

No. 750,225.

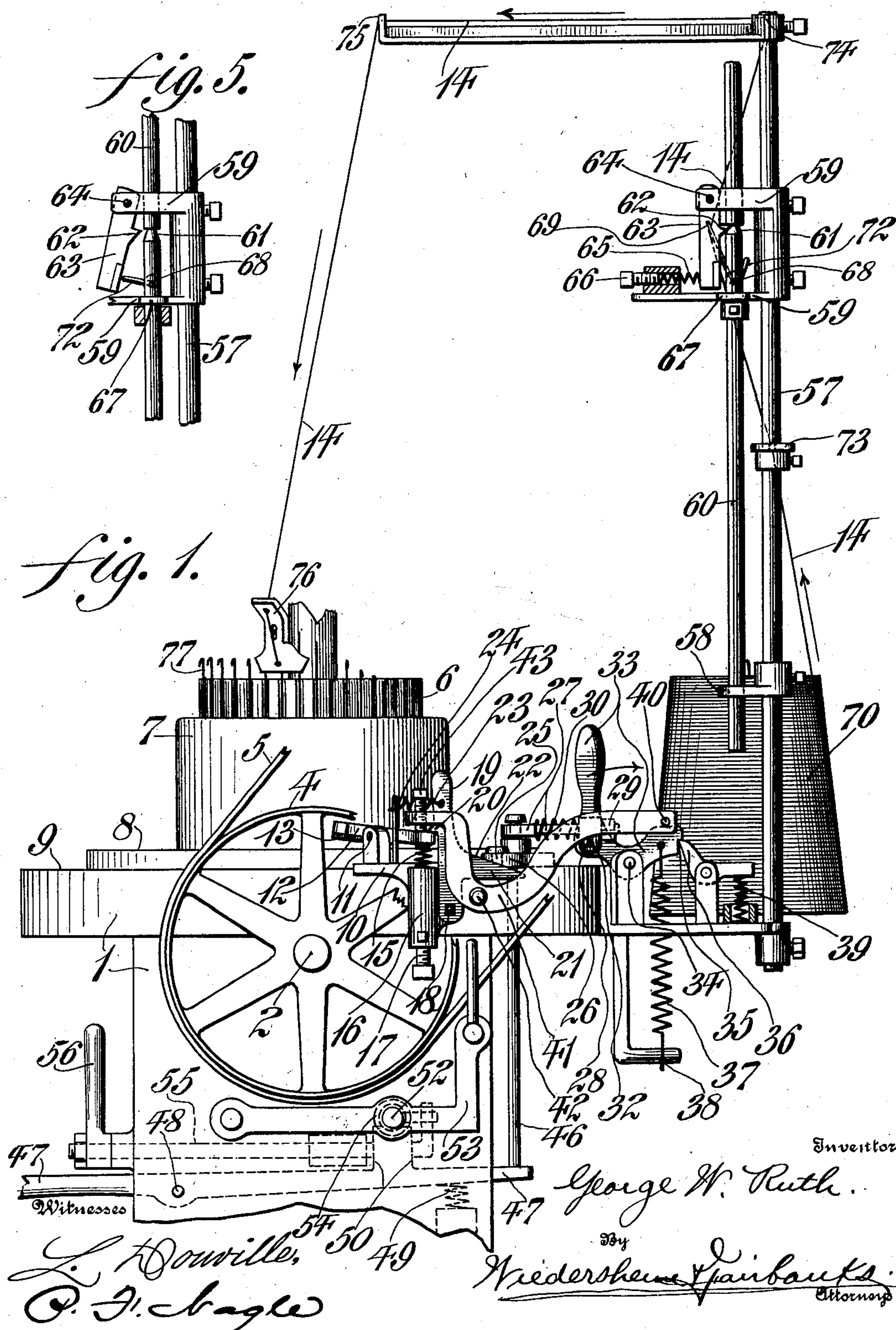
PATENTED JAN. 19, 1904.

G. W. RUTH.  
STOP MOTION FOR KNITTING MACHINES.

NO MODEL.

APPLICATION FILED FEB. 19, 1903.

3 SHEETS—SHEET 1.



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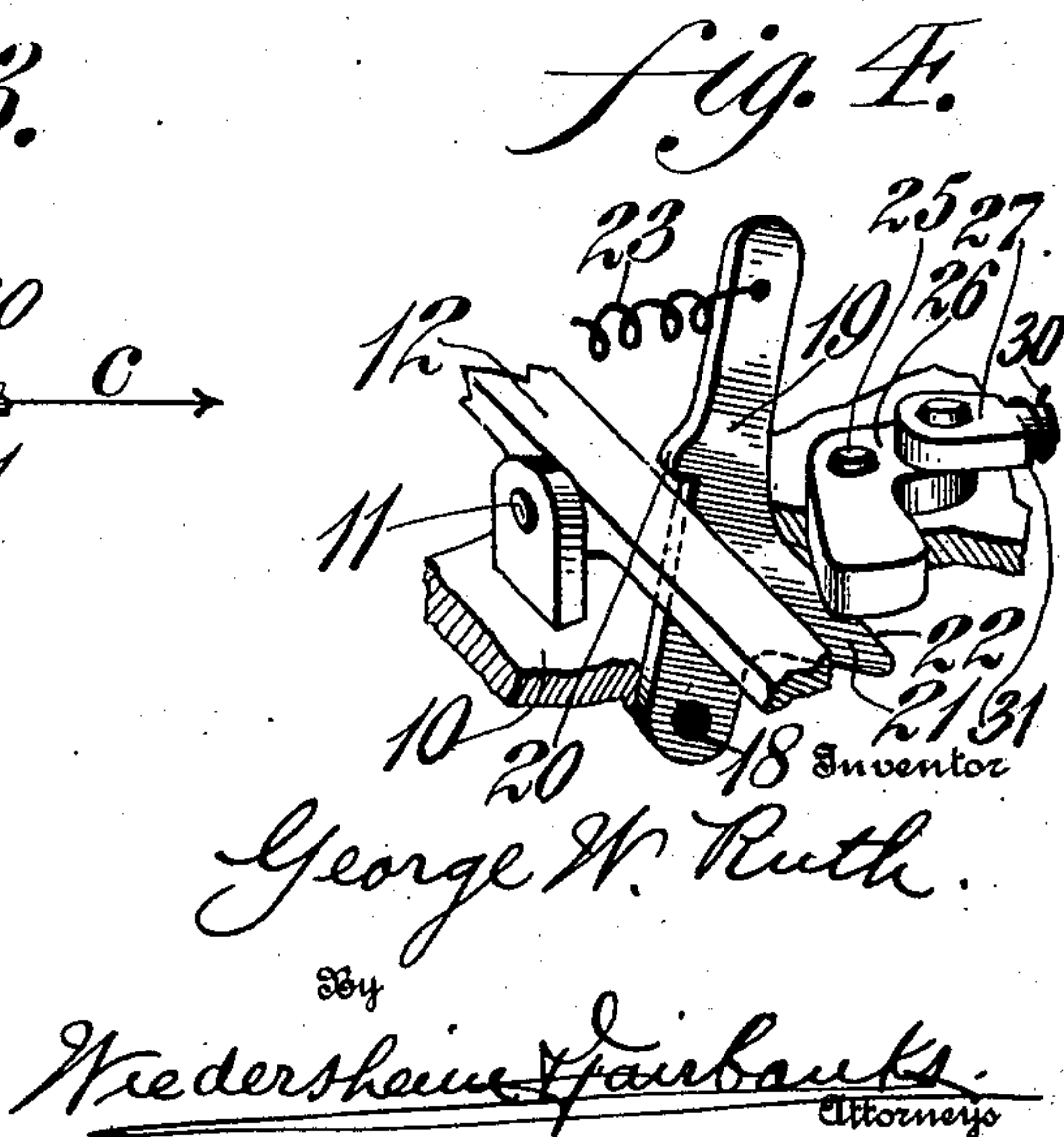
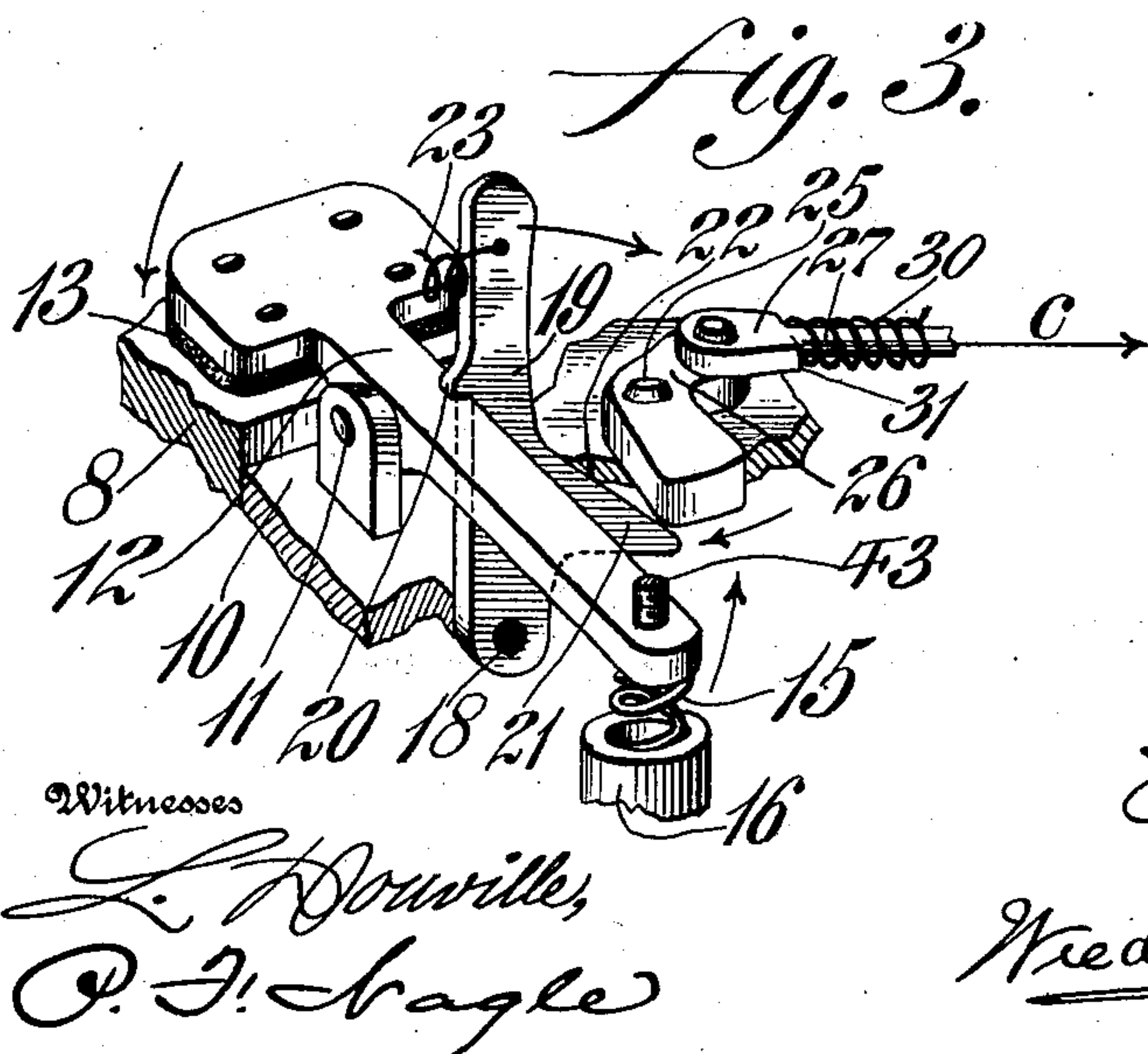
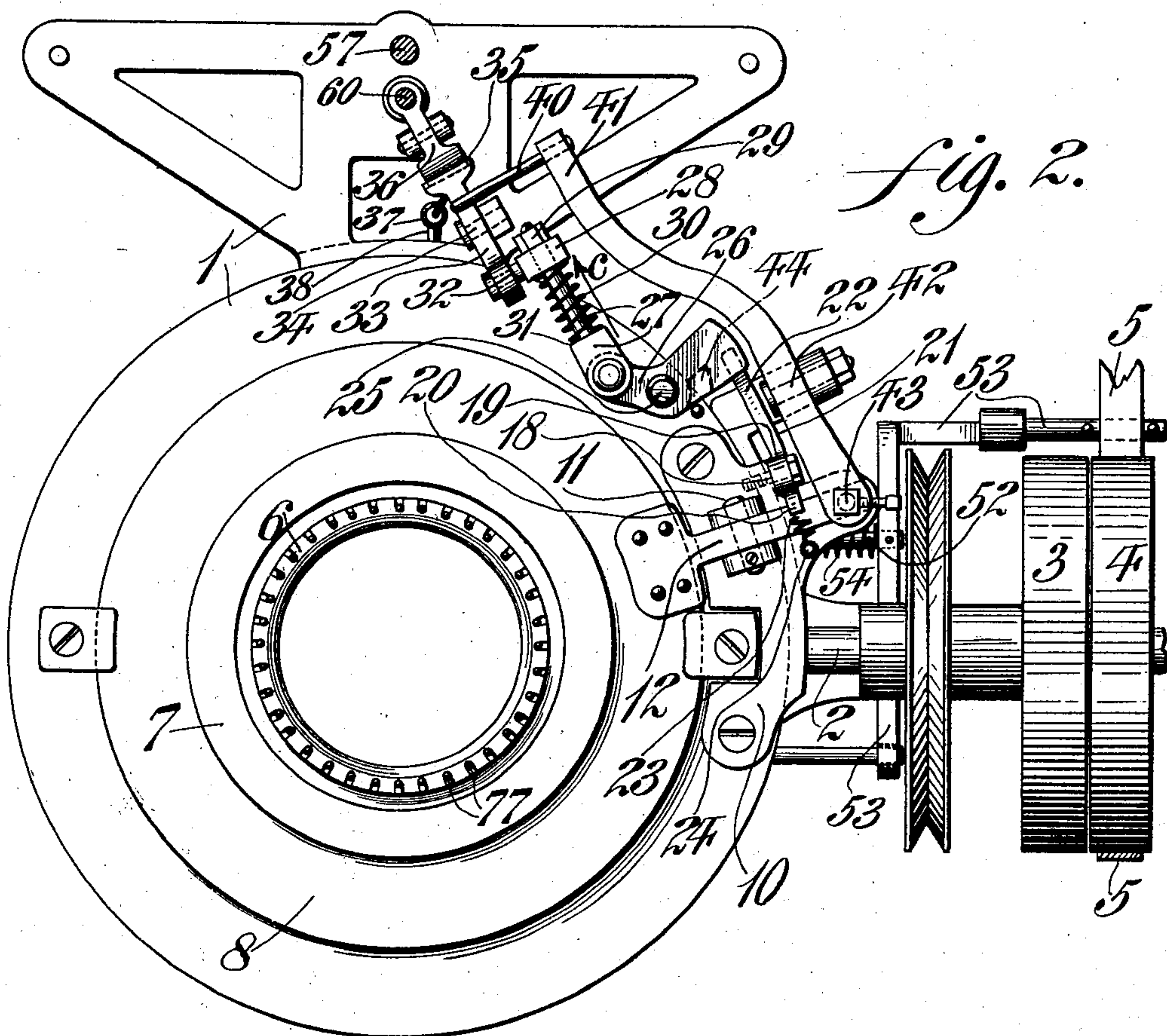
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NO MODEL.

3 SHEETS—SHEET 2.





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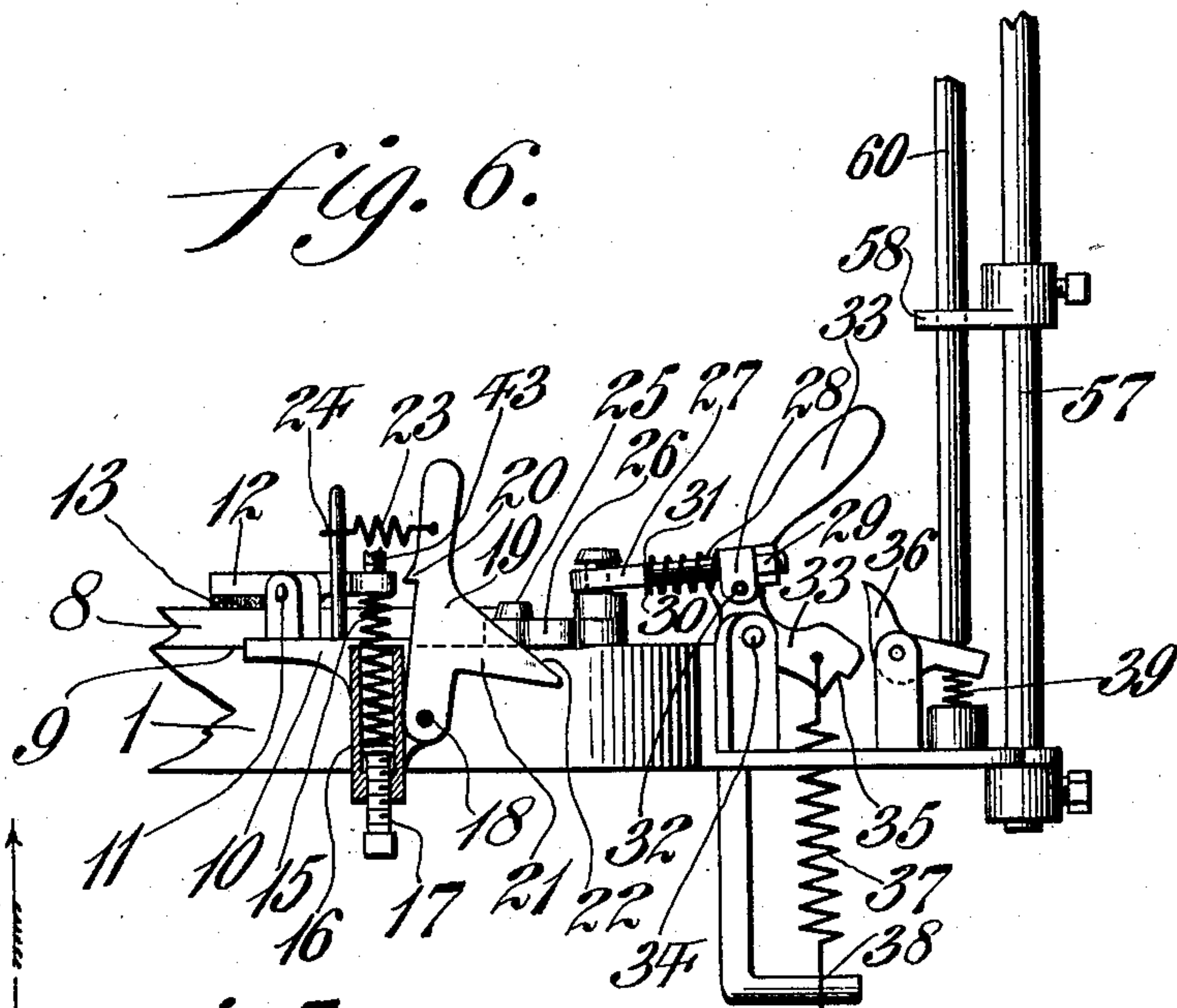
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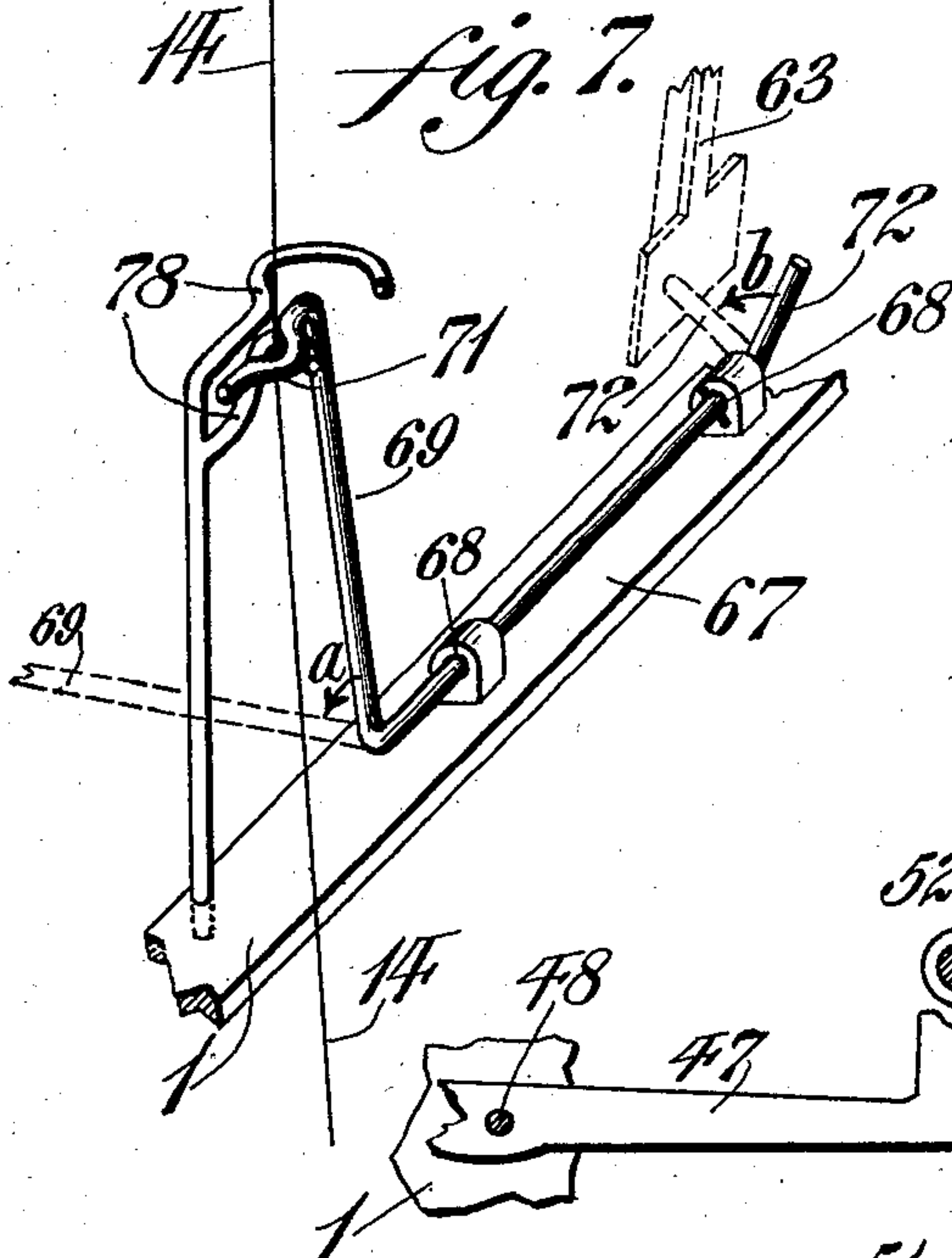
NO MODEL.

3 SHEETS—SHEET 3.

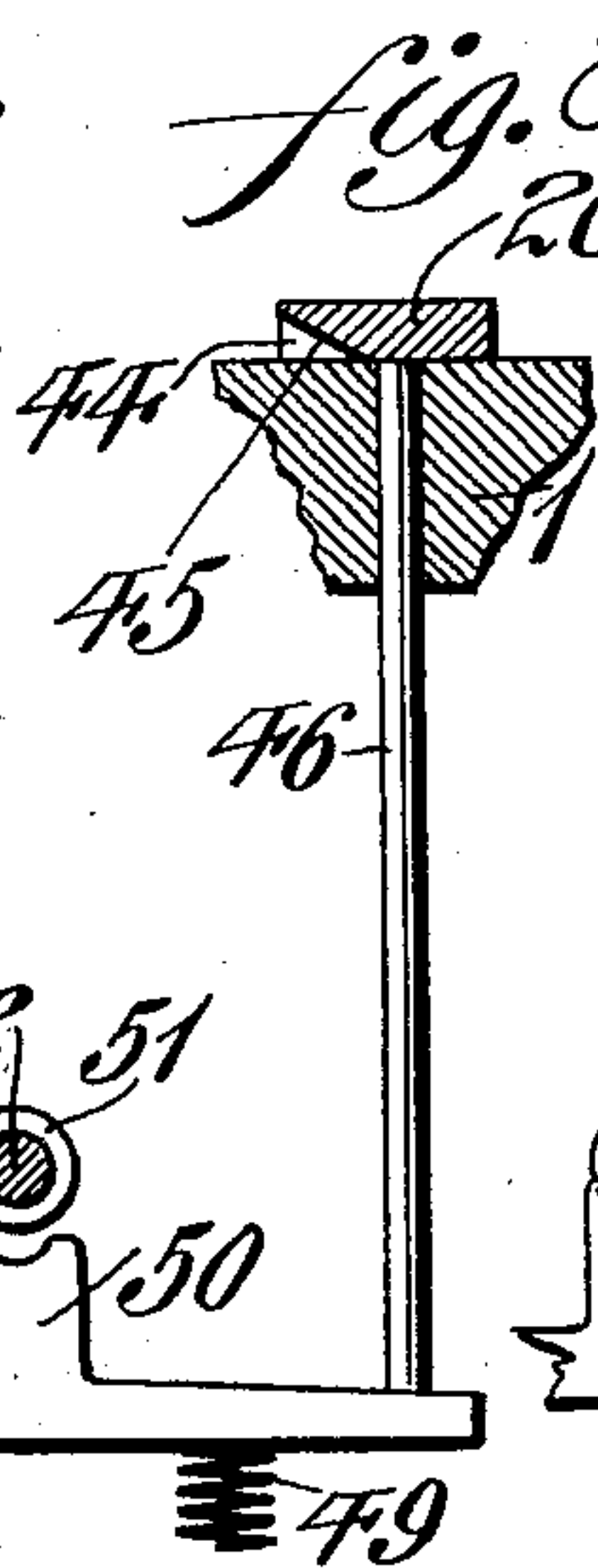
*fig. 6.*



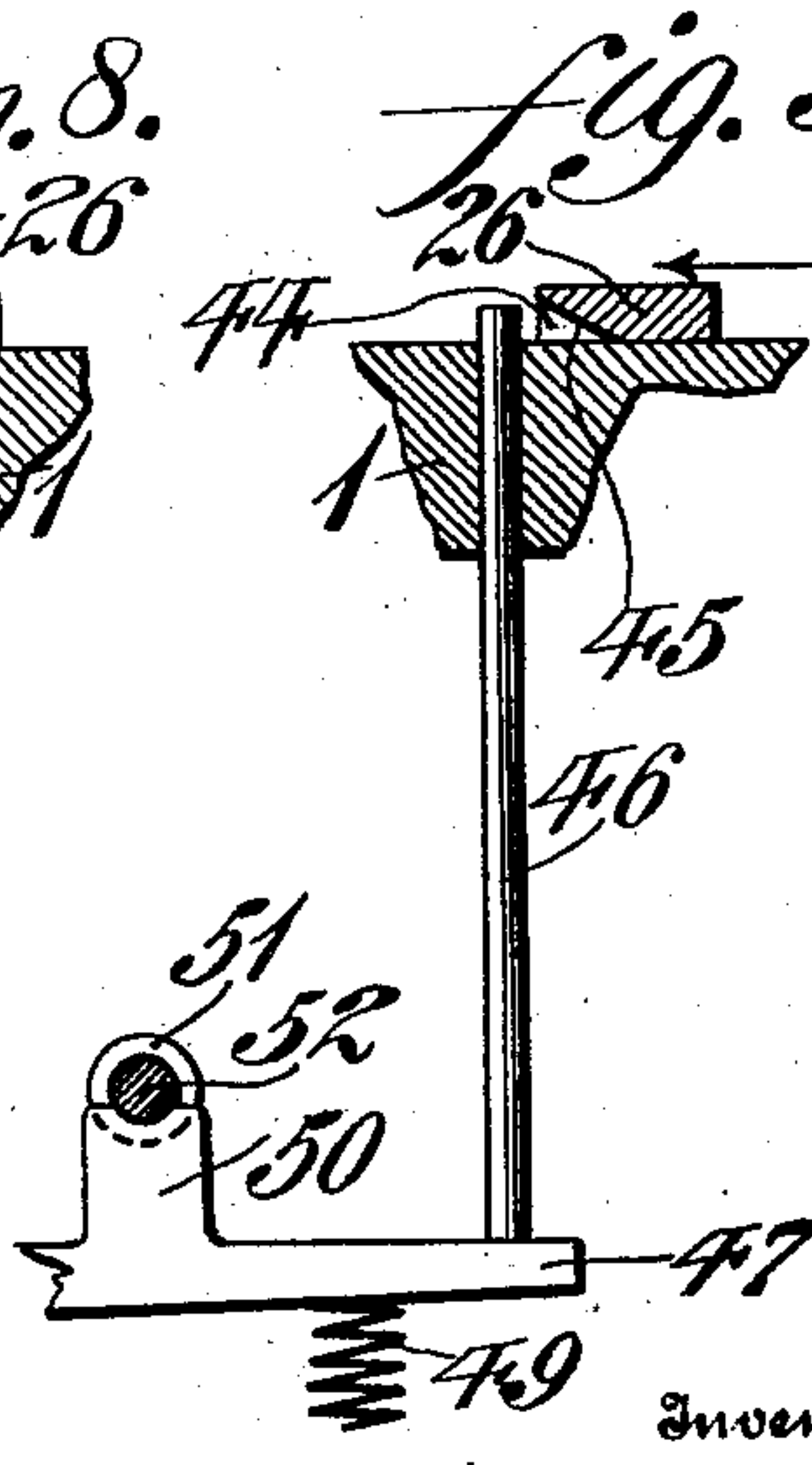
*fig. 7.*



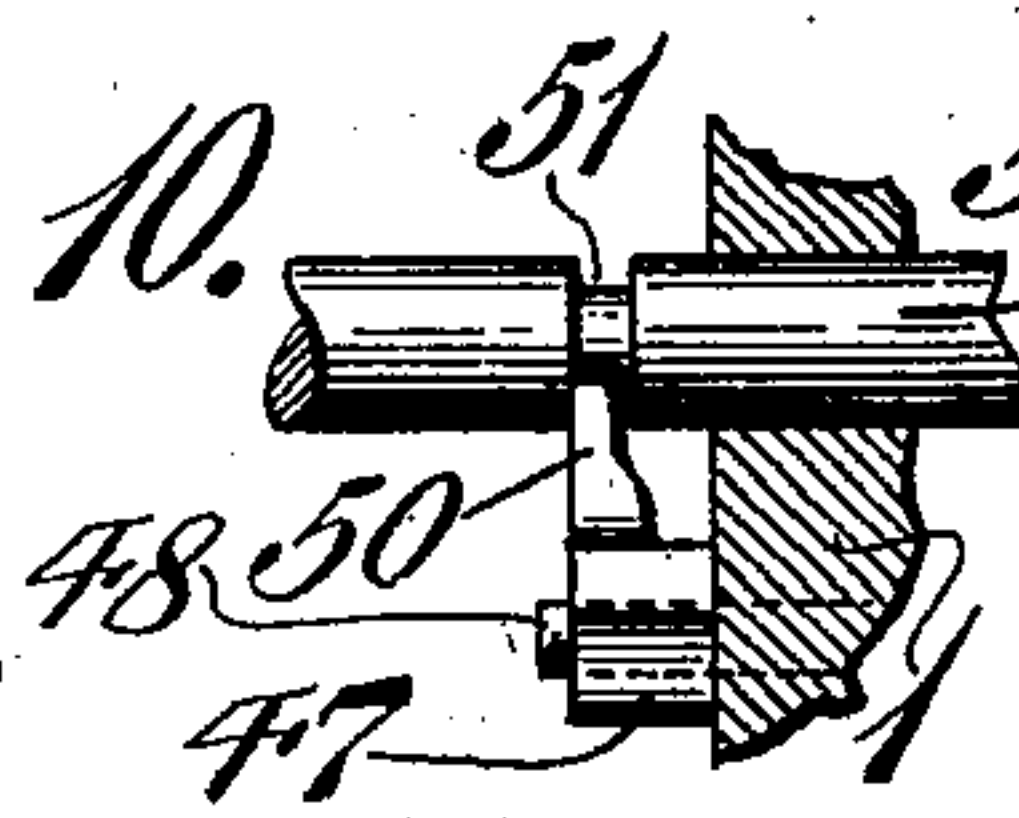
*fig. 8.*



*fig. 9.*



*fig. 10.*



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# UNITED STATES PATENT OFFICE.

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OF DELAWARE.

## STOP-MOTION FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 750,225, dated January 19, 1904.

Application filed February 19, 1903. Serial No. 144,075. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. RUTH, a citizen of the United States, residing at Norristown, Montgomery county, State of Pennsylvania, have invented a new and useful Improvement in Stop-Motions for Knitting-Machines, of which the following is a specification.

My invention relates to stop-motions for knitting-machines; and it consists of means for shifting the belt from the fixed to the loose pulley when one or more yarns break during the process of knitting; and it furthermore consists of means for applying a brake simultaneously with the shifting of the driving-belt from the fixed to the loose pulley, so that the momentum, which would otherwise cause certain of the parts of the machine to continue in motion for awhile after the belt is shifted, is checked instantly.

Figure 1 represents a side elevation of a stop-motion for knitting-machines embodying my invention. Fig. 2 represents a plan view of certain of the parts seen in Fig. 1. Fig. 3 represents a perspective view of certain detached portions of the device on an enlarged scale. Fig. 4 represents a perspective view of certain of the parts seen in Fig. 3, but in different positions from those seen in said Fig. 3. Fig. 5 represents a side elevation of certain detached portions of the device. Fig. 6 represents a side elevation of certain of the parts seen in Fig. 1, but in different positions from those seen in said Fig. 1. Fig. 7 represents a perspective view of certain detached portions of the device. Fig. 8 represents a partial side elevation and partial vertical section of certain detached portions of the device. Fig. 9 represents a partial side elevation and partial vertical section of the parts seen in Fig. 8 in different positions from those seen in said Fig. 8. Fig. 10 represents a partial side elevation and partial vertical section of certain detached portions of the device.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates a portion of the frame of a knitting-machine in

which is journaled the driving-shaft 2, which is provided with the fixed and loose pulleys 3 and 4, respectively, it being noted that a belt 5 is employed to drive the pulley 3, and consequently the shaft 2.

Fitted in the frame 1 of the machine is a needle-cylinder 6 and a cam-cylinder 7, it being noted that the flange 8 of the cylinder 7 projects above the portion 9 of the frame 1 of the machine, as best seen in Figs. 1 and 6.

In the present instance a bracket or hanger 10 is secured to the frame 1 and has fulcrumed therein, as at 11, a brake-lever 12, whose inner end is provided with a brake-shoe 13, which is adapted to be brought in contact with the flange 8 when one or more yarns 14 break, as hereinafter described. The outer extremity of the lever 12 rests upon a spring 15, which is placed within a pocket 16, as best seen in Figs. 1, 3, and 6, it being noted that the pressure of said spring 15 against the lever 12 may be adjusted, by means of the screw 17, so as to increase or diminish the pressure of the shoe 13 against the flange 8 of the cam-cylinder 7 when said shoe is brought in contact with said flange.

Pivoted in the bracket 10, as at 18, is a latch 19, provided with a tooth 20, adapted to engage with the lever 12, as best seen in Figs. 1, 2, and 3, it being noted that said latch 19 is provided with a projecting member 21, formed with an inclined face 22 for a purpose hereinafter described. The latch 19 has secured thereto one end of a spring 23, whose opposite end is secured to some fixed point, as at 24. (See more particularly Fig. 6.) The object of the spring 23 is to normally retain the tooth 20 in engagement with the lever 12, as best seen in Fig. 1.

Fulcrumed, as at 25, in the frame 1 is a lever 26, which has pivoted thereto one end of a rod or link 27, whose opposite end is fitted in a block 28 and is provided with a nut 29, as best seen in Figs. 1, 2, and 6, it being noted that a spring 30 encircles a portion of the rod 27 and is placed between the block 28 and a shoulder 31 on the rod 27 for a purpose hereinafter described.



The block 28 is pivoted, as at 32, to the lever 33, which is fulcrumed at 34 in the frame of the machine and as best seen in Figs. 1, 2, and 6, it being noted that the lever 33 is provided with a recessed portion 35, with which the trigger 36 is adapted to engage, as seen in Figs. 1 and 2 and for a purpose hereinafter described. The lever 33 has secured thereto one end of a spring 37, whose opposite end is secured to some fixed point, as at 38, it being noted that the trigger 36 has a portion thereof resting upon a spring 39 for a purpose hereinafter described.

Resting upon the outer end of the lever 33 is a stud 40, which projects from the lever 41, as best seen in Figs. 1 and 2, it being noted that the lever 41 is fulcrumed at 42 in the frame of the machine and is provided with a screw 43, which abuts against the brake-lever 12, so as to retain the brake-shoe 13 out of contact with the flange 8 when the several parts are in the position seen in Fig. 1.

The under side of the lever 26 is provided with a recessed portion 44, formed with an inclined surface 45, (see Figs. 2, 8, and 9,) and the object of which is to depress the rod 46 for a purpose hereinafter described.

The rod 46 rests upon the outer end of a lever 47, fulcrumed at 48 in the frame 1, it being noted that one end of a spring 49 bears against the under side of said lever 47 and retains the latter normally in the positions seen in Figs. 1 and 9, it being further noted that the lever 47 has in the present instance a projecting member 50, which enters a recess 51 in the rod 52, to which the shipping lever or arm 53 is secured, as best seen in Figs. 1 and 2. It will be noted on referring to Figs. 1 and 2 that a spring 54 encircles the rod 52 and that one end of said spring 54 bears against the frame 1 and its opposite end bears against the shipping lever or arm 53 for a purpose hereinafter described.

Mounted in the frame 1 is a rod 55, provided with a handle 56 for operating said rod 55 in order to shift the shipping lever or arm 53, so as to cause the belt 5 to move from the loose pulley 4 to the fixed pulley 3, so as to put the machine in operation.

Rising from the frame 1 is a rod 57, rigidly secured thereto and provided with guides 58 and 59, in which is loosely fitted a rod 60, which is provided with a recessed portion 61, in which enters a tooth 62, which projects from a latch 63, (see Figs. 1 and 5,) fulcrumed at 64 in the guide 59 and retained normally in the position seen in Fig. 1 by a spring 65, the force of which can be adjusted by the screw 66, and the object of all of which is hereinafter described.

Projecting from the guide 59 are brackets or supports 67, in which is journaled, as at 68 in Fig. 7, a finger 69, it being understood that there are as many fingers 69 as there are cops or bobbins 70 employed and that only one

finger 69 and one bobbin 70 are illustrated in the accompanying drawings. The finger 69 is formed with a bent portion 71 and a projecting portion 72, it being noted that the portion 71 is adapted to be brought in contact with the lever 63 and that the bent portion 71 is adjacent to the yarn-guides 78, and the object of all of which is hereinafter described.

The operation is as follows: Assuming the several parts to be in the positions seen in Fig. 1, the yarn 14 is drawn from the bobbin 70 and is passed through a yarn-guide 73 and from the latter to the yarn-guides 72, the finger 69 occupying the position seen in Fig. 7, after which the yarn 14 is passed through the guides 74, 75, and 76 and then to the needles 77 in the cylinder 6. The belt 5 is then shifted from the loose pulley 4 to the fixed pulley 3 by means of the shipping-lever 53, the rod 55, and the handle 56, whereupon the recess 51 in the rod 52 is brought in alignment with the projection 50 on the lever 47, and said projection 50 is caused to enter the recess 51 by reason of the expansion of the spring 49, as seen in Figs. 1, 9, and 10, it being understood that the interlocking of the projection 50 and recess 51 prevents the shipping-lever 53 from moving, and consequently retains the belt 5 upon the fixed pulley 3, and motion is imparted to the machine. When one or more yarns 14 break during the process of knitting, the finger 69 is no longer supported by the broken yarn, and being normally inclined, as seen in Fig. 7, said finger will turn in the direction indicated by the arrow *a* in said Fig. 7 and drop into the position seen in dotted lines, and thereby cause the bent portion 72 to turn in the direction indicated by the arrow *b* in Fig. 7 and occupy the positions seen in dotted lines in said Fig. 7 and in full lines in Fig. 5, whereupon the latch 63 is turned upon its fulcrum 64 and is brought into the position seen in Fig. 5, thereby causing the tooth 62 to be withdrawn from the recess 61, whereupon the rod 60 is no longer supported in its elevated position and drops by gravity from the position seen in Fig. 1 to that seen in Fig. 6, it being noted that the weight of the falling rod 60 is applied to the trigger 36 and causes the latter to move from the position seen in Fig. 1 to that seen in Fig. 6, it being apparent that the force of the blow of the rod 60 causes the trigger 36 to become disengaged from the lever 33, and the latter being now free to turn upon its fulcrum 34 is moved from the position seen in Fig. 1 to that seen in Fig. 6 by the contraction of the spring 37. The lever 33 in moving from the position seen in Fig. 1 to that seen in Fig. 6 exerts a pull upon the rod 27 and causes the latter to move in the direction indicated by the arrow *c* in Figs. 2 and 3, whereupon the lever 26 is turned on its fulcrum 25, causing said lever 26 to move from the positions seen in Figs. 1 and 3 to those seen in Figs. 4 and 6, it being noted that the



under side of the lever 27 is brought in contact with the inclined face 22 of the latch 19 and causes the latter to turn on its fulcrum 18 and move from the positions seen in Figs. 1 and 3 to those seen in Figs. 4 and 6, whereupon the tooth 20 is withdrawn from the brake-lever 12, and thereby permits the spring 15 to expand and raise the outer end of the lever 12, so as to cause the brake-shoe 13 to bear against the flange 8 of the cam-cylinder 7 and immediately stop the rotation of the latter, it being understood that when the lever 26 is brought into the position seen in Fig. 4 and which corresponds with that seen in Fig. 8 said lever 26 depresses the rod 46, which in turn removes the projection 50 from the recess 51, as seen in Fig. 8, and the rod 52 being no longer held against the compressed spring 54 is moved outwardly, and with it the shipping-lever 53, which then shifts the belt 5 from the fixed pulley 3 to the loose one 4, and thus stops the machine, it being understood that the shifting of the belt from the fixed to the loose pulley is accomplished simultaneously with the application of the brake-shoe, thereby checking the momentum which would otherwise exist. When the broken yarn is repaired, the several parts are returned to the positions seen in Figs. 1, 2, 3, 7, and 9, after which the belt is again shifted from the loose to the fixed pulley. When the lever 33 is moved from the position seen in Fig. 6 to that seen in Figs. 1 and 2, it is apparent that the lever 41 is turned upon its fulcrum 42 by reason of the contact between the lever 33 and the stud 40, which projects from the lever 41 and rests upon the lever 33 and operates the brake-lever 12 so as to remove the shoe 13 from contact with the flange 8 and when brought into the position seen in Fig. 1 permits the spring 23 to contract and bring the tooth 20 in engagement with the lever 12, so as to retain the latter in the position seen in said Fig. 1.

45 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a stop-motion for knitting-machines, a rotatable cylinder having a flange, a drop-rod supported in inoperative position during the normal working condition of the yarn and adapted to be released under abnormal condition of the yarn, a brake disposed adjacent the rotatable cylinder and adapted to contact with the flange thereof, means for applying the brake, devices operative by the dropping of the drop-rod to release the brake to the action of its operating means, a belt-shipper, means for moving the same to ship the belt and devices actuated by movement of the brake-releasing devices to release the belt-shipper to the action of its operating means.

2. In a stop-motion for knitting-machines, a rotatable cylinder, a drop-rod supported in inoperative position during normal working

condition of the yarn and adapted to be released upon the breaking of a yarn, a brake disposed adjacent the cylinder to contact with a part thereof, means for applying the brake, brake-releasing device for releasing the brake to the action of its actuating means upon the dropping of the drop-rod, a belt-shipper, means for moving the same, to ship the belt, mechanism actuated by movement of the brake-releasing devices to release the belt-shipper to the action of its operating means and a lever under control of the said releasing devices to move the brake into inoperative position when said releasing devices are reset.

3. In a stop-motion for knitting-machines, a rotatable cylinder, a brake disposed adjacent said cylinder to contact therewith, means for operating said brake, a latch for normally maintaining the brake in inoperative position, devices for tripping said latch upon the breaking of a yarn to free the brake in the action of its operating means, a lever under the control of said devices for releasing the brake from contact with the cylinder and to enable the brake to be caught and held by said catch when the said tripping devices are reset.

4. In a stop-motion for knitting-machines, a rotatable cylinder, a brake disposed adjacent said cylinder and adapted to contact with a part thereof, means for operating said brake, a latch for normally maintaining the brake in inoperative position, devices for tripping said latch upon the breaking of a yarn to free the brake to the action of its operating means, a cam movable by said tripping devices, a belt-shipper, means to actuate it, mechanism disposed between the said cam and belt-shipper and operable by said cam to release the belt-shipper to the operation of its actuating means, and means operable on the resetting of the tripping devices to release the brake from the cylinder and to enable the latch to engage and hold the brake in its inoperative position.

5. In a stop-motion for knitting-machines, the combination of a rotatable cylinder, a brake disposed adjacent thereto and adapted to contact with a part thereof, means for operating said brake, a latch having an inclined face and adapted to engage the brake and maintain it in inoperative position, a pivoted lever having a portion to engage said inclined face of the latch and trip it from its engagement with the brake, devices operable upon the breaking of a yarn for actuating said pivoted lever, and means under control of said devices for disengaging the brake from the cylinder after the same has acted, and when the said devices are reset.

6. In a stop-motion for knitting-machines, the combination of a rotatable cylinder, a brake disposed adjacent thereto and adapted to contact with a part thereof, means for operating said brake, a latch having an inclined face and adapted to engage the brake and maintain it in inoperative position, a pivoted



lever having a portion to engage said inclined face of the latch and trip it from its engagement with the brake, said lever having a cam-surface, a belt-shipper, and connections between the belt-shipper and said cam-surface for actuating the belt-shipper upon movement of the pivoted lever, devices operable upon the breaking of a yarn for actuating said pivoted lever, and means under control of said devices for disengaging the brake from the cylinder after the same has acted, and when the said devices are reset.

7. In a stop-motion for knitting-machines, the combination of a rotatable cylinder having a flange, a brake disposed adjacent said cylinder and adapted to act upon said flange, a spring normally tending to apply the brake, a latch for maintaining the brake from action against said spring, said latch having an inclined face, a pivoted lever for acting upon said inclined face to trip the latch, means for actuating said lever upon the breaking of a yarn, and a lever engaging the free end of the brake and operable to release the same from the cylinder and depress the free end that it may be engaged by the latch when the actuating means are reset.

8. In a stop-motion for knitting-machines, the combination of a rotatable cylinder having a flange, a brake disposed adjacent said cylinder and adapted to act upon said flange, a spring normally tending to apply the brake, a latch for maintaining the brake from action against said spring, said latch having an inclined face, a pivoted lever for acting upon said inclined face to trip the latch, said pivoted lever having a cam on its under surface, a spring-acting belt-shipper, tripping devices for the belt-shipper under control of said cam for releasing the belt-shipper to the action of its spring, means for actuating said lever upon the breaking of a yarn, and a lever engaging the free end of the brake and operable to re-

lease the same from the cylinder and depress the free end that it may be engaged by the latch when the actuating means are reset.

9. In a stop-motion for knitting-machines, a drop-rod normally held in elevated position during proper working condition of the yarn and adapted to be released upon the breaking of a yarn, a trigger adapted to be operated by the dropping of the drop-rod, a rotatable cylinder, a brake adapted to act upon a portion thereof, a spring-latch for holding the brake out of action, a pivoted lever for tripping said latch, devices disposed between the trigger and pivoted lever to operate the latter when the trigger is tripped, means operable by resetting of said devices for releasing the brake and moving it in position to be engaged by the latch, the devices between the trigger and pivoted lever being yielding in one direction to permit resetting of said devices while the latch is disengaged from the brake.

10. In a stop-motion for knitting-machines, the combination of a rotatable cylinder having a flange, a pivoted brake, adapted to engage with said flange, a latch for holding the brake out of action, said latch having an inclined face, a pivoted lever for tripping said latch, said lever having a cam, a belt-shipper, means for operating it, devices operable by the said cam for releasing the belt-shipper to the action of its actuating means, a trigger, a drop-rod, devices disposed between the trigger and pivoted lever for operating the latter on the dropping of the drop-rod, a lever having one end disposed adjacent one end of the pivoted brake and its opposite end under control of said devices, whereby upon resetting of said devices the brake is brought into position to be engaged by the latch.

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Witnesses:

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