

J. BECKMANN & J. GIBSON.
Stove-Pipe Elbow-Machines.

No. 135,880.

Patented Feb. 18, 1873.

Fig. 1

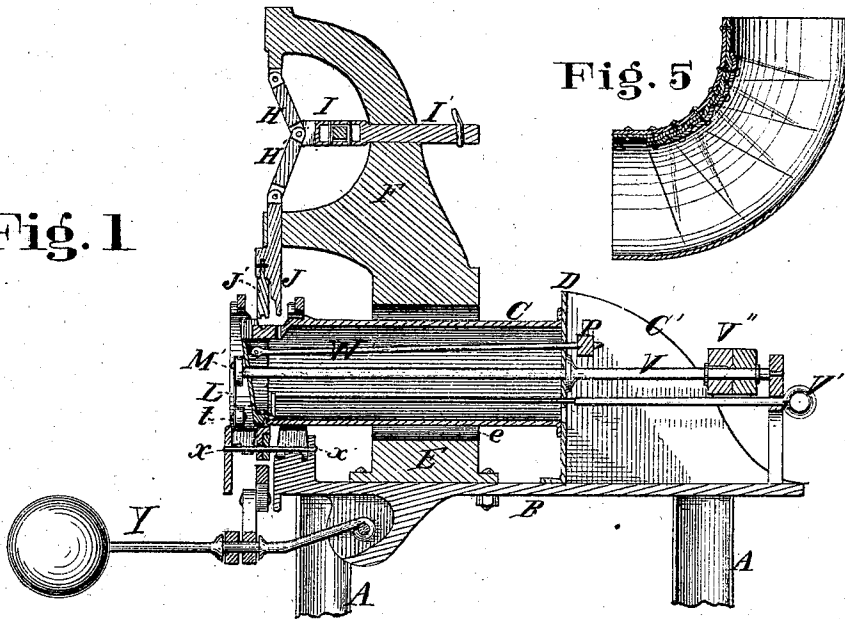


Fig. 5

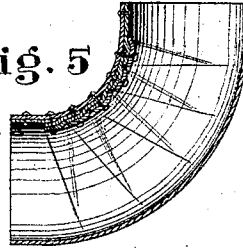


Fig. 2

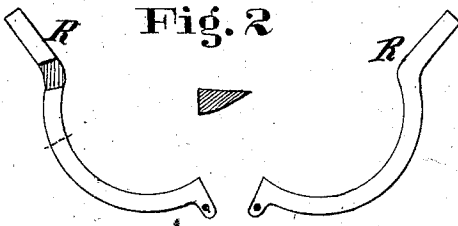


Fig. 3

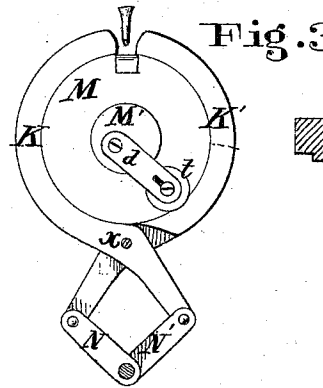
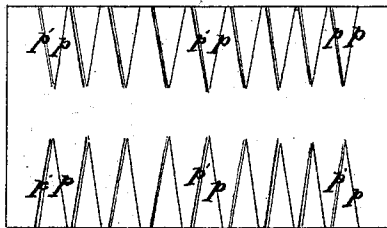


Fig. 4



Attest

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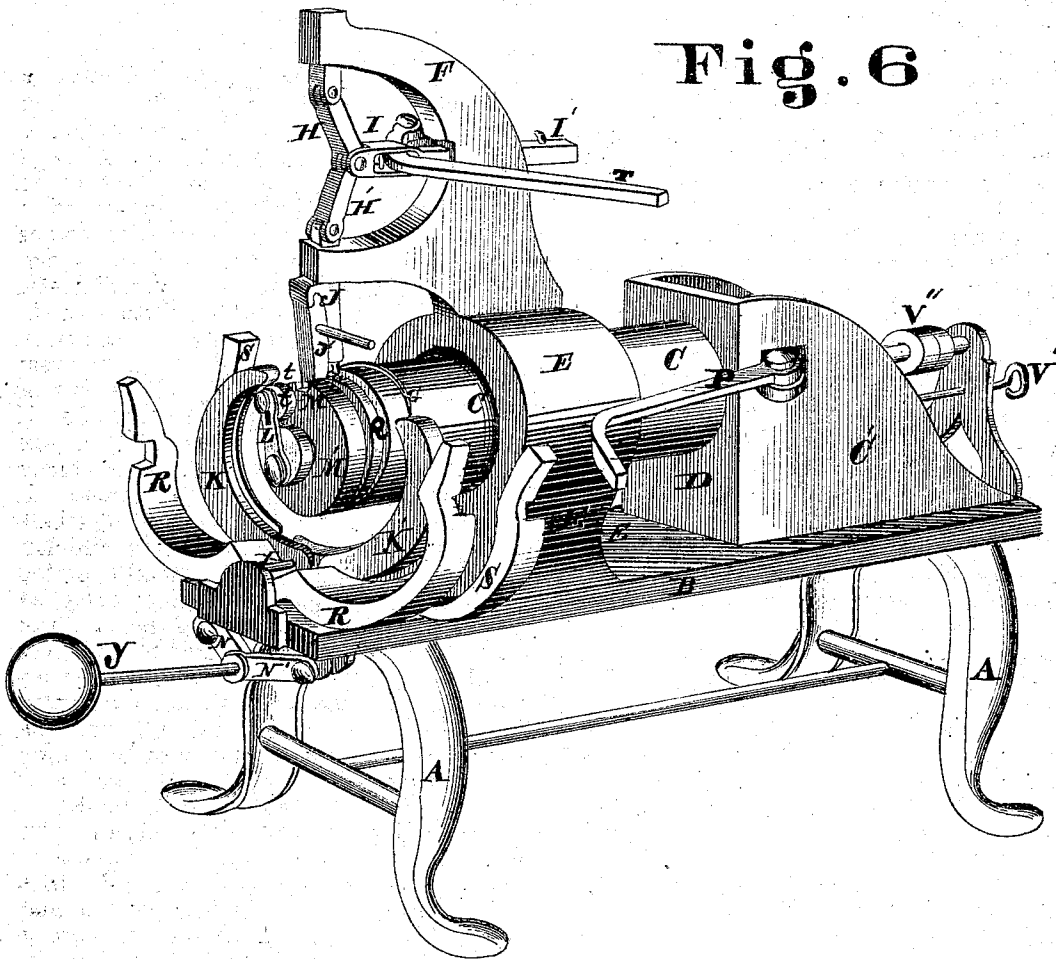
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Fig. 6



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UNITED STATES PATENT OFFICE.

JOHN BECKMANN AND JOHN GIBSON, OF CINCINNATI, OHIO.

IMPROVEMENT IN STOVE-PIPE-ELBOW MACHINES.

Specification forming part of Letters Patent No. 135,880, dated February 18, 1873.

To all whom it may concern:

Be it known that we, JOHN BECKMANN and JOHN GIBSON, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain Improvements in Stove-Pipe Elbows and Machines for making the same, of which the following is a specification:

The first part of our invention relates to an improved stove-pipe elbow made from a piece of sheet metal, which has first had slits made transversely from both side edges in such a manner that the surplus metal is taken up by lapping the cut edges; the object of this part of our invention being to enable a strong and durable elbow to be made by a cheap and simple machine. The second part of our invention relates to the construction and operation of a machine by means of which the elbow is formed and made; all of which will be fully understood by reference to the following specification and drawing making a part of the same, in which—

Figure 1 is a vertical longitudinal section of a machine embodying our invention. Fig. 2 is a plan of the clamps of the same used to hold the metal. Fig. 3 is a plan of the hinged circular jaws of the same used to form the metal and to hold it during a part of the process. Fig. 4 is a plan of the sides of a piece of sheet metal with a series of slits in each side edge, and with a jog in the metal between each slit to allow the lapped edges to fit closely. Fig. 5 represents a vertical longitudinal section of our manufactured elbow, and Fig. 6 is perspective view of our machine.

A A represent legs or posts upon which the machine is mounted; B, the bed-plate of the machine; and C, a cylinder, around which the metal from which the elbow is to be formed is placed and held in position to be fed into the jaws. D is a bracket, to which the cylinder C is attached. C' represents one side of the bracket extending back to rear end of the machine. A similar one is on the opposite side, and their office is to strengthen and support the bracket D. E is a bracket with a circular opening loosely surrounding the cylinder C, and from the top of which projects an arm, F, upon which is mounted some of the operating mechanism. G is a projection on the cylinder C for forming the jog in the metal. S S represent hinged circular jaws for

clamping the metal to cylinder C in front of the bead G, which forms the offsets or jogs *p'* in the metal; and K K' circular clamps, which are opened and closed by means of links N N' and weighted lever *y* attached to the shanks of K K'. The circumference of this clamp K K' is smaller than that of clamps S S. Q represents the front end of the cylinder C, cylindrical, but of smaller diameter and eccentric to the other portion of C. When the piece of metal, slitted as shown in Fig. 4, is formed into a hollow pipe the rear part of the two wedge-shaped pieces will be forced by the jaws K K' to fit the cylinder Q. M represents a movable press-block in size made to correspond with that of the interior circumference of the elbow to be formed. It is mounted on rod W, and operated by a bell-crank lever, P. R R represent a circular-hinged die or support for the metal operated on by the roller *t* adapted to be joined or locked together at the top, and having their interior surfaces flaring to correspond with the curves of the elbow. M' represents a stationary eccentric rigidly attached to M, and L a slotted crank carrying a friction-roller, *t*, which is made to travel in its desired path by rolling on and around the eccentric M', and as it travels presses the metal against the flaring surfaces of R R so tightly as to closely unite the slitted pieces of the elbow. X represents the pivot for the clamps K K' and S S. Dies R R are also pivoted in a similar manner, and notches or gains are cut in the top part of clamps S S, so that they may be locked firmly together. The clamp-jaws do not come quite together at the top, but rest on the metal pressed onto the surface of cylinder Q. A die for forming rivet-holes is made upon the top part of Q between the open ends of jaws K K' for the punch J to descend into to form a rivet-hole in the metal. J' is a set which descends to form a head upon the rivet, which is placed in a proper seat directly under it. These devices are used to rivet the lapped parts of the metal together, but, instead of riveting, the parts may be brought together by means of teats and recesses in the metal itself. The parts J J' are operated by means of the parallel lever I I', the double-jointed links H H', and hand-lever T, to which the parts J J' are attached, as shown in Fig. 6.

The rivet set J' is hinged to J so it may be turned out sidewise to prevent its being operated with J when desired. V' is a scraper and rod for removing burrs, &c., from cylinder C . V is a shaft passing through cylinder C , having the crank L rigidly attached to its end at the front of the machine, and a pulley, V'' , on its rear end for the purpose of transmitting motion and power.

The following is the operation of the machine in the construction of an elbow: A piece of sheet metal is slitted as represented by p , Fig. 4, and offsets or jogs p' may be made in it at the same time. The metal is then rolled and riveted at one end, forming a pipe of the same diameter of the elbow, which is then put on the cylinder C ; and the clamps $S S$ being brought together the metal is pressed against the cylinder C and the first offset formed, when the jaws $S S$ are released and the pipe advanced a sufficient distance to form the next offset of the series in the same manner. The press-block M , which up to this time has been in its advance position, is brought back against the end of C by means of rod U and lever P , carrying with it the first slitted piece on each side, depositing them over the metal now on Q . Clamps $K K'$ are then closed down and the now double pieces tightly pressed together, and, if desirable, into a secondary offset, and there held until riveted, as before described. The metal is then advanced in the same manner as before, and these different operations repeated, while at the same time crank L and roller t are put in motion to perform the office hereinbefore described for them. After the forming of each lap the clamps are loosened and the metal and block M advanced, and the several operations repeated until the desired number of laps are properly made and the elbow completed.

It is obvious that the distinctive features of the several parts can be variously modified, and yet retain the principal features of our invention, which consists chiefly in forming an elbow from a slitted sheet of metal by lapping one piece upon another and pressing them into the desired shape to form the curve of the elbow.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The clamps $S S$, $K K'$, and $R R$, press-block M , operated substantially as described, in combination with cylinder C and proper supports therefor, whereby the metal is formed into an elbow ready to be riveted.

2. The slotted crank L , carrying roller t with mechanism causing it to travel around eccentric M' , substantially as and for the purpose described.

3. The connecting mechanism composed of levers $I I'$ and T , links $H H'$, punch J and set J' , either or both, and proper supports for the whole, substantially as shown and described.

4. A stove-pipe elbow made from sheet metal, slitted as shown and described, when the slitted pieces are formed and united substantially as set forth.

5. An elbow-machine, consisting of the elements embodied by the first, second, and third claims, when constructed and arranged substantially as herein described.

Signed at Cincinnati, Ohio, this 11th day of January, 1873.

JOHN BECKMANN.
JOHN GIBSON.

Witnesses:

EDWARD BOYD,
E. E. WOOD.