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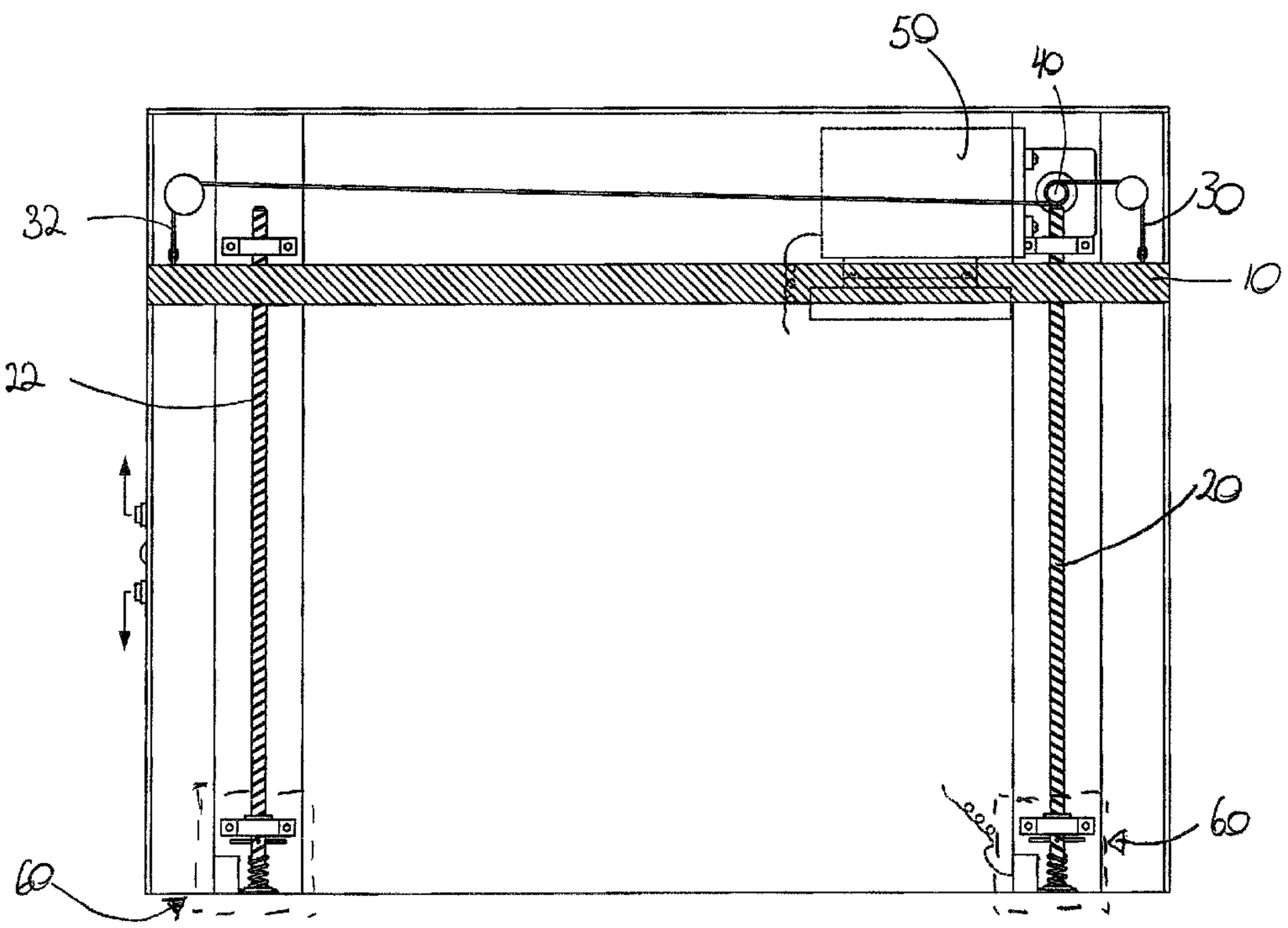
(54) Titre : MECANISME DE FREINAGE POUR PLATE-FORME A SOULEVER
(54) Title: BRAKING MECHANISM FOR A RAISABLE PLATFORM ASSEMBLY



Braking Mechanism for a raisable platform assembly

Background of the invention

The present relates to a braking mechanism for a raisable platform. More particularly, the invention relates to an automatic braking mechanism for preventing falling of a raisable platform in the case of a malfunction.

Raisable platforms have been in use for the purposes of raising people and goods. One example use would be the elevators used in tall buildings. One problem with such raisable platforms is the chance of failure. On type of failure would be breakage in the raising mechanisms of the platforms. If these mechanisms fail then the platform may be allowed to rapidly fall from its elevated position. This may cause great damage to the raisable platform mechanism, as well as to the goods that were being raised.

For this reason, most raisable platform assemblies are fitted with emergency brakes and other braking mechanisms which are designed to automatically start to function in the case of a malfunction in the platform assembly.

These emergency brakes can often get complicated to manufacture, and often require additional braking surfaces to be installed along with the raisable platforms.

While raisable platforms may be constructed very simply using noting but a platform which is raisable by a winch, it is often useful to provide the platform with additional support measures. These additional support measures can provide greater stability and support. These additional support measures may for instance take the form of threaded support rods. These threaded support rods may be attached to the raisable platforms by way of nuts. Thus, the turning of the threaded support rods may raise and lower the raisable platform, or more commonly, the threaded support rods will rotate in response to the raising and lowering of the platform. This type of structure provides additional support for a raisable platform and is simple to implement.

Brief description of the drawings

Figure 1 shows an example embodiment of a raisable platform assembly fitted with an example embodiment of braking mechanism according to the present invention

Figure 2 shows a close-up of the braking mechanism shown in figure 1 during normal operation.

Figure 3 shows a close-up of the braking mechanism shown in figure 1 when the braking mechanism is activated.

Figure 4 shows a top view of the braking mechanism shown in figure 1 during normal operation.

Figure 5 shows a top view of the braking mechanism shown in figure 1 when the braking mechanism is activated.

Detailed Description

Referring to the fig 1, we can see one example embodiment of a raisable platform assembly equipped with a breaking mechanism according to the present invention. As may be seen the raisable platform assembly comprises a raisable platform 10 mounted on threaded support rods 20 and 22. The platform 10 is mounted on the threaded support rods 20 and 22 such that when the platform 10 is raised or lowered the threaded support rods 20 and 22 will rotate.

Any mounting means between the rods 20 and 22 and the platform 10 can be used, as long as any up and down movement of the supported platform 10 allows the rod 20, 22 to freely rotate about themselves. Also, the mounting means must allow the transmission of the load and movement of the unsupported platform 10 to the rods 20 and 22. In the shown embodiment the treaded rods 20 and 22 cooperate with the platform 10 via a male (rods 20 and 22) female (threaded hole in the platform 10) connection.

While the example embodiment shown in Fig 1 has two threaded support rods 20 and 22, the raisable platform assembly may be utilized with any number of threaded support rods. Other embodiments may for instance have four threaded support rods, on at each corner of the platform.

Also attached to the raisable platform 10 are support cables 30 and 32. The support cables 30 and 32 are attached to winding rod 40 such that rotation of winding rod 40 may wind or unwind the support cables. Therefore, the rotation of the winding rod 40 allows for the raisable platform 10 to be moved in a up and down direction by winding and unwinding the support cables 30 and 32. The winding rod 40 may further be attached to a reversible motor 50, which rotates the winding rod in both directions.

In the shown embodiment of Figure 1, two support cables 30 and 32 are shown, but the present invention could comprise only one cable attached at strategic locations on the platform 10, or could comprise more than one cable.

The raisable platform assembly also has breaking means 60, which are adapted to stop the platform 10 in the case of dangerous decent speeds such as when one of the cable 30 and 32 breaks.

As may be seen in greater detail in figures 2 and 3, the braking means may 60 comprise multiple components. In a first aspect, the braking means 60 comprises a bolt 64 which may be attached to the threaded support rods 20 and 22, or may alternately be formed integral therewith. The bolt 64 is attached such that as the threaded rod 20 and 22 turn, the bolt 64 will turn as well.

Second, the braking means 60 may comprise a stopping means 66 configured such as allow the bolt 64 to freely rotate above it. However, if the bolt 64 is moved to the level of the stopping means 66, then the stopping means 66 will prevent the bolt from turning.

Finally, the braking means may comprise a biasing means 62 like a spring, which gives the threaded support rod 20 and 22 a bias so as to keep the bolt 64 at a height where the stopping means 66 does not interfere with bolt 64.

The braking mechanism 60 functions as follows. During normal utilisation, the platform 10 is loaded, and may then be raised and lowered using motor 50 and support cables 30 and 32. In this case the biasing means 62 will exert sufficient force on the threaded support rods 20 and 22 to keep the bolts 64 out of the way of the stopping means 66.

In the case of a malfunction however, such as the breaking of at least one of the support cables 30 and 32 or a malfunction in the motor, the raisable platform 10 may lose start to fall rapidly due to its one weight which is combined with the weight of any load placed thereon. In this case the weight of the platform 10 and its load will press downwards on the threaded support rods 20 and 22 as they are rotated by the decent of the platform 10. The induced pressure of the platform 10 on the threaded support means 20 and 22 will overcome the bias of the biasing means 62. The bolt 64 will then be brought down to the level of the stopping means 66. Then as the threaded support means 20 and 22 rotate the bolt 64 will come into contact with the stopping means 66, thus halting the rotation of the threaded support means 20 and 22 and thereby the decent of the platform 10.

Moving on to figures 4 and 5, we can see a top view of the braking mechanism 60. In figure 4 we can see that the braking mechanism may be fitted with multiple bolts 64. The stopping means 66 may also be fitted with a kill switch so that when the braking means is activated the kill switch will automatically stop the motor 50. The kill switch may be activated by providing the stopping means 66 with a button 68. This button 68 may be placed such that if one of the bolts 64 comes into contact with the stopping means 66 the button will be pressed (see fig 5). The pressing of the button 68 then activates the kill switch and stops the motor 50.

While the braking mechanism of the invention has been described using the example embodiment shown in the figures, other embodiments are envisioned. In other embodiments, the biasing means may for instance be a wire, which suspends the threaded support rod from the top of the raisable platform assembly. This wire could be selected to have a tensile strength such that it would break if subjected to the full weight of the platform.

In another example embodiment, the threaded support rod or rods could be suspended from an extendable spring at the top, rather than supported by a compressible spring at the bottom.

In yet another example embodiment, the threaded support rods may be fitted with magnets, either on the top where in which case the magnets could attract to magnets placed on the top of the raisable platform assembly, or on the bottom in which case the magnets would repulse from magnets placed on the bottom of the raisable platform assembly.

In another example embodiment, the spring might be replaced by a mechanism similar to those used for shock absorption, for instance in vehicles.

In another example embodiment, the spring might be removed and the bolt could be placed on hinges and biases to a position parallel with the threaded support rod. The bolt and the bias would be such that in the case of a rapid rotation of the threaded support rod, such as in the case of a malfunction, the result would allow sufficient centrifugal force to cause the bolt to overcome the bias and displace to a position at an angle to the threaded support rod, thus coming in to the path of a stopping means.

Claims

1. A breaking means for a raisable platform assembly comprising a platform mounted on a threaded support such that the raising and lowering of said platform will cause the threaded support to rotate, said breaking means comprising:

a stopping means;

a biasing means;

a bolt means attached to said threaded support, such that rotation of said threaded support will cause comparable rotation of said bolt; said bolt means being displaceable between a first position and a second position, said first position having said bolt being biased by said biasing means;

whereby when said bolt means is in said first position said stopping means does not prevent said bolt means from rotating, and when said bolt means is in said second position said stopping means prevents said bolt means from rotating.

2. A raisable platform assembly using moving means which has an operating mode and a non operating mode, said raisable platform assembly comprising:

a platform connected to said moving means when said moving means is in said operating mode and not connected to said moving means when said moving means is in said non operating mode;

at least one guiding means having bolt means and providing moving guidance to said platform;

mounting means engagingly moving said at least one guiding means with said platform;

stopping means being located near said bolt means;

biasing means keeping said guiding means in a first location while said moving means is in said operating mode;

whereby when said moving means is in said non operating mode, said guiding means goes to a second location such that said bolt means cooperates with said stopping means to immobilize said guiding means and said platform.

3. A braking mechanism for a raisable platform assembly, substantially as described herein.

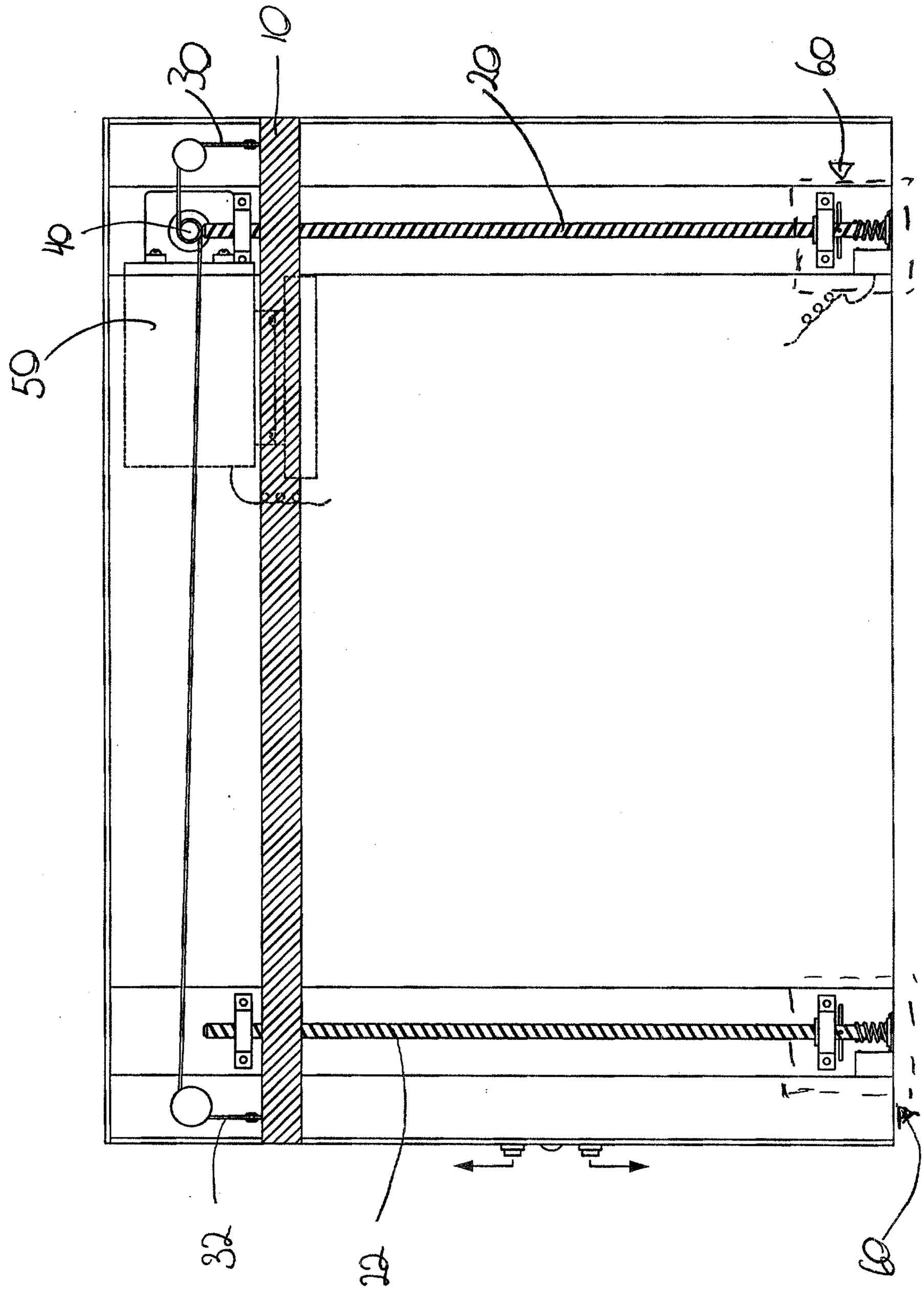


Fig. 1

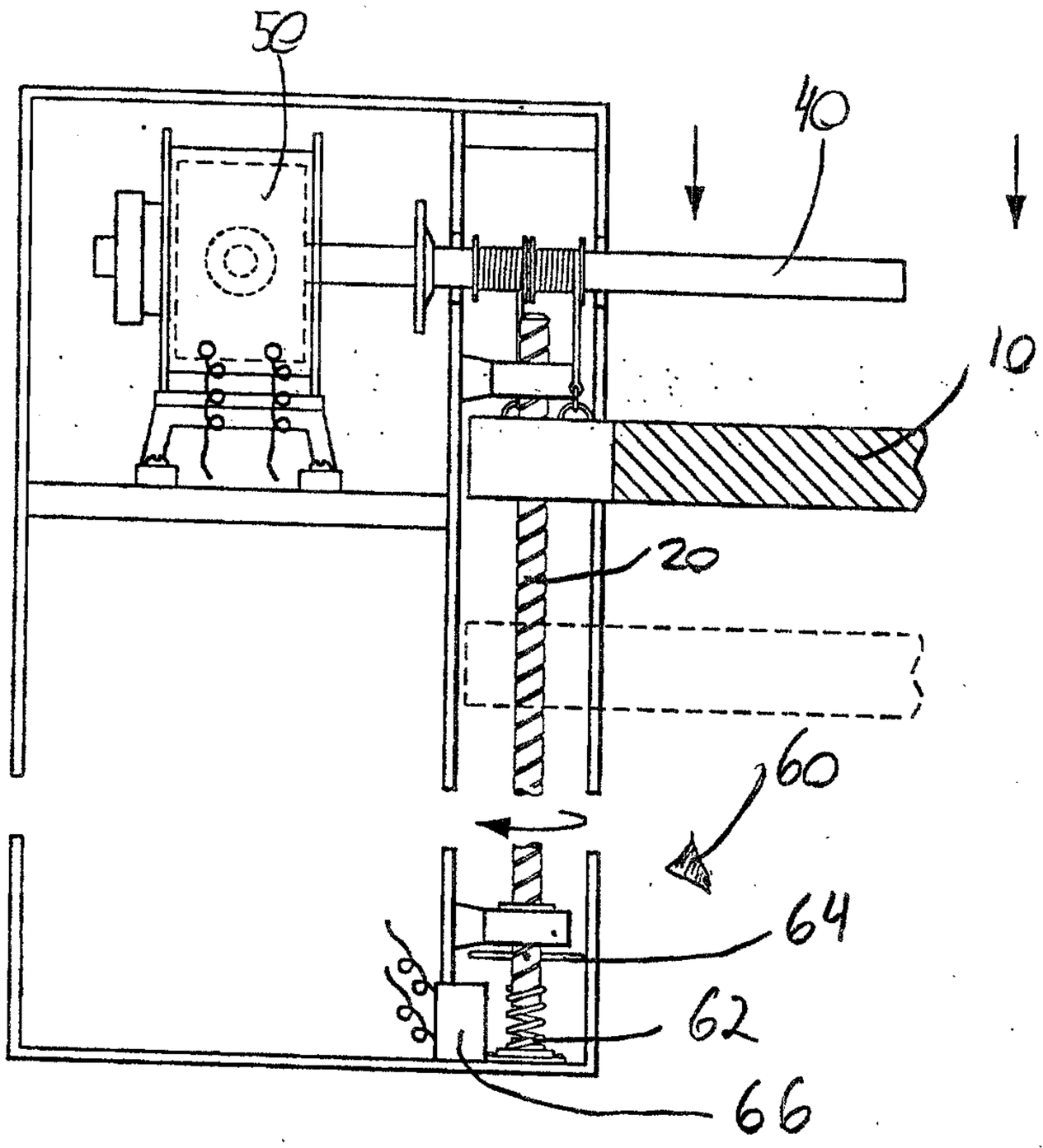


FIG_2

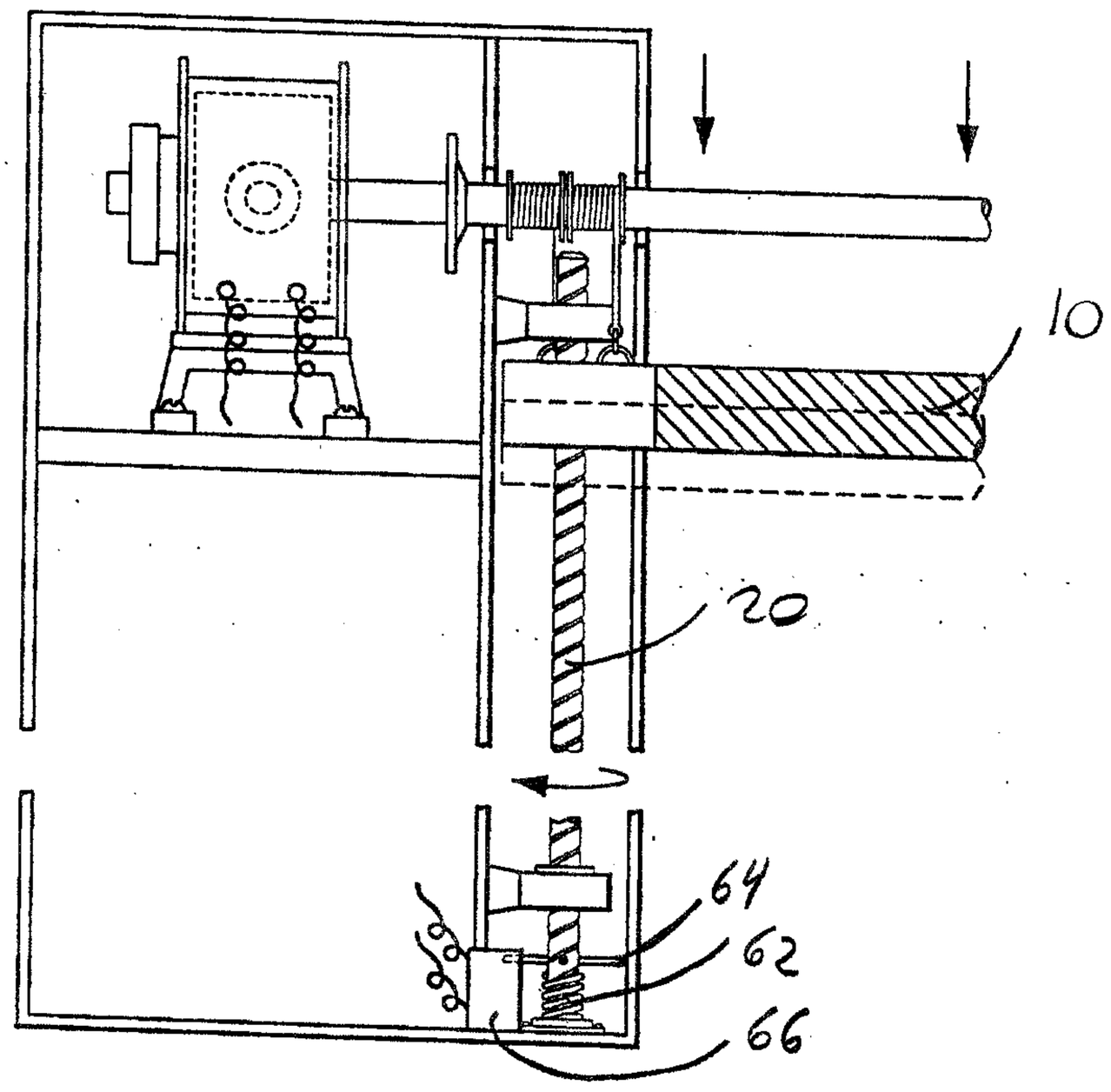


FIG_3

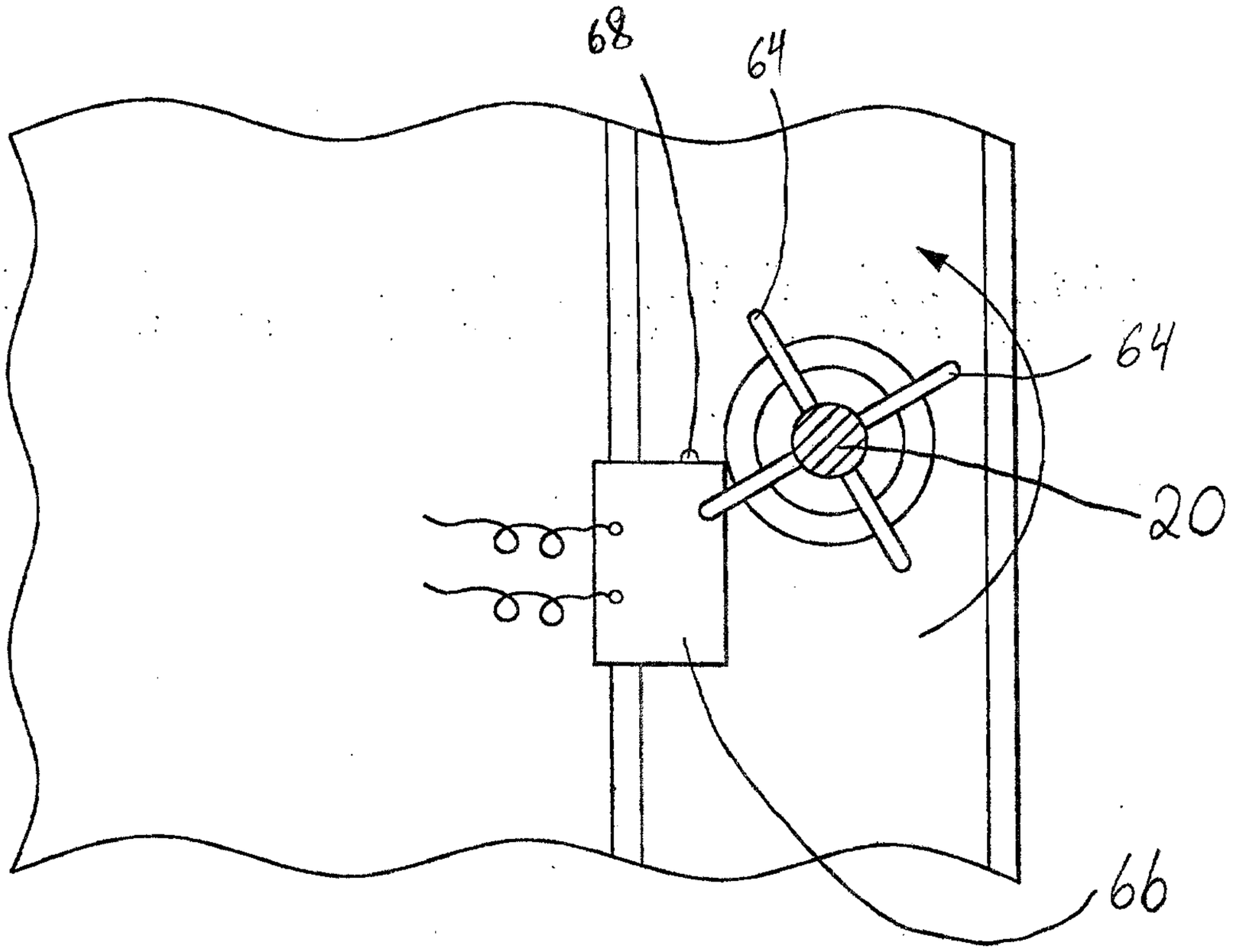


FIG_4

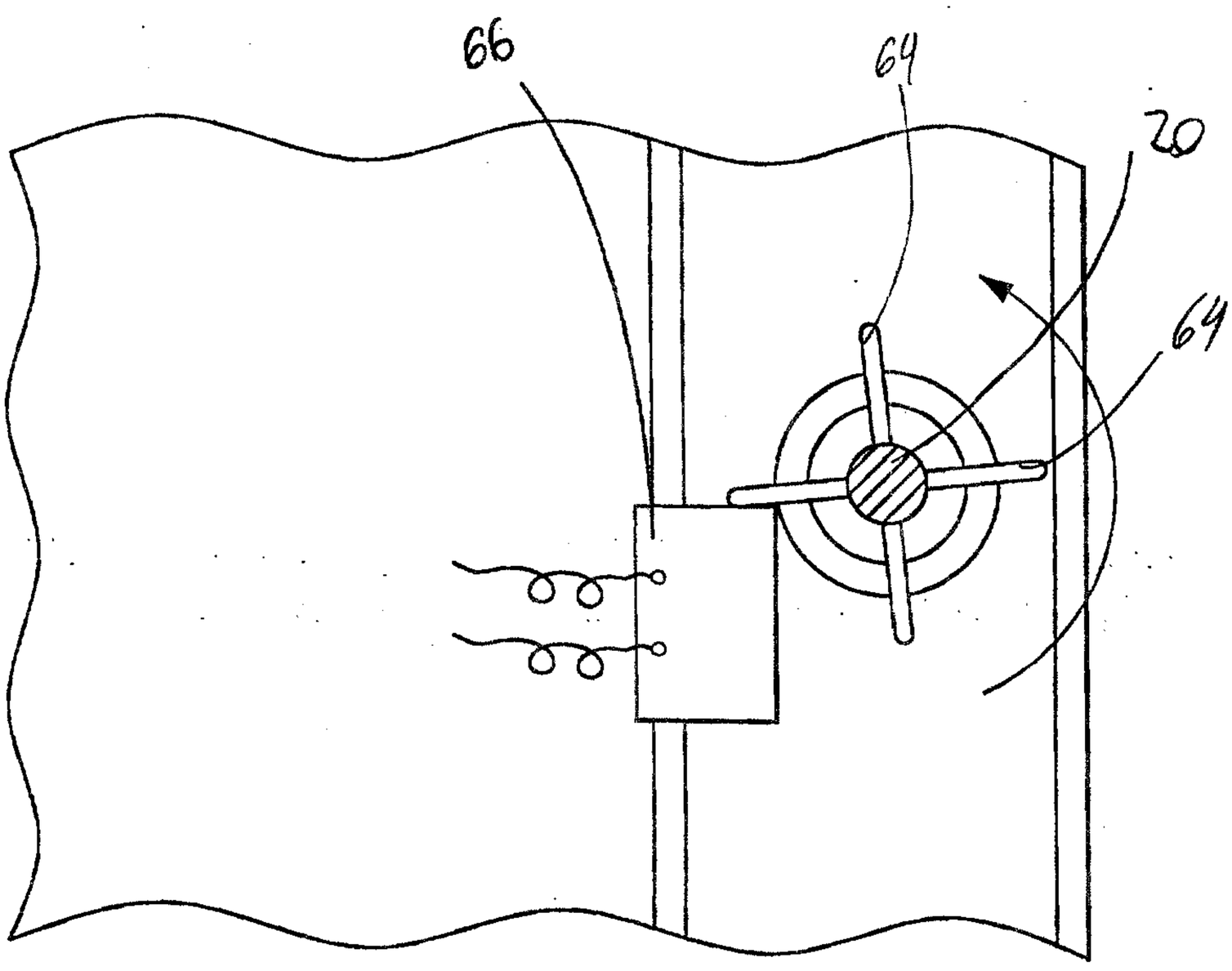
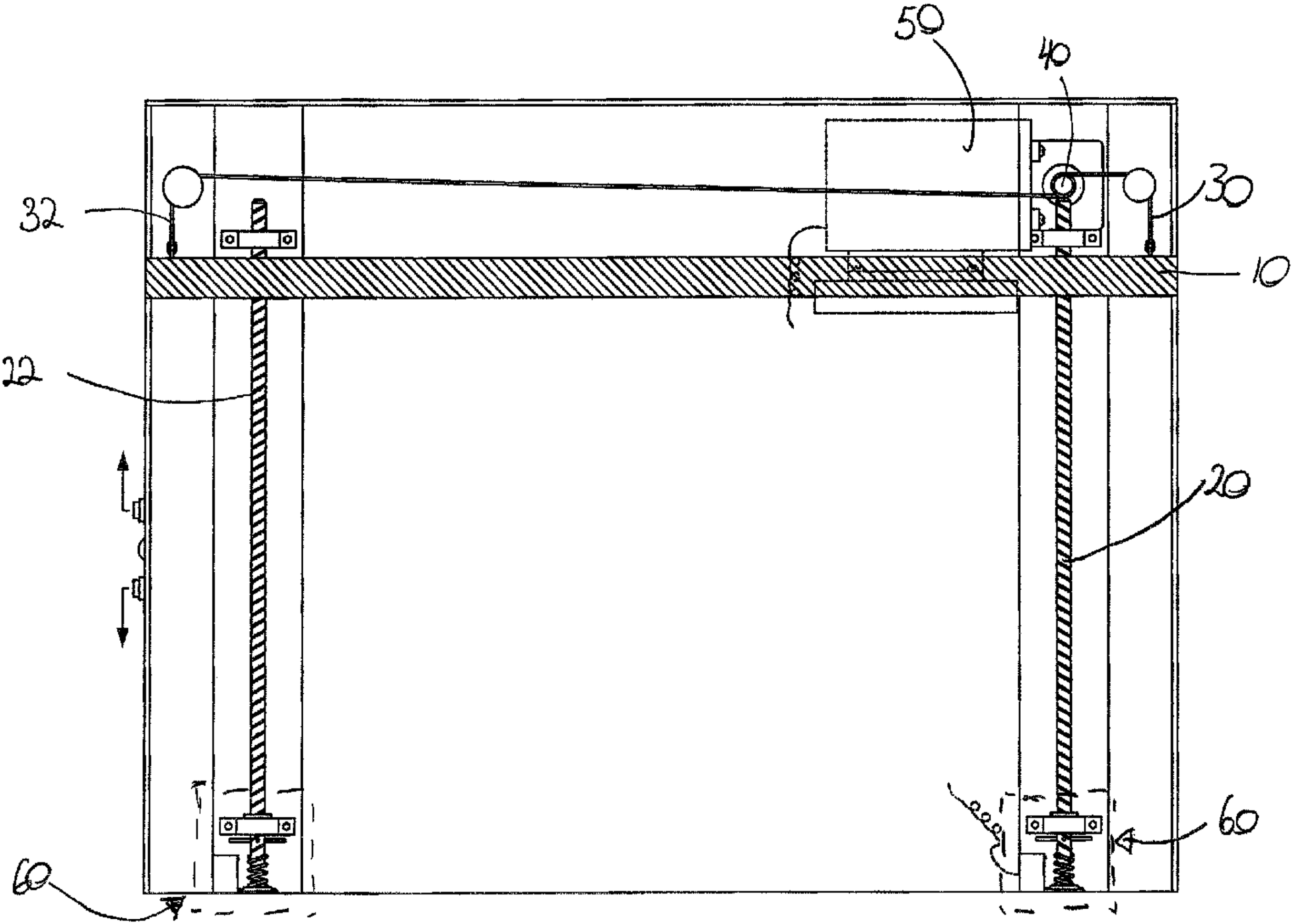


FIG_5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