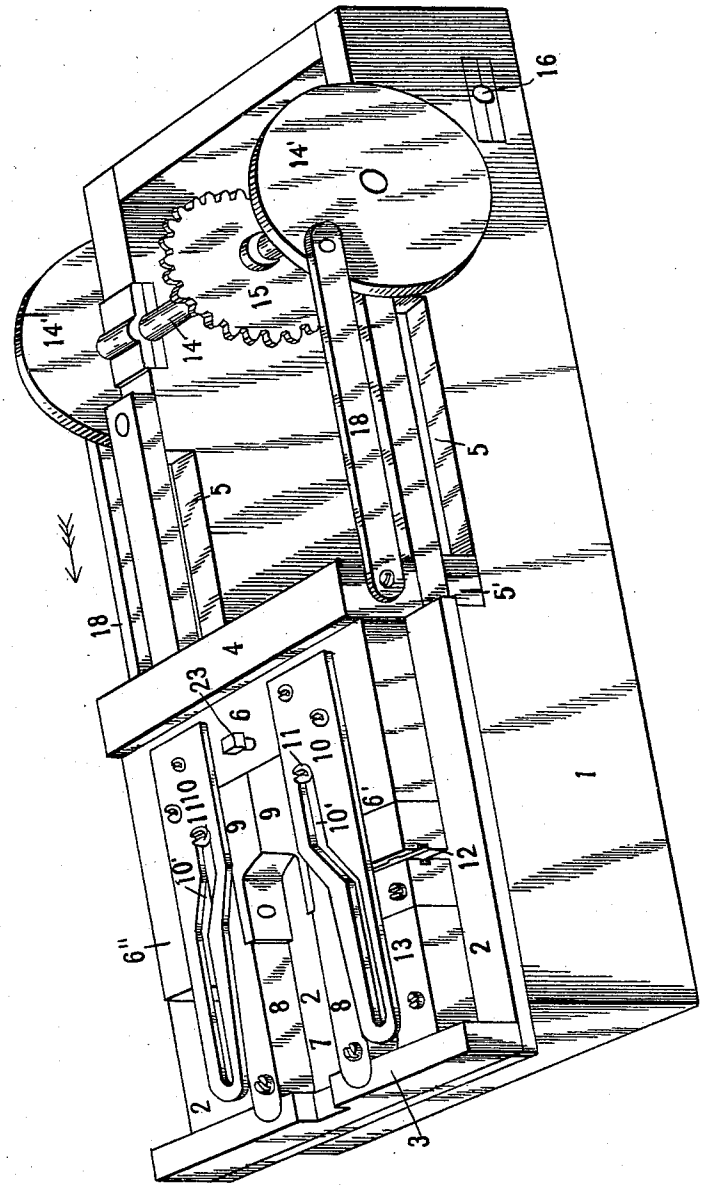
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# H. MARKHOFF, Sr.

## MACHINE FOR FORMING TURNBUCKLES.

No. 589,182. Patented Aug. 31, 1897.

Fig. 1




WITNESSES.

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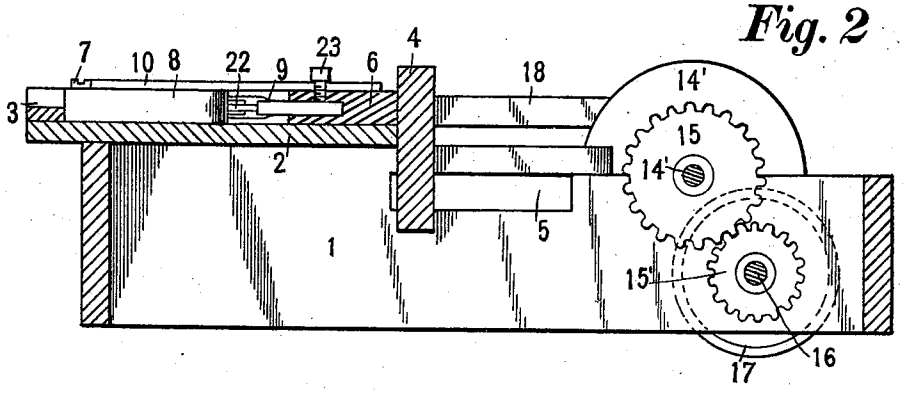
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# H. MARKHOFF, Sr.

## MACHINE FOR FORMING TURNBUCKLES.

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*Fig. 2*



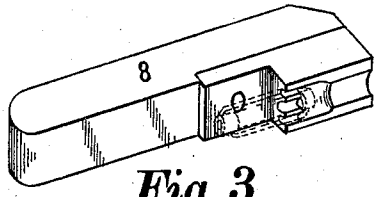




*Fig. 3*

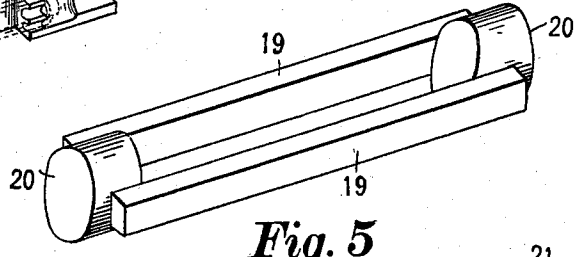



*Fig. 5*

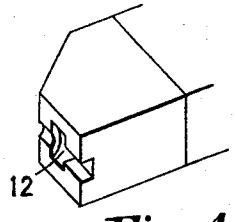



*Fig. 4*

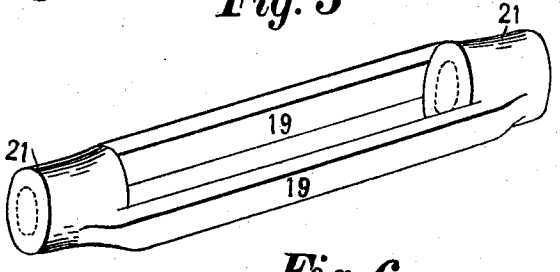



*Fig. 6*

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# UNITED STATES PATENT OFFICE.

HARMANN MARKHOFF, SR., OF DETROIT, MICHIGAN.

## MACHINE FOR FORMING TURNBUCKLES.

SPECIFICATION forming part of Letters Patent No. 589,182, dated August 31, 1897.

Application filed April 16, 1897. Serial No. 632,403. (No model.)

*To all whom it may concern:*

Be it known that I, HARMANN MARKHOFF, Sr., a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Machines for Forming Turnbuckles, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to new and useful improvements in machines for forming turnbuckles, &c.; and it consists in the construction and arrangement of parts as hereinafter fully set forth, and pointed out particularly in the claims.

The object of the invention is to provide a machine of the character set forth that shall be cheap and simple of construction and operation and which embraces a pair of separable forming-dies, a receptacle for the article formed by said dies, and a punching device. This object is attained by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a general perspective view of a machine as made in accordance with my invention. Fig. 2 is a vertical longitudinal section through Fig. 1. Figs. 3 and 4 are details of the forming and retaining dies. Fig. 5 is a perspective view of two bars sweated to connecting end pieces ready for the forming-dies. Fig. 6 is a view of the completed article.

Referring to the numerals of reference, 1 designates the frame of the machine, which may be of any suitable size and of the requisite strength.

2 represents the bed of the frame, having a bumper or seating rail 3 rising vertically from the rear edge thereof.

4 indicates a cross-head which is adapted to be moved horizontally along guideways 5, said cross-head having a portion 5′ fitted therein. Projecting from the rear face of cross-head 4 is a table 6, said table being cut out in its center portion, so as to form side arms 6′ and 6″. Pivoted at 7 upon the upper face of table 2 is a pair of movable arms 8, said arms having dies 9 removably secured to the inner side of its rear ends.

10 indicates guide-plates having angled recesses 10′ therein of the particular formation shown in Fig. 1. Lying within said recess 10′ and extending into the upper face of arms 8 are screws or operating-pins 11, which are adapted to traverse said recess 10′, such operation being hereinafter more fully set forth.

A die-cavity 12 is formed in the outer end of arm 6′, which is adapted to be brought contiguous with a metal block 13, which is secured to the upper face of body 2, said block having a die-cavity therein, such cavity being the complement of and corresponding with cavity 12.

Journaled in suitable boxes in the rear end of the machine-frame 1 is a shaft 14, said shaft having crank-wheels 14′ rigidly fastened to its outer ends. Also rigidly secured to said shaft intermediate of its bearing-boxes is a gear-wheel 15, said gear-wheel being adapted to mesh with a corresponding gear-wheel 15′, mounted upon a shaft 16, which shaft is also journaled in frame 1 below shaft 14. Rigidly secured to one of the outer ends of shaft 16 is a suitable drive or band wheel 15, which receives power from any suitable source to drive the machine.

18 represents connecting-rods which are journaled at their rear ends to wrist-pins which project in line with each other from the outer faces of wheels 14′, the forward ends of said rods being pivoted to cross-head 4.

The product from which turnbuckles are made by this improved machine consists of metal bars 19, between the ends of which pieces of scrap-iron or slugs 20 are sweated by being placed under the action of heat in a suitable furnace or other generator. After one end of each of said bars and their adjacent slugs have been so heated as to form an integral mass it is placed in the die-cavity in the end of block 13, and as arm 6′ of table 6 and cross-head 4 are moved in the direction of the forward end of the frame during the operation of the machine said arm 6′ and its die 12 will bear thereagainst, compressing the ends of bars 19 and slugs 20 into the form shown at 21 of Fig. 6. After both ends of each of said bars and slugs 20 have been

treated as before described they are placed, as shown by dotted lines in Fig. 3, between the dies 9, when said dies are thrown open by the longitudinal movement of plates 10 and their respective recesses 10′, the arrangement of the parts being such that said dies will be closed upon the article formed by dies 12 before the punching device or tooth 22, which is removably secured in the front edge of table 6 by means of a set-screw 23, comes in contact therewith. As the machine continues to operate and cross-head 4 and table 6 are projected forward said punching-tooth will pass through end 21 and form a hole therein through which rods (not shown) to be connected by said turnbuckles may pass, as will be readily understood. After the operation of punching one end has been completed, as cross-head 4 and table 6 are drawn toward the rear end of the machine, the pins 11 in traversing groove 10′ will throw the free ends of arms 8 apart, allowing the buckle to be removed.

It will thus be seen that the construction and arrangement of parts hereinbefore set forth produce a machine that will be perfect in its operation and one by the use of which a complete turnbuckle may be formed by four revolutions of the driving-shaft.

Having thus fully set forth my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A machine for the purpose set forth, consisting of a frame having a stationary bed mounted thereon and a guideway formed therein, a cross-head and table adapted to slide in said guideway and to be moved in the direction of the length of said frame, movable arms pivoted to said bed; said arms having dies secured thereto, and the punching-tooth secured to said table and adapted to enter between the dies of said arms by the movement of said table, for the purpose set forth.

2. A machine for the purpose set forth, consisting of a suitable framework having a bed mounted thereon, arms pivoted at one of their ends upon said bed, suitable guideways formed in said framework, a cross-head adapted to travel therein, a U-shaped table secured to said cross-head, one portion of said table having a die-cavity formed therein, metal plates having angled ways cut therein, in which ways pins projecting from said arms, are adapted to travel to operate said arms, and the die-block having a cavity therein corresponding with the cavity in said table, substantially as shown and described.

3. A machine for forming turnbuckles &c., consisting of a suitable framework having a bed mounted thereon, arms pivoted at one of their ends upon said bed, guideways formed in said framework, a cross-head adapted to travel therein, a U-shaped table secured to said cross-head, one portion of said table having a die-cavity 12 formed therein, metal plates 10 having angled ways 10′ therein, in which ways pins projecting from the free ends of said arms, are adapted to travel, said arms having dies secured to their inner sides, a block 13 secured to the upper face of bed 2 and standing in the terminal of the path traversed by the die-cavity 12 of said table, substantially as shown and described.

4. A machine for the purpose set forth, consisting of a suitable framework having an angled body mounted thereon, arms 8 pivoted at one of their ends upon said bed and bearing against its angled portion, said arms having dies 9 removably secured to the inner sides of their free ends, said framework having suitable guideways in which a cross-head 4 is adapted to travel, said cross-head having a U-shaped table extending from its forward side, the guide-pieces having recesses 10′ formed therein secured to said table and extending over said arms, the pins of said arms extending upward through said guideways, the block 13 having the complementary portion of a die-cavity 12 formed therein, the shafts 14 and 16 journaled in said framework, said shaft 14 having wheels 14′ mounted thereon and said wheels being connected with said cross-head by means of connecting-rods, a gear-wheel also mounted upon said shaft 14, which is adapted to mesh with a corresponding wheel mounted upon shaft 16, the drive-wheel mounted on said shaft 16, the punching-tooth removably secured in the depressed portion of said U-shaped table, all substantially as and for the purpose set forth.

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

HARMANN MARKHOFF, SR.

Witnesses:
CHAS. T. SPRINGMAN,
H. ROSCOE WHEELER.