J. MUCK.

MACHINE FOR MAKING WIRE CLOTHESPINS.

APPLICATION FILED NOV. 4, 1918.

1,389,893. Patented Sept. 6, 1921.

Fig. 1.

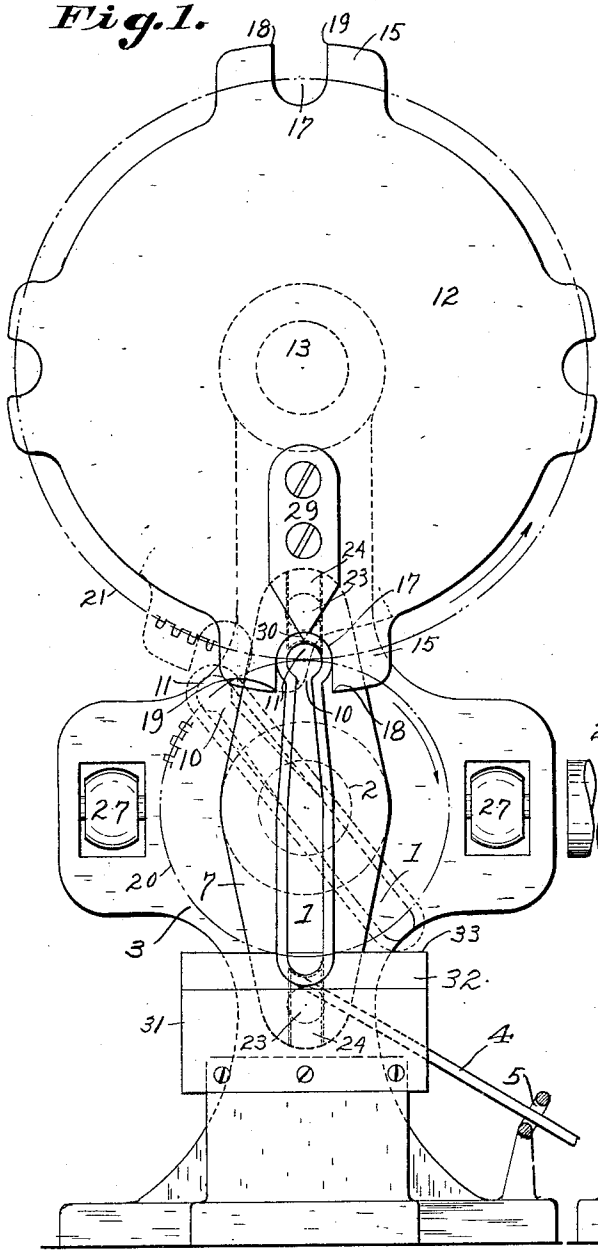
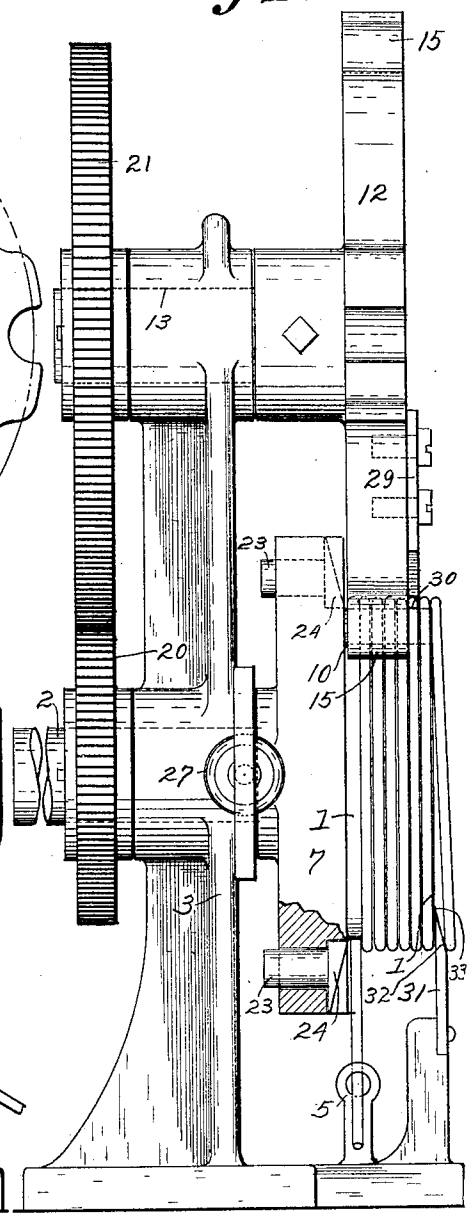


Fig. 2.



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MACHINE FOR MAKING WIRE CLOTHES-PINS.

1,389,893. Specification of Letters Patent. Patented Sept. 6, 1921.

Application filed November 4, 1918. Serial No. 260,981.

To all whom it may concern:

Be it known that I, JOHN MUCK, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Machines for Making Wire Clothes-Pins, of which the following is a specification.

My invention relates to improvements in machines for making wire clothes pins, with particular reference to that type of clothes pins described and claimed in a companion application bearing even date herewith.

The object of my invention is to provide means whereby a continuous strand of wire may be coiled upon a form bent into the required shape, progressively fed along the form in completed coils, cut at the proper intervals, and delivered from the form as completed clothes pins, except only for the capping operations to be subsequently performed.

In the drawings:—

Figure 1 is a front elevation of my improved machine.

Fig. 2 is a view of the same in side elevation, partly in vertical section.

Like parts are identified by the same reference characters throughout both views.

A coiling form 1 is mounted upon a supporting shaft 2 journaled in a standard or set of standards 3. The wire 4 is fed from any suitable supply through a frame eye 5, and is wound upon the form 1, the winding operation commencing along the junction of the form 1 with a rotary head 7, the form being rigidly connected with the head.

It will be observed that the sides of the form are flat, and at one side of the axial line of the shaft these sides are parallel with each other, and the margin is rounded, whereby the wire will wind upon this portion of the form to produce a U-shaped bend or loop. At the other side of the axial line of the shaft, the sides of the form converge to a neck 10, beyond which the form is cylindrically rounded, the diameter of this cylindrical portion 11 being substantially the same as the distance between the flat parallel sides of the form on the opposite side of the shaft axis. Therefore, during the winding operation, the wire may be pressed inwardly along the neck portion 10, whereby the portion of the wire extending about the cylindrical portion 11 will be curved in the arc of a circle in excess of 180°, and preferably to about 270°. The operation of pressing the wire about this cylindrical member 11 is performed by a rotary die which will now be described.

The die wheel 12 is mounted to rotate upon a shaft 13, and is provided on one side with a peripheral projection 15 having a U-shaped recess 17 curved at its inner end semi-cylindrically to receive the cylindrical portion 11 of the winding form, or bobbin, with the wire encircling the same. The shafts 2 and 13 are geared together in a ratio of two to one, the shaft 2 revolving twice for every single revolution of the shaft 13, the gear wheel 20 being one-half the diameter of gear wheel 21, the former being mounted on the shaft 2, and the latter being mounted on the shaft 13. The arrangement is such that for every second revolution of the form or bobbin, the cylindrical portion 11 of the form will enter the socket 17 of the die 15, and the shoulder formed at the junction of the side wall of the socket with the outer surface of the die at 18 will initially push the wire inwardly about the front side of the cylindrical portion 11 as the latter moves with a rolling motion into the socket. A continuous movement of the form and the die will, during the period when the form is leaving the die, cause the opposite shoulder 19 of the die socket to push the wire inwardly on the rear side of the form, thereby causing the wire to conform to the shape of the form or bobbin.

Feeding slides 23 are mounted in the rotary head 7. Each of these slides is provided with a cam shaped head 24, over the surface of which the wire is adapted to pass during the winding operation. The inclined face of the head facilitates guiding the wire to its proper position at the rear end of the form and against the outer face of the rotary head 7. Once during each revolution of this rotary head 7 the slides 23 at their rear ends are brought into contact with rollers 27, which force the slides outwardly, whereupon the inner or thick margins of the slide heads 24 will bear against the last winding of wire upon the bobbin or form, and push the coil outwardly, its outer portion being eventually pushed from the form.

The turns or windings thus pushed by the slides 23 over the outer end of the form are first severed at the proper point from the remaining portion of the wire. The clothes pins to be formed comprise a set of fork arms, each fork arm including one loop or turn of the wire about the form. The free extremity of each arm will be composed of the rounded portion which passes over the form at the margin opposite the cylindrical member 11, and the wire will be severed at the outer surface of said cylindrical portion 11 in each alternate loop over this portion. For this purpose I have secured to the outer face of the wheel 12 a shearing blade 29, having a cutting or shearing edge at 30 adapted to revolve in approximate contact with the outer surface of the cylindrical portion 11, whereby when the cylindrical portion 11 is inclosed within the die cavity or recess 17 the outer portion of the form which projects beyond said cavity, and which carries the windings previously coiled upon the form, will present one of said windings in close proximity to the outer surface of the die, and in the path of the cutting edge of the shear blade 29, said cutting edge operating upon the wire with a rocking motion as the wheel 12 rotates.

A relatively fixed spreader blade 31 is employed to separate the intermediate uncut turns of wire preparatory to their delivery from the form or bobbin, and to also separate the cut turns, and discharge them from the form. This spreader is provided with a beveled margin 32, terminating in a comparatively sharp edge 33 at one point, or for a short distance along its length, whereby it will readily enter between the coils to either spread the coils or separate the several set of coils from the form. In Fig. 2, this spreader is illustrated as it appears when performing a spreading operation upon the wire, the cutting blade 29 being simultaneously in operation at the opposite side to sever the wire preparatory to allowing the delivery of the two final turns. The next half revolution of the form will similarly cause a partial discharge of two of the windings, and on completing the revolution these two windings, together with the severed half of the third winding, will be pushed entirely from the form.

The machine may be operated from any suitable source of power transmitted initially to either shaft 2 or 13. Thereupon, the end of the wire will be manually applied to the rotating form in close proximity to the head 7, and as the wire winds upon the form, it will be progressively shifted outwardly by the slides 23, and will be bent by the die 15 to form cap receiving circularly curved portions upon the cylindrical or mandrel shaped member 11 of the form. Eventually, the windings thus formed will be brought into the path of the cutting blade 29, which will sever the alternate turns or windings, the intermediate turns being unsevered for the reason that the wheel 12 revolves only half as fast as the form 1. After the windings have been severed and discharged, the severed ends of each length may be gathered with the unsevered circularly curved portion which has been shaped around the member 11, and these portions of the wire may then be inclosed in any suitable cap adapted to be anchored thereon, and to hold them in assembled relation with two projecting loops of wire in position to constitute the forked arms of the completed pin. It will be observed that the die 15 has a thickness equal to a plurality of windings or turns of wire upon the bobbin. Therefore, all the turns of wire upon the bobbin will be subjected to the shaping operation above described, notwithstanding the fact that the die and its supporting wheel revolves only one-half the number of turns made by the bobbin. It will also be observed that the position of the slide actuating rollers 27 is such that the slides 23 will be operated in the intervals between the shaping and cutting operations performed by the die 15 and the shearing blade 29.

I claim:—

1. A machine for forming clothes pins from an indeterminate length of wire, comprising a rotary elongated bobbin about which the wire is wound, said bobbin having rounded end portions, and means engaging the wire only adjacent the end portions.

2. A machine for forming clothes pins from wire, including the combination of a rotary bobbin having loop forming marginal portions, and an intermediate portion parallel with the axis about which the bobbin rotates into which the wire may be pressed from the sides of the adjacent marginal portion to form a head, a relatively constricted neck, and a rotary die for pressing the wire against the bobbin and into the neck forming portion thereof.

3. A machine for forming clothes pins from wire, comprising a rotary elongated bobbin having rounded marginal surfaces parallel with its axis, and an intermediate neck forming portion adjacent one of said rounded surfaces, a rotary die for pressing the wire against the rotary bobbin and into the neck forming portion to form a head for the pin connected by a neck with the line engaging members of the clothes pin.

4. A machine for forming clothes pins from wire, comprising a rotary elongated bobbin, a rotary die coöperating with said bobbin to press the wire against said bobbin to form elongated loops upon said bobbin, said bobbin and die having conjugate parts to form cap anchoring means adjacent one end of the loops, said bobbin having head

and neck forming portions along one margin, and the die being adapted to press the wire about the head and convergingly into the neck forming portions.

5. A clothes pin forming machine, comprising a rotary wire coiling bobbin contoured to form flat end wire loops, a rotary shaping die adapted to receive and press one end of each loop into cap anchoring form, and a wire severing device carried by the rotary die member in a position for operation upon the wire beyond the die, said die having a thickness equal to a plurality of turns of wire, and said die being provided with means for rotating it at one-half the speed of the wire winding bobbin.

6. A clothes pin forming machine, including a wire winding bobbin and shaping die, gear connections between the bobbin and the die, adapted to transmit motion from one to the other, and to cause the die to rotate once during every two revolutions of the bobbin, said die having a thickness equal to a plurality of turns or windings of the wire upon the bobbin, whereby each coil of wire upon the bobbin is operated upon a plurality of times by the rotating die.

7. A clothes pin forming machine, including a wire winding bobbin and shaping die, gear connections between the bobbin and the die, adapted to transmit motion from one to the other, and to cause the die to rotate once during every two revolutions of the bobbin, said die having a thickness equal to a plurality of turns or windings of the wire upon the bobbin, together with means for severing the wire once during each revolution of the die, and means for feeding the wire outwardly from the bobbin in the intervals between severing operations.

8. A clothes pin forming machine, including a wire winding bobbin and shaping die, gear connections between the bobbin and the die, adapted to transmit motion from one to the other, and to cause the die to rotate once during every two revolutions of the bobbin, said die having a thickness equal to a plurality of turns or windings of the wire upon the bobbin, together with means for severing the wire once during each revolution of the die, means for feeding the wire outwardly from the bobbin in the intervals between severing operations, and spreading means adapted to separate the successive turns of wire as the bobbin is rotated, and to facilitate delivery of the cut lengths from the bobbin.

9. A machine for forming clothes pins from wire, including the combination of a rotary member having marginal surfaces parallel with its axis, and over which the wire may bend to form loops, said member being so formed along one of said surfaces as to allow the wire to be bent about the same, and convergingly between such surface and the axis of the member to form a loop having a head portion and a restricted neck, and means coöperative with said member for so bending the wire.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN MUCK.

Witnesses:
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O. C. WEBER.