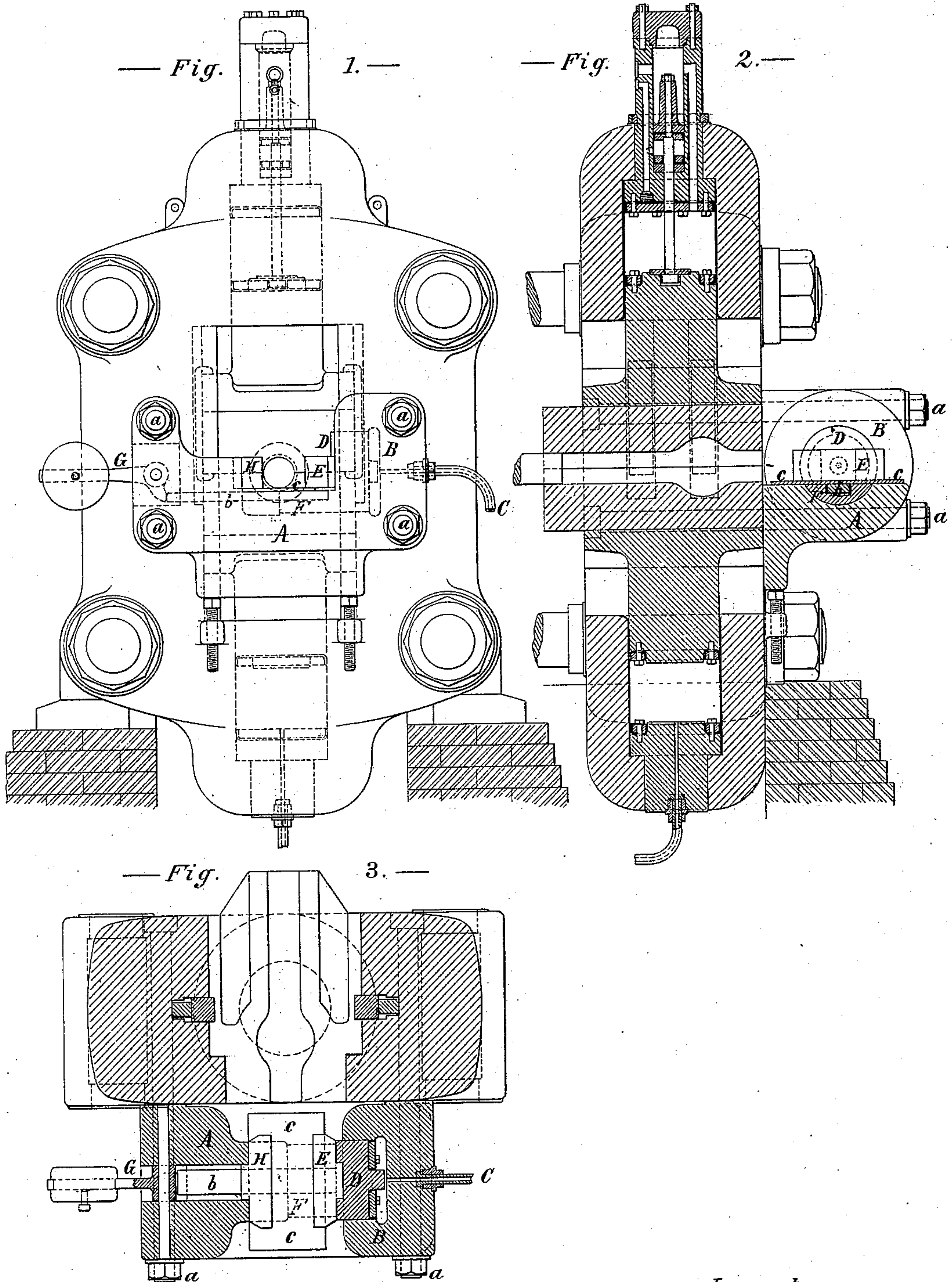


W. SELLERS.

HYDRAULIC APPARATUS FOR HOLDING BARS OF IRON AGAINST  
THE PRESSURE REQUIRED TO UPSET THEM.

No. 178,967.

Patented June 20, 1876.



Witnesses:  
*J. P. Schenck*  
*C. L. Peoples*

Inventor:  
*Wm. Sellers*



# UNITED STATES PATENT OFFICE,

WILLIAM SELLERS, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN HYDRAULIC APPARATUS FOR HOLDING BARS OF IRON AGAINST THE PRESSURE REQUIRED TO UPSET THEM.

Specification forming part of Letters Patent No. **178,967**, dated June 20, 1876; application filed December 7, 1874.

*To all whom it may concern:*

Be it known that I, WILLIAM SELLERS, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Holding Bars of Iron Against the Pressure Required to Upset Them, of which the following is a specification:

In upsetting and shaping the ends of long bars of iron it is necessary to prevent the bar from being forced out of the shaping-die by the upsetting-pressure, and for this purpose various devices have been employed, either as fixed stops against the outer end of the bar, or to produce friction against its sides. The fixed stops remove the resistance so far from the die that with long and slender bars it is necessary to apply supports to prevent buckling, which involves delay in adjusting, while the frictional resistance has either been uncertain, or, if measurably certain, it has been correspondingly slow, owing to the danger of crushing the bar by an excess of pressure. As the iron must be operated upon while it is hot, any delay in adjusting preliminary to the upsetting and shaping may prove fatal to the success of the operation.

It is the object of my invention to clamp the bar as close as possible to the shaping-die, thereby avoiding the necessity for applying other supports; to exert the pressure promptly without adjustment for each bar, to avoid delay; to restrict the clamping-pressure within the elastic limit of the bar, to avoid crushing; and to limit the traverse of the clamp by the bar alone, to compensate for variations in size; and to these ends my invention consists in an improved holder and clamp, one or both moved by hydraulic pressure graduated to the performance of the work, and in combining such holder and clamp with the upsetting and shaping die.

The accompanying drawing, which forms a part of this specification, exemplifies my improved apparatus as applied to a welding, upsetting, and shaping machine, the details of which I will not describe, as they form no part of the invention herein claimed, but constitute the subject-matter of separate applications of even date herewith filed by George H. Sellers,

of Wilmington, Delaware, and Coleman Sellers, of the city, and county of Philadelphia, in the State of Pennsylvania.

In the drawings referred to, Figure 1 represents a front elevation, Fig. 2 a vertical section across the center, and Fig. 3 a horizontal cross-section, of the apparatus, which comprises a stout frame, A, securely attached to the main housing of the upsetting-machine by the bolts *a a a a*. One end of this frame forms a hydraulic clamping-cylinder, B, closed at one end, to which fluid-pressure from the accumulator which operates the upsetting-ram is admitted by the pipe C. This pipe is provided with a stop and an exhaust-valve of any of the ordinary constructions, by means of which fluid under pressure is admitted to and allowed to escape from the cylinder B. The cylinder B is provided with a piston, D, which may be packed in any manner, so as to be capable of preventing the escape of the fluid-pressure. The outer side of this piston is provided with a clamp, E, the length of which is variable, so as to present a surface to the iron which it operates upon of sufficient area to prevent crushing. From the lower side of the piston D a projecting arm, F, is provided, the outer side of which is turned to the same radius as the piston, to fit a corresponding surface in the frame A, which serves to maintain the piston in position and afford support to one end of the bar *b*, the other end of which is pressed against by the toe of the weighted lever G. The recess in the frame A, forming a bearing for the arm F and bar *b*, is covered by the plate *c c*, which passes under the clamp E and holder H, and prevents the access of dirt or scale to the sliding surfaces. The holder H is of corresponding size to the clamp E, and is supported against the pressure of the clamp by a shoulder of the frame A, between which and the holder suitable packing-pieces may be inserted to bring the front line of the holder in position with reference to the upsetting-die.

For convenience of adjustment and greater range of opening at each operation, the holder H may also be moved by hydraulic pressure, in which case a stop must be provided to limit its forward motion to the line of the die; and, to insure that the holder shall reach its limit



of forward motion before the clamp shall commence to operate upon the bar, the weight upon the drawback of the holder must be less than that upon the clamp. When both holder and clamp are movable, I designate as the holder that part which adjusts the position of the bar with reference to the die, and the clamp that part which subsequently presses the bar against the adjusted holder.

The operation of the apparatus is as follows: The holder being adjusted, and the bar to be upset in position, the stop-valve is opened to admit the pressure to the piston D, which is thereby forced outward until its motion is arrested by the clamp E coming in contact with the bar, which is prevented from moving by the holder H. This pressure will be maintained so long as the stop-valve is open and the exhaust-valve is closed. While the bar is thus securely held the upsetting is performed, so that when the adjustment of the bar has been made and the clamping-pressure applied the position of the bar will be maintained against the upsetting-pressure, and the limit of the upset portion of the bar will be accurately defined. When the upsetting has been completed the stop-valve of the clamping-cylinder B is closed and the exhaust-valve is

opened, when the clamp E will be retired and the fluid be forced out of the cylinder through the operation of the weighted lever G. The pressure in the clamping-cylinder, being obtained from the same source as that in the upsetting-cylinder, will be graduated to the performance of the work. The surfaces of the clamp and holder which operate upon the bar may be readily adjusted so as to be within the crushing limit, and also prevent the bar from sliding between them, so that the movement of the clamp and the consequent consumption of the power can be reduced to a minimum.

Having thus fully described my improvement, what I claim as new, and desire to secure by Letters Patent, is—

The combination of an upsetting-ram, a shaping-die, a holder, and a hydraulic clamp, the combination being and operating substantially as described.

In testimony whereof I have hereunto subscribed my name.

WM. SELLERS.

Witnesses:

ANDW. J. BOSWELL,  
JUS. H. SCHWACKE,  
C. L. PEEPLES.