J. S. Ford,

Pipe Vise.

No. 21,951. Patented Nov. 2, 1858.

Fig. 2.

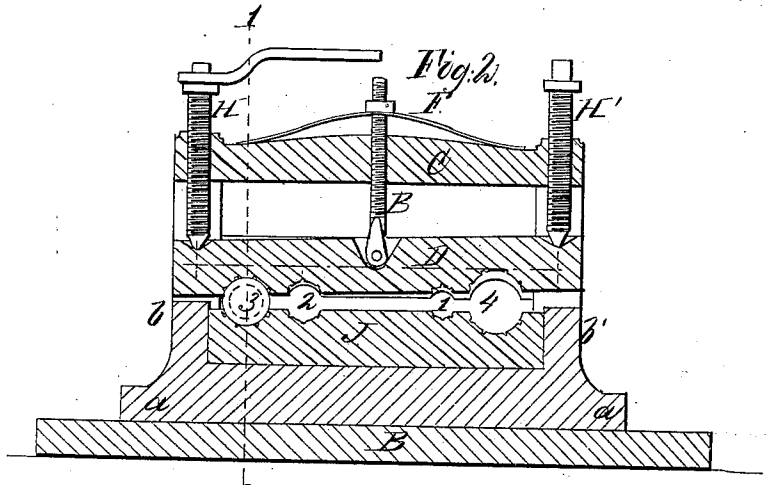


Fig. 1.

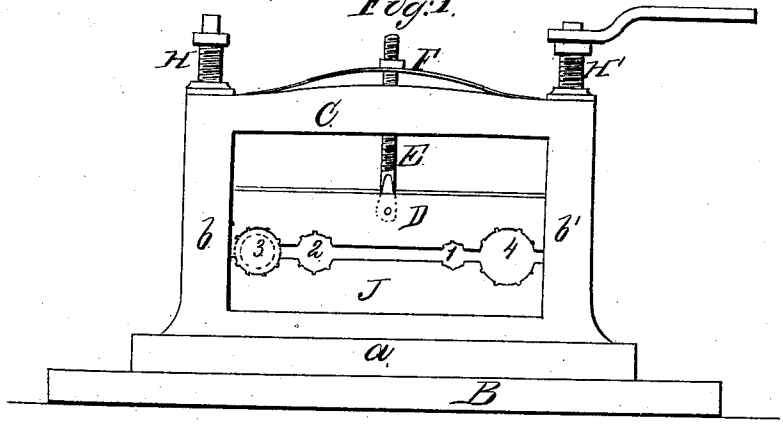
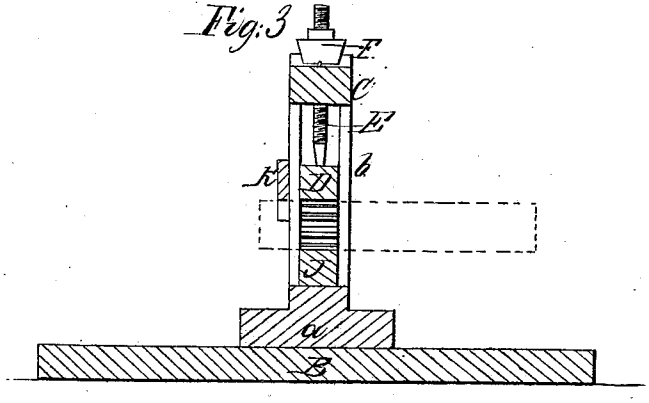


Fig. 3



UNITED STATES PATENT OFFICE.

JOSEPH S. FORD, OF PHILADELPHIA, PENNSYLVANIA.

GAS-FITTER'S VISE.

Specification of Letters Patent No. 21,951, dated November 2, 1858.

To all whom it may concern:

Be it known that I, JOSEPH S. FORD, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Gas-Fitters' Vises; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention consists in a combination of an upper and lower die with two screws, each die having two or more semicircular recesses, the screws and recesses being peculiarly situated in respect to each other, and the whole being adapted to a suitable frame substantially in the manner fully set forth hereafter, in order that one or the other of the screws may serve as the fulcrum and the upper die as a lever for transmitting, by turning the remaining screw, an increased pressure at that point where a gas pipe is inserted between the two dies, and this with but little exertion on the part of the operator.

In order to enable others to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawing which forms a part of this specification, Figure 1 is an exterior view of my improved vise for gas fitters; Fig. 2, a sectional view; Fig. 3, a transverse section on the line 1, 2 (Fig. 1).

Similar letters refer to similar parts throughout the several views.

The frame of the vise consists of the base *a*, the two uprights *b* and *b'*, and the crossbar *c*, all being cast in one piece, and secured to the bench B by any suitable attachments. In each of the opposite uprights *b* and *b'* is an oblong opening, one for receiving one end and the other for receiving the opposite end of the upper die D, which is jointed at the middle to the lower end of the screw E, the latter passing freely through the crossbar *c* of the frame and through the spring F, above which it is furnished with a nut. The opposite ends of the spring bearing on the cross bar and the middle bearing on the underside of the nut, have a tendency to raise the upper die and cause its ends to bear on the points of the bolts H and H', which screw through the top of the frame and pass downward into the oblong openings of the uprights *b* and *b'*.

J is the lower die, bedded firmly to the base *a* of the frame, and both dies have semicircular recesses, marked respectively 1, 2, 3 and 4, those of the upper coinciding with those of the lower die, and all being different in size, so as to be adapted to differently sized pipes.

It will be observed that two of the semicircular recesses of the dies are situated at a considerable distance from the other two, the object of which will be apparent hereafter.

A plate K is secured to the face of the uprights *b* and *b'*, and in the lower edge of this plate are recesses corresponding to those of the upper and lower dies. The plate is placed at such a distance from the lower die that the pipe to be secured by the vise may be steadied between one of the semicircular recesses in the plate K, and a coinciding recess in the lower die prior to the upper die being brought to bear on the pipe.

In cutting the screws on the ends of gas pipes, it is necessary that they should be secured by a firm grip, in order to prevent them from turning on applying the cutting instrument, an object effectually attained by the simple instrument above described.

Supposing the operator desires to secure a pipe between the dies at the semicircular recess 3. The upper die is first raised, by turning the screws H and H' to a height sufficient to admit the pipe between the dies, as seen in Fig. 3, where it remains balanced between the semicircular recess of the plate K and that of the lower die J. The upper die is then brought down, by turning both screws, until it bears lightly on the pipe, when the operator (allowing the screw H to remain stationary) turns the screw H', so as to press down that end of the upper die farthest from the pipe. The upper die thus forms a lever, of which the point of the screw H is the fulcrum. The power exerted on the pipe will, therefore, be as much more than that exerted by the screw H', as the distance between the point of that screw and the pipe exceeds the distance of the pipe from the point of the screw H. As arranged in the drawing, which represents the instrument half size, the leverage on the pipe in

the recess 3 will be as six to one, or six times greater than if the screw was applied directly over the pipe.

The object of placing the semicircular recesses apart, too near one end and too near the opposite end of the dies, will now be obvious, as on this distance, together with their distance from the screws, must depend the gripping force exerted on the pipe. As the smaller pipes require less power to grip them tight, the semicircular recesses for their reception are situated on the inside of the larger recesses, and the leverage consequently diminished. The notches in the upper die for receiving the points of the screws are sufficiently large to allow the die to assume a diagonal position, as shown in Fig. 2.

Although I have illustrated and described my improved vise as arranged to receive four sizes of gas pipe, it will be evident that it may be arranged to receive more or less than this number, without any other alteration than that of lengthening or shortening the dies. The semicircular recesses, however, should be situated near to one or other of the screws, in order to render the leverage of the upper die effective.

I claim and desire to secure by Letters Patent,

The upper die D and lower die J, in combination with the screws H and H′, the said dies having two or more semicircular recesses, situated, in respect to each other and to the screws, substantially as and for the purposes herein set forth.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH S. FORD.

Witnesses:

HENRY HOWSON,

WM. W. W. WOOD.