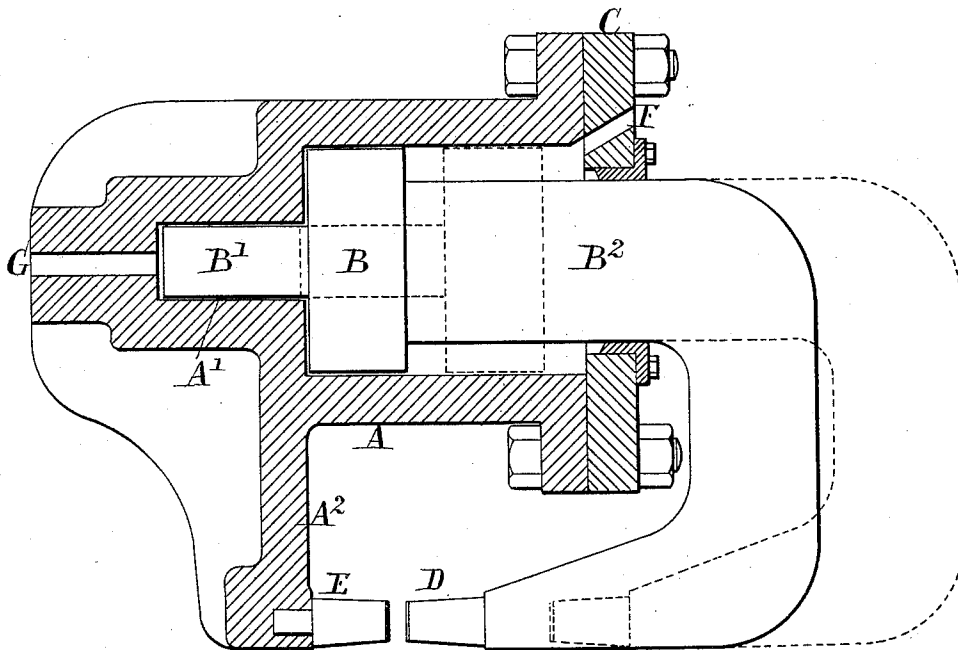


(No Model.)

A. C. A. HOLZAPFEL.
PORTABLE PUNCHING AND RIVETING MACHINE.

No. 472,356.

Patented Apr. 5, 1892.



Witnesses:-
J. A. Rutherford.
Robert Corbett.

Inventor:
Albert C. A. Holzappel.
By James L. Norris.
Attorney.

UNITED STATES PATENT OFFICE.

ALBERT C. A. HOLZAPFEL, OF LONDON, ENGLAND.

PORTABLE PUNCHING AND RIVETING MACHINE.

SPECIFICATION forming part of Letters Patent No. 472,356, dated April 5, 1892.

Application filed February 23, 1892. Serial No. 422,549. (No model.)

To all whom it may concern:

Be it known that I, ALBERT CHARLES AUGUSTUS HOLZAPFEL, a citizen of England, residing at 116 Fenchurch Street, in the city of London, England, have invented new and useful Improvements in Portable Punching and Riveting Machines, of which the following is a specification.

My invention relates to portable punching and riveting machines worked by hydraulic or other fluid pressure in which a punching or riveting tool is moved by the piston so as to advance against and punch a plate or form the head of a rivet held against it by an abutment on its other side.

The object of the present construction of apparatus is to render such machines direct acting and to make them more compact and applicable for working in small and confined spaces. For this purpose I construct the cylinder with an extended part or arm at the end farthest from the cylinder-cover and at right angles to the direction of movement of the piston. This extended part forms the abutment for containing the tool or die, against which the punch or riveting-tool works. The piston is similarly constructed with a correspondingly-extended part outside the cylinder-cover at right angles to its direction of movement, and in this arm is fitted the punch or riveting-tool in line with and immediately opposite the abutment-tool.

The accompanying drawing shows a longitudinal section of a portable punching and riveting machine constructed according to my invention.

A is a cylinder in which is a piston B, having at one end a small cylindrical extension B', fitting a cylindrical recess A' at the end of the cylinder A, and having also at the other end a cylindrical extension B², working through the cover C, outside which it is bent into elbow form, and carries at its end a punching or riveting die D. The cylinder A has a projecting arm A², fitted with an abutment-piece E, facing the punching or riveting die D. The cylinder communicates by a passage F at the front end and by a passage G at the rear end with the fluid-pressure supply which, for the punching or riveting action, operates on the annular front surface of the piston B,

and for the return movement acts upon the small area of the extension B'.

It will be seen by the above description that power for the riveting or punching is transmitted directly from the piston B to the operating-tool, and that as the cylinder is situated a certain distance above or below the arms carrying the die or punch and abutment the punching or riveting can be effected in confined spaces, and in particular the punching and riveting of the flanges of flanged plates near the roots of the flanges and close up in the corners thereof can be readily effected by the machine.

Having thus described the nature of this invention and the best means I know for carrying the same into practical effect, I claim—

1. In a machine for punching and riveting, the combination of a cylinder A, having a projecting arm A², carrying an abutment-piece, and a piston B, subjected to fluid-pressure and having an elbow-shaped extension B², extending laterally to the same distance as the arm of the cylinder and carrying the punching or riveting tool, substantially as described.

2. In a machine for punching and riveting, the combination of a cylinder A, having a projecting arm A², carrying an abutment-piece, a piston B, subjected to fluid-pressure, a cylindrical extension B' on the said piston fitting into a cylindrical recess A' on the cylinder A and also subjected to fluid-pressure, and an elbow-shaped extension B² on the said piston extending laterally to the same distance as the arm of the cylinder and carrying the punching or riveting tool, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 8th day of February, A. D. 1892.

A. C. A. HOLZAPFEL.

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