Feb. 11, 1941. W. H. MILLER 2,231,278

CRIMPING MACHINE

Filed Sept. 24, 1937 2 Sheets-Sheet 1

FIG. 1.

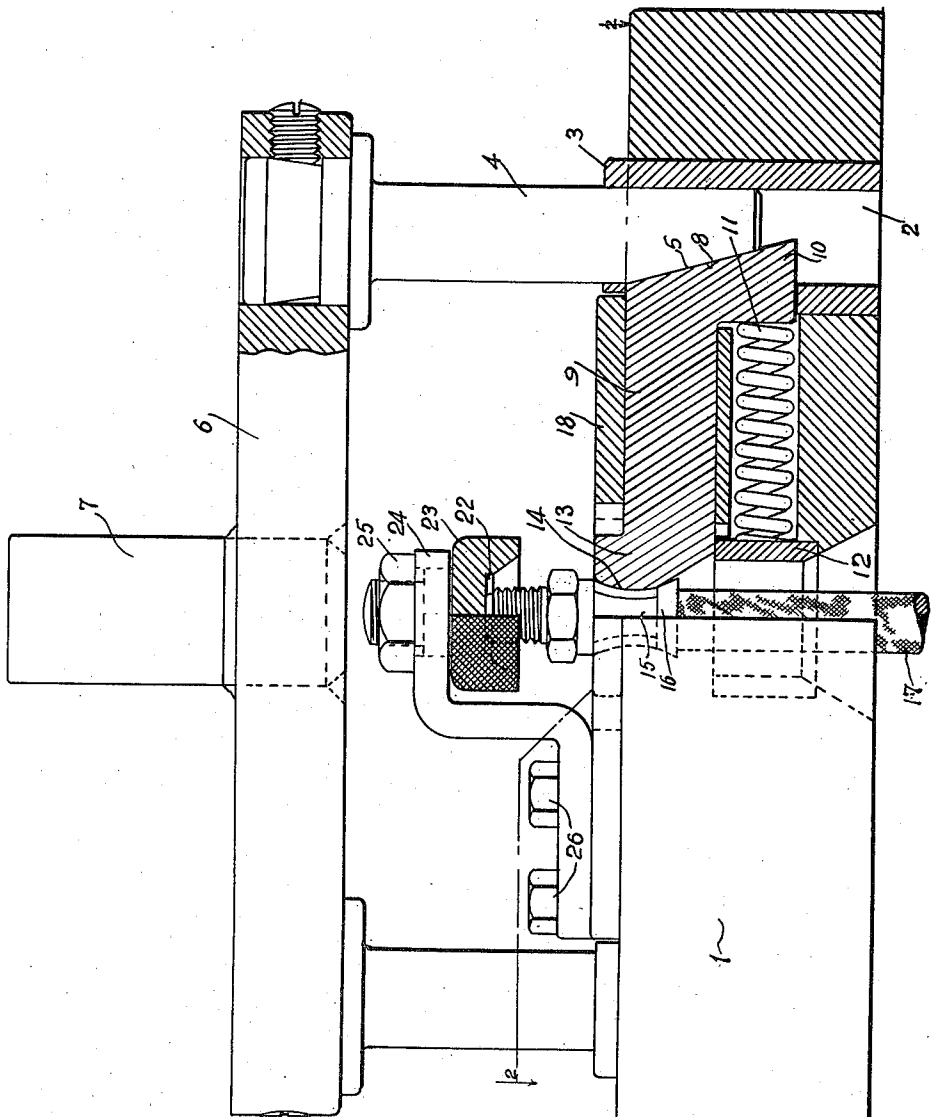
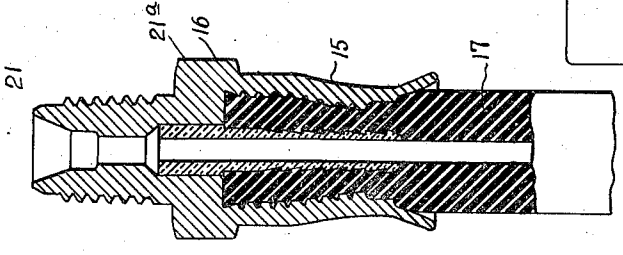


FIG. 3.



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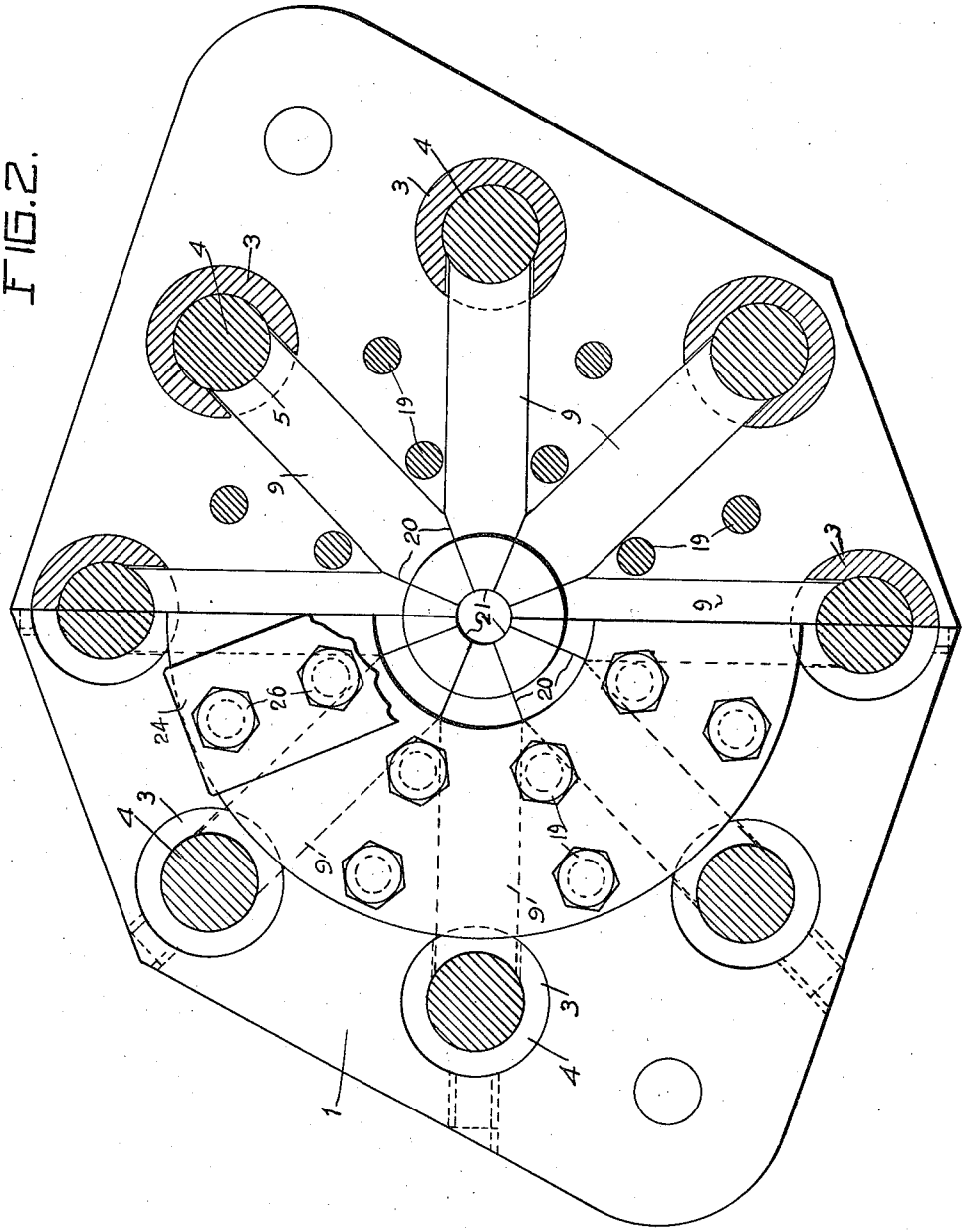
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FIG. 2.



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UNITED STATES PATENT OFFICE

2,231,278

CRIMPING MACHINE

William H. Miller, Royal Oak, Mich., assignor to The Flex-O-Tube Company, Detroit, Mich., a corporation of Delaware

Application September 24, 1937, Serial No. 165,562

2 Claims. (Cl. 153—1)

This invention relates to apparatus for forming metallic couplings on the ends of hose.

It is the object of this invention to provide means of uniformly forming at one stroke of the press a predetermined cross section of a fitting on a resilient hose.

It is an object to provide means of positioning this fitting and of collapsing it partly or crimping it from all directions at one time, and of utilizing the ends of the means for performing this operation as a support for the fitting and hose while it is being so crimped.

It is a further object to provide a limiting and adjusting head for regulating the position of the fitting.

It is a further object to provide a crimping machine in which the crimping members can be readily installed and removed so that different configurations can be imparted through different crimping members to the fitting as it is attached to the hose.

Referring to the drawings:

Figure 1 is a side elevation partially in section on the section line 1—1 of Figure 2, showing the press and crimping mechanism of this invention with the fitting in position being crimped.

Figure 2 is a top plan view partially in section on the line 2—2 of Figure 1. The supporting bracket for the limiting head or spacer guide is broken away.

Figure 3 is a section taken vertically through a typical coupling and hose after the crimping operation.

Referring to the drawings in detail, 1 represents a base having a plurality of guideway passageways 2 in which are mounted bearing sleeves 3 for receiving the reciprocating plungers 4 having a cam face 5. These plungers are detachably mounted in the reciprocating head of the press designated 6. The press plate 6 has a projecting member 7 for attachment to the main press mechanism so that it can be reciprocated.

The cam face 5 of the plungers 4 engages with a corresponding cam face 8 of the transversely moving reciprocating crimping members 9 which are S-shaped in section. The depending outer end 10 thereof is used as an abutment for the spring 11, the other end of which engages with the collar 12 which is carried within the base plate 1. This reciprocating crimper is provided with a head 13 that has an arcuate face 14 for engaging with the metal side wall 15 of the coupling 16 that is to be crimped upon the hose 17.

The reciprocating crimpers are held in position by a cover plate 18 retained upon the base plate 1 by the screw bolts 19.

It will be noted from examining Figure 2 that the ends of the crimping members are tapered at 20 so that they interengage with one another when they are held in their inner position. When they are in their inner position they form a reduced aperture 21 in which is located the fitting that has been crimped. The outer ends of these crimping members 9 are arcuate as at 5, so that they are both concave and diagonally disposed downwardly to form a cam surface. In this way they are aligned laterally on the transverse circular reciprocating plunger 4. The upper end of the fitting designated 21*b* is inserted within the positioning recess 22 of the spacer guide 23 that is held on the bracket 24 by the nut 25. This positioning member 23 can be adjusted vertically to accommodate different lengths of the fittings. The member 23 is carried on the bracket 24 which is bolted by the bolts 26 to the cover plate 18.

The method of operating this crimping press is as follows. The plate 1 is elevated so that the pressing plungers 4 are withdrawn. This permits the springs 5 to move the crimping members 9 outwardly. The enlarged space 21 thus formed is used for inserting the fitting on the end of the hose that is to be crimped on the hose. The nut on this fitting at 21*a* is so positioned that the crimping member comes beneath it. The end of the fitting 21*b* fits within the limiting guide socket member, or spacer guide, 23. While the hose is being held from below the plate 1, the press head 6 descends with its plungers 4 so that the cam faces 5 thereof engage the cam faces 8 of the crimping members 9 collapsing the springs 11 and forcing the side walls of the fitting inwardly as at 15 into the hose.

It will be understood that I desire to comprehend within my invention such modifications as come within the scope of the claims and the invention.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A crimping apparatus comprising in combination, a bed plate having a plurality of radial passageways and a central vertical pasageway extending downwardly through said bed plate with which said radial passageways communicate, a plurality of reciprocating crimping members in the radial passageways having depending

cam-shaped outer ends and having deforming inner ends which are convex in a vertical plane, said cam-shaped outer ends being bevelled outwardly, a stationary abutment disposed annularly of said vertical passageways, yielding means confined between the depending ends of said members and said stationary abutment for moving said crimping members outwardly of said abutment, a vertically reciprocating head above said bed plate provided with depending vertically reciprocating plungers disposed generally above said bed-plate and having cam faces corresponding with and engaging the cam faces of said crimping members for effecting inward movement of the latter in opposition to the pressure of said yielding means, a bracket secured to the bed plate and having a portion extending above the central vertical passageway between said head and said bed plate, and stationary means secured to the lower face of said bracket acting as a limiting stop for the upward movement of an article to be crimped, said stationary means including centering means for said article during the crimping operation, and means for vertically adjusting said stationary means.

2. In combination, a bed plate having a plurality of radially disposed guideways therein and a central space at the inner termination of said guideways, said space extending vertically through said bed plate so as to be accessible from beneath the same, a plurality of horizontally disposed crimping members mounted for reciprocating movement in said guideways, said members having inner end portions shaped so as to be vertically convex for contracting inwardly an article for effecting crimping engagement therebetween, said crimping members having their outer end portions downwardly extending and provided with outer outwardly inclined faces and inner abutment surfaces, an annular abutment located in the space at the inner termination of the crimping members, and springs confined between said abutment and the inner faces of the depending portions of the crimping members, in combination with a reciprocating head located above said bed plate, having depending plungers provided with outwardly inclined faces which correspond with and cooperatively engage with the inclined faces upon the outer end portions of the crimping members to effect inward movement of said members upon the downward movement of said head and plungers, and means for positioning an article in said space relatively to said crimping members and extending through said space.

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