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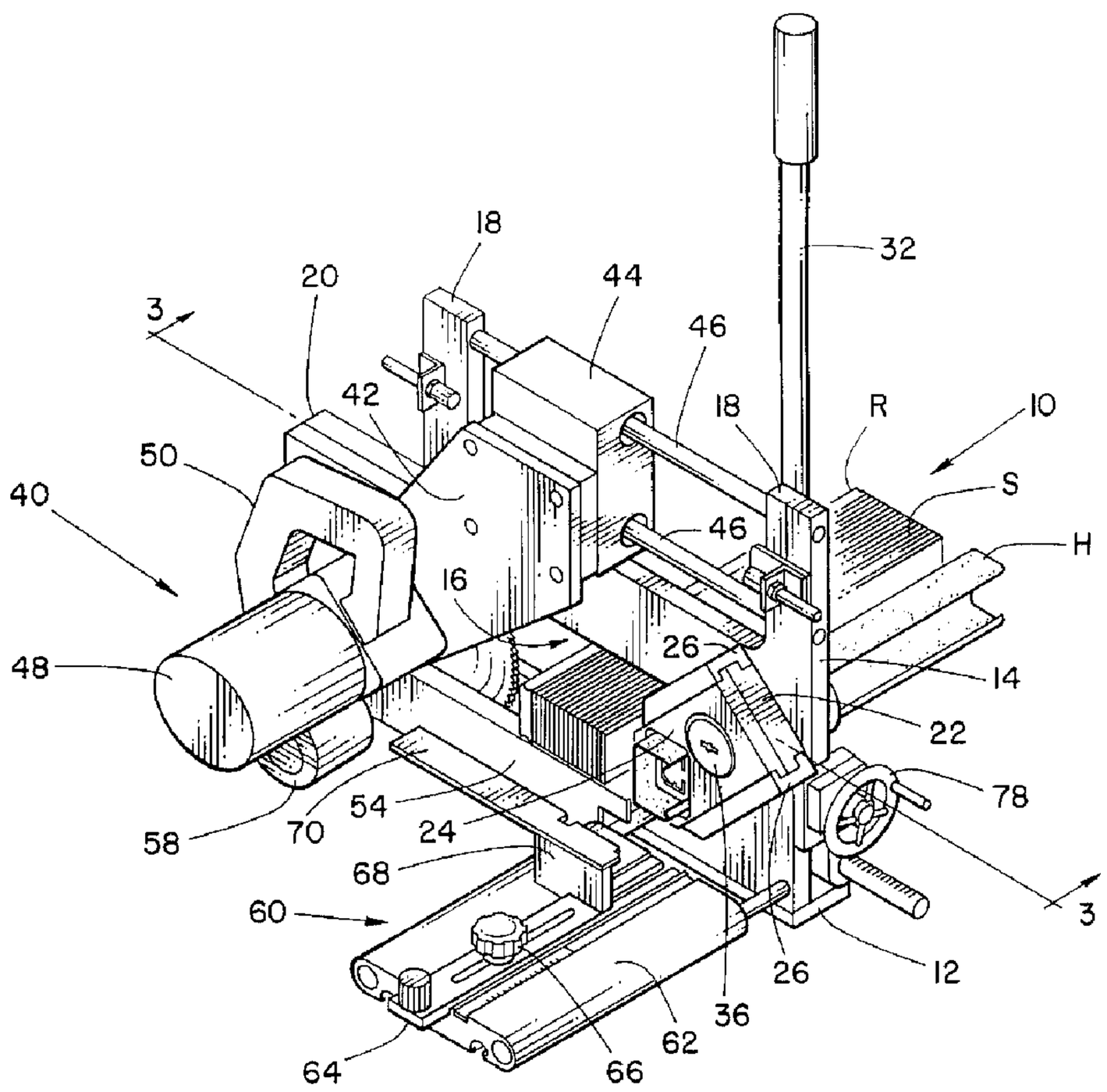
(72) Inventeur/Inventor:
MAROCCO, NORBERT, CA

(73) Propriétaire/Owner:
SHADE-O-MATIC LIMITED, CA

(74) Agent: GIERCZAK, EUGENE J. A.

(54) Titre : MACHINE D'EBOUTAGE DE STORES A LAME DE SCIE ROTATIVE
(54) Title: ROTARY SAW CUTTER BLIND CUT DOWN MACHINE



(57) Abrégé/Abstract:
A blind cut-down apparatus (10) for cutting and sawing having at least a head rail component (H), and blind slats (5) suspended from the head rail (H), and having a blind holding plate (14) with an opening (16) for holding the components (H, S) in position for cutting, a slat cutting saw (40) moveable relative to the holding plate (14) for cutting blind components (5) held in the holding

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(57) Abrégé(suite)/Abstract(continued):
plate (14), and including a movement device (32, 34) for moving the cutting saw (40) and the die holder (24). Also disclosed is a method of saw cutting ends of blind components (H, S) in which the blind components (H, S) are held in a head plate (14) and in which a saw blade cuts the components (H, S).

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(71) Applicant *(for all designated States except US)*: **SHADE-O-MATIC LIMITED** [CA/CA]; 550 Oakdale Road, Toronto, Ontario M3N 1W6 (CA).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **MAROCCO, Norbert** [CA/CA]; 46 Pennycross Court, Woodbridge, Ontario L4L 3M6 (CA).

(74) Agent: **ROLSTON, George**; Miller Thomson LLP, Suite 2500, 2500,20 Queen Street West, Toronto, Ontario M5H 3S1 (CA).

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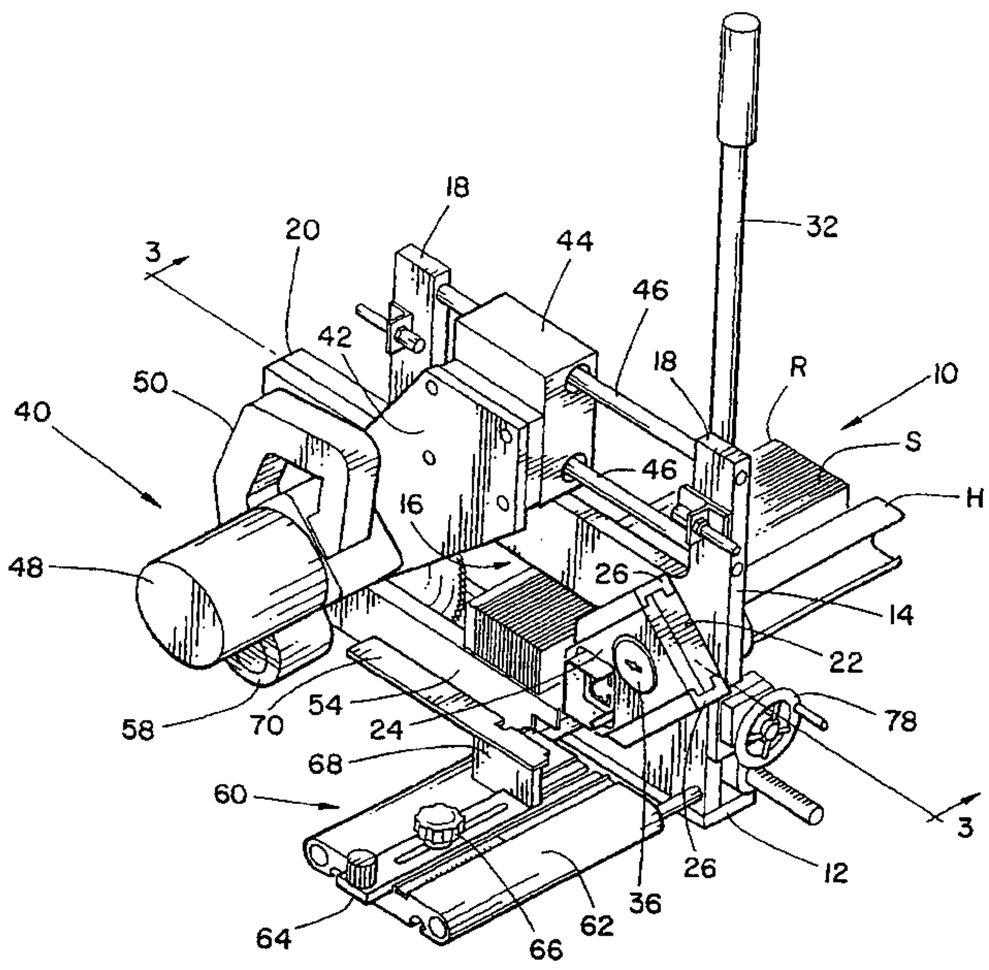

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WO 01/07747 A1

ROTARY SAW CUTTER BLIND CUT DOWN MACHINE

FIELD OF THE INVENTION

The invention relates to a machine for trimming the ends of blinds and window coverings, in which the slats are formed of materials requiring a saw cut.

BACKGROUND OF THE INVENTION

Blinds and window coverings are available in a variety of materials. Horizontal blinds are available in which the head rail, and in some cases, the bottom rails are formed of metal, usually steel, and in which the slats are formed of wood. In other cases slats may be formed of materials such as thick thermo plastic or other heavier materials.

In some cases blinds may be available in which the slats are vertical being secured usually at the top to a head rail typically made of steel. Bottom rails are not usually required on this type of blind, since the slats are relatively heavy.

Such blinds must be fitted to the width, or in some cases the height and width, of the window or other opening for which they are intended. In the past blinds have been made in a factory, on a custom basis to a particular width (and height) specified by the purchaser. A salesperson would usually have had to call on the customer and take an order. However, it is more convenient to manufacture blinds and window coverings in certain standard widths, and stock these standard widths in a retail store. A customer may then simply come into the store and buy a blind slightly wider than the desired width (or longer than the height), and have it trimmed at the ends to the desired width (or height). This is both more economical, and thus more readily saleable, and at the same time provides the customer with an opportunity to purchase blinds in a retail establishment and walk out of the store with them in his possession, rather than meeting a salesperson at home, and waiting a few weeks for them to be fabricated in a factory.

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For example HENSLEY US Patent 2,925,005 discloses a machine for clamping bundles of wooden pieces, and holding them for cutting.

It does not relate to trimming blinds as such. The method of clamping of the bundles of wooden pieces disclosed essentially forms the pieces into a square bundle. This, is totally unsuited to clamping blind slats, which must be held side by side. This is due to the fact that blinds are trimmed after they have already been assembled with their blind tapes and controls. The slats must be clamped without disturbing the tapes or controls.

Hsu US Patent 4,907,325 discloses a machine used to trim both ends of a blind simultaneously. The entire blind is clamped by cylinders on a bench. Two saws then move simultaneously to trim opposite ends of all the blind components, ie the head rail the blind slats and the bottom rail.

Two milling heads then mill the trimmed ends of the components to give them a slightly curved profile at each end.

This will result in the head rail having milled and curved ends, as well as the slats and bottom rail. Generally this would be undesirable to a consumer. Most consumers expect the blind head rail to be cut square at the ends. The effect of milling the head rail ends would be to define milled curves running from top to bottom of the head rail and would create an odd appearance.

This system does not have dies for trimming the head rail of the blind., separately from the blind slats.

In the past various apparatus has been designed for cutting down widths of horizontal blinds of specific designs and specific materials. However, in general terms, these machines have not been totally suitable for cutting down blinds in which the slats are made of heavier (or thicker) materials, such as wood or thick thermoplastic.

In addition to these factors, blinds and window coverings are also available in which blind slats are suspended vertically from a head rail. These blind slats may be drawn to one side or the other of the window opening, or in some cases to both sides, and may be rotated between open and closed positions, by a mechanism located in the head rail. Again, these blinds usually required a sales call, at the home, followed by custom fabrication in a factory.

Advantageously, these blinds too would be provided in standard widths, in a retail store and it would be desirable to provide an apparatus in the store for cutting down the width of the head rail, and also the lengths of the vertical slats, in the case of vertical blinds. Vertical blinds, as well as horizontal blinds, also use blind slats which are made of heavier or thicker materials such as wood or thick thermoplastic, and earlier machines such as those using shears or cutting blades are not suitable for cutting blind slats either vertical or horizontal, made of these thicker materials.

Preferably, in order to economize in-store installations of cut-down equipment and also to simplify instruction of staff, a single cut-down machine will be provided which enables blinds having a metal head rail, and having slats formed of these heavier materials to be cut down to the desired width (or height) in a single machine.

One of the considerations in designing such a cut-down machine is the manual effort that is required to operate the machine to cut through the head rail

materials and the different cutting action, namely a saw cut for the heavier (and thicker) slat materials.

Clearly, metal such as steel, used in head rails, is relatively hard to cut. On the other hand, since the sections used in this type of product are relatively thin, the die for cutting the metal components of the blind may only be required to move a short distance.

Consequently, so long as adequate leverage is provided to move the metal cutting die a relatively short distance, this problem can be addressed.

On the other hand, the cutting of the blind slats themselves presents entirely different problems. In this type of blind the slats are made of relatively thick materials which while easier to cut require a saw blade action. The thickness of all of the blind slats of these heavier materials when bundled together for cutting is considerable. Consequently, the saw for cutting these heavier, thicker blind slats must move a considerable distance.

While it is relatively easy to provide for the manual operation of such a saw moving a considerable distance for cutting easier to cut thicker materials, the problem becomes more complex when it is understood that it is desirable, at least in the case of horizontal blinds, to cut all of the materials, both the metal head rail and the softer blind slats, in what is essentially a single cutting stroke.

This is because, at least in the case of horizontal blinds, the trimming of the ends of the head rails and slats must in most cases be carried out, so that the blind has a precisely measured width along each side, and the widths of the blind slats correspond to the widths of the head rail and bottom rail. This is not so important in the case of vertical blinds, but is still desirable.

It is not feasible to provide two machines, i.e. a first machine which cuts only the head rail which is usually made of steel, and a second machine for an entirely separate cut for cutting the softer, thicker blind slats.

The moving of the blind from one machine to another will almost inevitably result in some discrepancy between the amount cut off from the head rail and the amount cut off from the blind slats, and the end result will not be satisfactory.

In addition to these problems there are other forms of blinds in which the head rails and bottom rails a formed of thermoplastic material. When cutting down of blind components such as these formed on thermoplastic it is found that it is generally unsuitable for cutting by means of a movable cutting die such as is used for cutting metal sections. Such thermoplastic section components are however easy to cut when using a rotary saw blades.

In this case it is found desirable to provide some form of component support to hold the component so that the saw cut is formed cleanly and in a desired plane.

For these reasons therefore the provision of a cutdown machine meeting all of these objectives, i.e. being capable of cutting through both the softer but thicker blind slats, and the harder but thinner metal head rail and bottom rail, in a single manual cutting movement, and being capable of saw cutting thicker materials, presents a complex problem.

The complexity of the design is further aggravated by the fact that (in the case of horizontal blinds) the head rail is located at the head of the blind and is usually made of metal, eg. steel, and the blind slats (of thicker material) are located spaced below the head rail. Consequently, when trimming the blind it is necessary to provide cutting dies for cutting head rails and for substantially simultaneously saw cutting the thicker blind slats. It will of course be appreciated that in the case of horizontal, i.e. Venetian blinds, all of these cuts must be made in a common plane, so as to provide a uniform end trimming function on the blind. Even for vertical blinds, the vertical blind slats must be trimmed, along their lower ends, by cutting all the slat ends along a common plane.

A further factor in this type of apparatus is that as far as possible it is desirable to simplify its operation for the service personnel in the retail outlet, so that the cutting or trimming of the ends of the blind may be carried out with the least possible chance for error. Preferably, in order to do this, the apparatus will be constructed in such a way that a single movement of a manual cutting arm or lever, will produce the cut down or trim function both in respect of the head rail cutting die and also the closure element saw blade, so that all the components of the blind are trimmed with a single manual stroke. When referring to a "manual" stroke it will be appreciated that, in fact, the apparatus could be power operated. In some cases the head rails may also be of softer material, such as thermoplastic, and in these cases saw blade cutting may be used to trim the ends of all the blind components.

It will further be appreciated that this type of equipment will be used by service personnel in retail establishments. As such, while they will have a certain degree of training, they will usually have numerous other duties, and may in fact be working somewhat under pressure, while a customer is actually waiting. Consequently, it is desirable as far as possible to make the apparatus as simple to operate as is possible.

For this reason, it is desirable that the operating mechanism, in this case for example, a manual lever, shall operate both the head rail cutting die and also the closure element cutting saw.

Consequently, it is desirable to provide some form of linkage in which both the die and the saw are operated.

It will also be appreciated that while reference is made to manual operation, it is conceivable that some form of power operated means could be provided, which would still require some degree of manual operation, if only to

simply press a switch. Manual operation is deemed to be generic to all such forms of operation whether power assisted, or not.

BRIEF SUMMARY OF THE INVENTION

With a view to providing a blind cutdown apparatus which addresses the various foregoing conflicting problems, the invention comprises a blind cut-down apparatus for cutting and sawing a blind having at least a head rail component of thin material, and blind slats of thicker material suspended from the head rail, and comprising a blind holding plate having opening means for at least a head rail component and slat components therein for receiving respective components of a blind there through, and holding them in position for cutting, a slat cutting saw moveable relative to said holding plate, for cutting blind slats extending through said holding plate.

Preferably in order to provide for cutting both thermoplastic components and/or metal components, the apparatus will also have a cutting die holder adjacent to said cutting saw, said cutting die holder carrying at least one cutting die for receiving said head rail there through, and being moveable relative to said holding plate for cutting said head rail, and including movement means for moving said cutting saw and said cutting die holder substantially simultaneously, whereby both said blind slats and said head rail may be cut substantially simultaneously and in a common plane along the surface of said holding plate.

Preferably the thermoplastic component holder will be moveable into and out of position, depending upon whether the blind has all thermoplastic components, or a mix of thermoplastic and of metal components.

The invention further provides for such a cut down apparatus and including a head rail cutting die secured to said holding plate, and said head rail cutting die being mounted to said die holder, whereby said head rail cutting die

may move relative to said holding plate for cutting said head rail extending there through.

The invention further provides such an apparatus and further having a saw blade guide attached to said holding plate and said saw blade being moveable there along relative to said holding plate.

The invention further provides such an apparatus and in which manual movement means are provides for moving both said cutting die and said saw blade, with said cutting die moving a short distance, and said saw blade moving a greater distance and in a common plane, under the influence of a single manual operating means.

The invention further provides for a slat clamping mechanism operable to clamp a bundle of slats extending through said holding plate, whereby to hold them stationary during operation of said saw blade.

The invention further provides that the saw blade is operated by an electric motor, the saw blade comprising a rotatable saw disk.

The invention further provides that the cutting die guide shall provide a cutting die movement path which is diagonal to the movement path of said saw blade.

The invention further provides such an apparatus and including a vacuum fan and vacuum nozzle, located adjacent to said saw blade collecting saw cut debris resulting from the operation of said saw.

The invention further provides such an apparatus wherein the manual operation means comprises a rotary shaft, a manual lever connected to said shaft, an operating cam connected to said shaft and engaging said cutting die, and a movement transmission lever connected between said shaft and said saw blade, said transmission means are being operable through a path of movement greater than the path of movement of said cutting die.

In a simplified form of the invention, both the head rail, and the blind slats, and even the bottom rail, can all be cut by a single saw cutting blade, and they can all be held in a single clamp opening. This will become possible where, for example, the head rail and bottom rail are made out of a non-metallic material such that it is easily cut by means of a saw blade.

In this form of the invention a moveable head rail holder plate is provided, having head rail holding openings therein. The head rail holder plate is moveable between inoperable and operable positions, and in the operable position, the head rail openings register with the openings in the holder plate. In this way both the head rail and blind slats are held in position fixed and immovable, suitable for cutting by the cutting saw.

The invention further provides an embodiment in which a moveable component holder plate is formed with a plurality of component openings of varying shapes, for holding components of corresponding varying cross sections.

The various features of novelty which characterize the invention are pointed out with more particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be made to the accompanying drawings and descriptive matter in which there are illustrated and described preferred embodiments of the invention.

IN THE DRAWINGS

Figure 1 is a perspective illustration of a rotary saw cut down machine from the saw blade side, illustrating the invention and showing blind components inserted therein;

Figure 2 is a perspective illustration of the apparatus of Figure 1 viewed from the opposite side;

Figure 3 is a section along the line 3-3 of Figure 1;

Figure 4 is a schematic side illustration of the head rail cut down die portion of the apparatus, shown in a first position;

Figure 5 is a view corresponding to Figure 1 showing the cut down die in a second position, and showing movement in phantom;

Figure 6 is a side elevational view of a further embodiment of the cutdown machine;

Figure 7 is a side elevation view of the apparatus of Figure 6;

Figure 8 is a perspective illustration of a simplified form of saw blade cut down machine where the saw blade will cut all of the blind components namely the head rail, the blind slats and the bottom rail, in a single pass of the saw blade;

Figure 9 is a perspective illustration of the apparatus of Figure 8, shown from the opposite side;

Figure 10 illustrates a side elevational view of a further embodiment to the invention showing an optional moveable head rail holder plate, the holder plate being in its inoperable position in Figure 10, and,

Figure 11 is a side elevation view corresponding to Fig 10, and showing the head rail holder plate moved into its operable position.

DESCRIPTION OF A SPECIFIC EMBODIMENT

Referring first of all to Figs. 1 and 2, the invention is there illustrated in the form of a blind cut down machine indicated generally as 10. Such a machine is intended to be installed at a retail store, and would be bolted on a working surface somewhere in a service area away from the customers.

As explained above the purpose of the apparatus 10 is to be capable of trimming the head rail and slats both of horizontal or so called Venetian blinds, and also the head rail and slats of vertical blinds.

Where a Venetian blind has a bottom rail, then the apparatus is also capable of cutting down the bottom rail, if such a blind has a bottom rail.

It should also be understood that in the case of Venetian blinds, the Venetian blind is already assembled so that there are so called ladder tapes and also raise cords which are already attached to the slats, and connected to the head rail.

As a result, when trimming the ends of the blind head rail and slats, in Venetian blinds it will be understood that it is necessary to insert both the head rail (and bottom rail) and the slats into the trimming apparatus at the same time, so that the trim cuts are made in a common plane. It will be further understood that in the great majority of cases, when trimming a Venetian blind, it is necessary to trim the head rail (and bottom rail) and slats at both ends, so as to produce an even appearance in the finished cut down blind. If, for example, the blind must be cut down by, for example, a total of two inches, then the slats and the head rail (and bottom rail) at each end will have to be cut down by an amount of one inch, so as to produce a total two inch cut down.

On the other hand, with vertical blinds, the normal industry practice is to supply the head rail with its trolleys, and operating mechanism, and to supply a group of closure elements, ie. blind slats, in a package, with the slats separate

from and detached from the head rail. In this case, the normal practice is to cut down the head rail at one end only, since the controls for the blind are usually located in a fixed location at the opposite end of the head rail.

The blind slats will usually be cut down only along their lower ends, since they are usually provided with some form of attachment means at their upper ends for connecting to the trolleys in the head rail when the blind is finally assembled and installed.

From this preliminary outline, it will be understood that the apparatus illustrated should preferably perform these varied functions on different types of blind products, so that a single cut down machine may be supplied to the retailer and the retail staff trained on that single machine, thereby avoiding the expense of supplying several different cut down machines and training staff on several machines.

Referring once again to the drawings, the apparatus 10 will be seen in this embodiment to comprise a base or mounting plate 12, and a frame plate or blind holding plate 14 mounted thereon perpendicular thereto. The frame plate 14 is provided with a rectangular opening 16 for receiving blind components typically a head rail indicated as H, and closely spaced thereto, closure elements ie. blind slats S, and in this case, a blind bottom rail R. The blind illustrated, typically would be a Venetian blind, and it will be understood that the ladder tapes and raise cords are not illustrated simply for the sake of clarity, and to avoid complexity in the illustration. Frame plate 14 also defines two upwardly directed support arms 18-18, defining between them a generally U-shaped rectangular space, for reasons to be described below. Mounted on frame plate 14 there is a spacer plate 20, and holder or holding plate 22.

In order to cut the head rail H which typically will be made of thin relatively hard material, typically metal, a moveable die mounting plate 24 is provided.

The plate 22 and the moveable plate 24 provide a movable head rail support member and are mounted in a common pair of channels or cutting die guides 26-26 - secured to frame plate 14. Holder plate 22 defines a rectangular slot like opening 28 of a shape that corresponds to the shape of the head rail H1 so as to hold it securely during cutting. In this particular embodiment, provision is made for two different shapes of head rails H1 and h1. For this purpose, a second head rail(h1) opening or receiver 29 is provided, which in this case, is located within the dimensions of the first headrail opening or receiver opening 28 for H1.

Moveable die plate 24 carries with it a head rail cutting die 30 which has a corresponding rectangular slotted recess corresponding to the shape of the head rail H1 and opening 28. Moveable die plate_ 24 also carries a second cutting die 31, located within the dimensions of the cutting die 30, for cutting the smaller head rail placed through the smaller head rail opening 29.

Movement of the moveable plate 24 relative to the fixed holder plate 22 will cause movement of the cutting die 30 (or 31) and this will sever or shear the material of the head rail. It will be appreciated that since the head rail is of relatively thin gauge material, the die plate 24 will not move a great distance. On the other hand, considerable force must be exerted on the die plate 24 in order for it to perform the shearing action. It will also be noted from Figs. 1 and 2 that the channels 26-26 which hold and control the moveable die plate 24, also define its path of movement relative to the head rail. This path of movement will be seen to be in a generally diagonal direction. The reason for this is that the shearing action of the cutting die 30 is preferably of a progressive nature, and will shear the head rail in a direction which is diagonal to its rectangular cross section from one corner to the other.

The moveable die plate 24 is moved by manual operation means of the manual lever 32 coupled to a rotary drive shaft 34. Shaft 34 extends through frame plate 14 and through fixed plate 22. Within fixed plate 22, there is mounted an offset

drive stub shaft or operating cam 36. By this means, by manual operation of lever 32, the shaft 34 can be rotated thereby rotating and causing an orbital movement of the drive stub shaft 36. This will cause sliding movement of the plate 24 relative to the fixed plate 22, thereby shearing the head rail.

The saw cutting assembly for cutting the closure elements (and bottom rail) is indicated generally as 40. It will be seen to comprise a saw blade mounting plate 42, which is secured to a slide block or guide body 44. Block 44 is mounted on slide rails or saw blade guide rods 46-46 extending between the upright arms 18.

On the lower end of the saw plate 42, there is mounted a rotary saw assembly indicated as 48. The saw assembly 48 is essentially a typical electric motor, coupled by a shaft (not shown) to a rotary saw blade 49 of a type well known in the art. For simplicity, an operating handle 50 may be provided, on the saw assembly 48, for manually drawing the saw 48 to and fro along the rails 46. The spacer plate 20 is secured to the frame plate 14, so as to space the saw mounting plate 42 in the correct plane, so as to bring the saw blade into alignment with the interface between the fixed plate 22 and the moveable die plate 24. This is required so that the trimming cut down action both of the saw blade and of the moveable die plate 24, shall produce trimming of both the head rail and the blind slats, and the bottom rail where it is included in a common plane.

In order to ensure that the saw debris does not fly about, a hollow collection tube 54 is provided. Tube 54 is provided with a plurality of openings (not shown) along the length of the saw blade travel.

One end the hollow tube 54 may be connected, for example, by vacuum hose 56 (Fig. 2) to a vacuum pump or fan and motor which are indicated generally as 58.

In order to preset the length of end trim or cut down on any particular job, the length cutting control indicated generally at 60 is provided. The length control 60 comprises a generally horizontal plate 62. A slidable bar 64 is moveably connected to plate 62 by means of threaded screw 66. A generally L-shaped spacer block 68 is secured to the end of bar 64. A blind contact plate 70 is attached to the block 68 and is oriented to a contact at the ends of the head rails H and the blind slat S and the bottom rail.

The spacer block 68 and blind contact plate 70 may, in some cases, be connected to the lever 32 and shaft 34 so that it moves away from the ends of the blind component but this is not always necessary and consequently, the mechanism is not described in detail.

In order to clamp the blind slats S and bottom rail R in position, to be held firmly during the operation of the saw blade, a slat clamping mechanism or device is provided, comprising a clamp plate 72 and a moveable clamp arm 74. Clamp plate 72 is secured to frame plate 14 and moveable clamp arm 74 is mounted on a screw shaft 76. A hand wheel 78 permits the screw shaft to be drawn to and fro, thereby drawing the clamp arm into contact with the blind slats and bottom rail (Fig. 2).

In operation, the head rail H and blind slats S and bottom rail R are inserted as shown in Figs. 1 and 2. The clamp arm 74 is operated so as to clamp the blind slats S and bottom rail R in position.

The lever 32 is then operated so as to move the moveable die plate 24 (Figs. 4 and 5) thereby severing the head rail.

Thereafter, the operator may simply manually grasp the handle 50 and switch on the motor 48, by any suitable electrical switch (not shown). The saw blade 49 is then drawn through the blind slats and the bottom rail.

All of the blind components therefore are cut in a common plane while being held in position in the apparatus.

As shown in Figure 6, the operation of the operating means in this case, the lever 32, although other operating means could be used whether hand operated or power operated, for operating the die plate 24, and the operation of the saw assembly 48 and its sliding mount 44, may be coupled together to provide a single manual movement transmission means. In order to provide this coupling, a first spring or resilient member 80 may be provided. The spring 80 is connected between the lever 32 and a connecting bar 82 which is itself mounted on the slide block 44. Manual operation of the lever 32 will thus be communicated to the slide block 44 by the increased tension developed in spring 80.

In order to provide a slow progressive movement of the saw assembly, a damper means or device, namely a control cylinder 84 is provided. Cylinder 84 is mounted on a flange 86 on support arm 18, and the piston rod of cylinder 84 is connected to bar 82. The operation of the cylinder 84 is such as to cause a progressive gradual movement of the cutting saw assembly 40 (Fig. 7), in response to tensioning of the spring 80, thereby producing a slow, progressive, gradual movement of the cutting saw assembly 40 so as to provide a smooth, regular cut through the ends of the blind closure elements and bottom rail.

In order to return the block 44, and the cutting saw assembly 40, the return spring 88 is provided. Spring 88 connects between block 44 and support arm 18.

In order to provide automatic on/off operation of the cutting saw assembly 40, a typical limit switch 90 is provided, being operated by a finger 92 on block 44. As soon as the spring 80 is placed in tension, the finger 92 will release the limit switch 90 thereby activating the motor in the cutter saw assembly 40.

Once the return spring 88 returns to the block 44, the finger 92 will contact the switch 90 and thereby shut off power to the motor and stop the cutter saw assembly 40.

In addition, suitable end stops 94 and 96 may be provided on the two frame portions 18-18, so as to limit the length of travel of the block 44.

While the apparatus already described is suitable for use where, for example, the head rail is made of a metallic material, and the slats and bottom rail are made of a softer material suitable for cutting by means of a saw blade, it will be appreciated that in certain cases it may be possible to fabricate the head rail itself out of a softer material, so that it too may be cut by a saw blade.

A modified simplified form of apparatus for this purpose is shown in Figures 8 and 9.

In this simplified apparatus, a frame plate 100, is mounted on a base plate 102. A blind component opening 104 is formed in plate 100. A component buffer 106 is mounted on plate 100.

A component clamp arm 108 is mounted on screw 110 operated by hand wheel 112.

Blind components consisting of a non-metallic head rail H, blind slats S, and a bottom rail R, are all passed through the opening 104. The edge of the head rail abuts against buffer 106, while the bottom plate is clamped by means of clamp 108, thereby securing the blind components in position for cutting.

A saw blade mounting arm 114, carries a rotary saw blade 116 driven by any suitable motor means (not shown). Mounting 114 is secured to slide bearings 118. Bearings 118 are spaced apart from one another and ride on guide rods 120.

A collector channel 122 is secured to plate 100, and defines an opening along which blade 116 can travel. In this way, saw dust and debris from the saw blade cutting through the blind components, can fall down into the channel. The channel will be connected to a suitable vacuum source (not shown) in essentially the same manner as described above.

Blind component end stops are provided in the form of a transverse stop bar 124, mounted on a slide body 126, which is slidable to provide a fixed stop and which can be secured by means such as clamp screws 128.

The mounting 114 is operated by means of a handle 130 and a trigger switch 132 is provided in handle 130, and when the trigger switch is depressed, the motor driving the blade 116 will commence operation.

In a still further embodiment to the invention, the advantages of both the cutting apparatus of Figure 1 and Figure 9 may be provided in a single apparatus.

In the apparatus of Figures 10 and 11, the essential features of the apparatus of Figures 1 through 9 is provided, and is deemed included without reference.

In this embodiment, the apparatus is adaptable to either cut blinds in which the head rail is metallic and the slats are non-metallic, in which case the apparatus will employ the moveable cutter plate 24 and cutter die, for cutting the metallic head rail, or, the apparatus may be adapted for cutting a blind in which the head rail is made of softer materials typically thermoplastic, which does not require cutting in a head rail die, but which can be cut simply by means of the saw.

To facilitate this, the apparatus of Figures 10 and 11 provides a moveable head rail holder plate or support member 140 , mounted alongside the frame or holding plate 14. Typically, the moveable head rail support member comprises a head rail cutting die holder or support plate 140 mounted above the opening 16 and carries at least one head rail cutting die. The holder plate 140 will be slidably mounted in slide or guide channels 142. Any suitable form of plate locking means such as plate locking device 144 is provided for holding the plate in, for example, its upper inoperative position.

The holder plate 140 is provided with the first pair of head rail holder slots or first head rail receiver 146 for a larger head rail H2, which are parallel and spaced apart from one

another. They are oriented to support the two side walls of the typical three sided head rail channel, such as 28, 29 (Fig. 3).

Between the two slots 146-146 a head rail support shoulder 148 is provided, for supporting the web or intermediate walls of the typical head rail channel.

A further head rail slot 150 is provided located between slots 146-146. The head rail slot 150, coupled with the lower slot 146, will allow such a smaller rectangular head rail h2 to be supported by the head rail plate 140.

Head rail slot 150 can receive a small head rail typical in so-called "Mini-blinds" having smaller slats.

When the head rail support plate 140 is in its upper inoperative position, the apparatus will typically be used for cutting a blind cutting slats indicated as S1, which will be cut by the saw, and a head rail indicated as H1 which will be cut by the head rail cutting die already described.

Typically, however, when the support plate 140 is in its lower operative position as shown in Figure 11, the apparatus will be used for cutting slats indicated as S2, and a head rail indicated as H2.

In each case, the cutting of smaller blinds having narrower slats and a smaller head rail is not illustrated, but is deemed to be self-explanatory.

The embodiment shown in Figs 10 and 11, is capable of handling blinds consisting of all thermoplastic components, on the one hand, and a mix of thermoplastic components and metal components on the other.

As mentioned above the existence of some blinds using all thermoplastic components makes it desirable to provide such a machine which is adaptable to cutting down either type of blind. Where the head rail and bottom rail components are formed of thermoplastic then the using of metal cutting dies is

found to be unsuitable. Instead it is found to be preferable to use the rotary cutting saw to cut all the components when they are all of thermoplastic..

In this case as explained the holder plate 22 and cutting die plate 24 are not used.

After positioning the moveable plate 140 in its operative position, and inserting the blind components, and operating the clamp, the rotary saw is then switched on. As it is drawn past plate 14 it will cut the slats and then the head rail H2.

Clearly, if desired a similar moveable plate (not shown) could be provided with an opening for holding a bottom rail while cutting. Such a bottom rail plate would of course be located somewhere along the length of the opening 14. However in most cases this will not be needed. Blinds of this type are often made without a bottom rail, or , if one is provided, it is simply formed of solid plastic but somewhat thicker than the slats, and can therefore be held by the clamp for cutting.

The foregoing is a description of a preferred embodiment of the invention which is given here by way of example only. The invention is not to be taken as limited to any of the specific features as described, but comprehends all such variations thereof as come within the scope of the appended claims.

CLAIMS

1. A blind cut-down apparatus(10) for cutting a head rail (H) by means of a head rail die (30,31) and for sawing blind slat components(S) suspended from the head rail(H) by means of a slat cutting saw (40), and characterized by;

a blind holding plate(14) having an opening for a head rail component(H), and having a further opening (16) for blind slat components(S) for receiving respective components of a blind there through, and holding them in position for cutting;

a clamp device (72,74) for clamping said blind slat components(S) in said opening (16) in position relative to said blind holding plate;

guides (46,46) for guiding said slat cutting saw (40) to move relative to said holding plate(14), for cutting said blind slat components extending through said opening (16) and clamped by said clamp device (72,74);

guides (26) for guiding said head rail die(30,31), for cutting said head rail (H) extending through said head rail opening ; and,

a movement drive (32,34) for moving said slat cutting saw(40), and

moving said head rail cutting die (30,31).

2. A blind cut down apparatus (10) as claimed in Claim I and including a holding plate (22) and head rail die plate (24) for mounting said head rail cutting die(30,31) said plate (24) moveably secured to said holding plate(22), by said guides (26) whereby said head rail die plate and cutting die(30,31) may move relative to said

holding plate(22) for cutting said head rail(H) extending therethrough.

3. A blind cut down apparatus (10) as claimed in Claim I and further having a pair of parallel saw blade guide rods (46-46) attached to said holding plate(14) and a guide body (44) carrying said cutting saw(40) and being moveable along said rods (46) relative to said holding plate(14).

4. A blind cut down apparatus(10) as claimed in Claim 2 and in which said movement drive (32,34) is provided for moving both said head rail die plate (24) and said cutting die(30,31) and said cutting saw(40), with said cutting die(30,31) moving a short distance, and said cutting saw(40) moving a greater distance than said cutting die holder(24) and in a common plane therewith, under the influence of a single manual operating member(32,34).

5. A blind cut down apparatus (10) as claimed in Claim I wherein the cutting saw(40) includes a saw blade(49) operated by an electric motor(48), the saw blade comprising a rotatable saw disk.

6. A blind cut down apparatus (10) as claimed in Claim I wherein said cutting die guides (26-26) providing a cutting die movement path which is diagonal to the movement path of said saw blade(49).

7. A blind cut down apparatus (10) as claimed in Claim I including a vacuum fan(58) and vacuum nozzle(56) located adjacent to said saw blade(49) collecting saw cut debris resulting from the operation of said cutting saw(40).

8. A blind cut down apparatus(10) as claimed in Claim 4 wherein the manual operating member (32,34) a rotary shaft(34), a manual lever(32) connected to said shaft(34), an operating cam(36) connected to said shaft (34) and engaging said head rail die plate (24), and a movement transmission(80,82) connected between said

shaft(34) and said saw blade(49), said saw blade(49) being operable through a path of movement greater than the path of movement of said cutting die(30,31).

9. A blind cut-down apparatus(10) as claimed in claim I including a head rail holder plate (140) moveable between operative and inoperative positions.

10. A blind cut-down apparatus (10) as claimed in claim 9 including head rail support openings (146-146) defined by said head rail holder plate(140), and wherein opening (16) in said blind holding plate(14) is oriented to receive said head rail(H) there through.

11. A blind cut-down apparatus (I0) as claimed in claim 10 included slide channels (142) moveably mounting said head rail holder plate(140) on said plate(14), said head rail holder plate(140) being moveable between operative and inoperative positions, and, when in said operative position, said head rail opening (16) registering with said opening (146) in said head rail holder plate (140).

12. A blind cut-down apparatus(10) as claimed in claim 9 including a first head rail opening (146-146) in said head rail holder plate(140) for receiving a first said head rail(H2) therein, and a second head rail opening (150) in said head rail holder plate(140) for receiving a second head rail(h2) therein.

13. A blind cut-down apparatus (10) as claimed in claim 12 and wherein said head rail openings (146-146,150) comprise a pair of parallel spaced apart slots, for receiving corresponding head rail (H2) formations there through, and a support shoulder (148) extending between said slots for supporting a further head rail (H2) component thereon.

14. A blind cut down apparatus(10) as claimed in Claim 8, wherein a resilient member (80) connects said manual lever (32) to said cutting saw (40) for movement in one direction, and a resilient return spring (88) for returning said cutting saw (40) in the

opposite direction.

15. A blind cut down apparatus as claimed in Claim 14 and including a damping device(84) to control movement of the cutting saw (40) in one direction, and including limit switch (90,92) at each end of the cutter path of said cutting saw (40) for controlling operation of said saw blade (49).

16. A blind cut down apparatus(10) as claimed in Claim 1, wherein said blind further includes a bottom rail(R) suspended from said blind slats(S), in which said clamp (74,72) includes a moveable member (74) adapted to abut against said bottom rail(R) and urge said bottom rail(R) toward said blind slats(S).

17. A blind cut down apparatus (10) as claimed in Claim 2, wherein said holding plate(22) defines a first head rail opening(28), for receiving a head rail(H1) of a first blind having a first head rail dimension, and further defining a second head rail opening(29) for receiving a head rail(hl) of a second blind having a second head rail dimension smaller than said first head rail dimension.

18. A method of operating a blind cut-down apparatus(10) for sawing and trimming a blind having at least a head rail component(H) of a material having a first thickness, and blind slats(S) of material having a second thickness greater than said first thickness suspended from the head rail(H), the blind cut down apparatus(10) having a holding plate (22) with an opening (28,29) for a head rail and a further opening (16) for blind slat components and a clamp (72,74) for clamping the slats in the opening (16) and a head rail die (30,31) and a cutting saw(40) moveable relative to the holder and characterized by the steps of:

positioning said head rail in said opening (28,29);

positioning said blind slat components in a blind slat opening ([14] 16);

clamping said blind slat components in said opening, by said clamp (72,74);

moving a cutting saw(40) moveable relative to said blind slat opening(16), along a saw blade guide(46, 46) attached to said holding plate (22) thereby cutting said blind slat components(S) and

moving said head rail die (30,31) relative to said head rail opening (28,29) thereby cutting said head rail component(H).

19. A method according to claim 18 wherein said blind further comprises a bottom rail(R) suspended from said blind slats(S), and including the step of clamping said bottom rail (r) in said opening (16) together with said blind slats and in which said cutting saw (40) is moved during said cutting step through said bottom rail(R) in addition to said blind slats(S).

20. A method according to claim I8 in which said clamping step comprises moving a movable clamp member(74) of said adjustable clamp(72,74) against said bottom rail(R) in order to move said bottom rail(R) toward said blind slats(S), and clamp them as a single bundle in said opening(16).

21. A blind cut-down apparatus for cutting and sawing a blind having at least a head rail component of thin material, and blind slats of thicker material suspended from the head rail, and comprising:

(a) a blind holding plate having at least a head rail opening and a slat opening formed therein for receiving respective components of a blind there through, and holding them in position for cutting;

(b) a slat cutting saw moveable relative to said holding plate, for cutting blind slats extending through said holding plate;

(c) a cutting die holder adjacent to said cutting saw, said cutting die holder carrying at least one cutting die for receiving said head rail there through, and being moveable relative to said holding plate for cutting said head rail, and,

(d) movement means for moving said cutting saw and said cutting die holder relative to said holding plate whereby both said blind slats and said head rail may be cut in a common plane along the surface of said holding plate.

22. A blind cut down apparatus as claimed in claim 21 and including a head rail cutting die secured to said holding plate, and said head rail cutting die being mounted to said die holder, whereby said head rail cutting die may move relative to said holding plate for cutting said head rail extending therethrough.

23. A blind cut down apparatus as claimed in claim 21 and further having a saw blade guide attached to said holding plate and said saw blade being moveable there along relative to said holding plate.

24. A blind cut down apparatus as claimed in claim 21 and in which manual movement means are provided for moving both said cutting die and said saw blade, with said cutting die moving a short distance, and said saw blade moving a greater distance than said cutting die and in a common plane therewith, under the influence of a single manual operating means.

25. A blind cut down apparatus as claimed in claim 2I and including a slat clamping mechanism operable to clamp a bundle of slats extending through said holding plate, whereby to hold them stationary during operation of said saw.

26. A blind cut down apparatus as claimed in claim 21 wherein the saw blade is operated by an electric motor, the saw blade comprising a rotatable saw disk.

27. A blind cut down apparatus as claimed in claim 21 including cutting die guides providing a cutting die movement path which is diagonal to the movement path of said saw blade.

28. A blind cut down apparatus as claimed in claim 21 including a vacuum fan and vacuum nozzle, located adjacent to said saw blade collecting saw cut debris resulting from the operation of said saw.

29. A blind cut down apparatus as claimed in claim 21 wherein the movement means comprises a rotary shaft, a manual lever connected to said shaft, an operating cam connected to said shaft and engaging said cutting die holder, and a movement transmission means connected between said shaft and said saw blade, said saw blade being operable through a path of movement greater than the path of movement of said cutting die holder.

30. The method of operating a blind cut-down apparatus for cutting and sawing a blind having at least a head rail component of thin material, and blind slats of thicker material suspended from the head rail, and comprising the steps of:

(a) positioning said blind components in a blind holding plate having at least a head rail opening and a slat opening formed therein for receiving respective components of a blind there through, and holding them in position for cutting;

(b) securing said components in said position; moving a slat cutting saw moveable relative to said holding plate, for thereby cutting blind slats

extending through said holding plate;

(c) moving a head rail cutting die adjacent to said cutting saw, relative to said holding plate thereby cutting said head rail, and,

(d) said movement of said cutting saw and said cutting die cutting both said blind slats and said head rail in a common plane along the surface of said holding plate.

31. The method as claimed in claim 30 wherein the saw blade is mounted on a saw blade guide attached to said holding plate and wherein said saw blade is moved there along relative to said holding plate.

32. The method as claimed in claim 31 wherein said movement is carried out by moving manual movement means for both said cutting die and said saw blade, with said cutting die moving a short distance, and said saw blade moving a greater distance than said cutting die and in a common plane therewith, under the influence of a single manual operating means.

33. The method as claimed in claim 32 and including the step of clamping the blind slats in a slat clamping mechanism whereby to clamp a bundle of slats extending through said holding plate, whereby to hold them stationary during operation of said saw.

34. The method as claimed in claim 33 including the step of operating the saw blade by an electric motor, the saw blade comprising a rotatable saw disk.

35. The method as claimed in claim 34 including the step of moving the cutting die along a movement path which is diagonal to the movement path of said saw blade.

36. The method as claimed in claim 35 including the step of collecting saw cut debris

by means of a vacuum fan and vacuum nozzle, located adjacent to said saw blade.

37. The method as claimed in claim 36 including the step of moving the saw blade through a path of movement greater than the path of movement of said cutting die.

38. A blind cut-down apparatus for sawing a blind while said blind is held stationary, said blind having at least a head rail component, and blind slat components suspended from the head rail, and comprising:

(a) a stationary blind holding plate;

(b) an opening through said blind holding plate for receiving respective components of a blind there through, said blind components passing through said opening and extending normal to said blind holding plate and defining cut-down trim portions of said blind components extending through said blind holding plate, and holding them in position stationary for cutting;

(c) clamp means for clamping said blind components in position in said blind holding plate and keeping them stationary therein;

(d) a cutting saw moveable relative to said stationary blind holding plate, and being moveable relative to said blind components held stationary therein, for cutting said cut-down trim portions of said blind components extending through and clamped in said blind holding plate, and movement means for moving said cutting saw, as aforesaid while said blind holding plate and said blind components remain stationary

including a head rail support member moveable relative to said holding plate wherein said head rail support member comprises a support plate, and head rail opening means in said support plate oriented to receive said head rail there through ; including slide

channels moveably mounting said head rail support member on said holding plate, said head rail support member being moveable between an operative position, in which said head rail opening means registers with said opening means in said blind holding plate, and an inoperative position in which said head rail support member does not register with said opening means; including a head rail cutting die holder, and a head rail cutting die held thereby, and including movement means for moving said cutting saw and said head rail cutting die holder relative to said holding plate whereby both said blind slats and said head rail may be cut in a common plane along the surface of said holding plate.

39. A blind cut down apparatus as claimed in claim 38, and in which a single manual movement device is provided for moving both said cutting die and said saw blade, with said cutting die holder moving a first distance, and said saw blade moving a second distance in a common plane with said cutting die, under the influence of said single manual movement means, wherein said second distance is greater than said first distance.

40. A blind cut down apparatus as claimed in Claim 39 wherein the manual movement device comprises a rotary shaft, a manual lever connected to said shaft, an operating cam connected to said shaft and engaging said cutting die holder, and a movement transmission member connected between said shaft and said saw blade, said saw blade being operable through a path of movement greater than the path of movement of said cutting die.

41. A blind cut-down apparatus for trimming the lengths of the slats and the head rail of a blind having at least a head rail, and blind slats suspended from the head rail, and comprising:

(a) a blind holding plate having a slat receiving opening at a predetermined. location in said holding plate for receiving said blind slats;

(b) a moveable head rail support member moveably mounted on said holding plate for receiving at least a first head rail and being moveable into and out of at least a first position;

(c) a first head rail receiver in said moveable head rail support member;

(d) at least one cutter moveable relative to said blind holding plate, for cutting at least one of said head rail and said blind slats extending through said holding plate;

(e) a movement transmission for moving said at least one cutter.

42. A blind cut-down apparatus as claimed in claim 41 wherein said at least one position of said head rail support member partially registers with said blind slat opening inn said holding plate.

43. A blind cut-down apparatus as claimed in claim 42 and including a second [moveable] head rail receiver in said moveable head rail support member, wherein said first and second moveable head rail receivers are shaped to receive head rails of dimensions different from one another.

44. A blind cut-down apparatus as claimed in claim 43 wherein said moveable head rail support member comprises a support plate and guides mounting said support plate on said holding plate, said support plate being moveable transversely relative to said blind slat opening and when in an operative position [partially] registering with said blind slat opening; and when in an inoperative position exposing said blind slat opening.

45. A blind cut-down apparatus as claimed in claim 44 and including locking means for securing said support plate in at least one of its positions.

46. A blind cut-down apparatus as claimed in claim 44 and wherein said first head rail receiver comprises a pair of spaced apart slots, for receiving corresponding head rail formations there through, and a support shoulder extending between said slots, and wherein said second head rail receiver includes at least one further slot for receiving a corresponding head rail.

47. A blind cut-down apparatus as claimed in claim 44 and including a cutting blade, said blade being moveable relative to said holding plate for cutting said head rail, and including a movement transmission for moving said cutting blade whereby both said blind slats and said head rail are cut in a common plane along the surface of said holding plate.

48. A blind cut-down apparatus as claimed in 41 and wherein said blind holding plate has at least one fixed head rail receiver; separate from said moveable head rail support member, and a clamp for holding said blind slats in said blind slat opening in position for cutting, and including a head rail cutting die holder adjacent to said cutting blade said head rail cutting die holder carrying at least one head rail cutting die for receiving a said head rail from said fixed head rail receiver there through, and being moveable relative to said holding plate and said fixed head rail receiver for cutting a said head rail received in said at least one fixed head rail receiver.

49. A blind cut-down apparatus as claimed in claim 48 and including a first and a second fixed head rail receiver and a first and a second head rail cutting die, both said first and second cutting dies being moveable simultaneously.

50. A blind cut-down apparatus for trimming the lengths of the slats and the head rail of a blind having:

(a) at least a head rail and blind slats suspended from the head rail; and

comprising

(i) a blind holding plate having at least one fixed head rail receiver at a predetermined location in said holding plate for holding a head rail;

(ii) a moveable head rail support member moveably mounted on said holding plate having at least a first moveable head rail receiver and being moveable between two positions, and being spaced apart from said predetermined location of said fixed head rail receiver on said holding plate;

(b) a blind slat-opening in said holding plate for receiving a group of blind slat components; and holding them in position for cutting;

(c) a clamp for clamping said blind slats in position in said blind slat opening, for cutting;

(d) at least one cutter moveable relative to said blind holding plate for cutting at least one of said head rail, and for cutting said blind slats; and,

20 a movement transmission for moving said at least one cutter.

51. A blind cut down apparatus as claimed in claim 50 wherein said moveable head rail support member incorporates a second moveable head rail receiver.

52. A blind cut-down apparatus as claimed in claim 51 wherein said moveable head rail support member is moveable between an operative position in which it supports at least one of said head rails , and an inoperative position.

53. A blind cut-down apparatus as claimed in claim 51 wherein said moveable head rail support member comprises a support plate, and guides mounting said support plate

on said holding plate; said support plate being moveable transversely relative to said blind slat opening, and when in an operative position partially registering with said blind slat opening; and when in an inoperative position exposing said blind slat opening.

54. A blind cut-down apparatus as claimed in claim 53 and including a first head rail receiver in said moveable head rail support member for receiving said head rail of a first predetermined size therein, and a second head rail receiver in said moveable head rail support member for receiving a head rail therein of a second predetermined size, wherein, said first and second head rails have predetermined profiles, differing from one another, and wherein said first predetermined size is larger than said second predetermined size.

55. A blind cut-down apparatus as claimed in claim 54 and including locking means for securing said moveable head rail support member in at least one of its positions.

56. A blind cut-down apparatus as claimed in claim 55 and wherein said head rail receiver in said moveable head rail support for said larger head rail comprises a pair of parallel spaced apart slots for receiving corresponding head rail formations of said larger head rail therethrough, and a support shoulder extending between said slots, and further including at least one further slot for receiving a smaller said head rail.

57. A blind cut-down apparatus as claimed in claim 41 and including a cutting blade, said blade being moveable relative to said holding plate for cutting a said head rail, and including a movement transmission for moving said cutting blade whereby both said blind slats and said head rail are cut in a common plane along the surface of said holding plate.

58. A blind cut-down apparatus as claimed in claim 57 and including a head rail cutting die holder adjacent to said cutting blade, said head rail cutting die holder carrying at least one head rail cutting die for receiving a said head rail from said fixed

head rail receiver there through, and being moveable relative to said holding plate for cutting said head rail.

59. A blind cut-down apparatus as claimed in Claim 58 and further having a cutting blade guide attached to said holding plate and said cutting blade being moveable there along relative to said holding plate.

60. A blind cut down apparatus as claimed in Claim 59 and including a manual movement transmission for moving both said head rail cutting die holder and said cutting blade, with said head rail cutting die holder moving a first distance, and said cutting blade moving a second distance in a common plane with said head rail cutting die; under the influence of a single-manual movement means, wherein said second distance is greater than said first distance.

61. A blind cut-down apparatus as claimed in Claim 58, wherein said [cuffing] cutting blade is a saw, and including a vacuum fan and vacuum nozzle, located adjacent to said saw collecting saw cut debris resulting from the operation of said saw.

62. A blind cut down apparatus as claimed in Claim 59, wherein the movement transmission comprises a rotary shaft defining a shaft axis, drive stub shaft mounted offset on said rotary shaft, a manual lever connected to said rotary shaft.

63. A blind cut down apparatus as claimed in Claim 41, wherein said blind includes a bottom rail, and-wherein said clamp mounted on said holding plate is operable for compressing both said blind slats and said bottom rail together and for holding said blind slats and bottom rail fixedly with respect to said holding plate during cutting.

64. A blind cut-down apparatus as claimed in Claim 41, wherein said holding plate defines a first fixed head rail opening, for receiving a first head rail having a first head rail profile, and further defining a second fixed head rail opening for receiving a further

head rail having a profile smaller than said first head rail profile, and wherein in said first and second fixed head rail openings are-spaced from said moveable head rail support member.

65. A blind cut down apparatus as claimed in Claim 64 wherein both said first and further head rails are of rectangular shaped cross section, and wherein said first fixed head rail opening and said second fixed head rail opening define generally rectangular shaped slots for respective said head rails, wherein said second fixed head rail opening is located within the dimensions of said first-fixed head rail opening.

66. The method of operating a blind cut-down apparatus for trimming the lengths of the slats and the head rail of a blind having at least a head rail, and blind slats suspended from the head rail, the blind cut down apparatus having a blind holding plate, a blind slat opening in said holding plate; a moveable head rail support member rnoveably mounted on said holding plate for supporting a head rail and being moveable into a head rail supporting position, and including the-steps of:

(a) moving said moveable head rail support into said head rail support position;

(b) positioning a head rail in said moveable head rail support member;

(c) positioning a group of blind slats in said blind slat opening and holding them in position for cutting;

(d) operating a movement transmission for moving at least one cutter relative said blind holding plate, for cutting at least one of said head rail and said blind slats extending through said holding plate.

67. A method according to claim 66 wherein said blind further comprises a bottom

rail and in which said cutter is moved during said cutting step through said bottom rail in addition to said blind slats and head rail.

68. A method according to claim 67 including moving a movable clamp member against said bottom rail in order to move said bottom rail toward said blind slats.

69. A method according to claim 68 further comprising the step of removing debris caused by said cutting step.

70. The method of operating a blind cut-down apparatus for cutting and sawing a blind having at least a head rail component of thin material, and blind slats of thicker material suspended from the head rail, and comprising the steps of:

(a) positioning said head rail in a blind holding plate having at least one fixed head rail opening;

(b) positioning said blind slats in said blind holding plate having a blind slat opening; and holding them in position for cutting;

(c) moving a slat cutting saw moveable relative to said holding plate, for cutting said blind slats extending through said holding plate;

(d) moving a head rail cutting die adjacent to said cutting saw , relative to said holding plate thereby cutting said head rail, and,

(e) said movement of said cutting saw and said cutting die cutting both said blind slats and said head rail in a common plane along the surface of said holding plate.

71. The method as claimed in claim 70 wherein the saw is mounted on a saw blade

guide attached to said holding plate and wherein said saw blade guide is moved there along relative to said holding plate.

72. The method as claimed in claim 71 wherein-said movement is carried out by moving manual movement transmission for both said cutting die and said saw, with said cutting die moving a short distance, and said saw moving a greater distance than said cutting die and in a common plane therewith, under the influence of a single manual operating means.

73. The method as claimed in claim 72 and including the step of clamping the blind slats in a slat clamping mechanism whereby to clamp a bundle of slats extending through said holding plate, whereby to hold them stationary during operation of said saw.

74. The method as claimed in claim 73 including the step of operating the saw by an electric motor, the saw comprising a rotatable saw disk.

75. The method as claimed in claim 74 including a cutting die guide, and including the step of moving the cutting die along a movement path which is at an angle to the movement path of said saw.

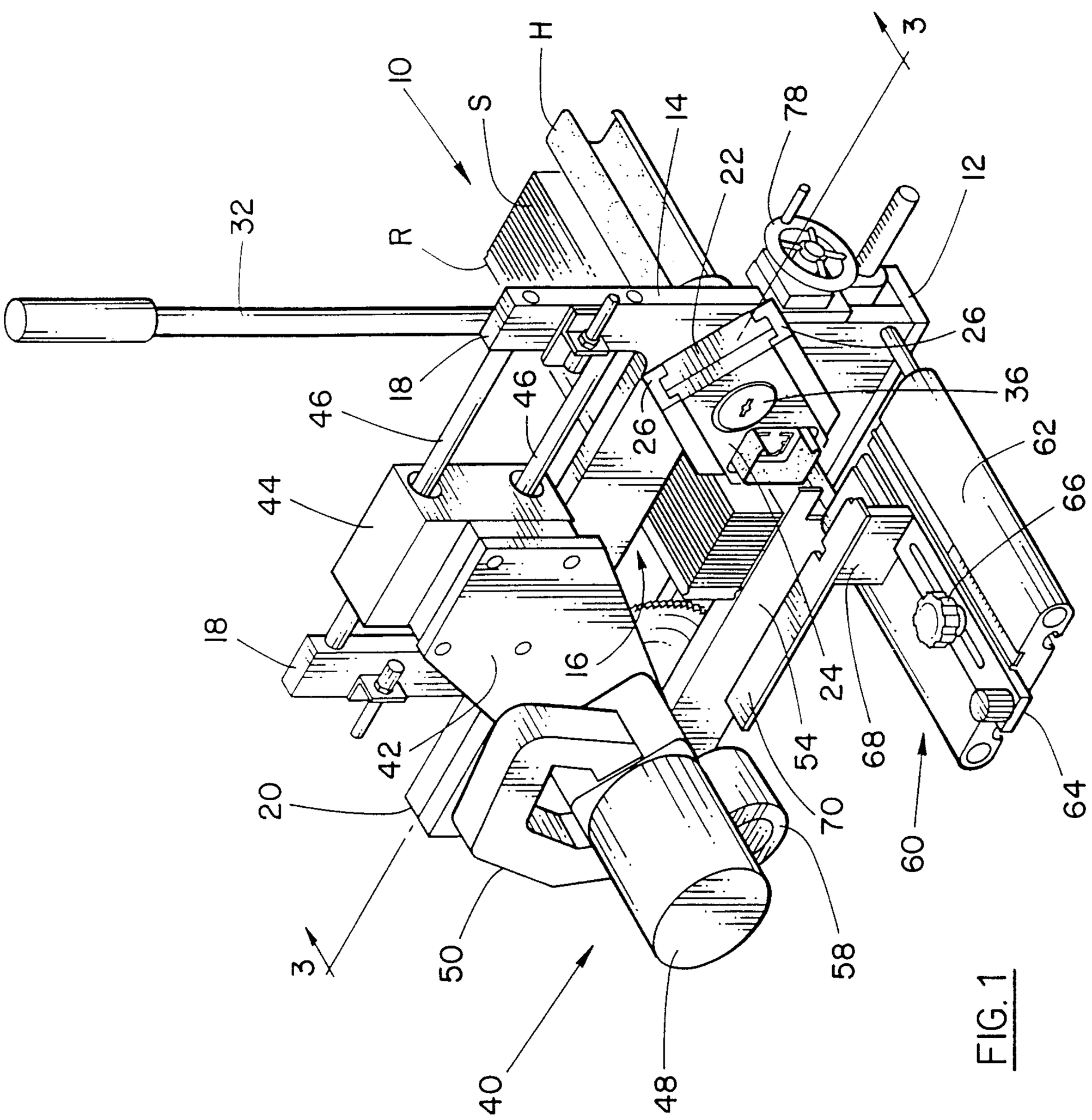
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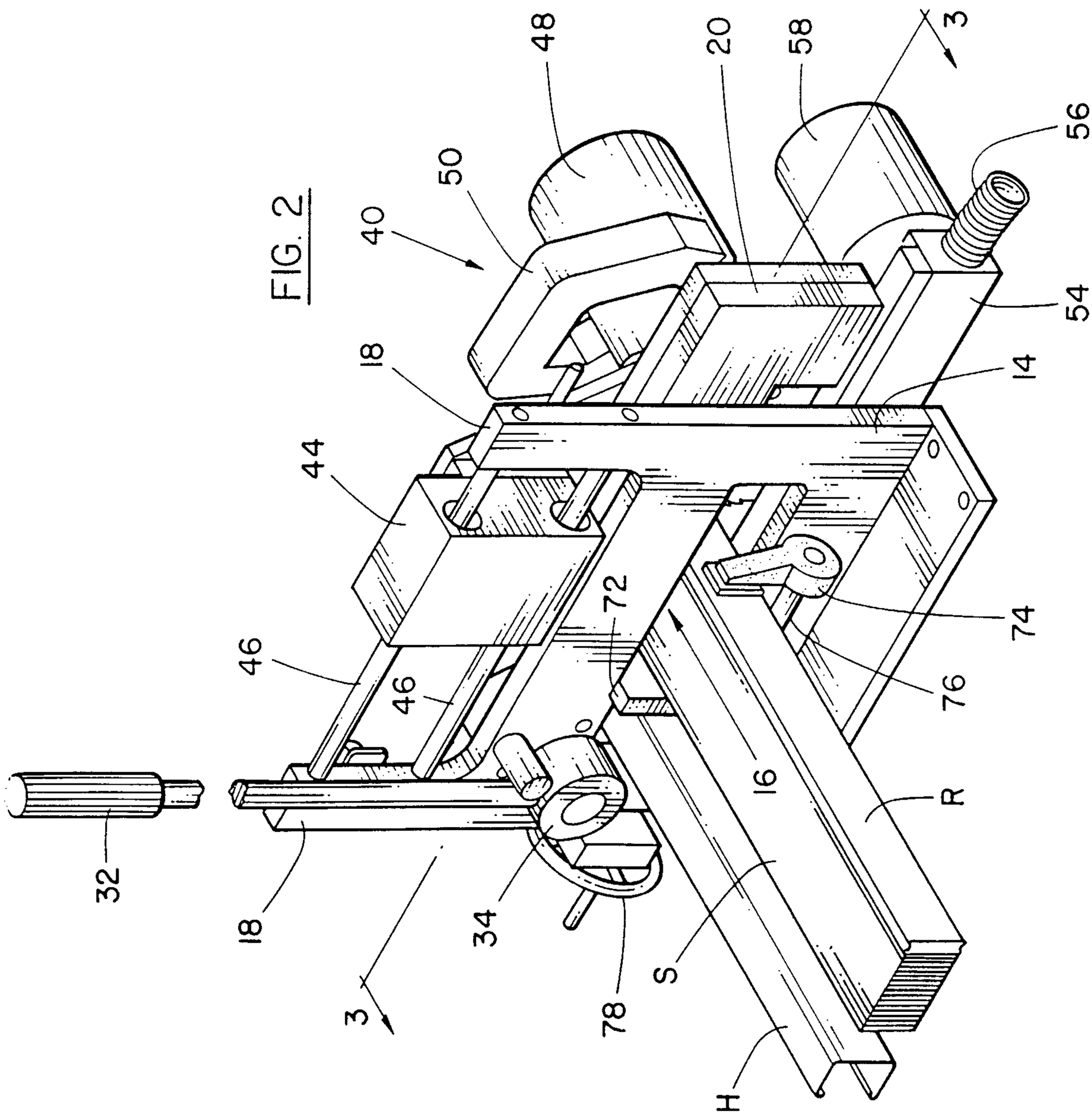
FIG. 1

FIG. 2



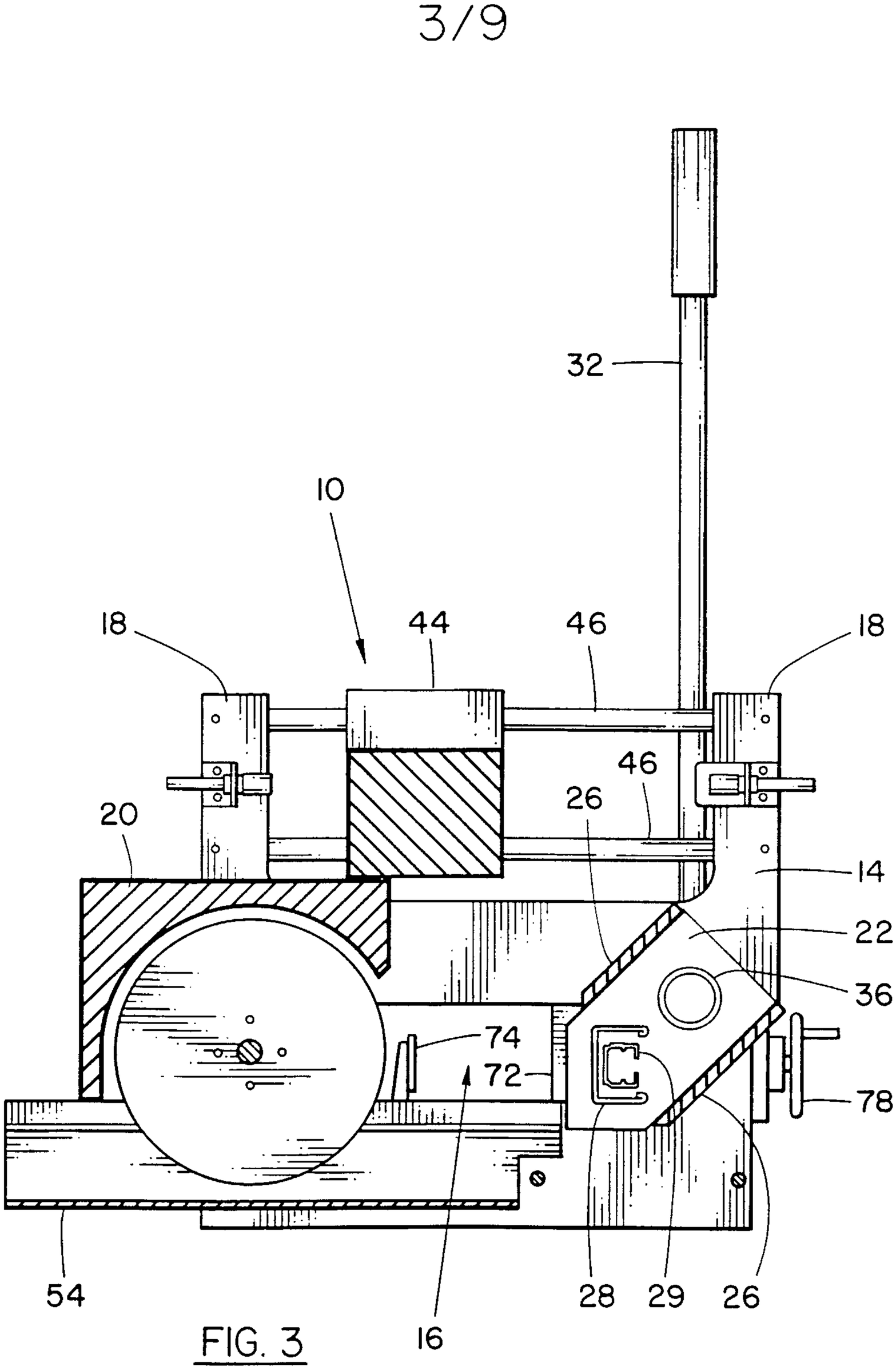


FIG. 3

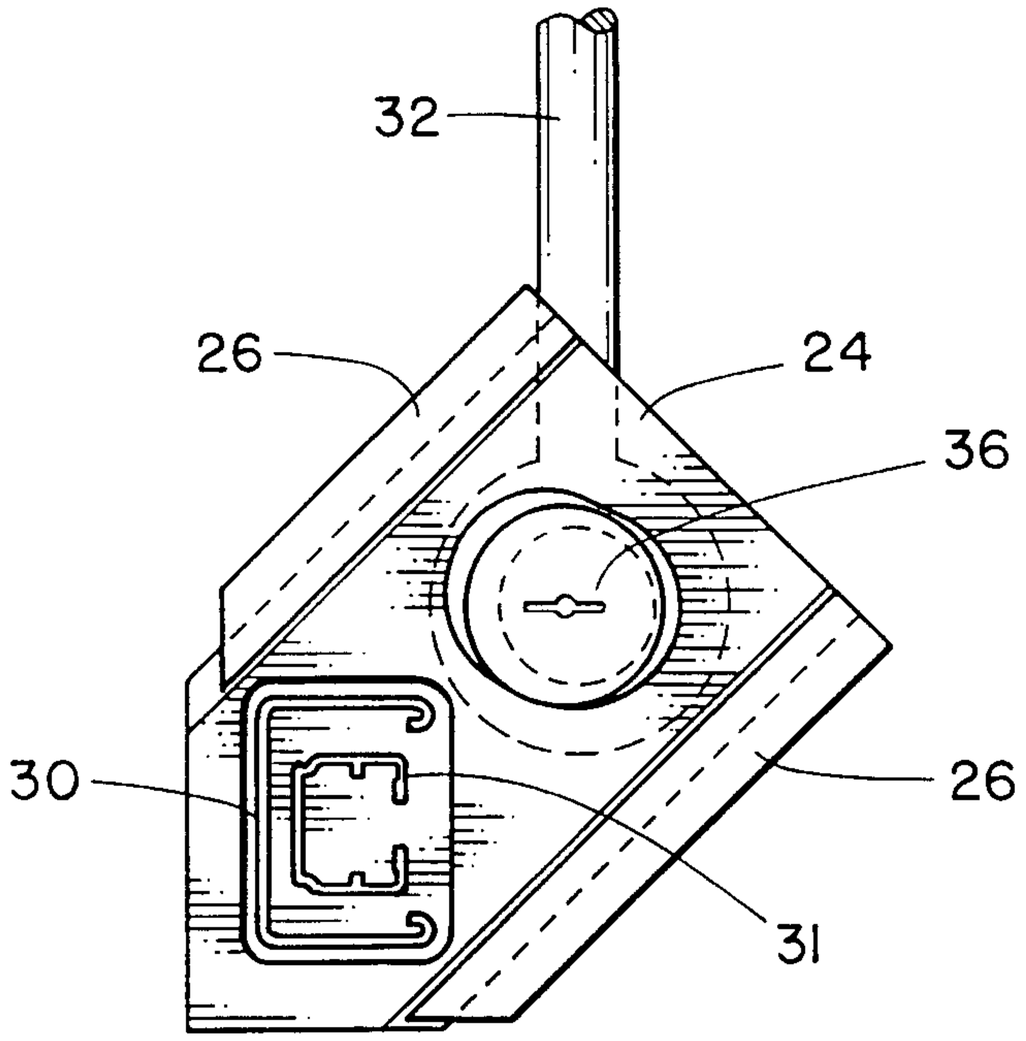


FIG. 4

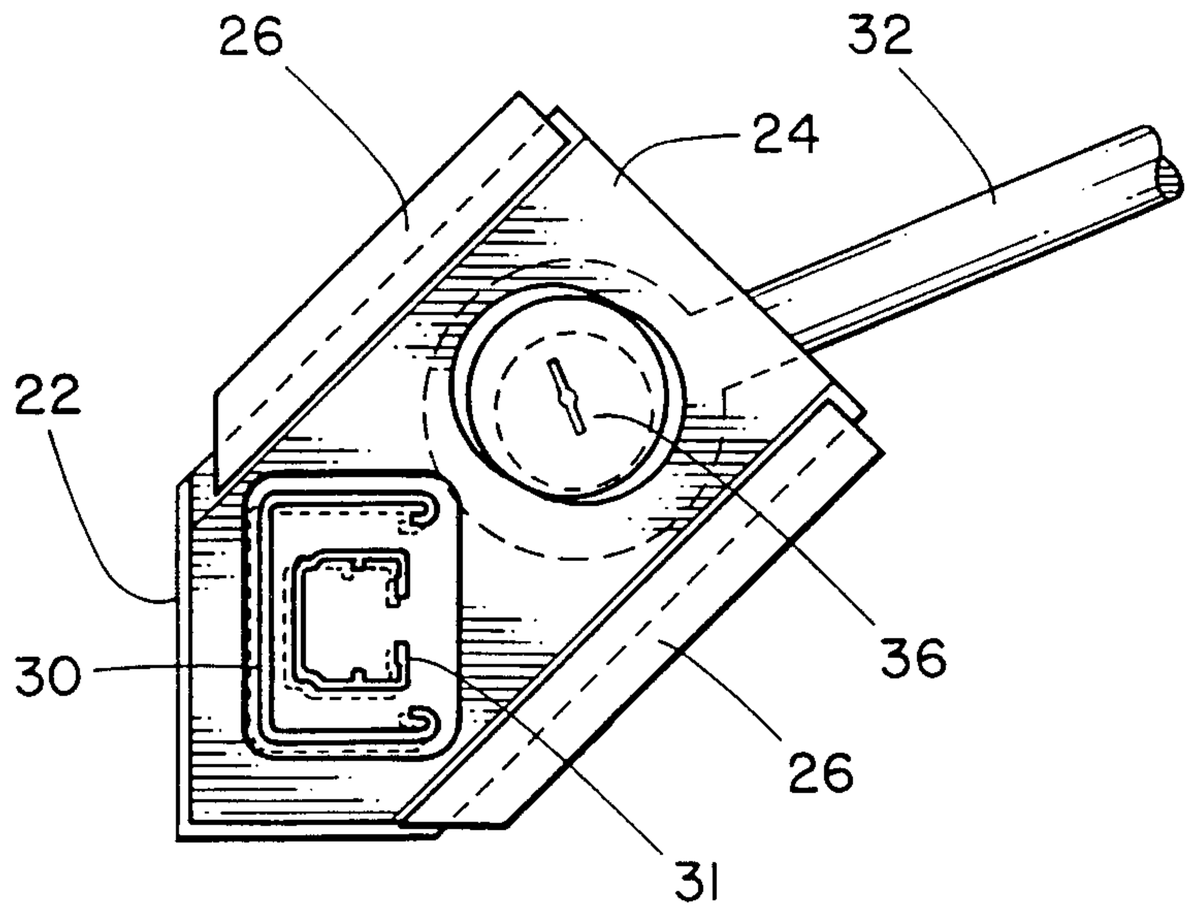


FIG. 5

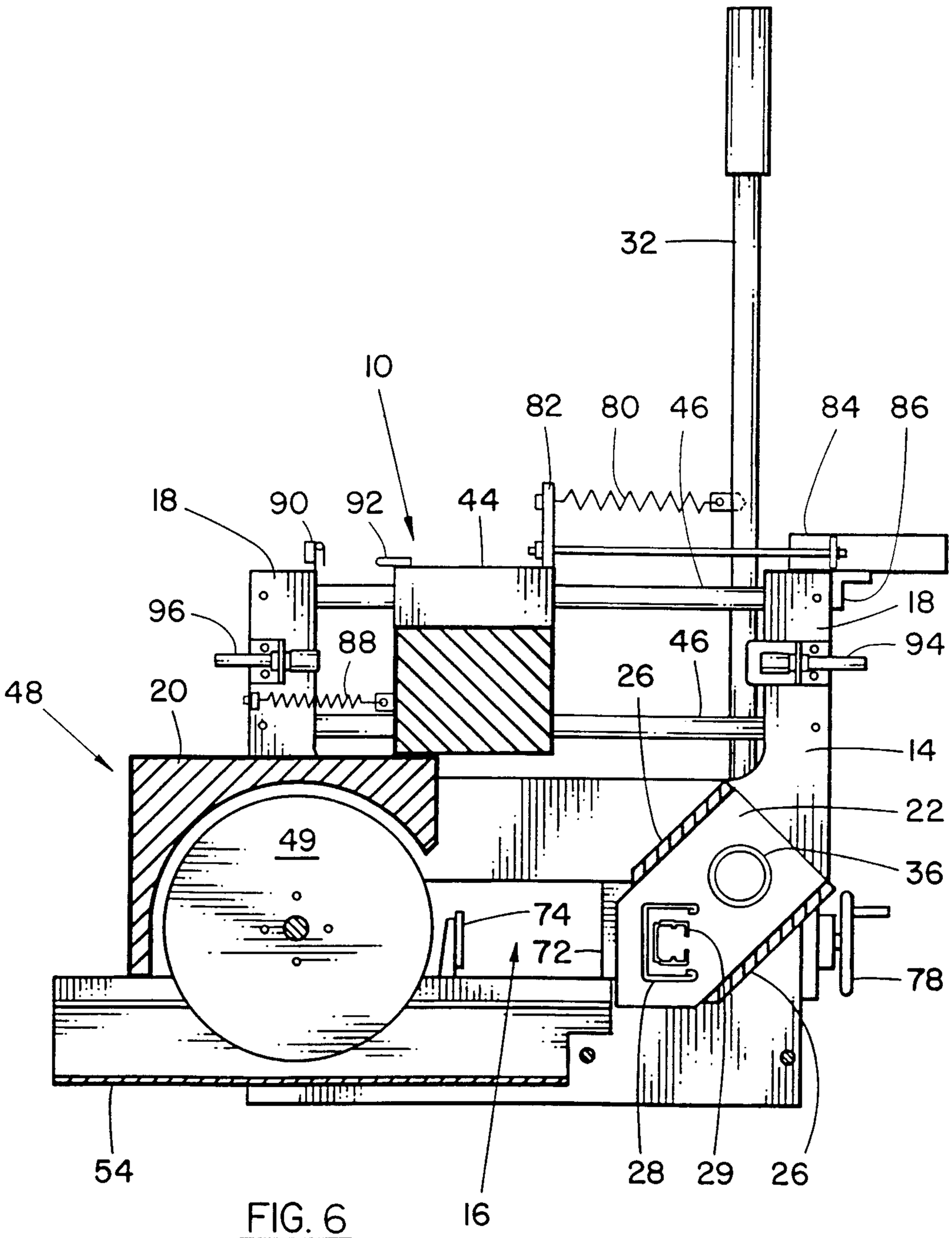

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FIG. 6

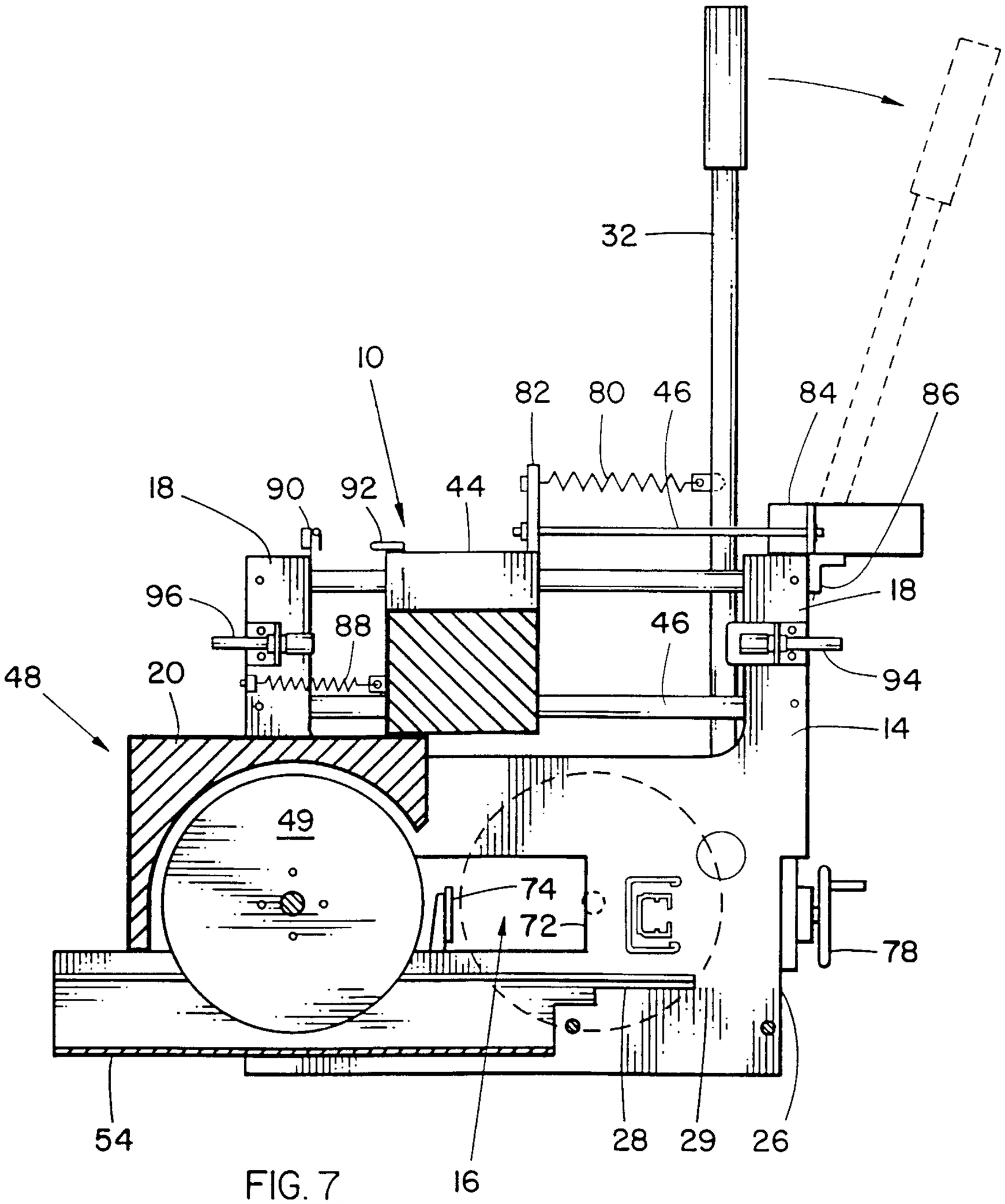
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FIG. 7

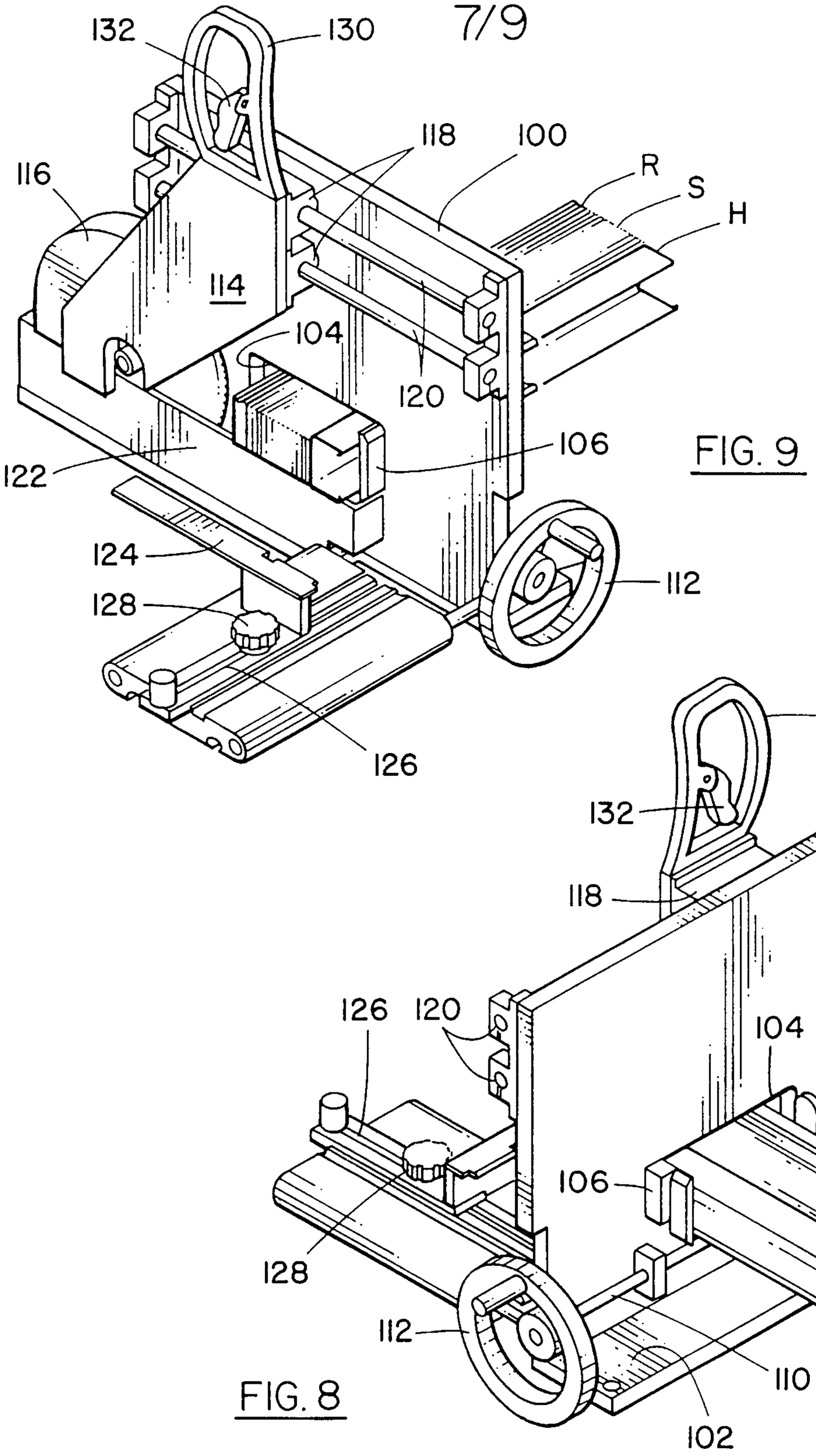
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FIG. 9

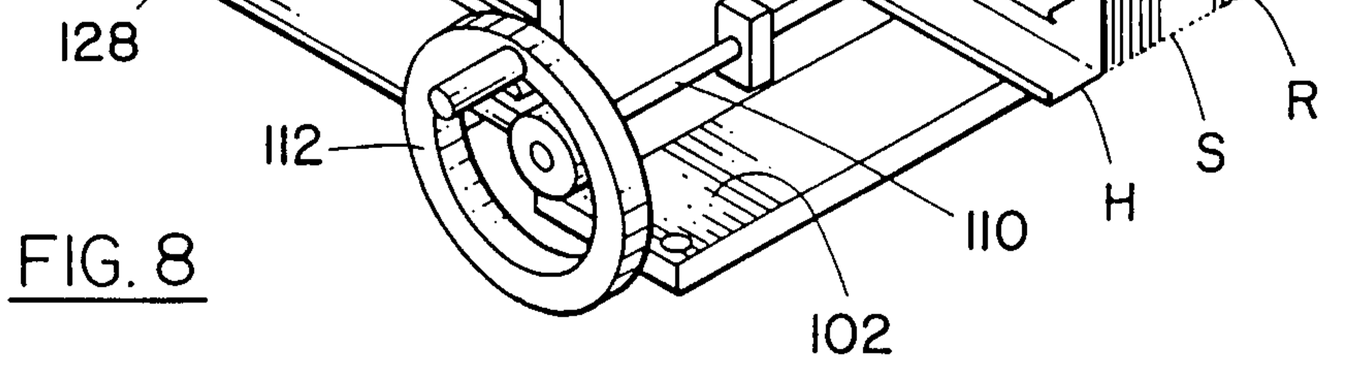
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FIG. 8

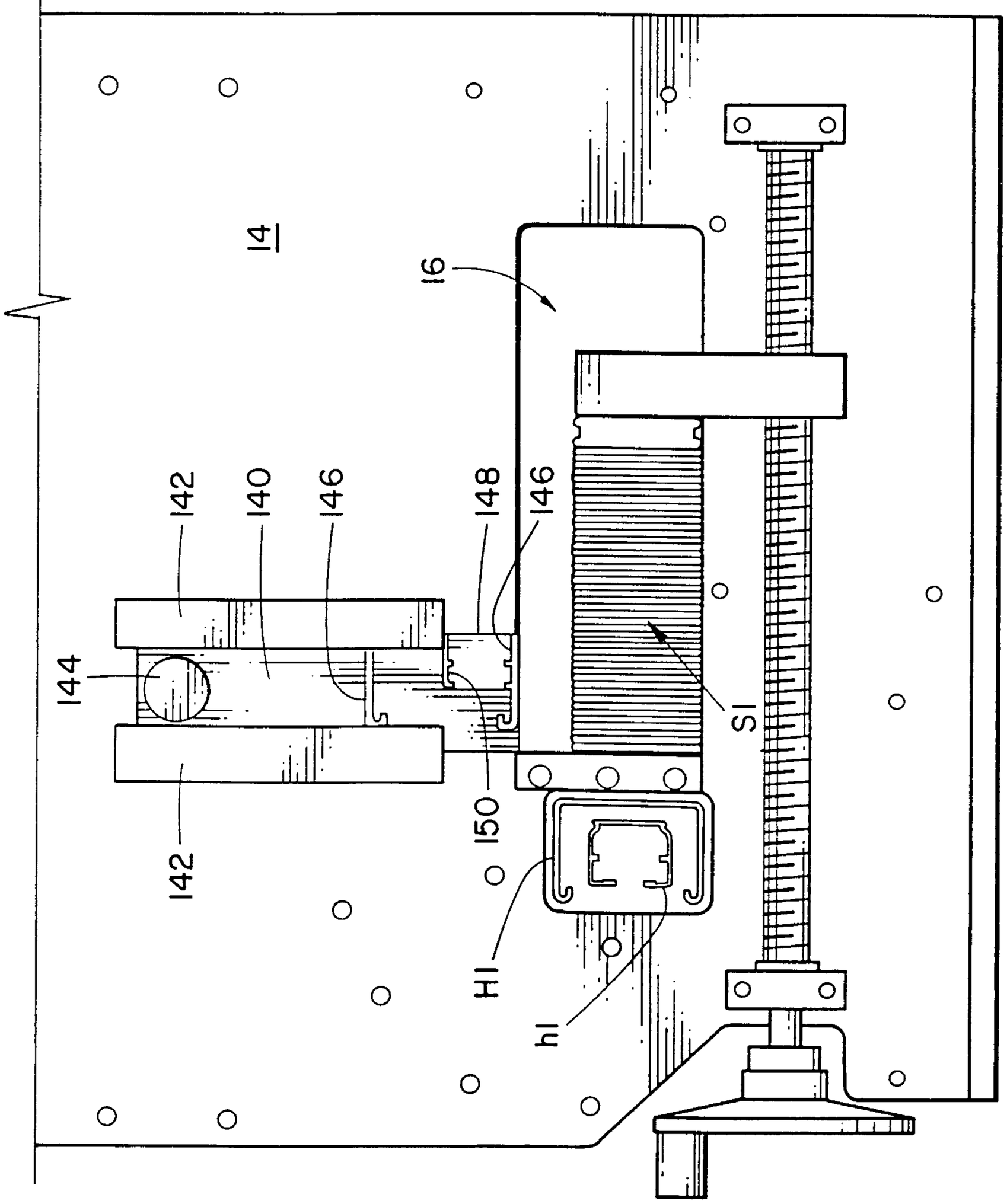


FIG. 10

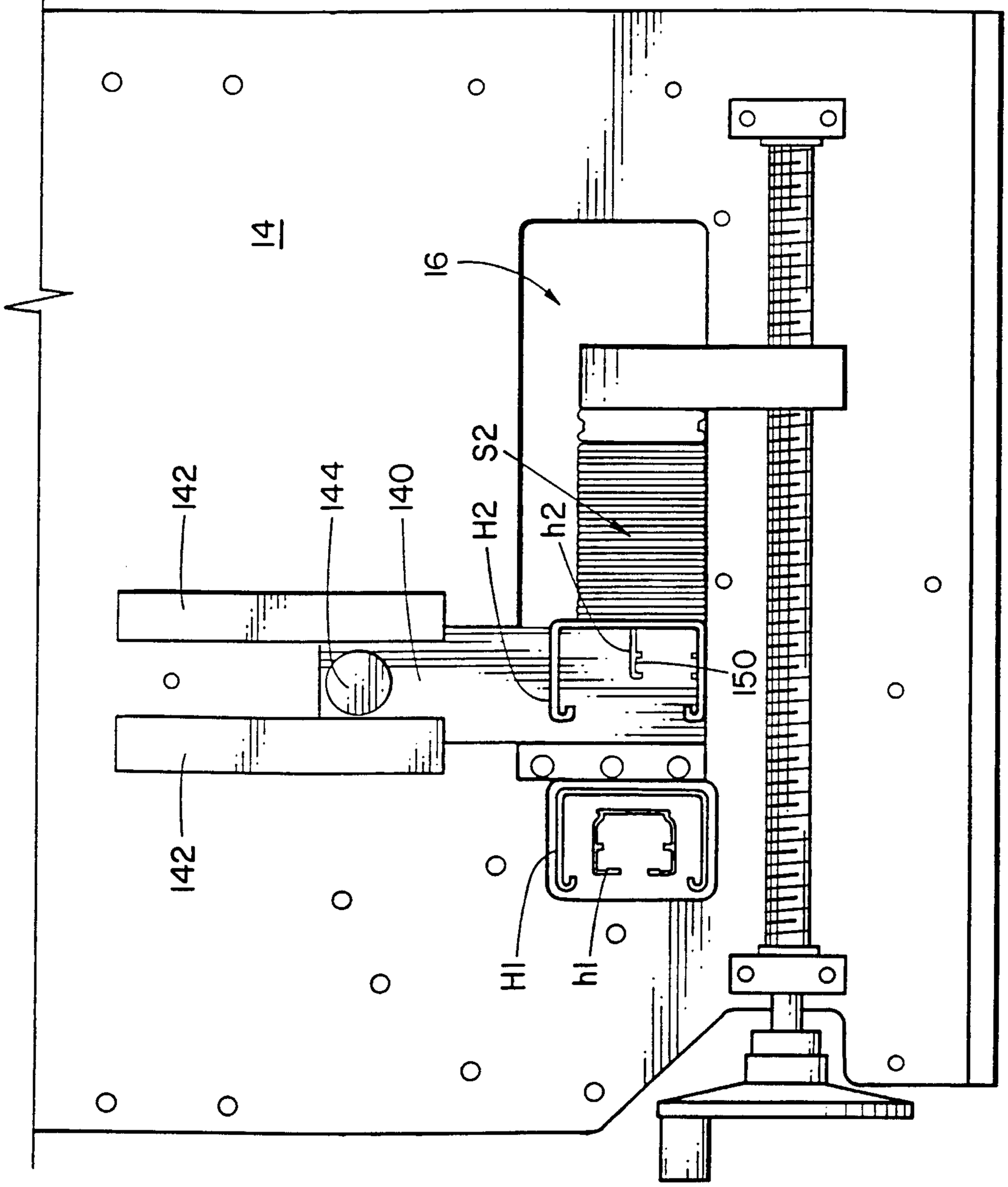
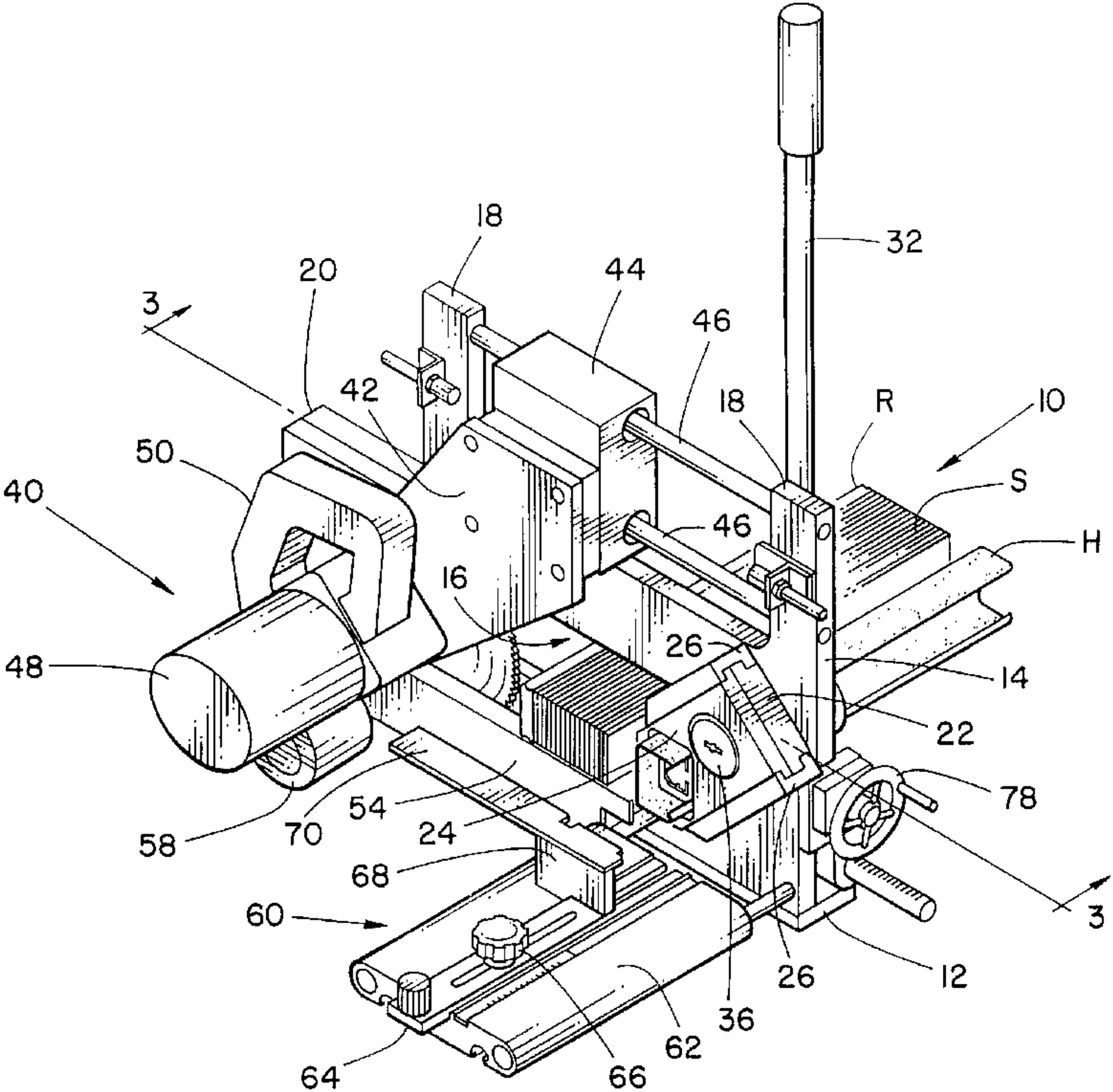


FIG. 11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