

No. 719,317.

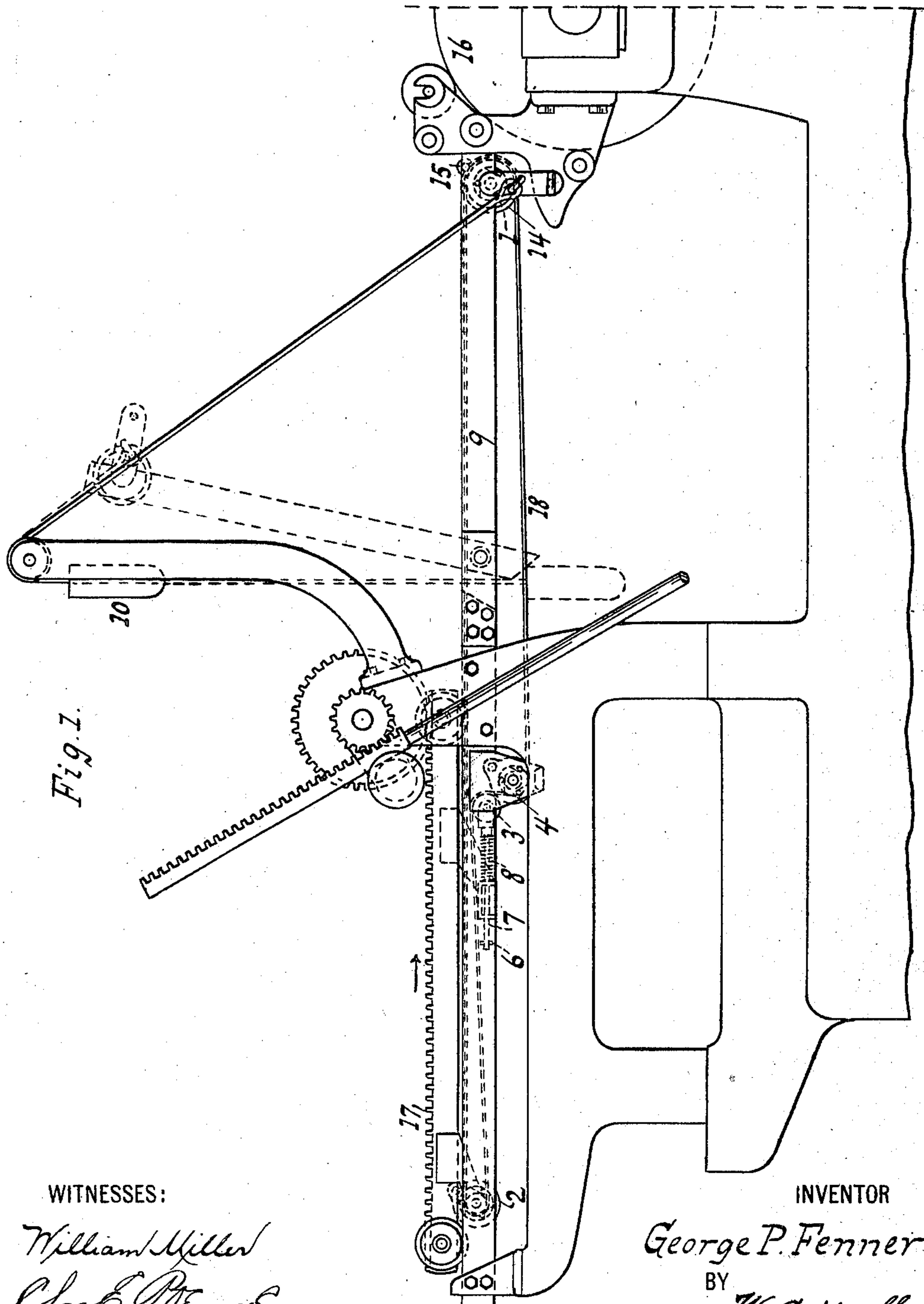
PATENTED JAN. 27, 1903.

G. P. FENNER.
SHEET DELIVERY.

APPLICATION FILED AUG. 13, 1902.

NO MODEL.

6 SHEETS—SHEET 1.



WITNESSES:

William Miller
Chas. E. Ferguson

INVENTOR

George P. Fenner

BY

W. C. Hauff

ATTORNEY

No. 719,317.

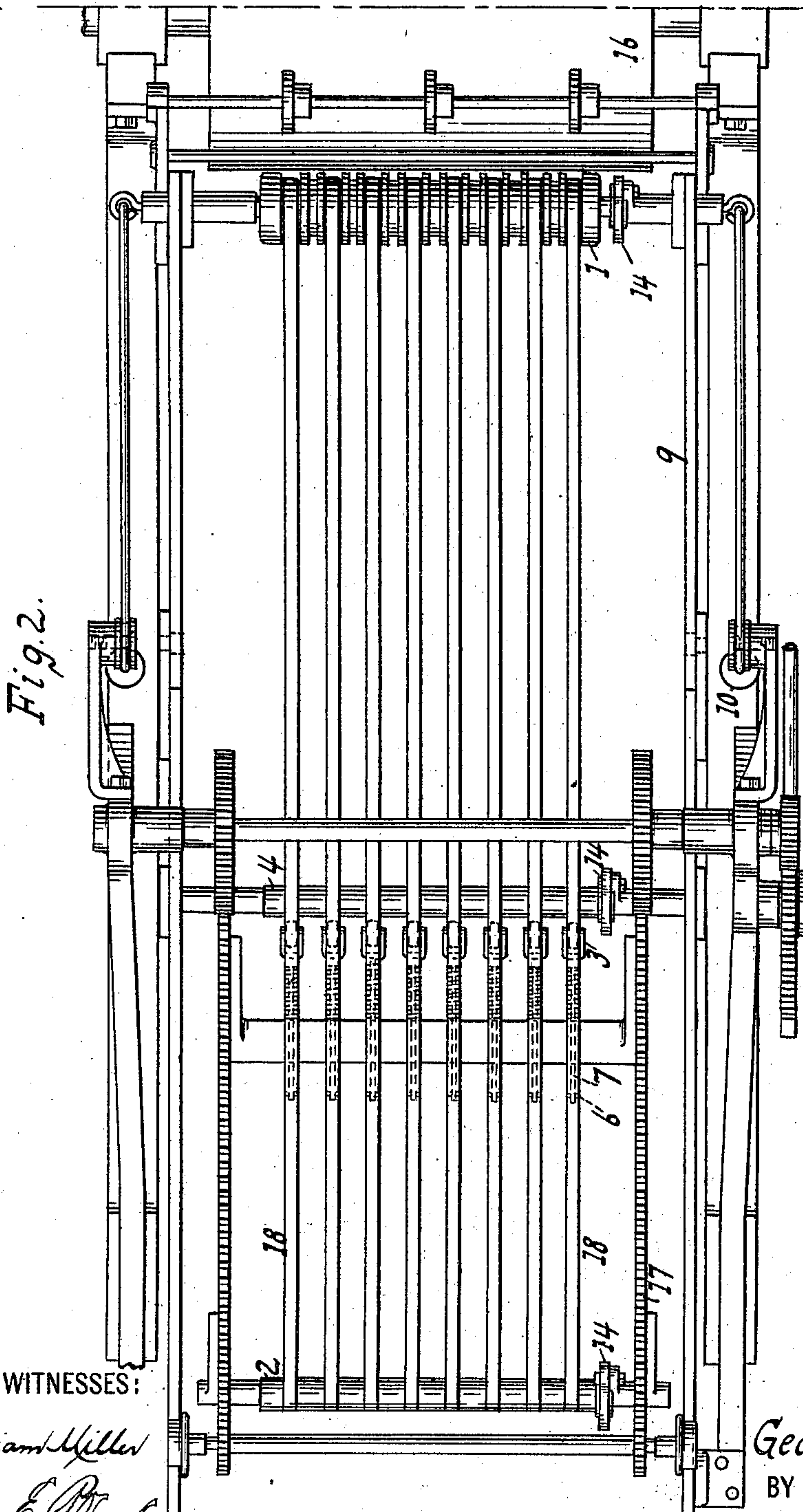
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NO MODEL.

5 SHEETS—SHEET 2.



WITNESSES:

William Miller

Chas. E. Thompson

INVENTOR

George P. Fenner

BY

W. C. Hauff

ATTORNEY

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5 SHEETS—SHEET 3.

Fig. 3.

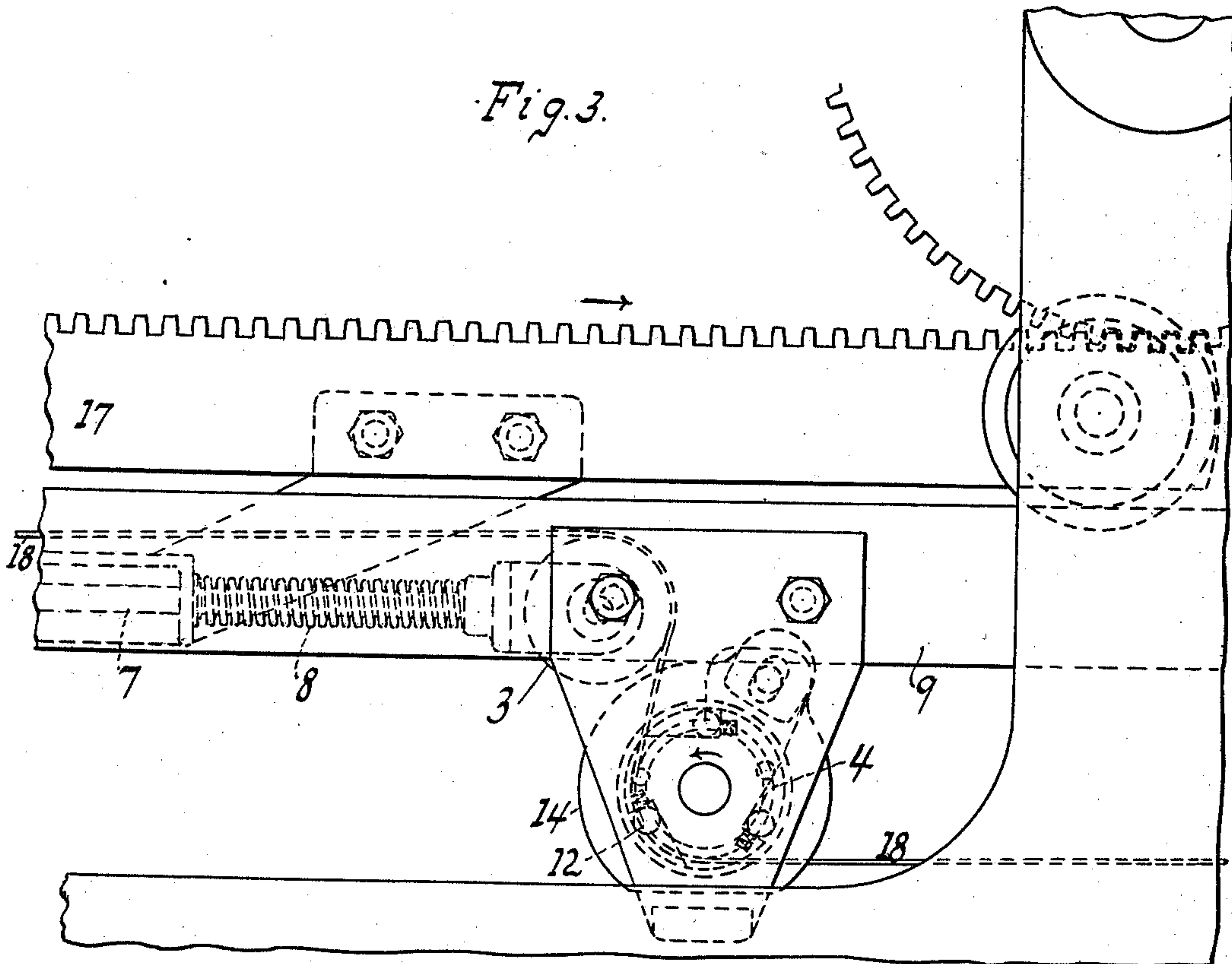
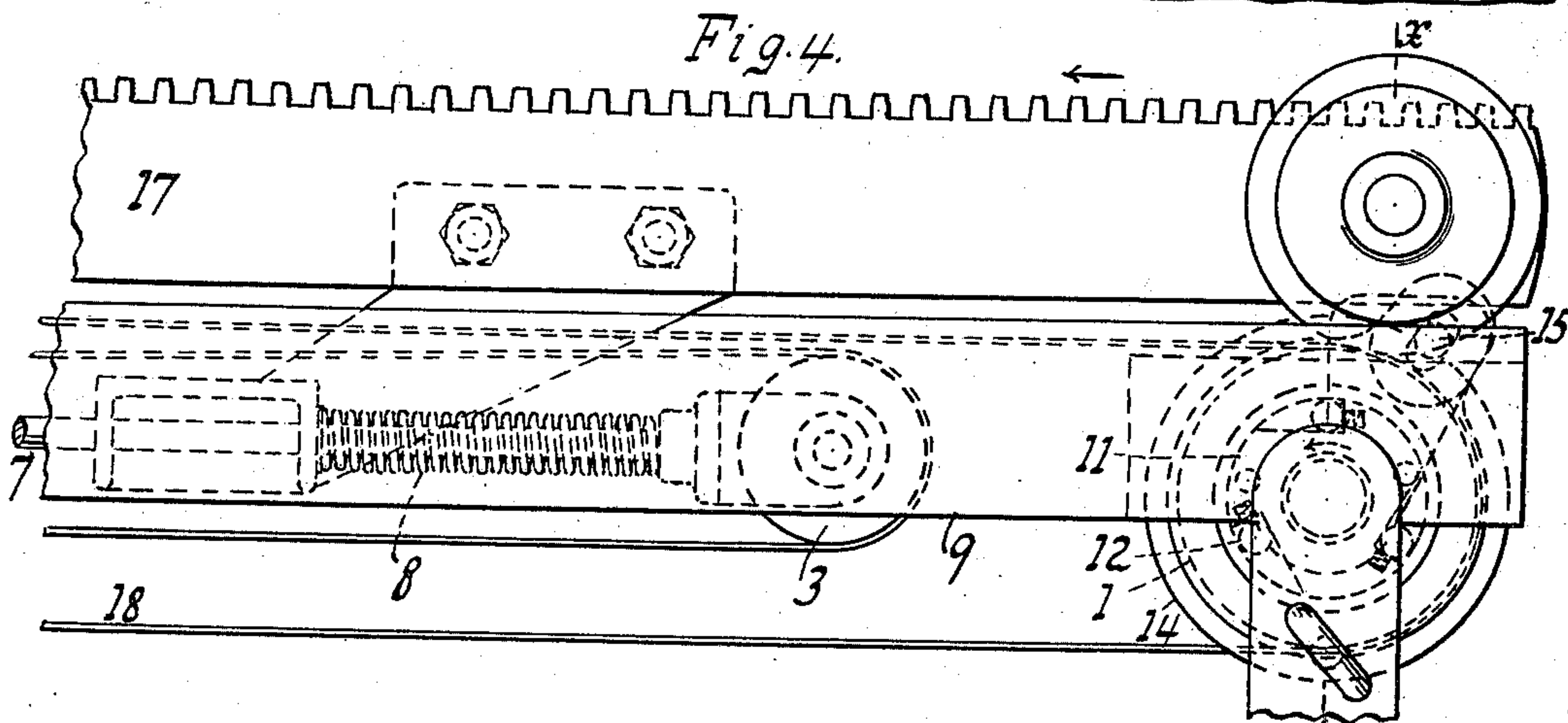


Fig. 4.



WITNESSES:

William Miller
Chas. E. Penner

INVENTOR

George P. Fenner

BY

W. C. Hauff

ATTORNEY

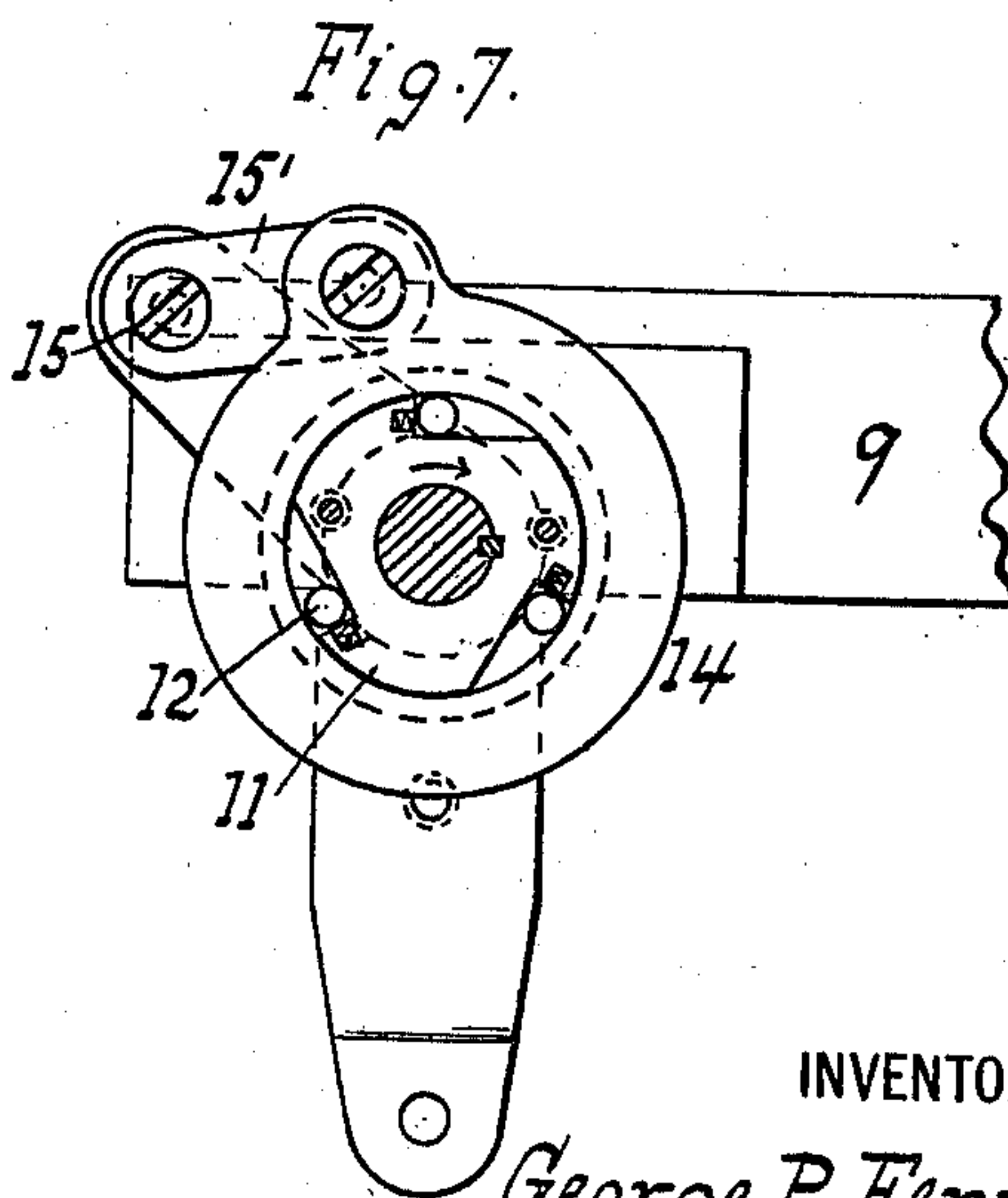
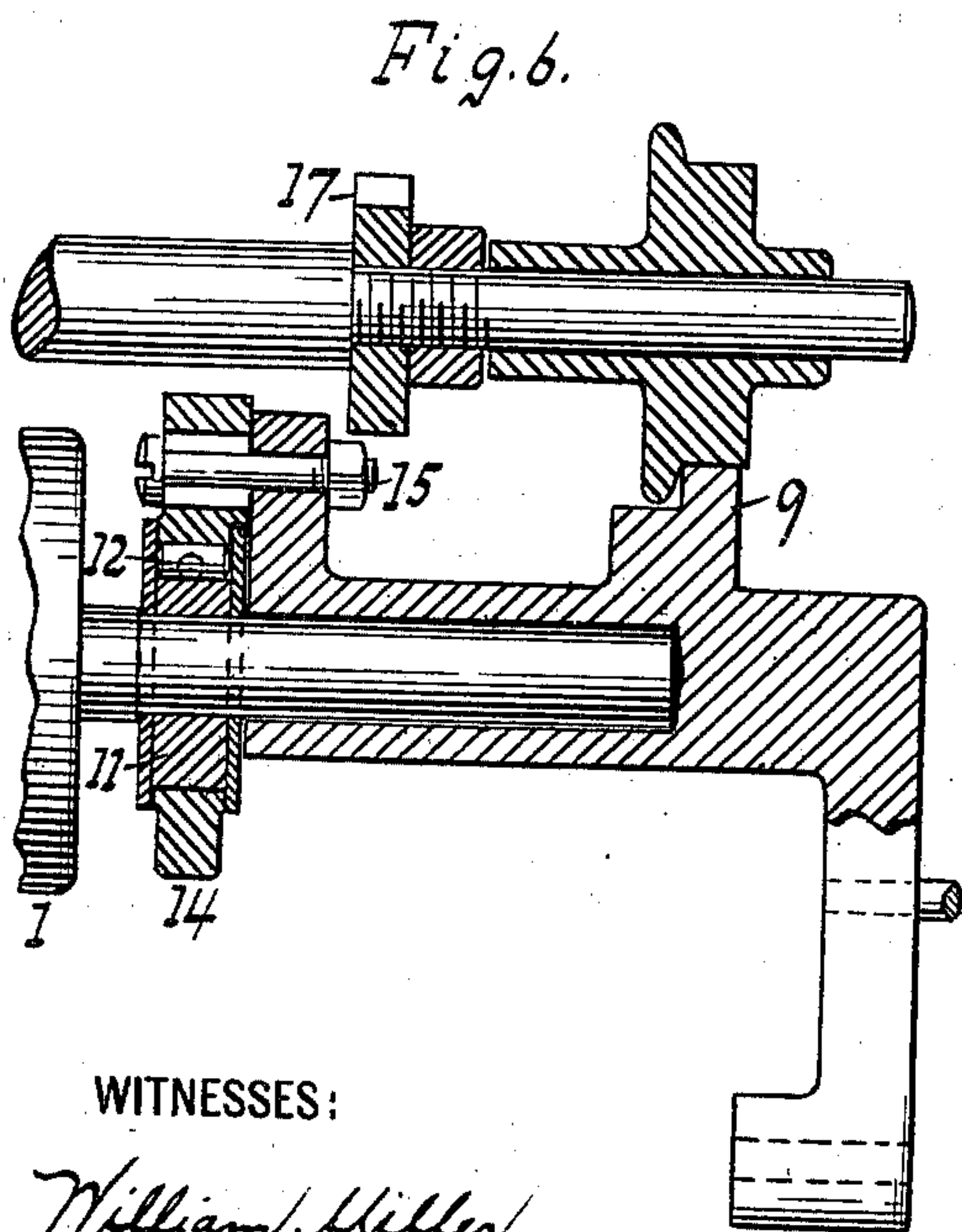
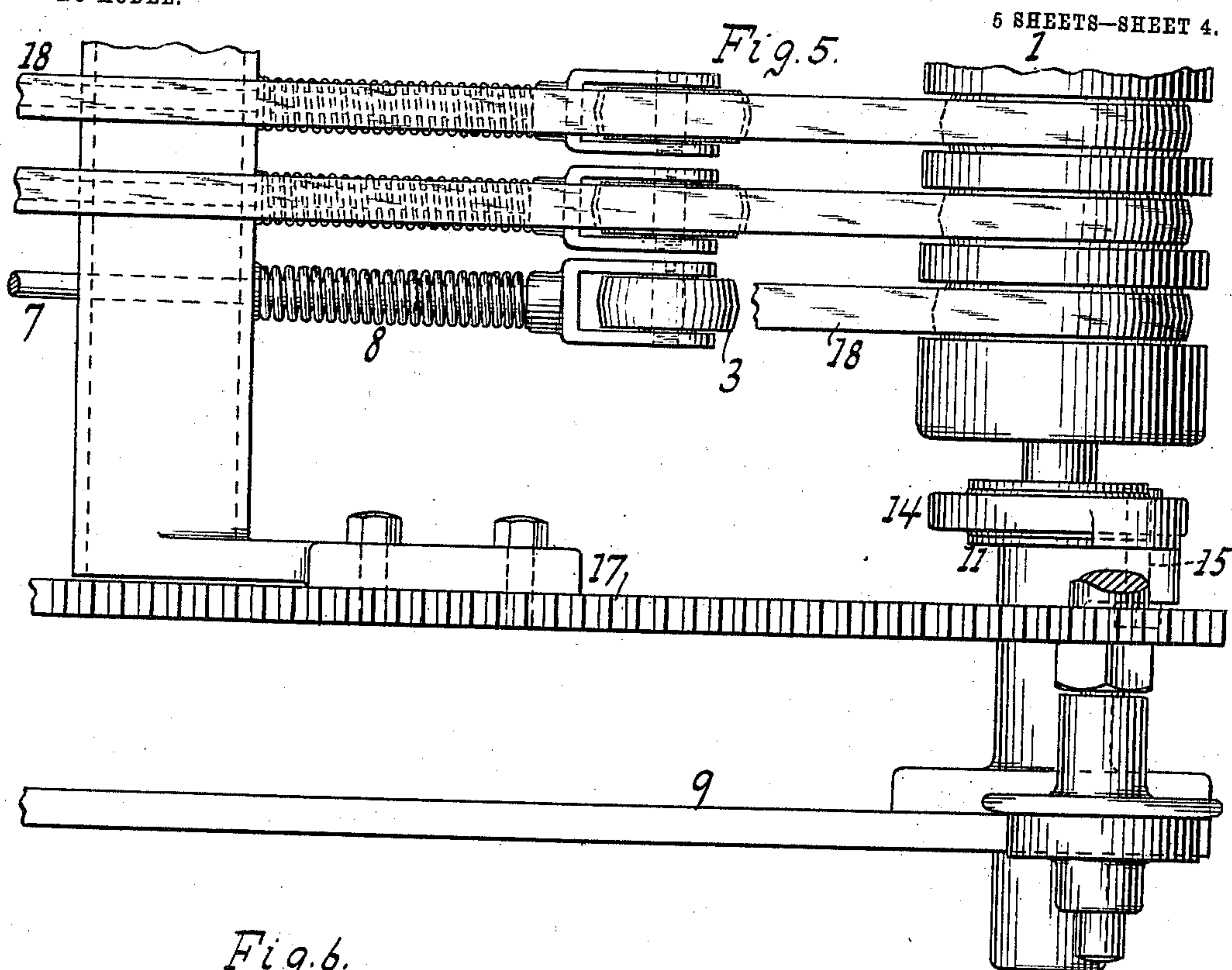
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NO MODEL.



WITNESSES:

William Miller
Chas. E. Burroughs.

INVENTOR ·

George P. Fenner

BY

W. C. Hauff

ATTORNEY

No. 719,317.

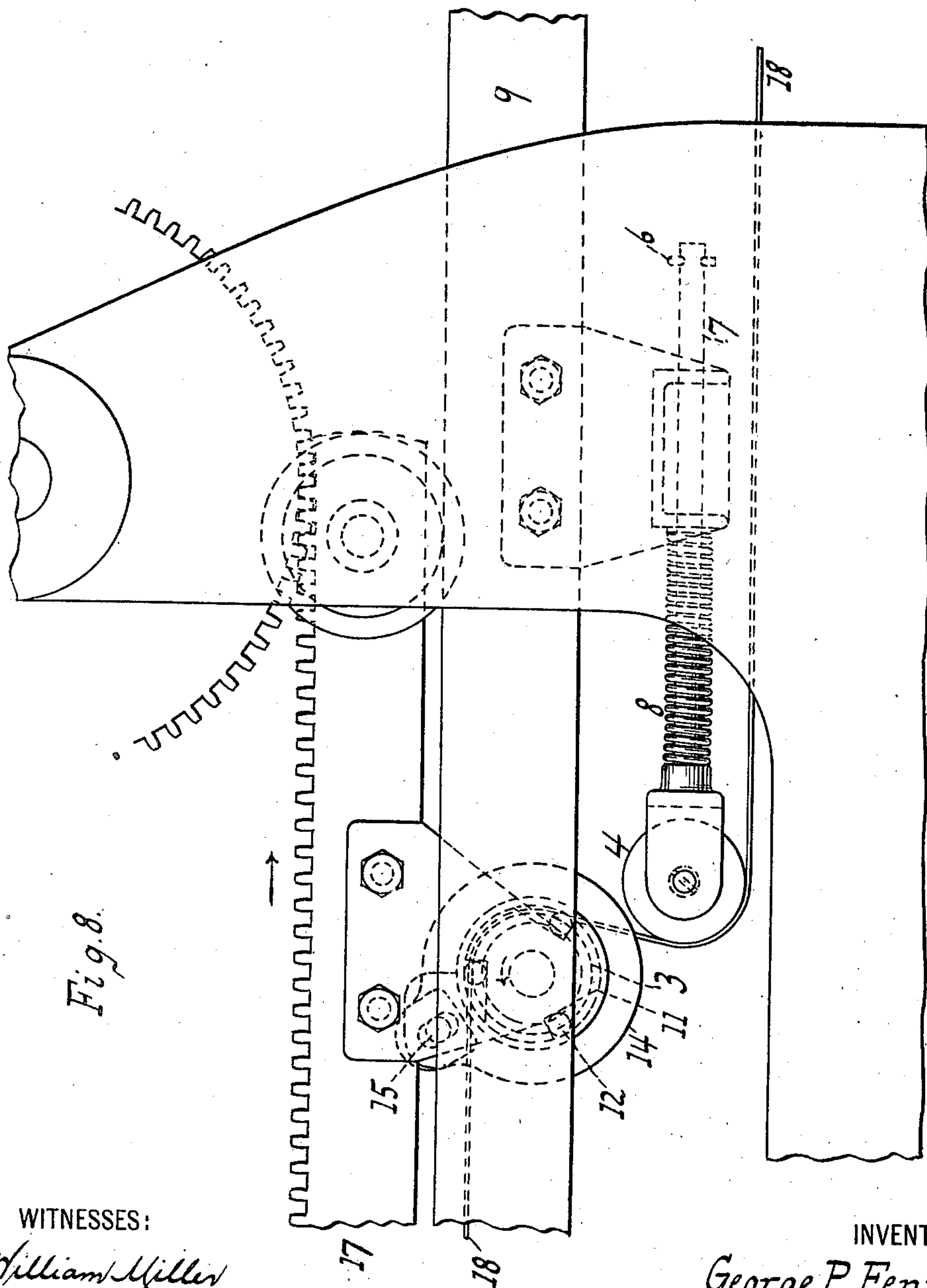
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APPLICATION FILED AUG. 13, 1902.

NO MODEL.

6 SHEETS—SHEET 5.



WITNESSES:

William Miller

Chas. E. Plummer.

INVENTOR

George P. Fenner

BY

W. C. Hauff
ATTORNEY

ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE P. FENNER, OF NEW LONDON, CONNECTICUT.

SHEET-DELIVERY.

SPECIFICATION forming part of Letters Patent No. 719,317, dated January 27, 1903.

Application filed August 13, 1902. Serial No. 119,563. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. FENNER, a citizen of the United States, residing at New London, in the county of New London and State of Connecticut, have invented new and useful Improvements in Sheet-Deliveries, of which the following is a specification.

By means of this invention the tape of a delivery mechanism can always be kept at a suitable degree of tension and accurate operation attained.

The invention resides in certain novel features of construction set forth in the following specification and claims and illustrated in the annexed drawings, in which—

Figure 1 is a side elevation of a delivery embodying this invention. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a side view of the tape-carriage, on a larger scale than Fig. 1, the carriage moving backward. Fig. 4 is a view like Fig. 3, the carriage moving forward. Fig. 5 shows a plan view of rolls for keeping the tapes stretched. Fig. 6 is a sectional view along $x x$, Fig. 4, of a tape-roll with clutch arrangement. Fig. 7 is a side elevation of a clutch-ring mounted somewhat differently from that shown in Fig. 6. Fig. 8 shows a modification.

In the drawings are indicated an impression-cylinder 16 and tape-carriage 17, which reciprocates and the tapes 18 of which are arranged so that their top side or stretch remains stationary or without motion when the carriage is moving back or toward the impression-cylinder. This arrangement of tape and carriage is known in the art and need not be described here. (See, for example, United States Patents No. 335,066, of January 26, 1886, and No. 506,990, of October 17, 1893. Sheet delivery.) The tape rolls or wheels can for convenience of description be called "rear" roll 1, located toward the impression-cylinder, and "front" roll 2, with "intermediate" rolls 3 and 4. Any one or more of these rolls could be selected as a tape-tightener roll; but a practical construction has been found to construct intermediate rolls—say 3—as a tape-tightener or combined with tightening mechanism. By selecting intermediate rolls, as 3 or 4, for tightening it is possible to get all of the action of these tightener-wheels without its being necessary to increase the length of the run of the delivery-carriage. In the drawings the roll 3—that is, the series of disks which

can be considered as composing this roll—is mounted on a spindle, or rather a corresponding series of spindles, 7, movable or sliding in a suitable part of the tape-carriage and exposed to spring action or pressure. Springs are shown at 8, coiled about the spindles. A stop-pin 6 is provided for the spindle, which limits the movement of the wheels 3, so that if the tape should become excessively slack the wheels 3 cannot extend or move to such an extent as to strike against roll 1. The advantage of such tightening arrangement is manifest from the above explanation. Such tighteners, among other things, will take care of increased and decreased length of tape because of atmospheric changes.

In the operation of the machine as roller 3 moves back and forth with the carriage and one part or another of the tape tends to slacken the tightener-springs coming into action will keep the tension of the tape uniform. Say, for example, on the roll 3 moving away from roll 4 the tape should slack, the spring will preserve the tension of the tape, or when roll 3 starts its backward motion toward roll 1 and the tape should be shortened, the spring is compressed, and roll 3 moves somewhat more slowly than the delivery-carriage until the tape has resumed its normal position. Manifestly, the same action is produced when the tightener-wheels are in the position of roll 4, Fig. 8. The roll 3 in that case could be the ordinary roll as heretofore used. It may be noted that if the roll 4 should come under the position of roll 3 it would be necessary to drop the sheet correspondingly farther ahead on the delivery-board; otherwise the back edge of the sheet might strike the roll 4. In case the inking apparatus is located under the delivery-board the farther front the sheet is delivered the more will access to the ink-rolls and ink-fountain be interfered with. The selection of roll 3 for the tightening action mentioned is considered the most practical; but of course no limitation of the invention is thereby intended.

The tape-carriage is shown running on a track, which latter for a certain part of its length is hinged or movably mounted. Such track or movable section 9 can thus be swung out of the way to allow ready or free access to the front of the cylinder. The movable track part or rails 9 can be balanced by suit-

able means, such as a rope running over a pulley and attached to a weight 10. By this arrangement the type as well as the cylinder are easy of access when the delivery is out of the way.

In using ratchet-wheels and dogs to prevent the delivery-rolls from turning backward it has been found that variations in delivering the sheet occur. The dogs do not always drop into the teeth in perfect register with the preceding sheet. In other words, the sheet does not come to a standstill every time in just the same place, because the tapes are not exactly controlled by the ratchet-wheels and dogs. The dogs and ratchet-wheels are also undesirable because of the noise they produce. Objections of this nature are avoided by substituting friction-clutches, as shown, for example, in connection with rolls 1, 2, and 4. These clutches work with accuracy, allowing no backlash to the tape. These clutches can be arranged as follows, taking, for example, roll 1: To said roll or the shaft thereof is attached a disk 11, Figs. 4, 5, and 6, with cam-surfaces for the action of rolls 12, each exposed to the action of a spring tending to hold the rolls in constant contact with the cam-surface of disk 11 and with the internal surface of a ring 14, inside of which the rolls 12 work. Roll 1 is thus allowed to revolve freely in one direction, as indicated by the arrow at the same, Fig. 4; but as soon as reverse action starts then the disk 11, with its cam-surfaces, impinges the rolls 12 against the inner surface of ring 14 and instantly stops or prevents such reverse action. Ring 14, it has been found, should be free to conform or adjust itself to irregularities that may exist, say, in the bearings of roll 1 or to follow the position of roll 1 as its bearings wear from use. As roll 1 is worn on its journal it moves to one side. This throws the clutch out of center and prevents its perfect action. These irregularities may be but slight; but it is thought advisable they be provided for, which can be done by having ring 14 free to conform thereto. These disadvantages can be overcome, as shown, by having a slip connection between ring 14 and the casting forming part of the bearing for roll 1. A pin-and-slot connection are shown. The pin is shown at 15, and the slotted hole of this connection is made to accurately fit this pin, which goes through or is carried by the bearing-casting. The ring 14 is thus effectually prevented from rotating in either direction, but is allowed to follow roll 1 in its movement from wear or other cause.

A modified form of connection is shown in Fig. 7, a link connection being shown at 15' connecting the ring with the support or solid casting. Like rings 14 and clutch arrangements are shown at rollers 1, 2, and 4 or at roll 3 in a modification such as shown in Fig. 8; but the description of one clutch serves to explain the others.

What I claim as new, and desire to secure by Letters Patent, is—

1. A delivery apparatus comprising a reciprocating tape-carriage and a track therefor having a hinged section, rear and intermediate tape-rollers supported by the track, and front and intermediate tape-rollers carried back and forth by the carriage, one of said rollers being composed of independently-mounted spring-pressed disks one for each tape to maintain each respective tape in proper tension.

2. A delivery apparatus comprising a reciprocating tape-carriage and a track therefor, rear and intermediate tape-rollers supported by the track, and front and intermediate tape-rollers suspended from and carried back and forth by the carriage, said intermediate rollers suspended from the carriage composed of independently-mounted spring-pressed disks one for each tape to maintain each respective tape in proper tension.

3. A delivery apparatus comprising a reciprocating tape-carriage and a track therefor having a hinged section, rear and intermediate tape-rollers supported by the track, and front and intermediate tape-rollers suspended from and carried back and forth by the carriage, the intermediate roller on the carriage being composed of independently-mounted spring-pressed disks one for each tape to maintain each respective tape in proper tension.

4. A delivery apparatus comprising a reciprocating tape-carriage and a track therefor, rear and intermediate tape-rollers supported by the track, and front and intermediate tape-rollers carried back and forth by the carriage, one of said rollers being composed of independently-mounted spring-pressed disks one for each tape to maintain each respective tape in proper tension, and the rear roller being provided with a clutch to prevent reverse rotation thereof and compel the tape to travel about the rollers in one direction only.

5. A delivery apparatus comprising a tape carriage and rolls, and a clutch comprising a ring movable or adjustably mounted to be set to correspond to the position of its roll.

6. A delivery apparatus comprising a tape carriage and rolls, and a clutch comprising a ring and a slot-and-pin support for movably supporting the ring.

7. A delivery apparatus comprising delivery-tapes and rolls and a clutch for preventing reverse action of the rolls, said clutch comprising a ring having a movable connection or support to prevent the ring from revolving while allowing the same to move or be adjusted.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE P. FENNER.

Witnesses:

A. A. SMITH,
E. L. HUDSON.