J. F. ALLEN.

Riveting Machine.

No. 168,314. Patented Oct. 5, 1875.

Fig. I.

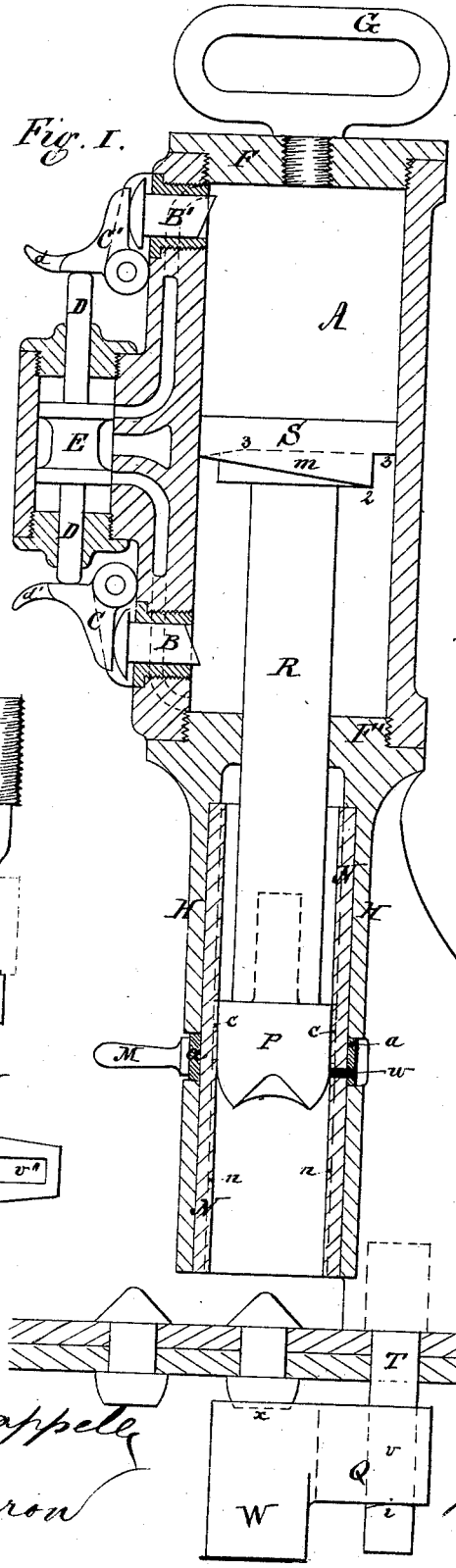


Fig. V.

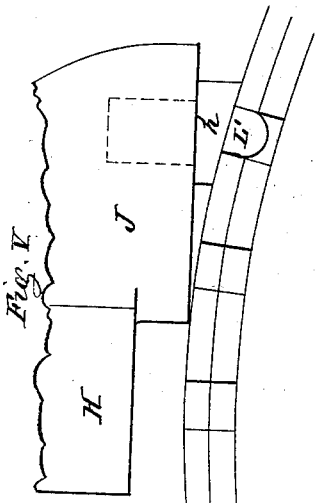


Fig. III.

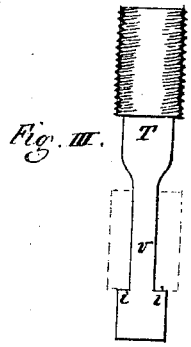


Fig. II

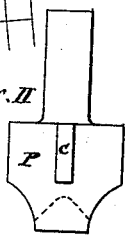
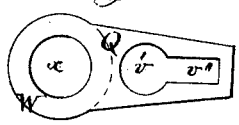


Fig. IV



Witnesses.

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JOHN F. ALLEN, OF NEW YORK, N. Y.

IMPROVEMENT IN RIVETING-MACHINES.

Specification forming part of Letters Patent No. **168,314**, dated October 5, 1875; application filed February 17, 1875.

To all whom it may concern:

Be it known that I, JOHN F. ALLEN, of New York, in the State of New York, have invented a new and Improved Riveting-Machine, of which the following is a specification:

The nature of my invention consists in the arrangement of a cylinder with suitable valves, operated by the cylinder-piston, with the hammer attached to the piston-rod. The hammer-head is made to move tight in a suitable guide-tube. The lower edge of the piston is made with an inclined surface, so as to open the lower air-passage sooner or later, as may be desired, to correspond with the finish of the rivet-head.

In the accompanying drawing, Figure I represents a longitudinal section of my riveting-machine embodying my invention.

The other figures will be referred to in the following specification.

A is a cylinder, with suitable valves for the admission and exhaustion of the pressure which operates the piston. The motive power I propose to use is compressed air. In the upper and lower ends of the cylinder pins or plugs B B′ are arranged, acting against levers C C′, which act against the valve-rod D, so as to move the valve E to admit and exhaust the pressure at the end of the piston-stroke. These plugs B B′ are operated by the edges of the piston coming in contact with the same. The valve E may be operated by hand, for which purpose small projections *d d′* are made on the levers C C′. To the upper cylinder-head F a strong handle, G, is attached to hold the machine, and to the lower cylinder head F′ is attached a tube, H, and bracket J, which latter is provided with a steady-pin, L, which enters the rivet-holes in the boiler-plates, to support the lower end of the machine, and at the same time to regulate and fix its position. Into the tube H another tube, N, is fitted, to which a band, *a*, provided with a handle or projection, M, is attached. This handle M passes through a circular slot in the tube H, and enables the inner tube N to be turned in any direction desired. P is the hammer, fitting air-tight into the tube N, and provided with projections *c* on the sides, working in grooves *n n* in the inside of the tube N, to guide said hammer P, and at the same time allow the hammer to be turned around with the tube N. This hammer is firmly attached to the end of the piston-rod R, and its lower end is shaped to form a die for the desired shape of the rivet-head. Fig. II represents a side view of this hammer. S is the piston, attached to the upper end of the piston-rod R. The upper end of this piston is straight, while on its lower surface an inclined surface, *m*, extending about one-half around its outer circumference, is attached. The piston S, rod R, and hammer P being firmly attached together, while the hammer P is guided and works in grooves *n* in the inner tube N, the turning of said tube N, by means of its projection or handle M, will cause a corresponding turning around of the piston S, so as to bring any desired point of the inclined surface *m* in a line with the plug B in the bottom of the cylinder, regulating thereby the length of the downward stroke of the piston, and consequently of the hammer P, by opening the lower port sooner or later, as may be desired. *w* is a small air-hole, passing through the tube N, to admit air into said tube above the hammer-head P, and which said air is, after the hammer has passed said hole *w* in its upward stroke, compressed in the upper part of the tube N, and assists in the downward motion of the hammer, to increase the force of the blow. Into the bracket J a bolt, T, is firmly attached in such a position as to fit and pass through the rivet-holes in the plates to be riveted. The lower part of this bolt is flattened at *v*, (see Fig. III, which shows a side view of said bolt,) so as to leave a shoulder, *i*, on its end, upon which the head of the holding-on bar W rests. This holding-on bar W is provided with a head, Q, having an opening, *v′*, to pass over the end of the bolt T, and an oblong opening, *v″*, fitting on the flattened part *v* of the bolt T, as well as a suitable recess, *x*, for the end of the rivets. (See Fig. IV.)

The machine is placed against or upon the boiler-plates to be riveted, so that the steady-pin L and the bolt T pass through the rivet-holes, whereby the adjoining rivet-holes come in a line with the center of the machine. A heated rivet is then put through these holes, and the holding-on bar W attached to the

bolt T, pressing against the end of the rivet. The tube N is then turned, so as to bring the greatest depth, 2, of the inclined surface *m* in a line with the plug B, when pressure is admitted into the cylinder, whereby the end of the rivet will be hammered down and shaped. The tube N is gradually moved around, as the height of the end of the rivet diminishes, bringing thereby a less depth of the inclined surface *m* in a line with the plug B, whereby the plug B is made to operate the valve later, and the length of the stroke is gradually increased until the piston is moved so far around that the straight part 3 of its lower edge is in a line with the plug B, when the piston, and consequently the hammer P, makes its full stroke, and the head of the rivet will be finished.

When circular plates are to be riveted together, the steady-pin L′ (see Fig. V) is made with a collar, *h*, to correspond with the distance of the plates and the bottom of the bracket J at that point, and the pin itself placed at an angle to fit the rivet-holes.

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

1. An improved riveting-machine, consisting of a cylinder, A, with suitable valves, in combination with the piston S, rod R, hammer P, guide-tube N, projecting guide-tube H, bracket J, steady-pin L, fixed bolt T, and the holding-on bar W, the whole being arranged and operating together substantially as described.

2. The combination of the cylinder A, plugs B B′, levers or horns C C′, valve E, piston S, provided with an inclined surface, *m*, rod R, hammer P, and tube N, with projection or handle M, substantially in the manner and for the purpose set forth.

3. The piston S, with an inclined surface, *m*, on its under side, in combination with the plug B, piston-rod R, tube N, and projection or handle M, arranged and operating in the manner and for the purpose specified.

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