

No. 729,201.

PATENTED MAY 26, 1903.

D. MILLS.

STOP MECHANISM FOR SEWING MACHINES.

APPLICATION FILED NOV. 5, 1901.

NO MODEL.

4 SHEETS—SHEET 1.

Fig. 1.

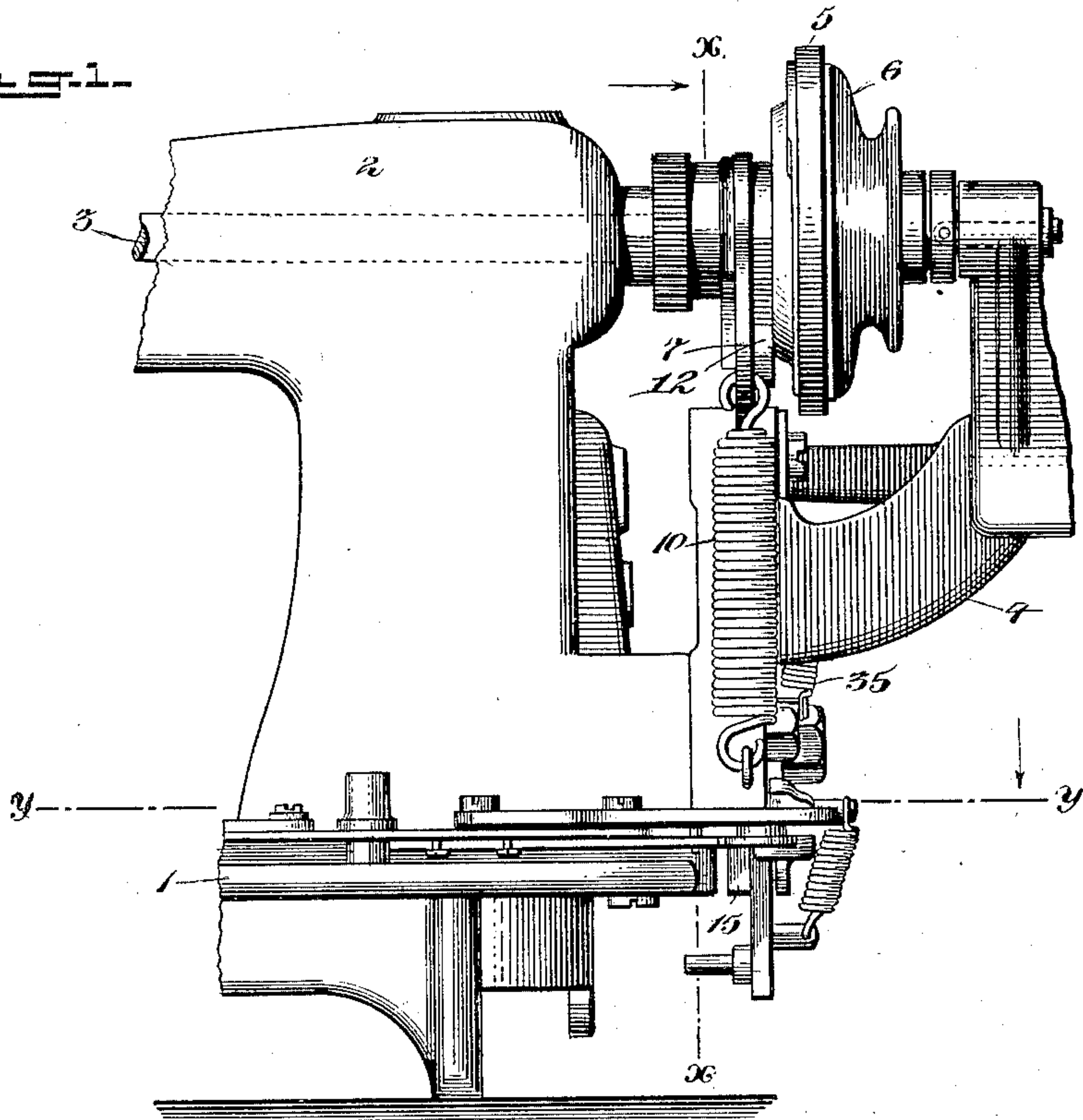
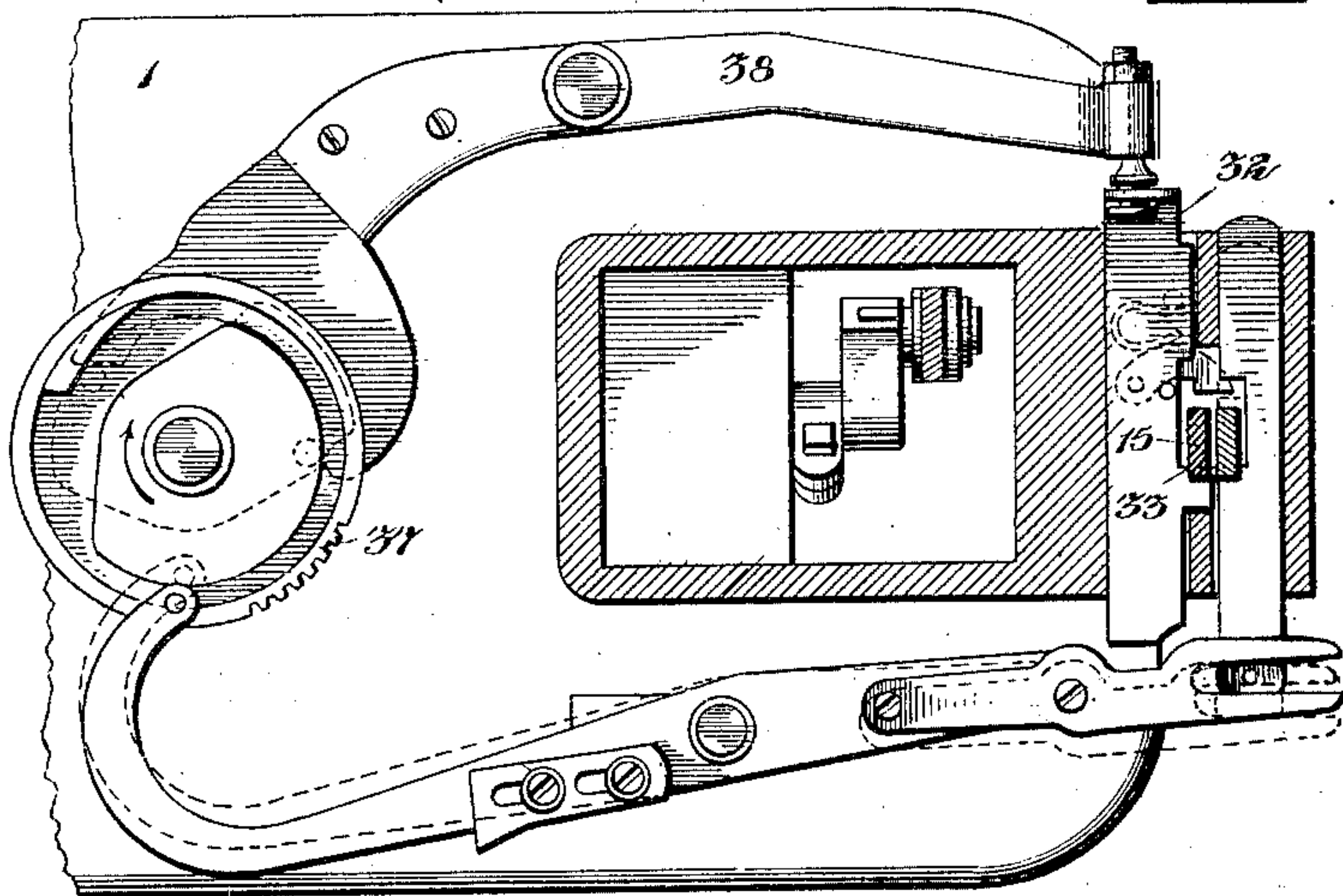


Fig. 2.



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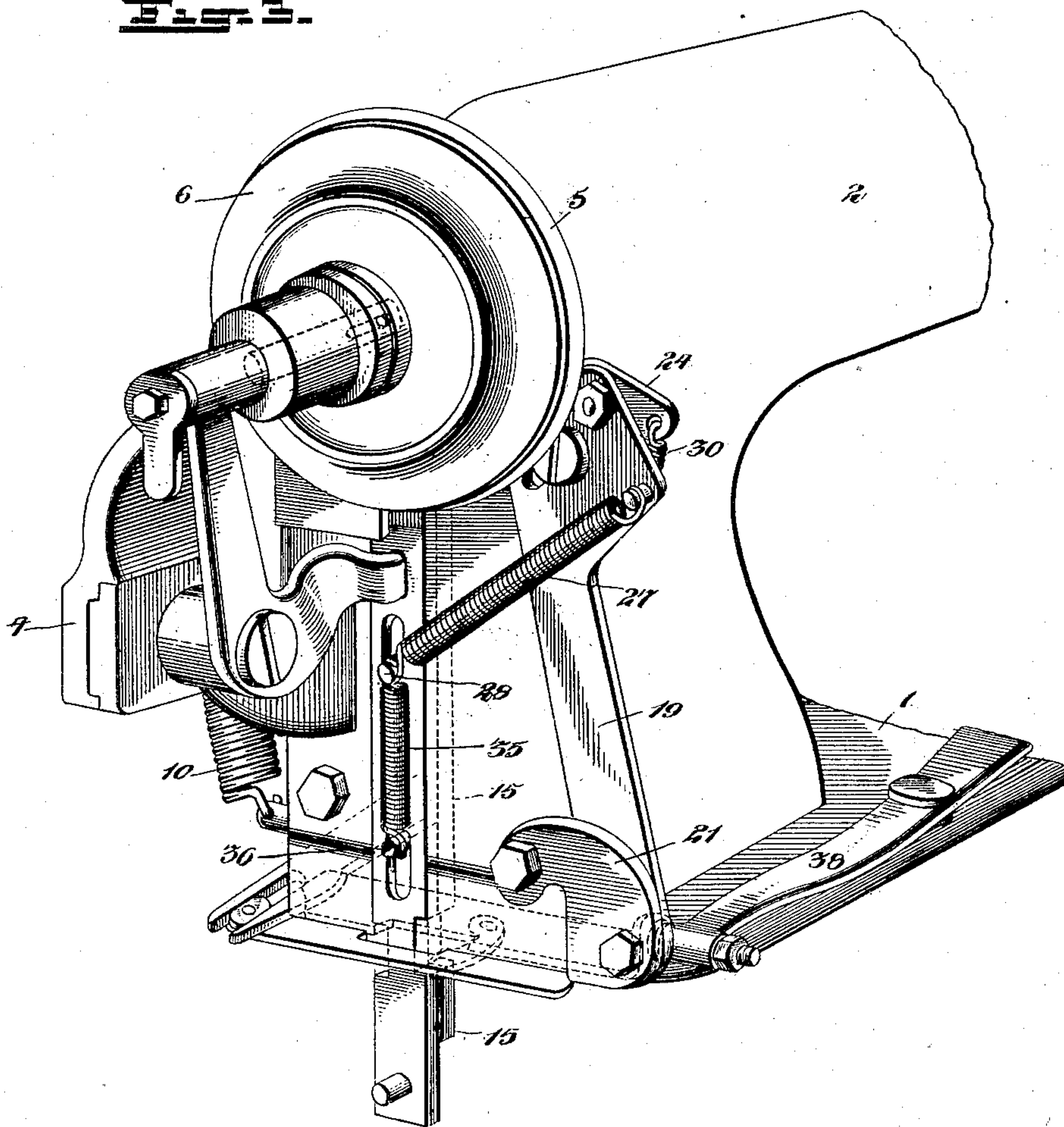
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4 SHEETS—SHEET 2.

## References



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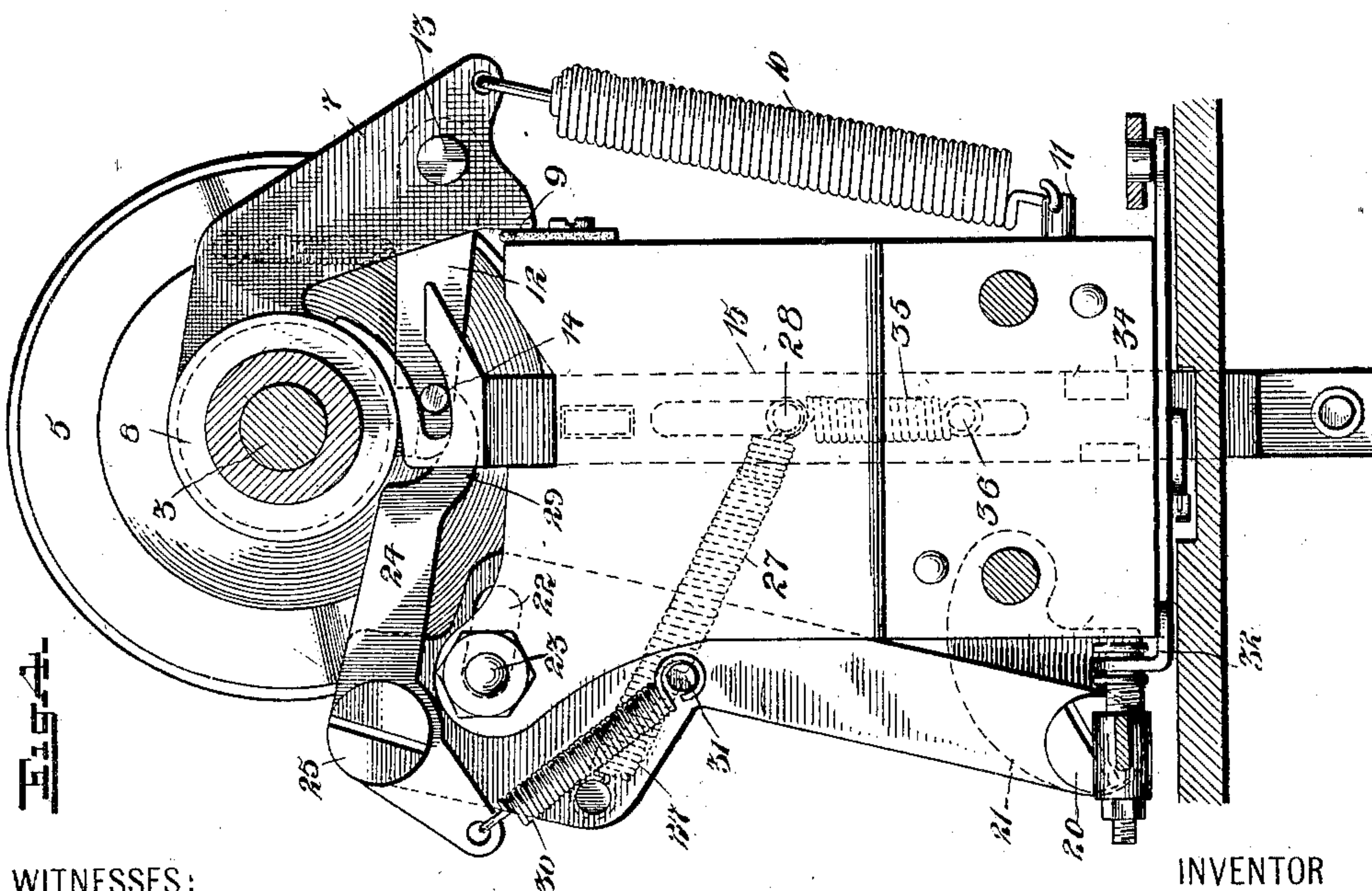
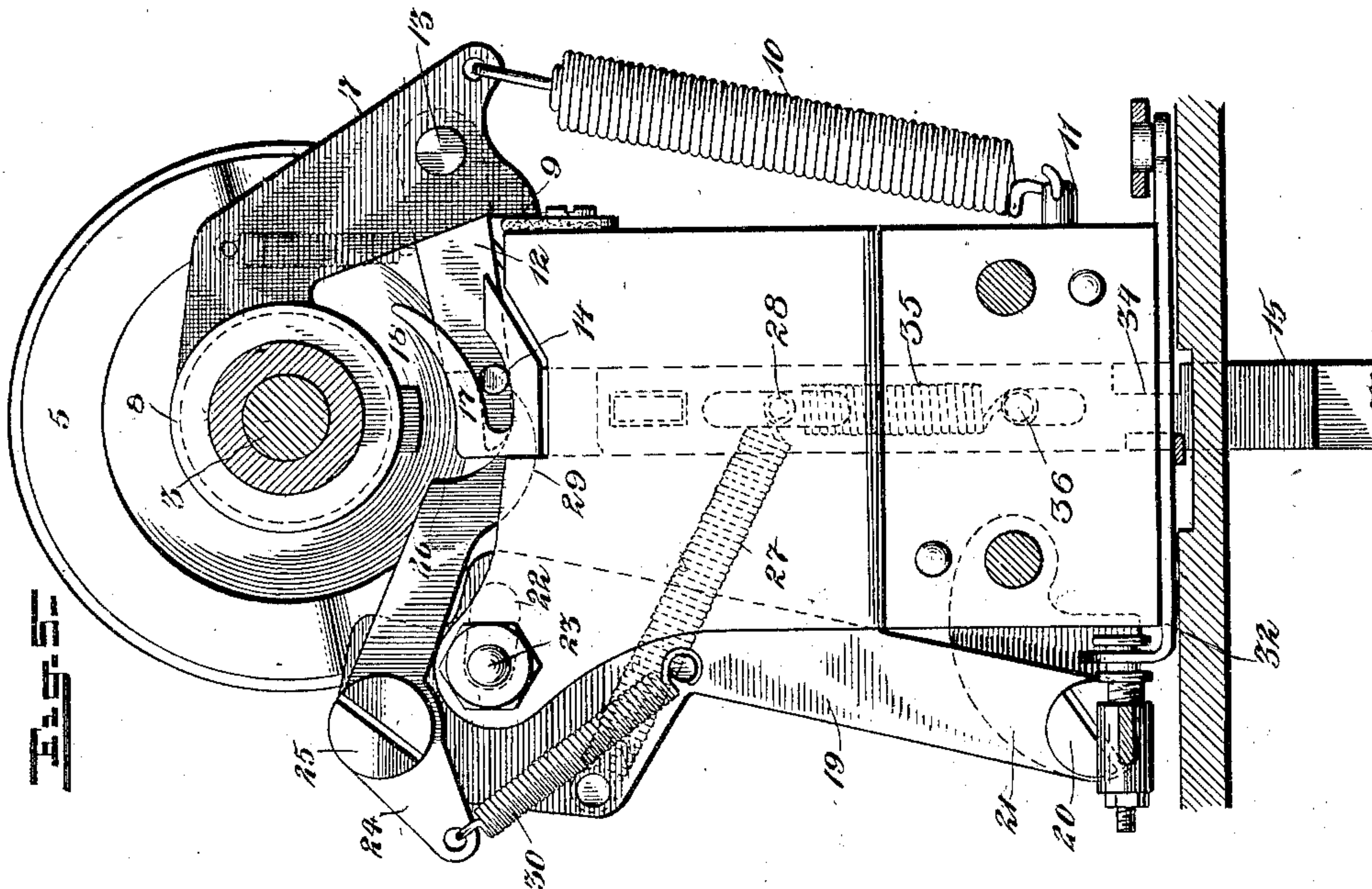
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4 SHEETS—SHEET 3.



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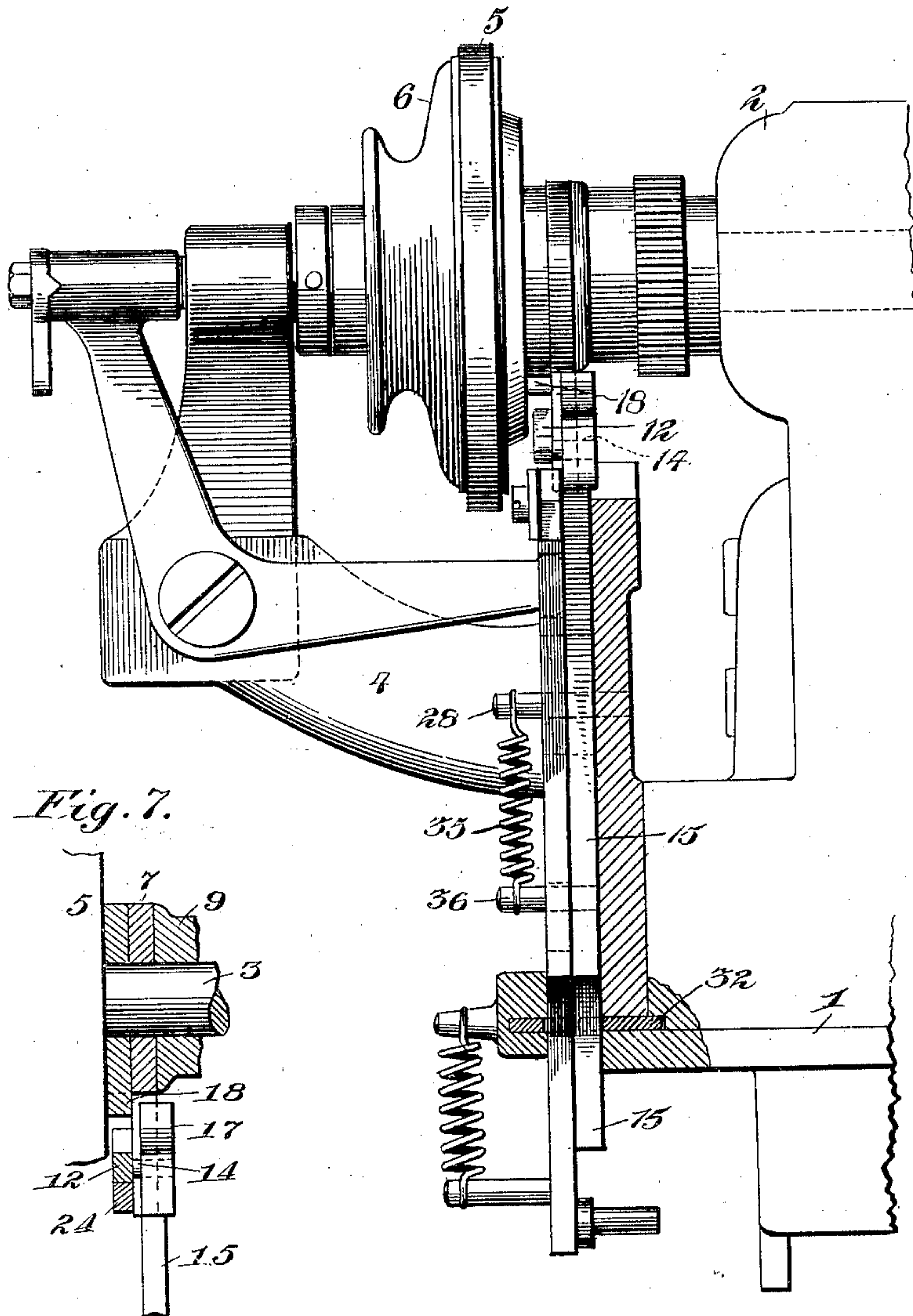
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4 SHEETS—SHEET 4.

Fig. 6.



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# UNITED STATES PATENT OFFICE.

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## STOP MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 729,201, dated May 26, 1903.

Original application filed August 29, 1900, Serial No. 28,395. Divided and this application filed November 5, 1901. Serial No. 81,178. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL MILLS, a citizen of the United States, residing at Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Stop Mechanism for Sewing-Machines, of which the following is a specification.

This invention, which is a division of that forming the subject-matter of the application filed by me August 29, 1900, and bearing Serial No. 28,395, relates to stop mechanism for sewing-machines; and it consists of improvements upon the stop mechanism disclosed in Letters Patent No. 635,267, granted to me October 17, 1899.

In certain classes of sewing-machines, such as buttonhole-stitching and button-sewing machines, it is desirable that the operation of the machine should be stopped at certain predetermined times and with certain of the parts, such as the needle and the take-up, in certain determined positions; and it has been the object of this invention to provide an improved stop mechanism of simple and durable construction by means of which the machine may be quickly brought to a stop within a partial revolution of the driving-shaft and with the parts in the desired positions without undue jar or shock. This object I secure by means of the novel construction, arrangement, and combinations of parts as herein-after set forth in detail and pointed out in the claims.

Referring to the accompanying drawings, forming a part of this specification, Figure 1 is a front elevation of a portion of a "Standard" buttonhole-sewing machine having my invention applied thereto. Fig. 2 is a sectional plan view of a portion of the machine, taken through line *y y* of Fig. 1, showing the connection between certain parts of the stop mechanism and its actuating devices. Fig. 3 is a perspective view of a portion of the rear end of the machine. Figs. 4 and 5 are enlarged sectional views through line *x x* of Fig. 1 looking in the direction indicated by the arrow and showing the position of certain parts of the stop mechanism when in oper-

ative and inoperative positions, respectively. Fig. 6 is an enlarged view of a portion of the rear end of the machine looking toward the side opposite that shown in Fig. 1, the same being partly in section on a line adjacent to the center thereof. Fig. 7 is a detail sectional view showing the relative positions of certain operative parts of the stop mechanism.

In said drawings the head or frame of the machine, comprising the bed-plate 1 and overhanging arm 2, the driving-shaft 3, supported in bearings in said arm and extended at its rear end beyond the latter and having a bearing in a bracket-arm 4, secured to the rear end of the machine, the fly-wheel or pulley 5, made fast on said driving-shaft, so as to rotate therewith, and the driving-pulley 6, loosely mounted on the driving-shaft, so as to rotate thereon and also be capable of having a longitudinal sliding movement whereby it may be moved to and from a position of frictional engagement with the fast pulley, are all substantially the same as disclosed in my said prior patent, No. 635,267.

In accordance with my present invention and as a means whereby the operation of the machine may be stopped with the parts in a desired position I provide a lever 7, which is loosely connected at one end with a sleeve 8 upon the driving-shaft, so as to turn and hinge thereon, and at its opposite end is yieldingly held in a normal position against a stop 9 on the frame of the machine by means of a coiled spring 10, which latter connects at one end with said lever and at its opposite end with a fixed pin 11 on the machine-frame. A stop-lever 12 is pivotally connected at one end with said carrying-lever 7 at 13 and adjacent to its opposite end is provided with a laterally-projecting pin 14, which is engaged by the upper forked end of a vertically-acting slide-bar 15, which latter is supported to slide in a vertically-arranged groove or guideway formed in the rear end of the machine-frame. The stop-lever 12 is provided with a shoulder 17 at its inner end and is adapted to be operated by the vertically-acting slide-bar 15 to move its said shoulder to and from a position



for engaging with a lug or shoulder 18, located on the hub of the fast pulley 5. In the operation of the machine the slide-bar 15 is held in a lowered position by means as will hereinafter be described, so as to hold the shoulder 17 on the stop-lever 12 below the path of the said lug 18 on the fast pulley, as shown in Fig. 5. At a certain desired time in the operation of the machine, however, and after the driving-pulley has been released from operative engagement with the fast or driven pulley, as will hereinafter be referred to, the slide-bar 15 will be automatically released and moved upward to raise the connected end of the stop-lever 12 and locate its said shoulder 17 in the path of the lug 18 on the fast pulley 5, as shown in Fig. 4, whereby it will engage therewith and stop rotation of the pulley and connected driving-shaft in such direction. In the event of the projection 18 on the fast pulley coming into contact with the stop-lever with any considerable degree of force, as is usually the case, the said stop-lever and its supporting-lever 7 will yield outwardly against the pressure of the spring 10, and so prevent injurious jar or strain to the parts. After the force of the momentum is spent the spring 10 then returns the pulley back to its normal and proper stopping position, which is regulated by the contact of the lever 7 against the stop 9. The slot or opening between the forks at the upper end of the slide-bar 15, into which the pin 14 on the stop-lever extends, is formed in the arc of a circle substantially parallel with the periphery of the pulley-hub on which the lug 18 is located, so that the stop-lever will be guided in a path to retain its engagement with the said lug 18 when forced outwardly under the momentum of the pulley 5, as described.

After the pulley 5 has been stopped in its rotation in one direction by the impact of its lug 18 against the yielding or resilient stop-lever 12 the same obviously has a backward or recoil movement which it is necessary to limit in order that the pulley may be brought to a stop with its connected parts in a desired definite position. I provide for the stopping of the pulley on such backward or recoil movement in a manner as follows: A lever 19 is pivotally connected at its lower end at 20 with a bracket-arm 21, attached to the frame of the machine, and adjacent to its upper end is provided with an elongated slot 22, through which a bolt 23 on the frame of the machine extends to guide and limit the movement of the lever at such end. A lever 24, which I term the "recoil stop-lever," is pivotally connected at 25 with the upper end of said lever 19 and is arranged with one end 26 extending into a position opposite the end of the stop-lever 12 and with a space between the same into which the lug 18 of the fast pulley is adapted to be received and engaged at its opposite sides when the machine is to be stopped, as shown in Fig. 4. A coiled spring 27, connecting at one end with a fixed pin 28

on the machine-frame and at its opposite end with the lever 19, as best shown in Fig. 3, serves to yieldingly hold said lever in a normal position, with one of the end walls of the slot 22 in contact with the bolt 23, in which position of the same the recoil-lever 24, carried thereby, is in its normal position relative to the stop-lever to receive the lug 18 therebetween. In order that the inner end of the recoil-lever 24 may be raised and lowered with the coöperating stop-lever 12 when the latter is moved to and from its operative position by the connecting slide-bar 15, it is provided with an extension 29, which projects beneath the adjacent end of the said stop-lever and is yieldingly held in contact therewith by means of a coiled spring 30, which connects at one end with the outer end of the recoil-lever 24 and at its opposite end with a pin 31 on the lever 19. By such construction and arrangement of parts the inner end of the recoil-lever 24 will be drawn downward by and with the stop-lever 12 when the latter is lowered to its inoperative position below the path of movement of the lug 18 on the pulley, as shown in Fig. 5, and will be moved upward therewith under the action of the spring 30 to an operative position for engaging with the said lug 18, as shown in Fig. 4.

When the stop-lever 12 and recoil-lever 24 have been moved to their operative positions, as shown in Fig. 4, the lug 18 on the pulley 5 will during the revolution of the latter strike against the recoil-lever 24 and force the same downward and out of its path and then be engaged by the stop-lever 12 in the manner as hereinbefore described. Immediately after the lug 18 has passed over and beyond the end of the recoil-lever 24 the latter is again returned to its raised position under the action of the spring 30 to receive the lug 18 thereagainst in its backward or recoil movement and yieldingly limit the rotation of the pulley and driving-shaft in such direction, the stop formed by the lever 24 being yielding under the tension of the spring 27 in the same manner and for the same purpose as the first or primary stop 12 under the tension of the spring 10, as hereinbefore described. The opposing stops formed by the adjacent ends of the stop-lever 12 and recoil-lever 24 being supported as described thus act to yieldingly stop the machine within a partial revolution of the driving-shaft and without injurious jar or strain to the parts.

When the machine is in operation, the vertically-acting slide-bar 15 is held in its lowered position, with the parts 12 and 24 below the path of the lug 18 on the fast pulley 5, by means of a horizontally-movable slide-latch 32, which is supported to slide on the bed-plate of the machine beneath an overhanging portion of the machine-frame, as clearly shown in Figs. 4 and 5. This latch 32 is provided with a lip or projection 33 at one side thereof, (see Fig. 2,) which engages with the slide-bar 15 within a notch 34 in one side there-



of to hold the same in its said lowered position, and when the machine is to be stopped the latch is withdrawn from its engagement with the slide-bar 15 and the latter is automatically raised under the action of a spring 35, which latter connects at one end with the stationary pin 28 and at its opposite end with a pin 36 on the said slide-bar 15. To again start the machine, the slide-bar 15 is returned by a suitable connection to its lowered position to be engaged and held by the slide-latch 32, as before described.

The slide-latch 32 may be operated to control the action of the stop mechanism in the manner described by any suitable means; but the same will preferably be automatically controlled from a rotating driving-gear 37, forming part of the feeding mechanism of the machine, through the medium of a lever 38. As the means for automatically controlling the operation of the stop mechanism from the feeding mechanism, however, and also the means for automatically releasing the loose driving-pulley 6 from operative engagement with the fast pulley 5 prior to the action of the stop mechanism form a part of the subject-matter of my said pending application, bearing Serial No. 28,395, of which this present application is a division, further description of such parts will be unnecessary herein.

Although my improved stop mechanism has been shown and described in connection with a sewing-machine, it will be obvious that the same may be applied to machines of other character.

Having thus set forth my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a driving-shaft, of a stop mechanism comprising two stops, one being disposed to engage with a part on said shaft and limit rotation of the latter in one direction and the other being disposed to engage with a part on the shaft and limit the recoil movement of the same.

2. The combination, with a driving-shaft, of a stop mechanism comprising two stops, one being resilient and disposed so as to engage with a part on said shaft and limit rotation of the latter in one direction and the other being disposed to engage with a part on the shaft and limit the recoil movement of the same.

3. The combination, with a driving-shaft, of a stop mechanism comprising two resilient stops, one being disposed to engage with a part on said shaft and limit rotation of the latter in one direction and the other being disposed to engage with a part on the shaft and limit the recoil movement of the same.

4. The combination, with a driving-shaft, of a stop mechanism comprising two stops, one being disposed to engage with a part on said shaft and limit rotation of the latter in one direction and the other being disposed to engage with a part on the shaft and limit the

recoil movement of the same, and means for moving said stops to and from an operative position for engaging with the coacting part on the driving-shaft.

5. The combination, with a driving-shaft provided with a lug or shoulder, of a stop mechanism comprising two stops, one being disposed to receive the impact of said lug and limit rotation of the shaft in one direction, and the other being disposed to limit the recoil of said lug, and means for moving one of said stops to and from a position within the path of movement of the lug.

6. The combination, with a driving-shaft provided with a lug or shoulder, of a stop mechanism comprising two stops, one being disposed to receive the impact of said lug and limit rotation of the shaft in one direction, and the other being disposed to limit the recoil of said lug, and means for moving said stops to and from a position within the path of movement of the lug.

7. The combination, with a driving-shaft provided with a lug or shoulder, of a stop mechanism comprising two resilient stops, one being disposed to receive the impact of said lug and limit rotation of the shaft in one direction, and the other being disposed to limit the recoil of said lug, and means for moving said stops to and from a position within the path of movement of the lug.

8. The combination, with a driving-shaft provided with a lug or shoulder, of a stop mechanism comprising two pivoted stops, one being disposed to receive the impact of said lug and limit rotation of the shaft in one direction, and the other being disposed to limit the recoil of said lug, and means for moving said stops to and from a position within the path of movement of the lug.

9. The combination, with a driving-shaft provided with a lug or shoulder, of a stop mechanism comprising two stops, one being disposed to receive the impact of said lug and limit rotation of the shaft in one direction, and the other being disposed to limit the recoil of said lug, a support carrying each of said stops yieldingly held in a normal stationary position, and means for moving said stops to and from a position within the path of movement of the lug.

10. The combination, with a driving-shaft provided with a lug or shoulder, of a stop mechanism comprising two stops capable of independent movement, one of said stops being disposed to receive the impact of said lug and limit rotation of the shaft in one direction, and the other being disposed to limit the recoil of said lug, and a common means for effecting the movement of said stops to and from a position within the path of movement of the lug.

11. The combination, with a driving-shaft provided with a lug or shoulder, of a stop mechanism comprising two stops capable of independent movement in opposite directions, one of said stops being disposed to receive the



impact of said lug and limit rotation of the shaft in one direction, and the other being disposed to limit the recoil of said lug, and means, including an operating-bar, for moving said stops to and from a position within the path of movement of the lug.

12. The combination with a driving-shaft provided with a lug or shoulder, of a stop mechanism comprising two pivoted stops capable of independent movement, one of said stops being disposed to receive the impact of said lug and limit rotation of the shaft in one direction, and the other being disposed to limit the recoil of said lug, movable supports to which said stops are pivoted yieldingly held in a normal stationary position, and means independent of said stop-supports for moving the stops to and from a position within the path of movement of the lug.

13. The combination, with a driving-shaft provided with a lug or shoulder, of a stop

mechanism comprising two pivoted stops, one of said stops being disposed to receive the impact of said lug and limit rotation of the shaft in one direction, and the other being disposed to limit the recoil of said lug, and means, including an operating-bar and a spring, for moving the stops to and from a position within the path of movement of the lug.

14. The combination, with a driving shaft provided with a lug or shoulder, a stop mechanism comprising a pivoted stop, and a slide-bar having connection with said stop for moving the same to and from an operative position within the path of movement of the lug, and also having means for guiding the stop and retaining it in the path of movement of the lug.

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