J. F. ALLEN.

RIVETING MACHINE.

No. 188,224. Patented March 13, 1877.

Fig. II

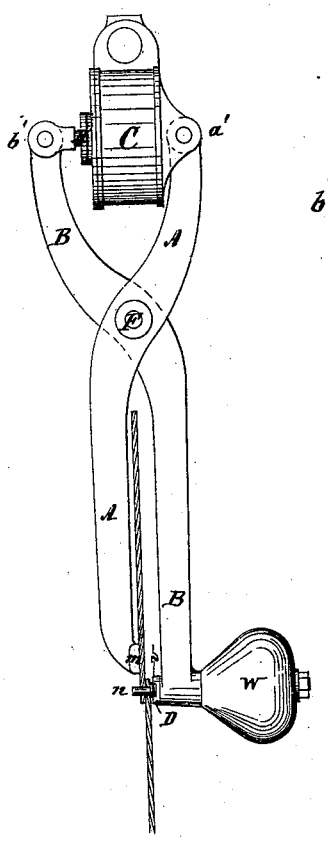
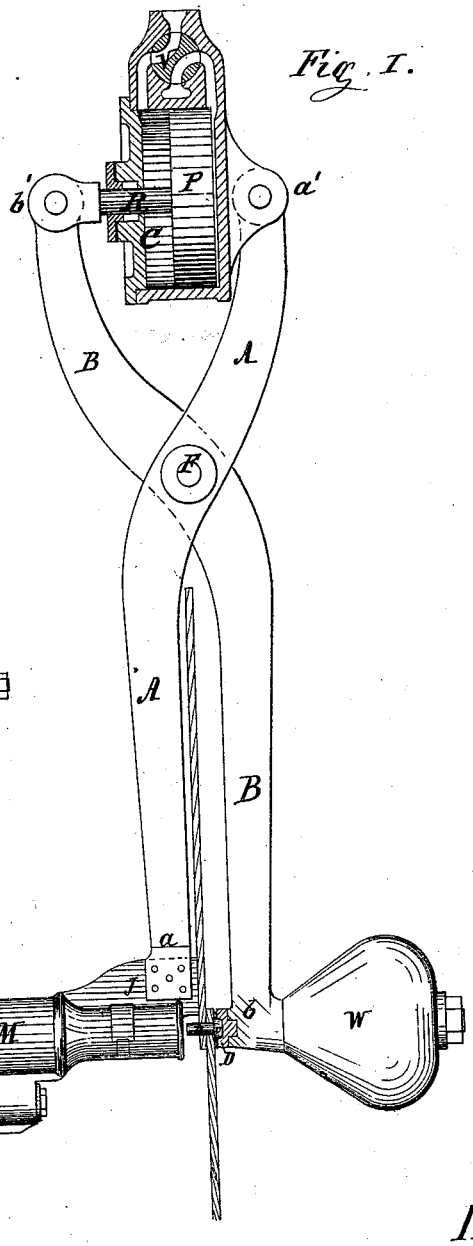


Fig. I.



Witnesses.

F. P. Follett

Wm. Ehret.

Inventor.

John F. Allen

per Henry E. Rocder

Attorney

UNITED STATES PATENT OFFICE

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

IMPROVEMENT IN RIVETING-MACHINES.

Specification forming part of Letters Patent No. **188,224**, dated March 13, 1877; application filed August 25, 1876.

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 useful Improvement in Supporting and Attaching Riveting-Machines on Plates to be Riveted, and in holding-on bars, of which the following is the specification:

The nature of my invention consists in the arrangement of two levers turning on a fulcrum between their ends, similar to a pair of scissors. To the end of one of the arms a die, having an opening or recess into which the end head of the rivet fits, together with a suitable heavy weight, is attached, and to the end of the other opposite arm a suitable projection is made to bear upon the plate, so as to gripe the plates to be riveted between the two arms, and forming thus the holding-on bar for supporting the rivet while forming its head; or the riveting-machine may be attached to the end of the arm opposite the arm containing the die for the rivet end, whereby, when the rivet has been passed through the plates, and the die placed over its end head, the riveting-machine is attached and supported over the rivet to be riveted. Between the ends of the other extremities of said levers a cylinder is arranged, attached to the end of one of the arms. In this cylinder a piston is made to work, connected to the opposite arm. By admitting pressure either on one or the other side of this piston these arms will be moved apart or drawn tight together, producing a corresponding motion of their other extremities, and thus liberating the machine from the plates or fastening the plates tight between the end of the arms, or between the riveting-machine and the die in the holding-on bar or opposite arm.

In the accompanying drawing, Figure I represents a front view of my improved machine with a riveting-machine attached. Fig. II represents a front view of the machine as holding-on bar.

Similar letters represent similar parts in both figures.

A and B are two levers, turning on a fulcrum, F, situated between their two extremities similar to a pair of scissors. To the end *a* of the arm A the riveting-machine M is firmly attached, and to the end *b* of the arm B a die, D, is fixed directly opposite and in line with the center line of the hammer of the riveting-machine M, as well as a heavy weight, W. In the face of the die D a recess is made, into which the end head *v* of the rivet *n* fits. This die D is made changeable, to be substituted by another die whenever a different style of rivet is operated upon, as the end head of the rivet must always fit exactly into the recess in the face of this die, for the purpose hereafter described.

The end of the rib J on the riveting-machine M, to which the arm A is fastened, must be made of such a length as to regulate thereby the distance of the end of the riveting-machine from the face of the plates to be riveted, and which said plates will be held tight (when the rivet is in its place) between the end of this rib J and the end head of the rivet in the face of the die D whenever the levers A and B are forced together.

As the recess in the die D fits exactly the end head *v* of the rivet *n*, the placing of said die over this end head after the rivet has been passed through the rivet-holes in the plates will, whenever the ends of the levers A and B are forced together, center the riveting-machine, and bring the same directly over and in the center of the rivet to be operated upon.

Between the other extremities of the levers A and B a cylinder, C, is arranged, in which a piston, P, is made to work, and provided with a suitable valve, V, to admit the pressure employed to operate this piston either on the one or the other side of said piston. This cylinder C is attached to the end *a'* of the arm A, while the piston-rod R is attached at *b'* to the end of the arm B directly opposite.

When the rivet has been passed through the rivet-holes, and the die D placed over the end head of the rivet, pressure is admitted into the cylinder C, so that the action of its piston P will cause the ends of the arms A and B to be drawn tight together.

By this operation the hammer in the riveting-machine M will be brought directly over the end of the rivet to be operated upon, and the two plates to be riveted together will be firmly griped between the end of the rib J and the end head *v* of the rivet, held in the face of the die D, when pressure is admitted into the

riveting-machine, to operate its hammer, and the head of the rivet will be formed. When the rivet-head is completed, and the operation of the riveting-machine is stopped, the pressure is admitted against the other side of the piston P, so as to move the ends of the levers A and B apart, whereby the die and the riveting-machine are moved away from the rivet which has been operated upon, and can then be moved to act on another rivet in the same manner.

The machine is suspended either at the ends *a' b'* of the levers or from any point of one of said levers by suitable cords or chains, whereby any desired position and inclination for the riveting-machine to operate may be obtained. When the thus arranged and operated levers are used as a holding-on bar, the end of the arm A is provided with a projection, *m*, (see Fig. II,) bearing upon the face of the plate, so as to gripe the plates to be riveted after the rivet has been passed through the rivet-holes between the end of this arm A and the end head *v* of the rivet held in the face of the die in the end of the arm B.

In the usual operation of driving rivets by hand, there are required one man to operate the holding-on bar, and two men or riveters to form the head of the rivet. In the riveting-machine for which Letters Patent No. 168,314 were granted to me on October 5, 1875, (a similar construction of which is used with this apparatus,) one man to operate the holding-on bar and one man to operate the riveting-machine are required, while by this improvement only one man will be required to perform the whole operation. He first puts the heated rivet into the rivet-holes, moves the machine so that the die comes over the end head of the rivet, then admits pressure into the cylinder C, so that the ends of the levers are forced together, whereby the plates are firmly griped between the end head of the rivet in the die and the riveting-machine, and at the same time the riveting-machine is fixed exactly over the center of the rivet, and then admits pressure into the riveting-machine to form the rivet-head.

Another advantage, besides the saving of labor, of this improvement consists in the manner of attaching and fixing the riveting-machine in its proper place, through the end head of the rivet to be operated upon, and whereby single rivets in the center of plates, as used for bridge-building, can be riveted by this machine, while with other portable riveting-machines adjoining rivet-holes are required for the purpose of attaching and fixing the machine to its work.

Instead of arranging a cylinder with piston operated by pressure or elastic medium between the levers, to open and close the same, a screw working in a nut, or a knuckle-joint, may be employed for this purpose; and instead of placing the fulcrum between the two extreme ends of the levers, the same may be arranged at the ends of the levers, and the mechanism to operate said levers arranged on the same side with the die and riveting-machine.

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

1. The levers A and B, turning on a fulcrum, F, having on one arm a riveting-machine, M, and on the other arm a die, D, and a suitable weight, W, attached directly opposite each other, in combination with a cylinder, C, provided with suitable valves, piston, and piston-rod, said cylinder being connected to one arm, and the piston-rod to the other arm opposite, the whole to be suspended by suitable cords, or their equivalent, and arranged to operate in the manner and for the purpose substantially as set forth and described.

2. A holding-on bar consisting of two levers, A and B, turning on a fulcrum, F, and constructed substantially as described, in combination with a pressure-cylinder, or its equivalent, to open or close the ends of said levers, substantially in the manner and for the purpose herein specified.

JOHN F. ALLEN.

Witnesses:
HENRY E. ROEDER,
W. EHRET.