

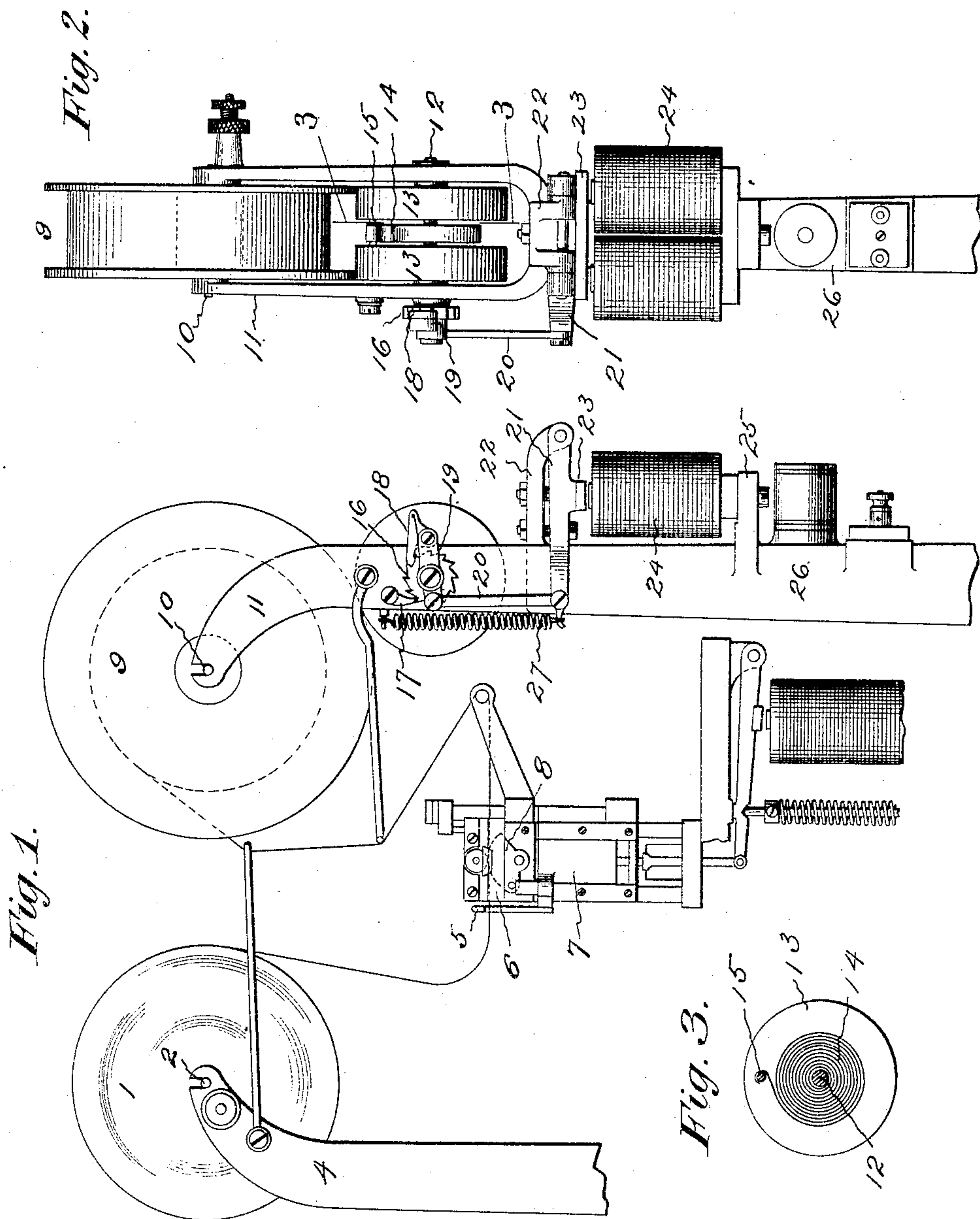
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K. WEST.

PAPER SLACK PROVIDER AND WINDING MECHANISM.

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PAPER SLACK PROVIDER AND WINDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 785,783, dated March 28, 1905.

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To all whom it may concern:

Be it known that I, KIRKE WEST, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Paper Slack Provider and Winding Mechanism, of which the following is a specification.

The actions of some forms of automatic type-casting machines, machines for transmitting messages, and other machines are controlled by strips of paper which have been perforated in perforating-machines. It is necessary for the accurate operation of a machine which is automatically controlled by a perforated strip that the perforations be made in exact relation with each other. To insure an even passage of the strip through the perforating-machine, so the distances between the perforations will not vary and cause irregular action of the means which actuate the machine which the strip is to control, the strip must be properly fed to the perforating-machine and uniformly wound up after passing through the perforating-machine.

This invention relates to a mechanism for feeding such a strip of paper to a perforating-machine and winding it into a roll after it has been perforated.

Strips of paper are received from the manufacturer wound in rolls. The strain upon the feed mechanism varies according to the size of the roll and varying strain tends to cause uneven feed.

The object of this invention is to provide a simple mechanism which will draw from a roll and leave slack enough of the strip to feed to a perforating-machine after each perforation, and to wind onto a reel with an even intermittent motion that is without jerk or strain just the length of the strip that is delivered from the perforating-machine. This object is attained by drawing the paper from the roll by a slack-providing device connected to the mechanism that causes the paper to feed or the punches to perforate the paper and rotating the winding-reel by the frictional contact of a roll that is elastically connected with

a shaft positively driven by an electromagnetic or other motive mechanism which is actuated in conjunction with the feeding and perforating mechanisms.

Figure 1 of the accompanying drawings shows a side elevation of the slack providing and winding mechanism and so much of a perforating-machine as is necessary to an understanding of the invention. Fig. 2 is an edge elevation of the winding mechanism, and Fig. 3 is a section taken through the feed-roll on the plane indicated by the line 33 of Fig. 2.

The strip of paper 1 is wound upon an arbor 2, that rests in the notched upper end of a fork 4. The strip passes down from this roll under the slack-providing hook 5 and through the perforating-head 6 of a common form of perforating-machine. After passing the perforating mechanism the strip is wound upon the reel 9, which is supported by an arbor 10, that is held by the notched upper end of a fork 11. The hook 5 is attached to and moves up and down with the feed-slide 7 of the perforating mechanism, and at each downward movement draws a sufficient length of paper from the roll to allow the necessary amount to be fed by the feeding-segment 8 through the perforating-head. The perforating and feeding mechanisms being of common arrangement are not specifically described.

Loosely mounted on the feed-shaft 12, that is supported by the fork 11, is a feed-roll 13. This feed-roll is shown as formed in two sections connected together as one piece by a pin 15, and between the two sections is a helical spring 14, that has one end fastened to the pin and the other end fastened to the shaft. The peripheries of the sections of this feed-roll are arranged to bear against the edges of the disks of the winding-reel. Fastened to the outer end of the feed-shaft is a ratchet-wheel 16, and engaging with the teeth of this ratchet-wheel is a stop-pawl 17 and a feed-pawl 18. The feed-pawl is mounted on the end of a lever 19, that by a link 20 is connected with a lever 21, which is pivoted to a bracket 22, projecting from the lower end of the fork, and which carries an armature 23 for an electromagnet

24, that is supported by a bracket 25, projecting from the standard 26. A spring 27 lifts the armature-lever. The coils of the electromagnet are adapted to be connected in circuit
 5 with the proper mechanisms of the perforating-machine, and when current is sent through those coils the armature is attracted and causes the pawl to feed the ratchet-wheel and feed-shaft. When the feed-shaft is quickly ro-
 10 tated, the helical spring actuates the feed-roll with a slightly slower motion and causes the reel to be rotated and roll up the amount of strip that has been fed through the perforating mechanism. The weight of the reel on
 15 the feed-roll causes practically a uniform friction between the edges of the reel and the periphery of the feed-roll, so that the force of the feed will always be the same. If there is strain upon the strip, the feed-roll will slip
 20 beneath the reel without tearing or stretching the paper and the spring connection between the feed-shaft and the feed-roll provides sufficient yielding, so that when the armature-lever is drawn down the feed-roll and reel
 25 will not be jerked and twitch the paper or pull along more than is necessary.

This mechanism provides the desired amount of slack for a correct feed and insures a steady and uniform pull upon the strip without strain-
 30 ing the paper or causing the paper to be fed in such manner as to produce irregular perforations.

The invention claimed is—

1. A paper-winding mechanism having a
 35 reel, a feed-roll with its periphery engaging the periphery of the reel, a feed-shaft supporting the feed-roll, a ratchet connected with the feed-shaft, a pawl engaging the ratchet, and an electromagnet adapted to actuate the
 40 pawl, substantially as specified.

2. A paper-winding mechanism having a
 reel, a feed-roll with its periphery engaging the periphery of the reel, a feed-shaft sup-
 45 porting the feed-roll, a helical spring connecting the feed-roll and the feed-shaft, a

ratchet connected with the feed-shaft, a pawl engaging the ratchet, and an electromagnet adapted to actuate the pawl, substantially as specified.

3. A paper slack providing and winding 50 mechanism having a reel, a feed-roll with its periphery engaging the periphery of the reel, a feed-shaft supporting the feed-roll, a spring connecting the feed-roll and the feed-shaft, a ratchet connected with the feed-shaft, a pawl 55 engaging the ratchet, an electromagnet adapted to actuate the pawl, a perforating mechanism, mechanism for feeding paper through the perforator, and means for providing slack paper for the feeding mechanism connected 60 to and moving synchronously with the feeding mechanism, substantially as specified.

4. A paper slack providing and winding mechanism having a fork, a reel supported by the fork, a feed-roll supported by the fork 65 and adapted to rotate the reel, a feed-shaft supporting the feed-roll, an elastic connection between the feed-roll and the feed-shaft, mechanism for intermittently rotating the feed-shaft and a slack-provider movable syn- 70 chronously with the feeding mechanisms, substantially as specified.

5. A paper slack providing and winding mechanism having a reel, a feed-roll engaging with and adapted to rotate the reel, a feed- 75 shaft supporting the feed-roll, a ratchet connected with the feed-shaft, a pawl engaging the ratchet, an electromagnet adapted to actuate the pawl, a perforating mechanism, means connected to and operating synchro- 80 nously with the feeding mechanism for providing slack paper for the feeding mechanism, and an electromagnet for operating the perforating mechanism and slack-provider, substantially as specified.

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