June 16, 1931. J. E. LODGE 1,810,023

FEEDING DEVICE

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Fig. 1.

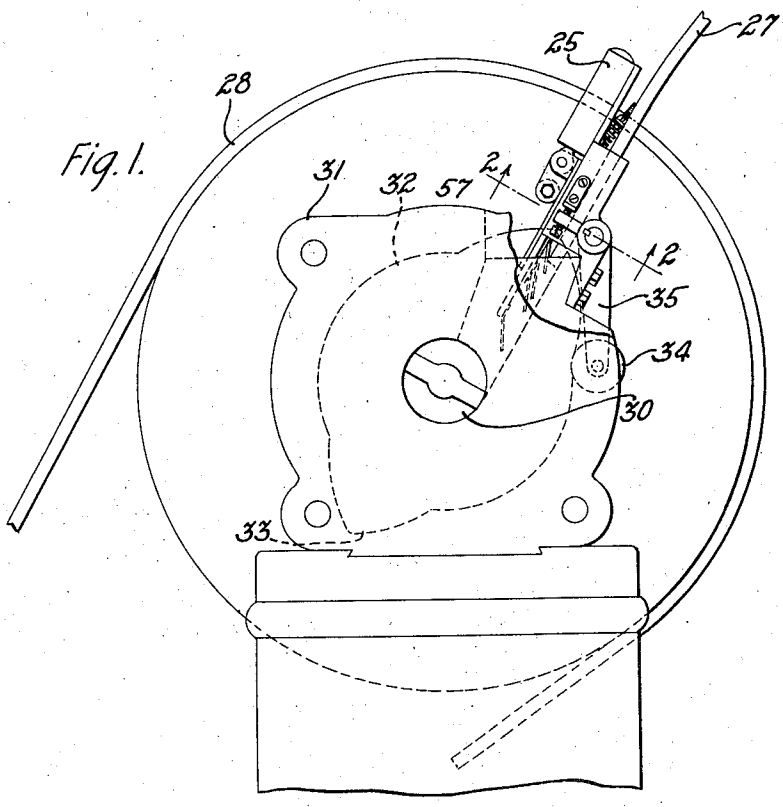
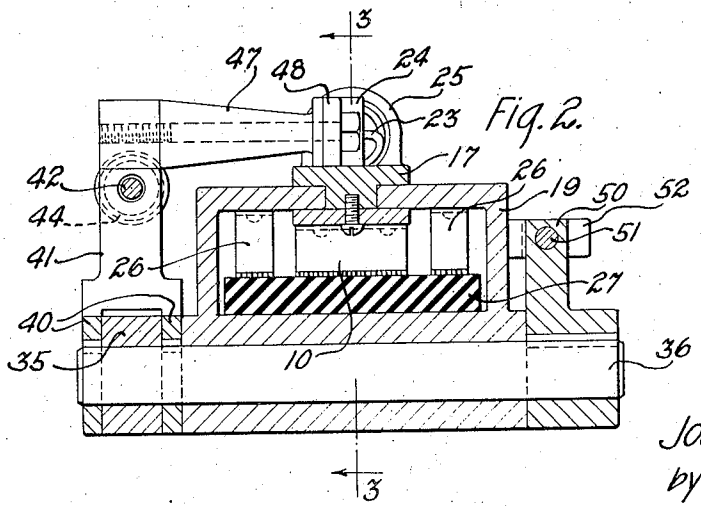



Fig. 2.




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Fig. 4.

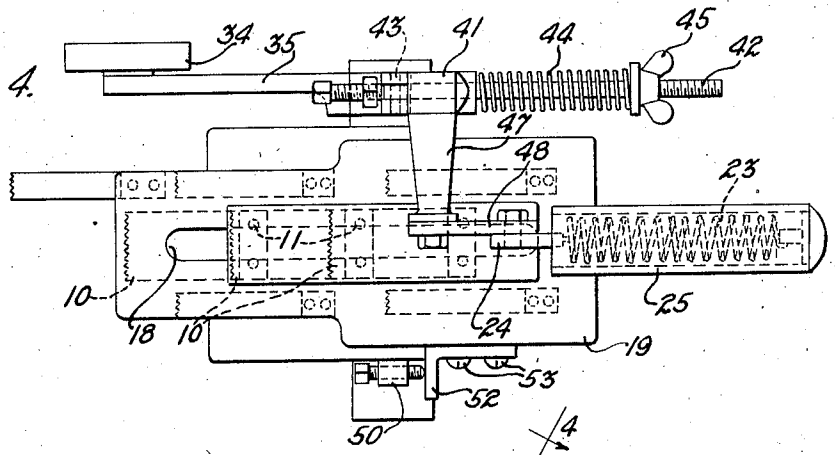
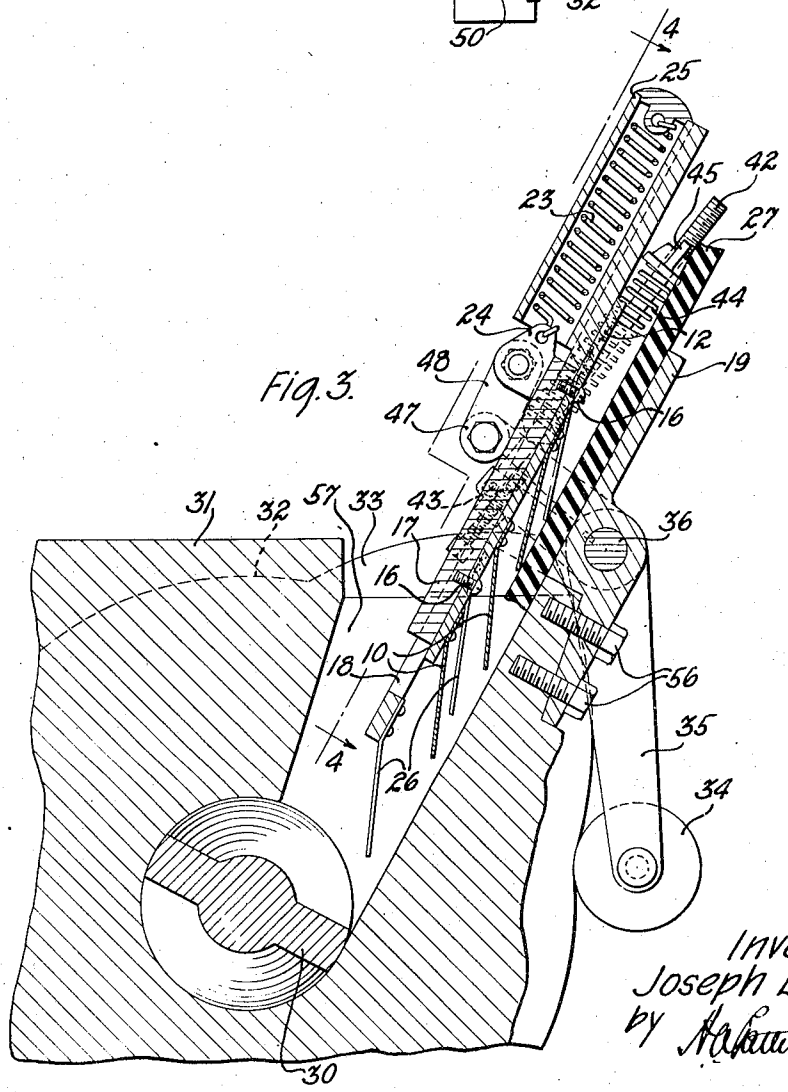



Fig. 3.




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Patented June 16, 1931

1,810,023

# UNITED STATES PATENT OFFICE

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## FEEDING DEVICE

Application filed July 14, 1927. Serial No. 205,822.

This invention relates to feeding devices, and more particularly to a device for feeding rubber compound in strip form to an extrusion machine for insulating wire.

The primary object of this invention is to provide a simple and effective material feeding means which is responsive to a predetermined condition for varying the rate at which the material is advanced.

In order to attain these and other objects and in accordance with the general features of the invention, one embodiment thereof includes a mechanism wherein rubber compound in strip form is intermittently engaged and fed forward into an extrusion machine by a plurality of teeth reciprocated by a cam and a lever arrangement which are controlled by the extrusion screw. The strip is maintained in its advanced positions by fixed teeth, and the length of the feeding stroke is automatically decreased upon an overfeed of the material.

For a better understanding of this invention reference is made to the following description, taken in connection with the accompanying drawings, in which

Fig. 1 is a fragmentary front end view of an extrusion machine with the feeding device attached in operative position thereto;

Fig. 2 is a transverse sectional view of the feeding device taken on line 2—2 of Fig. 1;

Fig. 3 is a fragmentary vertical sectional view taken on line 3—3 of Fig. 2 showing the feeding device fastened to an extruding machine, and

Fig. 4 is a detailed elevational view of the feeding device as viewed on line 4—4 of Fig. 3.

Referring now to the drawings wherein like numerals are employed to designate similar parts throughout the several views, a plurality of teeth 10 are fastened by means of screws 11 to a strip 12, which strip is fastened with screws 16 to a reciprocable slide 17. This slide is reciprocated in a longitudinal opening 18 in a bracket 19 and is held in a retracted position by a spring 23 having one of its ends fastened to a lug 24 which is integral with the slide 17 and the opposite end of the spring being secured to the end of a housing 25 integral with the bracket 19. Stationary teeth 26 fastened to the bracket 19 serve to prevent a rubber compound strip 27 from being moved rearwardly during the backward movement of slide 17. A belt 28 driven by any suitable means (not shown) drives an extrusion screw 30 within a machine frame 31. A cam 32 fastened to and rotatable with the extrusion screw 30 has oppositely disposed raised portions 33 which are adapted to engage a roller 34 at the end of a bell-crank 35. The bell-crank 35 is rotatably mounted on a horizontal shaft 36 between bifurcated arms 40 of a lever 41 which is keyed to the shaft 36. The upper extremity of the bell-crank 35 is provided with a recess in which is inserted the end of a plunger rod 42 which is held therein by a pin 43 (Fig. 4). The rod 42 passes through an aperture in the lever 41 and said rod has a coil spring 44 mounted thereon with one end of the spring bearing against the lever 41 and the other end against a winged nut 45. The upper extremity of the lever 41 carries a horizontal arm 47 to which is fastened a link 48 interconnecting it with the lug 24 which is integral with the slide 17. From the foregoing it will be clear that one complete rotation of the cam 32 causes two complete reciprocations of the slide 17. One end of the shaft 36 has an arm 50 keyed to it, and this arm carries an adjustable stop screw 51 which is adapted to engage a stop plate 52 when the slide 17 is carried to its retracted position through the action of the spring 23.

The feeding device just described is fastened by means of bolts 56 to a throat portion 57 of the extrusion machine 31, as clearly shown in Fig. 3. Upon rotation of the cam 32 the roller 34 will follow the surfaces of the raised portion 33 and arm 35 will be swung outwardly. This motion is transmitted to the plunger 42, and if the pressure occasioned by the teeth 10 bearing against the strip 27 is less than the pressure necessary to compress the spring 44, the slide 17 and associated teeth will be advanced against the opposing pull of spring 23. This movement carries the compound strip 27 forward into the throat

57 of the extrusion machine 31 where the rotating screw 30 forces it outward into a wire extruding device (not shown). In the event that the screw 30 becomes completely filled with rubber compound fed thereto, the tendency to continue the feeding of the compound will cause a back pressure to be exerted against the teeth 10. This pressure will be greater than the force exerted by the spring 44, and hence the lever 41 remains idle while the movement of roller arm 35 and its associated parts is taken up through the compression of spring 44 through the action of the plunger rod 42.

In the operation of the feeding device, the belt 28 driven by a source of power (not shown) rotates the extrusion screw 30 and the cam 32 attached thereto. Rotation of the cam causes the actuation of the bell-crank 35 which is connected to the material advancing slide 17. The outward swing of the bell-crank forces the slide 17 forward against the opposing pull of the spring 23. This forward movement causes the teeth 10 of the slide to engage the strip material 27, thereby feeding it from a reel or other supply (not shown) and to continuously advance the material into the extrusion screw. From the foregoing it will be understood that the invention provides a very effective means for expeditiously and continuously feeding strip material to a screw mechanism or other suitable receiving means.

Although the invention as herein described and illustrated is particularly well adapted for use in connection with extrusion machines, it should be understood that the novel features are capable of other applications and should be limited only by the scope of the appended claims.

What is claimed is:

1. In material feeding apparatus, movable means for engaging and feeding material in strip form, means for maintaining the material in an advanced position, and means responsive to a predetermined condition for varying the extent of movement of the feeding means to thereby vary the rate at which the material is advanced.

2. In material feeding apparatus, material receiving means, means controlled by the receiving movable means for engaging and feeding material in strip form thereto, means for maintaining the material in an advanced position, and means for decreasing the extent of movement of the feeding means when the force exerted by the feeding means upon the material exceeds a predetermined amount.

3. In material feeding apparatus, a receiving means, reciprocating means for engaging and feeding material in strip form to the receiving means, a cam mechanism associated with the receiving means, the material engaging and feeding means being operable in response to the actuation of the cam mechanism, and means responsive to variations in the amount of material in the receiving means for controlling the length of feeding stroke of the feeding means.

4. In material feeding apparatus, a material advancing means, a tooth for engaging and feeding a strip of material to the advancing means, tooth reciprocating means operable in response to said advancing means, means for maintaining the material in an advanced position during the retraction of the reciprocating means, and means for decreasing the feed when the force exerted by the tooth upon the material exceeds a predetermined amount.

5. In material feeding apparatus, a feeding screw, a plurality of tooth elements for feeding material in strip form to the screw, a cam and lever mechanism for reciprocating the tooth elements, a stationary tooth element for maintaining the strip in an advanced position during the retraction of the feeding tooth elements, and means for decreasing the feed when the force exerted by the tooth elements upon the material exceeds a predetermined amount.

6. In material feeding apparatus, a material advancing screw, a cam attached thereto, a slide, a plurality of teeth carried thereby, a bell crank associated with the cam and adapted to actuate the slide, a bracket supporting the slide, a coiled spring for retracting the slide, means for actuating the screw, a plurality of stationary toothed elements attached to the bracket for maintaining a strip of material in advanced position, and means controlled by the screw for decreasing the feed when the force exerted by the movable teeth upon the material exceeds a predetermined amount.

7. In material feeding apparatus, a material advancing screw, a plurality of teeth for feeding material to the screw, means controlled by the screw for actuating the teeth, means comprising a plunger rod, a spring and a bifurcated lever for decreasing the feed when the force exerted by the teeth upon the material exceeds the pressure of the spring.

8. In material feeding apparatus, reciprocating means for engaging and feeding material, and means responsive to an overfeed of the material for decreasing the length of feeding stroke of the feeding means to thereby decrease the rate at which the material is fed.

9. In material feeding apparatus, reciprocating means for advancing material, a member engaging the material for maintaining the material in advanced position during the retraction of the reciprocating means, and means responsive to a predetermined condition for varying the rate at which the material is advanced.

10. In material feeding apparatus, reciprocating means for advancing material, a stationary resilient means for maintaining the material in advanced position during the re-

traction of the reciprocating means, and means responsive to an overfeed of the material for decreasing the rate at which the material is advanced.

11. In a material feeding apparatus, a movable material engaging element, means for moving the element to feed the material, and means responsive to a predetermined condition for varying the movement of the element.

12. In a material feeding apparatus, a receiving means, a movable material engaging element, means for moving the element to advance the material to the receiving means, and means responsive to an over-feed of material for decreasing the movement of the element.

In witness whereof, I hereunto subscribe my name this 29th day of June, A. D. 1927.

JOSEPH EVERETT LODGE.