

May 6, 1941.

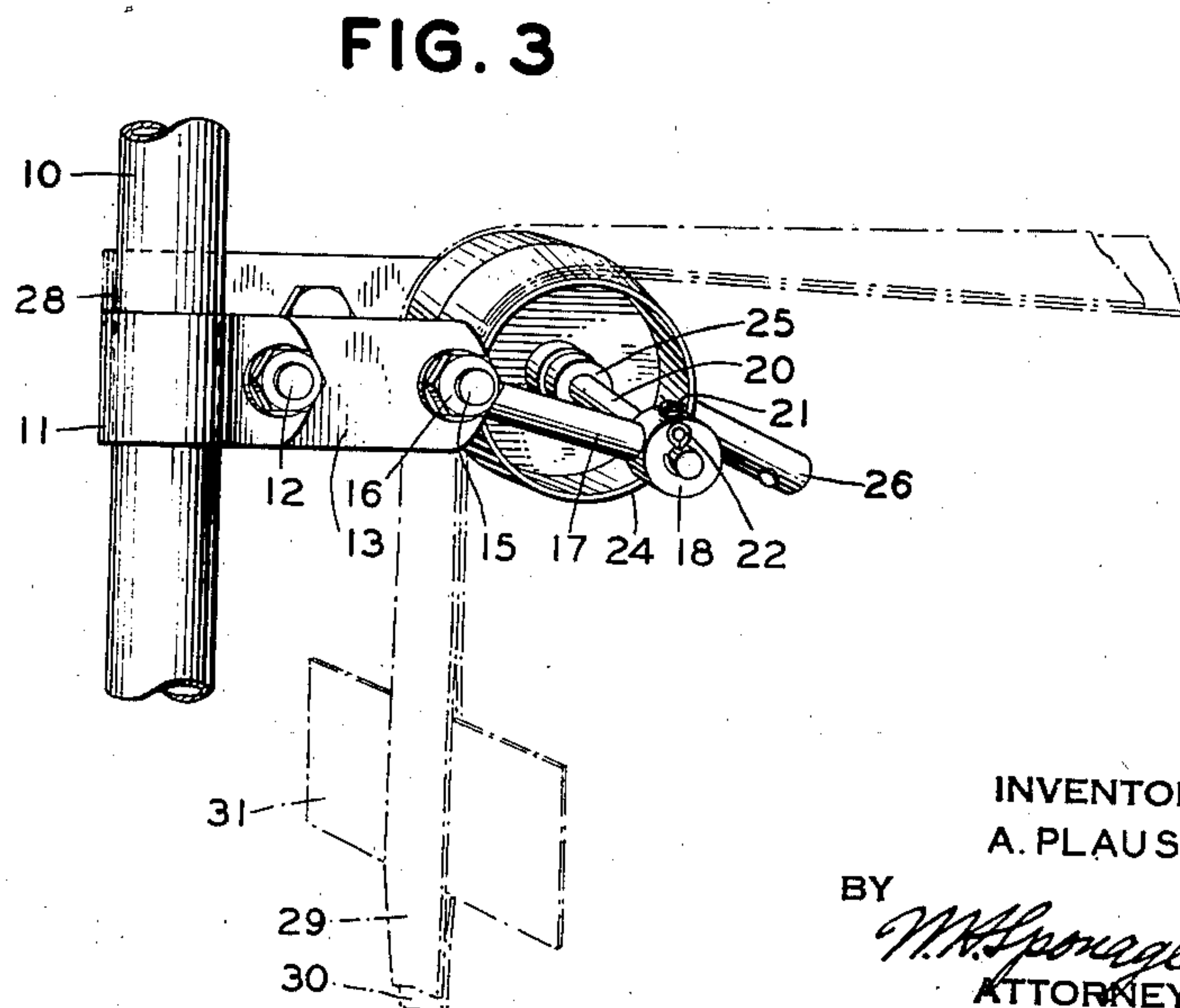
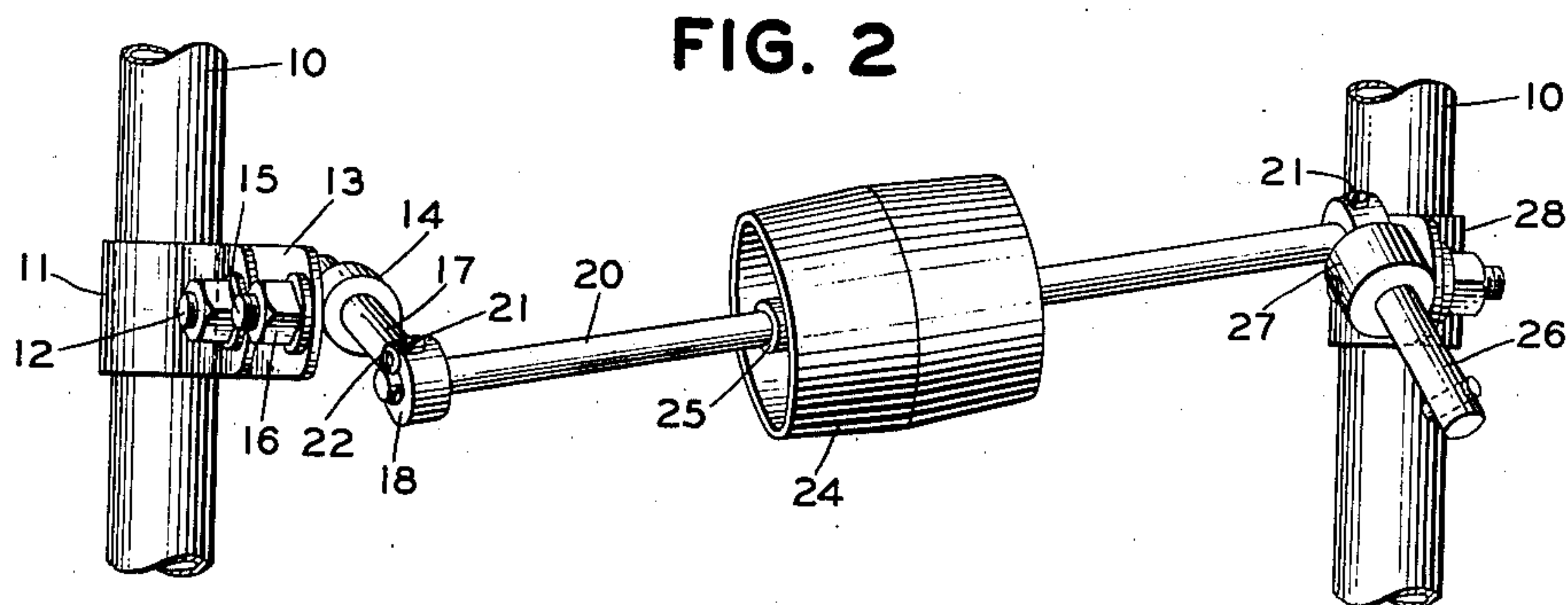
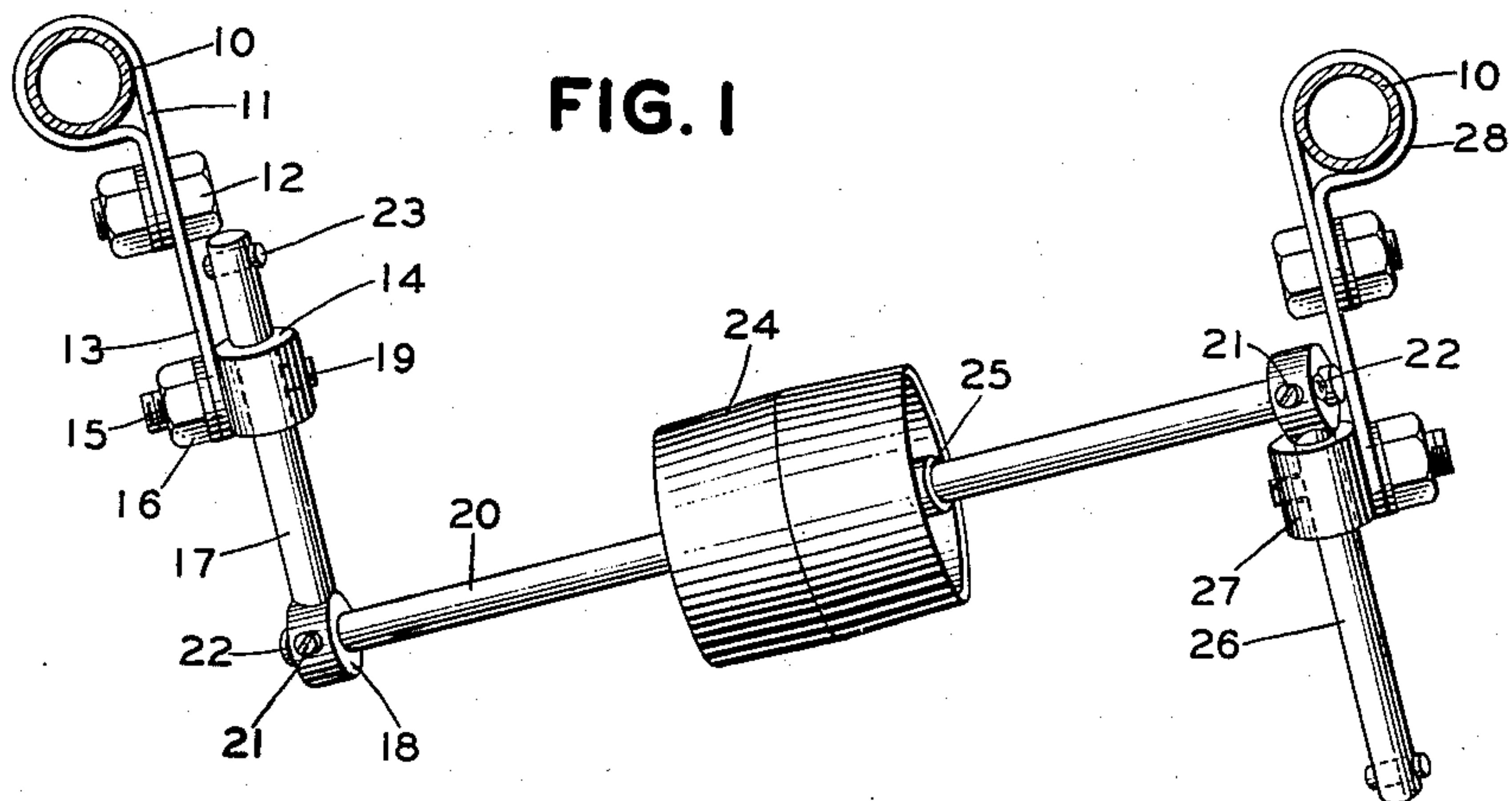
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2,241,219

ROLL SUPPORT FOR STRAP CONVEYERS

Filed May 28, 1938

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

FIG. 4

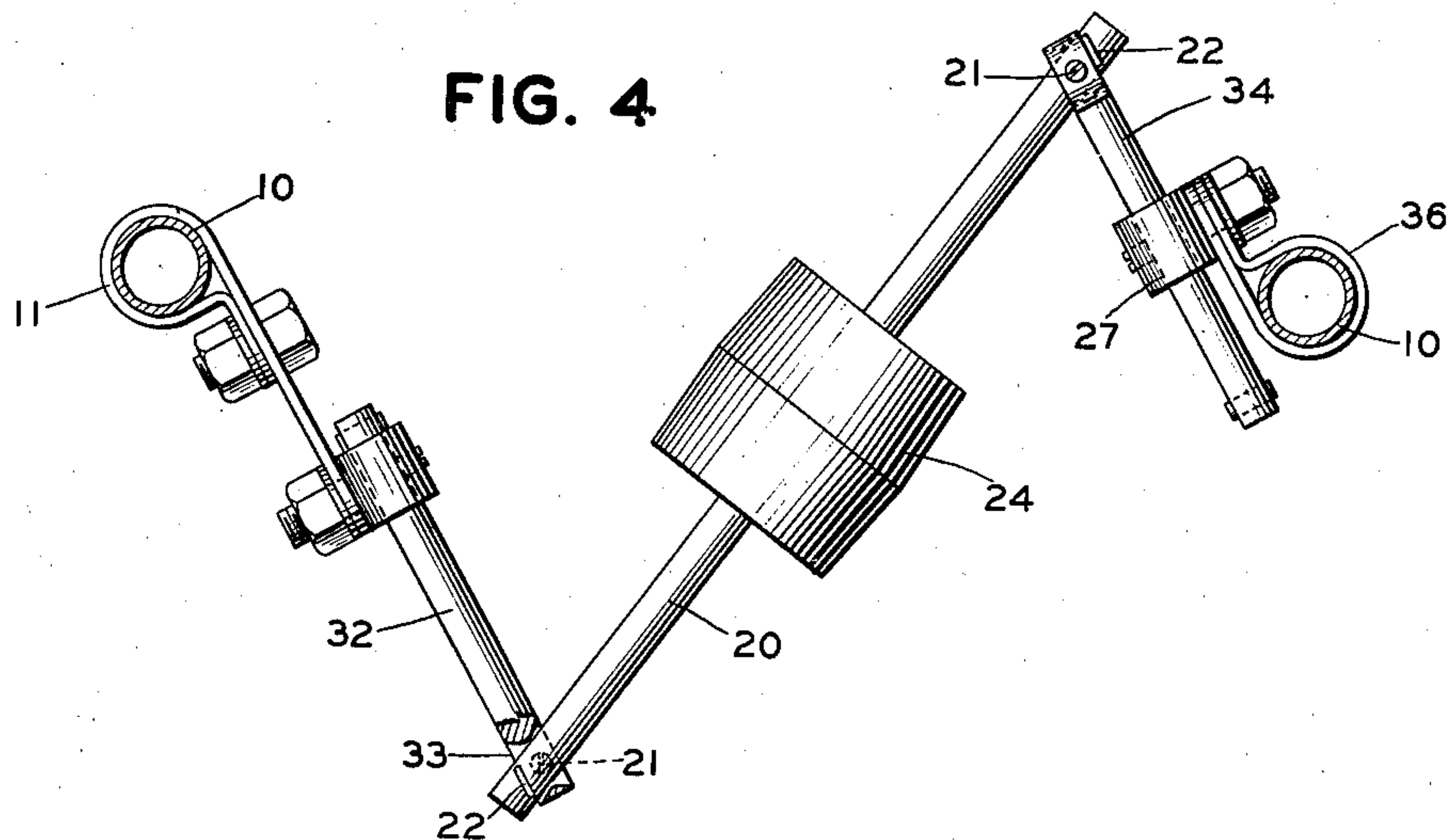


FIG. 5

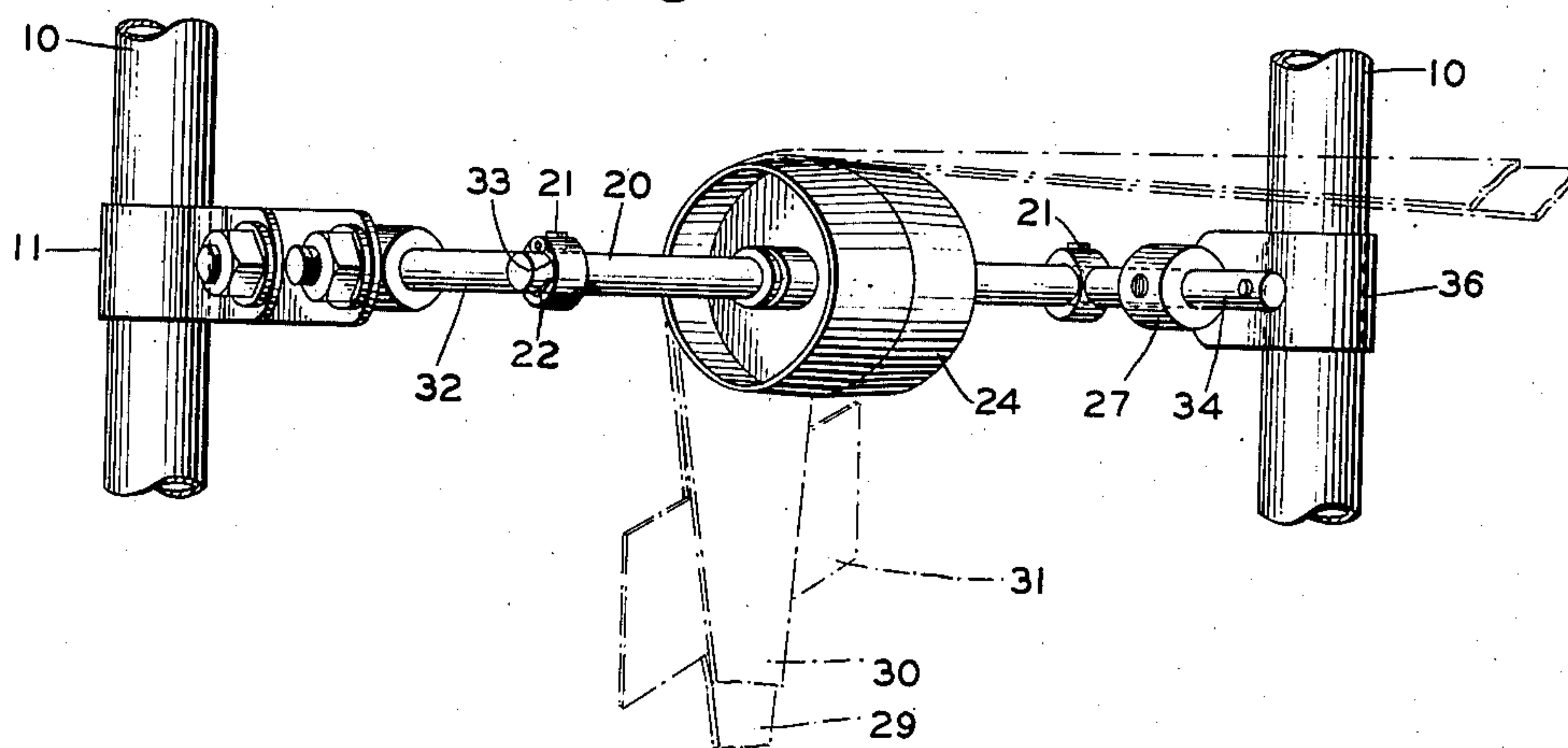
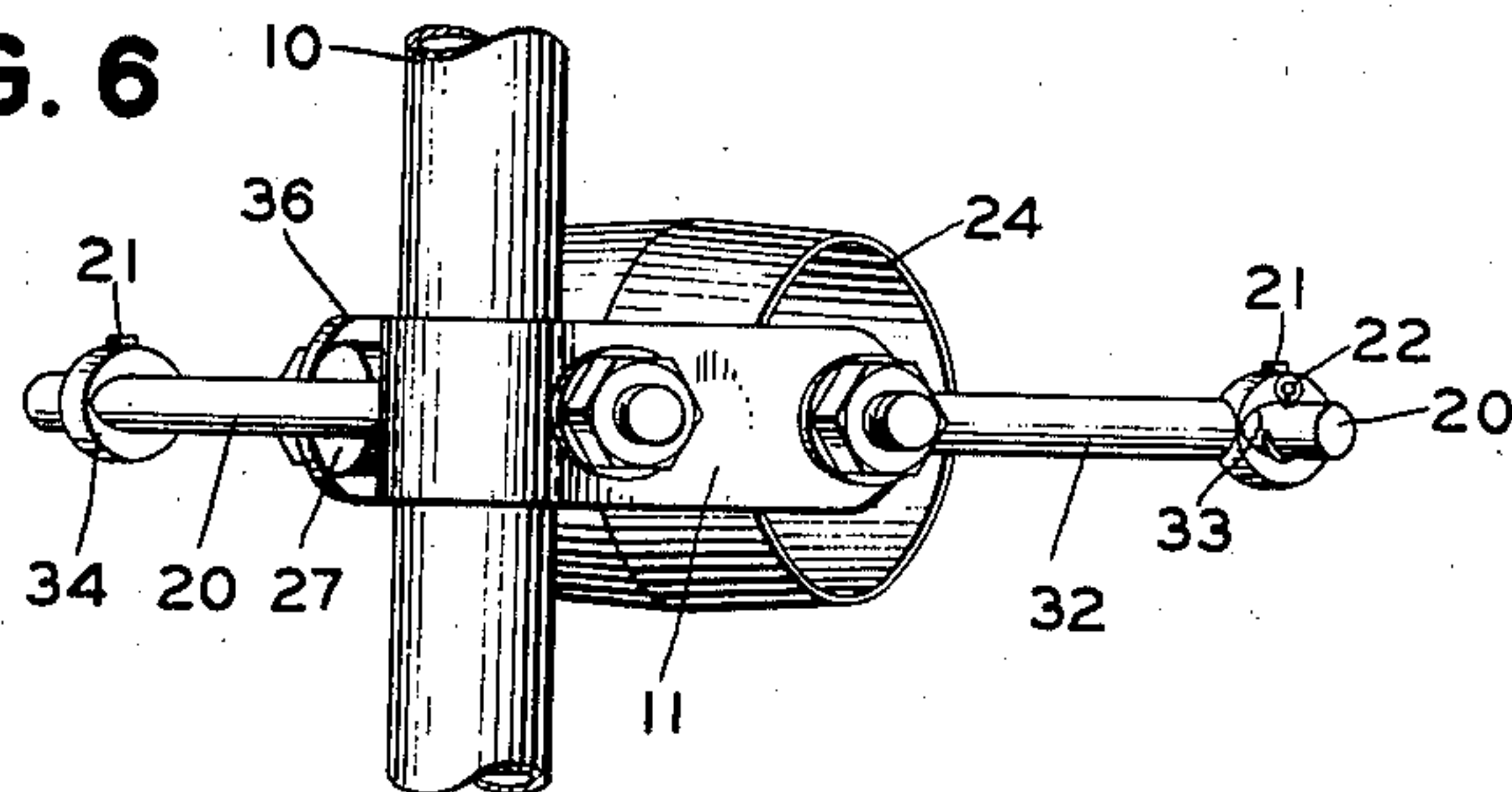


FIG. 6



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3 Sheets-Sheet 3

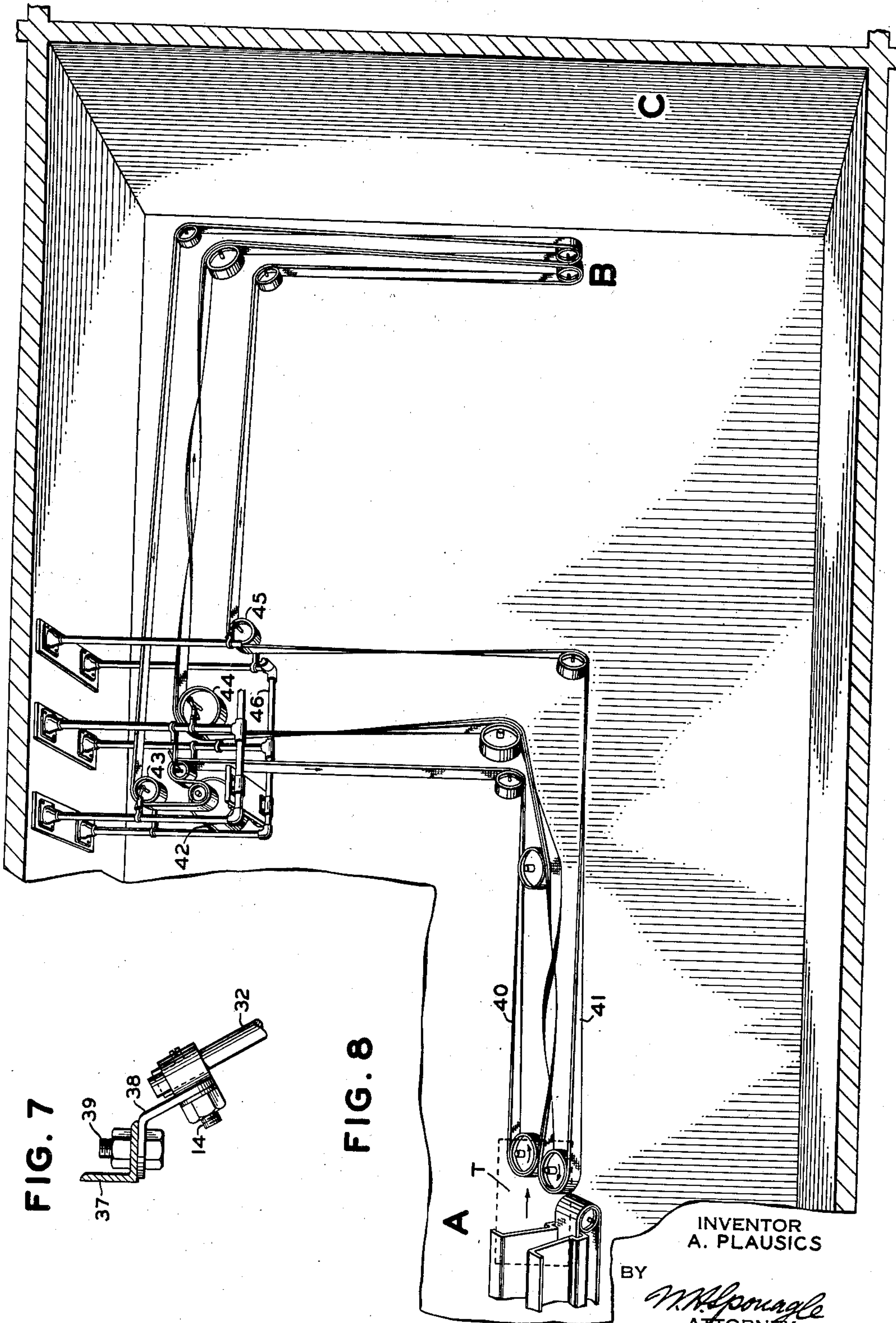


FIG. 7

FIG. 8

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ROLL SUPPORT FOR STRAP CONVEYERS

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6 Claims. (Cl. 198—165)

This invention relates generally to strap conveyer systems and has particular reference to means for adjustably mounting the pulleys employed in such systems.

In systems of this type which are used for transporting sheet material such as telegrams and the like, it is frequently necessary to change the direction of the strap or straps comprising the conveying medium. Since one of the advantages of a strap conveyer is its adaptability to a large number of different conditions, it is necessary to position the direction changing or idler pulleys in a wide variety of angular relations with respect to the supporting structure. Obviously it is uneconomical to specially design equipment for effecting each different pulley mounting. Accordingly, the prior art has included various means for adjustably mounting pulleys, all of which have been more or less limited in the degree of angularity which they could afford. As a result such devices have been not entirely satisfactory.

With the adjustable devices employed in the prior art it has always been necessary to install the supporting framework for the direction changing pulleys so that the frameworks are faced in the general direction of the conveyer route. Obviously such an installation is limited in the degree of flexibility which it will afford. It often develops that a change in the direction of the conveyer route is desirable. In the past such a change necessitated a rearrangement of the supporting framework, in addition to other modifications of the system. A conveyor system embodying the present invention is not subject to such limitations. Supporting structures may be standardized with reference to the ceiling, floor or other permanent structures and, by means of the adjustable pulley mounting which comprises the instant invention, rerouting or other changes in the system may be readily effected without disturbing the supporting frameworks. In other words the latter may be made a permanent part of the building in which the system is housed.

Hence, it is the major part of the instant invention to provide a conveyer system of the twisted strap type in which is inherent a maximum degree of flexibility and in which alterations such as rerouting the conveying path may be made with a minimum of structural changes.

Another object of the invention is to provide a means for mounting pulleys at substantially any angle with reference to their supporting structure.

Another object of the invention is to provide means for altering the position of the rollers employed in a belt conveyer system to compensate for elongation or stretching of the straps comprising such a system without dismantling the conveyer in any manner.

Two embodiments of the present invention are shown on the accompanying drawings, of which:

Figs. 1, 2 and 3 illustrate the conventional plan, front and side elevations respectively, of one arrangement of the pulley mounting;

Figs. 4, 5 and 6 show respectively in plan, front and side elevation a modification of the mountings shown in Figs. 1, 2 and 3, and in which a greater degree of angularity may be attained.

Fig. 7 illustrates one manner of adapting the instant invention to supporting frameworks now commonly in use.

Fig. 8 is a perspective view of a typical twisted strap conveyer embodying the present invention.

Referring first to Figs. 1, 2 and 3, a structure 10 which in the present instance is in the form of a tubular or pipe framework, constitutes the means of supporting the pulley mounting. Attached to the framework 10 is a clamp 11 which is arranged to substantially encircle the pipe and is firmly affixed thereto by means of a bolt 12 and its cooperating nut. It may be seen that the clamp 11 is arranged so that it may be secured to the pipe in any radial position relative thereto and at any point longitudinally therealong. Extending outwardly from the clamp 11 is an arm or lug 13 which is provided with an aperture adjacent its outer extremity.

A sleeve member 14 having a transverse opening is also fitted with a threaded stud 15 which is adapted to be mounted on the lug 13 by means of the opening therethrough and the nut 16. The sleeve 14 may be rotated to any desired position with respect to the lug 13.

Slidably mounted in the transverse opening of the sleeve 14 is an arm or eyebar 17, having formed on one end thereof a ringed portion 18. This arm 17 is susceptible of two adjustments with reference to the sleeve 14. By means of a set screw 19 it may be held in fixed relation to the sleeve 14 at substantially any point throughout its entire length and also, upon suitable twisting or rotation within the sleeve 14 and subsequent locking with the set screw 19, the ringed portion 18 may be disposed at substantially any angular position with reference to the sleeve 14.

The transverse opening in the portion 18 of the eyebar 17 serves to partially support the shaft

20 at substantially any point between the extremity thereof and its mid-portion. The shaft and eyebars are securely positioned in relation to one another by means of a set screw 21. Adjacent the end of the shaft 21 is a cotter pin 22 which acts as a stop, thereby preventing the shaft from sliding endwise out of the eyebars 17. It should be noted that the eyebars or extensible arm 17 is also provided with a pin 23 for a similar purpose.

The pulley or roller 24 is positioned on the shaft 20 at any desired point intermediate the extremities thereof. Endwise motion of the pulley 24 on the shaft 20 is impeded by suitable collars 25 which may be securely affixed to the shaft 20 in any conventional manner.

The other end of the shaft 20 is supported in a similar manner. In this connection it is seen that the arm 26 may occupy a quite different position in relation to its associated sleeve 27. Also it may be seen, particularly in Figs. 2 and 3, that the clamp 28 may be attached to the pipe structure 10 at a different height than the clamp 11. Thus, it is apparent that by the novel instrumentalities comprising this invention a pulley which is mounted on a shaft may be adjusted so that it is angularly disposed in three dimensions relative to the supporting structure.

Fig. 3 indicates the manner in which a pulley mounted by means of the present invention may be incorporated in a strap conveyer. In this particular illustration a conveyer of the twist or double strap type is shown, comprising the belts or straps 29 and 30 which are arranged in contact with one another and between which is gripped a telegram 31. Obviously, such a pulley may also be used with equal facility in other types of strap conveyers such as the so-called drag conveyer.

Having reference now to Figs. 4, 5 and 6, there is depicted a modified form of a shaft mounting. It is substantially similar to the embodiment hereinbefore described except for the configuration of the eyebars 32. The opening through the ringed portion of this member is of an elongated nature and, in the preferred form here shown, is elliptical in shape. Such an opening or hole may be constructed either by milling or, more simply, by rocking a drill backward and forward through any desired angle. By providing such an opening in the arm 32 it is possible to attain a greater degree of angularity in mounting the shaft 20. It will be noted in connection with these figures that the arms 32 and 34 are arranged so that they are pointed in opposite directions and that the clamp 36 is not provided with a lug. It will be appreciated that such an arrangement is susceptible of a very wide variety of adjustments.

Figs. 5 and 6 show the shaft mounted horizontally although, obviously, this embodiment may also be arranged to mount the shaft and pulley at a substantial angle with the horizontal.

In most conveyer systems now in use the structure or framework which is employed to support the direction-changing pulleys and other apparatus comprises one or more of the more common structural steel shapes such as angles, channels, I sections, etc. Fig. 7 shows, in transverse section, a portion of such a framework made up of one of the aforementioned sections which in the figure is illustrated as an angle 37. An angular bracket 38 which may have any desired configuration, is fastened to the framework 37 by means of the bolt 39. The outwardly extending portion of this bracket is provided with a hole which

serves to mount the stud 14. This type of mounting will generally be utilized with an eyebars of the type illustrated in Figs. 4, 5 and 6. The use of such a bar 32 will permit of a substantial adjustment of the pulley shaft. Obviously such a device will not lend itself to such a wide range of adjustments as will those previously described. However, by utilizing some of the novel instrumentalities comprising this invention, a substantial increase in the range of adjustment over that obtainable with the prior art devices may be effected.

In Fig. 8 there is illustrated a typical twisted strap conveyer system. It comprises two endless straps or belts 40 and 41 which are arranged with a system of pulleys in any well known manner.

The belts derive their movement from a motor 42 and are arranged to form a medium of conveying light sheet material T from point A to point B. It will be noted that these points are disposed generally diagonally with reference to the room in which the conveyer is located. A typical use of the adjustable pulley mounting as shown in this figure illustrates the ease with which such a system may be installed on supporting structures which are disposed squarely with reference to the sides of the room. Pulleys 43, 44, and 45 are mounted on a supporting framework 46 which is suspended from the ceiling. It may be clearly seen that by the suitable manipulation of the improved type of pulley mounting, the necessary degree of angularity of these pulleys with respect to their supporting framework may be obtained. It will be apparent that, if at some future date it is desired to rearrange the system here shown so that the conveying route will connect points A and C, for example, the only necessary changes to be made are the adjustments of the pulleys 43, 44 and 45 and such incidental changes as altering the lengths of the belts, etc.

Obviously this invention is not limited, in strap conveyers, to the mounting of direction changing pulleys, but may also be used to mount pulleys which provide support to a strap conveyer at some point intermediate the direction changing pulleys. It may also be used in conveyers of this type where pulleys are needed for corrective purposes, that is wherever there is a tendency for one of the belts to diverge laterally from the other. Obviously various modifications of this invention may be made without departing from the spirit thereof.

The nature and operation of the invention may be ascertained from the foregoing description and it is particularly defined in the following claims. It is to be understood that the scope of the invention shall be determined only by the prior art and by the express limitations of the appended claims.

What is claimed is:

1. In a belt conveyer, a device for mounting a pulley on a supporting structure in any of a plurality of angular positions relative thereto, comprising clamps attached to said supporting structure, studded sleeves adjustably affixed to said clamps by said studs, eyebars slidably positioned in said sleeves and also arranged therein for rotation about the longitudinal axis of said sleeves, and a shaft about which said pulley may revolve, said shaft having its support in said eyebars.

2. In a belt conveyer, a device for mounting a pulley on a supporting structure in any of a

plurality of angular positions relative thereto, comprising a shaft about which said pulley may rotate, a pair of supporting arms each characterized by a cylindrical body portion and a ringed end adapted to engage said shaft at any point between an extremity thereof and said pulley, 5 studded means adapted to engage each of said arms at any point between the ringed end and the other extremity thereof, said means being completely rotatable about the longitudinal axis 10 of the studded portion thereof so that said arms may be disposed in any of the possible positions in a given plane perpendicular to said axis, and means for attaching said rotatable means to said supporting structure, said second means having 15 a plurality of possible positions in any one of a plurality of planes perpendicular to said first mentioned plane.

3. In a belt conveyer, a supporting structure therefor, a direction-changing roller, and means for mounting said roller on said structure in any of a plurality of angular positions relative thereto, said means comprising a shaft about which 20 said roller may rotate and a jointed coupling interposed between said shaft and said supporting structure, the coupling including a shaft-supporting extensible arm, and a studded member having an opening therethrough, said studded member constituting a means for supporting said arm at substantially any point therealong, and 25 for permitting rotation of the arm within said opening.

4. In a belt conveyer, an adjustable supporting structure for a direction-changing pulley, comprising a shaft for said pulley, a pair of rods 30 each having an elongated transverse hole adjacent one end thereof, said holes serving as supports for said shaft and permitting angular

movements of said shaft with reference to said rods, a pair of studded members each having one end thereof threaded and a transverse hole adjacent the other end thereof, said transverse holes serving to slidably mount said rods, and a pair of clamps each having a lug extending therefrom for mounting said studded members, 5 said clamps serving to attach the structure to a supporting framework.

5. In a belt conveyer, an adjustable supporting structure for a direction-changing pulley comprising a shaft for said pulley, a pair of rods having elliptical transverse holes adjacent one end thereof, said holes serving to support said shaft and permitting angular movements of said shaft with reference to said rods, a pair of 10 studded members, each having one end thereof threaded and also having a transverse hole adjacent the other end thereof, said last named transverse holes serving to slidably mount said rods, and a pair of brackets arranged to attach 15 said studded members to a supporting framework.

6. In a belt conveyer, an adjustable supporting structure for a direction changing pulley, comprising a shaft for said pulley, a pair of rods 20 each having a transverse hole adjacent one end thereof, said holes serving as supports for said shaft, a pair of studded members each having one end thereof threaded and a transverse hole adjacent the other end thereof, said last named transverse holes serving to slidably mount said rods, and a pair of clamps each having a lug 25 extending therefrom for mounting said studded members, said clamps serving to attach the structure to a supporting framework.

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