

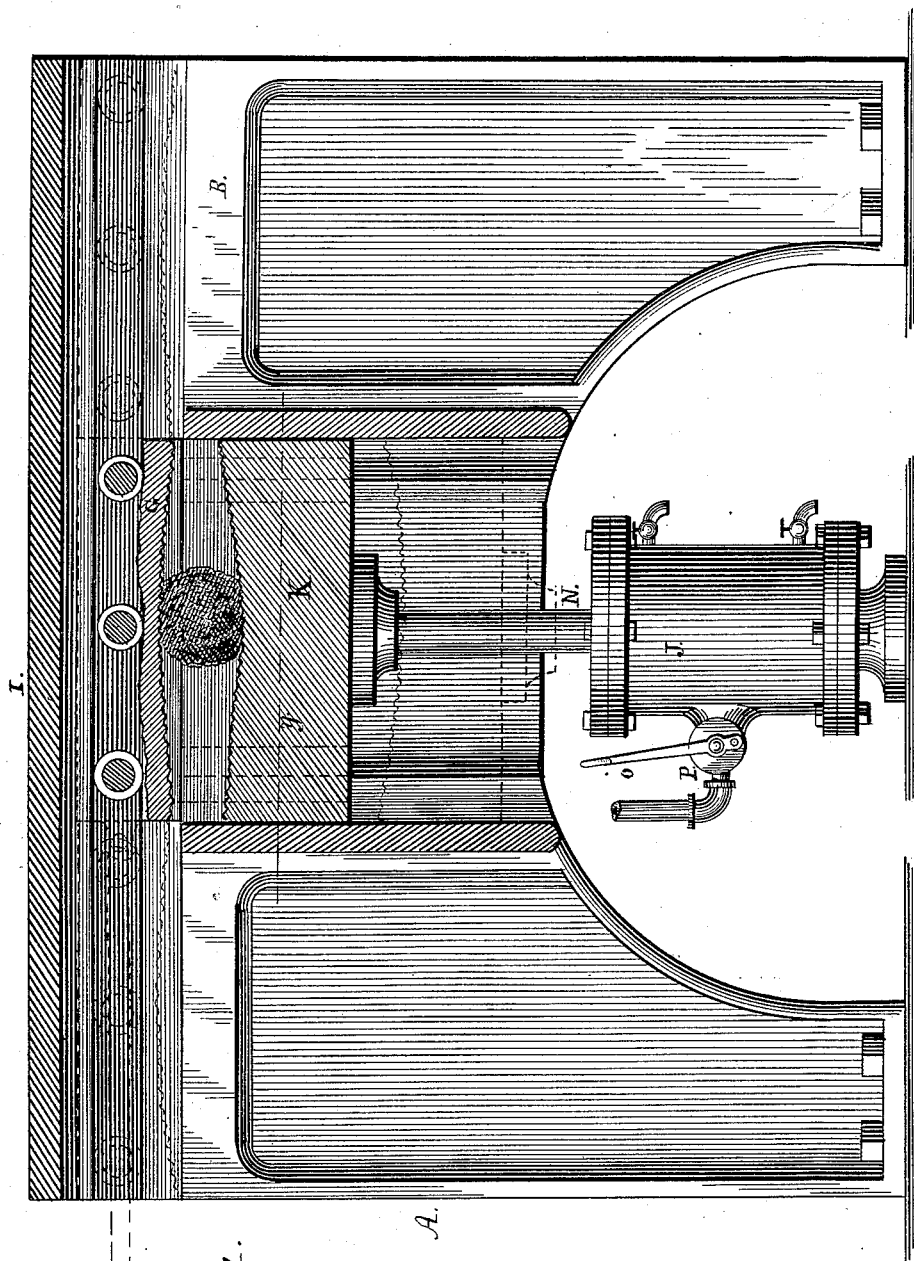
(No Model.)

3 Sheets—Sheet 1.

J. J. JOHNSTON.  
MACHINE FOR BLOOMING IRON.

No. 306,157.

Patented Oct. 7, 1884.



*Fig. 1.*

WITNESSES:

*Frederick S. Dietrich.*  
*Wm. E. Dyne*

INVENTOR.

*James J. Johnston*



(No Model.)

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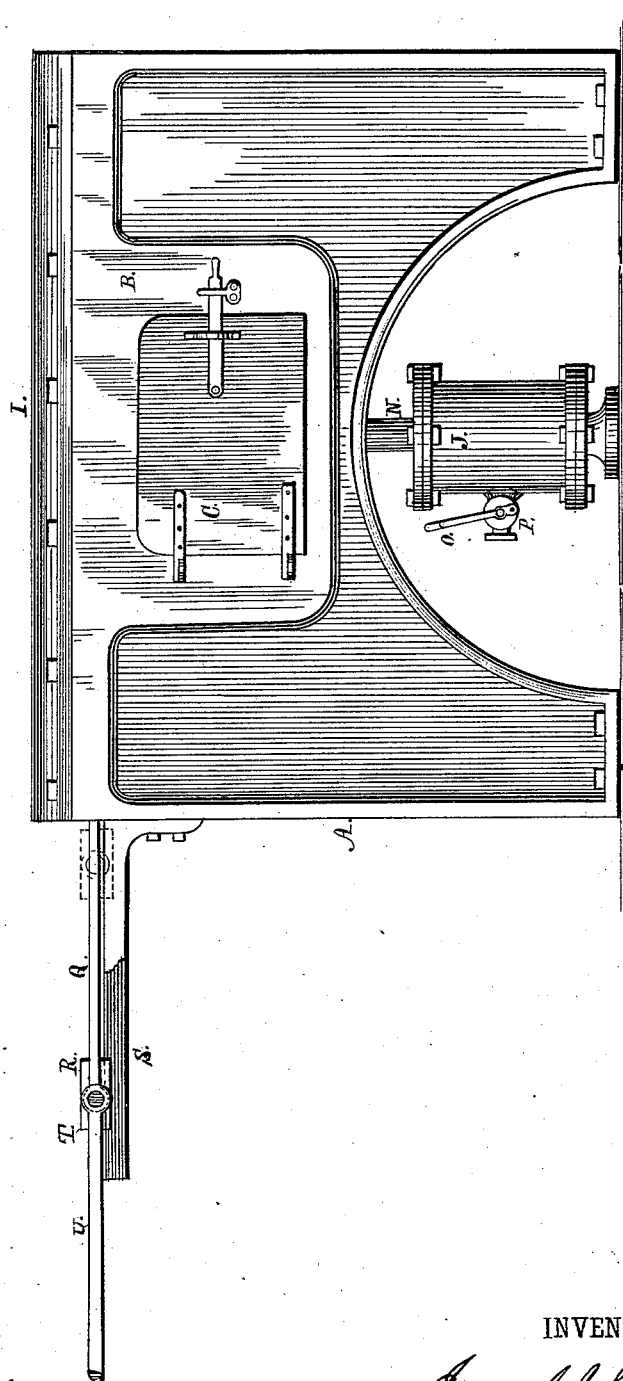
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Fig. 2.



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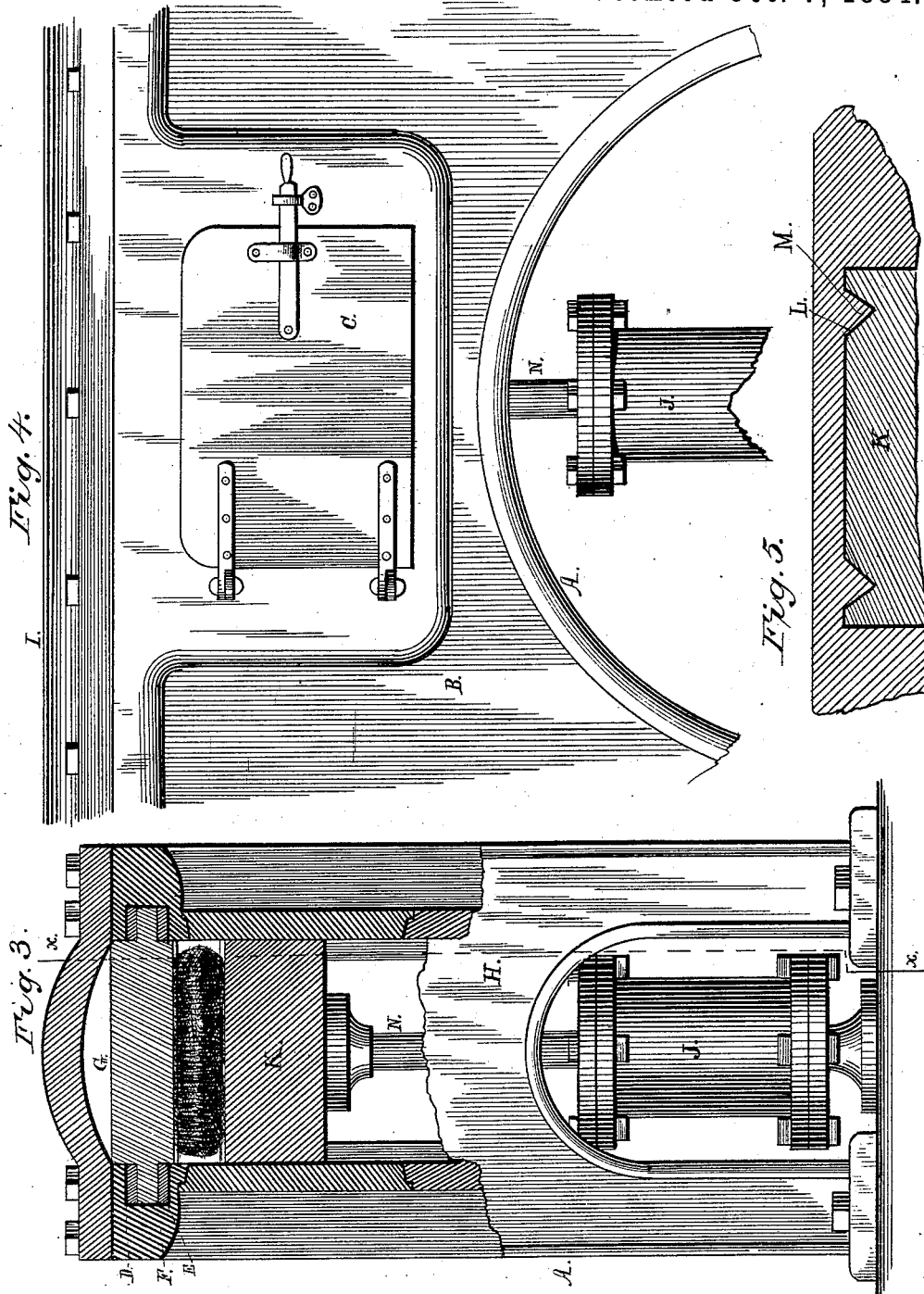
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# UNITED STATES PATENT OFFICE.

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TO WILLIAM W. GIBBS, OF PHILADELPHIA, AND ALBERT C. ELLIS, OF  
PITTSBURG, PENNSYLVANIA.

## MACHINE FOR BLOOMING IRON.

SPECIFICATION forming part of Letters Patent No. 306,157, dated October 7, 1884.

Application filed December 13, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES J. JOHNSTON, of Columbiana, in the county of Columbiana and State of Ohio, have invented a certain new and useful Improvement in Machines for Blooming Iron; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention has for its object the blooming of balls of iron, usually called "puddled balls," and accomplishing the same without liability of tearing them into two or more fragments, and without danger of breaking the blooming-machine when subjected to undue strain while blooming balls of unusual size and of different degrees of plasticity and adhesion.

The nature of my invention consists in the combination of a table curvilinear on its upper side and a plano-concave plate, the former susceptible of a vertical and the latter of a reciprocating motion, and their operating mechanism, all of which will hereinafter more fully and at large appear.

To enable others skilled in the art with which my invention is most nearly connected to make and use it, I will proceed to describe its construction.

In the accompanying drawings, which form part of this specification, Figure 1 is a side elevation representing a part of the machine in longitudinal section at line *xx* in Fig. 3. Fig. 2 is a side elevation of the machine. Fig. 3 is an end elevation representing a part of the machine in vertical transverse section. Fig. 4 is an enlarged side view of a part of the machine. Fig. 5 is a horizontal section of a part of the machine at line *yy* of Fig. 1.

Reference being had to the accompanying drawings, A represents the frame of the machine, and consists of heavy cast-iron sides B, each having a door, C, and the inner wall of each side furnished with a channel or way, D, for rollers E, the axes F of which are secured in or to the plano-concave plate G. The end H and top I of the frame A are also constructed

of cast-iron and made heavy and strong and bolted firmly to the sides B. The frame A and steam-cylinder J should be bolted down upon "bed-timbers" or masonry capable of withstanding heavy jar and strain. The steam-cylinder J is of the ordinary construction employed for lifting, such as is used for operating a steam-hammer, the construction of which is well known, and need not therefore be further described. The curvilinear table K is provided with V-shaped grooves L, in which guides M, corresponding to the form of the grooves L, are placed, said guides M being constructed on or attached to the inner walls of the sides B of the frame. To the under side of the table K is attached the upper end of the piston N of the steam-cylinder J, which cylinder and piston move the table K vertically at the will of the operator, who controls the movement through the medium of a lever, O, which operates the steam-valve P of the steam-cylinder J, the guides M in grooves L guiding the table K in its vertical movements. The plano-concave plate G is supported upon rollers E, which turn on axes F, the track of the rollers being the channels or ways D. To one end of the plano-concave plate G is attached an operating-rod, Q, having slide R, which moves in guides S, and to which slide is pivoted at T a pitman, U, which may be connected to the crank of an engine or other operating machinery. The upper and working face of the curvilinear table K and the under and working face of the plano-concave plate G are corrugated, as shown in Fig. 1 of the drawings.

The skilled mechanic will readily understand the construction of my improvement in machines for blooming iron from the foregoing description and by reference to the accompanying drawings. I will therefore proceed to describe briefly the operation, which is as follows: The curvilinear table K is lowered to its lowest point by means of the piston and steam-cylinder and one of the doors C opened. The ball of puddled iron is then placed upon the table K, the door closed, and the table elevated by the means hereinbefore described, which will bring the ball up against the plano-



concave plate G, which, having a reciprocating motion imparted to it through the medium of the operating mechanism, will compress and roll the ball into an elongated bloom.  
5 The table K is then lowered and the door C opened and the bloom removed from the machine. It is then ready for the reception of another ball of iron.

Having thus described my improvement,  
10 what I claim as of my invention is—

The combination of a table curvilinear on its upper side and a plano-concave plate, the former susceptible of a vertical and the latter of a reciprocating motion, and their operating mechanism, substantially as herein described, 15 and for the purpose set forth.

JAMES J. JOHNSTON.

Witnesses:

E. JOHNSTON,

WM. E. DYRE.