

(No Model.)

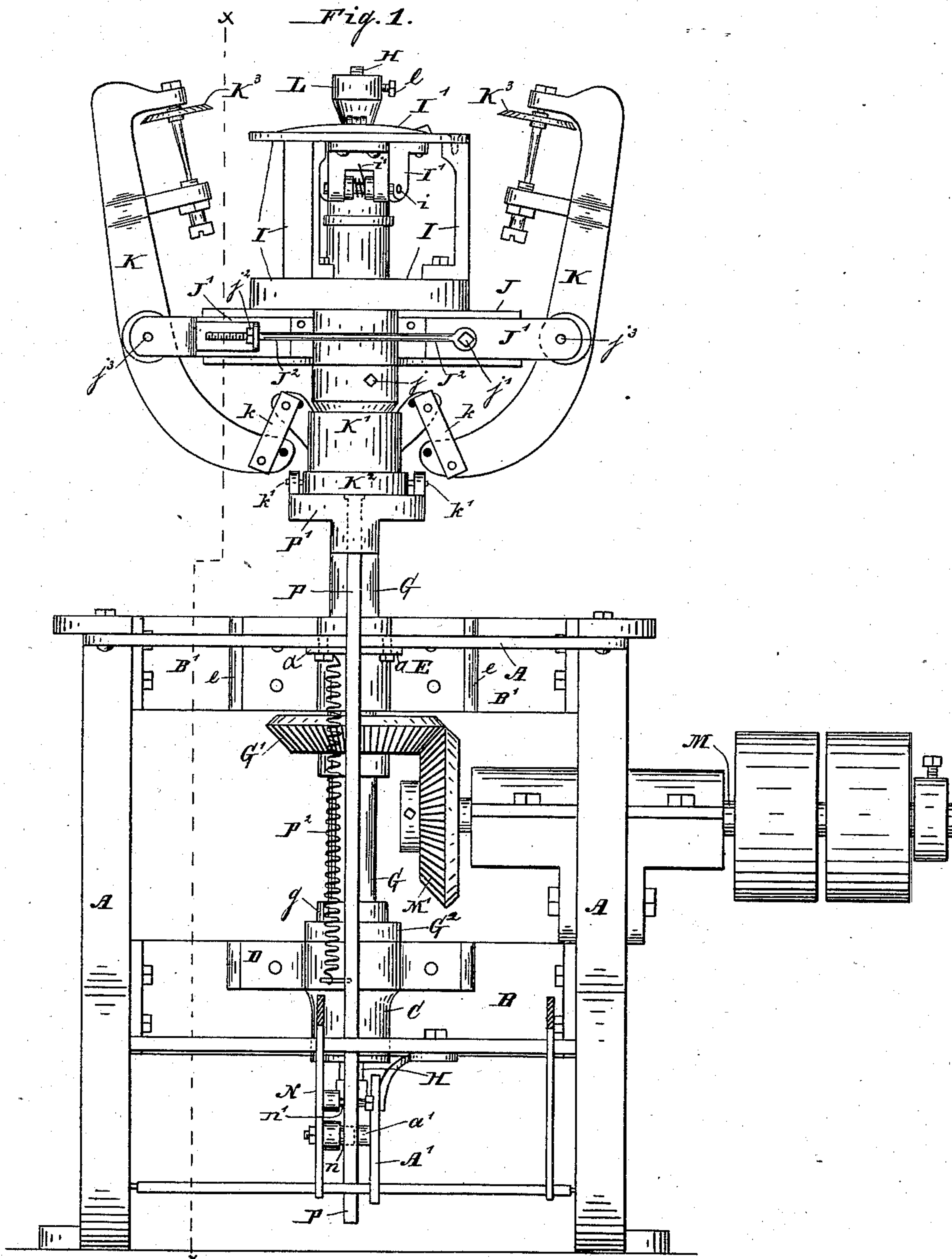
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W. A. WHEELER

MACHINE FOR CLOSING DOWN THE SEAMS OF SHEET METAL PIPES.

No. 254,891.

Patented Mar. 14, 1882.



WITNESSES.

James B. Liggins.  
R. P. Daggett.

INVENTOR.

William A. Wheeler,  
PER  
C. Bradford  
ATTORNEY.

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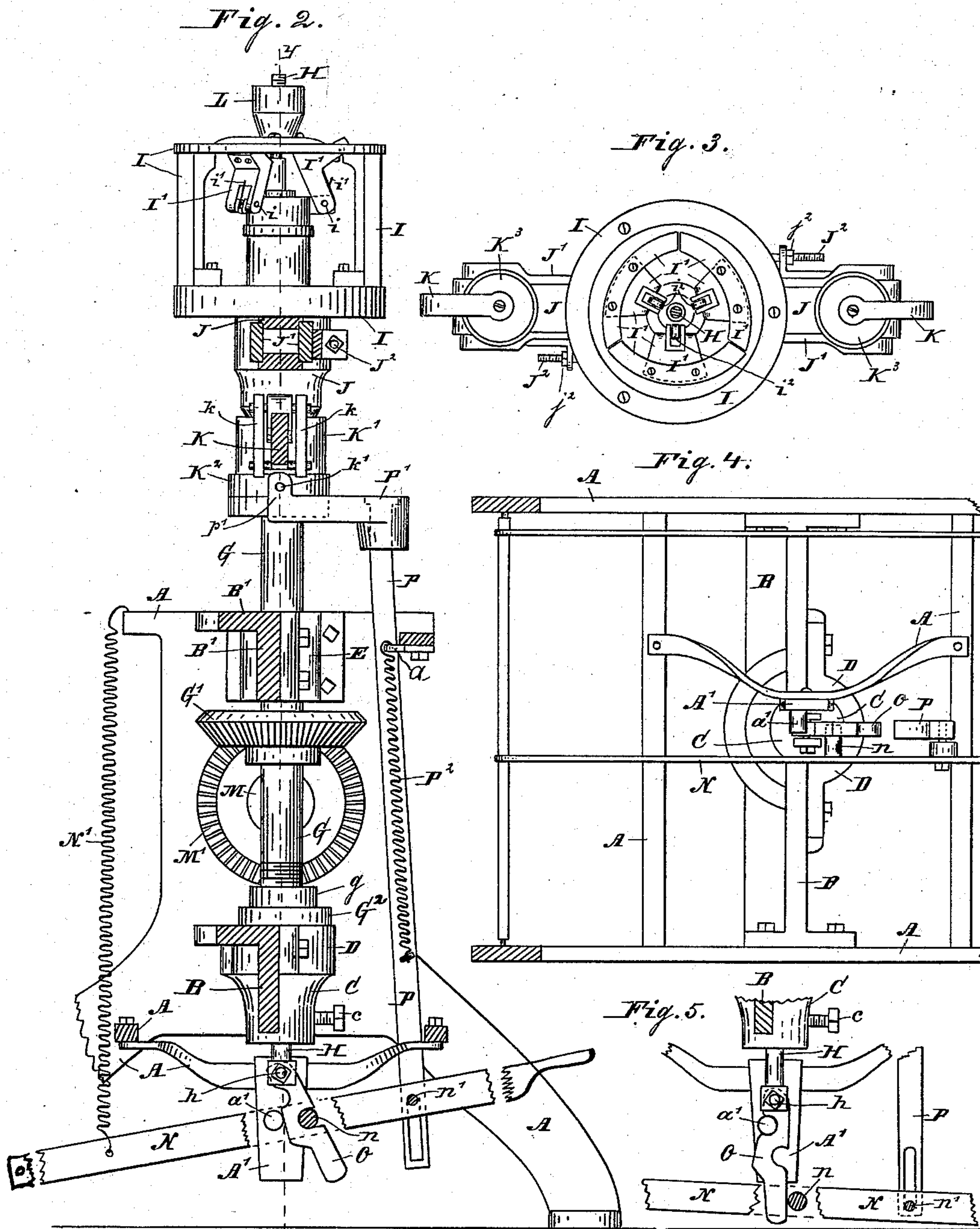
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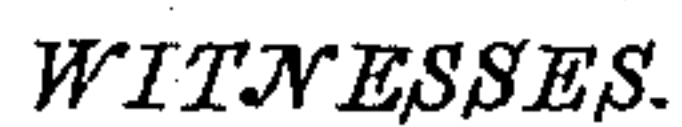
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# UNITED STATES PATENT OFFICE.

WILLIAM A. WHEELER, OF INDIANAPOLIS, INDIANA.

MACHINE FOR CLOSING DOWN THE SEAMS OF SHEET-METAL PIPE.

SPECIFICATION forming part of Letters Patent No. 254,891, dated March 14, 1882.

Application filed November 5, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. WHEELER, of the city of Indianapolis, county of Marion, and State of Indiana, have invented certain  
5 new and useful Improvements in Machines for Closing Down the Seams of Sheet-Metal Pipe, by which sections of such pipe are jointed together, of which the following is a specification.

The object of my said invention is to produce a machine which shall rapidly and efficiently close down the circumferential seams of stove-pipe elbows, thereby joining the several sections together; and it consists in certain combinations of mechanism and details of construction, as will hereinafter be more particularly set forth.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar  
20 parts, Figure 1 is a side elevation of a machine embodying my invention; Fig. 2, a view thereof as seen from the dotted line *xx* in Fig. 1; Fig. 3, a top or plan view of the top part of the machine; Fig. 4, an under side plan of a  
25 portion of the machine; Fig. 5, a detail view of the same parts shown in the bottom portion of Fig. 2, but in different position; Fig. 6, a vertical section of the machine on the dotted line *yy*; Fig. 7, a detail plan, looking downwardly from the dotted line *zz*; and Fig. 8, a  
30 view in some respects similar to the top portion of Fig. 6, but showing a portion of an elbow in the machine and being operated upon.

In said drawings, the portions marked A  
35 represent the outside frame-work of the machine; B B', bridge-trees therein; C D E, boxes thereon; F, a hollow standard secured in the box C; G, a hollow shaft surrounding the standard F; H, a vertically-moving rod inside  
40 said hollow standard; I, a circular frame-work mounted on the standard F; J, a revolving frame-work mounted on the shaft G; K, jaws mounted upon the arms of the frame-work J, and which are revolved thereby; L, an inverted-  
45 cone-shaped head upon the upper end of the rod H; M, a shaft whereby, through the usual pulleys and gears, the shaft G is revolved; N, a treadle; O, a device connecting said treadle to the rod H; P, a rod connecting said treadle to  
50 the toggle-center K', and Q a section of elbow being operated upon.

The frame A is simply a common cast-iron or other frame of suitable size and strength to support the mechanism and cause it to run steadily.

The bridge-trees B B' are bolted firmly to the frame-work A, and form, in effect, a part thereof.

The boxes C D are attached to the bridge-tree B, and the box E to the bridge-tree B',  
60 and support the hollow standard F and the hollow shaft G.

The hollow standard F is rigidly secured to the box or bearing C by the set-screw *c*, and supports the stationary frame I, the position  
65 of the latter thereon being determined by the collar *f*. The relative height of this standard to the frame-work is rendered adjustable by means of the set-screw *c*, as when said set-screw is loosened said standard can be easily moved  
70 up and down in its bearing.

The revolving shaft G rests in the bearings D and E on the bridge-trees and supports the revolving frame J and the mechanism attached thereto. It receives its direct support from  
75 the step G<sup>2</sup>, in which the collar *g* thereon revolves. It is actuated by the shaft M through the gear-wheels M' G'.

The central rod, H, is sustained by the treadle N, and carries the inverted-cone-shaped head  
80 L, or an equivalent toggle-joint mechanism.

The frame-work I is securely attached to the standard F, and is adapted to receive the section of pipe or elbow in such manner that it will be surrounded by the ring which forms  
85 the top portion of said frame-work, and which serves to support said elbow in position while being operated upon by the machine. Segments I' are mounted on the central portion of this frame-work by pivots *i*, and serve as inside  
90 clamps for the pipe or elbow while in the machine, said segments being at such times forced outwardly by the head L. Springs *i'* hold said segments back when not forcibly thrown forward, and small anti-friction trucks  
95 *i''* prevent too much wear of the parts.

The frame-work or casting J is firmly secured to the hollow shaft G by the set-screw *j*, or some other appropriate means, and is revolved thereby. The arms of this frame-work  
100 are rendered adjustable in length by being divided into three portions, the two outer ones,



J', of which are movable on the central or main portion. The movable portions, J', are secured to the central portion by bolts j', which pass through them, and are secured against being drawn apart farther than is desired by the cross-bolts J<sup>2</sup>, which are adjusted by means of nuts j<sup>2</sup> thereon, as shown. The reason for having the arms J' J' adjustable is that it is necessary to vary the distance between the rollers K<sup>3</sup> K<sup>3</sup> when different-sized pipe is operated upon by the machine. It is also necessary to vary it slightly as these rollers wear, which they do quite rapidly.

The jaws K are pivoted to the arm portions J' of the revolving frame-work J by the pivots j<sup>3</sup>. They are also secured to a toggle-center, K', by the toggle-links k, which, when pulled down, expand the lower ends of said jaws apart, and throw the tops of the jaws toward each other. Upon the upper ends of the arms K are small steel wheels or disks K<sup>3</sup>, which are the devices which perform the work of closing down the seams of the elbow, in connection with the circular frame I, which is the work for which this machine is constructed. I consider the form of wheels shown as the best; but they may be varied in form, or other equivalent devices substituted, without departing from my invention.

The cone-shaped head L, when forced down by the rod H, spreads out the clamps I' against the inside of the section of pipe or elbow in the machine at the time. Its position on the rod may be adjusted to any point required, it being secured in position by the set-screw l. A device embodying the essential elements of a toggle-joint might be employed instead of this head with substantially the same results.

The shaft M is simply an ordinary driving-shaft, bearing wheels and pulleys in the usual manner, as shown.

The treadle N is attached, as shown, both to the rod H by means of the device O and to the vertically-moving toggle-center K' by means of the rod P, and thus when said treadle is forced down the clamps I' are forced out, and the jaws K are forced in, by the mechanism described.

The device O is pivoted to the bottom of the rod H by a bolt, h. To the frame A is attached a downwardly-projecting piece, A', from the face of which projects a stud, a', with which this device comes in contact. The attachment to the treadle is made by means of a similar stud, n. The device is recessed upon both sides, and one or the other of these studs is in engagement with one of the recesses at all times. When the treadle is in raised position the stud n rests in the recess on the front side of the device, as shown in Fig. 2, and there remains until the rod H is pulled down far enough to permit the stud a' to enter the other recess, when the stud n passes out of its recess and down the face of the device, as shown in Fig. 5. Thus while the movement of the treadle is comparatively considerable the move-

ment of the rod H is defined by the distance between the recess on the rear side of the device O and the stud a'. The movement of the clamps I' is thus permitted to be completed before that of the jaws K. The device O is returned to the position shown in Fig. 2 as the treadle rises in the following manner: When the stud n arrives opposite the notch in said device the gravity of the latter carries it forward far enough to cause the notch therein to engage with said stud, and to part contact with the stud a'. This enables said device to rise far enough, so that the stud a' is so far out of its notch as to lose its hold thereon, and the force of the upward movement of the treadle accomplishes the rest. It will be noticed in this connection that the upper side of the notch into which the stud n enters hooks over somewhat, and is thereby the better enabled to catch onto said stud, while the lower corner of the other notch is somewhat rounded off, thus allowing it to release itself from the pin a' more readily.

The rod P is rigidly attached to the crotched head P', the arms p' of which extend part way around the toggle-center K', and through which the projecting pivots k' on the trunnioned ring K<sup>2</sup> pass. As shown in Figs. 2 and 5, the lower end of this rod is slotted, and therefore is not operated upon by the treadle until after it has pulled the rod H down into place, and the clamps I' are thereby operated. This is so that said clamps may firmly support the inside of the pipe before the jaws K bring the closing-down wheels K<sup>3</sup> against the outside thereof, and by the use of only a single treadle.

The treadle N is held in raised position, except when forcibly depressed by the spring N', and the rod P by the spring P<sup>2</sup>. The rod P is prevented from moving sidewise by the projections a, which extend on each side thereof from the frame, as shown most plainly in Fig. 7.

The operation of my machine may be recapitulated as follows: The pipe or section of elbow Q is first set inside the ring which forms the top portion of the frame I. The treadle N is then forced down, which first pulls down the rod H and expands the clamps I' until they bear against the inside of the pipe forming the elbow. It then, through the rod P, head P', ring K<sup>2</sup>, device K', and toggle-arms k, expands the lower ends of the jaws K, bringing the top ends thereof toward each other and clamping the seam of the elbow between the ring of the frame I and the wheels K<sup>3</sup> on said jaws. The hollow shaft G, being in motion, revolves the frame-work J and said jaws and wheels rapidly, thus closing said seams tightly together and completing the construction of the elbow.

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

1. In a machine for closing down the seams connecting sections of sheet-metal pipe together, the combination of a circular frame of



about the same diameter inside as the outside diameter of the pipe for supporting said pipe, rollers carried by jaws which revolve around outside of said frame and said pipe, means for revolving said jaws, and means for bringing said rollers down close to said frame, whereby they are enabled to force the crimps forming the seam of said pipe down upon the top of said frame, and thus pinch said seams tightly together, substantially as set forth.

2. The combination of the outside revoluble hollow shaft carrying the arms and jaws, means whereby said jaws may be operated, the inside stationary hollow shaft carrying the frame and inside clamps, and the inside vertically-movable rod, whereby said clamps may be operated, substantially as set forth.

3. The combination, with the clamps for holding the pipe while being operated upon, of the treadle N, device O, studs  $n$  and  $a'$ , and rod H, substantially as set forth.

4. The combination of the treadle N, rod P, head P', trunnioned ring  $K^2$ , toggle-center  $K'$ , toggle-links  $k$ , and jaws K, the upper ends of which are armed with devices for closing the

pipe seams, substantially as described, and for the purposes specified.

5. The combination, with the jaws K, having suitable devices upon their upper ends for closing the pipe-seams, of the device J, having adjustable arms  $J'$ , whereby the distance between said jaws may be increased or lessened, substantially as set forth.

6. The combination, with the adjustable arms  $J'$ , of the tie-rods  $J^2$ , whereby said arms are secured in position and are at the same time rendered accurately adjustable, substantially as set forth.

7. The combination of the treadle N, rod H, head L, clamps I I', vibrating jaws K, pivoted at  $j$ , and carrying closing-down wheels, and mechanism for operating the same, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 1st day of November, A. D. 1881.

WILLIAM A. WHEELER. [L. s.]

Witnesses:

C. BRADFORD,

C. L. THURBER.