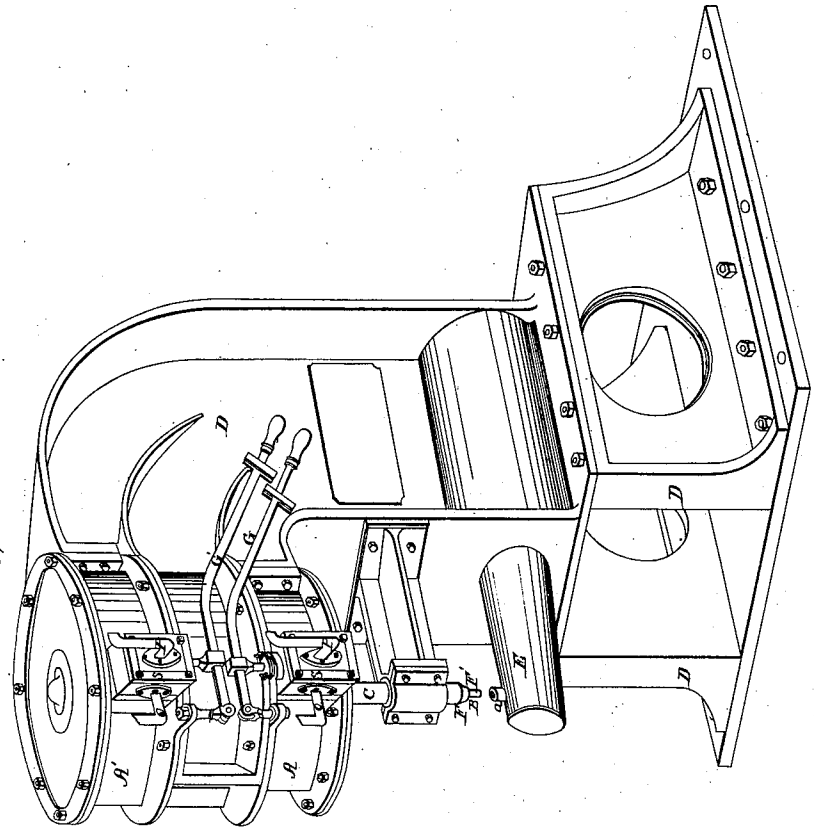
Sheet 1 - 2 Sheets.

S. Bennett,

Machine for Riveting Boilers,

No. 17,661. Patented June 30, 1857.

Fig. 1.



Witnesses;
J. P. Shattuck
J. W. Bissell

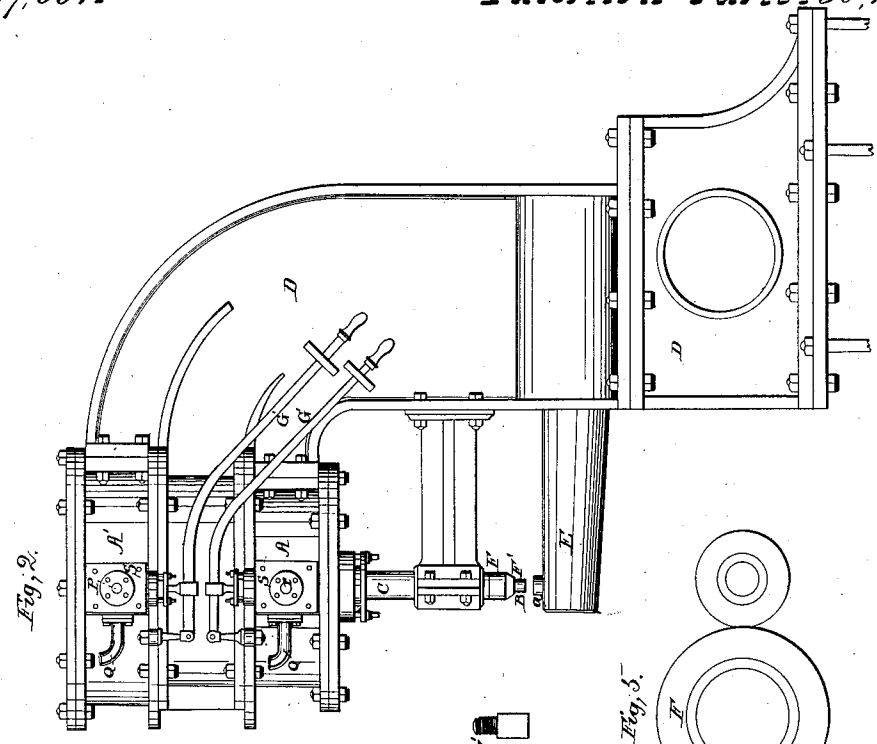
Inventor;
Silvester Bennett

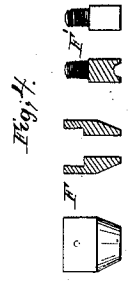
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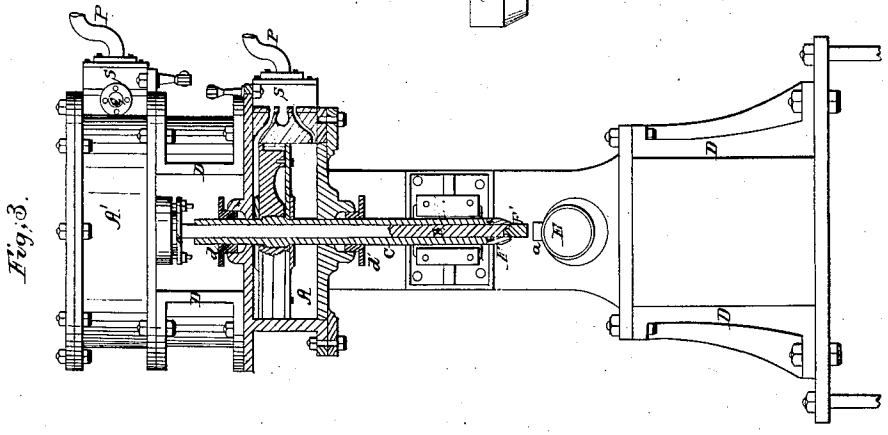
S. Bennett,

Machine for Riveting Boilers,

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Witnesses;
H. P. Chatterton
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Inventor;
Silvester Bennett

UNITED STATES PATENT OFFICE.

S. BENNETT, OF NEW ORLEANS, LOUISIANA.

MACHINE FOR RIVETING BOILERS.

Specification of Letters Patent No. 17,661, dated June 30, 1857.

To all whom it may concern:

Be it known that I, S. BENNETT, of the city of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and useful Improvement in Machinery for Riveting Steam-Boilers and other Articles; and I do hereby delare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of a steam-riveting machine, with my improvement. Fig. 2 is a side elevation of the same. Fig. 3 is a front elevation of the same, partly in section. Fig. 4, exhibits side views and central sections of the dies. Fig. 5 exhibits, full size, plans of the heads of a rivet and of the hollow die. Fig. 6 is a section of the riveting plunger or punch, the "set," and the anvil, illustrating the operation of the invention.

Similar letters of reference indicate the same parts in all the figures.

In riveting operations it is common to use what is known as a "set," consisting of a tool with a hole in it, or in other words, a hollow die, which, after the rivet is put in the holes in the plates and placed with its head on the anvil or has the riveting stake held against it, is put over the protruding point of the rivet and driven with a hammer to close the plates around the rivet before upsetting the point of the latter to form the second head. This "set" has always (as far as known to me) been used as a separate tool and held in the hand, and had to be removed before the hammer, punch, or plunger by which the point of the rivet is upset and hammered over the sides of the hole, can be applied. My invention consists in fitting the "set" in the form of a tube to the exterior of a punch or plunger, which is employed to upset the point of and close the rivet, so that it may be employed not only to close the plates together and around the rivet before the riveting commences, but to hold them closed during the riveting operation. The invention is applicable whether the riveting be performed by steam or other power.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, A^1, are two steam cylinders supported in line with each other at a short distance apart, upon a heavy goose-neck framing D, D, and fitted each with a piston. The piston-rod B, of the piston within the upper cylinder A^1, is solid and works through a stuffing box *c*, at the bottom of the cylinder, and this rod carries at its extremity the riveting punch F^1, which works opposite to a die *a*, secured in a stake or anvil horn E, that is secured in the lower part of the framing D, D, said die being of a proper shape to receive the head of the rivet. The piston-rod C, belonging to the piston within the lower cylinder A, is tubular and fits to the exterior of the rod B, and passes through stuffing boxes *d*, *d*, in the upper and lower ends of the cylinder. This hollow rod has attached to its lower extremity, the tubular die or set F for closing the plates or other articles to be riveted, upon each other and around the rivet; said die or set fitting around the riveting punch F^1. Each cylinder is provided with a steam chest S containing a valve or valves for the induction and eduction of steam to and from the cylinder, which needs no particular description, as any construction or arrangement of a valve or valves that is suitable for reciprocating steam-engines is applicable. The valve or valves of the upper cylinder are operated to reverse the action of the piston by means of a hand lever G^1, and those of the lower cylinder by means of a hand lever G. The steam chests are supplied with steam from a boiler by pipes P, P, and the exhaust steam escapes by pipes Q, Q.

The operation of riveting is performed as follows:—The pistons having been raised by the pressure of steam below them to the top of their respective cylinders, and the punch F^1 and set F consequently raised, the rivet is inserted in the holes made to receive it and placed with its head upon the die *a*, and its point upward, and then the valve lever G of the lower cylinder is moved by an attendant to admit steam above its piston, by which means the set is forced down upon the metal surrounding the rivet with a very heavy pressure; and while the set remains upon the metal, the valve lever G^1 of the upper cylinder is moved to admit steam above its piston, which brings down the punch F^1 upon the point of the rivet and at once completes the operation. The valve levers are then both moved by the attendant to admit steam below their respective pistons to force them upward and by that means the punch F^1, and set F, are raised

and the rivet enabled to be moved away from the die, and the machine is brought to a state of readiness to repeat the operation as soon as a new rivet is inserted and placed on the die *a*.

It is obvious that the interior of the tubular die or set F, must in all cases be larger than the head that is formed on the rivet by the punch F^1. This being observed the punch and set may be changed for rivets of different sizes and with different shaped heads, and for that purpose they are fitted to screw into their respective piston rods or otherwise attached so as to be capable of removal. The machine may be arranged to operate horizontally instead of vertically as shown.

I do not claim, of itself, the employment of a "set" or tubular punch to close the metal around the rivet before the riveting operation, when such set is un-combined with the riveting punch or other device by which the upsetting or heading up of the rivet is effected, and has to be removed before the said punch or other device can be operated, as such sets are used in riveting by hand, but

What I claim as my invention, and desire to secure by Letters Patent, is:

The employment in combination with a riveting punch or plunger, of a hollow "set", fitted to slide upon the exterior of the same, and operated to close or set the metal around the rivet before the operation of the punch or plunger commences, and hold the same closed during such operation, substantially as described.

SILVESTER BENNETT.

Witnesses:
ISAAC W. SPRAGUE,
JNO. FRED BRAUN.