W. G. LIEBIG.

WIRE TENSIONING DEVICE.

APPLICATION FILED MAR. 15, 1915.

1,167,764.

Patented Jan. 11, 1916.

Fig. 1

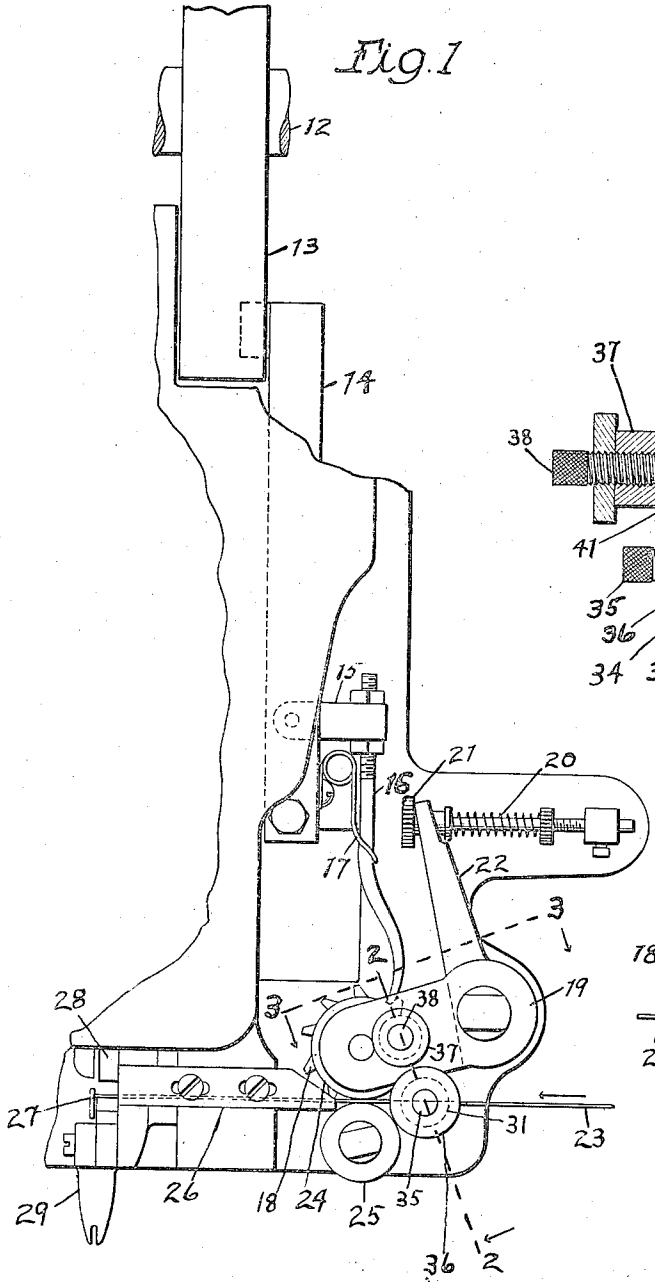


Fig. 2

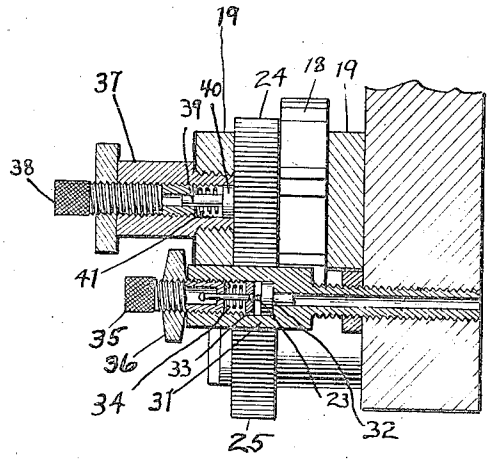
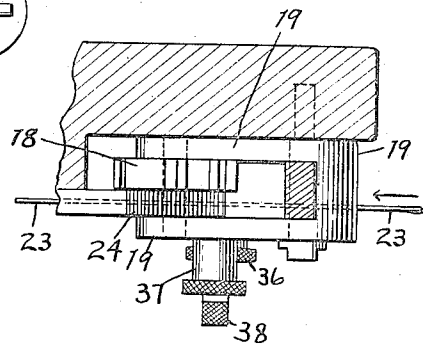


Fig. 3



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM G. LIEBIG, OF DETROIT, MICHIGAN.

WIRE-TENSIONING DEVICE.

1,167,764. Specification of Letters Patent. Patented Jan. 11, 1916.

Application filed March 15, 1915. Serial No. 14,567.

To all whom it may concern:

Be it known that I, WILLIAM G. LIEBIG, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Wire-Tensioning Devices, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to wire-tensioning devices for staple-forming machines, and has for its object the provision of a constant spring tension on the wire and on the milled wheel, by which its travel is effected, whereby uniformity in the length of the staples which are made is secured.

In the drawings:—Figure 1 shows the improved device in front elevation, together with so much of the adjacent actuating parts which I employ therewith as is necessary to an understanding of the operation of the device. Fig. 2 is a sectional elevation along the line 2—2 of Fig. 1. Fig. 3 is a plan view, partly in section, along the line 3—3 of Fig. 1.

Although my improvements are obviously adapted to various types of staple forming machines, I have in Fig. 1 shown a fragmentary elevational view of one heretofore patented by me, and to which my improvements herein described are applied in which 12 represents a power shaft and 13 a track cam member keyed to rotate therewith, to cause the vertical reciprocatory movement of the slide 14 and other similar slides not here necessary to be shown. On the slide 14 is pivotally mounted a bracket 15, whose adjustable pawl finger 16 is yieldingly held in position by the spring 17. The lower point of the pawl engages a pivoted ratchet wheel 18, which is rotatably mounted between the forked ends of the pivoted angular arm 19; and this ratchet wheel is yieldingly held against the wire 23 by means of the spring 20 pressing against the adjustable screw stop 21, over which the yoked end of the lever arm 22 engages.

At each rotation of the ratchet 18, due to the vertical reciprocation of the slide 14 and its supported parts, the milled periphery of the wheel 24, which is preferably integral with the ratchet wheel 18, coöperates with the idler roller 25 in advancing the wire 23, which passes between them, from right to left, as shown in Fig. 1, so as to project the wire toward the guide block 26 and over the anvil 27, where it is sheared off by the staple-forming die 28, which is vertically reciprocated in timed relation to the movement of the wire by another slide, similar to the member 14, which it is not necessary here to show, and thence driven downwardly toward the guide 29, which immediately overhangs the holes in the brush blank or other articles to be stapled.

In order to insure uniformity in the length of the wire projected at each stroke of the pawl finger 16, it is necessary not only to keep the wire, as fed from the supply spool, taut, but to provide also against even comparatively slight slippage of the milled wheel 24. This should moreover be adjustable with respect to the front-and-back location of the wire and the other parts, particularly the anvil, and also with respect to the thickness of the wire used under various conditions. To care for the former, I provide a threaded centrally bored tension block 31, which is screwed into the frame of the machine, and within which is located the removable headed piece 32 and a slidable piston piece 33, which is yieldingly projected theretoward by the spring 34, whose tension is regulated by the screw 35 and its locking washer 36. By this means a constant though yielding pressure is kept on the wire 23, so that in the intervals between forward projections it does not wholly or partially fall back from its position between the rollers 24 and 25. This holding of the wire, however, would not, in all cases at least, be sufficient without provision for yieldingly holding the milled wheel 24 against loosely rocking on its pivot pin between downward strokes of the pawl finger 16. To provide thereagainst, I employ a tension block 37, similar to the screw 31 already described, which is mounted in the yoked lever 19, and through whose central bore a screw 38 engages against the stem 39 of the piston piece 40. Between the forward end of this screw 38 and the piston 40 engages the spring 41, by which the piston head 40 is yieldingly held against the side face of the milled wheel 24, not sufficiently strongly to interfere with its rotation when actuated by the movement of the pawl finger 16, but yet sufficiently strongly to hold the former in the position in which the cessa-

tion of the wheel's rotation, under the influence of the pawl finger 16, leaves it.

What I claim is:—

1. In combination with a pair of feed rollers, means for yieldingly forcing one of said rollers into peripheral engagement with the other, means for periodically rotating one of said rollers through a predetermined peripheral distance, and means for yieldingly engaging said rotated roller and a length of wire interposed between its periphery and that of the other roller to hold them against slippage between successive operations, substantially as described.

2. In combination with a supporting frame, a bracket pivotally supported thereon, a pair of pivoted rollers, one of which is mounted upon said frame and the other of which is mounted in said bracket, spring means for projecting said last-named roller toward a position of peripheral engagement with the first-named roller, means for periodically rotating said last-named roller, thereby projecting to a predetermined degree a wire interposed between the rollers, and means for frictionally holding said rotated roller and the wire against slippage between successive cycles of operation.

3. In combination with a projecting roller and an idler roller between which a wire is adapted to pass, means for periodically actuating the projecting roller to frictionally advance the wire a predetermined distance, and a pair of adjustably resilient members adapted to engage the projecting roller and the wire to prevent slippage thereof between successive cycles of operation.

4. In combination with a pivoted arm, resilient means for normally holding one end thereof in depressed position, a projecting roller rotatably supported in the depressed end of said pivoted arm, with its periphery in frictional engagement with a wire whose periodical advancement is desired, means for rotatively actuating said roller at desired intervals to cause the travel of the wire accordingly, and resilient means engaging the projecting roller and the wire, whereby the same are held against slippage between successive movements thereof, substantially as described.

5. In combination with a pivoted arm, a wire-advancing roller rotatably supported in one end thereof, a spring engaging said arm whereby said roller is yieldingly held in frictional engagement with a wire leading from a source of supply, a pair of adjustable spring stops engaging said roller and the wire whereby the same are held against undesired movement, and means for intermittently rotating said roller to advance the wire a predetermined length, substantially as described.

6. In combination with a reciprocating actuating pawl, a ratchet member provided with a milled peripheral portion, a pivoted arm member in which said ratchet member is rotatably mounted, an idler roller between which and the periphery of the ratchet-member a length of wire is adapted to pass, and adjustable spring stops whereby the wire and the ratchet member are held against undesired movement between successive actuations due to the movement of said reciprocating pawl.

7. In combination with a supporting bracket, a roller member rotatably supported thereby in position to frictionally engage a length of wire whose periodical projection is desired, intermittent actuating means therefor, and an adjustable spring-projected stop adapted to prevent undesired movement of the roller member and of the wire between successive actuations.

8. In combination with a supporting member, a pivoted bracket member, a spring engaging said bracket member to yieldingly project one end thereof against an external object, and means for varying the tension of said spring, substantially as described.

9. Wire-tensioning means, comprising a pair of rotatable wheels between whose adjacent peripheral portions a wire is adapted to pass, means for intermittently rotating one of said wheels through a predetermined peripheral distance, and adjustably resilient means for frictionally engaging the wire and the rotated wheel whereby undesired movement thereof between successive operations is prevented.

10. The combination of a rotatable wheel adapted to frictionally engage a length of wire with its roughened peripheral portion, means for intermittently rotating said wheel through an arc of predetermined size thereby advancing the wire accordingly, and an adjustable spring stop adapted to frictionally engage said wheel to prevent undesired rotative movement thereof.

In testimony whereof, I sign this specification in the presence of two witnesses.

WILLIAM G. LIEBIG.

Witnesses:

JEFFERSON C. THURBER,

MARION F. KIEFER.