C. A. PORATH.

WIRE FEEDING MECHANISM.

APPLICATION FILED JUNE 4, 1917.

1,258,706.

Patented Mar. 12, 1918.

3 SHEETS—SHEET 1.

Fig. 1.

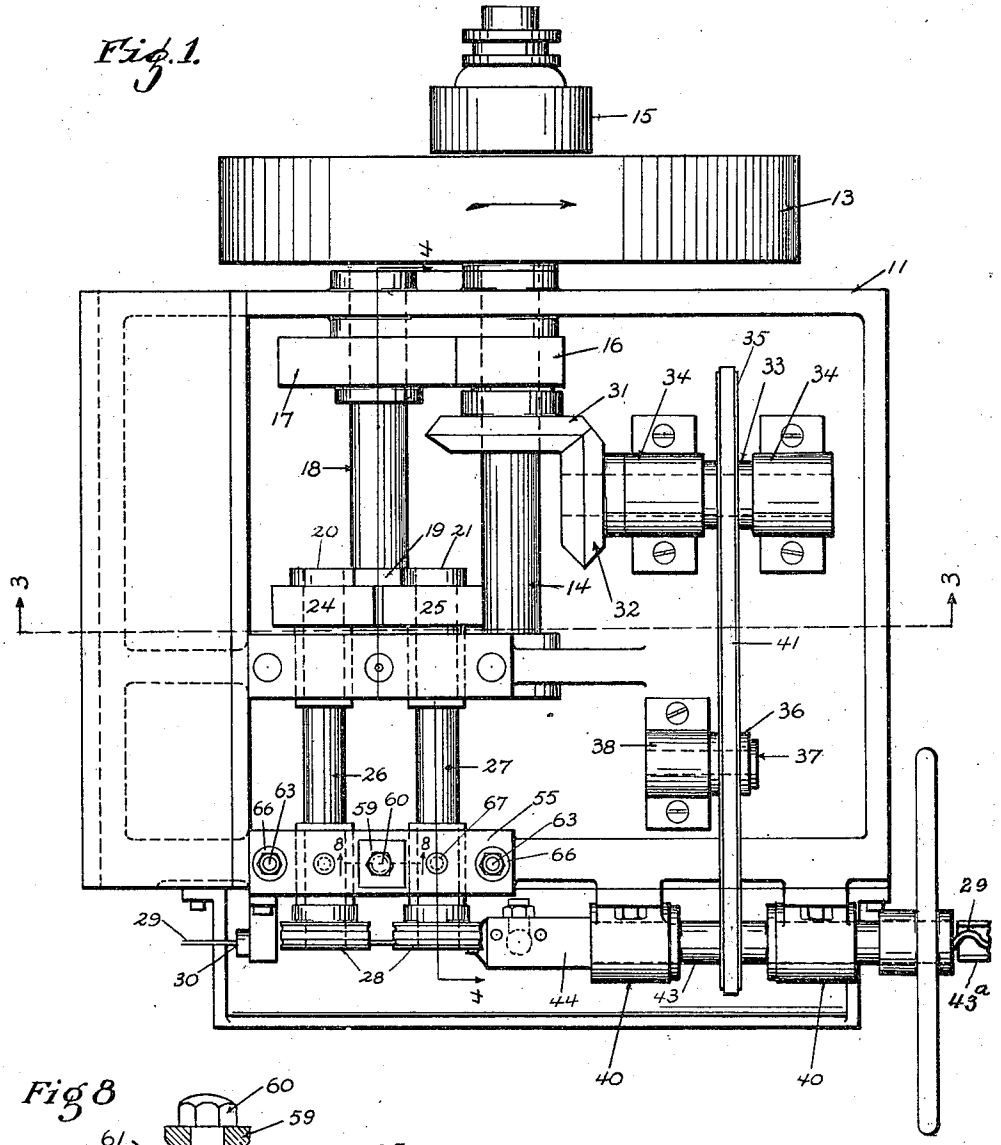
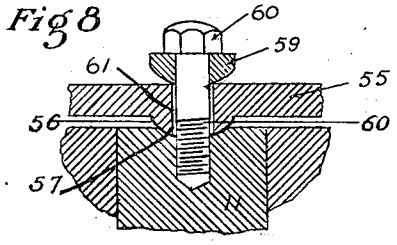


Fig 8



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3 SHEETS—SHEET 2.

Fig. 2.

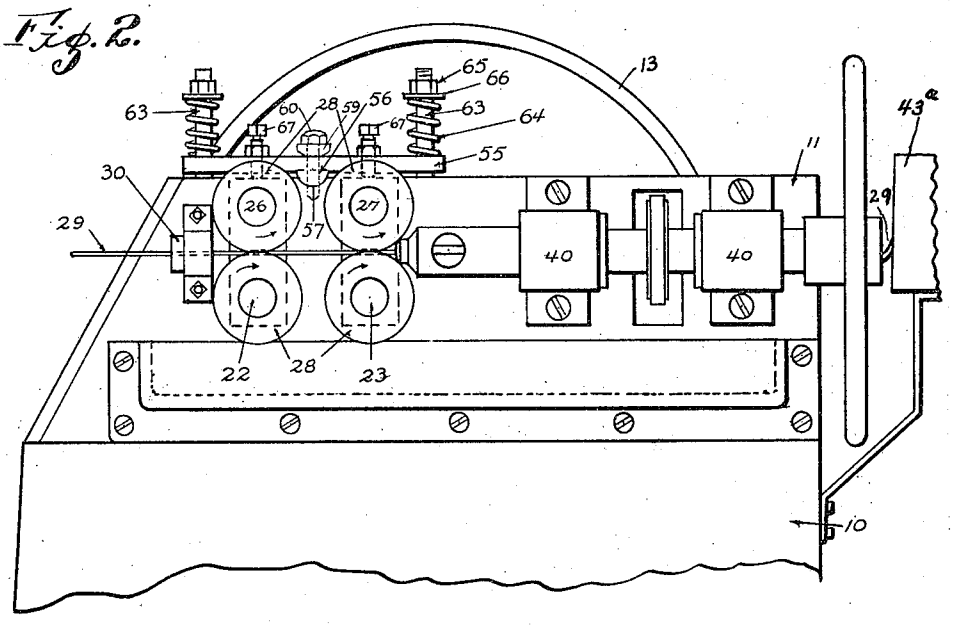
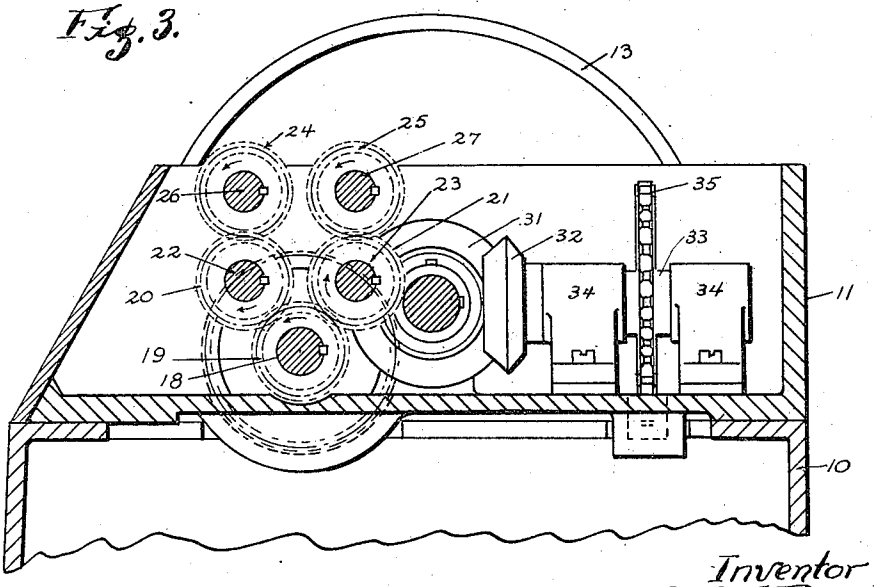


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

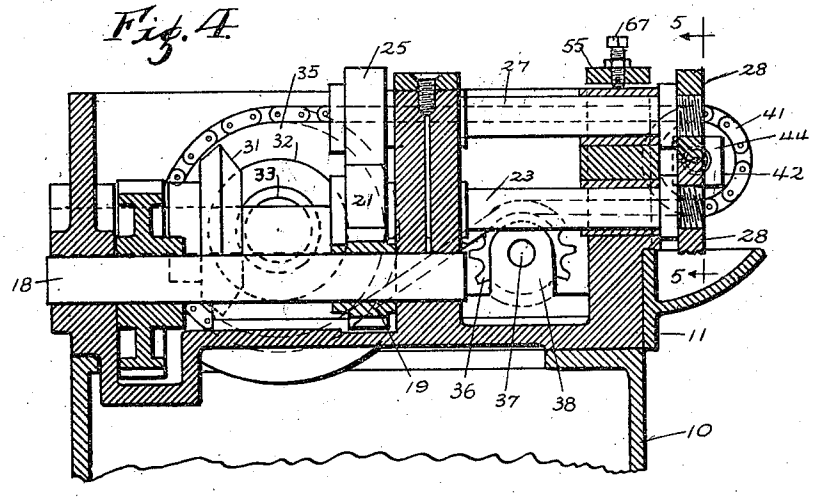


Fig. 5.

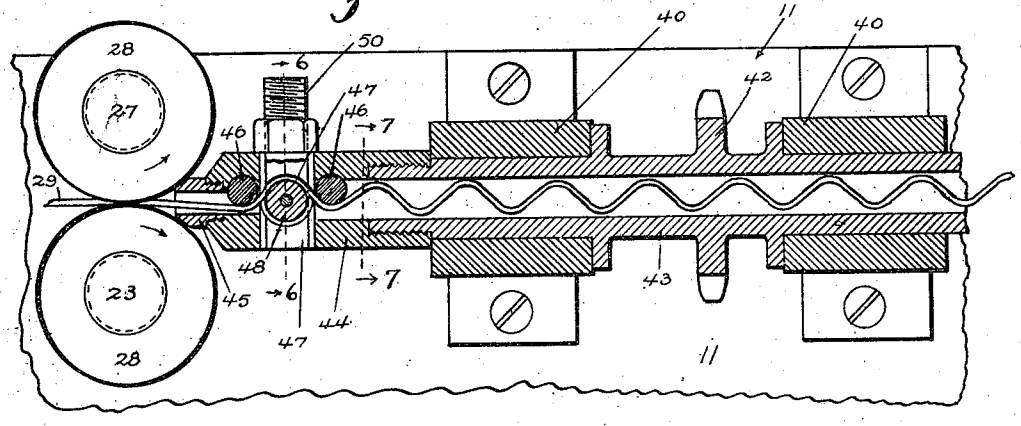


Fig 6

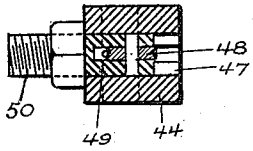
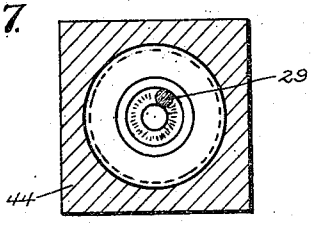


Fig. 7.



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UNITED STATES PATENT OFFICE.

CARL A. PORATH, OF KOKOMO, INDIANA.

WIRE-FEEDING MECHANISM.

1,258,706. Specification of Letters Patent. Patented Mar. 12, 1918.

Application filed June 4, 1917. Serial No. 172,667.

To all whom it may concern:

Be it known that I, CARL A. PORATH, a citizen of the United States, and a resident of Kokomo, county of Howard and State of Indiana, have invented a certain new and useful Wire-Feeding Mechanism; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like letters refer to like parts.

This invention is an improved device for wire feeding machines.

The object of this invention is to provide means for feeding wires into a coiling device in such manner that a constant uniform movement of the wire will result. A further feature of the invention is the provision of movable and yielding means whereby a constant feed will be given the wire even though a knot or enlargement in the wire is encountered, and a further feature of the invention is the provision of means for holding the feeding rolls in juxtaposition to each other.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

Figure 1 is a plan view of the machine. Fig. 2 is a side view of the machine. Fig. 3 is a longitudinal section on the line 3—3 of Fig. 1. Fig. 4 is a transverse section on the line 4—4 of Fig. 1. Fig. 5 is a section on the line 5—5 of Fig. 4. Fig. 6 is a section on the line 6—6 of Fig. 5. Fig. 7 is a section on the line 7—7 of Fig. 5. Fig. 8 is a section on the line 8—8 of Fig. 1.

Similar letters of reference are used to indicate the same parts throughout the several drawings.

This invention is provided with a pedestal or frame 10 on which a housing 11 for the mechanism is secured. The mechanism is driven by a pulley 13 mounted on a shaft 14 and the pulley 13 engages the shaft 14 through a clutch member 15 of any acceptable construction.

Mounted on the shaft 14 inside the housing 11 is a driving pinion 16 which engages a driven gear 17 mounted on a shaft 18, said shaft having its bearing in the housing of the machine extending only partly through the width of the machine. On the inner end of said shaft there is mounted a gear 19 which meshes with a pair of gears 20 and 21 which are mounted on the shafts 22 and 23. The gears 20 and 21 engage the gears 24 and 25 which are mounted on shafts 26 and 27. These shafts 22 and 23 and 26 and 27 extend through the housing of the machine and at the outer end thereof are mounted the feed rolls 28. The direction of rotation of the various parts is indicated by the arrows in Fig. 2. The feeding of the wire 29 is done by the feed rolls 28 the wire being fed through an eyelet 30 at the left hand part of the machine and in between the two pairs of feed rolls into the coiling mechanism.

For operating the coiling device the following mechanism is provided:

A beveled gear 31 is secured to the shaft 14 and meshes with a pinion 32 mounted on a shaft 33, said shaft being supported in bearings 34 which are secured to the housing. Between the bearings 34 there is a sprocket wheel 35 mounted on the shaft 33. An idler sprocket 36 mounted on a pin 37 secured to a bearing 38 is secured to the housing. The coiling mechanism is mounted in bearings 40 secured to the side of the housing 11. Said coiling mechanism is rotated by a chain 41 which engages a sprocket 42 on the coiling mechanism. The coiling mechanism consists of a tubular portion 43 to which the sprocket 42 is secured or may be integral, as shown, and a head 44 which is secured to one end of the tubular portion 43. The inside of the tubular portion is of sufficient diameter to permit the passage of a spiral coil of wire of the size desired. The head 44 has at the inner end thereof an eyelet 45 and extending partly through the tubular opening are coiling pins 46 and situated centrally and at right angles of the coiling pins is a hole 47 in which an adjusting roller 48 is mounted in the jaws 49 of an adjusting bolt 50.

To start the wire through the coiling mechanism the nut on the adjusting bolt is loosened and the wire pushed through the feed rolls through the eyelet 45 and past the inner portion of the roll 48, thence past the rear stud 46 into the unimpeded portion

of the coiling mechanism. Then the nut on the adjusting stud is tightened so that the desired depth of spiral is secured and the machine put in operation and as the wire is fed through the feed rolls the coiling mechanism rotates and at the same time the wire is fed through and the obvious result will be a spirally formed wire.

To guard against slippage of the wire in feeding, a uniform tension is maintained on the feed rolls. This is accomplished by means of an adjustable cap 55 which has a radial projection 56 extending into a likewise radial depression 57 of the housing. On the top of the adjustable cap 55 there is a pivot plate 59 the underside of which is radially formed and this said pivot plate is secured in place by means of a machine screw 60 extending downwardly through the adjusting cap 55 into the housing 11. There is a hole 61 in the adjusting cap and this hole is larger in diameter than the machine screw 60. Therefore, a certain amount of motion is provided for at this point. At the outer ends of the adjusting cap 55 there are holes through which studs 63 which are secured to the housing 11 project upwardly. Bearing against the upper side of the adjusting cap and around the studs 63 are springs 64 the tension on which is adjusted by means of the nuts 65 and washers 66. The outer bearings of the shafts 26 and 27 are in sliding blocks mounted in the housing 11 and through the adjusting cap 55 and over the center of these bearing blocks are set screws 67 provided with lock nuts so that a primary adjustment of the tension on the pressure rolls may be secured. As the coiled wire leaves the tubular member 43 it passes into a chute 43ª and is guided by said chute into a cutting machine, but as said machine forms no part of this invention it is not shown.

The object in providing the chain drive 41 is that it is necessary to have every coil bent exactly alike as these wires when used as stays, are cut in lengths and bent upon themselves and unless the coils are absolutely uniform they will not properly register when bent upon themselves, rendering the stay absolutely useless, thus entailing considerable loss.

I am aware that machines for coiling wires are in existence but said machines use belts for driving the coiling mechanism which sometimes slip and consequently the coils are not all uniform while by using a chain drive, which is positive, the coils must be uniform.

A further important feature of my device is the means for maintaining a proper tension on the feed rolls. It sometimes happens that a thick place will be encountered in the wire thus elevating the feed rolls to a greater degree than ordinary, which, if no provision was made to prevent it, would result in an uneven feed of the wire into the bending mechanism.

By providing the rocking adjusting cap as shown, should one of the rollers be elevated by an uneven place in the wire, a greater pressure will be directed against the other roll and thus prevent any possibility of the wire slipping between the rolls and giving an absolutely uniform feed.

The invention claimed is:

1. In a wire feeding mechanism, the combination with a frame, shafts mounted in said frame in pairs, one pair above the other, the upper pair being vertically movable, and feed rollers carried at one end of said shafts, of an adjustable cap of sufficient length to extend across both of the upper shafts, a radial projection at the longitudinal center of said cap, said frame having a radial depression to receive said projection, a screw extending through an opening in said adjustable cap and through said radial projection, said opening being larger than the diameter of the screw, a pivot plate above and resting upon the cap through which said bolt extends, the under face of said plate being beveled whereby the cap may having rocking movement, set screws extending through said cap and in engagement with the bearings in the movable shafts, and yielding means for holding said screws against said bearings under tension.

2. In a wire feeding mechanism, pairs of shafts one pair above the other, the upper pair being adjustable, feed rollers on said shafts, an adjustable cap above the adjustable shafts, a housing through which said shafts extend, said housing having a radial depression, a radial projection on said adjustable cap adapted to enter said depression, a binding screw extending through said cap and projection and into the housing, the opening through said cap being larger than said screw, and a pivot plate between the head of the screw and cap, said plate having a beveled underface whereby the cap may have yielding movement, and means carried by the adjustable cap adapted to hold the upper feeding rollers in juxtaposition to the lower feeding rollers.

3. In a wire feeding mechanism, the combination with a frame, shafts mounted in pairs in said frame, one pair above the other, the upper pair being movable, and feed rollers carried at one end of said shafts, of means to yieldingly hold the upper feed rollers against the lower feed rollers under tension, comprising an adjustable cap having a radial projection thereon, said frame having a radial depression to receive said projection, a screw extending through an opening in said adjustable cap, said opening

being larger than the diameter of said screw, a pivot plate between the upper end of the screw and the adjustable cap, the underface of which is beveled whereby said cap may have rocking movement, studs carried by said frame and projecting through said adjustable cap, means carried by the studs to direct downward pressure on the ends of the cap and adjustable means for engaging the pair of the movable shafts.

In witness whereof I have hereunto affixed my signature.

CARL A. PORATH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."