

**No. 685,234.**

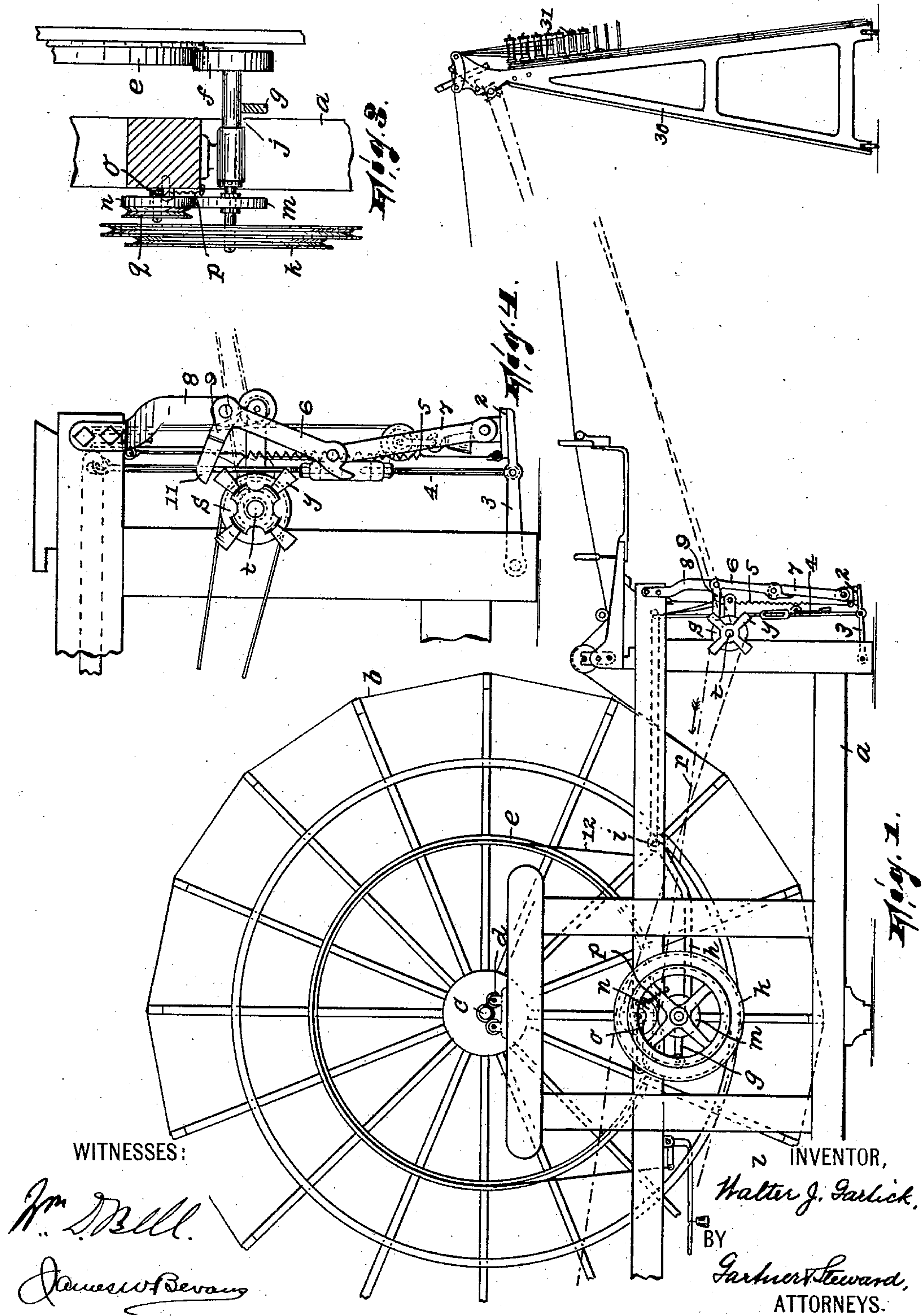
**Patented Oct. 22, 1901.**

**W. J. GARLICK.**  
**WARPING MACHINE.**

(Application filed Oct. 4, 1900.)

(No Model.)

**2 Sheets—Sheet 1.**



No. 685,234.

Patented Oct. 22, 1901.

W. J. GARLICK.  
WARPING MACHINE.

(Application filed Oct. 4, 1900.)

(No Model.)

2 Sheets—Sheet 2.

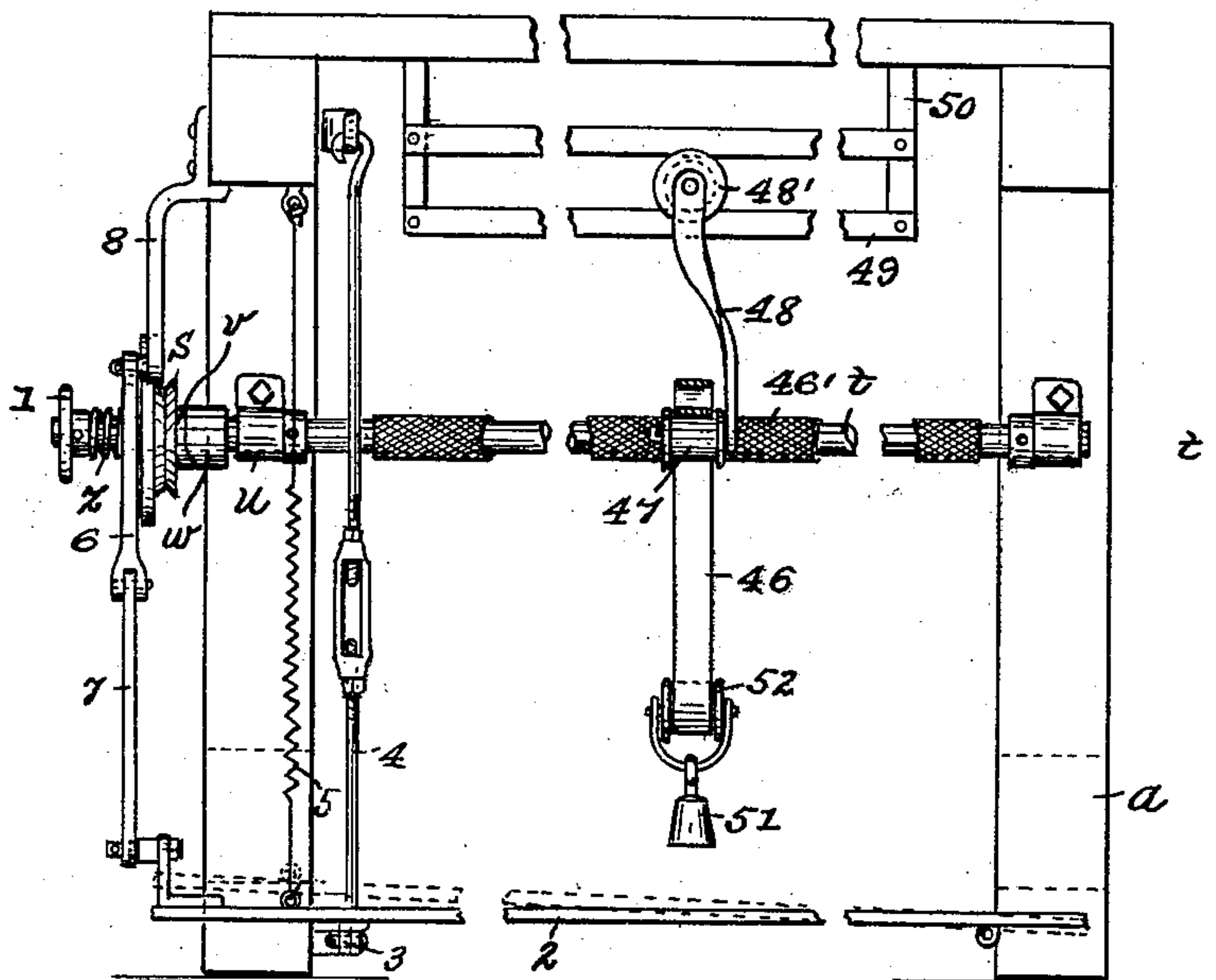


Fig. 2.

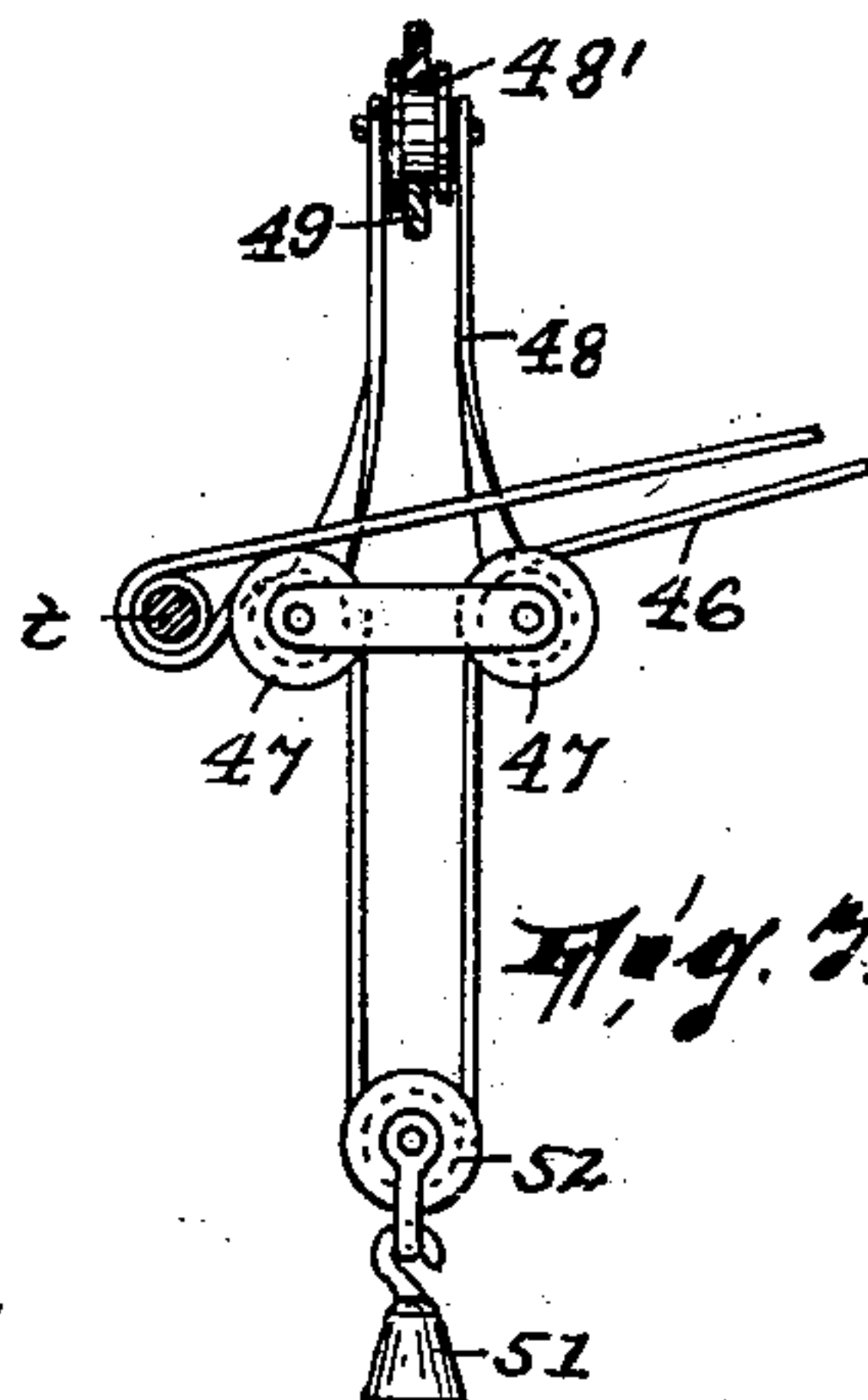


Fig. 3.

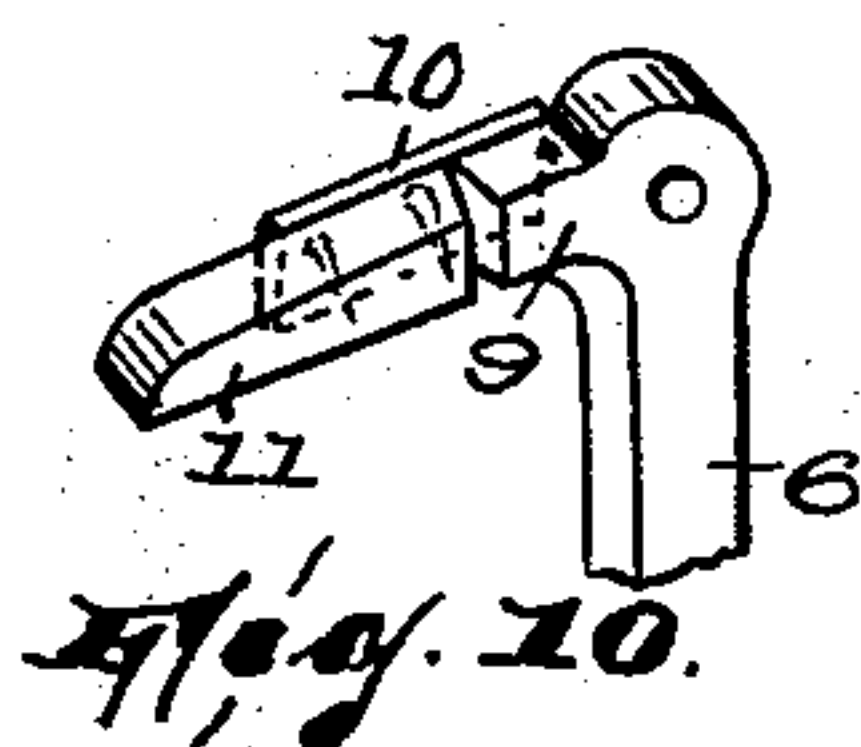


Fig. 10.

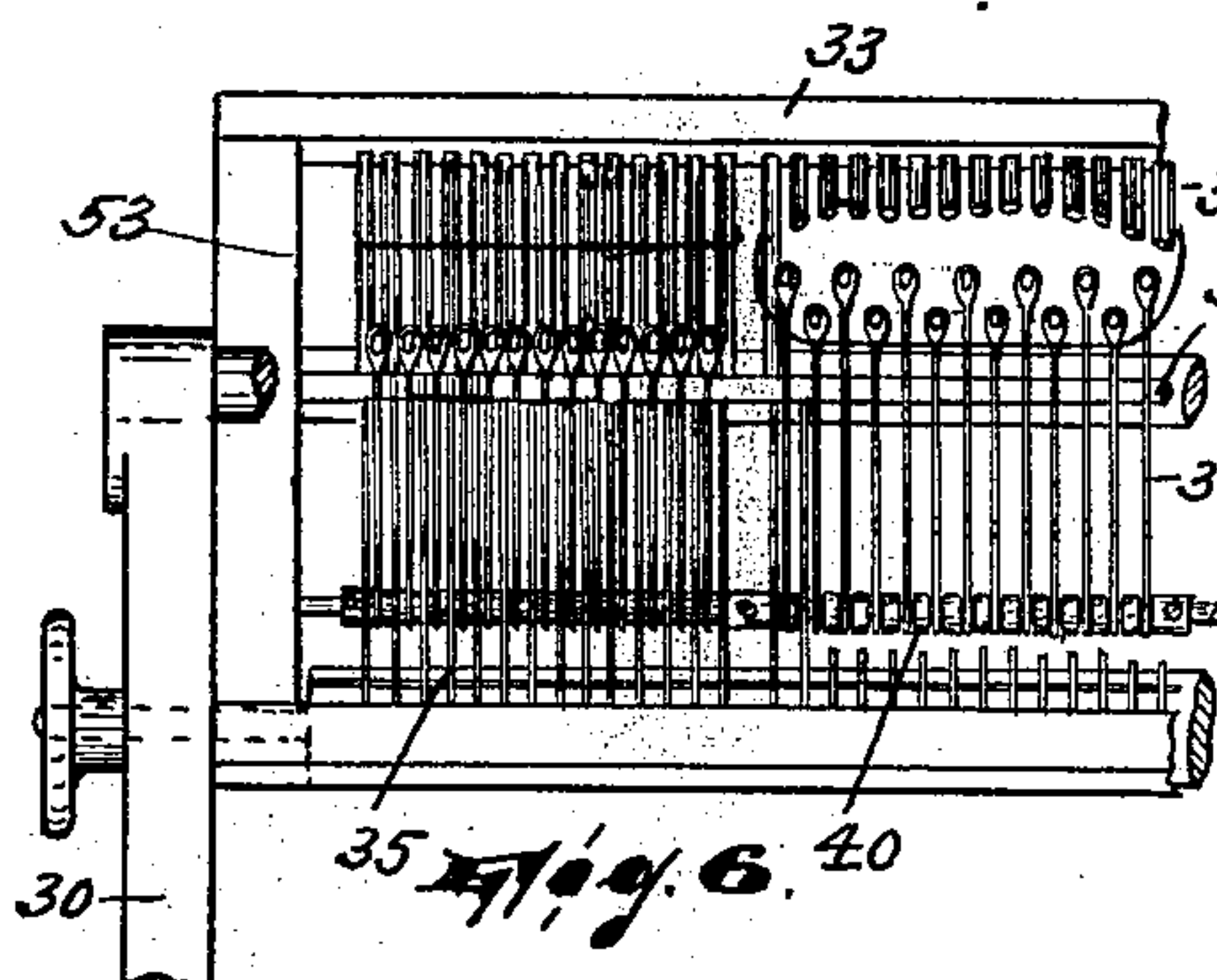


Fig. 6.

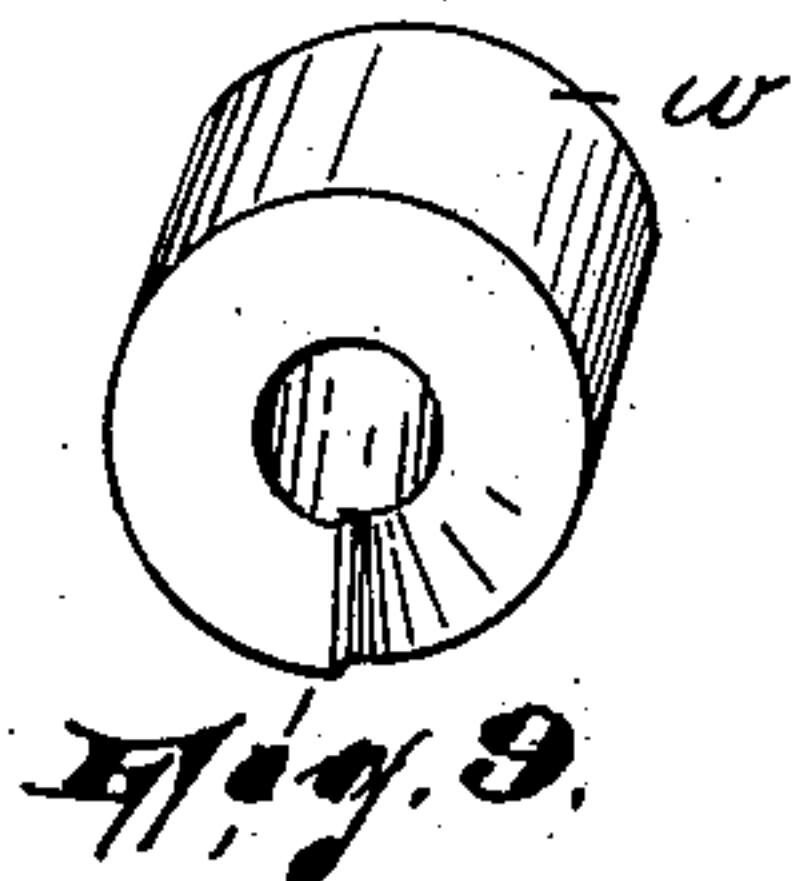


Fig. 9.

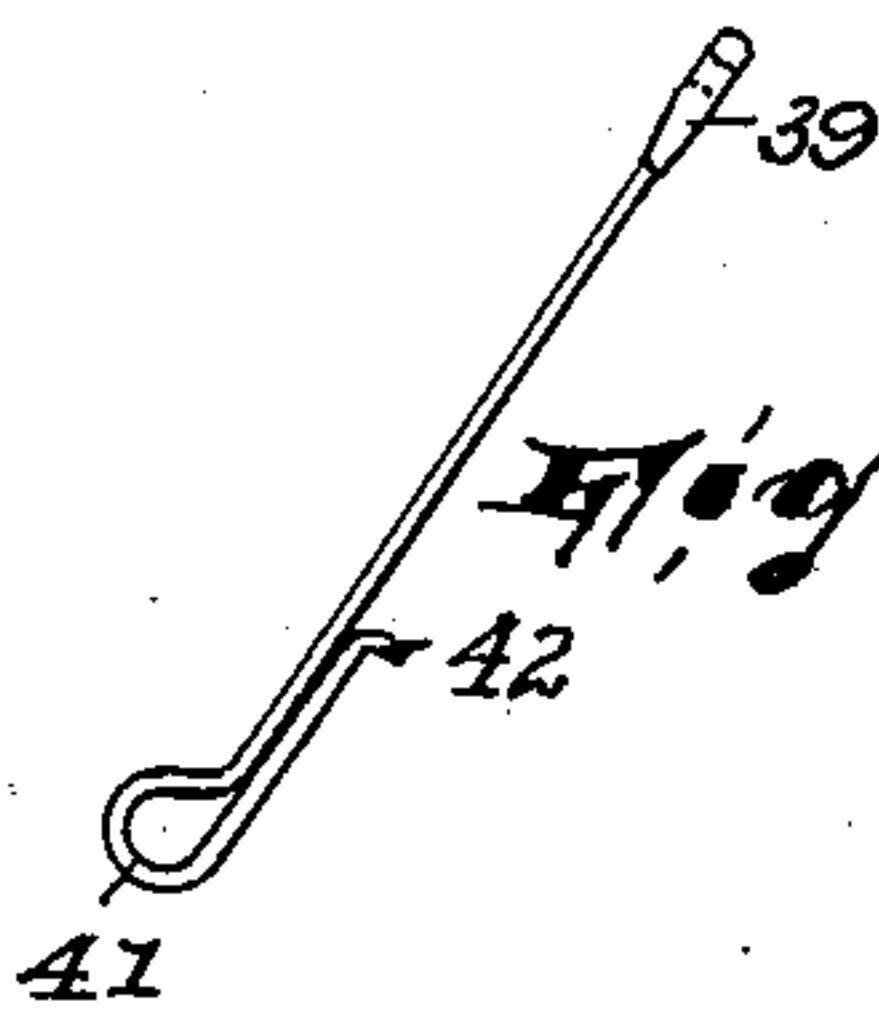


Fig. 8.

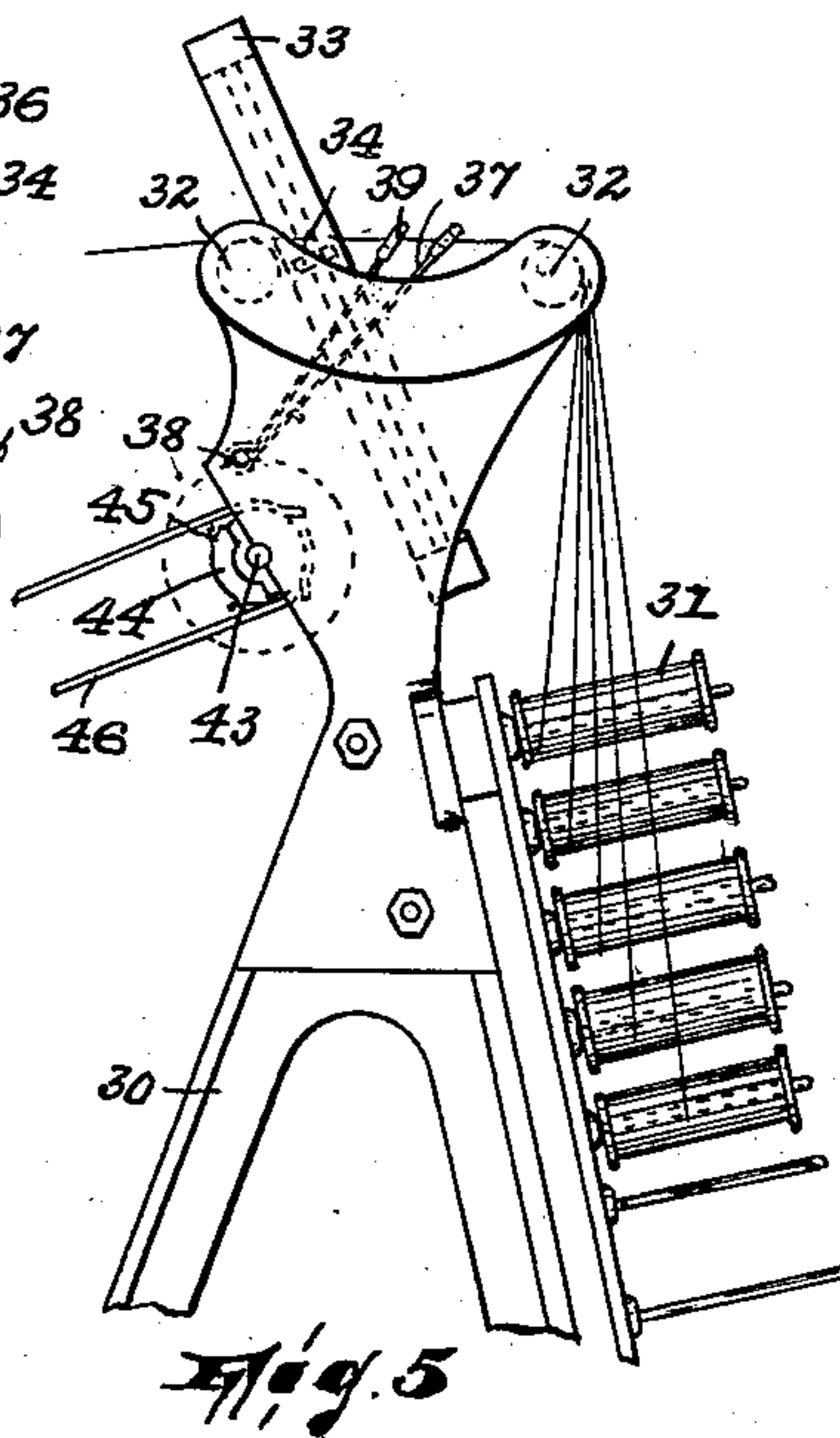


Fig. 5.

WITNESSES:

Wm. D. Bell.  
James W. Bevan

INVENTOR,

Walter J. Garlick,

BY

Arthur Stearns,  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

WALTER J. GARLICK, OF PATERSON, NEW JERSEY.

## WARPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 685,234, dated October 22, 1901.

Application filed October 4, 1900. Serial No. 31,967. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER J. GARLICK, a citizen of the United States, residing in Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Warping-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

This invention relates to warping-machines; and it has reference to that portion of a machine of this nature which is comprised in the mechanism whereby the machine is driven.

The object of the invention is to provide the mechanism whereby the warping-machine is driven with an improved form of throw-out apparatus of that construction whereby should a thread break said apparatus operates to disconnect the power instantaneously, thus permitting the reel to stop.

My invention is fully illustrated in the accompanying drawings, wherein—

Figure 1 is a view in side elevation of a warping-machine, including a creel, provided with my improvements. Fig. 2 is a view in front elevation of my improved machine. Fig. 3 is a sectional view of a portion of the machine, taken on a vertical line just forward of the axis of the reel. Fig. 4 is a view in side elevation of a portion of what is shown in Fig. 1, the various parts being enlarged. Fig. 5 is a side view of the upper portion of a creel and showing a part of the means whereby the power is controlled. Fig. 6 is a front view of a portion of what is shown in Fig. 5. Fig. 7 illustrates the other part of the means last referred to. Fig. 8 is a detail view of one of the parts shown in Figs. 5 and 6. Fig. 9 is a perspective view of a certain clutch member constituting a portion of the throw-out apparatus, and Fig. 10 is a perspective view of a certain detail of the invention.

In said drawings, *a* designates the frame of the warping-machine, and *b* denotes the reel, the axis *c* of which in the usual manner is journaled in antifriction-bearings *d*, suitably arranged on said frame. To one side of the

reel is secured the usual circular flange *e*, against which is adapted to bear a friction-roller *f*, carried in a pivoted bracket *g* and rendered controllable by a lever *h*, fulcrumed at *i* in such manner that by raising or lowering the lever the contact between the roller and flange may be made or broken. The roller *f* is secured upon one end of a short shaft *j*, journaled in the bracket *g*, and at the other end of this shaft is secured a pair of pulleys *k*, over either of which may extend the belt *l*, whereby power is taken into the machine. The free end of lever *h* takes under this shaft. Upon the shaft *j* I also mount another friction-roller *m*, against which bears still another friction-roller *n*, carried by a bracket *o*, said bracket being pivoted in the frame and being controlled by a spring *p*, which normally acts to hold the two friction-rollers in contact with each other.

*q* is a pulley formed with the roller *n*, and *r* is a crossed belt which extends around said pulley and also around another pulley *s*, which is so journaled on a horizontal revolvable shaft *t*, having bearings in brackets *u*, projecting from the front of the frame *a*, that it may be revolved freely on said shaft.

*v* and *w* designate normally-engaging clutch members, the former of which forms a part of the pulley *s* and the latter of which is secured upon the shaft *t* and is adapted to rotate therewith.

*y* denotes radial arms which project from the pulley, forming tappets. The clutch members are normally held in contact with each other by a spiral spring *z*, which is coiled between the pulleys and a hand-wheel *1*, which is secured rigidly on the end of the shaft *t*, so that, if desired, the latter may be manually rotated. The hand-wheel is not shown in Figs. 1 and 4.

At the front of the machine is pivoted to the lower portion of the frame a treadle-lever *2*, the free end of which rests upon a lever *3*, also fulcrumed in the frame, and is connected with that end of the lever *h* which is remote from the shaft *j*, which it supports by a coupling *4*. The treadle is normally lifted by a spring *5*, connecting it with the upper portion of the frame. The treadle is also connected with the upper portion of the frame by toggle-levers *6* and *7* of such con-



struction that so long as they are alined (the former being pivoted in a bracket 8, projecting downwardly from the frame, while the latter is pivotally connected to the treadle) 5 the spring 5 cannot act to raise the treadle-lever, whereas as soon as their alinement is disturbed said lever may be raised by the spring. From the lever 6 projects an arm 9, and to this arm, through the medium of a 10 plate-spring 10, is secured a block 11, the arrangement being such that the parts together constitute a flexible extension of the lever 6, which will bend laterally but not vertically. The block normally extends in a plane imme- 15 diately at the side of the tappets *y*; but should something stop the rotation of the shaft *t*, which, be it observed, is normally driven by the belt *r* through the medium of the clutch members, the tappets will be brought into 20 alinement with it, this being of course due to the fact that though the shaft ceases to rotate the pulley *s* continues to rotate, and so upon the consequent disconnection of the clutch members the member *v* is forced lat- 25 erally, moving the tappets with it.

It will be observed that should at any time the tappets be moved laterally when one of them is at the side of the block 11 the flexible mounting of said block, already described, 30 will duly permit the movement. When the block 11 is brought into the path of the tappets *y*, one of them will engage it, causing the toggle-levers to buckle, and thus permitting the spring 5 to raise the treadle-lever 2, 35 which action will lift the adjacent end of the lever *h* and lower its other end. The result will of course be the disconnection of the friction-roller *f* and the flange *e*, thus throwing off the power from the reel, and also the dis- 40 connection of the rollers *m* and *n*, throwing off the power to the pulley *s*. It should be remarked that the reel is provided with the usual belt-brake 12, which is secured at one end to the frame, extends around the flange 45 *e*, and at its other end is secured to a weighted lever 13. The stopping of the rotation of the shaft *t* in order to effect the desired lateral movement of the clutch member *v* is depend- 50 ent upon the action of a mechanism which itself depends upon the breaking of some one of the threads which are being wound upon the reel.

30 denotes a creel of the ordinary pattern, and 31 denotes the delivery-spools mounted 55 thereon. Between the glass bars 32, arranged in the upper portion of this creel and over which the threads from the spools pass, is mounted a reed 33, which is divided horizon- 60 tally by a bar 34, below which are dents 35, of the ordinary flat-metal pattern, and above which are dents 36, consisting of round bars of glass somewhat thicker than the dents 35. Through the upper set of dents the threads 65 pass, whereas through the lower set of dents extend fallers 37, which are fulcrumed upon a rod 38, mounted in the creel, and which have eyelets 39 at their upper ends, through which

the threads extend. The disposition of these fallers is such that their eyelet ends are nor- 70 mally sustained by the threads, said fallers thus resting somewhat at an incline. It is to be noted that their fulcrumed ends are back of their eyelet ends relatively to the di- 75 rection in which the threads move. If they were disposed with their fulcrumed ends forward of their eyelet ends, the catching of a knot or other enlargement in the eyelet would be augmented instead of broken. Arranged 80 as I have shown them the fallers can rise to thus tend to release the threads. The alternate ones of these fallers are longer than the others, so that when they are all brought into 85 alinement with each other, bearing against the rod 34, their eyelets will not interfere with each other. In order to properly space the 90 fallers, washers 40 are arranged alternately with them upon the rod 38. The body portion of each faller consists of a piece of wire whose free end forms an annulus 41, which receives the shaft 38 and terminates in a dog 42. In the 95 upper portion of the creel is journaled a horizontal shaft 43, which carries a cylinder 44, having longitudinal ribs 45, some one of which should a thread break and the corresponding 100 faller thus be permitted to drop will engage the dog of said faller to stop the rotation of the cylinder. The cylinder is driven by a belt 46, which is crossed and extends around the 105 shaft *t*, which has a covering 46' of a substance adapted to adhere closely to said belt, so as to preserve a proper engagement be- 110 tween the belt and the shaft. Between the shaft and the cylinder, however, the under part of the belt adjacent the shaft extends over two spaced rollers 47, journaled in a 115 bracket 48, which is suspended from a grooved roller 48', which moves in parallel horizontal guides 49, suspended from the frame of the machine by bars 50, the slack of the belt be- 120 ing taken up and its engagement with both the shaft *t* and the cylinder being augmented by a weight 51, which is hung from a pulley 52, suspended by the belt from the rollers 47. 125 The object of extending the belt over rollers 47, which are mounted in a traveling bracket 48, is simply to afford means whereby should it be desired to move the creel laterally with reference to the warping-machine proper 130 this can be done without disturbing the action of the belt, which can be moved along on the shaft *t*, just as the creel is. If the cylinder 44 is stopped by the dropping of a faller, as above described, the drag which the belt 46, continually kept taut by the weight 51, exerts upon the shaft 43 will be sufficient 135 to stop the rotation of the latter, whereupon the clutch members will be thrown out of action with each other, this resulting in the lateral movement of the tappets *y*, one of which in the manner already set forth will 140 cause the toggle-levers to buckle and produce that movement of the other parts which throws off the power. Should it not be desired to use any of the fallers, they may be



held up out of the way in the manner before referred to by elastic bands 53, which surround the corresponding series of glass bars 36:

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

1. In a warping-machine, the combination, with the frame and a reel journaled in said  
10 frame, of a movable revoluble shaft, means for rotating said shaft, a friction-wheel carried by said shaft and adapted to engage the reel to drive the same, a lever fulcrumed in said frame and adapted to operatively engage  
15 said shaft to move the same, toggle-levers, a coupling pivotally connected to said lever at one end, operative pivotal connection between the other end of said coupling and one of said toggle-levers, and a revoluble tappet  
20 device, said tappet device being movable into contacting proximity to one of said toggle-levers to buckle the latter, substantially as described.

2. In a warping-machine, the combination, with the frame and a reel journaled in said  
25 frame, of a movable revoluble shaft, means for rotating said shaft, a friction-wheel carried by said shaft and adapted to engage the reel to drive the same, a lever fulcrumed in said frame and adapted to operatively en-  
30 gage said shaft to move the same, a pulley movably arranged in said frame and adapted to be driven by said shaft, toggle-levers, a coupling pivotally connected to said lever at one end, operative pivotal connection be-  
35 tween the other end of said coupling and one of said toggle-levers, a revoluble tappet device, a pulley carried by said tappet device, and a belt connecting said pulleys, said tap-  
40 pet device being movable into contacting proximity to one of said toggle-levers to buckle the latter, substantially as described.

3. In a warping-machine, the combination, with the frame and a reel journaled in said  
45 frame, of a movable revoluble shaft, means for rotating said shaft, a friction-wheel carried by said shaft and adapted to engage the reel to drive the same, a lever fulcrumed in

said frame and adapted to operatively engage  
said shaft to move the same, a pulley mov- 50  
ably arranged in said frame and adapted to be driven by said shaft, toggle-levers, one of said toggle-levers having a laterally-flexible projection, a coupling pivotally connected to  
said lever at one end, operative pivotal con- 55  
nection between the other end of said coupling and one of said toggle-levers, a revoluble tappet device, a pulley carried by said tappet device, and a belt connecting said pulleys, said tappet device being movable into 60  
contacting proximity to said flexible projection, substantially as described.

4. In a warping-machine, the combination, with the frame, of a reel journaled in said  
frame, disconnective power-transmitting 65  
mechanism for said reel, controlling means for said power-transmitting mechanism, a shaft constituting a portion of said controlling means, a creel, another shaft journaled in  
the creel, a belt connecting said shafts, guides 70  
arranged parallel with said first-named shaft, a bracket movable in said guides longitudinally of said shaft, rollers journaled in said bracket, the belt being extended over said  
rollers, and a weight suspended from said 75  
belt between the rollers, substantially as described.

5. The combination, with a frame, of a shaft, a pair of spring-actuated toggle-levers arranged substantially at right angles to said  
shaft, a part or parts operatively connected 80  
to and adapted to be controlled by said toggle-levers, and a revoluble tappet device mounted on, and movable longitudinally of, said shaft into operative proximity to said  
toggle-levers, one of said toggle-levers hav- 85  
ing a laterally-flexible projection adapted to be engaged by said tappet device, substantially as described.

In testimony that I claim the foregoing I 90  
have hereunto set my hand this 26th day of September, 1900.

W. J. GARLICK.

Witnesses:

ROBERT ATHERTON,  
JOHN W. STEWARD.