

J. GILLESPIE.
RIVETING MACHINE.
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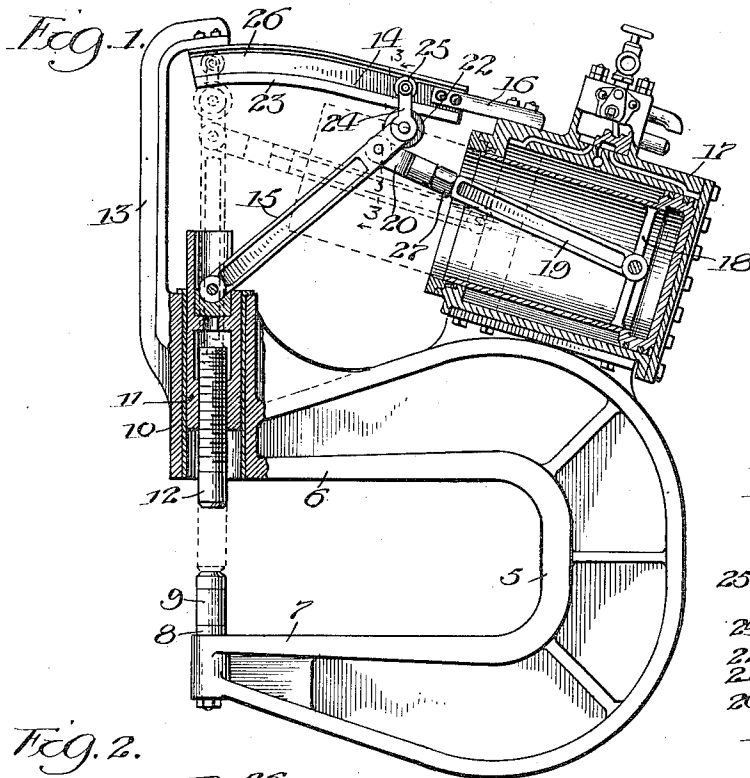
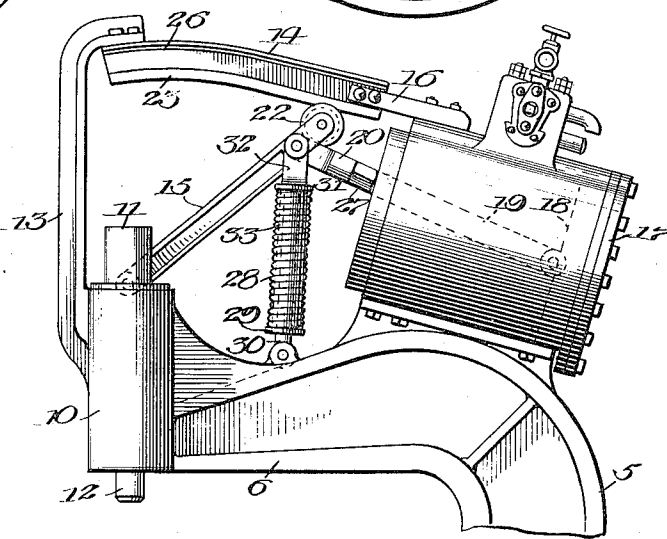


Fig. 2.



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UNITED STATES PATENT OFFICE.

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RIVETING-MACHINE.

972,689.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES GILLESPIE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Riveting-Machines, of which the following is a specification.

This invention relates to improvements in that type of machines used for riveting two or more pieces of metal together, and while it has especial relation to that class of such machines, which are operated by fluid pressure, yet it is applicable to riveting machines in which other motive force may be used, and it consists in certain peculiarities of the construction, novel arrangement and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The principal object of the invention is to provide a riveting machine which shall be of such construction that the motive power from the engine or other operating motor will be transmitted to the plunger or riveting-head in such a manner as to cause a substantially uniform pressure to be exerted by said head upon a rivet operated on throughout a relatively small part of the latter portion of its stroke; or in other words, to provide means in a riveting machine for transmitting power and motion from the engine or prime mover to the plunger or riveting-head rapidly at the beginning of the riveting operation, and afterward in a substantially uniform manner.

Another object of the invention is to furnish a riveting machine of the above-named character, which shall be simple and inexpensive in construction, strong, durable and efficient in operation.

Other objects and advantages of the invention, will be disclosed in the subjoined description and explanation.

In order to enable others skilled in the art to which my invention pertains, to make and use the same, I will now proceed to describe it, referring to the accompanying drawings in which—

Figure 1, is a side view partly in elevation and partly in section of a riveting machine embodying one form of the invention. Fig. 2, is a view in side elevation of a portion of the frame of the riveter, showing a modification in the construction of the operating mechanism for the riveting-head or plunger, and Fig. 3, is a cross-sectional

view taken on line 3—3 of Fig. 1, looking in the direction indicated by the arrows.

Like numerals of reference, refer to corresponding parts throughout the different views of the drawing.

The reference numeral 5, designates the frame of the machine, which may be made of any suitable size, form and material, but preferably of substantially the shape of a horseshoe as shown in the drawing, so as to provide upper and lower arms 6, and 7, with a gap and reach of suitable dimensions between the same. The outer or free end of the lower arm 7, is provided with a bushing or sleeve 8, to receive the lower die or riveting tool 9, and the upper arm 6, is provided at its outer or free end with a hollow extension 10, for the reception and operation of the plunger or riveting-head 11, into the lower portion of which is screw-threaded the upper tool or die 12, which, it is apparent, may be suitably adjusted or removed when desired, and replaced by another tool or die. Projecting upwardly from the upper portion of the frame 5, is an extension 13, to the upper portion of which is secured one end of the cam-guide 14, for the operating bar 15, of the plunger or riveting-head 11, which cam-guide in the present instance is shown in the form of a rail or bar provided with a groove on each of its sides, and as being connected at its other end by means of a bracket or bar 16, to the upper front portion of the engine cylinder 17, which in the present instance is shown as a fluid pressure engine of the well known type, but which engine may be of any preferred construction or may be operated by any desired power.

As at present shown, the cylinder 17, is mounted on the upper rear portion of the frame 5, of the machine and is provided with a reciprocating piston 18, having a forwardly extended piston-rod 19, the front portion 20, of which is pivotally connected to the upper portion of the operating bar 15, for the plunger 11, which bar is pivotally connected at its lower end to the upper portion of the plunger 11, and has at its upper end prongs 21, between which is journaled a roller 22, which is preferably grooved and is adapted to contact with the lower surface of the cam-guide 14, which lower surface is upwardly curved throughout a portion of its length, as is clearly shown at 23, in Figs. 1, and 2, of the drawing, and has its rear portion substantially

straight. Pivotally secured to the upper portion of the operating bar 15, and preferably to each of the prongs 21, thereof, is an upwardly extending arm 24, each of which has journaled on its upper end a roller 25, to travel in the grooves 26, of the cam-guide in such a manner as to securely and constantly hold the roller 22, in contact with the lower surface of said guide. The front portion of the piston-rod 19, may be reduced and screw-threaded to engage a screw-threaded socket formed in the rear portion of the part 20, of the piston-rod and said reduced portion may have thereon a nut 27, as is clearly shown in Fig. 1, of the drawing.

In Fig. 2, is shown a modification in the construction of the operating mechanism for the plunger in which the construction is the same as that just above described, except, that instead of employing the upwardly extended arms 24, and rollers 25, to hold the roller 22, in constant contact with the lower surface of the cam-guide 14, an expanding spring 28, is employed which rests at its lower end against a head 29, the stem 30, of which is pivotally secured to the upper portion of the frame 5, and rests at its upper end against a head 31, which is provided with upward extensions 32, which are pivotally secured to the operating bar 15, near its upper end. The head 31, is provided on its lower portion with a stem 33, which is extended into the coils of the spring 28, yet is adapted to move therewith in its expansion and contraction.

From the foregoing, and by reference to the drawing, it will be readily understood and clearly seen that when the parts are moved from the positions shown by continuous lines to that illustrated by dotted lines in Fig. 1, of the drawing, by reason of the arrangement of the cam-guide co-acting with the roller on the operating bar 15, the initial or first part of the stroke of the plunger will be very rapid, while the remainder of its stroke will be lessened and substantially uniform in movement with maximum pressure.

From the above description of my improvements, it will be seen that the improved riveting machine constructed ac-

ording to my invention is of an extremely simple and inexpensive nature, and is especially well adapted for use by reason of the positive character of its operation, and it will also be evident from the above description that the device is susceptible of considerable modification without materially departing from the principles and spirit of the invention, and for this reason, I do not desire to be understood as limiting myself to the precise form and arrangement of the several parts of the device as herein set forth in carrying out my invention in practice.

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

1. In a riveting machine, the combination with a main frame, of a plunger slidably mounted thereon, a cam-guide mounted above the plunger, a plunger operating bar pivotally connected at one of its ends to the plunger and in movable engagement at its other end with the cam surface of the cam-guide, and means connected to the operating bar for imparting movement thereto.

2. In a riveting machine, the combination with a main frame, of a plunger slidably mounted thereon, a cam-guide mounted near one end of the plunger, a plunger operating bar pivotally connected at one of its ends to the plunger, a roller journaled on the other end of said bar, means to hold the roller in contact with the cam-surface of the cam-guide, and means connected to the operating bar for imparting movement thereto.

3. In a riveting machine, the combination with a main frame, of a plunger slidably mounted thereon, a cam-guide located near one of the ends of the plunger, a plunger operating bar connected at one of its ends to the plunger, a roller journaled on the other end of said bar, an upwardly extending arm secured to each side of the operating bar, a roller journaled on the upper portion of each of said arms and in engagement with the cam-guide.

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