

No. 757,081.

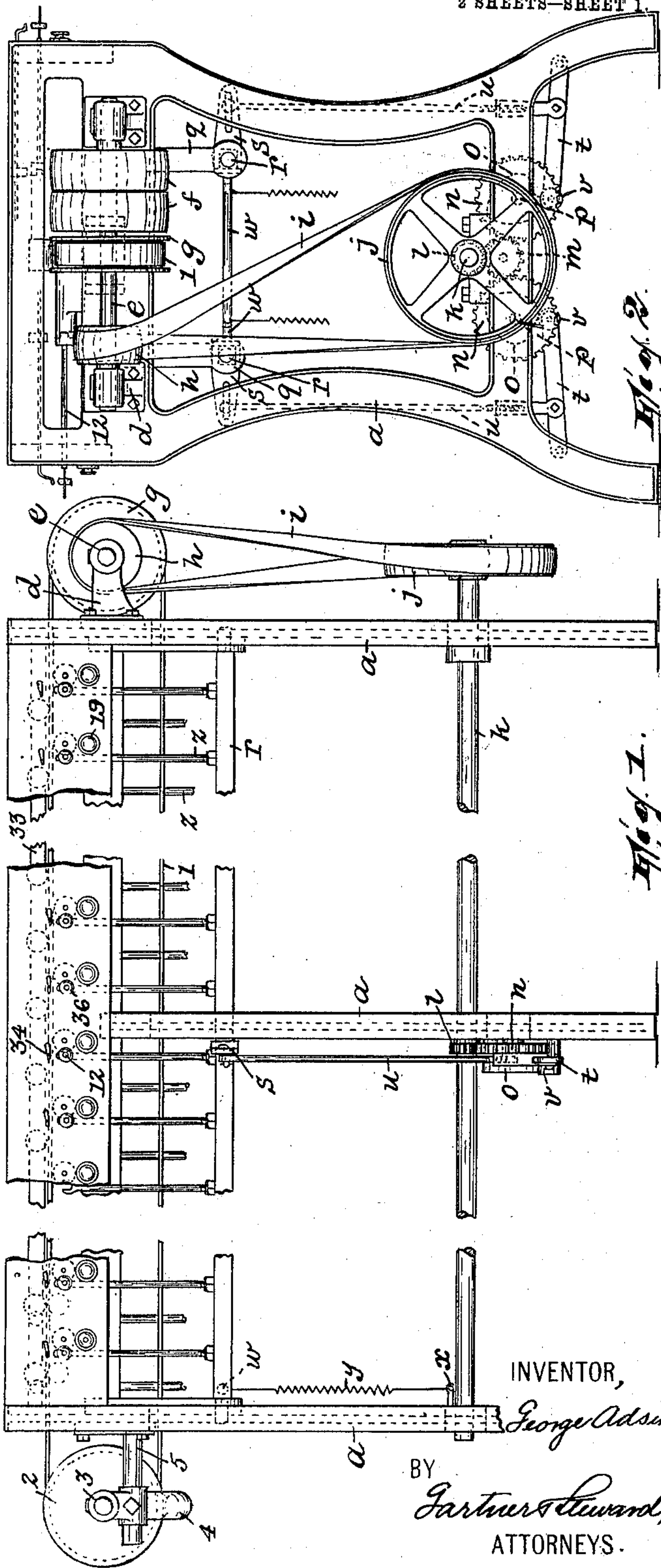
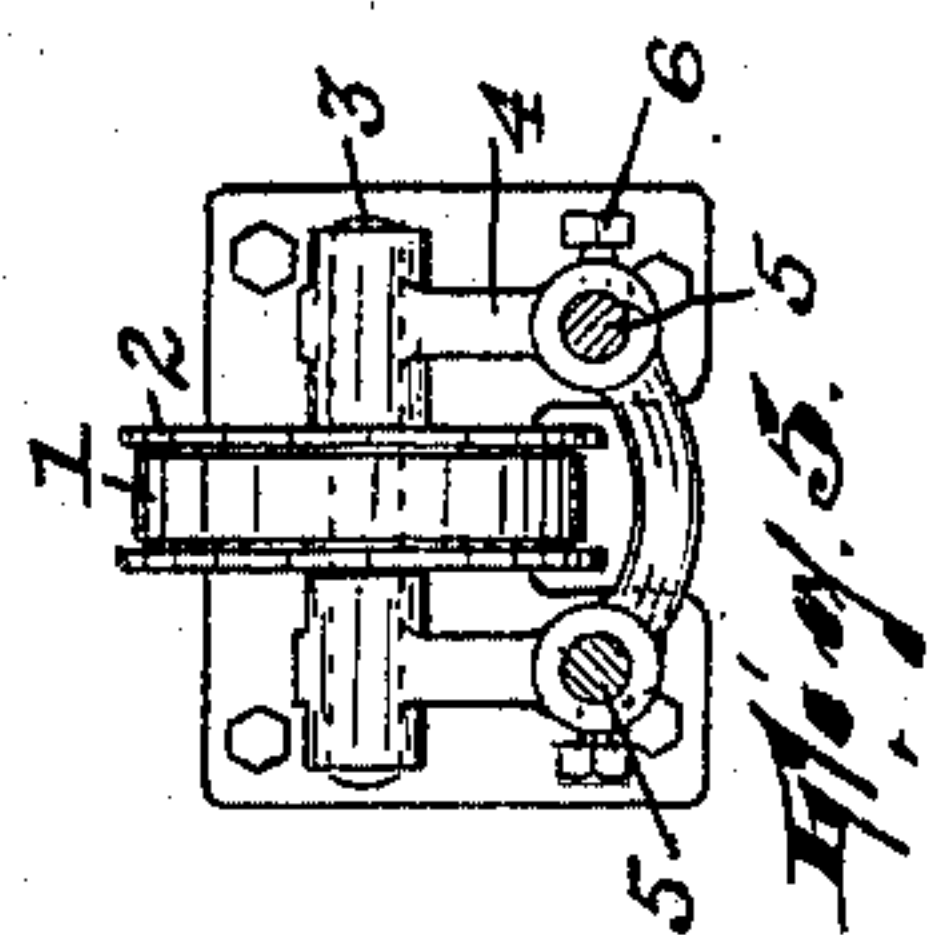
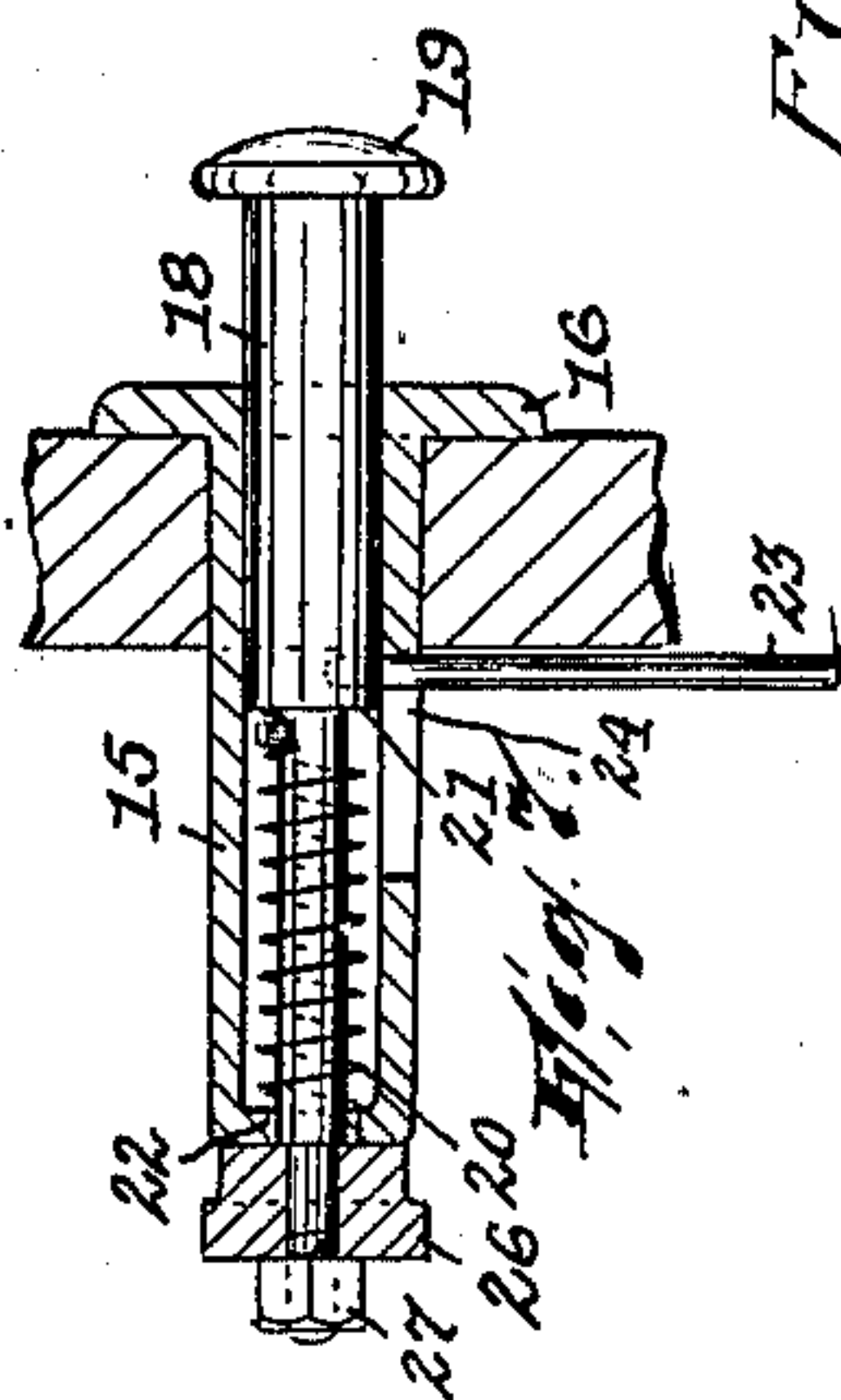
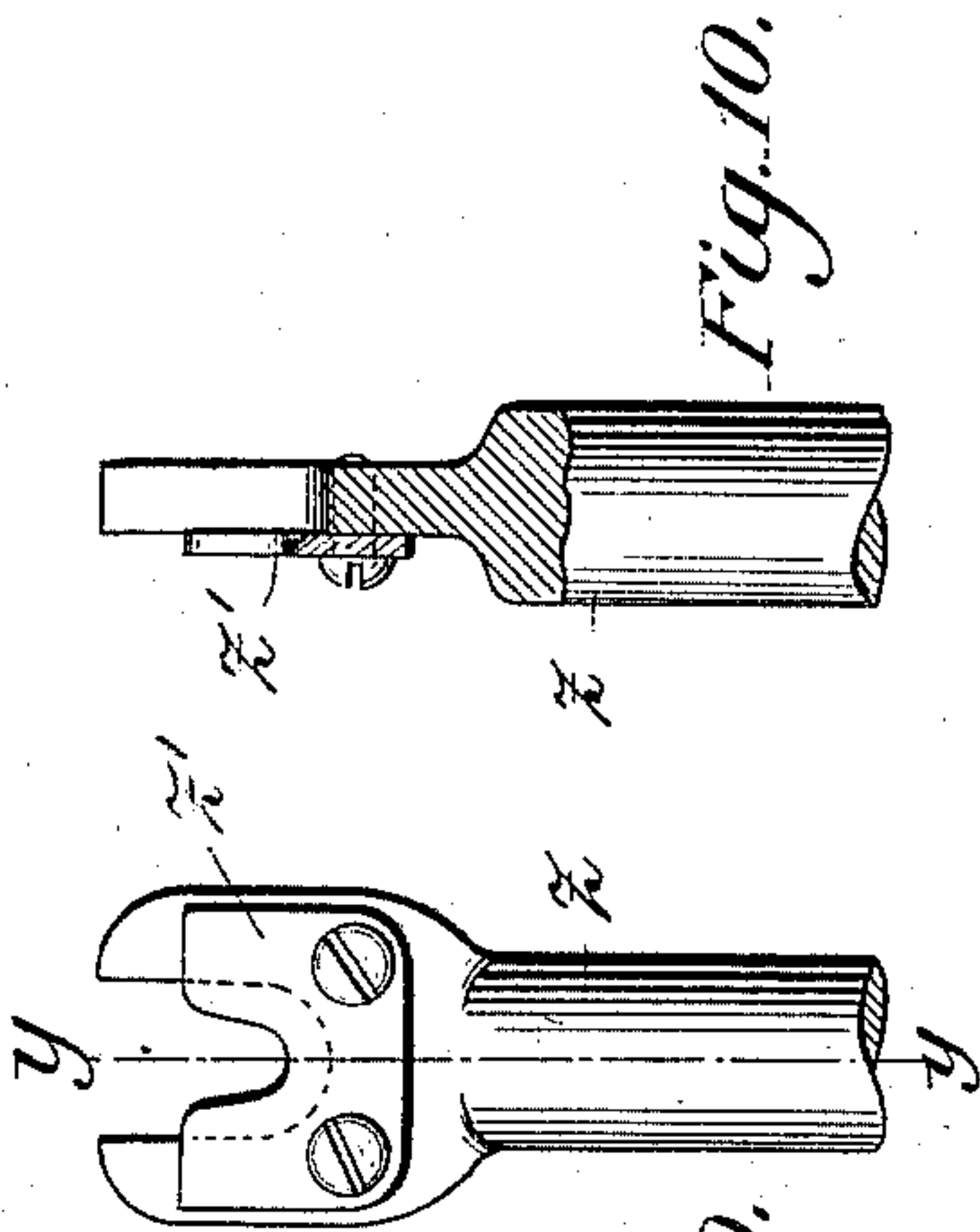
PATENTED APR. 12, 1904.

G. ADSIT.
QUILLING MACHINE.

APPLICATION FILED MAY 1, 1903.

NO MODEL.

2 SHEETS—SHEET 1



WITNESSES:

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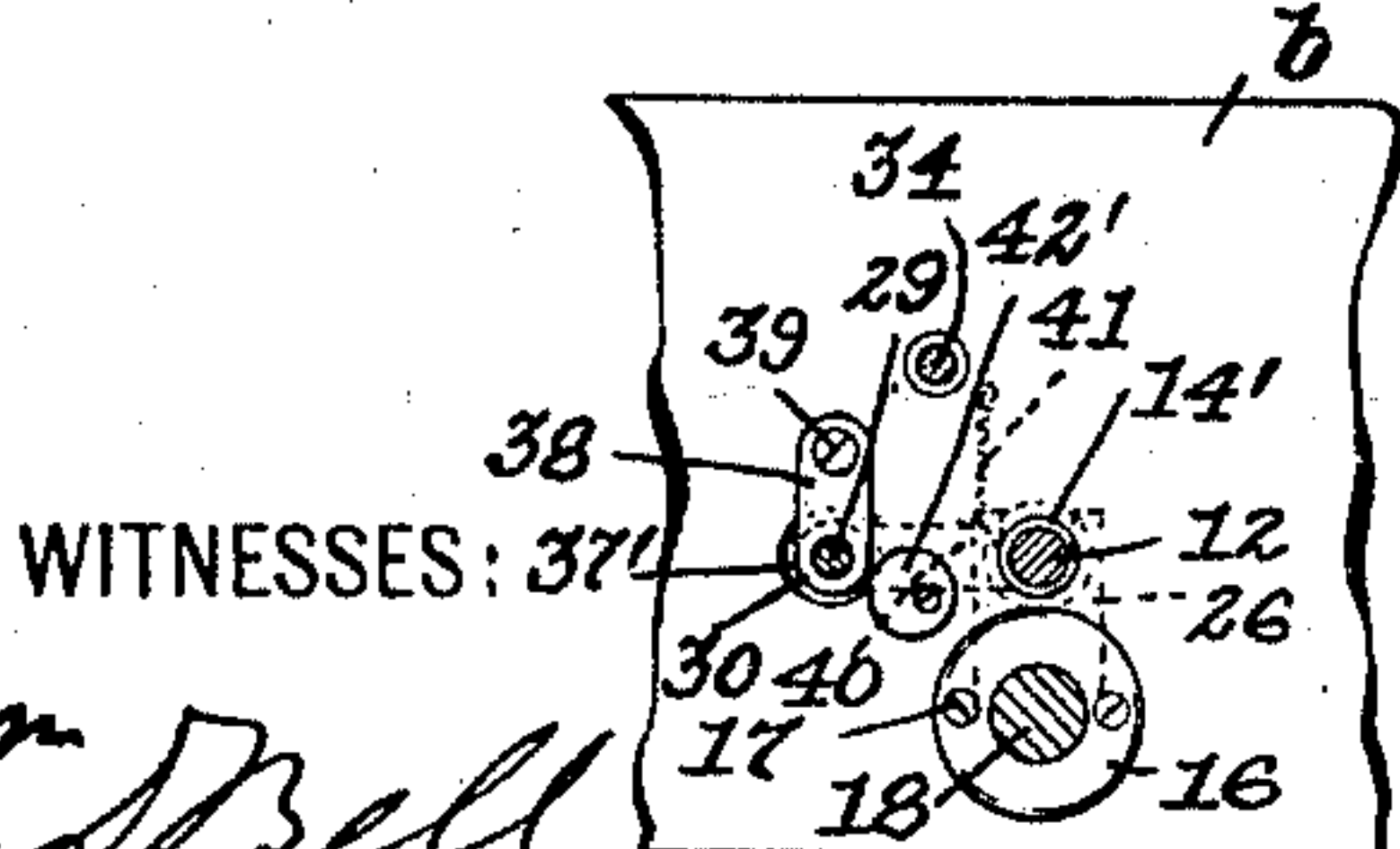
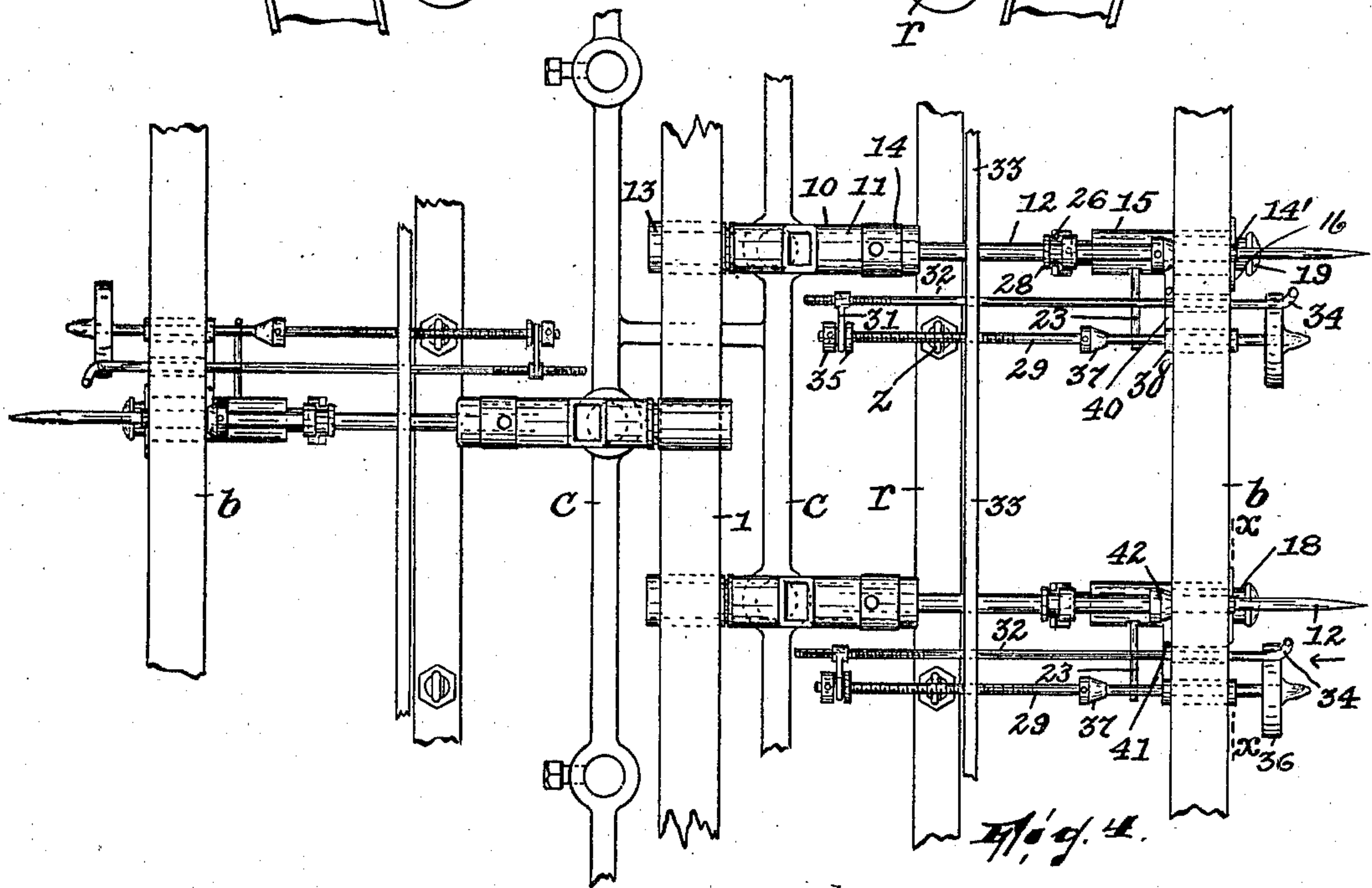
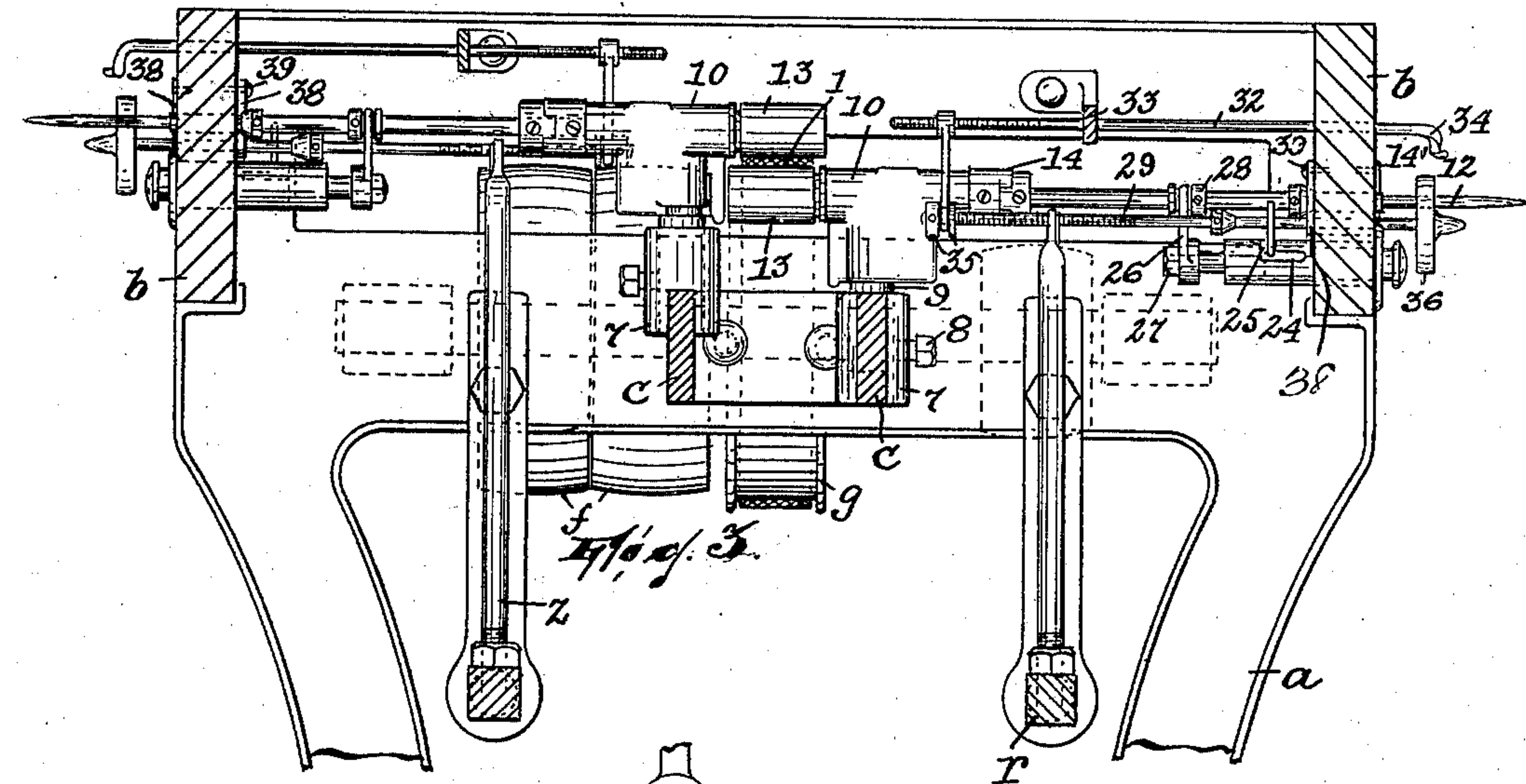
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2 SHEETS—SHEET 2.



WITNESSES: 37

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Fig. 6.

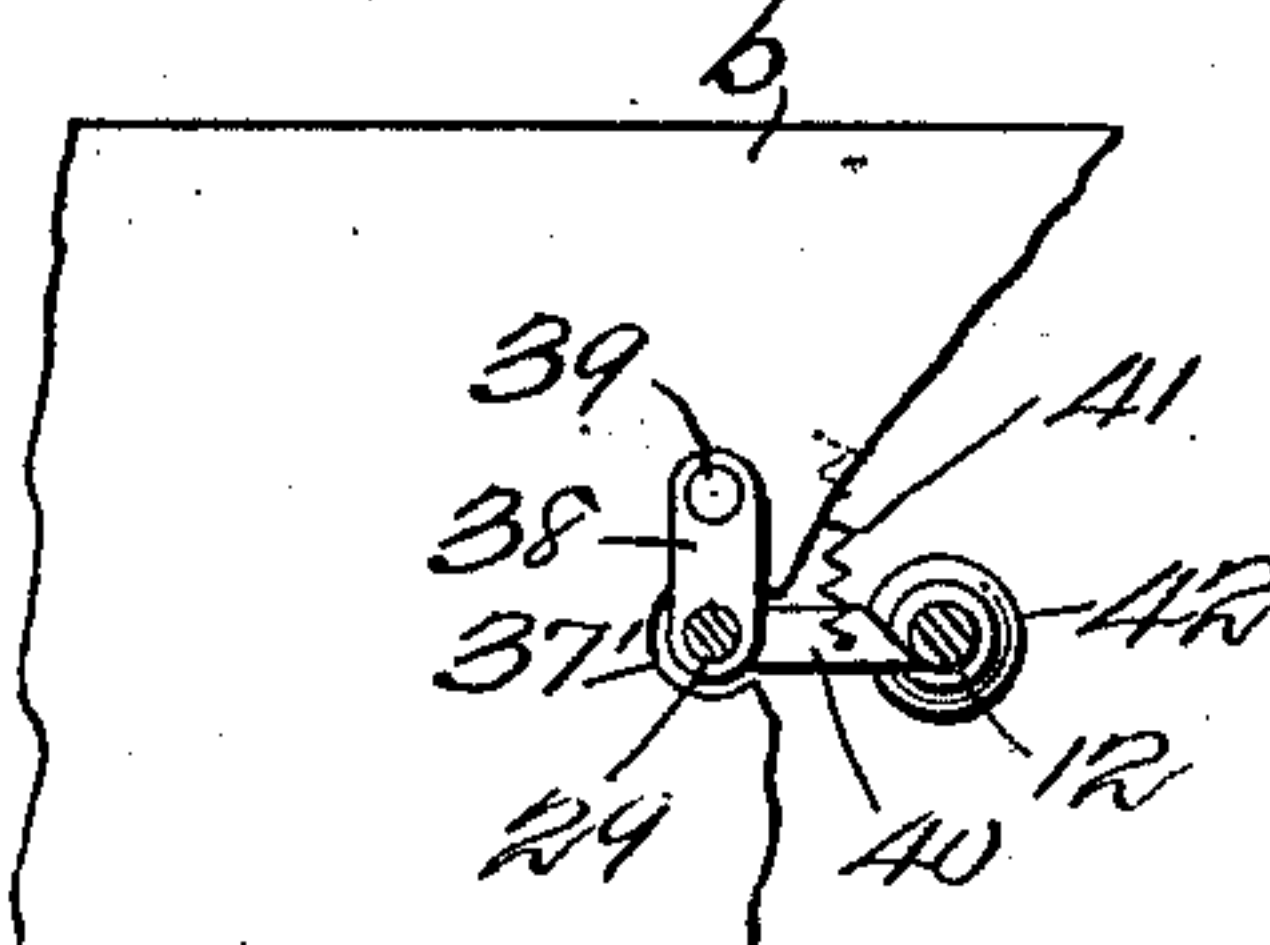


Fig. 8.

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UNITED STATES PATENT OFFICE.

GEORGE ADSIT, OF PATERSON, NEW JERSEY, ASSIGNOR TO THE BENJAMIN EASTWOOD COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

QUILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 757,081, dated April 12, 1904.

Application filed May 1, 1903. Serial No. 155,158. (No model.)

To all whom it may concern:

Be it known that I, GEORGE ADSIT, a citizen of the United States, residing at Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Quilling-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 the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to that general class of quilling or cop-winding machines in which the winding of the cop is effected by rotating the same relatively to the thread-guide, while the attenuating or building up of the cop is effected by advancing the thread-guide relatively to the cop.

The invention consists in certain improvements in machines of this or substantially this nature, hereinafter pointed out, and involving principally the cop-rotating means.

The invention will be found fully illustrated in the accompanying drawings, wherein—

Figure 1 is a view in front elevation of enough of a quilling-machine to illustrate the invention. Fig. 2 is a view of the right-hand end of the machine as seen in Fig. 1. Fig. 3 is a vertical sectional view of the machine slightly enlarged. Fig. 4 is a top plan view of a portion of the machine. Fig. 5 is a detail illustrating how the spindle-driving belt is rendered adjustable. Fig. 6 is a sectional view on the line *x x* in Fig. 4 and looking in the direction of the arrow in said figure. Fig. 7 is a view, partly in section and partly in elevation, of a portion of the mechanism whereby the cop-carrying spindle is automatically disconnected from its driving part when the winding of the cop is complete. Fig. 8 is a view of certain parts as they appear in Fig. 6, except that they are here shown entirely in full lines. Fig. 9 is a front view of the upper end of a certain fork *z*; and Fig. 10 is a view, partly in side elevation and partly in section, on the line *y y* in Fig. 9 of said fork *z*.

It is to be understood that that portion of the machine which supports the supply of the material to be wound onto the cops and the means for drawing off the material from the supply forms a superstructure for so much of the machine as is illustrated in the drawings, although it is not shown.

a designates several standards connected and braced by horizontal side rails *b* and intermediate rails *c*. In brackets *d*, projecting from one of the end standards, is journaled the main drive-shaft *e*, the same being horizontal and carrying the usual fast and loose pulleys *f*, whereby power is taken into the machine, a pulley *g*, hereinafter to be more particularly referred to, and a pulley *h*. Over the pulley *h* extends a belt *i*, which passes around another pulley *j* on a horizontal shaft *k*, journaled in the several standards.

Shaft *k* carries a pinion *l*, which meshes with another pinion *m*, disposed between and meshing with gears *n*, each associated in fixed relation with a cam *o*. Each gear and cam is mounted on a shaft *p*, journaled in one of the standards *a*.

In brackets *q* are arranged rock-shafts *r*, from which project cranks *s*. These cranks are connected with levers *t*, fulcrumed in the standards adjacent the parts *l m n o* by couplings *u*, and said levers *t* are provided with antifriction-rollers *v*, which engage the corresponding cams *o*. From each rock-shaft also projects an arm *w*, which is connected with some fixed part, as *x*, by a spring *y*, which acts in an obvious manner to keep the roller on the corresponding lever *t* against its cam.

Each rock-shaft *r* carries a series of upwardly-projecting forks *z*.

Over pulley *g* extends a belt 1, passing at the other end of the machine over another pulley 2, having its shaft 3 horizontally disposed and journaled in a substantially U-shaped bracket 4, which is penetrated by horizontal guides 5, on which it slides. The bracket is provided with set-screws 6, which may be set up against the guides to secure said bracket in any desired position. By this means the belt may be adjusted. It will be observed that

belt 1 is arranged in a vertical plane substantially midway between the vertical planes of the rails *c*.

Rails *c* are provided with a staggered series of sockets 7, those on one rail being slightly higher than those on the other. In these sockets are adjustably secured, by means of set-screws 8, the vertical stems 9 of horizontal bolsters 10, forming the bearings for the driving-shafts 11 of the spindles 12, on the free ends of which the cops to be wound are placed. The rear end of each shaft 11 carries a whirl 13, engaging the belt 1. The whirls for the spindles corresponding to one rail *c* are arranged below, while those for the spindles corresponding to the other rail *c* are arranged above the belt 1 on account of the difference in elevation of the sockets 7 on the two rails. The rear end of each spindle is revolvably arranged in the adjoining end of the shaft 11, and shaft 11 and spindle 12 carry engageable clutch members 14, whereby they may be locked together, so that the rotation of shaft 11 will be transmitted to the spindle. 14' is a tubular bearing for the spindle where it penetrates the rail *b*.

In each rail *b* and adjacent each spindle 12 is arranged a tubular holder 15, having its outer end formed with a flange 16, whereby by means of screws 17 the holder is fixed in the rail. In said holder is guided a push-rod 18, having a knob or head 19 and normally pressed outwardly by a spiral spring 20 interposed between a shoulder 21 on the push-rod and a shoulder 22 in the bore of the holder. Said push-rod carries a laterally-projecting pin 23, projecting through a longitudinal slot 24, having its rear end formed with an offset portion 25. (See Fig. 3.) The rear end of the push-rod is reduced and protrudes from the holder, carrying a fork 26, which is secured thereto by a nut 27. Said fork engages an annularly-grooved collar 28 on the spindle. By this arrangement, so long as the pin 23 engages in the offset portion of the slot 24, the push-rod, through its fork 26, holds the clutch members 14 engaged, so that the rotary movement of the shaft 11 is transmitted to the spindle. If the push-rod is turned sufficiently to move the pin out of said offset portion into the slot 24 proper, spring 20 will press the push-rod outwardly, which in turn will act through its fork 26 to throw the spindle outwardly, and thus disengage the clutch members, so that the power is thus cut off from the spindle.

It will be understood that during the winding the pin 23 normally engages the offset portion of the slot in the holder. It is when the winding of the cop is complete that the pin is disengaged from said offset portion, so that the spring-actuated push-rod will throw the spindle forward to disengage it from its driving-shaft. The means for automatically releasing the pin from the offset portion of the

holder may be thus described: Each fork *z* carries a beveled crotched plate *z'*, engaging the threaded portion of a rotary and threaded part in the form of a rod 29, arranged to reciprocate in a tubular bearing 30, penetrating the rail *b* and having its rear end journaled in an arm 31, carried by a rod 32, arranged to slide in rail *b*, and a fixed bar 33, arranged between the rails *b* and *c*. Said rod 32 forms the shank of a thread-guide carrier 34, and it has a threaded engagement with the arm 31, whereby said arm is adjustable on the rod. The arm engages the rod 29 between fixed collars 35 on said rod. The front end of rod 29 carries a friction-wheel 36, arranged in contacting proximity to the cop-carrying portion of the spindle 12. Rod 29 carries a cone 37 of sufficient extreme diameter, so that as the rod longitudinally advances the cone will engage pin 23 and disengage it from the offset portion of the slot in the holder.

The automatic stopping of the spindle is primarily the result of the intermittent turning of rod 29 by friction-wheel 36 being engaged by the rotating cop as the friction-wheel reciprocates with the spindle. In order to break the contact between the cop and the friction-wheel after the winding is complete, the friction-wheel is arranged to be moved away from the cop by the following mechanism: Tubular bearing 30 is suspended in an opening 37' slightly larger than the bearing by arms 38, pivoted at 39. Said bearing is formed with a detent 40, (see Fig. 8,) which is normally held against the spindle 12 by a spring 41, connecting it with a fixed point on rail *b*. Spindle 12 carries a cone 42. This cone when the spindle is thrown forward by the spring-actuated push-rod engages the detent 40, and thus moves the bearing 30 about 39 as a center, with the consequence that the friction-wheel is moved away from the cop on the spindle. Detent 40 may be adjusted relatively to cone 42 by an eccentric disk 42'.

The operation may be thus briefly described: The rotation of shaft *k* from shaft *e* through the connecting mechanism described causes shafts *r* to rock, this being the consequence of the engagement of levers *t* with the cams *o*, rotated from said shaft *k*. The rocking of shafts *r* causes rods 29 to reciprocate, which action is imparted to said rods by the forks *z*, which are carried by said shafts *r* and engage the threading on the rods. In this connection it may be remarked that some up-and-down play of the parts 29 and 32 is provided for by making their bearings at the rails *b* not too snug, so that, in view of the further fact that the arc in which the upper end of each fork moves is that of a relatively large circle, adequate engagement between said fork and the threading of part 29 is at all times insured. At the same time belt 1 is being continuously driven from shaft *e* and acts to drive the whirls 13 and (it being assumed that the

clutch members between each spindle and each shaft 11 are engaged) in consequence the spindles. The rotation of the spindles effects the winding of the cops, and the building up thereof in proper form is caused by the thread-guide carriers 34 being made to reciprocate with rods 29 through the medium of arms 31, the constantly-augmented cops being from time to time engaged by the periphery of the friction-wheels 36, which are thus caused to turn, thus turning rods 29 and intermittently advancing the same by virtue of the threaded engagement of said rods with the forks 2. Ultimately each cone 37 will engage the corresponding pin 23, thus throwing it out of the offset portion of the slot 24, so that the push-rod is free to move forward under the tension of its spring and cause the disengagement of the clutch members 14. At this time cone 42 takes against the detent 40, so as to cause the friction-wheel 36 to be moved away from the finished cop in the manner already sufficiently described. Cone 42 also, it may be remarked, acts as a brake for the spindle to perfectly stop the same by being caused to impinge against bearing 14'. Thereupon, the finished cop having been removed and it being desired to start winding a new one, push-rod 18 is pressed inwardly, whereupon spring 20 will, on account of its form of coil, turn the push-rod to bring the pin into engagement with the offset portion of the slot in the holder.

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

1. In a quilling or other similar machine, the combination of a suitable support, rotary parts comprising an alined spindle and driving device therefor arranged in said support and movable the one longitudinally away from the other, clutch members adapted to disconnectively connect said spindle and its driving device, a spring normally forcing the movable part away from the other, and holding means for said spring normally resisting the action thereof to move said part, substantially as described.

2. In a quilling or other similar machine, the combination of a suitable support, an alined spindle and driving device therefor arranged in said support, said spindle being movable longitudinally away from its driving device, clutch members adapted to disconnectively connect said spindle and its driving device, a spring normally pressing said spindle away from its driving device, and holding means for said spring normally resisting the action thereof to move said spindle, substantially as described.

3. In a quilling or other similar machine, the combination of a suitable support, rotary parts comprising an alined spindle and driving device therefor arranged in said support and movable the one longitudinally away from the other, clutch members adapted to discon-

nectively connect said spindle and its driving device, a spring normally forcing the movable part away from the other, holding means for said spring normally resisting the action thereof to move said part, and means, actuated from the cop being wound, for causing said holding means to release said spring, substantially as described.

4. In a quilling or other similar machine, the combination of the frame, a spindle journaled in said frame, a spindle-driving device alined therewith, a clutch for disconnectively connecting said spindle and its driving device, said spindle being movable longitudinally to disconnect the clutch, a spring-actuated means adapted to effect the longitudinal movement of said spindle, means for retaining said spring-actuated means in a retracted position, and means for effecting the release of said spring-actuated means, substantially as described.

5. In a quilling or other similar machine, the combination of the frame, a spindle journaled in said frame, a spindle-driving device alined therewith, a clutch for disconnectively connecting said spindle and its driving device, said spindle being movable longitudinally to disconnect the clutch, a spring-actuated means adapted to effect the longitudinal movement of said spindle, means for retaining said spring-actuated means in a retracted position, and means, controlled from the cop being wound, for releasing said spring-actuated means, substantially as described.

6. In a quilling or other similar machine, the combination of the frame, alined rotary members, one of which is a spindle and the other of which is its driving device, a clutch disconnectively connecting said members, one of said members being movable away from the other to disengage said clutch, a spring-actuated device controlling the longitudinal movement of said member, means, resisting the action of said spring-actuated device, for holding said members engaged, and means, actuated from the cop being wound, for disengaging said spring-actuated device from said holding means, substantially as described.

7. In a quilling or other similar machine, the combination of the frame, interlocking members revolubly arranged in said frame and one of which is a spindle and the other of which is its driving device, one of said members being movable away from the other to disengage said members, a spring-actuated device adapted to move said movable member away from the other member, means for holding said device retracted, a rotary and threaded part engageable with the cop being wound, and an oscillating part engaging the threaded portion of said rotary threaded part, said rotary threaded part being engageable with said spring-actuated device to release the same from its holding means, substantially as described.

8. In a quilling or other similar machine, the combination of a spindle, a driving device

therefor, a clutch disconnectively connecting said spindle and its driving device, means for moving said spindle away from its driving device to disengage the clutch, a rotary part engageable with the cop being wound and controlling said spindle - moving means, and means, actuated from the spindle, for automatically moving said rotary part away from the spindle, substantially as described.

- 10 9. In a quilling or other similar machine, the combination of a suitable support, an aligned spindle and driving device therefor arranged in said support, clutch members disconnect-

ively connecting said spindle and its driving device, said spindle being movable longitudinally to disengage said clutch, and a fixed braking device arranged to be frictionally engaged by said spindle upon the longitudinal movement thereof, substantially as described. 15

In testimony that I claim the foregoing I have hereunto set my hand this 30th day of April, 1903. 20

GEORGE ADSIT.

Witnesses:

JOHN W. STEWARD,
JAMES B. NEWTON.