

No. 707,739.

Patented Aug. 26, 1902.

C. J. WARREN.

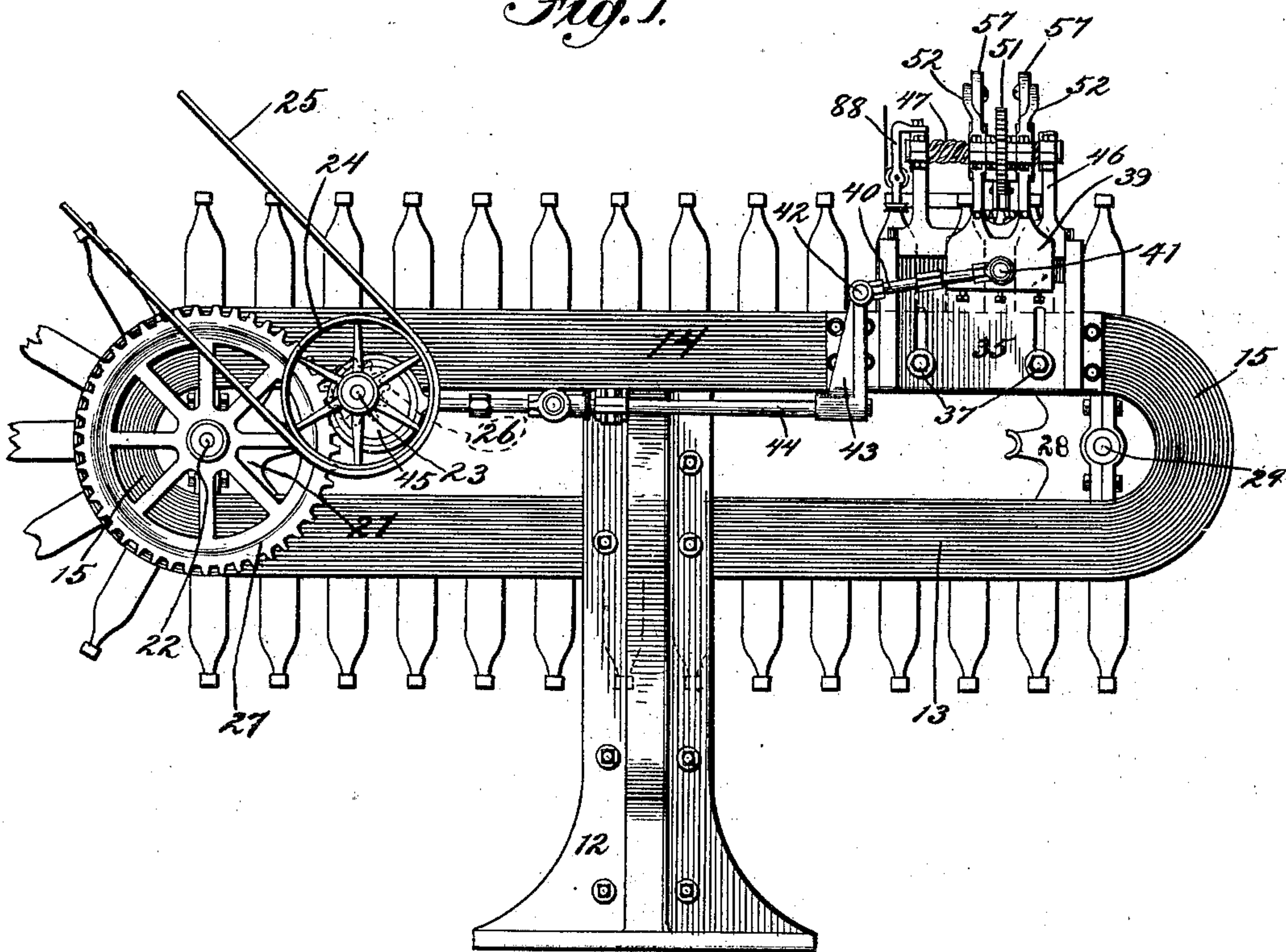
MACHINE FOR WIRING CORKS IN BOTTLES.

(Application filed Dec. 7, 1901.)

(No Model.)

5 Sheets—Sheet 1.

Fig. 1.



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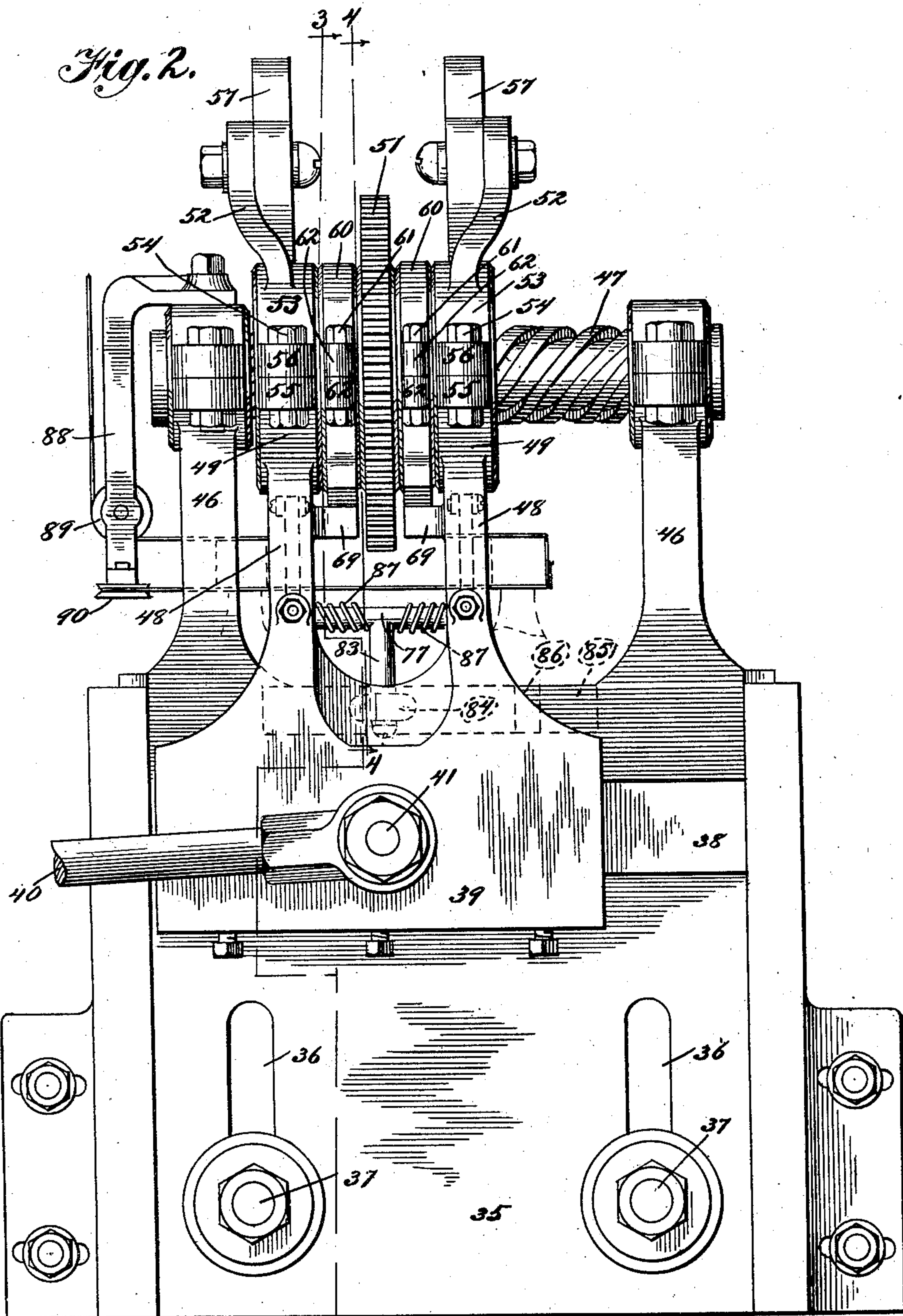
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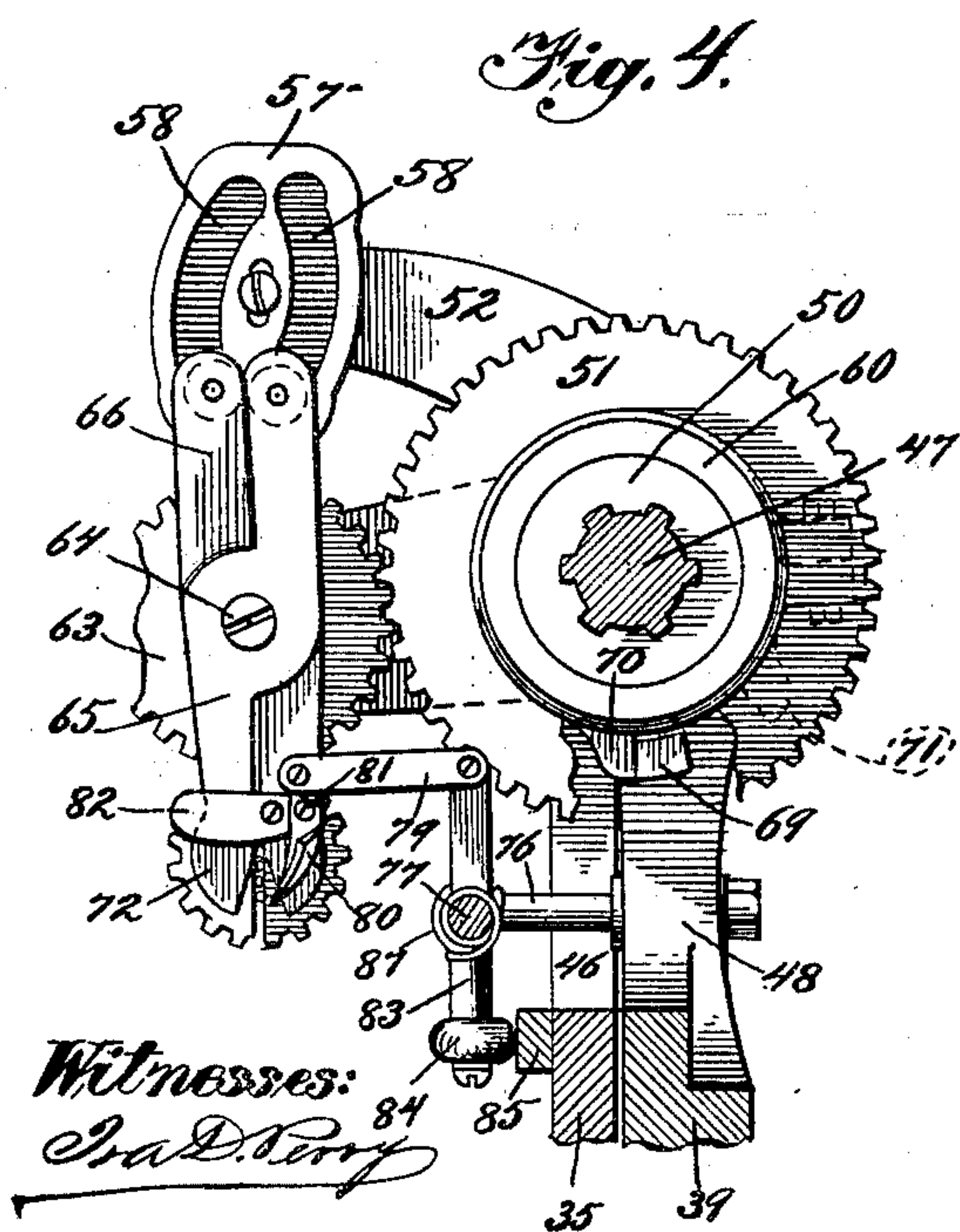
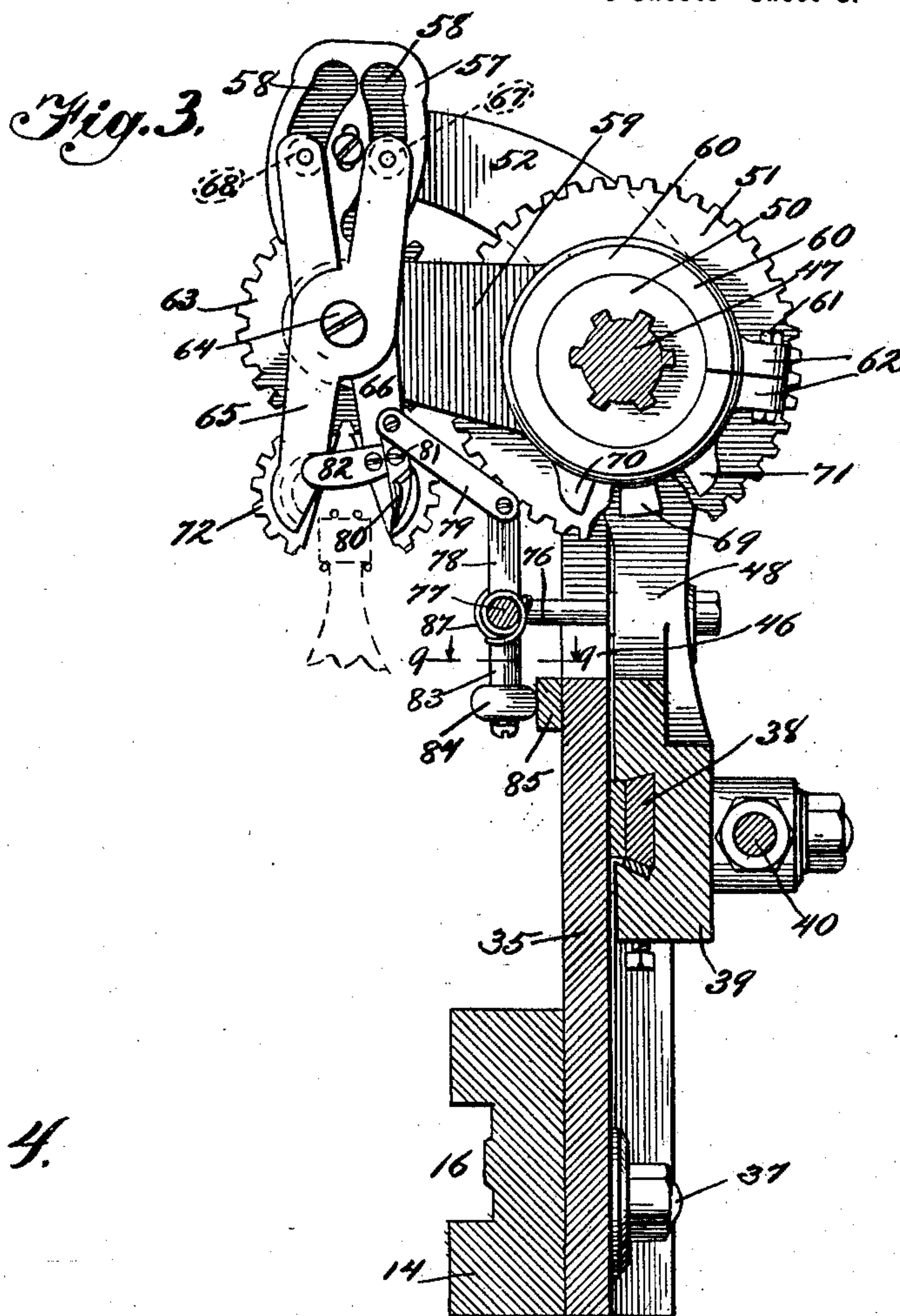
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5 Sheets—Sheet 3.



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84
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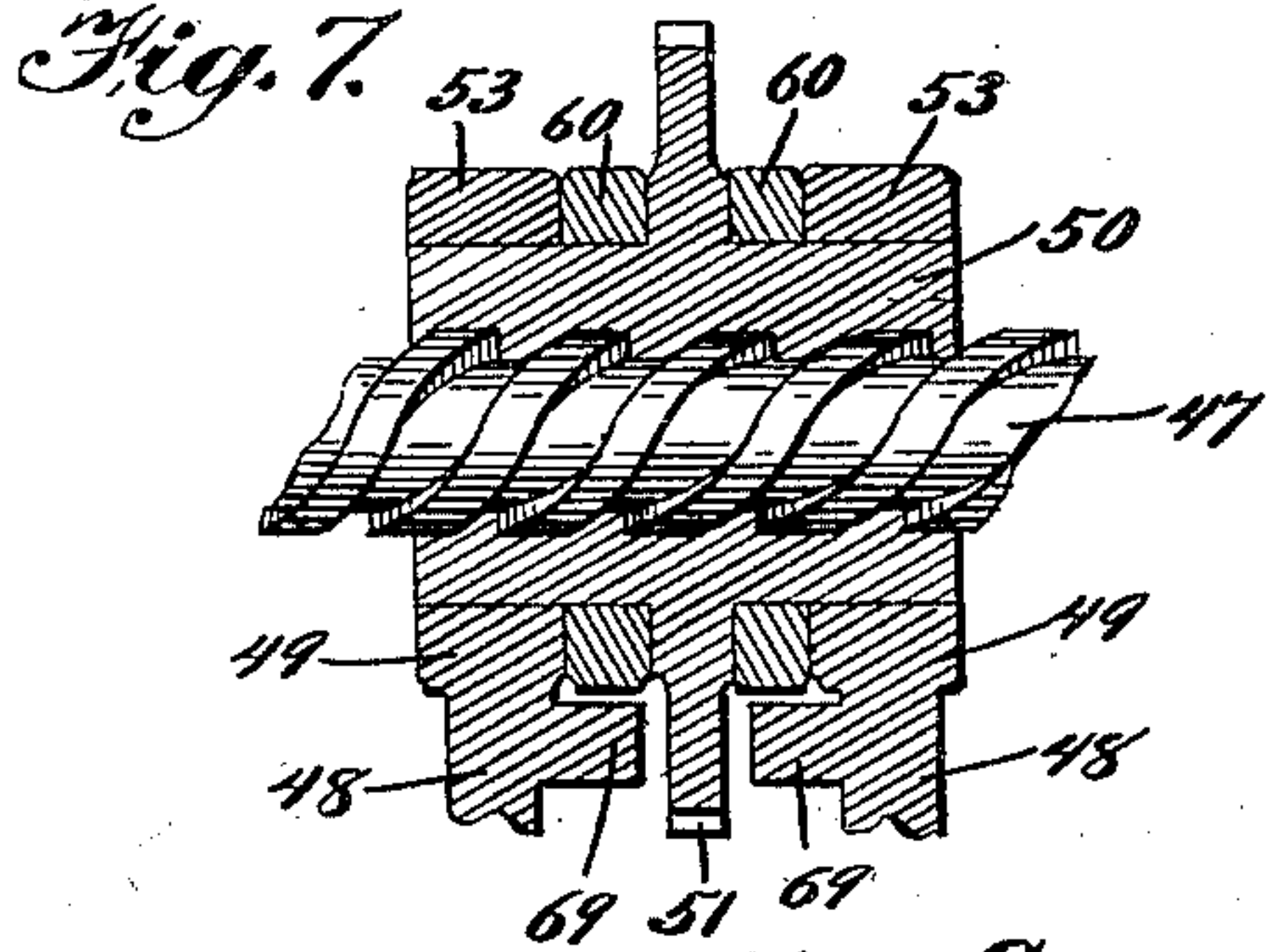
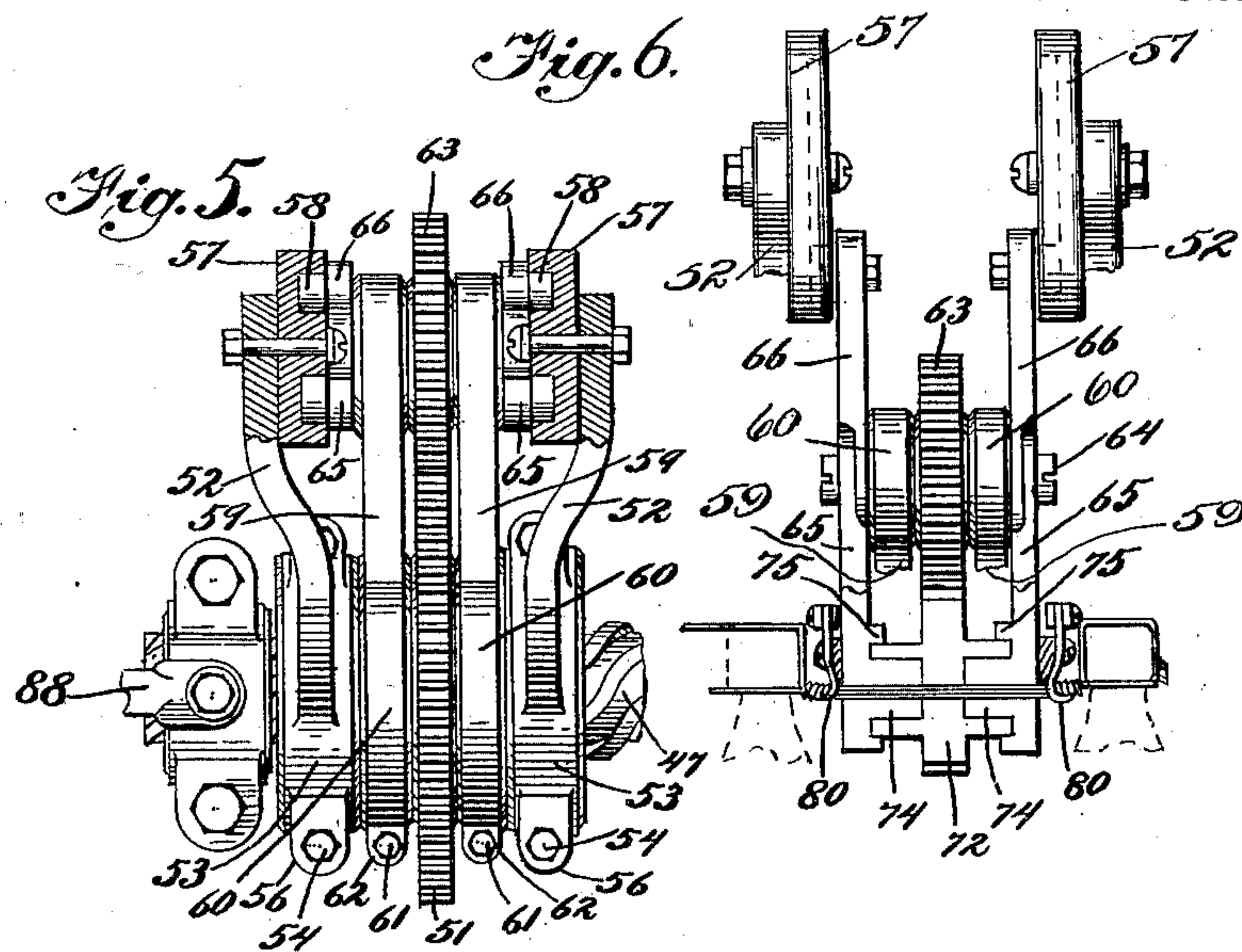


Fig. 8.

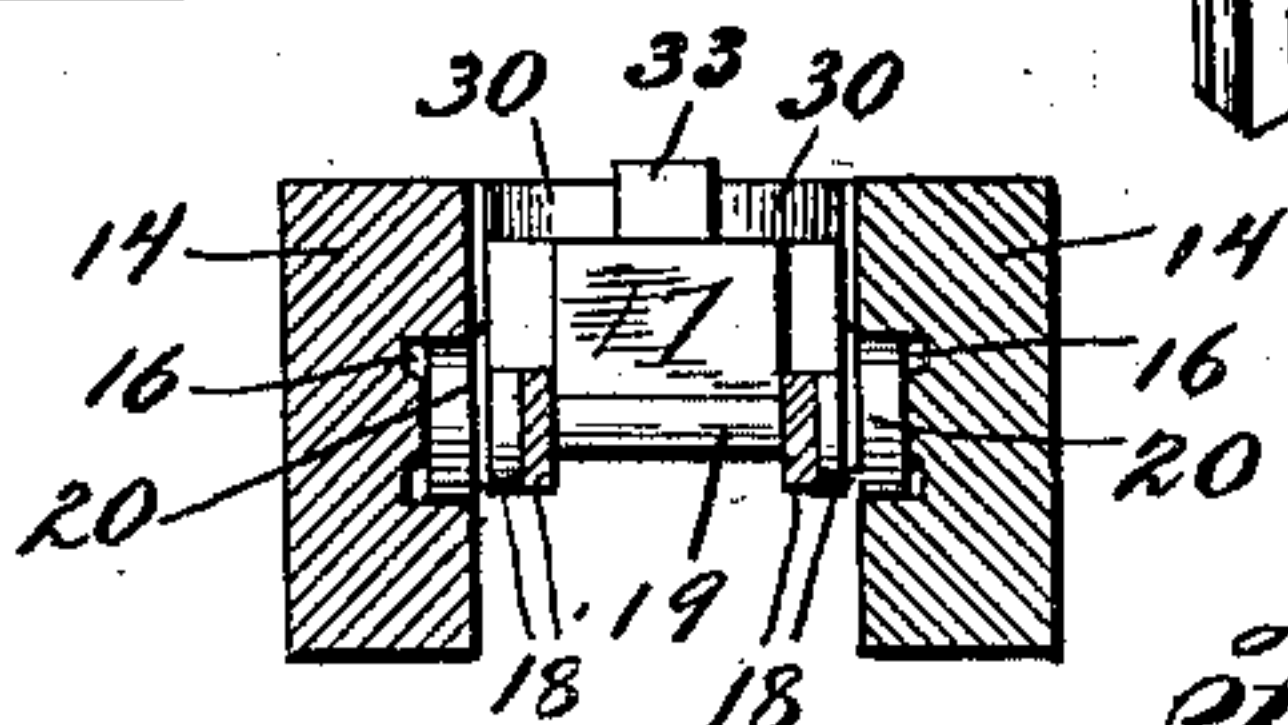
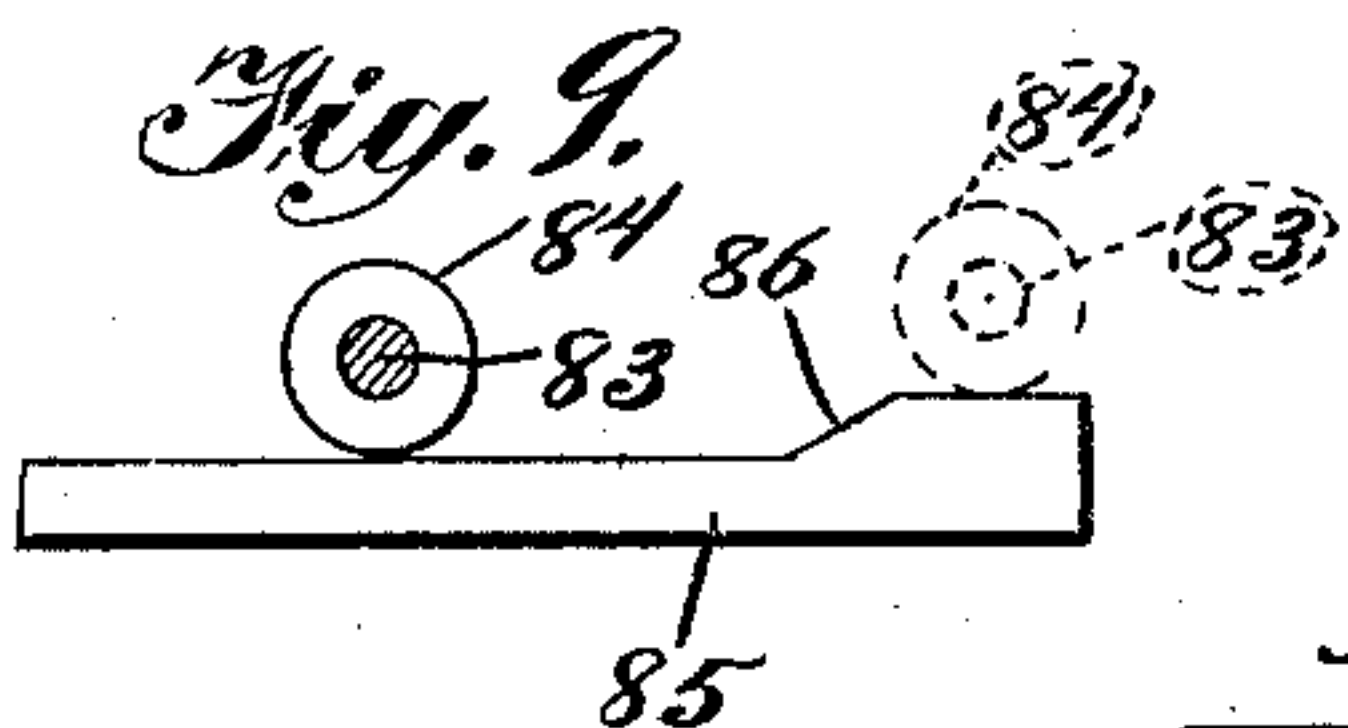
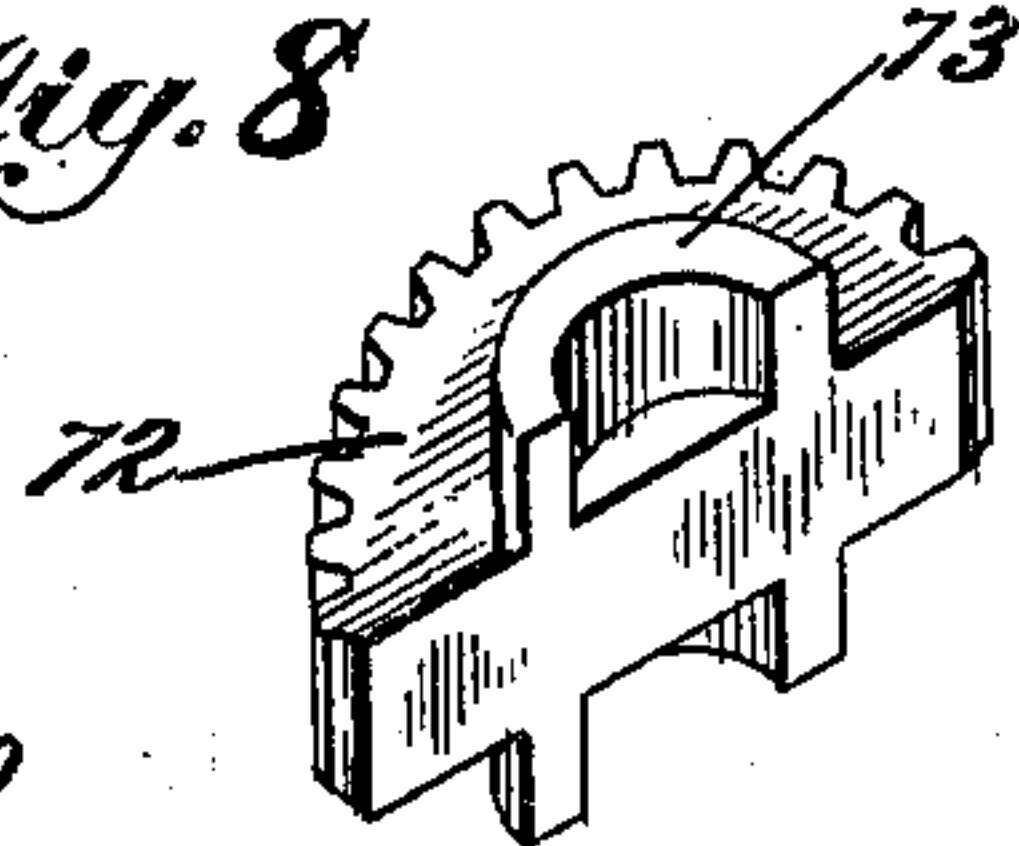


Fig. 10.

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Fig. 11.

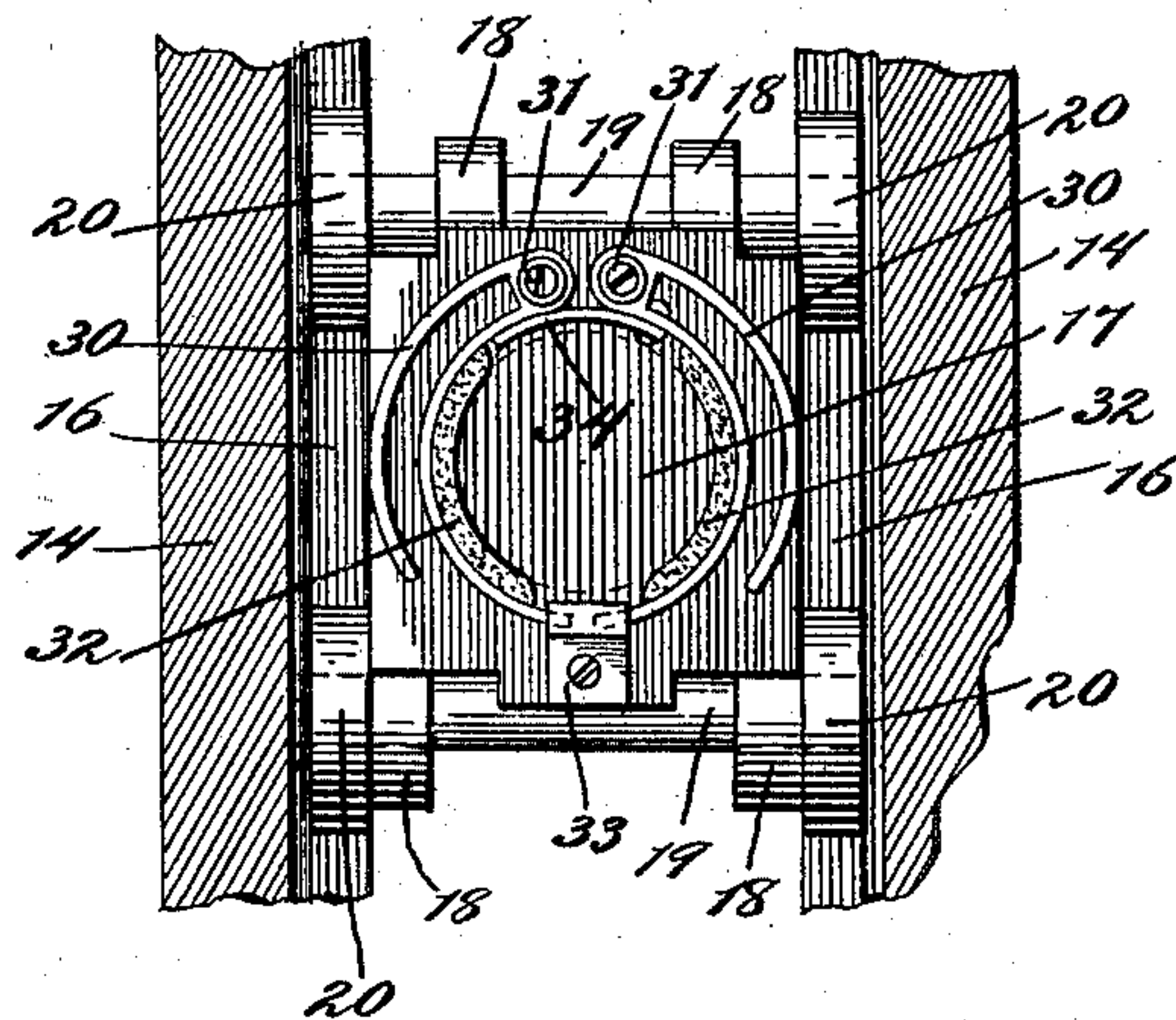
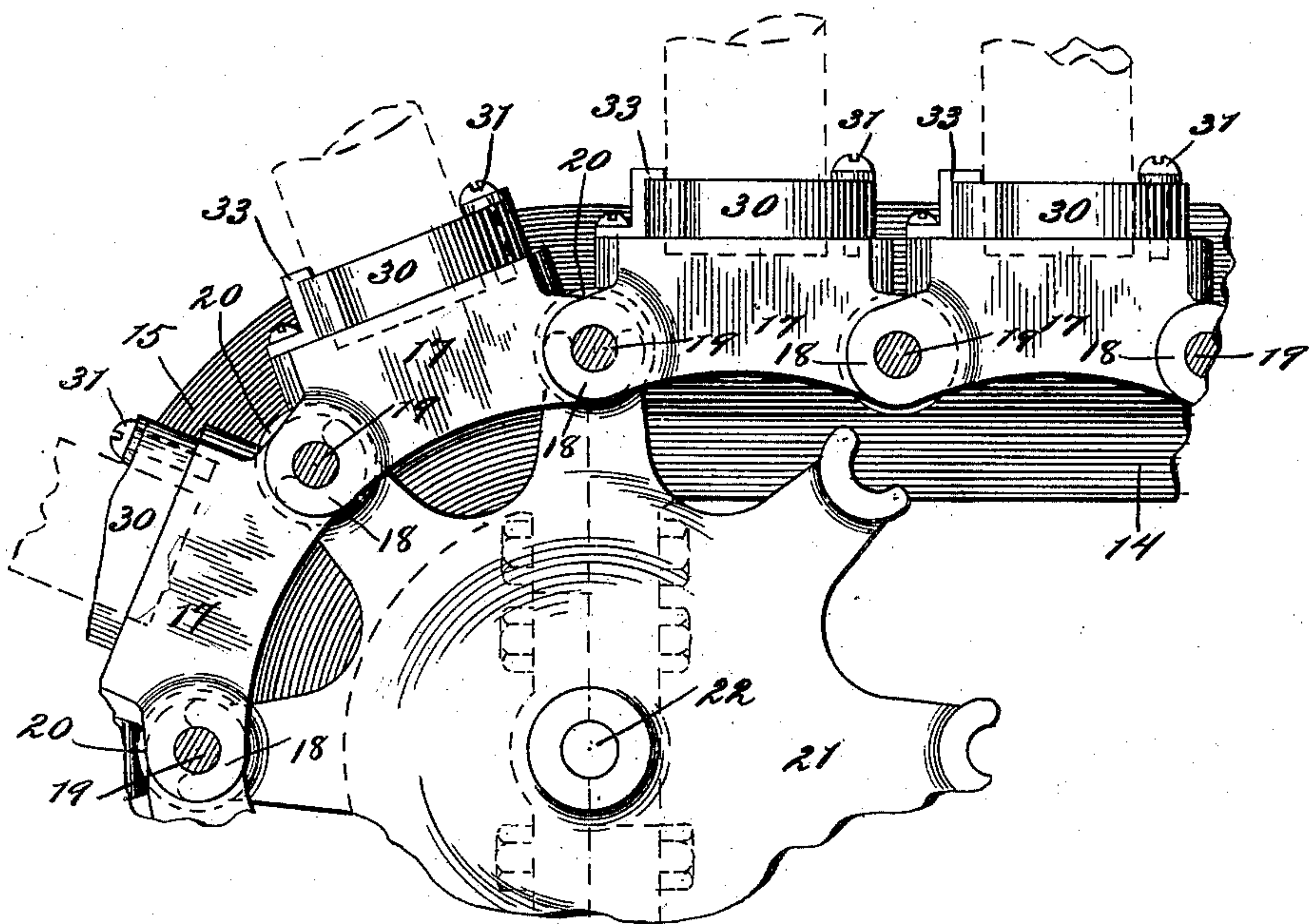


Fig. 12.



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UNITED STATES PATENT OFFICE.

CLINTON J. WARREN, OF CHICAGO, ILLINOIS.

MACHINE FOR WIRING CORKS IN BOTTLES.

SPECIFICATION forming part of Letters Patent No. 707,739, dated August 26, 1902.

Original application filed May 16, 1901, Serial No. 60,524. Divided and this application filed December 7, 1901. Serial No. 85,001. (No model.)

To all whom it may concern:

Be it known that I, CLINTON J. WARREN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Wiring Corks in Bottles, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to machines for wiring corks in place after said corks have been inserted in filled bottles, and has for its object to provide means for performing such wiring operation while the bottles being operated upon are being moved by an endless carrier, the wiring devices being moved for a limited distance parallel with and over the moving carrier and in engagement with one of the bottles thereon and after traveling in such engagement being withdrawn clear of the bottle and retracted in an opposite direction in order to be in a position to engage and wire a succeeding bottle on such carrier. I accomplish this by the means shown in the drawings and hereinafter specifically described, and that which I claim as new will be set forth in the claims.

20 The wiring devices forming the subject-matter of this application are shown and described in my pending application, Serial No. 60,524, filed May 16, 1901, of which this is a division, in which said application is also shown various other sets of mechanism for operating upon bottles both before and after they are wired, all acting, as does the wiring mechanism about to be described, while the bottles are being continuously moved forward through the machine.

30 In the accompanying drawings, Figure 1 is a side elevation of the entire machine. Fig. 2 is an enlarged detail, being a side elevation of the wiring devices. Fig. 3 is a vertical section taken at line 3 3 of Fig. 2. Fig. 4 is a vertical section taken at line 4 4 of Fig. 2. Fig. 5 is a plan view, partly in section, of the devices shown in Fig. 2. Fig. 6 is an end view, partly in section, of the devices shown in Fig. 4. Fig. 7 is a section through the main gear-wheel of the wiring mechanism and its elongated hub, together with the parts that are carried thereon, the actuating-screw through

such hub being shown in elevation. Fig. 8 is a perspective view of one-half of the divided gear-wheel shown in side elevation in Figs. 3 and 4. Fig. 9 is a sectional view taken at line 9 9 of Fig. 3. Fig. 10 is a cross-section through the frame that supports the bottle-carrier. Fig. 11 is a detail, being a plan view of the endless bottle-carrier and one of the bottle-clamps secured thereon, a portion of the frame for said endless carrier being shown in section; and Fig. 12 is a detail of a portion of the endless bottle-carrier and its frame and the sprocket-wheel that drives such carrier.

Referring to the drawings, in which corresponding parts are indicated by the same reference-numerals, 12 indicates one of a pair of suitable supporting-standards, which may be arranged, as shown, to support the framework at its longitudinal center, or a pair of such standards may, if deemed advisable, be located at each end of the machine. The framework of the machine is supported by these standards and consists of two pairs of longitudinal beams 13 14, 13 indicating the lower pair of beams, and 14 the upper pair of beams, said pairs of upper and lower beams being connected by curved end pieces 15. The upper and the lower beams and their connecting end pieces are separated sufficiently to provide a space for a moving carrier to be located between them, such space being clearly indicated in Figs. 10 and 11, and it of course will be understood that this same space that is shown in these two figures is continued, so as to be the same at all points between the pair of lower beams and the pair of upper beams and their curved ends. The carrier referred to is an endless one and is composed of a number of comparatively heavy blocks 17, each block having ears 18 at its ends, through which pass axles 19, and on the ends of which axles are journaled rollers 20, these rollers traveling in grooves 16 in the inner faces of the beams 13 14 and their curved end pieces 15.

21 indicates a sprocket-wheel keyed to a shaft 22, mounted in suitable bearings that are secured between the longitudinal beams 13 14, near one of the curved ends 15 thereof. 23 indicates another shaft extending across the machine between the longitudinal beams

referred to and suitably secured in bearings supported by the framework of the machine. Upon this shaft 23, at one end thereof, is secured a pulley-wheel 24, over which a driving-belt 25 passes. The shaft 23 carries a small gear-wheel 26, (indicated by dotted lines in Fig. 1,) which gear-wheel 26 is keyed to said shaft and meshes with another and larger gear-wheel 27, said gear-wheel 27 being secured upon a projecting end of the shaft 22, whereby upon the rotation of such larger gear-wheel the sprocket-wheel 21 is driven and by its engagement with the axles 19 of the carrier-wheels 20 moves such carrier forward. At the opposite end of the machine from that at which the devices just referred to are located is arranged another and similar sprocket-wheel 28, over which the carrier travels, this sprocket-wheel 28 being located on a shaft 29, journaled in suitable supports secured to the framework. The outer face of each block 17 is provided with a suitable clamp adapted to receive the base of a bottle and hold such bottle firmly in position, so that it will at all times have its neck end projected outward. The form of clamp shown consists of two similar curved metal bands 30, each portion 30 being bent on itself and at the bent portions secured to the blocks 17 by a screw or other pivot 31. The curvature of each portion of the clamp is such as to adapt it to conform to the curvature of the bottle that is to be held, and it is provided on its inner face, as shown, with two oppositely-arranged cushions 32, one of such cushions being provided for each portion 30 of the clamp. The acting portion of the clamp, as shown, forms nearly a complete circle, the two ends approaching closely to each other, as indicated by the dotted lines in Fig. 11, and working back and forth beneath a bracket 33 when pressure is applied to or released from the sides of the clamp. The outer ends of each portion of the clamp bear against the sides of the beams 14 with sufficient force to cause the cushions 32 to grasp the bottle firmly, so as to hold the bottle securely whether such bottle be upright or inverted. Suitable means may be provided for automatically inserting the bottles within the clamps and disengaging them therefrom, so as to be discharged from the machine, and means for that purpose are shown and described in my said pending application; but as they form no part of my present invention and so far as my present invention is concerned may be of any suitable character I do not deem it necessary to here show or describe them. It is also to be understood that other forms of clamping devices for holding bottles securely upon the carrier may be adopted. In the form of bottle-clamp shown the two portions 30 are adapted to be forced apart at the releasing-point by the action of a flat curved spring 34, which, as shown in Fig. 11, is bolted at one end to one of the parts 30 and bears at its other and free end against the corre-

sponding part 30. With a series of bottles mounted and suitably held upon the endless carrier and such endless carrier with the bottles thereon being continuously driven at a comparatively slow rate of speed and with the bottles filled and corked the operation of wiring the corks in place is accomplished by the means now to be described.

35 indicates a heavy supporting-plate secured against the outside face of one of the longitudinal beams 14, said plate being adjustably secured thereon preferably by slots 36, formed in said plate, and bolts 37, passing therethrough and into the beam 14, as shown.

38 indicates a guide secured to the outer face of the plate 35 and near the upper end thereof, said guide being disposed horizontally, as shown.

39 indicates a slide adapted to be moved back and forth upon the guide 38.

40 indicates a rod pivotally secured at 41 to the slide 39 and also pivotally secured at its other end, as indicated by 42, to the upper end of a vertical arm 43, that is securely fastened in any suitable manner to an eccentric-rod 44, said eccentric-rod being secured, as usual, to an eccentric 45, that is secured upon the shaft 23. It is evident that as the eccentric 45 is turned the slide 39 will, through the parts 40, 43, and 44, be reciprocated on its horizontal guide 38.

46 indicates vertical supports extending up from and suitably secured to the stationary supporting-plate 35. In the upper end of these supports 46 are formed suitable bearings, in which rest the ends of a heavy screw 47, said screw being secured rigidly in place by any suitable means.

48 indicates vertical supports rising from the slide 39, each of said supports 48 having a semicylindrical head 49, which form bearings in which rests the elongated hub 50 of a large gear-wheel 51.

52 indicates arms having at their inner ends semicylindrical heads 53, adapted to fit over the ends of the elongated hub 50, the heads 49 and the heads 53 being bolted firmly together by bolts 54, passing through projecting ears 55 and 56 on the semicylindrical heads 49 and 53, respectively. These arms 52 are in this manner held rigidly against any movement except their movement longitudinally of the machine, as the slide 39, to which they are connected or with which they are formed, is moved. As shown, these arms 52 are curved inward toward the longitudinal center of the machine, so that their outer ends are brought directly over the bottle-carrier, which, as stated, is formed of a series of blocks 17, secured together by the axles 19, passing through the ears on the ends of the blocks. Upon the inner face of each arm is securely fastened, preferably in an adjustable manner, a block 57, upon the inner face of which are formed two similarly-shaped cam-grooves 58.

59 indicates two correspondingly-shaped

arms, each secured to a friction-band 60, which bands encircle the hub 50 and are adapted to be tightened thereon by a bolt 61, passing through projecting ears 62 and secured by a nut on the end thereof. (See Fig. 2.) Each of these friction-bands 60, carrying an arm 59, is located on the elongated hub 50 between the large gear-wheel 51 and the heads 53 and 49, as clearly shown in Fig. 7. Between these two arms at their outer ends is mounted a gear-wheel 63, adapted to turn on a pin 64, and upon each of the extended ends of such pin 64 is pivoted a pair of bent levers 65 66, which levers carry at their upper ends small rollers 67 68, respectively, said rollers being adapted to move in the cam-shaped grooves 58 in the blocks 57. The lower ends of the levers are cut away slightly, so as to leave when such lower ends are together a notch of an inverted-V shape, as clearly shown in Fig. 4. Projecting from the opposite inner faces of the supports and lying directly beneath the friction-bands 60 are two lugs 69, and carried by each friction-band 60 are two lugs 70 71, each adapted to be brought in contact with one of the lugs 69.

72 indicates another gear-wheel, which is made in two halves, one half being supported, as shown, by one of the pairs of bent levers 65 and the other half by the other pair of bent levers 66. This gear-wheel is of considerable thickness, and it has an extended hollow hub portion 73 projecting from each face. It is held in place by inwardly-extending projections 74 75 from the levers 65 66, as best shown in Fig. 6.

76 indicates rods, each projecting inward from one of the supports 48 and each having an eye at its inner end, through which eye passes a horizontally-arranged bar 77, to the ends of which are secured upwardly-extending arms 78.

79 indicates two short levers, each pivoted at one end to one of the arms 78 and pivoted at its other end to one end of a blade 80, which in turn is pivoted at 81 to a bolt or screw that passes through a fixed cutting-blade 82, that is located near the lower end of one of the levers 66.

83 indicates a short rod formed with or rigidly secured to the horizontal bar 77 and carrying on its lower end a roller 84, which bears against a track 85, affixed to the inner face and near the upper end of the plate 35, said track having near one end an incline 86, up which incline the roller 84 is adapted to travel. (See Fig. 9.)

87 indicates coiled springs around the bar 77, each bearing at one end against one of the arms 78.

88 indicates a frame carried by one of the supports 46, in which frame are journaled pulleys 89 90, over which wire passes to be used upon the bottles. The wires are led from reels located in any suitable position upon the framework or other support and not herein shown.

In operation the motion of the eccentric-rod 44 is transmitted, through the arm 43 and connecting-rod 40, to the slide 39, causing it to move back and forth upon the horizontal guide 38. As the screw 47 is secured against rotation, it is evident that the elongated hub 50, that is secured by screw-threads upon such screw, will have to turn. The friction of the bands 60 around the hub is sufficient to bind them tightly enough to such hub to cause them to turn with the hub until the lugs 70, carried by these friction-bands, contact with the fixed lugs 69, projecting out from the supports 48. This contacting of the lugs mentioned occurs at about the time that the pivoted bent levers 65 66 are in their lowermost position, and by reason of the travel of the rollers 67 68 at the upper ends of these levers in the cam-grooves 58 the lower ends of such levers are brought together, as represented in Fig. 4, which action of the levers brings the two halves of the divided gear 72 together. Although the gears 51, 63, and 72 are in mesh, the gears 63 and 72 have not been driven by the rotation of the gear 51, owing to the downward movement of such gears 63 and 72; but now as the limit of their downward movement is reached and as the elongated hub 50 is still being forced along on the fixed screw 47, and consequently rotating, the rotation of the gear 51 drives the gear 63 and through that the now-closed gear 72. This closing of the two halves of the gear 72 and the commencement of its rotation take place just as a bottle with the two sets of wires shown leading over it and at its sides approaches the first set of bent levers 65 66, the result being that the wires are grasped between the two parts of the gear 72 and twisted together as the bottle moves along. At about the completion of this twisting operation the horizontal roller 84 rides up the incline 86 of the track 85, turning the blade 80 on its pivot 81, such movement of the blade being brought about through the arms and lever interposed between the said roller and the said blade, and as such blade is so turned up it cuts off the then-twisted wires between it and the fixed cutting-blade 82. Upon the completion of this operation the action of the eccentric 45 through its eccentric-rod 44 and intermediate connections commences to draw back the slide 39, whereupon the rotation of the gear 51 is reversed, and the arms 59, through the frictional engagement of their bands 60 with the elongated hub 50, are raised, drawing up the levers 65 66, which through the action of the cam-grooves 58 cause said levers to open at their lower ends, leaving the bottle free to pass on. The contacting of the lugs 71 on the frictional bands with their respective fixed lugs 69 just before the rollers 67 68 approach the upper ends of their respective cam-grooves causes the gear 63 to rotate, but without any effect, as by this time the divided gear 72 is well above the bottles. Upon the slide 39 again being drawn back the levers

65 66, with the gears 63 and 72, are again brought down, and at this time the bottle previously operated upon to the extent of having the wires twisted at one of its sides is again operated upon by having the wires twisted at its opposite sides, and at the same time a succeeding bottle has the wires twisted and cut upon one side, the two pairs of levers 65 66 of course moving and acting together and the two operations of twisting and cutting the wire occurring on opposite sides of the divided gear 72, the position of the bottles being operated upon being indicated by dotted lines in Fig. 6. That portion of the wires extending between a bottle that has been completely wired and a bottle only partially wired is, when the wires are separated by the blades 80 81, not utilized, the wastage amounting practically to four pieces of wire equal in length to about the width of the divided gear 72. The partial wiring of a bottle which is obtained by the first operation, as above described, secures the wires upon that side of the bottle which is toward the forward end of the machine, so that as the bottle moves along it serves as a means to pull after it the several strands of wire, so that such wires will be properly in position over and at the sides of the succeeding bottle. The movable cutting-blade 80 is thickened considerably, as shown, on its outside, so as to enable it to engage the twisted ends of the wires after the same have been severed from the lengths of wire and bend such twisted ends up, so as to lie closely against the neck of the bottle, as clearly shown in Fig. 6.

By my invention I provide an accurately-working set of devices by which wires can be quickly and accurately twisted around and over the ends of a corked bottle while said bottle is being continuously moved, which method of working is one of especially great value when used in connection with other devices or sets of devices mounted upon the same frame, as shown and described in my said pending application, Serial No. 60,524, in which application other devices or sets of devices are shown and described for operating both before and after the wiring operation upon the same bottles while they are being moved through the machine.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. In a bottle-wiring machine, the combination with a movable carrier adapted to receive and hold a series of bottles thereon with their neck ends projected, of means for moving said carrier, and means for successively wiring said series of bottles while they are moving, substantially as specified.

2. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, wire-directing devices located over the carrier, a wire leading therefrom, devices for grasping said wire and securing it over the

end of the bottle while said bottle is moving with its carrier, means for moving said wiring devices for a limited distance parallel with and over said carrier during the operation of securing the wire to the bottle, and means for severing the wire, substantially as specified.

3. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, wire-directing devices located over the carrier, a wire leading therefrom, devices for grasping said wire and securing it over the end of the bottle while said bottle is moving with its carrier, means for moving said wiring devices down adjacent to one side of the neck of the bottle and at the same time moving them for a limited distance parallel with and over said carrier during the operation of securing the wire to the bottle, and means for severing the wire, substantially as specified.

4. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, wire-directing devices located over the carrier, a wire leading therefrom, devices for grasping said wire and securing it over the end of the bottle while said bottle is moving with its carrier, means for moving said wiring devices down adjacent to one side of the neck of the bottle and at the same time moving them for a limited distance parallel with and over said carrier during the operation of securing the wire to the bottle, means for severing the wire, and means for raising said wire-securing devices after the wire has been severed and withdrawing them for a limited distance in a direction opposite to the movement of the said carrier, substantially as specified.

5. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, wire-directing devices located over the carrier, wires leading therefrom, a fixed screw suitably supported above and parallel with the carrier, wire grasping and twisting devices carried by said screw, means for reciprocating said wire grasping and twisting devices on said screw, means for forcing said devices down and over the wires carried by said wire-directing devices and twisting them against the neck of the moving bottle, means for severing said wires when twisted, and means for raising and retracting said devices, substantially as specified.

6. The combination with a frame, a carrier supported thereby and adapted to receive and hold a bottle with its neck end projected, wire-directing devices located over the carrier, and wires leading therefrom, of a fixed screw-threaded bar arranged parallel with the carrier, a gear having an extended hub mounted on said screw-threaded bar, arms mounted on said hub on opposite sides of said gear and adapted to be turned on said hub, means for reciprocating said hub on its screw-threaded

bar whereby said hub and its gear will be rotated, means for turning said arms for a limited distance on said hub as said hub moves lengthwise of the screw-threaded bar, a gear 5 carried between said arms and meshing with said first-named gear, a pair of levers carried by each of said arms, cams acting upon the upper ends of said levers, a divided gear supported in the lower ends of the two pairs of 10 levers and adapted to be opened and closed, and when closed adapted to engage the wires from the wire-directing devices and twist said wires at one side of the head of a bottle, and means for severing said twisted wires, substantially as specified. 15

7. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, means for moving said carrier, a frame supporting said carrier, wire-directing 20 devices located over the carrier, and wires leading therefrom, of a slide supported by said frame, means for reciprocating said slide, a screw-threaded bar rigidly supported by said frame and parallel with the line of travel of 25 the carrier, a gear having an extended hub,

said hub being screw-threaded to fit and move upon said screw-threaded bar, a pair of cam-plates carried by arms supported from said slide, a pair of arms each having at its inner end a friction-band secured around said extended hub at each side of said gear and carrying between them at their outer ends another gear and also having pivoted to them at their outer ends two pairs of bent levers, the upper ends of which are adapted to engage 35 the said cams, a divided gear supported between the lower ends of said two pairs of levers, the two parts of said divided gear being adapted to be brought together on the downward movement of their carrying-arms and 40 rotated by the rotation of the other gears so as to grasp and twist at one side of a moving bottle the wires from the wire-directing devices, and means for severing said twisted wires, substantially as specified.

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