

(No Model.)

O. CARPENTER.
AUTOMATIC STOP MOTION FOR REELS.

No. 420,770.

Patented Feb. 4, 1890.

Fig. 1.

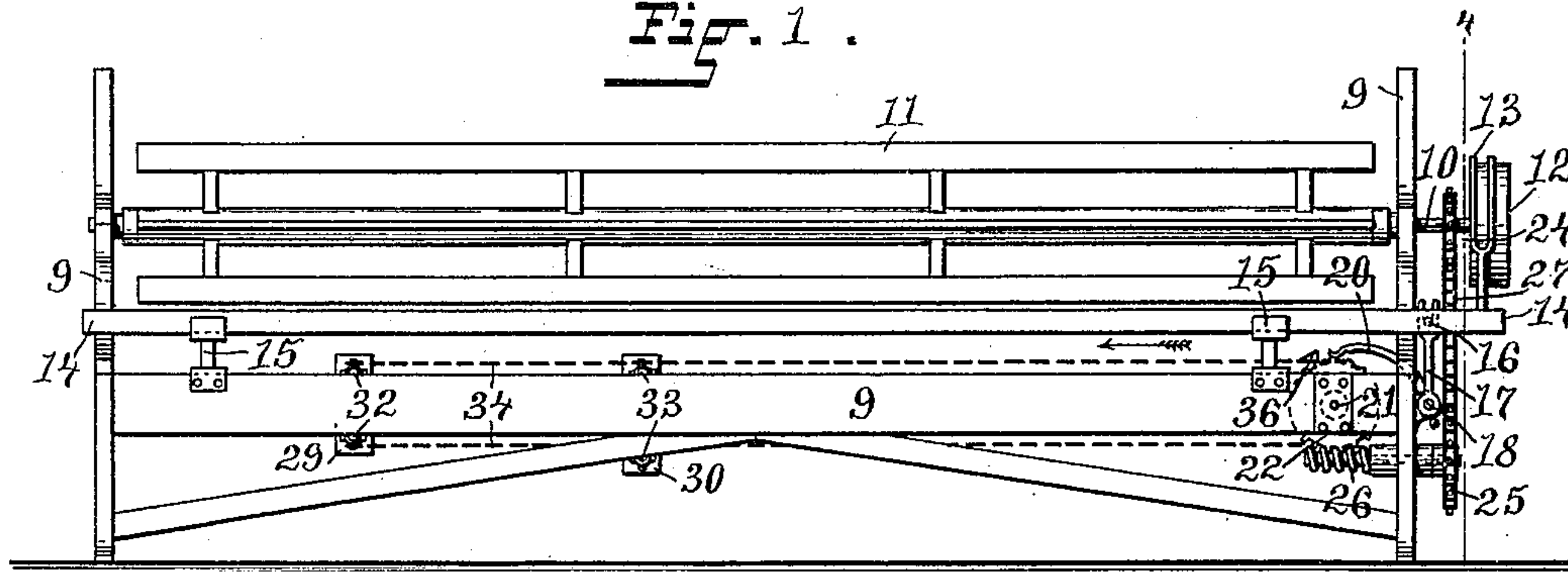


Fig. 2.

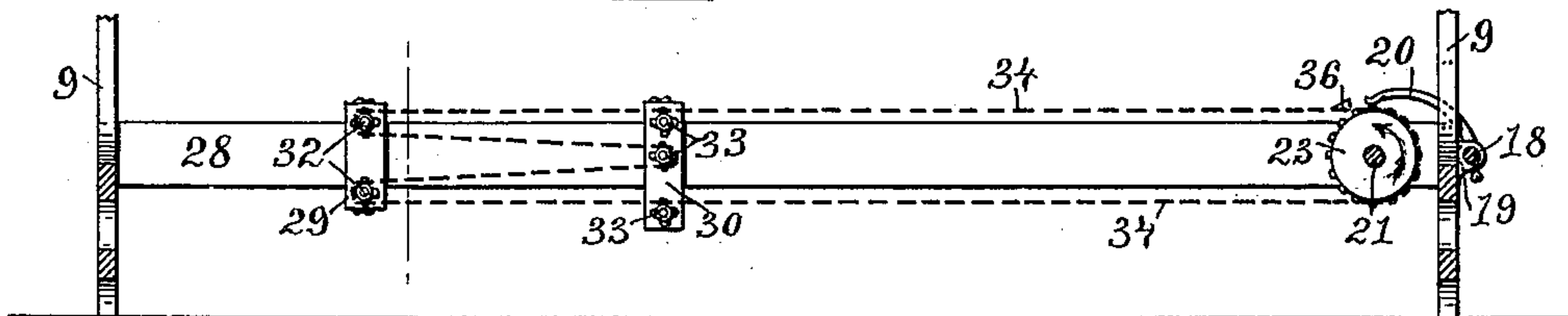


Fig. 3.

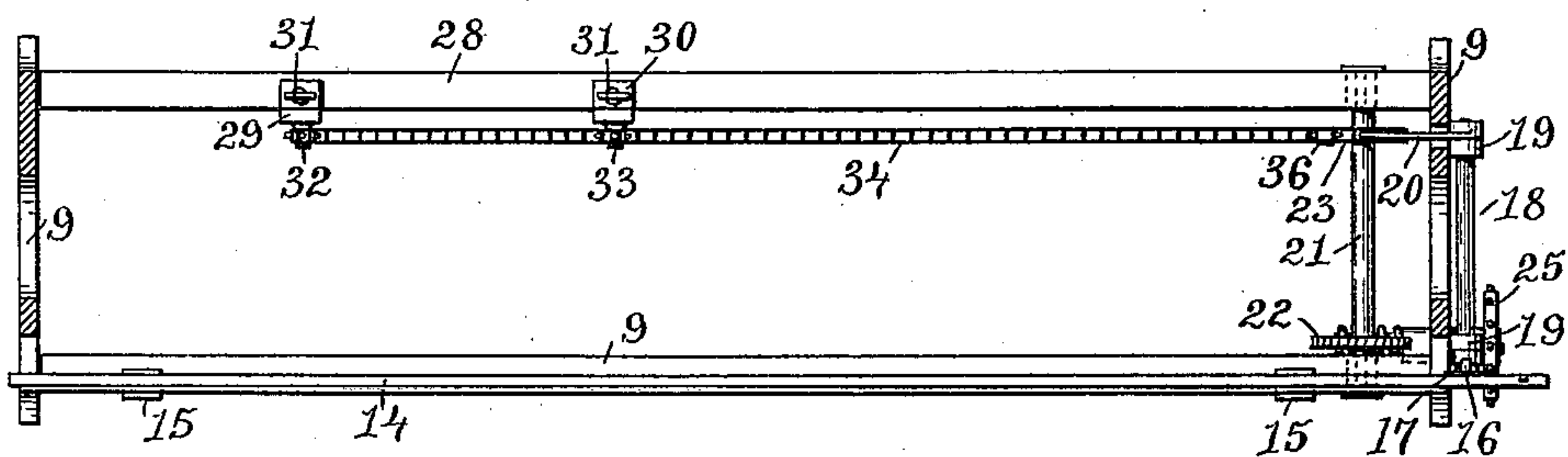


Fig. 4.

Fig. 5.

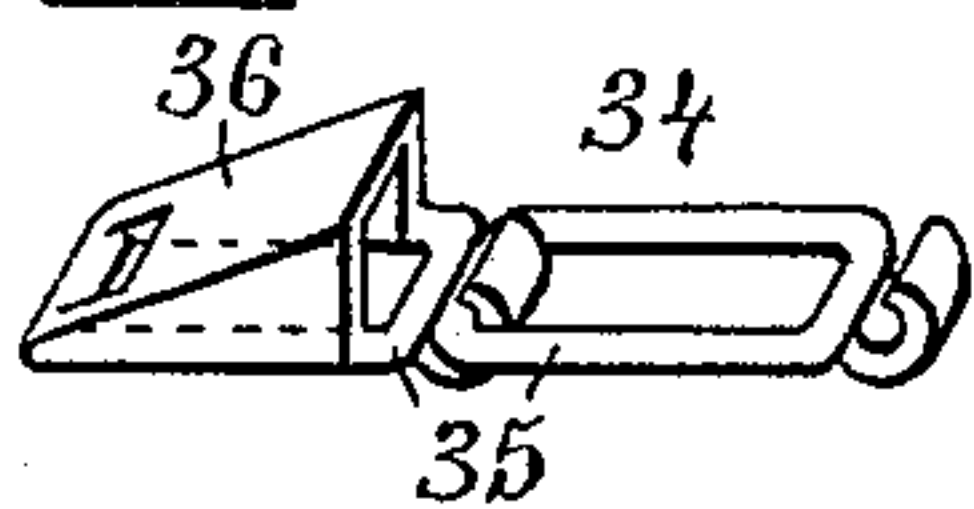
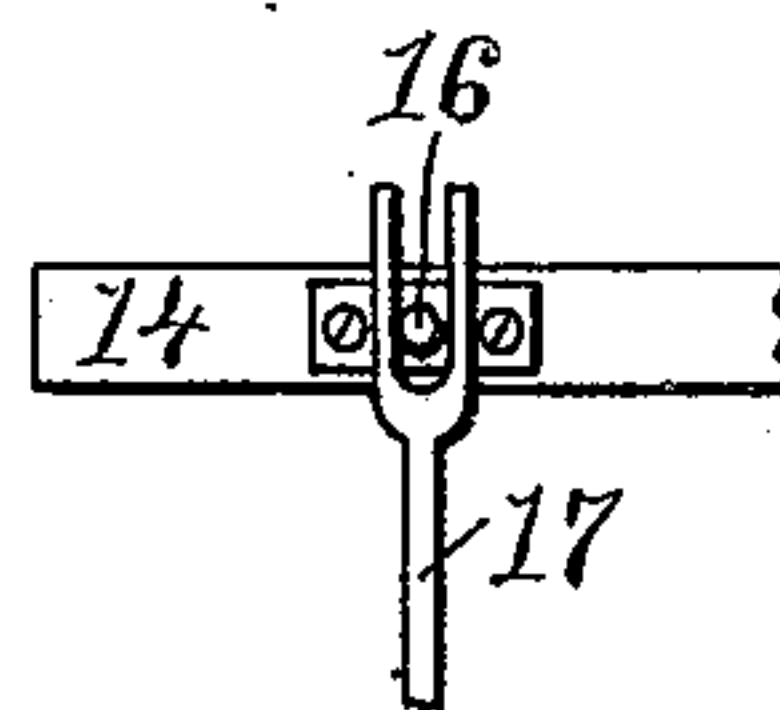
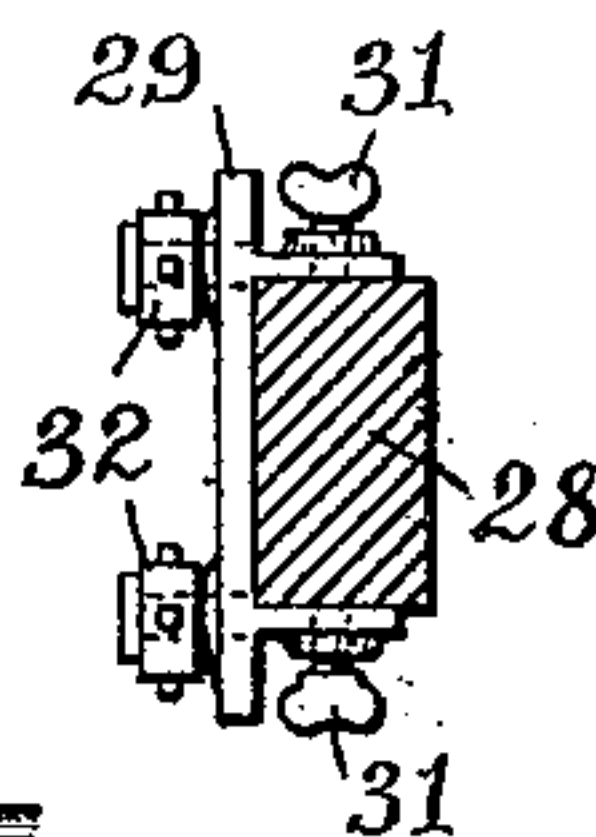
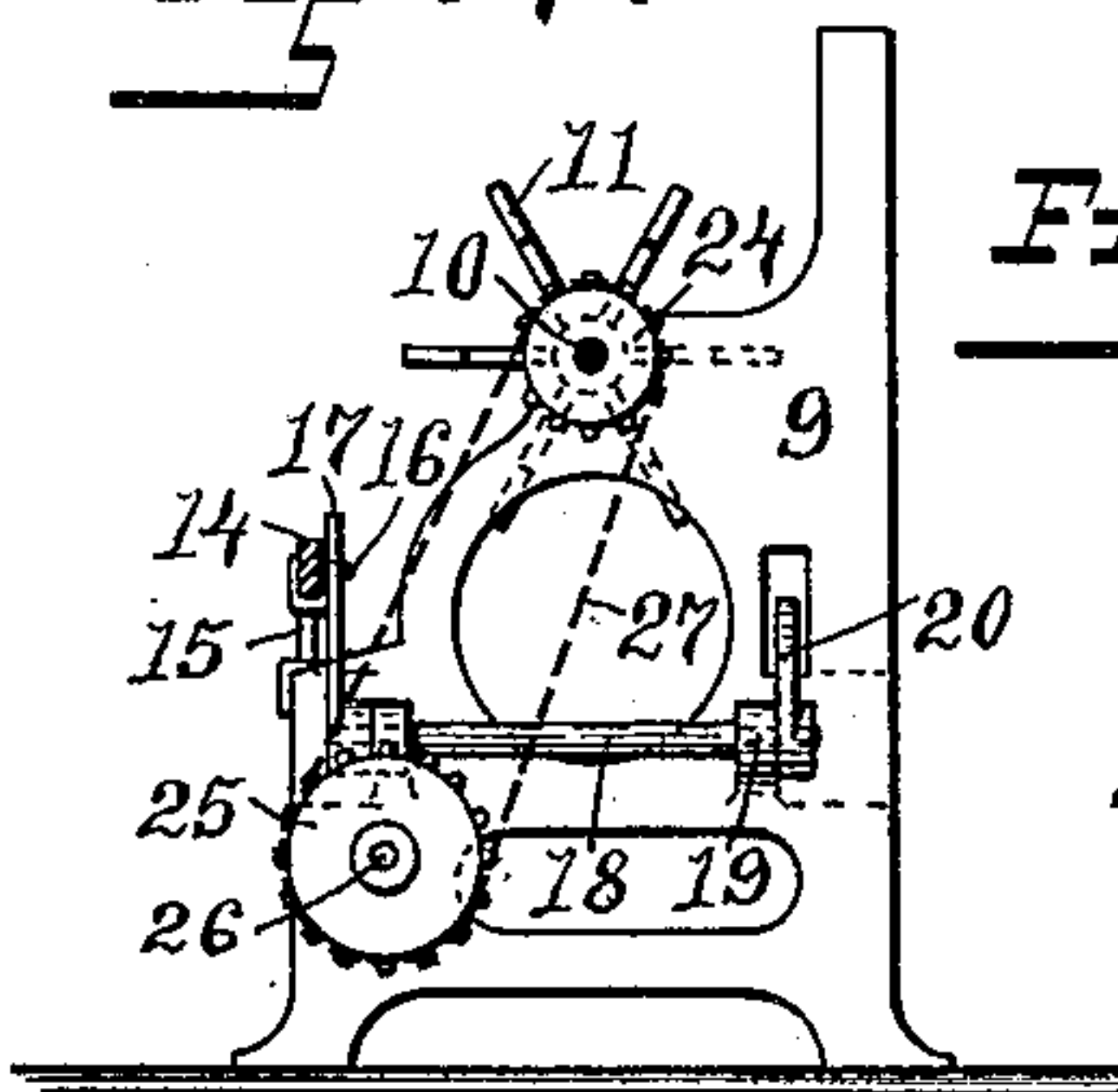


Fig. 6. Fig. 7.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ORVILLE CARPENTER, OF ATTLEBOROUGH, MASSACHUSETTS.

AUTOMATIC STOP-MOTION FOR REELS.

SPECIFICATION forming part of Letters Patent No. 420,770, dated February 4, 1890.

Application filed June 8, 1887. Serial No. 240,604. (No model.)

To all whom it may concern:

Be it known that I, ORVILLE CARPENTER, of Attleborough, in the county of Bristol and State of Massachusetts, have invented certain
5 new and useful Improvements in Automatic Stop-Motions for Reels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 This invention relates to stop motions or mechanisms such as are employed for stopping a reel when the same has reeled a predetermined amount of yarn or thread.

Reeling-machines are used to reel a certain
15 number of yards to the skein and the hank and a certain number of threads to the knot and a certain number of knots to the skein, and so on. It therefore becomes a requisite of these machines that the reels or swifts be
20 revolved for a certain number of times before coming to rest, since at each revolution of the swift or reel a certain known quantity of thread is taken up and wound thereon.

There are now in common use reels in which
25 the reels or swifts may be automatically stopped after they have performed a predetermined number of revolutions and reeled a predetermined quantity of yarn, and this automatic stopping is accomplished by means
30 of a set of interchangeable gears, each of which is gaged so as to allow the machine to make a certain number of revolutions, when the gear then causes the machine to stop. These gears are used one at a time with the
35 machine and have to be interchanged according to the amount of yarn to be reeled, and this construction therefore becomes objectionable.

The objects of my invention are to provide
40 a stop-motion which will be automatic and will have the capacity of being easily and accurately adjusted, so as to adapt the same reel to wind different amounts of yarn or thread.

45 To the above purposes my invention consists, essentially, in an endless chain of adjustable length and provided with a trip device and driving means for the chain, and in chain-wheels mounted on slides which are
50 adjustable, so as to take up the slack or to slack the chain.

The invention further consists in the means

for driving the chain from the main shaft and in the belt-shipping mechanism, which is periodically operated by the trip device on
55 the chain, the adjustment of the length of the chain governing the period of the tripping.

In order that my invention may be fully understood, I have illustrated in the accompanying drawings and will proceed to describe the best forms thereof so far devised
60 by me, with the knowledge that the same may be variously modified without, however, making a substantial departure from the spirit of my invention.

In the accompanying drawings, Figure 1 is a front view of a reel having my novel automatic stop-motion attached. Fig. 2 is a front view of a rear portion of the reel-frame, which is shown partly in section and partly
65 broken away. This view shows the endless chain with the trip device mounted thereon and the sprocket-wheel for driving the chain and the adjustable slides provided with the chain-wheels and also a portion of the belt-shipping mechanism. Fig. 3 is a view of a horizontal section, taken at a point just above the shipper-bar. Fig. 4 is a sectional view of the reel, taken on line 4 4 in Fig. 1. Fig. 5 is an enlarged view of the trip
70 device, together with an adjacent link of the chain. Fig. 6 is an enlarged view of one of the adjustable slides provided with the chain-wheels, and shown as mounted on the support-beam represented in cross-section. Fig. 7
75 is an enlarged view of the forked shipper-rod and the end of the shipper-bar engaged by the rod, both the rod and bar being shown in portions.

In the said drawings, like numbers of reference designate corresponding parts throughout.

Referring to the drawings, the number 9 designates the machine-frame, in which is journaled the main shaft 10, provided with
80 the belt-pulleys 12. The winding reel or swift 11 is mounted on the main shaft so as to revolve therewith. The belt-shipper 13 is secured to the shipper-bar 14, which sets loosely in the bearings 15, which are mounted on the frame 9, and this bar can be reciprocated on its length in the bearings 15, so as to cause
85 the belt-shipper to ship the belt (which is not shown) over the pulleys 12, in order to stop

and start the reel. Upon the inner side of the shipper-bar 14 is fixed the stud 16, which takes in the forked end of the shipper-rod 17, and this rod is rigidly attached to the rock-shaft 18, which turns in the brackets 19, mounted upon the machine-frame. At the rear end of the rock-shaft 18 is secured the curved trip-arm 20, the tripping of which will effect the movement of the belt-shipper, as will be hereinafter described.

In order to accomplish the tripping of the trip-arm 20 at predetermined periods, I have devised the following means: Across the frame 9 is mounted the turnable shaft 21, near the respective ends of which are keyed the pinion-wheel 22 and the sprocket-wheel 23. The shaft 21 is driven from the main shaft 10 through means of the chain-gear 24, mounted on the shaft 10 and the chain-gear 25, which turns with the worm-shaft 26, which is journaled in the frame 9 and works in mesh with the pinion 22 and through the chain belt 27, which connects the gears 24 and 25. Upon the support 28, which extends across the back of the machine-frame, are placed the two slides 29 and 30, respectively, which consist each in a flat plate provided with two projections designed to embrace the support 28, and each projection is provided with a set-screw 31, by means of which the slides may be adjusted at any points along the support. The slide 29 is provided with two idle chain-wheels 32, and the slide 30 is provided with three similar idle chain-wheels 33. The endless chain 34 is composed of the ordinary drive-chain links 35, (see Fig. 5,) which are readily detachable from each other, so that the chain may have links inserted in or taken from it in order to increase or decrease the length of the chain.

The trip device 36 consists in a detachable chain-link with a housing or tripping projection mounted upon it, and is designed to be passed under the end of the trip-arm 20 and to trip the same, in order to operate the belt-shipper, as will now be described. The endless chain 34 is of adjustable length, and is passed around the sprocket-wheel 23; thence the upper strand of the chain passes over the upper chain-wheels 33 and 32, respectively, and re-entering upon itself it passes around the central chain-wheel 33 and about the lower chain-wheel 32, and thence it leads over the top of the lower chain-wheel 33 back to the sprocket-wheel 23, which has a positive motion given it, as before described, and serves to drive the chain in the direction of the arrows. By the travel of the chain the trip device is passed under the trip-arm 20 at each complete trip of the chain and raises the arm, so as to rock the rock-shaft 18 and oscillate the shipper-rod 17, which effects the shipping of the belt from the fast to the loose pulley and stops the reel.

By virtue of the arrangements of the slides 29 and 30, which are provided with the chain-

wheels, the length of the chain may be increased or decreased, and the slides may be accordingly adjusted to take up the slack or to slack the chain. When the greatest length of chain is used, the slides will be adjusted at their greatest distance apart, one at each end of the frame.

The gearing intermediate the main shaft and the shaft 21 may be so constructed that the shaft 21 may be made to turn the sprocket-wheel sufficiently to advance the chain 34 the distance of one link at each revolution of the main shaft and reel, and thereby the reel will be permitted to make as many revolutions as there are links in the chain before the trip device will actuate the belt-shipper. Thus by having so many links to represent a revolution of the reel the length of chain may be regulated, in order to allow the reel to make a predetermined number of revolutions, and thereby reel a predetermined quantity of yarn.

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

1. The combination, as hereinbefore set forth, with a revolving reel, the shaft therefor provided with belt-pulleys, and a belt-shipping mechanism provided with a trip-arm, of an endless chain having detachable links, whereby the chain may be shortened or lengthened, and provided with a trip device for tripping the said arm, a wheel for driving the chain, slides having chain-wheels mounted thereon and provided with a support, and means for adjusting the slides at any points on the support in order to keep the chain taut, substantially as and for the purpose herein described.

2. The combination, as hereinbefore set forth, with a belt-shipper and an endwise-moving shipper-bar for moving the shipper, of a rock-shaft provided with a shipper-rod for engaging and moving the shipper-bar, a trip-arm mounted on the rock-shaft, and a chain provided with driving means and having a trip device for actuating the trip-arm, substantially as and for the purpose herein described.

3. The combination, as hereinbefore set forth, with the slides 29 and 30, provided with adjusting means and having the chain-wheels 32 and 33, respectively, and the support for the slides, of the endless chain 34, of adjustable length, and the sprocket-wheel 23, for driving the chain, and means for driving the sprocket-wheel, substantially as and for the purpose herein described.

4. The combination, with the reel 11 and its shaft 10, provided with the belt-pulleys and having the chain-gear 24, of the worm 26, provided the chain-gear 25, and the chain-belt 27, intermediate said gears 24 and 25, the shaft 21, provided with the pinion 22, meshing with worm 26 and having the sprocket-wheel 23 mounted thereon, the endless

chain 34, having supporting-wheels and driven by the sprocket 23 and provided with a trip device, as 36, the belt-shipping mechanism comprising the sliding shipper-bar 14, 5 provided with the belt-shipper arm 13, and the stud 16 upon said bar, the rock-shaft 18, provided with the shipper-rod 17, engaging said stud 16 and having the trip-arm 20 en-

gaged by said trip device of the chain, substantially as described. 10

In witness whereof I have hereunto set my hand.

ORVILLE CARPENTER.

Witnesses:

J. A. MILLER, Jr.,

M. F. BLIGH.