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J. A. RICE

2,698,081

WIRE FEED MECHANISM

Original Filed Aug. 8, 1951.

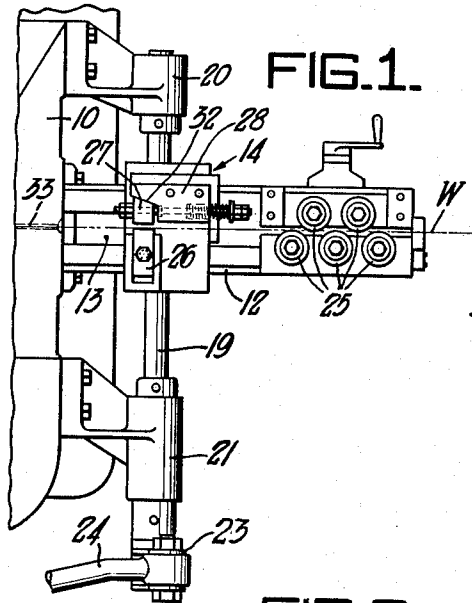


FIG. 1.

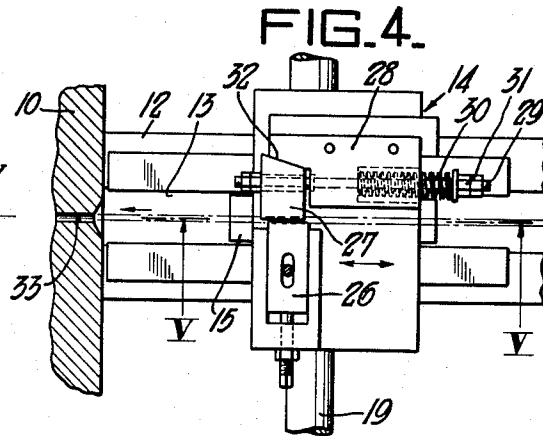


FIG. 4.

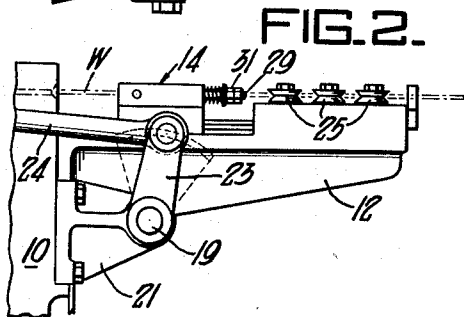


FIG. 2.

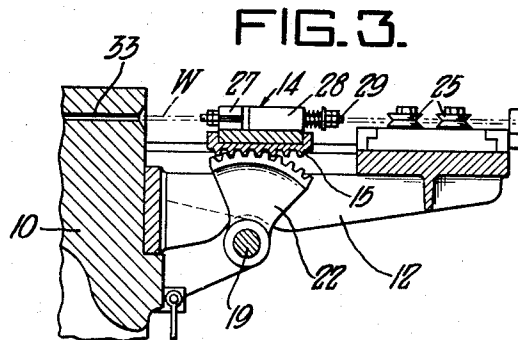


FIG. 3.

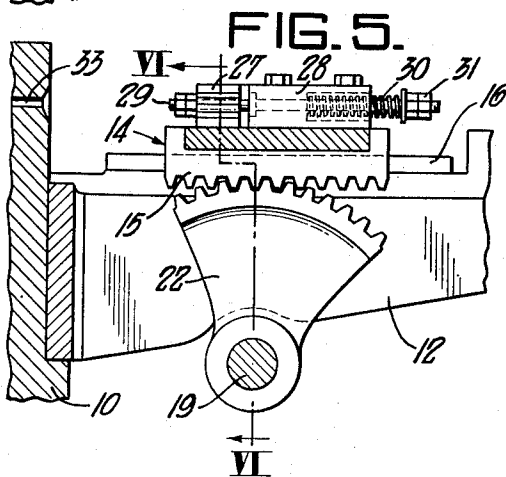


FIG. 5.

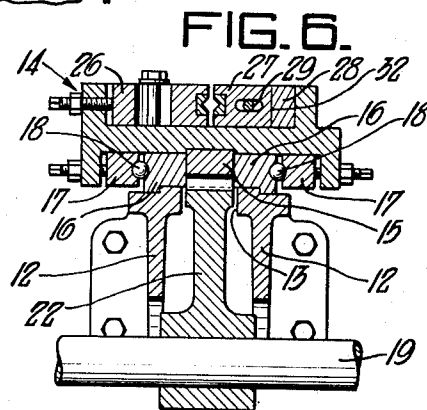


FIG. 6.

Inventor:
JOSEPH A. RICE;
by: Donald G. Dalton
his Attorney.

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WIRE FEED MECHANISM

Joseph A. Rice, Ensley, Ala., assignor to United States Steel Corporation, a corporation of New Jersey

Original application August 8, 1951, Serial No. 240,889.
Divided and this application July 24, 1953, Serial No. 370,056

2 Claims. (Cl. 203—150)

This invention relates to intermittent wire feed mechanism for machines that fabricate wire articles such as nails. The present application is a division of my earlier application Serial No. 240,889, filed August 8, 1951, entitled "Nail Making Machine."

Conventionally a nail making machine comprises a mechanism for straightening and feeding wire from which the nails are formed, a mechanism for gripping the wire, a mechanism for upsetting the end of the wire and thereby forming a head, and a cutoff mechanism. These mechanisms are supported on a common bedplate and driven from one or more crankshafts also mounted on this bedplate. The mechanisms are of course timed to produce the right sequence of operations; that is, the wire is gripped while a nail head is formed on the forward end, next the wire is released and fed forwardly, and finally the completed nail is cut from the wire with the cut forming a point.

An object of the present invention is to provide an improved feed mechanism which is applicable to such machines and reduces the possibility of wear on the parts and consequent lost motion and thus furnishes more accurate timing and straight line motion of the feed, longer life of parts, and less frequent need for adjustments and replacements.

A further object is to provide a feed mechanism in which there is no lost motion but instead the mechanism feeds wire on its full forward stroke.

In accomplishing these and other objects of the invention, I have provided improved details of structure, a preferred form of which is shown in the accompanying drawings, in which:

Figure 1 is a top plan view of a portion of a fabricating machine for wire articles equipped with a feed mechanism embodying features of my invention;

Figure 2 is a side elevational view on a larger scale of the feed mechanism;

Figure 3 is a longitudinal section of the mechanism;

Figure 4 is a top plan view on a larger scale of the mechanism;

Figure 5 is a vertical section on line V—V of Figure 4; and

Figure 6 is a vertical section on line VI—VI of Figure 5.

The drawings show a portion of a bedplate 10 of a fabricating machine, such as that for making nails shown in my aforementioned application. The feed mechanism includes a supporting bracket 12 which is fixed to the rearward end of the bedplate and has a longitudinally extending opening 13. A feed carriage 14 is supported for longitudinal movement along bracket 12 and on its underside has a gear rack 15 which extends into the opening 13. The support means for this carriage includes a pair of longitudinally extending retainers 16 fixed to the top of bracket 12, a pair of retainers 17 fixed to the bottom of the carriage, and ball bearings 18 riding between said retainers (Figure 6).

The means for reciprocating the carriage 14 includes a transverse shaft 19 which is rotatably mounted in a pair of spaced apart bearing brackets 20 and 21 fixed to the entry end of the bedplate beneath bracket 12. Said shaft carries a gear segment 22 intermediate its length and a lever 23 at one end. This gear segment meshes with the gear rack 15 on the bottom of the carriage. A connecting rod 24 is joined to the lever 23 and extends

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to a suitable crankshaft preferably mounted on the bedplate adjacent the other end of the latter. The crankshaft can be arranged, for example, as shown in my aforementioned application, but since this part of the machine is not involved in the present invention, no showing is made herein. Crank motion which is applied to the connecting rod 24 of course oscillates the shaft 19 and acts through the gears 22 and 15 to reciprocate the carriage 14.

The outer portion of the bracket 12 carries a plurality of straightening sheaves 25 which define an undulating straightening course (Figure 1). The top of the carriage 14 carries a fixed feed gripper 26, a movable feed gripper 27, and a guide 28 for the movable gripper (Figure 4). A spindle 29 is attached to the movable gripper 27 and extends through a longitudinal bore in the guide 28. A compression spring 30 encircles the outer end of said spindle and bears against the body of the guide at one end and against a nut 31 at the other. Thus the spring pulls the movable gripper toward the entry end of the carriage. The movable gripper 27 and guide 28 have cooperating wedge surfaces 32. As the gripper is pulled toward the entry end, these surfaces also force it toward the fixed gripper 26.

Wire W is introduced from the entry end (right), passes first over the straightening sheaves 25 and next between the grippers 26 and 27. As the carriage 14 moves forward (i. e., toward the bedplate), the wedging action of the surfaces 32 forces the movable gripper 28 into engagement with the wire so that the wire feeds with the carriage. As the carriage returns, the grippers release the wire. Thus the wire intermittently feeds into the machine. The bedplate 10 contains a passage 33 which receives the wire as it leaves the feed mechanism.

It is seen that the wire feeds through the entire forward stroke of the carriage and that there is no lost motion. The carriage moves in a straight line, rather than the usual arc.

While I have shown and described only a single embodiment of the invention, it is apparent that modifications may arise. Therefore, I do not wish to be limited to the disclosure set forth but only by the scope of the appended claims.

I claim:

1. In a machine for fabricating wire articles, which machine includes a bedplate, the combination with said bedplate of a wire feed mechanism comprising support means on the entry side of said bedplate, a carriage mounted for reciprocable movement on said support means, drive means for reciprocating said carriage, a first wire gripper and a guide fixed to the top of said carriage, a second wire gripper movably mounted on said carriage and being cooperable with said first gripper, a spindle extending from said second gripper toward the entry end of the carriage, said guide having a passage receiving said spindle, and a compression spring surrounding said spindle and urging said second gripper toward the entry end of the carriage, said second gripper and said guide having cooperating wedge surfaces which tend to move said second gripper toward said first gripper under the action of said spring so that a wire is gripped during the full stroke of said carriage as it moves toward said bedplate and released as said carriage returns.

2. A combination as defined in claim 1 in which said drive means includes a gear rack on the underside of said carriage, a shaft rotatably supported on said bedplate beneath said support means, a gear segment carried by said shaft and meshing with said gear rack, and means for oscillating said shaft.

References Cited in the file of this patent

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