No. 737,340. PATENTED AUG. 25, 1903.

A. C. CAMPBELL.

WIRE FEEDING MECHANISM.

APPLICATION FILED APR. 24, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1

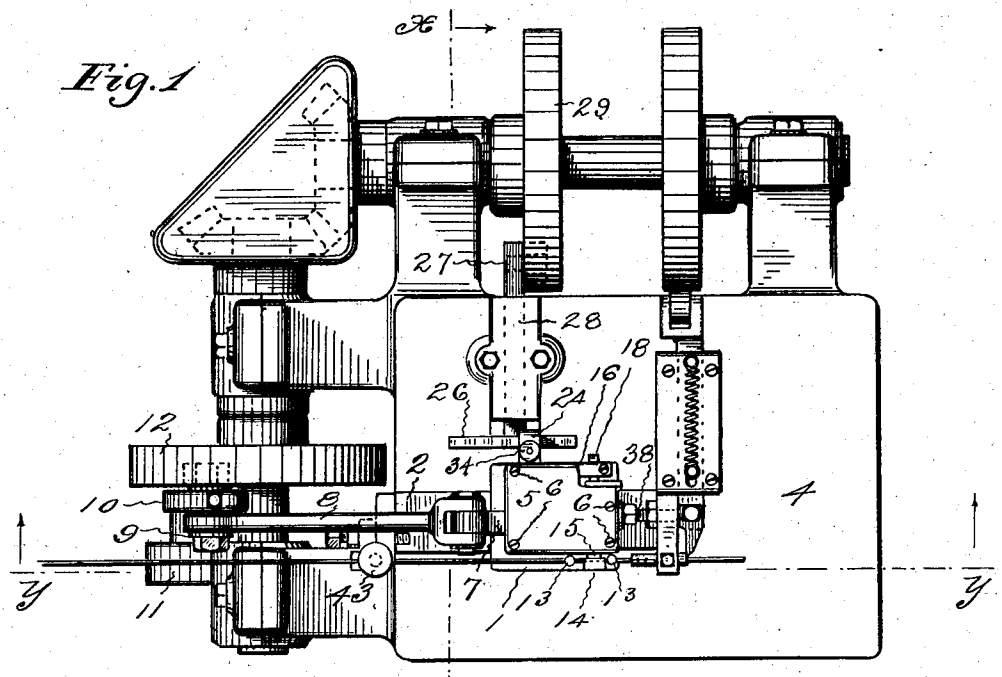
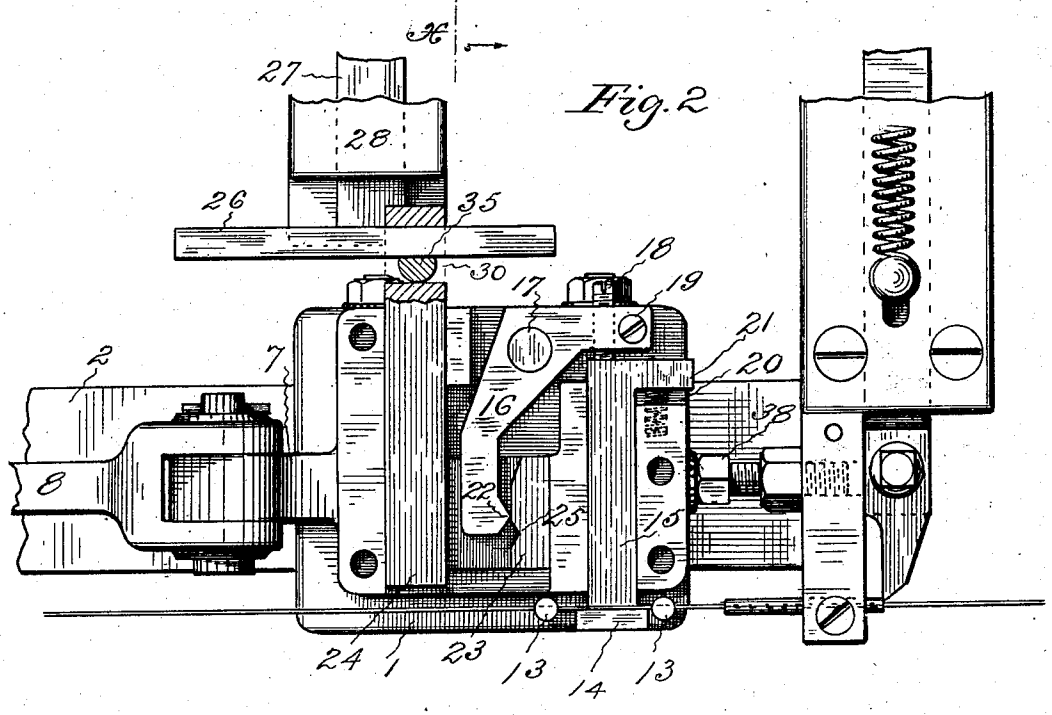


Fig. 2



Witnesses

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3

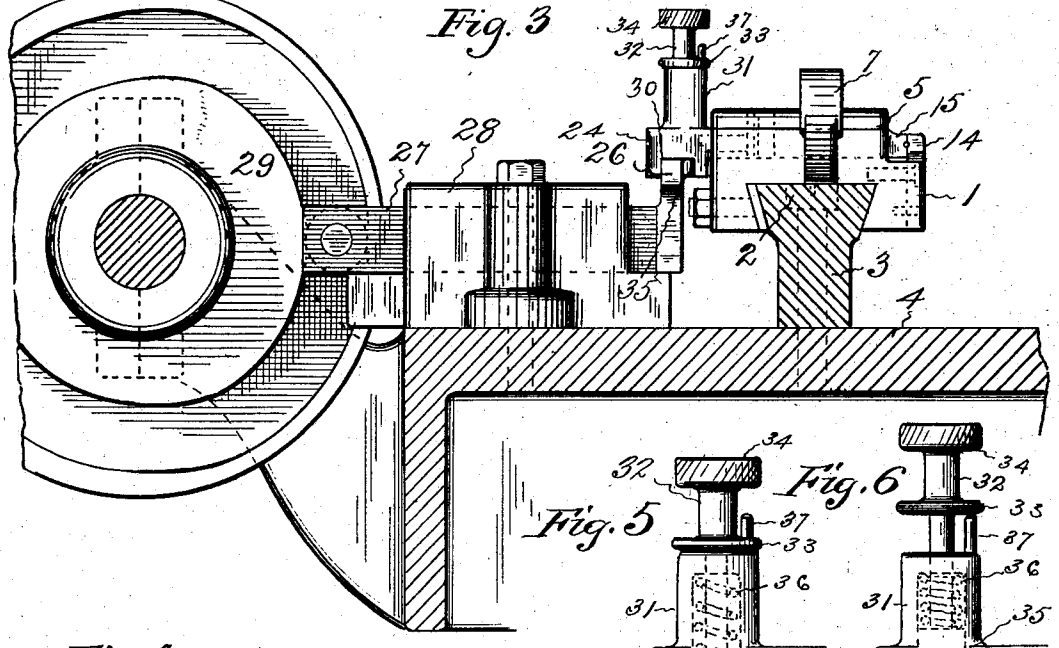


Fig. 5

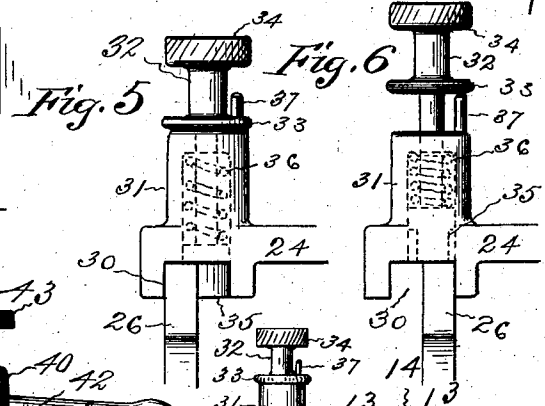
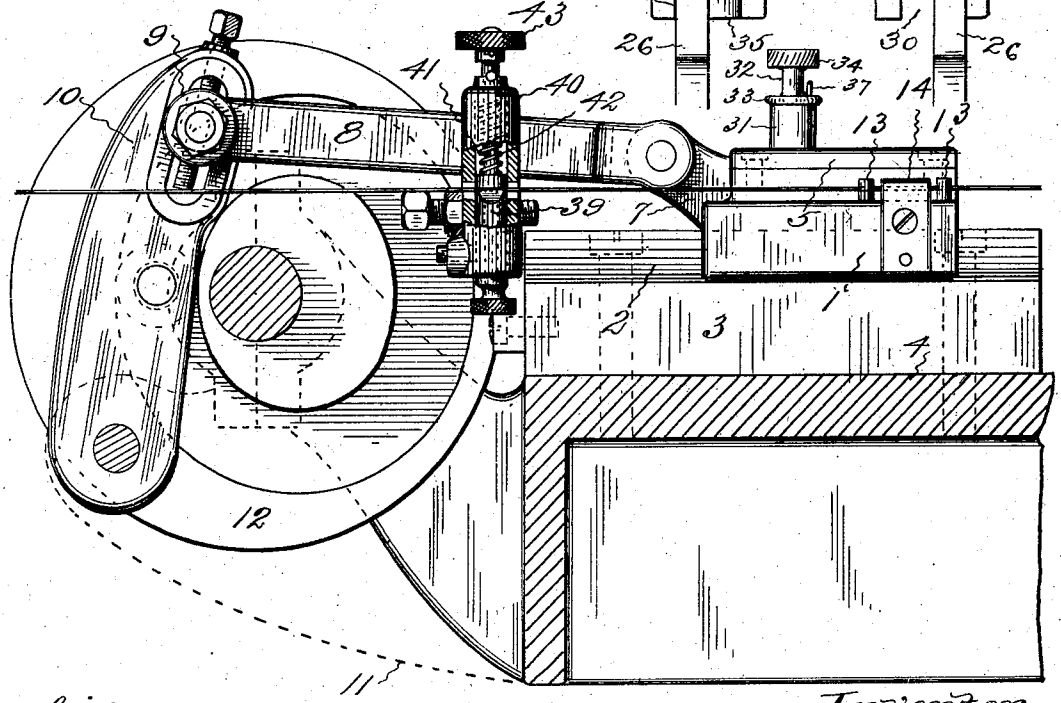


Fig. 6

Fig. 4



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No. 737,340. Patented August 25, 1903.

UNITED STATES PATENT OFFICE.

ANDREW C. CAMPBELL, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE E. J. MANVILLE MACHINE COMPANY, OF WATERBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT.

WIRE-FEEDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 737,340, dated August 25, 1903.

Application filed April 24, 1903. Serial No. 154,036. (No model.)

To all whom it may concern:

Be it known that I, ANDREW C. CAMPBELL, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Wire-Feeding Mechanism, of which the following is a specification.

This invention relates to a mechanism which is particularly adapted for intermittently feeding wire to an automatic wire-bending machine.

The object is to provide a very simple, strong, and durable mechanism which is so organized that the wire gripping and releasing parts are actuated positively by means independent of the means which advance the parts for carrying the wire forward and return the parts for obtaining a new grip on the wire.

The mechanism which is illustrated as embodying this invention has a carriage that by a cam is positively reciprocated longitudinally of the wire, which carriage supports a jaw that is moved transversely of the wire by a lever which is oscillated by the reciprocation of a wedge which is also moved transversely of the wire by a track that by a cam is moved positively at right angles to the direction of movement of the carriage.

Figure 1 of the accompanying drawings shows a plan of this wire-feeding mechanism and a cutting-off mechanism. Fig. 2 shows a plan on a larger scale with the cover of the carriage removed in order to show the arrangement of the gripping parts. Fig. 3 shows a vertical section on the plane indicated by the dotted line x x of Fig. 1. Fig. 4 shows a vertical section on the plane indicated by the broken line y y of Fig. 1. Fig. 5 shows a part of the track and the end of the wedge-slide with the bolt in position to lock the track and slide together. Fig. 6 shows the same parts with the bolt raised so the movement of the track will not cause a movement of the slide.

The carriage 1 is movable on the dovetail guideway 2 on the bed 3, which is secured to the top of the table 4. A cover 5 is held by screws 6 to the top of the carriage. The lug 7, projecting from the carriage, is connected by a link 8 with a block 9, adjustably held in a slot in the upper end of a lever 10, that is pivoted to an arm 11, which extends outwardly from the frame. This lever bears a roll that runs in a cam-groove in the disk 12. This cam, through the lever and link, reciprocates the carriage on the guideway in a line parallel with the axis of the wire. The distance of movement of the carriage, and consequently the amount of feed, is varied by adjusting the end of the link with relation to the end of the lever. Extending upwardly from the carriage and movable with it are two guide-posts 13 and a lug 14. This lug, which is located between the guide-posts and has one face substantially in line with the wire-openings through the guide-posts, forms the fixed wire-gripping jaw. The movable jaw 15 is held in a transverse mortise in the top of the carriage and is adapted to be moved toward and from the fixed jaw. When the jaw 15 is moved forwardly, the wire is gripped between the movable and fixed jaws, and when the jaw 15 is drawn backwardly the wire is released. An angle-lever 16, which is attached to the carriage by the pivot 17, bears a screw 18, that is adapted to engage with the back end of the movable jaw. This screw is adjusted to the desired position and then fixed by means of the clamp-screw 19. The forward movement of the screw end of the lever forces the jaw forward, so as to grip the wire. The backward movement of the screw end of the lever releases the jaw, so that it is forced backwardly by the spring 20, that thrusts between a fixed part of the carriage and a lug 21, projecting from the rear end of the jaw-piece. The other end of the angle-lever has a projection 22, that is adapted to engage the face of the wedge-block 23, that is connected with the slide 24, which is movable transversely of the carriage. The wedge-block has a notch 25 for receiving the projection on the end of the lever. When the wedge-block is in such position that the projection on the end of the lever lies in the notch, the jaw is free to be forced backwardly by its spring. When the transverse slide is moved forwardly and the projection on the lever is

wedged sidewise by the wedge-block, the screw at the other end of the angle-lever will engage with and force the movable jaw forwardly.

The rear end of the slide 24 has a mortise 30, through which passes a track 26, which is secured to the end of a slide 27, that is movable toward the front and back. This slide is held in a block 28 and has a roll that engages a cam-groove in the disk 29.

In a hub 31, extending up from the rear end of the wedge-slide 24, above the mortise 30, is a bolt 32, having a collar 33 and a knurled handle 34 at the upper end and a milled head 35 at the lower end. A spring 36 in the hub tends to keep the head down in the mortise 30 in front of the track 26 in such position that the bolt-head and track fill the mortise. A pin 37 projects upwardly from the hub through a notch in the collar 33, and when the bolt is lifted and turned the collar will rest on the pin and hold the bolt raised so the head is out of the mortise. When the bolt is down, the back cam in the disk 29 through the cam-slide and track reciprocates the wedge-slide and causes the wedge-block 23 to oscillate the angle-lever 16 independently of the movement of the carriage along the way on the bed. The track is of such length that the wedge-slide never moves beyond its ends. The cams are so timed that just before the carriage is about to move for feeding wire the track-slide 27 moves the wedge-slide forward—that is, transversely of the axis of the wire—and this causes the wedge to oscillate the angle-lever and force the movable jaw forward, so that the wire is gripped between the movable jaw and the fixed jaw. The parts remain in this position until the carriage has completed its forward movement and the wire has been fed the desired distance. A stop-screw 38 is usually provided for determining the exact position in which the carriage shall be brought to a stand. When the carriage is stopped at the limit of its feeding movement, the track-slide is drawn back, so as to draw back the wedge-slide and allow the lever to be oscillated and free the movable jaw. After the movable jaw is free and is thrust back by its spring so as to release the wire the carriage is drawn back to its starting position. If the bolt at the back end of the wedge-slide is lifted, the track moves in the mortise without moving the wedge-slide and wedge, so that the machine may be run without feeding wire. When it is desired to feed the wire, the bolt 32 is turned so it will drop into the mortise when the track is drawn back.

In order to place a proper tension on the wire and prevent it from moving backwardly when the carriage is drawn back, a friction device is attached to the side of the frame. This friction device may consist of a fixed stud 39, which has means whereby it may be adjusted vertically in the tube 40, and the plunger 41, which is thrust downwardly in the tube by means of a spring 42. A handle 43 is attached to the upper end of the spindle, so that it may be lifted to release the spring-plunger from the wire and relieve the friction.

This feed mechanism is very simple and durable. The wire is fed a fixed distance by a positive mechanism, which is capable of quick and accurate adjustment, and it is gripped positively at the proper time by a powerful mechanism which is actuated by means independent of the carriage-moving means. There is but little wear between the end of the lever and the wedge, and this wear may be compensated for by means of the abutting screw at the end of the angle-lever. The wire remains gripped until the lever is oscillated. After the wire has been gripped the mechanisms which operate the gripping parts are free from strain and there is no load upon the carriage-moving parts except that which results from feeding the wire. There are no springs which will get out of order or require especial adjustment, and the mechanism may quickly be set by means of the bolt, so as to feed or not feed wire.

I claim as my invention—

1. A wire-feeding mechanism consisting of a carriage movable longitudinally with relation to the wire, mechanism for positively reciprocating the carriage, a slide carried by and movable transversely of the carriage, mechanism for positively reciprocating the slide on the carriage transversely of the wire, and a gripping-jaw carried by the carriage and adapted to be reciprocated by the slide transversely of the wire, substantially as specified.

2. A wire-feeding mechanism consisting of a carriage movable longitudinally with relation to the wire, mechanism for positively reciprocating the carriage, a slide carried by and movable transversely of the carriage, mechanism for positively reciprocating the slide on the carriage transversely of the wire, a jaw carried by and movable transversely of the carriage, and a lever carried by the carriage and adapted to be moved by the slide and to move the jaw transversely of the wire, substantially as specified.

3. A wire-feeding mechanism consisting of a carriage movable longitudinally with relation to the wire, mechanism for positively reciprocating the carriage, a slide carried by and movable transversely of the carriage, mechanism for positively reciprocating the slide transversely of the wire, a jaw carried by and movable transversely of the carriage, a lever carried by the carriage and adapted to be moved by the slide, and a bolt adapted to be set so as to cause an engagement or disengagement between the slide and the slide-reciprocating mechanism, substantially as specified.

4. A wire-feeding mechanism consisting of a carriage movable longitudinally with relation to the wire, mechanism for positively reciprocating the carriage, a slide carried by and movable transversely of the carriage, mechanism for positively reciprocating the slide

transversely of the wire, a bolt carried by the slide and adapted to be set so as to cause an engagement or disengagement between the slide and the slide-reciprocating mechanism, a jaw carried by and movable transversely of the carriage, a lever carried by the carriage and adapted to be moved by the slide, and a screw held by the end of the lever and adapted to engage the jaw, substantially as specified.

5. A wire-feeding mechanism consisting of a carriage movable longitudinally with relation to the wire, mechanism for positively reciprocating the carriage, a jaw carried by and movable transversely of the carriage, a lever carried by the carriage and adapted to engage the movable jaw, a wedge adapted to move transversely of the carriage and engage the lever, a slide movable transversely of the carriage and adapted to move the wedge, a track extending longitudinally with relation to the wire and engaging the slide, and mechanism for moving the track transversely of the wire, substantially as specified.

6. A wire-feeding mechanism consisting of a carriage movable longitudinally with relation to the wire, mechanism for positively reciprocating the carriage, a jaw carried by and movable transversely of the carriage, an angle-lever carried by the carriage and adapted to move the jaw, a wedge movable transversely of the wire and adapted to move the angle-lever, and mechanism movable transversely of the wire for moving the wedge, substantially as specified.

7. A wire-feeding mechanism consisting of a carriage movable longitudinally with relation to the wire, mechanism for positively reciprocating the carriage, a jaw carried by and movable transversely of the carriage, an angle-lever carried by the carriage and adapted to move the jaw, a wedge movable transversely of the wire and adapted to move the angle-lever, mechanism movable transversely of the wire, and means for causing an engagement or disengagement of the wedge and the transversely-movable mechanism, substantially as specified.

8. A wire-feeding mechanism consisting of a carriage movable longitudinally with relation to the wire, mechanism for positively reciprocating the carriage, a slide carried by and movable transversely of the carriage, mechanism for positively reciprocating the slide on the carriage transversely of the wire, a jaw carried by and movable transversely of the carriage, a lever carried by the carriage and adapted to be moved by the slide and to move the jaw transversely of the wire, and a friction device adapted to prevent a backward movement of the wire, substantially as specified.

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Witnesses:
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