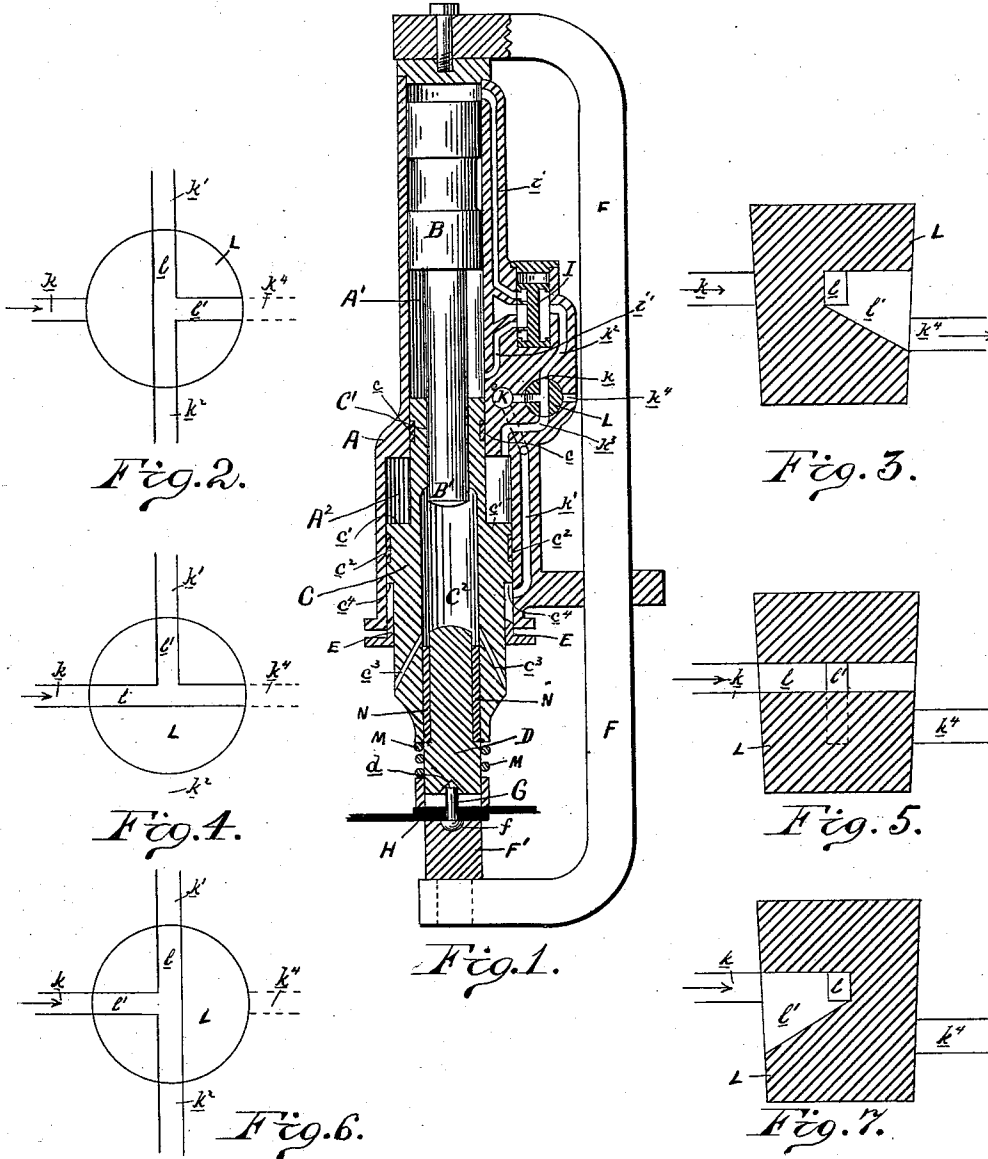


(No Model.)

W. R. WEBSTER.
RIVETING MACHINE OR HAMMER.

No. 466,476.

Patented Jan. 5, 1892.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM R. WEBSTER, OF PHILADELPHIA, PENNSYLVANIA.

RIVETING MACHINE OR HAMMER.

SPECIFICATION forming part of Letters Patent No. 466,476, dated January 5, 1892.

Application filed July 20, 1889. Serial No. 318,174. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. WEBSTER, of the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Riveting Machine or Hammer, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to the construction of the riveting-machines in which the riveting is accomplished by repeated rapid blows of a steam or compressed-air hammer.

The object of my invention is to provide a riveter which shall be free from the objections found to those machines in which the hammer-piston acts directly upon the rivet, and generally to improve the construction of riveting-machines of the above description.

The novel features of my invention will be best understood after a description of the drawings in which it is illustrated, and they will be hereinafter specifically pointed out in the claims, reference being now had to the drawings which illustrate my invention, and in which—

Figure 1 is a longitudinal cross-section through my improved riveter; Figs. 2 to 7, inclusive, views of an improved valve used in connection with my apparatus in the way hereinafter described.

A is a casing, in which are formed a cylinder A' for the hammer-piston and a larger cylinder A² for the clamping or holding piston.

B is the hammer-piston, and B' the hammer connected with said piston.

C is the clamping or holding piston, which I prefer to make with a large steam-surface c' near its upper end, and a smaller steam-surface c⁴ below the same. I prefer to extend the upper end of the clamping-piston into the cylinder A' of the hammer-piston, making a tight joint by means of a packing-ring C'. A packing-ring c² is also interposed between the steam-surfaces c' and c⁴, and a steam-tight packing E is provided at the end of the cylinder A².

The clamping-piston C is hollowed in the center, as shown at C², the hammer B' entering the upper part of this opening, and a riveting-tool D, entirely unconnected with the

hammer B', is adjusted in the lower portion of the opening C², as shown. Passages c³ c³ are formed in the lower part of the clamping-cylinder, so as to permit the escape of air from the opening C².

The riveting-tool B may be of any convenient construction, having its end d formed so as to properly grip the end of the rivet and its upper end made smaller than the opening C², in which it is secured, a ring of Babbitt metal or any other convenient packing N being provided to hold the riveting-tool properly centered in the clamping-cylinder. As shown in the drawings, the clamping-cylinder acts directly on the riveting-tool D, pushing it against the end of the rivet. A spring M is shown extending from the clamping-cylinder around the riveting-tool and forming a clip to hold the plates H together; or, if desired, any of the usual constructions by which the clamping-cylinder acts upon the plate may be substituted, this part of the apparatus forming no feature of my invention, and it being immaterial to the said invention whether the clamping-cylinder acts on the riveting-tool alone, on the plates alone, or on both together, as shown.

G is the rivet, the head of which rests in a hollow f of the anvil F', which anvil is, as shown, connected with the head of the casing A by means of an arm F, the arrangement shown being a convenient one for a portable riveter.

i i' are steam-ports leading to the two ends of the hammer-cylinder from the actuating-valve I, steam being led into the valve-chamber through the port k².

K indicates the main supply-passage for the steam. From this passage a port k' leads beneath the small steam-surface c⁴ of the clamping-cylinder and another port k leads to the distributing-valve cock L, from the seat of which extends the port k² to k³ and the exhaust-port k⁴, the port k⁴ being, as shown in Figs. 2 to 7, on a lower level than the ports k, k³, and k², all of which are formed in the same plane. The cock-valve L is formed with passages or ports l and l', the passage l' being deeper than the passage L, so as to connect with the ports k⁴ when turned into the position shown in Figs. 2 and 3,

which figures represent the position of the cock-valve when turned so as to connect the ports k^3 and k^2 with the exhaust-port k^4 and closes the supply-port k .

5 Figs. 4 and 5 represent the position of the cock-valve when it is turned so as to connect the supply-passage k with the passage k^3 , leading to the large steam-surfaces c' , and closes the ports k^2 and k^3 , and Figs. 6 and 7 represent the position of the cock-valve when
10 turned so as to connect the supply-port k with the passages k^3 and k^2 , so as to actuate the hammer-piston, while at the same time holding the clamping-cylinder down by the pressure on its large steam-surface c' .

15 The operation of my improved riveter is as follows: In the first place, steam being always admitted through the supply-passage k and the passage k' to the small steam-surface c^4
20 of the clamping-cylinder C, there is always a pressure on said surface c^4 tending to elevate the clamping-cylinder. Plates H and rivet G being arranged in position to be operated upon, the cock L is turned into the position indicated
25 in Figs. 4 and 5, admitting steam through port k^3 to the large steam-surface c' , and causing the clamping-cylinder to move down, so as to clamp the plates and bring the riveting-tool B in contact with the end of the rivet, or one or
30 both of these operations, as before noted. The cock-valve is then turned into the position shown in Figs. 6 and 7, in which position the steam is still admitted through ports k^3 , but also allowed to pass into the port k^2 , and thence
35 to the valve-chamber, from which, by means of the valve I, it is made to actuate the hammer-piston B, the hammer B' acting on the end of the supported riveting-tool B, which always rests in contact with the end of the
40 rivet. I have found that by using this supported riveting-tool the tendency to bend or act unevenly upon the rivet is overcome, and much more effective and regular riveting can be accomplished than in cases where
45 the hammer acts directly on the end of the rivet. When the riveting is accomplished, the cock-valve L is turned to the position

shown in Figs. 2 and 3 in the drawings, closing the supply-port k and allowing the steam to escape to ports k^3 and k^2 to the exhaust k^4 .
50 The small steam-surface c^4 being then no longer counteracted, the clamping-cylinder moves upward and the apparatus is ready for the adjustment of a new rivet.

Having now described my invention, what
I claim as new, and desire to secure by Letters Patent, is—

1. In a riveting-machine, the combination of a hammer cylinder and piston, a clamping-cylinder, a riveting-tool unconnected with the
60 hammer-piston and having bearings in the clamping-cylinder, and a casing connecting the hammer-cylinder and the bearings for the clamping-cylinder, so as to insure the alignment of the parts, all substantially as and for
65 the purpose specified.

2. In a riveting-machine, the combination of the casing A, containing a clamping-piston C and hammer-piston B, the clamping-piston being arranged within the cylinder of the
70 hammer-piston and having the large and small steam-surfaces c' c^4 , substantially as and for the purpose specified.

3. In a riveting-machine, the combination of a casing A, containing a clamping-piston
75 C and hammer-piston B, said clamping-piston having a steam-surface c^4 exposed to the constant action of the steam or other impelling-fluid, all substantially as and for the purpose specified.
80

4. In a riveting-machine, the combination of a casing A, containing a clamping-piston C, having a steam-surface c' and a hammer-piston B, a valve I for actuating the hammer-piston, ports k , k^2 , k^3 , and k^4 , meeting in a
85 cock-seat, said ports k and k^4 being on different levels and ports k^3 k^2 on the same level, and a cock-valve L, having ports l l' , said port l' being deeper than port l , all substantially as and for the purpose specified.

WILLIAM R. WEBSTER.

Witnesses:

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