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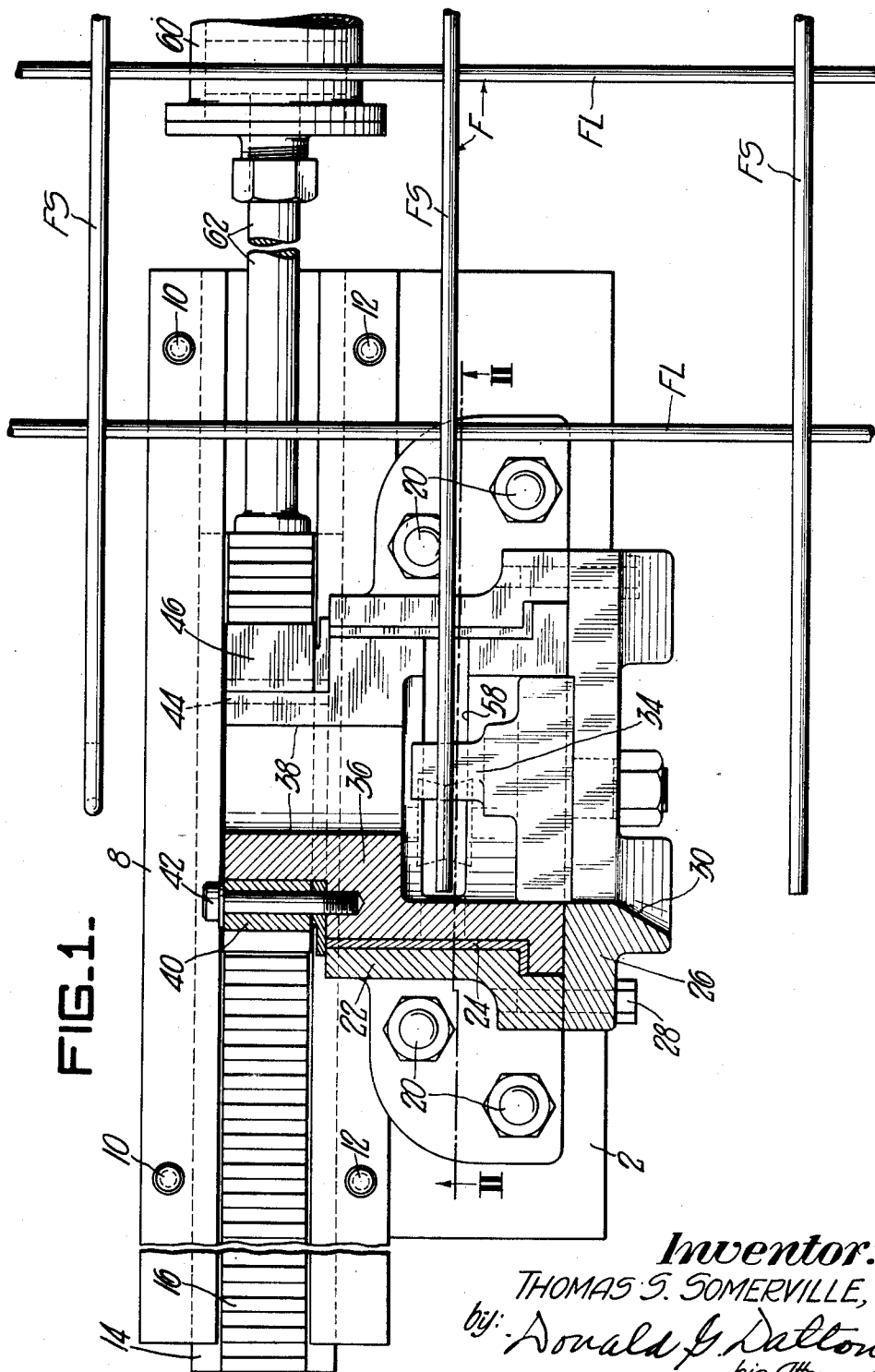
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HOOK FORMING APPARATUS FOR RODS AND WIRE

Filed Aug. 23, 1949

3 Sheets-Sheet 1



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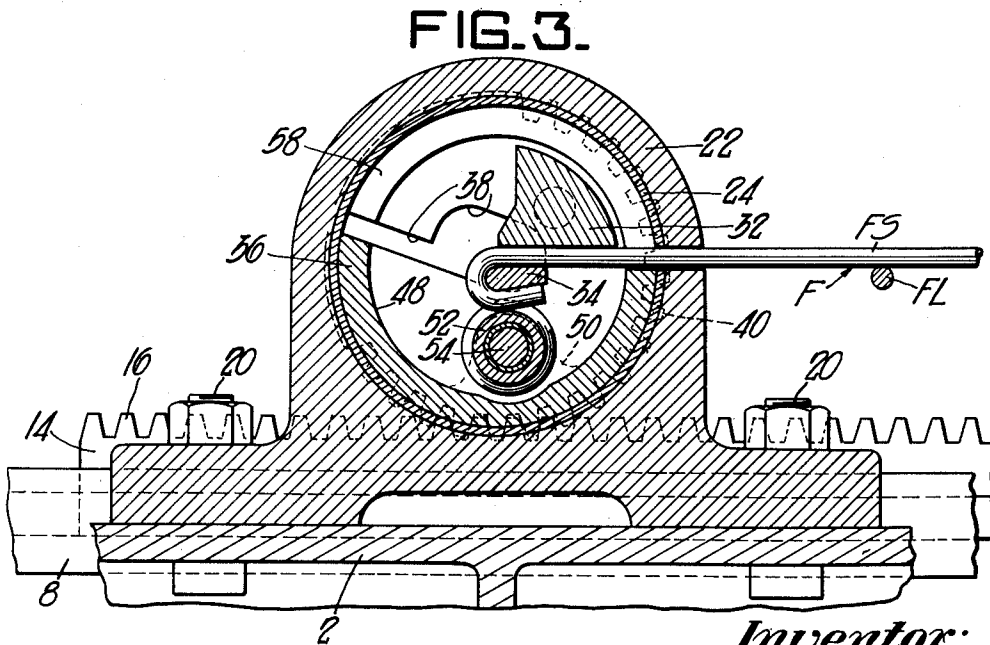
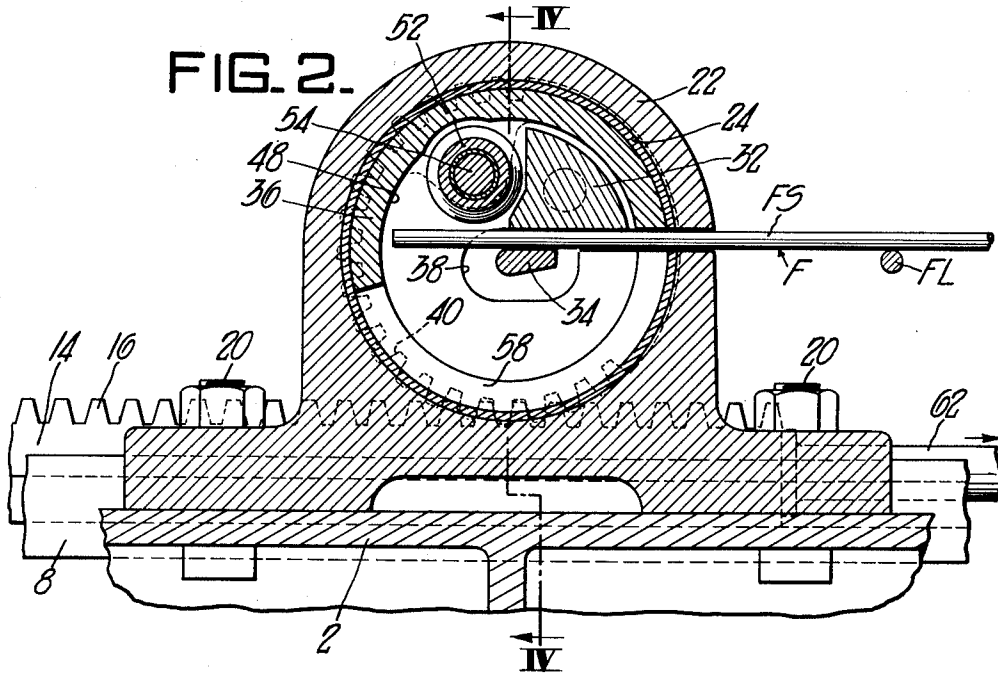
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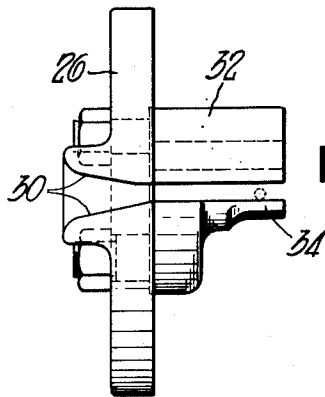
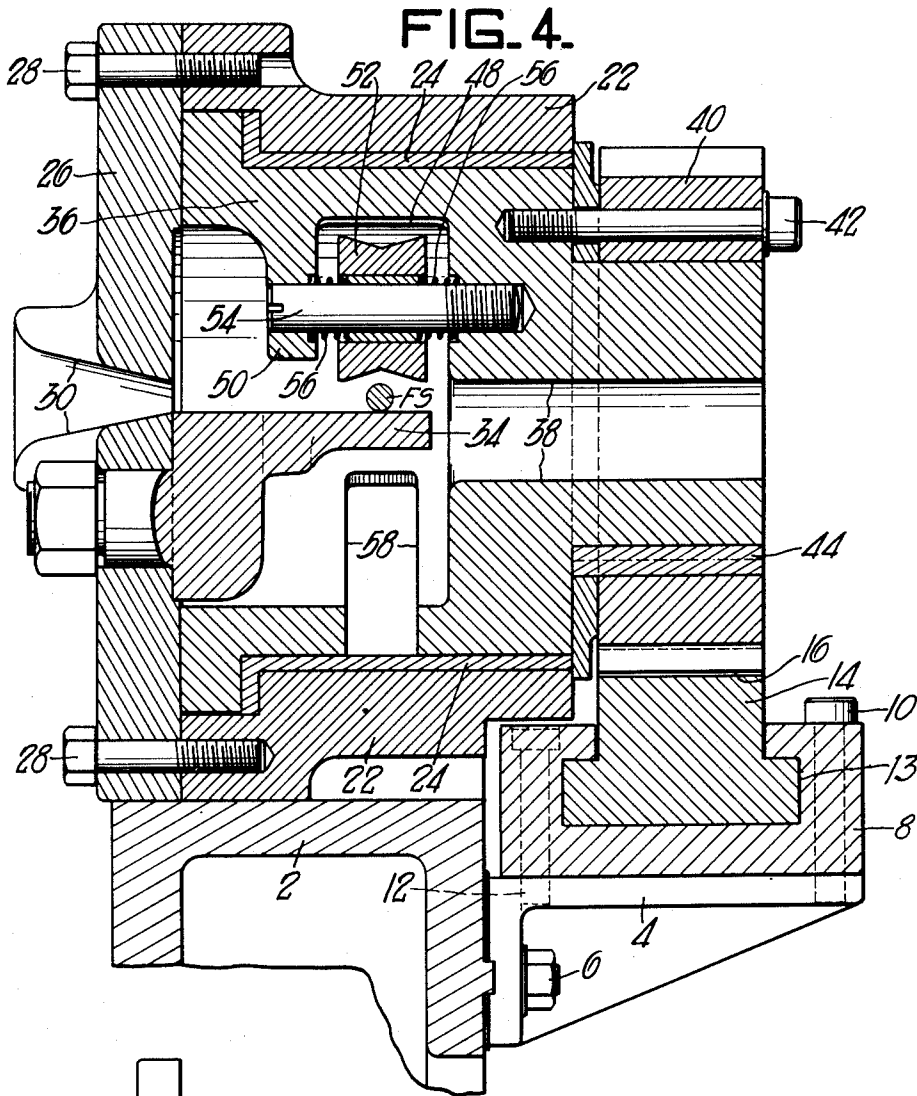
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# UNITED STATES PATENT OFFICE

2,535,328

## HOOK FORMING APPARATUS FOR RODS AND WIRE

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5 Claims. (Cl. 153—15)

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This invention relates to a hook forming machine and more particularly to a machine for forming hooks on the ends of stay wires in a wire fabric. Various types of apparatus have been devised for forming hooks on rods, but they are not entirely satisfactory from the standpoint of forming an accurate hook rapidly and cheaply. This is especially true when forming the hooks on the ends of stay wires in a wire fabric.

It is therefore an object of my invention to provide a hook forming machine which can rapidly and accurately form hooks on the ends of rods of wires, especially on the ends of stay wires in a wire fabric.

This and other objects will be more apparent after referring to the following specification and attached drawings, in which:

Figure 1 is a plan view partly in section taken slightly above the axis of rotation of the machine of my invention;

Figure 2 is a sectional view taken on the line II—II of Figure 1;

Figure 3 is a view similar to Figure 2 but showing the position of the parts after a hook has been formed on the end of a stay wire;

Figure 4 is a sectional view taken on the line IV—IV of Figure 2; and

Figure 5 is an elevation of the housing cap.

Referring more particularly to the drawings the reference numeral 2 indicates a base or supporting beam of the hook forming machine. A bracket 4 is fastened to the base 2 by means of bolts 6. A member 8 is fastened to the bracket 4 by means of cap screws 10 and 12 and has a rack slide groove 13 therein. Slidably received in the groove 13 is a slide 14 having a rack 16 thereon. Attached to the base 2 by means of bolts 20 is a housing 22 having a bearing 24 therein. A housing cap 26 is fastened to the housing 22 by means of cap screws 28. As best shown in Figures 4 and 5, the cap 26 has a bell mouthed slot 30 therein and holding anvil 32 and a hook mandrel 34 made of hardened tool steel fastened thereto in any suitable manner. The illustrated manner of fastening anvil 32 and mandrel 34 to cap plate 26 is by an integral threaded lug on a shouldered portion of said anvil and mandrel, the threaded end of each lug extending outwardly through suitable openings in said cap plate 26, for receiving a nut which is screwed into contact with the outer face of the cap plate. Mounted for rotation in the bearing 24 is a cylinder 36 having an axial slot 38 therein. A gear 40 in mesh with the rack 16 is attached to the cylinder 36 by means

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of cap screws 42 and keys 44. A slot 46 in line with slot 38 is provided in the gear 40.

The cylinder 36 is provided with a radial slot 48 having a lug 50 on one side thereof. A forming roller 52 is mounted in the slot 48 on a bolt 54 which is threaded into the cylinder 36 through the lug 50. A compression spring 56 is provided on each side of the roller 52 to hold it in centered position on the bolt 54. A slot 58 is provided about half way around the periphery of cylinder 36 opposite the slot 48. The rack 16 is reciprocated by means of an air cylinder 60 having its piston rod 62 attached thereto.

The operation of the device is as follows:

The workpiece is a wire fabric F having stay wires FS which are connected by means of strand wires FL. The fabric F is moved through the machine until a wire FS reaches the center line of the roller 52 as shown in Figures 1 and 4. Air is then admitted to the air cylinder 60 to move the rack 16 and rotate the gear 40 and cylinder 36 in a counterclockwise direction to the position shown in Figure 3, thus forming a hook on the end of the wire. Air is then admitted to the opposite end of air cylinder 60 to bring the gear 40 and cylinder 36 back to their original position. The fabric F is then moved to strip the formed hook from mandrel 34 and to bring another wire FS into position for bending.

While one embodiment of my invention has been shown and described it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. Apparatus for forming hooks on the ends of rods comprising a housing, a housing cap attached to said housing, a cylinder rotatably mounted in said housing, means for rotating said cylinder, a hook mandrel fastened to said cap and extending inside said cylinder, a holding mandrel fastened to said cap and extending inside said cylinder, said mandrels being spaced apart to permit insertion of said rod therebetween, and a roller mounted in said cylinder for movement therewith, the axis of said roller being parallel to the cylinder axis, said roller being adapted to contact the end of the rod and bend it around the hook mandrel when the cylinder is rotated.

2. Apparatus for forming hooks on the ends of rods comprising a housing, a housing cap attached to said housing, a cylinder rotatably mounted in said housing, means for rotating said cylinder, said housing, cap, and cylinder having slots therein extending the length thereof from

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the center to one side thereof, a hook mandrel fastened to said cap and extending inside said cylinder, a holding mandrel fastened to said cap and extending inside said cylinder, said mandrels being spaced apart to permit insertion of said rod therebetween, and a roller mounted in said cylinder for movement therewith, the axis of said roller being parallel to the cylinder axis, said roller being adapted to contact the end of the rod and bend it around the hook mandrel when the cylinder is rotated.

3. Apparatus for forming hooks on the ends of rods comprising a base, a rack slidably mounted on said base, a housing mounted on said base, a housing cap attached to said housing, a cylinder rotatably mounted in said housing, a gear attached to said cylinder, said gear being in mesh with said rack, a hook mandrel fastened to said cap and extending inside said cylinder, a holding mandrel fastened to said cap and extending inside said cylinder, said mandrels being spaced apart to permit insertion of said rod therebetween, and a roller mounted in said cylinder for movement therewith, the axis of said roller being parallel to the cylinder axis, said roller being adapted to contact the end of the rod and bend it around the hook mandrel when the cylinder is rotated.

4. Apparatus for forming hooks on the ends of rods comprising a base, a rack slidably mounted on said base, a housing mounted on said base, a housing cap attached to said housing, a cylinder rotatably mounted in said housing, a gear attached to said cylinder, said gear being in mesh with said rack, said housing, cap, cylinder and gear having slots therein extending the length thereof from the center to one side thereof, a

hook mandrel fastened to said cap and extending inside said cylinder, a holding mandrel fastened to said cap and extending inside said cylinder, said mandrels being spaced apart to permit insertion of said rod therebetween, and a roller mounted in said cylinder for movement therewith, the axis of said roller being parallel to the cylinder axis, said roller being adapted to contact the end of the rod and bend it around the hook mandrel when the cylinder is rotated.

5. Apparatus for forming hooks on the ends of rods according to claim 4 in which the cylinder has a radial opening therein for receiving the roller, a bolt for supporting said roller extending through said opening, and a spring surrounding said bolt on each side of the roller and bearing against the roller and the cylinder to keep the roller in centered position.

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