

(No Model.)

5 Sheets—Sheet 1.

A. R. STONE.
NEWSPAPER ELEVATOR.

No. 487,791.

Patented Dec. 13, 1892.

Fig. 1.

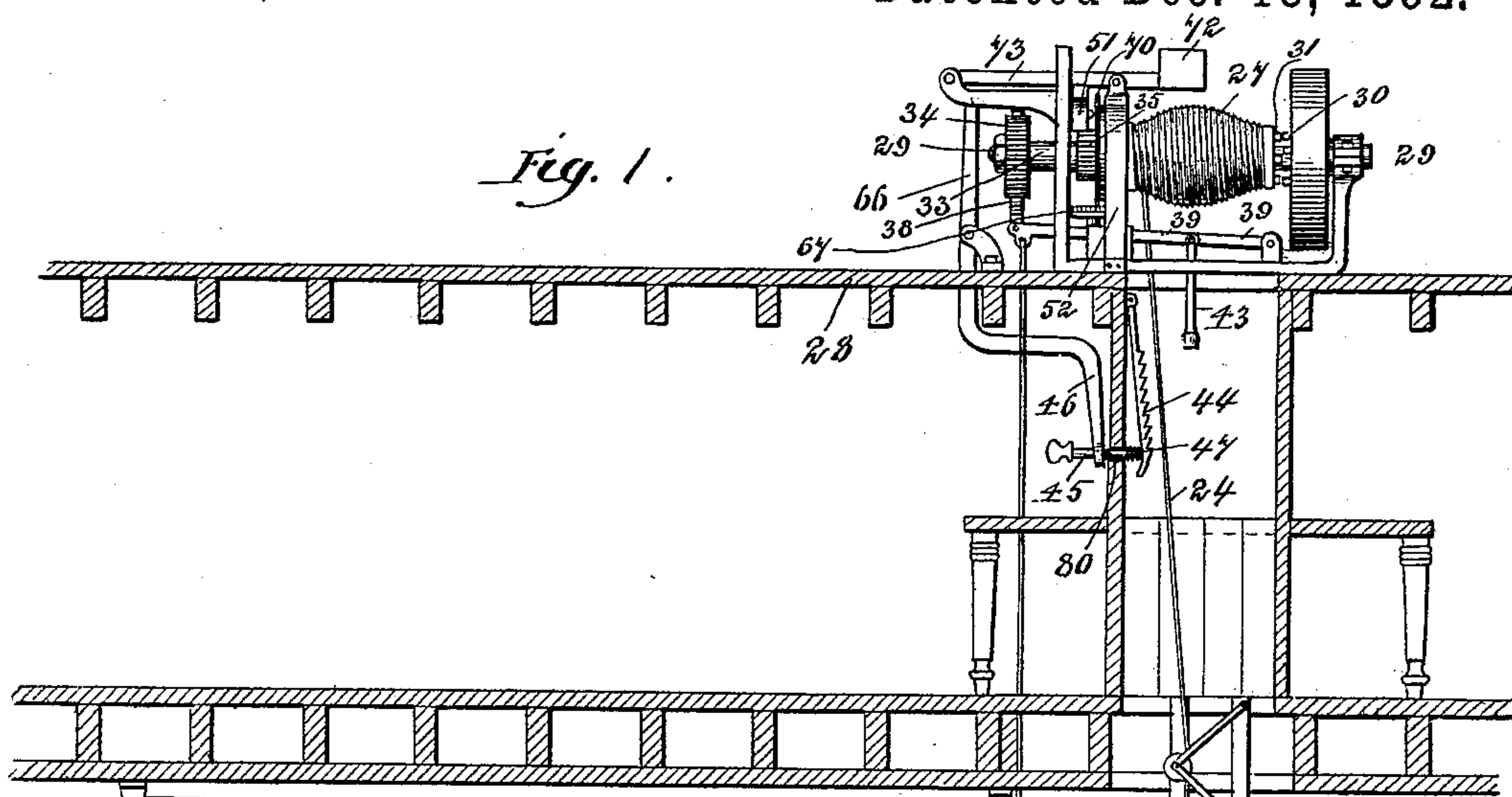


Fig. 2.

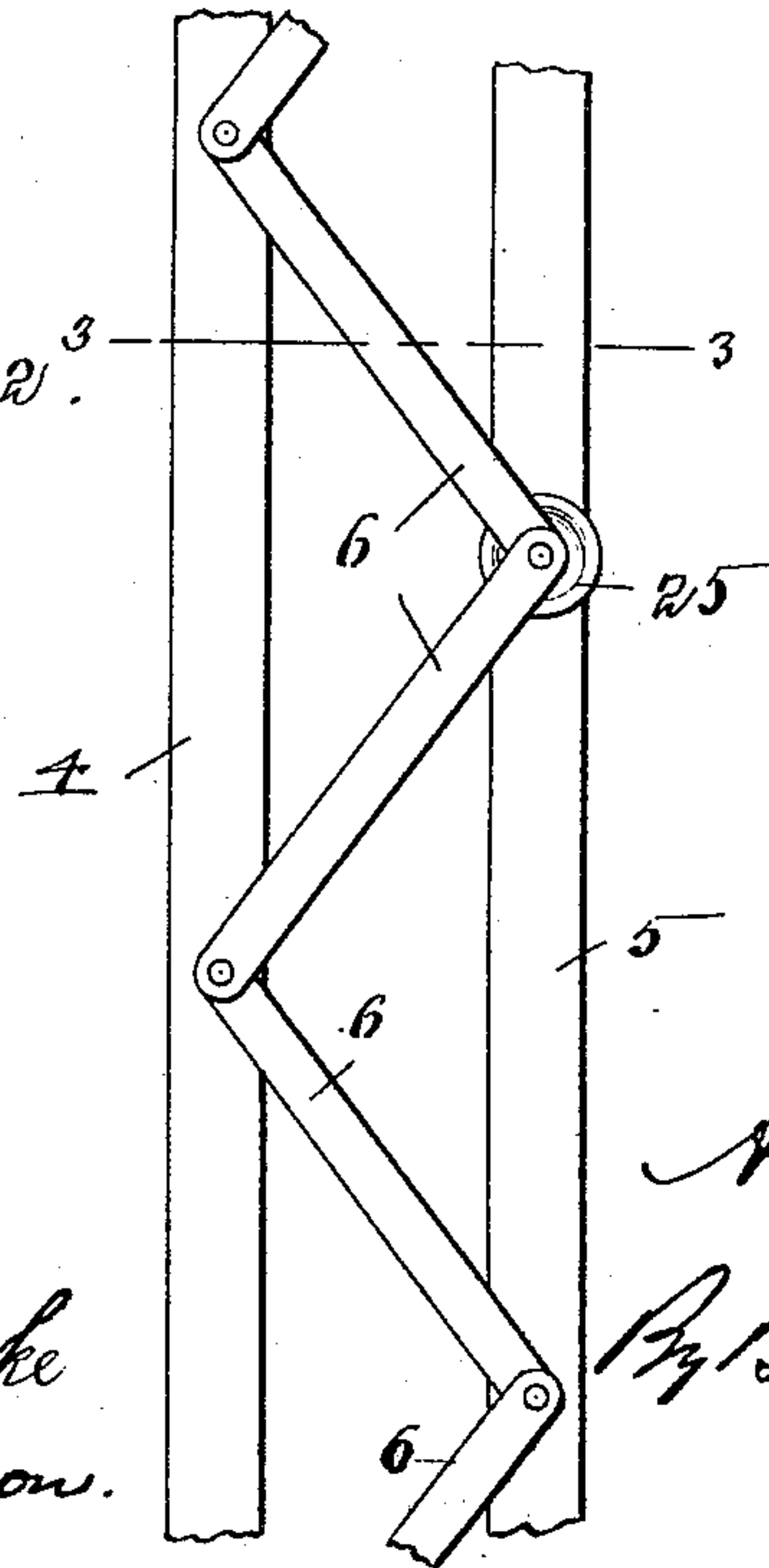
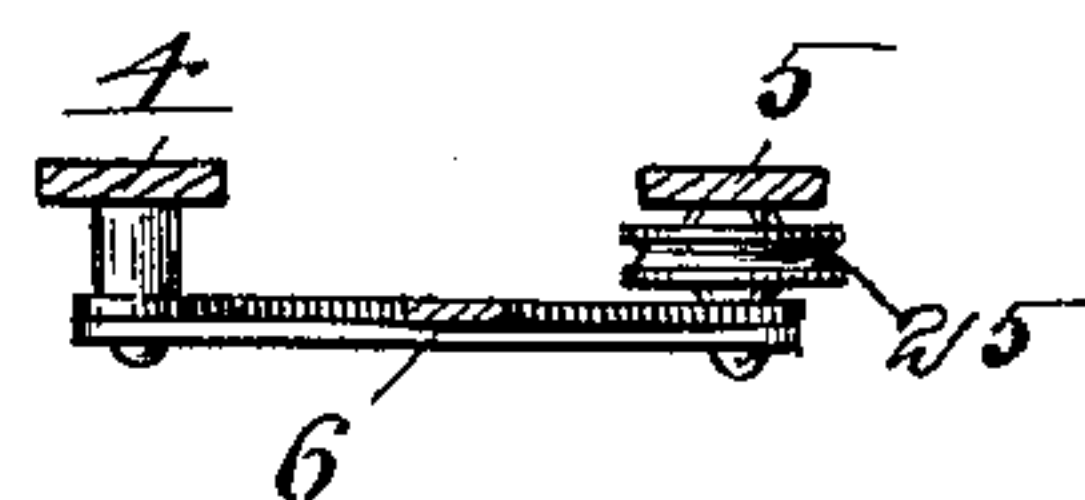


Fig. 3.



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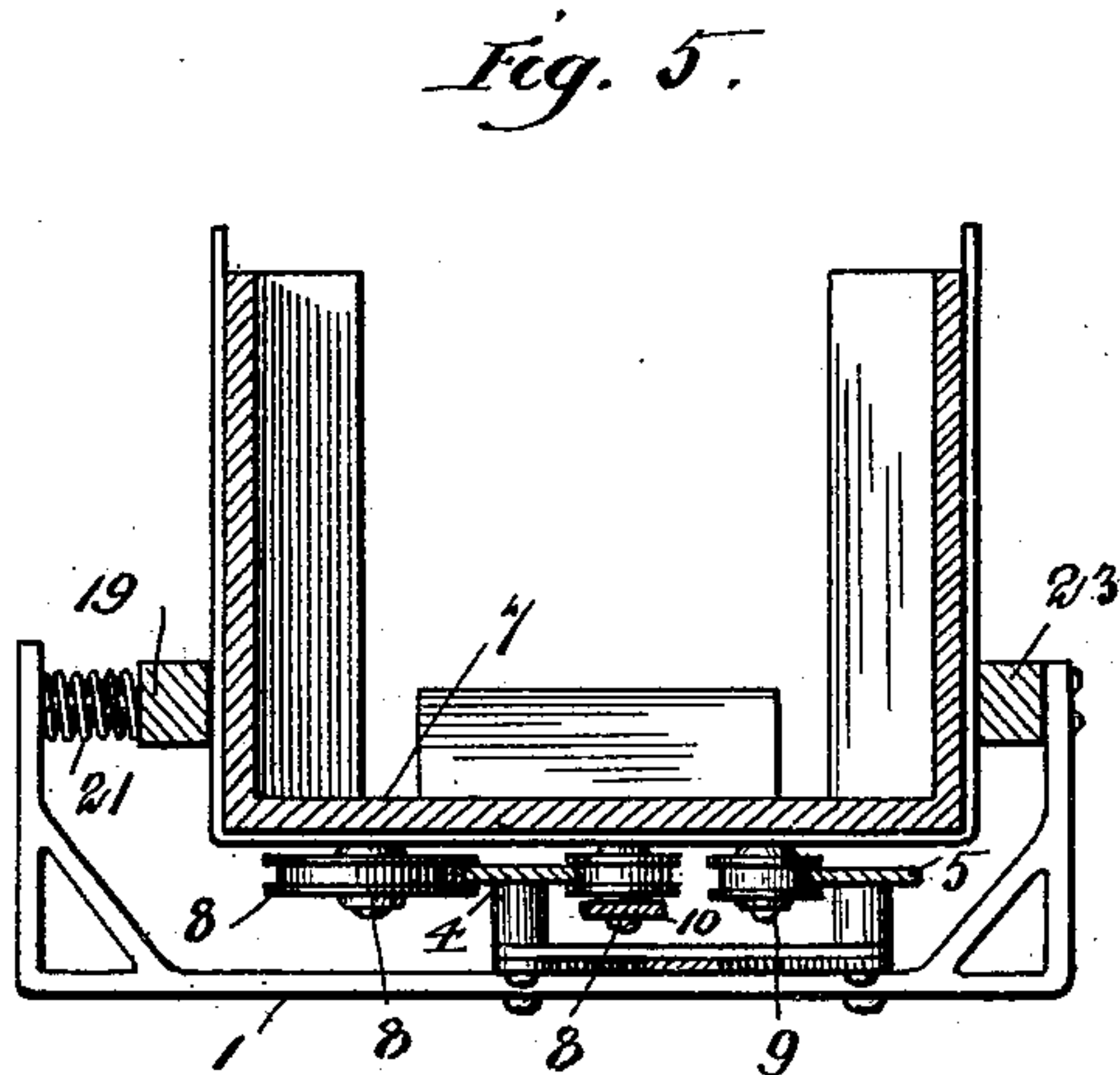
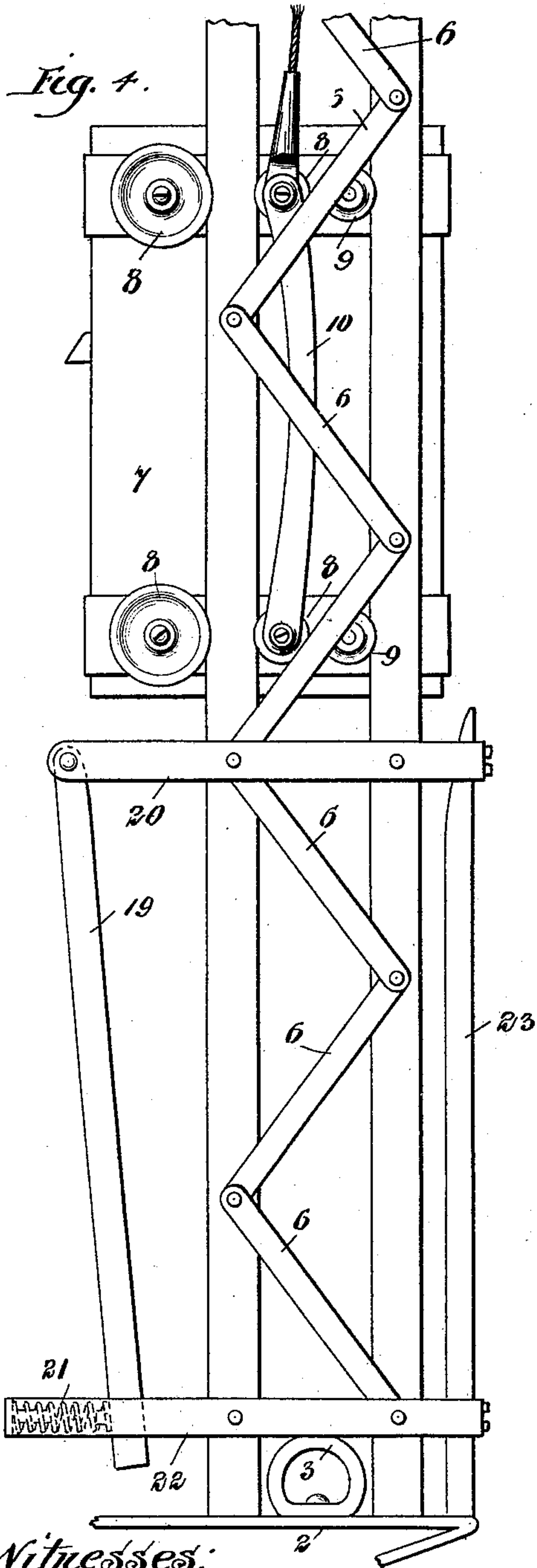
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5 Sheets—Sheet 3.

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Fig. 6.

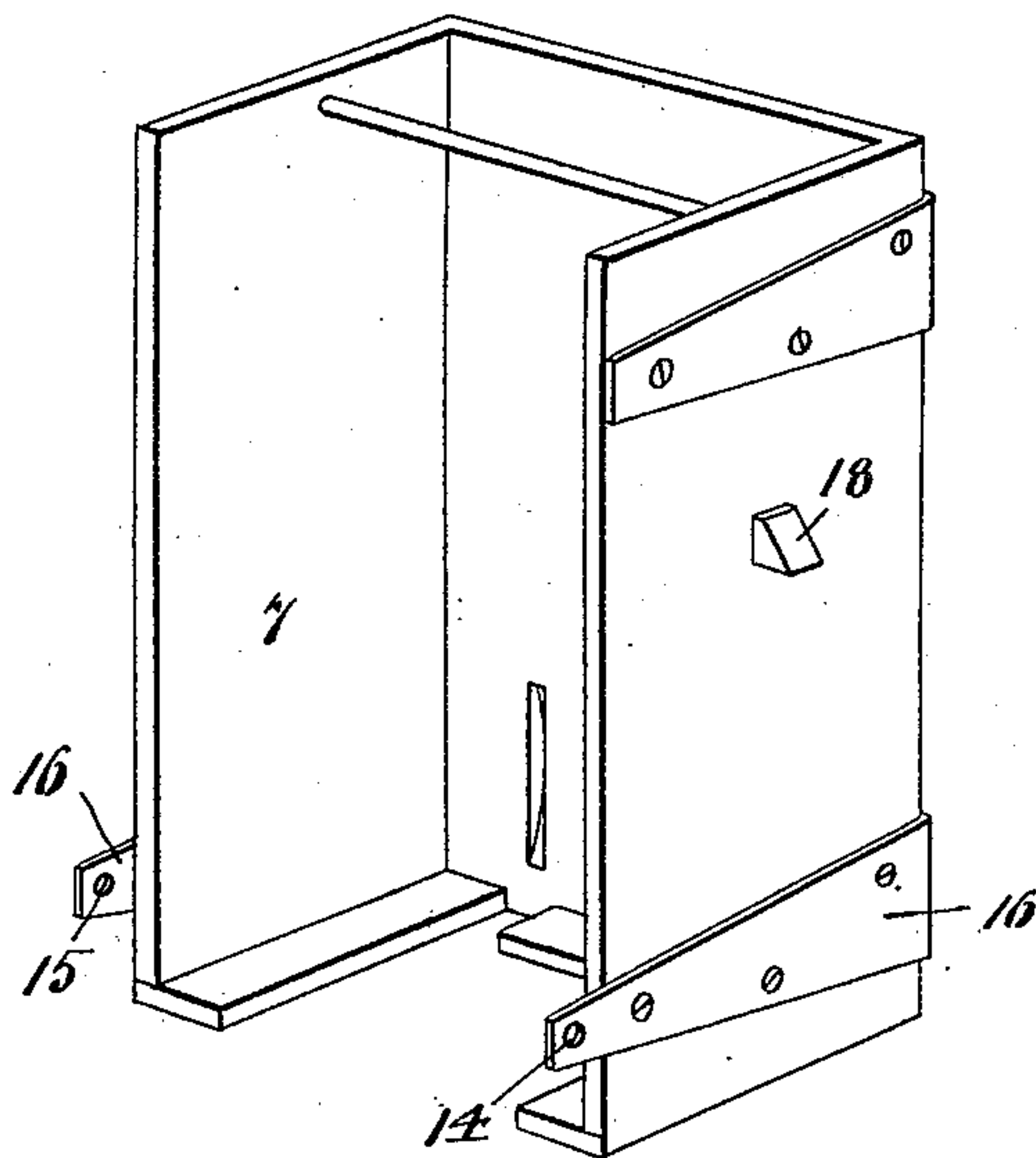


Fig. 7.

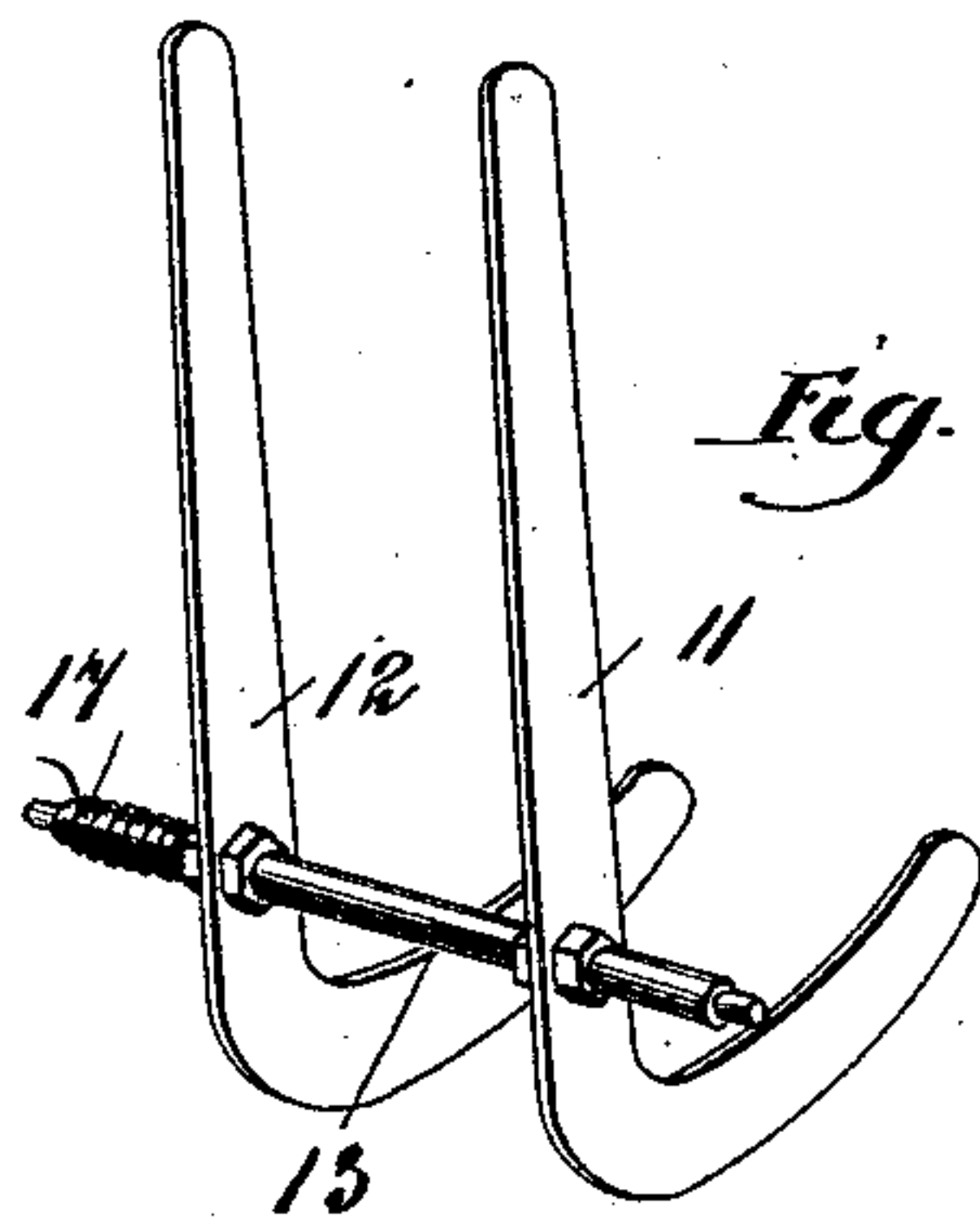
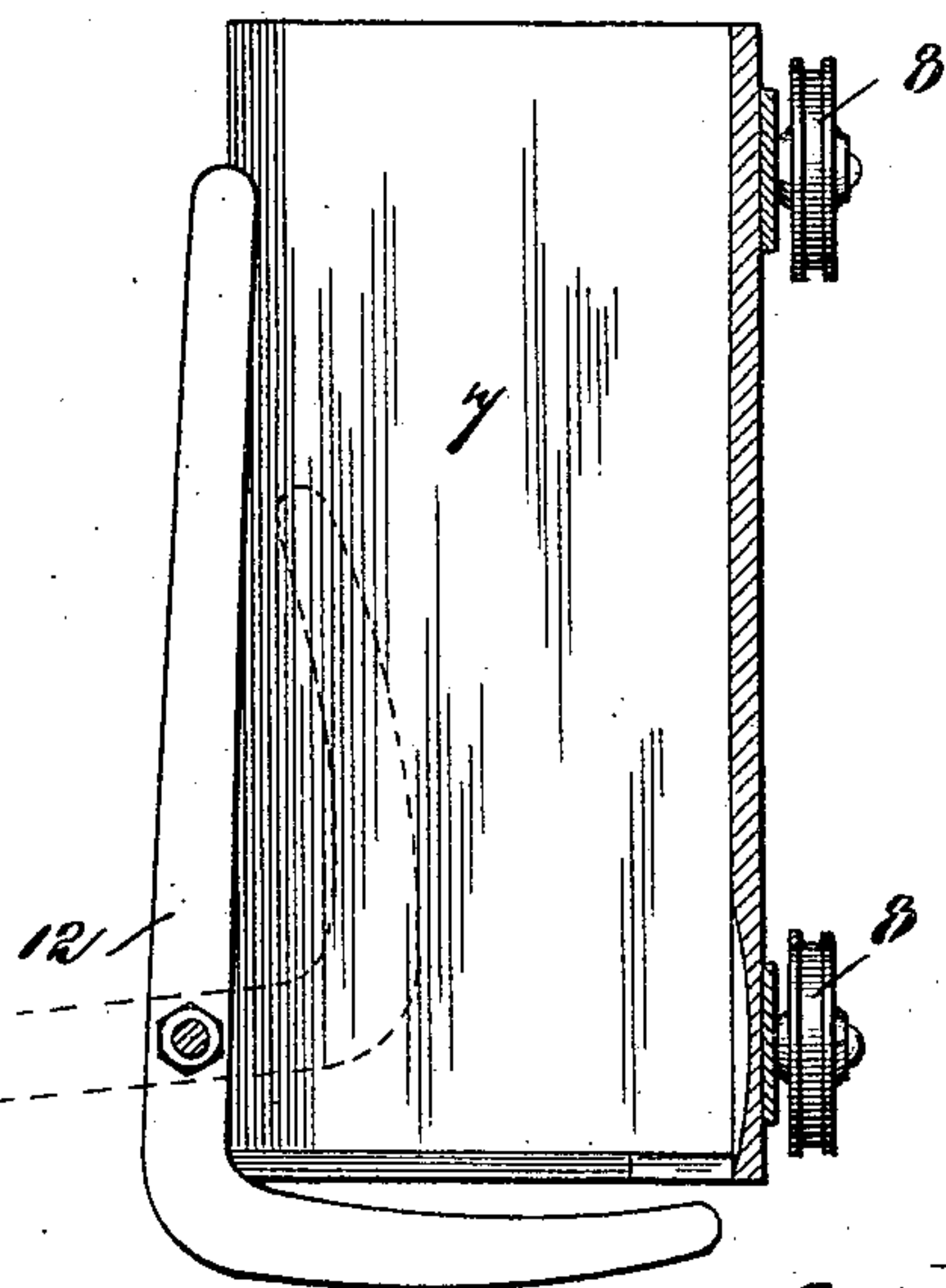


Fig. 8.



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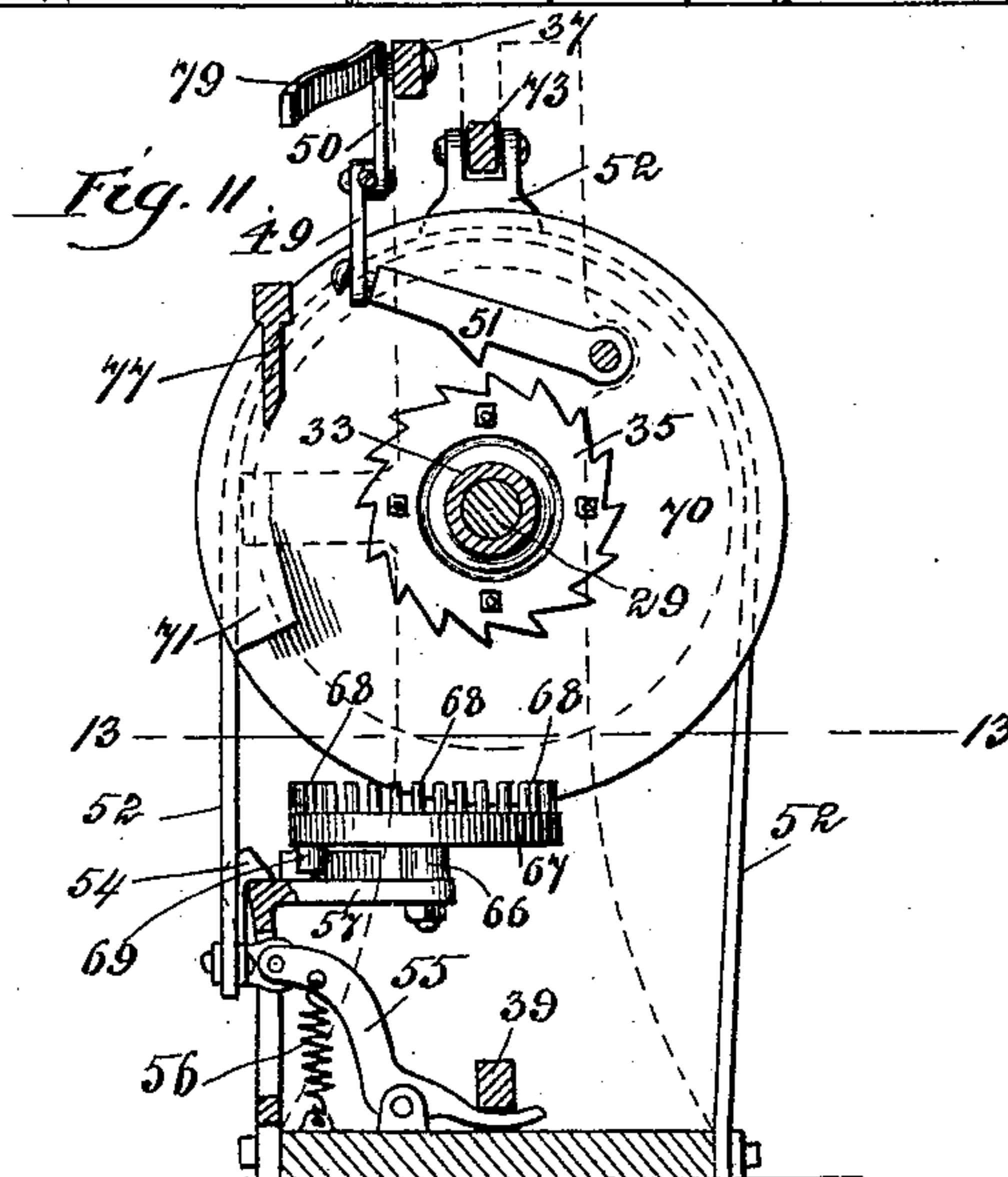
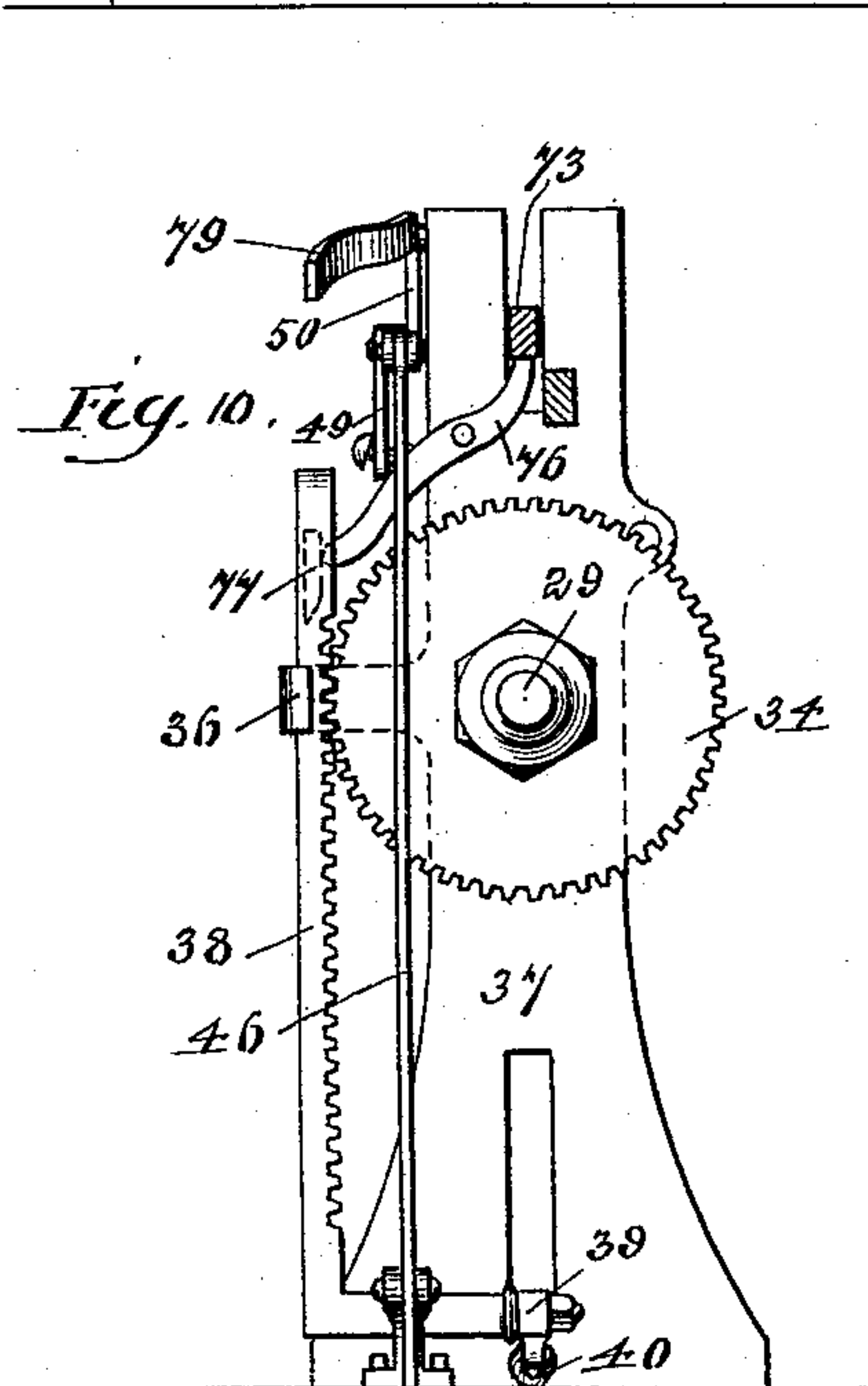
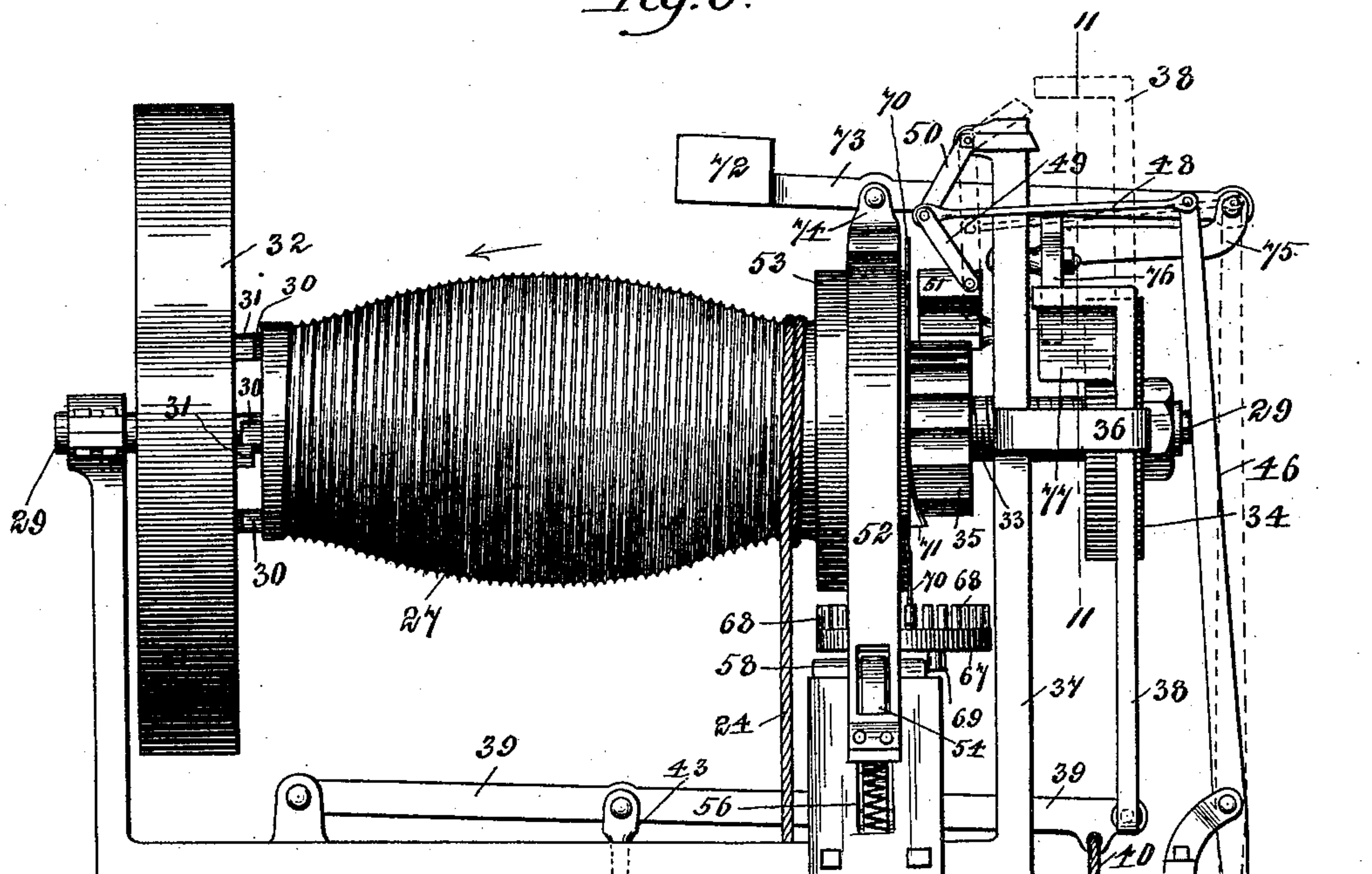
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Fig. 9.



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(No Model.)

5 Sheets—Sheet 5.

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Fig. 12.

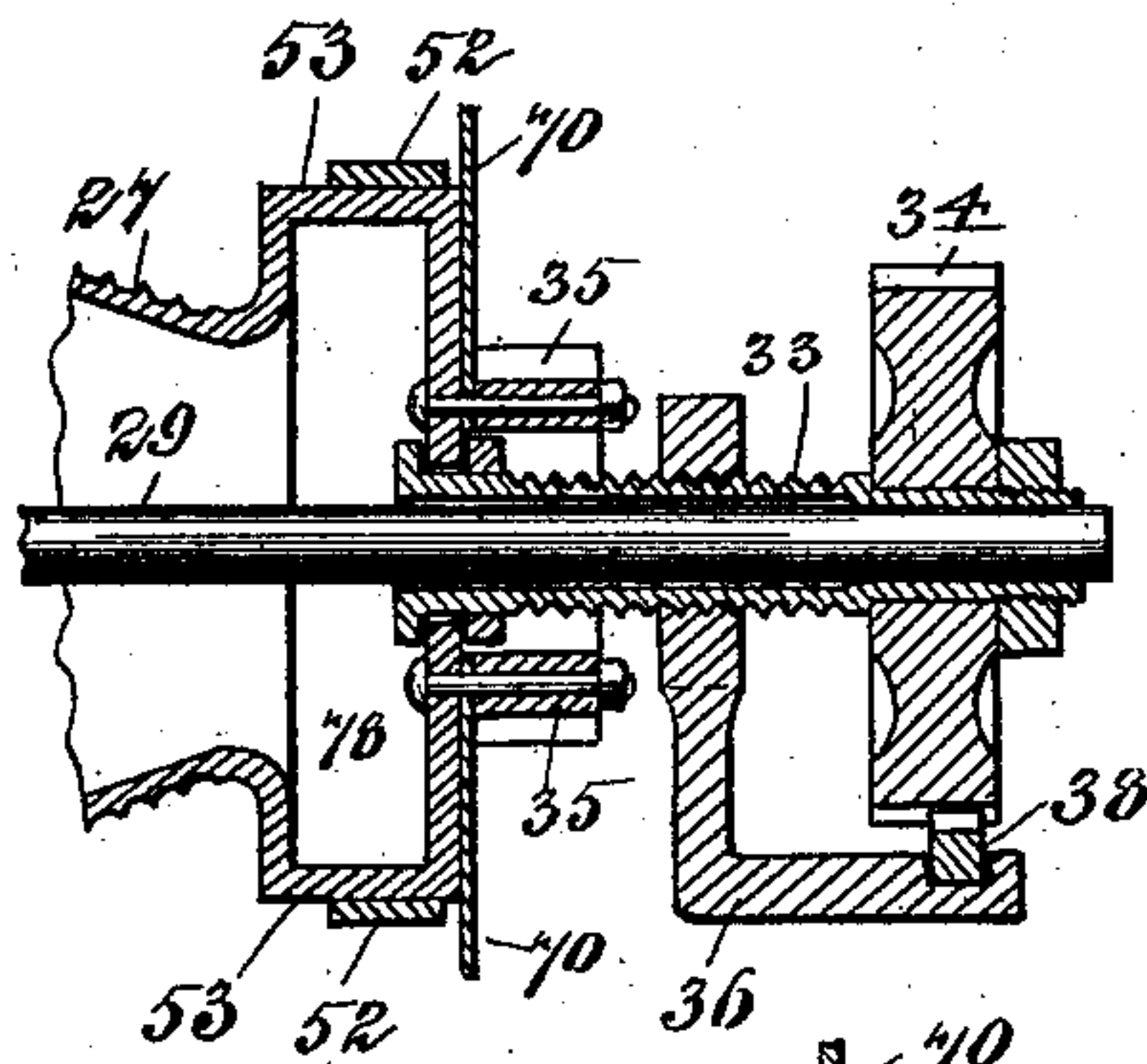


Fig. 13.

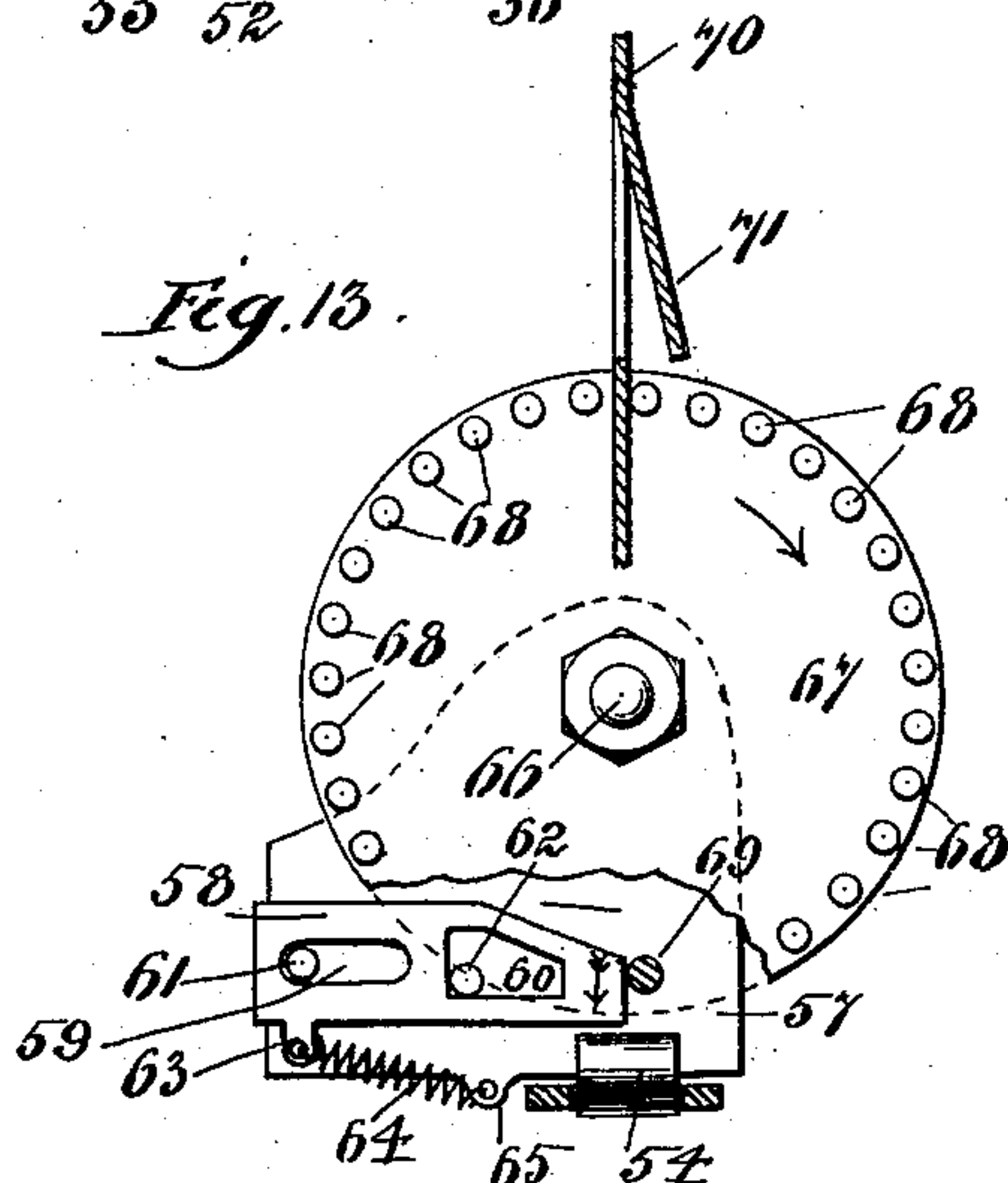
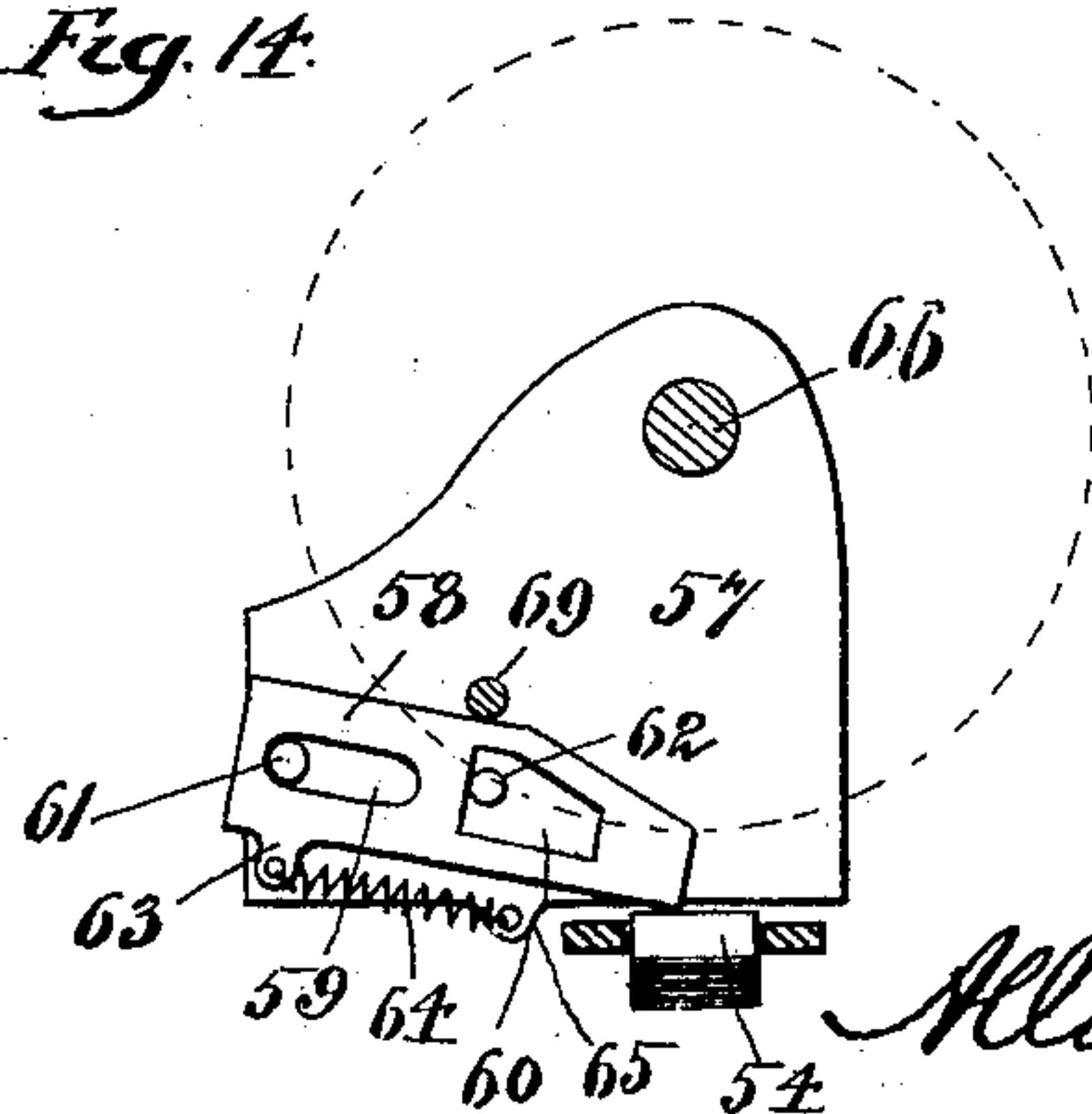


Fig. 14.



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UNITED STATES PATENT OFFICE.

ALLISON R. STONE, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND
GEORGE A. MONTGOMERY, OF SAME PLACE.

NEWSPAPER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 487,791, dated December 13, 1892.

Application filed April 9, 1892. Serial No. 428,537. (No model.)

To all whom it may concern:

Be it known that I, ALLISON R. STONE, 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 Newspaper Carriers or Elevators, of which the following is a specification, reference being had to the accompanying drawings, in which—

10 Figure 1 is a vertical section through a portion of a building, showing the arrangement of the various parts of the carrier. Fig. 2 is an enlarged detail, being a side elevation of a portion of the track. Fig. 3 is a cross-section on line 3 3 of Fig. 2. Fig. 4 is an enlarged view of the lower portion of the track and box. Fig. 5 is a cross-section on line 5 5 of Fig. 1. Fig. 6 is a perspective view of the box. Fig. 7 is a perspective view of the hinged arms carried by the box. Fig. 8 is a central vertical cross-section of the box, showing the position of the hinged arms. Fig. 9 is a front elevation of the winding-drum and mechanism for operating it. Fig. 10 is a side elevation of the same, looking to the left. Fig. 11 is a vertical section on line 11 11 of Fig. 9, one of the standards being removed. Fig. 12 is an enlarged detail, being a central horizontal section of one end of the winding-drum and of the adjacent parts. Fig. 13 is a horizontal section on line 13 13 of Fig. 11, showing the brake-operating disk; and Fig. 14 is a top or plan view of the plate which carries the brake-operating mechanism, the disk being removed.

35 My invention relates to mechanism for carrying articles from one portion of a building to another, and particularly to machinery adapted for use in carrying newspapers from a printing-press to the mailing-room.

40 The object of my invention is to provide a new and improved apparatus which will be particularly adapted for such use, which object I accomplish as hereinafter specified, and as illustrated in the drawings.

That which I regard as new will be pointed out in the claims.

50 In the drawings, 1 indicates a track which extends from the press-room to the mailing-room, its lower end terminating adjacent to the printing-press and its upper end termi-

nating at about the level of the floor of the mailing-room, as shown in Fig. 1. A suitable platform or table 2 is provided at the lower end of the track 1, on which the box which carries the papers is supported when it has been filled.

3 indicates a rubber tube or pad which is placed upon the table 2 in such position that when the box is lowered it will be prevented from striking the table forcibly.

The track 1 consists of a rail 4, upon which the box is adapted to run, and a second rail 5, which is connected to the rail 4 by braces 6, as best shown in Fig. 1. I do not wish to limit myself, however, to this particular construction, as the rail 4 may be supported and braced in any other suitable manner.

7 indicates a box which is adapted to receive the newspapers, which box is preferably rectangular, as shown in Fig. 6, one side being open to permit of the insertion of the papers. Upon one side of the box 7 are mounted wheels 8 and 9, which are adapted to run on the rails 4 and 5, as best shown in Fig. 5. The wheels 8 and 9 are flanged, so that they will be prevented from leaving the track. Two of the wheels 8 at opposite ends of the box are connected by a strap 10 in order to prevent straining of the box when starting.

11 and 12 indicate curved arms (best shown in Fig. 7) which are mounted upon a shaft 13. The shaft 13 is journaled in suitable bearings 14 and 15, carried by straps 16, secured to the sides of the box 7, as best shown in Fig. 6. The arrangement is such that the arms 11 and 12 may be turned downward to the position indicated by dotted lines, Fig. 8, and then to the position represented by full lines, Fig. 8. A spring 17 is placed upon the shaft 13, and its tension is such as to normally hold the arms 11 and 12 in a vertical position.

18 indicates a lug which is formed or secured upon one side of the box 7, as best shown in Fig. 6, the object of which will be hereinafter set forth.

At the lower end of the track 1 is provided a bar 19, which is hinged at its upper end to a suitable supporting-bar 20, which is secured to the track 1, as best shown in Fig. 4, and is of the shape shown in Fig. 5, being bent at

right angles to the track. The lower end of the bar 19 is adapted to be swung inward toward the track, and its lower end is normally held at a short distance from the track by a
 5 spring 21, secured upon a suitable cross-bar 22, as best shown in Fig. 4. The distance of the lower end of the bar 19 from the track is such that when the box 7 is lowered to its
 10 lowermost position the bar 19 will engage the side of the box and the spring 21 will hold it in contact with said box, thereby acting as a brake to retard the downward motion of the box.

23 indicates a fixed bar which is mounted
 15 in a vertical position at the lower end of the track and is connected to the cross-bars 20 and 22, as best shown in Fig. 4. It is placed at such a distance from the track as to be adapted to be engaged by the opposite side
 20 of the box 7 from that engaged by the bar 19.

24 indicates a rope which is connected to the box 7, preferably at the upper end of the strap 10, as best shown in Fig. 4, and extends
 25 upward along the track 1, over pulleys 25 and 26, mounted upon the rails 4 and 5, to a drum 27, mounted upon a suitable support 28 a short distance above the mailing-room floor. The drum 27 is adapted to be rotated to wind
 30 up the rope 24, and thereby pull the box 7 up into the mailing-room. The drum 27 is oval in shape and is preferably provided with spiral grooves to serve as guides for the rope 24. By making the drum oval when it is first
 35 started the rope will be wound slowly, and its speed will then increase, diminishing when the box has reached a point near the upper end of the track. The same will be true when the box is lowered. By this means violent jerking of the box is prevented.

40 The drum 27 is mounted upon a shaft 29, mounted in suitable bearings upon the floor 28 or other suitable support. The drum 27 is adapted to be moved longitudinally on the shaft 29 for purposes which will be hereinafter set forth.

45 Upon one end of the drum 27 is mounted a clutch-section 30, which is adapted to engage a clutch-section 31, formed upon the hub of a pulley 32, which is loosely mounted upon
 50 the shaft 29. The pulley 32 is continuously operated by a motor or other suitable driving mechanism, and by shifting the position of the drum 27 the clutch-section 30 of the drum may be thrown into or out of engage-
 55 ment with the clutch-section carried by the pulley 32, and the drum thereby rotated or stopped, as may be desired. In order to effect such shifting of the position of the drum, the end of the drum opposite that upon
 60 which is mounted the clutch-section 30 is mounted upon a sleeve 33, which sleeve is mounted upon the shaft 29, as best shown in Fig. 12. The outer portion of the sleeve 33 is screw-threaded, as shown, and it is pro-
 65 vided on its outer end with a gear-wheel 34, which is keyed thereto. A collar 78, mount-

ed upon the sleeve 33, prevents motion of the drum independently of the sleeve 33.

35 indicates a ratchet-wheel which is rigidly secured to the end of the drum, as best
 70 shown in Fig. 12.

36 indicates a bracket which is provided with a screw-threaded bearing adapted to fit upon the screw-threads of the sleeve 33, as
 75 best shown in Fig. 12. The bracket 36 is supported by a suitable standard 37, as best shown in Fig. 9.

38 indicates a rack which is mounted in a ver-
 80 tical position and is adapted to mesh with the teeth of the gear-wheel 34, as best shown in Fig. 12. The rack is supported by an arm of the bracket 36, as shown. By this construction when the rack 38 is moved up or down the gear-
 85 wheel 34 will be correspondingly rotated, thereby rotating the sleeve 33, which will be moved in its bearings in the bracket 36, thereby
 90 shifting the drum to throw the clutch-sections 30 and 31 out of or into engagement with each other. The lower end of the rack 38 is connected to the end of a lever 39, as best
 95 shown in Fig. 9, to which lever is connected the upper end of a rope 40, which extends downward over suitable pulleys 41 and 42 and hangs in a convenient position near the lower portion of the track 1. By pulling
 100 downward on the rope 40 the rack 38 will be drawn downward, thereby rotating the sleeve 33 in such manner as to throw the drum 27 in the direction indicated by the arrow in
 105 Fig. 9, and thereby throwing the clutch-sections 30 and 31 into engagement with each other. The drum 27 will thereby be caused to rotate in such direction as to wind up the rope 24 and pull the box 7 to the mailing-
 110 room.

In order to throw the clutch-sections 30 and
 31 out of engagement with each other when the box has reached its outermost point, a de-
 115 pending rod 43 is provided, which at its upper end is connected to the lever 39 and de-
 120 pends therefrom in such position as to be struck by the top of the box 7 when it reaches its uppermost point. The striking of the rod 43 by the box 7 will cause the rack 38 to move
 125 upward, and the drum 27 will thereby be moved in the opposite direction, throwing the clutch-sections 30 and 31 out of engagement with each other.

In order to hold the box 7 at its uppermost position after the clutch-sections 30 and 31
 130 are thrown out of engagement with each other, the following apparatus is provided:

44 indicates a rack-bar which is pivoted at its upper end to a suitable support and hangs
 135 downward at the side of the compartment at the upper end of the track 1, into which the box 7 is drawn in position to be engaged by the lug 18 on the box 7. The lower end of the rack 44 is held away from the side of the compartment by means of a pin 45, which is
 140 in part supported by a lever 46, and projects through the side of the compartment in posi-

tion to engage the rear surface of the rack 44, as best shown in Fig. 1. A spring 47 is provided on the pin 45, the tension of which acts normally to hold the rack 44 at an angle to the wall of the compartment, as shown. When the box 7 is drawn up, the lug 18 will come in contact with the rack 44 and will press it backward sufficiently to permit of its passage, and, engaging the rack, will prevent downward motion of the box. The upper end of the lever 46 is connected by a connecting-rod 48 to two levers 49 and 50, as best shown in Fig. 9. The lever 49 is connected at its lower end to a pawl 51, which is pivoted upon the standard 37, and is adapted to engage the teeth of the ratchet-wheel 35, as best shown in Fig. 11. The length of the lever 49 is such that when it is in its inclined position, as shown in Fig. 9, it will hold the pawl 51 out of engagement with the ratchet-wheel 35, and when the levers 49 and 50 are thrown into line the pawl 51 will be thrown downward into engagement with the teeth of the ratchet-wheel. The lever 50 is substantially a bell-crank lever, and is pivoted upon the upper end of the standard 37, as best shown in Fig. 9. One arm 79 of the lever 50 projects over the upper end of the rack-bar 38, as best shown in Fig. 9, and is adapted to be struck by said bar when it is moved upward, whereby the levers 49 and 50 will be thrown into line and the pawl 51 caused to engage the teeth of the ratchet-wheel 35.

When the box 7 is at its uppermost position, the lug 18 will be engaged by the rack 44 and the parts will be in substantially the position shown in Fig. 1. The upper portion of the lever 46 will then be in a substantially-vertical position and the levers 49 and 50 will be in line, causing the pawl 51 to engage the teeth of the ratchet-wheel 35, substantially as above described. To release the box 7 to permit it to descend, the pin 45 is drawn back by hand, thereby permitting the rack 44 to swing back out of engagement with the lug 18. The lower end of the lever 46 will also be drawn back, the pin 45 being provided with a cross-pin 80 for that purpose. This will throw the upper end of the lever 46 inward, and the levers 49 and 50 will be thrown out of line and the pawl 51 released from engagement with the ratchet-wheel 35.

In order to prevent the box 7 from descending too rapidly, a brake 52 is provided, which consists of a strap which encircles a brake-wheel 53, connected to the drum 27, as best shown in Fig. 9. One of the ends of the brake-strap 52 is secured to a stationary support, as best shown in Fig. 11, and the other end is secured to a dog 54, pivotally mounted upon the end of a bent lever 55, as shown in Fig. 11. The lever 55 is fulcrumed at about its central point upon a suitable support and is of such shape that the arm upon which the dog 54 is pivoted extends upward, as shown in Fig. 11. A spring 56 is provided, which is connected to the lever 55 and the support

from which the lever is pivoted, its tension being such that it will exert a downward pull upon the dog 54. The other arm of the lever 55 passes under the lever 39, as best shown in Fig. 11. The dog 54 is adapted to engage a horizontal plate 57, suitably secured in a stationary position at such a height that when the dog 54 is in engagement therewith the brake-band 52 will lie loosely upon the brake-wheel 53. The tension of the spring 56 is such that when the dog 54 is released from engagement with the plate 57 the spring will draw the lever 55 downward, thereby drawing the brake-band tightly upon the brake-wheel, retarding the rotation of the brake-wheel and drum. When the lever 39 is pulled downward, as in starting the drum, it will engage the lower arm of the lever 55, thereby throwing the dog 54 into engagement with the plate 57. Upon the plate 57 is mounted a block 58, which is provided with an inclined inner end portion and with two slots 59 and 60, adapted to receive pins 61 and 62, respectively, as in Figs. 13 and 14. By this construction the block 58 may move upon the plate 57.

63 indicates a lug formed upon one side of the block 58, to which is connected one end of a spring 64, the other end of which is connected to the end of a lug 65, formed on the plate 57. Mounted upon a pivot 66, which is supported by the plate 57, is a disk 67, which is provided with a number of pins 68 around its edge, which pins project upward, as best shown in Fig. 11, and are set a short distance apart, as shown.

69 indicates a pin which is carried by the disk 67 and projects downward from the under side thereof near its edge, as shown in Figs. 11 and 14. The pin 69 is so located that it will be adapted to engage the block 58 and move it in the direction indicated by the arrow in Fig. 13, thereby throwing it into contact with the dog 54 and forcing the dog out of engagement with the plate 57. The inclined inner end portion of the block 58, Figs. 13 and 14, causes the block to be forced outward by the action of the pin 69 for the purpose of pressing back the dog 54 out of engagement with the plate 57, and thereby to permit of the brake 52 being set, as hereinbefore described. When the disk 67 is rotated in the direction indicated by the arrow in Fig. 13, the pin 69 will be thrown into contact with the block 58 and will force such block into engagement with the dog 54, as hereinbefore described. The disk 67 is rotated by means of a vertically-mounted disk 70, which is rigidly connected to the end of the brake-wheel 53, as best shown in Fig. 12. The disk 70 is made of sheet metal and is provided on its periphery with a deflected portion 71, and thereby operates somewhat in the nature of a screw. When the drum 27 is rotated, the disk 70 will also be rotated, and it is so placed that it will fit between successive pins 68 on the disk 67. The deflected portion 71 of the

disk 70 is deflected to such a degree that at each rotation of the disk 70 the deflected portion 71 will rotate the disk 67 a distance equal to the space between two successive pins 68. By this arrangement the disk 67 will be partially rotated in one direction or the other by the disk 70 whenever the box 7 is carried up or down. When the box is carried up, the disk 67 will be rotated in a direction opposite to that indicated by the arrow in Fig. 13, and the block 58 will be thrown out of engagement with the dog 54, and the dog 54 will be returned to the position shown in Fig. 11 by the action of the lever 39, thereby throwing off the brake. When the drum is rotated in the opposite direction, the disk 67 will rotate in the direction indicated by the arrow in Fig. 13, thereby throwing the block 58 into engagement with the dog 54 and setting the brake.

As it is not desirable that the full force of the brake should be applied except when the box 7 is near the lower end of the track, the position of the pin 69 with relation to the disk 70 is so arranged that it will not be thrown into contact with the block 58 until the disk 67 has rotated a certain amount.

In order to slightly retard the downward movement of the box 7, the upper portion of the brake-strap 52 is held in contact with the brake-wheel 53 by means of a weight 72, which is carried by a lever 73, pivotally connected to a lug 74, formed upon the upper portion of the brake-strap 52. The opposite end of the lever 73 from that on which is carried the weight 72 is pivotally connected to a suitable support 75, as best shown in Fig. 9. By this means when the box 7 is descending the brake 52 will be applied with slight pressure to the brake-wheel 53; but the full force of the brake, as hereinbefore described, will not be applied until the box is near the bottom of the track.

In order to entirely throw off the brake when the box 7 is ascending, a lever 76 is provided, which is pivotally mounted upon the upper end of the standard 37, as best shown in Fig. 10. The upper end of the lever 76 is adapted to bear against the under side of the lever 73, while the other end of the lever 76 is adapted to engage a lug 77, formed at one side of the rack 38, as best shown in Figs. 9 and 11. The lug 77 is so placed that it will not be engaged by the lever 76, except when the rack 38 is drawn downward, as in starting the drum. When the rack 38 is drawn downward, the lower arm of the lever 76 will be engaged by the lug 77, which is of such size as to move the lever to draw said arm downward, thereby throwing the other arm of the lever upward and lifting the lever 73. The weight 72 will thereby be thrown off the brake-band 52, and the brake will be entirely thrown off.

In order that the operation of my improved apparatus may be more clearly understood, I will now describe the method of operating it to carry a load of papers to the mailing-room

and then to return the empty box for another load. The box 7 being at the lower end of the track, the arms 11 and 12 are thrown outward to the position indicated by dotted lines in Fig. 8. The papers are then placed upon the levers and the latter are then turned to the position represented by full lines, Fig. 8, so that the papers are held in the box. By a downward pull on the rope 40 the rack 38 will be thrown downward, thereby rotating the wheel 34 and rotating the sleeve 33 and the bracket 36. The drum 27 will thereby be shifted laterally, throwing the clutch-section 30 into engagement with the clutch-section 31, carried by the pulley 32. As the pulley 32 is in constant rotation, the drum 27 will thereby be caused to rotate, winding up the rope 24 and drawing the box 7 upward on the track. 1. When the box 7 reaches its uppermost point, the lug 18 will engage the rack 44. At the same time the top of the box will strike the rod 43, moving it upward, and thereby moving the rack 38 upward, thereby rotating the sleeve 33 in the direction opposite to that in which it was first rotated and drawing the clutch-sections 30 and 31 out of engagement with each other. The pawl 51 will be moved into engagement at this time with the ratchet-wheel 35 and will prevent the descent of the box, as will also the engagement of the lug 18 with the rack 44. As above described, the downward pull on the lever 39 will have thrown the lower arm of the lever 55 downward and the upper arm of said lever upward, throwing the dog 54 into engagement with the plate 57 and throwing off the brake 52. When the box has been unloaded by pulling out the pin 45, the upper end of the lever 46 will be thrown inward and the pawl 51 will be thrown out of engagement with the ratchet-wheel 35, and at the same time the rack 44 will be thrown out of engagement with the lug 18. The box will therefore be free to descend; but its descent will be retarded slightly by the weight of the weight 72, which throws the brake-band 52 into contact with the brake-wheel 53, the upward motion of the rack 38 having thrown the lever 76 out of engagement with the lug 77, thereby permitting the lever 73 to descend slightly. As the drum 27 rotates to unwind the rope 24 the disk 70 will rotate, and by reason of its peculiar construction will partially rotate the disk 67, thereby throwing the pin 69 into engagement with the block 58. When the block has nearly reached the lower end of the track, the pin 69 will force one end of the block 58 outward, thereby throwing the dog 54 out of engagement with the plate 57 and permitting the spring 56 to act upon the lever 55, thereby drawing the movable end of the brake-band 52 downward and setting the brake tightly upon the brake-wheel. The final descent of the box 7 will be further retarded by the hinged bar 19 and the cushion 3.

I do not wish to limit myself to the use of a track of any particular construction; neither

do I wish to limit myself to the specific construction of box shown, as any suitable paper-carrying receptacle adapted to run upon a track may be used, and the word "box," as herein used, should be so construed.

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

1. The combination of a track, a box adapted to travel on the track, a drum-shaft, a longitudinally-movable hoisting-drum mounted on the drum-shaft, driving mechanism having operative connection with the hoisting-drum for driving the latter, a rope connecting the box with the hoisting-drum, and screw mechanism operated by the action of the box when it reaches its highest elevation for shifting the hoisting-drum longitudinally out of operative connection with the driving mechanism, substantially as described.

2. The combination of a track, a box adapted to travel on the track, a drum-shaft, a lengthwise-movable hoisting-drum mounted on the drum-shaft, driving mechanism having operative connection with the hoisting-drum for driving the latter, a rope connecting the box with the hoisting-drum, a screw-shaft connected with the drum, and rack-and-gear mechanism operated by the action of the box when it reaches its highest position for rotating the screw-shaft to shift the hoisting-drum longitudinally out of operative connection with the driving mechanism, substantially as described.

3. The combination of a shaft, a driving-pulley mounted on the shaft and having a clutch-section, a longitudinally-movable hoisting-drum arranged on the shaft and having a clutch-section, a rope connecting the box with the hoisting-drum, and screw mechanism operated by the action of the box when it reaches its highest position for shifting the hoisting-drum longitudinally out of engagement with the driving-pulley, substantially as described.

4. The combination of a track, a box adapted to travel on the track, a hoisting-drum, a driving mechanism for operating the drum, a rope connecting the drum with the box, mechanism operated by the action of the box when it reaches its highest position for disengaging the drum from operative connection with the driving mechanism, a device arranged in the path of the box and engaging and supporting the latter when it reaches its highest position, and mechanism under control of an operator for disengaging said device from the box, substantially as described.

5. The combination of a track, a box adapted to travel on the track, a hoisting-drum, a shaft on which the drum is longitudinally movable, driving mechanism having operative connection with the drum for driving the latter, a rope connected with the box and adapted to be wound upon the drum, and mechanism operated by the direct action of the box when it reaches its highest elevation for shifting the drum longitudinally out of operative con-

nection with the driving mechanism, substantially as described.

6. The combination of a track, a box adapted to travel on the track, a hoisting-drum, a driving mechanism having operative connection with the drum for rotating the latter, a rope connected with the box and adapted to be wound upon the drum, devices operated by the box for automatically throwing the driving mechanism out of operative connection with the hoisting-drum when the box reaches its highest position, devices for temporarily supporting the box in its highest position, and means for automatically locking the drum against rotation when thrown out of operative connection with the driving mechanism, substantially as described.

7. The combination, with a shaft, a pulley mounted thereon, and a clutch-section carried by the pulley, of a drum mounted upon the shaft and having a clutch-section at one end, an externally-screw-threaded sleeve mounted upon and movable along the length of the drum-shaft, a screw-threaded bearing for the sleeve, and means for rotating the sleeve on the drum-shaft for shifting the drum and causing its clutch-section to engage the clutch-section on the pulley, substantially as described.

8. The combination of a track, a box having wheels adapted to travel on the track, a drum-shaft, a pulley mounted on the drum-shaft and having a clutch-section, a drum mounted on the said shaft and having a clutch-section, a screw-threaded sleeve mounted upon and movable along the length of the drum-shaft, a screw-threaded bearing for the sleeve, and mechanism operated by the direct action of the box when it reaches its highest elevation for turning the sleeve and causing it to shift the drum and thereby throw the clutch-section on the drum out of operative connection with the clutch-section on the pulley, substantially as described.

9. The combination, with a track, a box adapted to move upon said track, a shaft, a drum mounted upon said shaft, and a clutch-section carried by said drum, of a pulley mounted upon said shaft, a clutch-section carried by said pulley and adapted to engage the clutch-section carried by said drum, a screw-sleeve connected to said drum, means for rotating said sleeve in one direction to throw said clutch-sections into engagement with each other, and automatically-operating mechanism for rotating the sleeve in the opposite direction when the box reaches its highest position, substantially as and for the purpose specified.

10. The combination of a track, a box adapted to travel on the track, a drum-shaft, a drum mounted on the drum-shaft and having a clutch-section, a rope connecting the drum with the box, a pulley mounted on the drum-shaft and having a clutch-section, a screw-threaded sleeve connected with the drum and mounted upon and movable along

the length of the drum-shaft, a gear-wheel secured to one end of the sleeve, a screw-threaded bearing for the screw-threaded sleeve, a reciprocating rack engaging the gear-wheel, and means whereby the rack can be operated from a point in juxtaposition to the lower end of the track for throwing the clutch-section of the drum into engagement with the clutch-section of the pulley, substantially as described.

11. The combination of a track, a box adapted to travel on the track, a drum-shaft, a drum mounted on the drum-shaft and having a clutch-section, a rope connecting the drum with the box, a pulley mounted on the shaft and having a clutch-section to engage the clutch-section on the drum, a screw-threaded sleeve connected with the drum and mounted upon and adapted to move along the length of the drum-shaft, a gear-wheel mounted on the sleeve, a screw-threaded bearing for the screw-threaded sleeve, a rack engaging the gear-wheel, means for moving the rack in one direction to throw the clutch-section of the drum into engagement with the clutch-section on the pulley, and devices operated by the box when it reaches its highest position to automatically throw the clutch-section on the drum out of engagement with the clutch-section on the pulley, substantially as described.

12. The combination, with hoisting mechanism, a box adapted to be hoisted thereby, and mechanism operated by the box when it reaches its highest position for throwing the hoisting mechanism out of action, of a device arranged in juxtaposition to the point where the box reaches its highest position for engaging and supporting said box after the hoisting mechanism is thrown out of action and mechanism under control of an operator for disengaging said device from the box, substantially as described.

13. The combination, with a track, a box mounted upon said track, a shaft, a drum mounted upon said shaft, a rope connecting said drum to said box, whereby by the rotation of said drum the rope will be wound upon it, and a clutch-section carried by said drum, of a pulley mounted upon said shaft, a clutch-section carried by said pulley and adapted to engage the clutch-section carried by said drum, a screw-sleeve mounted upon said shaft and connected to said drum, a gear-wheel mounted upon said sleeve, a rack adapted to intermesh with said gear-wheel, a bearing for said sleeve, means for moving said rack downward, and devices for automatically moving said rack upward to throw said clutch-section out of engagement with each other, substantially as and for the purpose specified.

14. The combination, with a track, a box mounted upon said track, a shaft, a drum mounted upon said shaft, a rope connecting said drum to said box, whereby by the rotation of said drum the rope will be wound upon

it, and a clutch carried by said drum, of a pulley mounted upon said shaft, a clutch carried by said pulley and adapted to engage the clutch carried by said drum, a screw-sleeve mounted upon said shaft and connected to said drum, a gear-wheel mounted upon said sleeve, a screw-bearing for said screw-sleeve, a rack adapted to intermesh with said gear-wheel, a lever 39, connected to said rack, and a rod 43, depending from said lever 39 in position to be struck by said box when it reaches its uppermost point, whereby said rack will be moved upward and the clutches thrown out of engagement with each other, substantially as and for the purpose specified.

15. The combination, with a shaft, a drum 27, mounted thereupon, and a clutch-section 30 on one end of said drum, of a pulley 32, mounted upon said shaft, a clutch-section 31, carried by said pulley, a screw-sleeve 33, connected to said drum, a fixed bearing 36 for said screw-sleeve, a gear-wheel 34, mounted upon said sleeve, a rack 38, adapted to intermesh with said gear-wheel, a lever 39, connected to said rack, a rod 43, attached to and depending from said lever 39, a rope 24, adapted to be wound upon said drum 27, a box connected to said rope, and a track for said box, the upper end of said track terminating under said rod 43, substantially as and for the purpose specified.

16. The combination, with a track and a box adapted to move upon said track, of a rotatable drum, a rope connecting said drum to said box, whereby by rotating said drum said box may be moved upon said track, a ratchet-wheel 35, connected to said drum, a pawl 51, adapted to engage the teeth on said ratchet-wheel, levers 49 and 50, arm 79, connecting-rod 48, lever 46, pin 45, mounted on the lower end of said lever 46, pin 80, rack-bar 38, a rack 44, depending over said pin 45, spring 47 upon said pin, adapted to hold said rack 44 out of the perpendicular, and a lug 18 on said box, adapted to engage the teeth of said rack 44, substantially as and for the purposes specified.

17. The combination, with a box 7, of a shaft 13, mounted therein, arms 11 and 12, carried by said shaft, and a spring 17 upon said shaft, adapted to hold said arms in a vertical position, substantially as described.

18. The combination, with a drum, a track, a box adapted to travel on the track, and a rope connecting the drum with the box, of mechanism for rotating the drum to wind up the rope, and thereby elevate the box on the track, said rotating mechanism being adapted to be thrown out of gear to permit the box to descend by gravity, and a brake operated by the rotation of the drum when the box is descending for retarding the motion of the drum when the drum-rotating mechanism is thrown out of gear, substantially as described.

19. The combination, with a drum, a track extending downward from a point near said drum, a box adapted to move upon said track,

and a rope connecting said drum and said box, of mechanism for rotating said drum to elevate said box, means for throwing said mechanism out of gear to permit said box to descend, a brake to retard the rotation of said drum, and means for automatically throwing said brake into operation when the box has nearly reached its lowermost position, substantially as described.

20. The combination, with a drum, of a disk 70, connected thereto, said disk having a deflected portion 71, a disk 67, pins 68, mounted thereupon, a brake-wheel 53, connected to said drum, a brake-band 52, passing over said brake-wheel, a dog 54, connected to one end of said brake-band, stop adapted to be engaged by said dog to hold said brake-band out of operation, spring adapted to tightly draw said brake-band upon said brake-wheel, and mechanism operated by the rotation of said disk 67 to release said dog 54, substantially as and for the purpose specified.

21. The combination, with a drum, a rope adapted to be wound upon said drum, and a paper-carrying box connected to said rope, of a brake-wheel 53, a brake-band 52, passing over said brake-wheel, dog 54, connected to one end of said brake-band, a stop adapted to be engaged by said dog to hold said brake-band out of operation, lever 55, connected to said dog 54, spring 56, exerting a downward pressure upon said lever 55, means for releasing said dog to set the brake, and devices for throwing said dog into engagement with its stop, so that the drum may be rotated to wind up said rope, substantially as described.

22. The combination, with a drum, a brake-wheel 53, connected thereto, and a disk 70, connected to said brake-wheel, said disk having a deflected portion 71, of a disk 67, pins 68, mounted upon said disk 67, a pin 69, projecting from the under side of said disk 67, a

brake-band 52, passing over said brake-wheel, a dog 54, connected to one of the ends of said brake-wheel, plate 57, adapted to be engaged by said dog, a lever 55, connected to said dog, spring 56, connected to said lever and exerting a downward pressure thereupon, a block 58, mounted upon said plate 57 and adapted to be engaged by said pin 69 and to be thrown outward thereby to disengage said dog 54 from said plate 57, a spring 64, connected to said block and to said plate 57, and means for returning said dog 54 into engagement with said plate 57, substantially as described.

23. The combination, with a shaft, a drum mounted thereupon, and a sleeve 33, mounted upon said shaft and connected to said drum, a gear-wheel 34, mounted upon said sleeve, and a bearing 36 for said sleeve 33, of a rack 38, intermeshing with the teeth of said gear-wheel, said rack having a lug 77, a clutch-section carried by said drum, a pulley mounted upon said shaft, a clutch-section carried by said pulley and adapted to engage the clutch-section carried by said drum, a brake-wheel 53, connected to said drum, a brake-band 52, passing around said brake-wheel, lever 73, connected to said brake-band 52, a weight 72, carried by said lever, and a lever 76, bearing against the under side of said lever 73 and adapted to be engaged by said lug 77 when the rack 38 is depressed, substantially as and for the purpose specified.

24. The combination, with a track 1 and a box 7, of a hinged rod 19 and a spring 21, adapted to hold said rod in position to engage said box to retard the downward motion of said box, substantially as described.

ALLISON R. STONE.

Witnesses:

JOHN L. JACKSON,
A. H. ADAMS.