

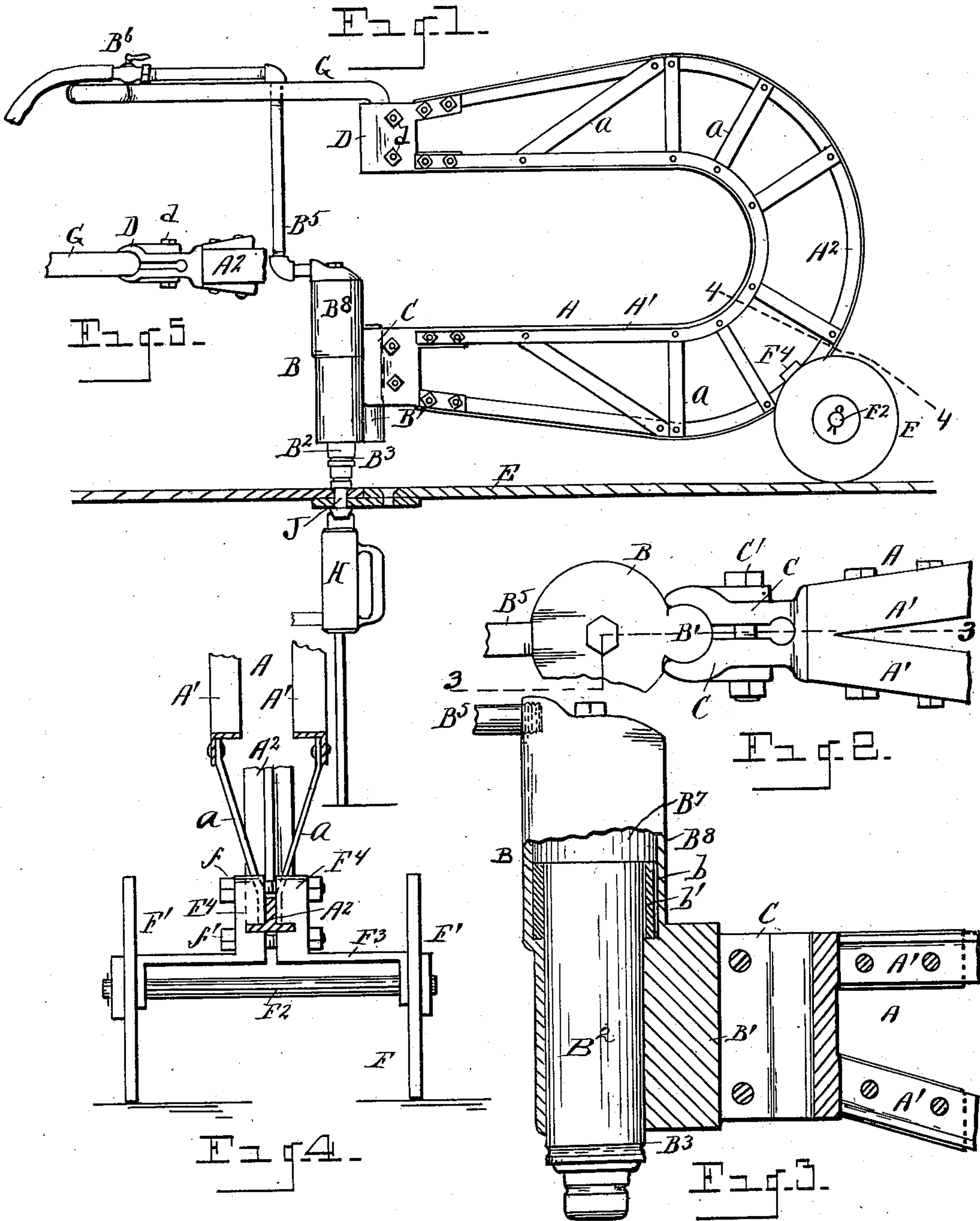
No. 639,739.

Patented Dec. 26, 1899.

F. A. KIRBY.
PNEUMATIC HAMMER OR RIVETER.

(Application filed Apr. 29, 1898.)

(No Model.)



WITNESSES.

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UNITED STATES PATENT OFFICE.

FITZ A. KIRBY, OF WYANDOTTE, MICHIGAN.

PNEUMATIC HAMMER OR RIVETER.

SPECIFICATION forming part of Letters Patent No. 639,739, dated December 26, 1899.

Application filed April 29, 1898. Serial No. 679,180. (No model.)

To all whom it may concern:

Be it known that I, FITZ A. KIRBY, a citizen of the United States, residing at Wyandotte, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Pneumatic Hammers or Riveters; and I 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, which form a part of this specification.

My invention is designed to provide certain new and useful improvements in a pneumatic hammer or riveter adapted and arranged for certain classes of work, as more fully hereinafter described and claimed and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation. Fig. 2 is a partial plan view. Fig. 3 is a vertical section of certain parts, other parts being shown in elevation. Fig. 4 is a rear elevation showing a part in section. Fig. 5 is a plan view of other portions of the device.

The object of my invention is to provide a portable pneumatic hammer or riveter which may be readily moved about, as upon the deck of a vessel under process of construction.

More particularly, my invention embodies certain improvements upon what is known as the "Boyer pneumatic hammer," my design being to greatly increase the range of work which may be accomplished thereby, and thereby to greatly increase the utility of the device and provide for an increased saving of labor as well as for the increased efficiency of the hammer.

My invention is designed to adapt a hammer more particularly for riveting steel plates upon the decks of ships in shipbuilding and for analogous work.

Heretofore pneumatic hammers have been employed in driving rivets in the construction of the framework of ships, bridges, &c.; but as they have heretofore been constructed these hammers have not been adapted for driving rivets into steel plates upon the deck of a ship and like uses, and it is more specifically to adapt pneumatic hammers for this class of work that my improvement is intended.

In the drawings submitted herewith, A represents the frame of a pneumatic riveting-machine commonly made of horseshoe form or U shape, the frame herewith shown comprising two metal bars A' A' of required form in combination with an outer bar A², preferably constructed of angle-iron, the bars A' being spaced one from another, braces a being provided connecting the bars A' with the bar A². With one extremity of the frame is connected a pneumatic or piston air-hammer, (indicated at B,) held in place in any suitable manner, as by clamping-arms C, secured upon said frame. The case of the piston air-hammer may be formed with a rib, (indicated at B',) which may be clamped in the arms C, as by a bolt C', passed through said arms. Heretofore the pneumatic hammer B, carried by the frame A, has been arranged to strike inward or toward the opposite extremity of the frame. The opposite extremity of the frame is provided with clamping-arms D, which have in devices heretofore constructed carried a "holder-on" or anvil projecting toward the opposite extremity of the frame or toward the hammer B. As formerly constructed the frame has been arranged so as to bring the two extremities of the frame astride the work, as astride beams to be riveted together, the work being located between the hammer and the holder-on, the hammer, as above observed, striking inward or toward the holder-on attached to the opposite extremity of the frame. With a pneumatic hammer so constructed and arranged it has been obviously impossible to drive rivets through sheet metal upon the deck of a ship and for analogous purposes, inasmuch as the blow must be struck in the opposite direction, and from the nature of the work it is obviously impossible to engage the frame astride the work or so that the work shall come between the hammer and the holder-on carried by the opposite extremity of the frame. One feature of my invention consists in reversing the hammer B in its engagement with the corresponding extremity of the frame. To this end my invention contemplates having the hammer removably connected with the frame and reversing its position, so that the blow shall be struck outward or away from either extremity of the frame or downward upon a rivet pass-

ing through metal plates upon the deck of a vessel, rendering it necessary to employ a separate and differently-arranged holder-on or anvil to support the rivet and the stroke of the hammer below the plate. Accordingly, as shown in Figs. 1, 2, and 3, the hammer B is arranged to strike away from the corresponding extremity of the frame or downward upon metal plates, (indicated at E, Fig. 1.)

10 In order to make the frame more readily portable, so that it may be readily moved about the deck of a vessel, the frame is provided intermediate its extremities with a truck, (indicated at F,) which may be constructed with wheels F' upon an axle F², a yoke F³ being provided having clamping-arms F⁴ to engage the metal band A² of the frame, the arms F⁴ being clamped upon the bar A² by any suitable means, as by bolts f. To

20 still further render the device more portable and to assist in moving it about upon the deck, one extremity of the frame, as the upper extremity or the extremity of the frame heretofore carrying the holder-on, is provided with a handle G. This handle may be engaged with the frame by removing the holder-on heretofore employed entirely and engaging the handle G with the clamping-arms D, said arms being clamped upon the handle G

30 in any suitable manner, as by a bolt d.

The hammer B may be any suitable hammer operated by compressed air and may be constructed in its more essential features as embodied, for example, in the United States

35 Patent granted to Joseph Boyer for a pneumatic hammer, No. 575,589, dated January 19, 1897, such a construction being essentially disclosed in Fig. 3, and in which B² is a cylinder and B³ is the piston-hammer, having its piston

40 located in the piston-chamber B⁴. B⁵ is the inlet-pipe for admitting compressed air into said chamber, provided with a controlling-valve B⁶. The cylinder is shown provided with a collar B⁷. The hammer is provided,

45 as shown in the drawings, with an exterior case B⁸ offset below the collar B⁷ to form a space or chamber below said collar, (indicated at b,) said space as the hammers are commonly constructed surrounding a portion of

50 the cylinder B² and affording room for the body of the hammer, as the cylinder and said collar with the piston-hammer B³ within the cylinder, to reciprocate a corresponding distance within the case B⁸, as for ordinary work

55 it is often required to move the body of the hammer within the case to overcome certain obstructions—as to get over an angle-iron, for example. The body of the hammer being movable within the case, the admission of air

60 first drives the whole body of the hammer within the outside case, pushing the body of the hammer down upon the work and maintaining a uniform pressure thereupon; but in the adaptation of the machine for the uses

65 above specified it is undesirable that the body of the hammer should have much movement within the outer case, and to limit such

movement my invention contemplates locating below the collar B⁷, within the space b, a washer or support b', which may be formed of gas-pipe, for example, said washer supporting the collar B⁷ thereupon, the opposite end of said washer resting upon the case within the space b, whereby the movement of the body of the hammer is limited, the piston-hammer B³ remaining movable within the cylinder in the operation of the machine. It is obvious that in reversing the hammer within the frame were it not for the employment of a washer b' the body of the hammer would drop down by its own weight and would necessitate its being lifted every time it was brought into position for work. I do not, however, limit myself solely to the employment of a washer, as the device could be used without it, although it would be an inconvenience, as the body of the hammer would drop down in the outside case every time the position of the implement was changed. When the hammer is reversed in its engagement with the frame A, the supply-pipe B⁵ of course enters the cylinder at the top thereof, so as to cause the hammer to strike its blow downward or away from the adjacent end of the frame. The interior mechanism of the hammer B otherwise than the introduction of said washer constitutes no special feature of my present invention and need not herewith be more fully described.

I would have it understood that I do not limit myself solely to any particular construction of the frame.

In the employment of my present device a separate holder-on H, of any suitable construction, is provided to support the rivet J in position to be hammered down. This holder-on where the device is employed to rivet plates on the decks of vessels would be located beneath said plates, as shown in Fig. 1, and would be supported at its base in any suitable manner.

When it is desired to reverse the hammer for the uses to which it has heretofore been put, the washer b' may be removed.

What I claim as my invention is—

1. In a pneumatic riveting-machine, the combination of a frame having its extremities in the same vertical plane and spaced one from another, a pneumatic hammer engaged with one extremity of the frame and arranged to strike its blow away from the opposite extremity of the frame, said frame projecting laterally from its extremities, and a traveling support for the lateral extension thereof intermediate the extremities of the frame, substantially as set forth.

2. In a pneumatic riveting-machine, the combination of a frame having its extremities in the same vertical plane and spaced one from another, a handle connected with one extremity of the frame, and a reversible pneumatic hammer engaged with the other extremity of the frame and arranged to strike its blow away from the opposite extremity of the

frame or toward the opposite extremity at the will of the operator, said frame projecting laterally from its extremities, and a traveling support for the lateral extension thereof intermediate the extremities of the frame, substantially as set forth.

3. In a pneumatic riveting-machine, the combination of a frame having its extremities in the same vertical plane and spaced one from another, one extremity thereof constructed to carry an anvil, a pneumatic hammer engaged with the other extremity of the frame and arranged to strike its blow away from said anvil portion, wheels engaged with the frame intermediate the extremities thereof, and a handle engaged with the anvil portion of the frame, substantially as set forth.

4. In a pneumatic riveting-machine for the purpose described, the combination of a U-shaped frame having its extremities in the same vertical plane and spaced one from another, a pneumatic hammer connected with one extremity of said frame and arranged to strike its blow outward or away from the opposite extremity of the frame, a truck engaged with the frame intermediate its extremities thereof, and a handle engaged with the extremity of the frame opposite said hammer, substantially as set forth.

5. In a pneumatic riveting-machine, the combination of a frame essentially U-shaped, provided at its extremities with clamping-arms, a pneumatic hammer connected with one of said clamping-arms, a device to assist in moving the frame engaged with the other of said clamping-arms, said pneumatic hammer arranged to strike its blow away from the extremities of the frame, and a supporting device arranged with said frame intermediate the extremities thereof, substantially as set forth.

6. In a pneumatic riveting-machine, the combination with a frame provided with a bar A², of a pneumatic hammer connected with one extremity of the frame and arranged to strike its blow downward or away from the extremity of the frame, and a truck to support the frame,

said truck provided with a yoke engaging said bar, substantially as set forth.

7. In a pneumatic riveting-machine, the combination with a frame having its extremities in the same vertical plane and spaced one from another, a reversible pneumatic hammer engaged with one extremity of the frame and arranged to strike its blow away from the opposite extremity of the frame, an outer case within which the body of the pneumatic hammer is located, and a removable device within said case to limit the reciprocation of the body of the hammer within said case, substantially as described.

8. In a pneumatic riveting-machine, the combination of a frame, a pneumatic hammer arranged to strike its blow away from the frame, provided with a removable collar at one end thereof, and a stop below said collar to limit the movement of the body of the hammer, substantially as described.

9. In a pneumatic riveting-machine, the combination of a frame, a cylinder, a pneumatic hammer within said cylinder arranged to strike its blow away from the frame, a collar located about said cylinder intermediate the ends thereof, and a stop below said collar to limit the movement of the body of the hammer, substantially as and for the purpose described.

10. In a pneumatic riveting-machine, the combination of a frame having its extremities spaced one from another, a pneumatic hammer engaged with one extremity of the frame and arranged to strike its blow in a direction away from the opposite extremity of the frame, said frame projecting laterally from its extremities, and a support for the lateral extension thereof intermediate the extremities of the frame, substantially as set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

FITZ A. KIRBY.

Witnesses:

N. S. WRIGHT,
MARY HICKEY.