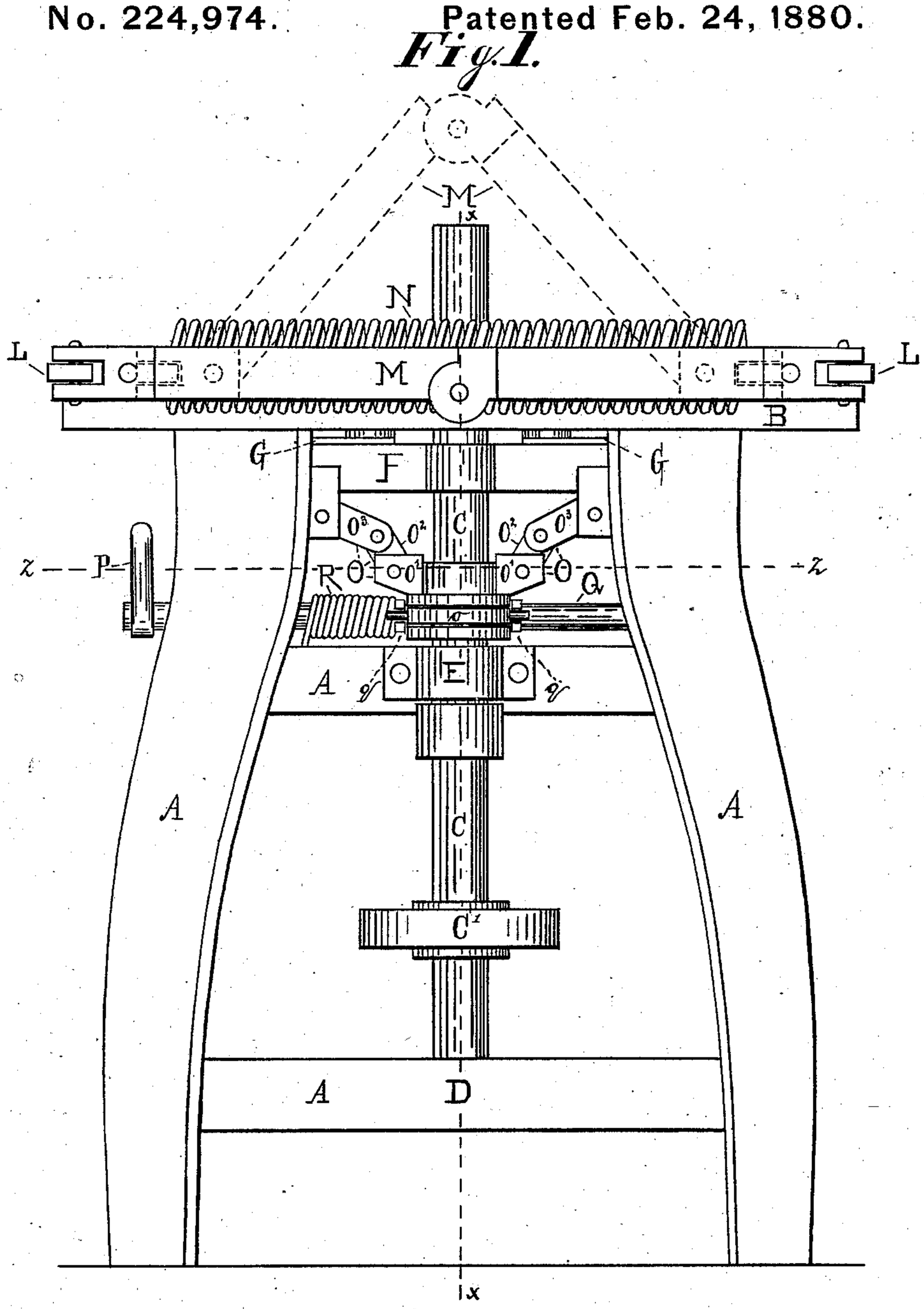
4 Sheets—Sheet 1.

W. A. WHEELER.

Machine for Forming Circumferential Crimp in Sheet-Metal Pipes.

No. 224,974. **Patented Feb. 24, 1880.**

Fig. 1.



WITNESSES.

Wm. E. Moore

James B. Lizius.

INVENTOR.

William A. Wheeler,

PER.

C. Bradford.

ATTORNEY.

4 Sheets—Sheet 2.

W. A. WHEELER.

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Fig. 2.

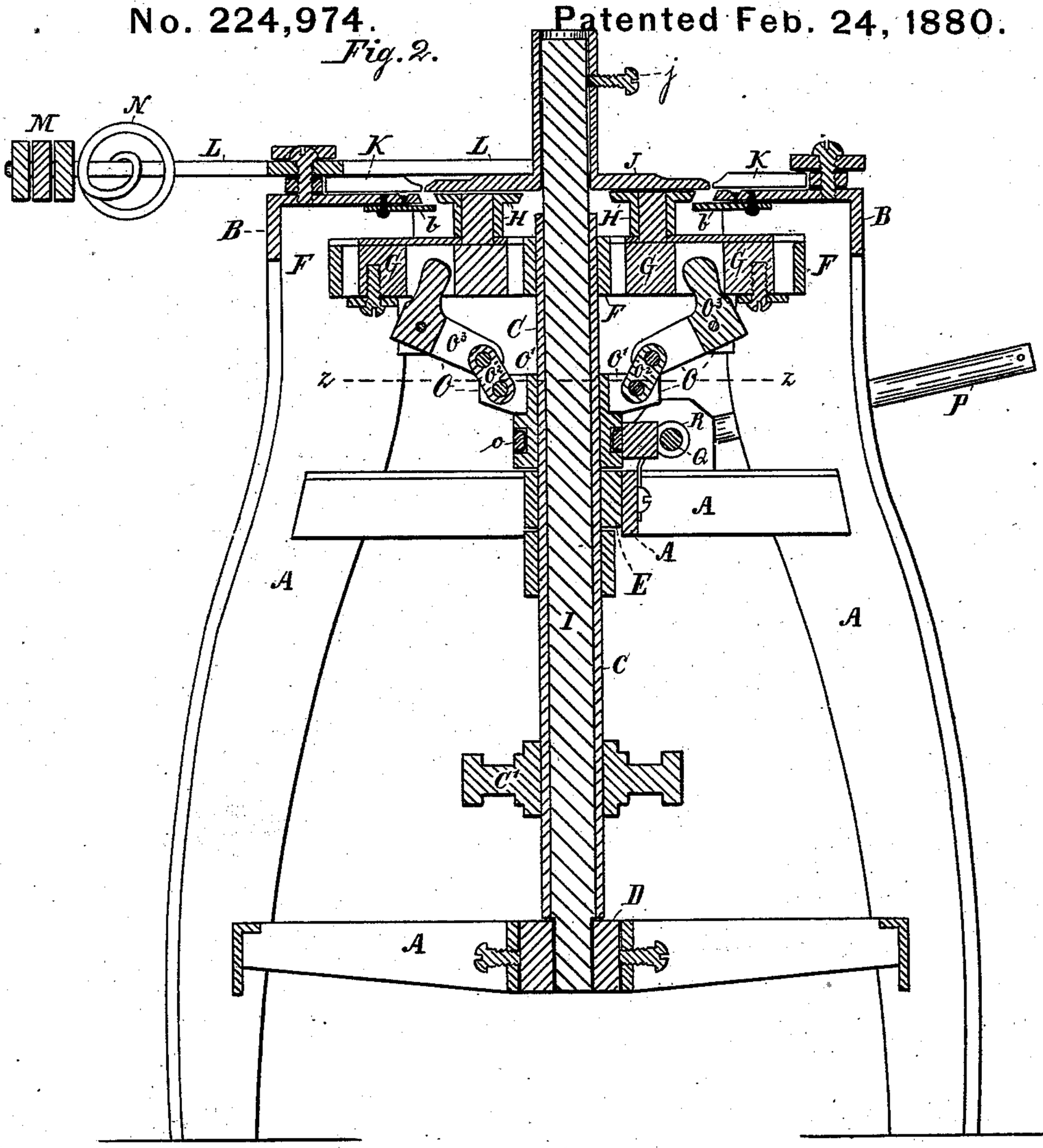
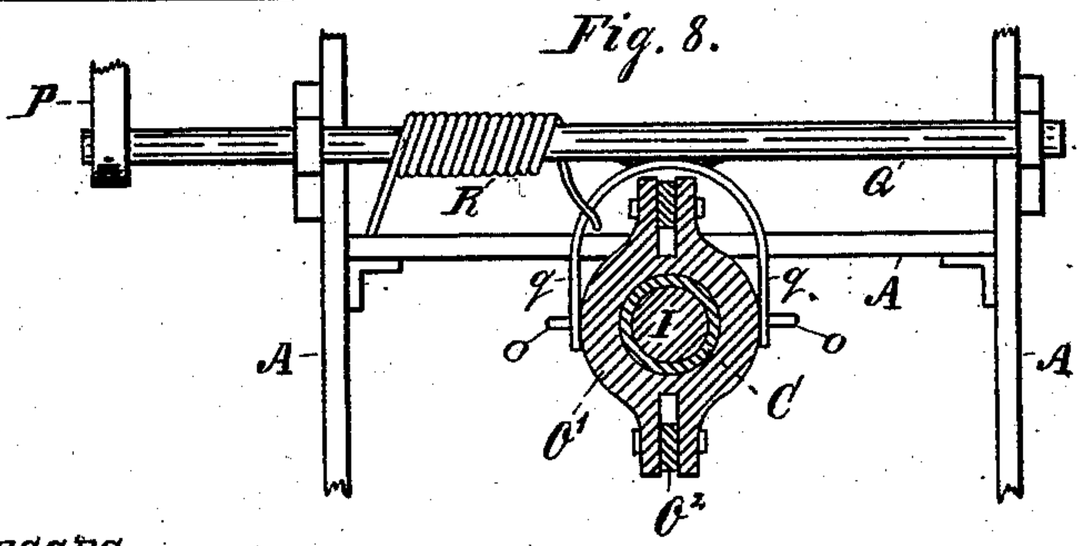


Fig. 8.



WITNESSES.

James B. Lyles.

R. P. Daggett

INVENTOR.

William A. Wheeler,

PER

C. Bradford.

ATTORNEY.

4 Sheets—Sheet 3.

W. A. WHEELER.

Machine for Forming Circumferential Crimp in Sheet Metal Pipes.

No. 224,974. **Patented Feb. 24, 1880.**

Fig. 3.

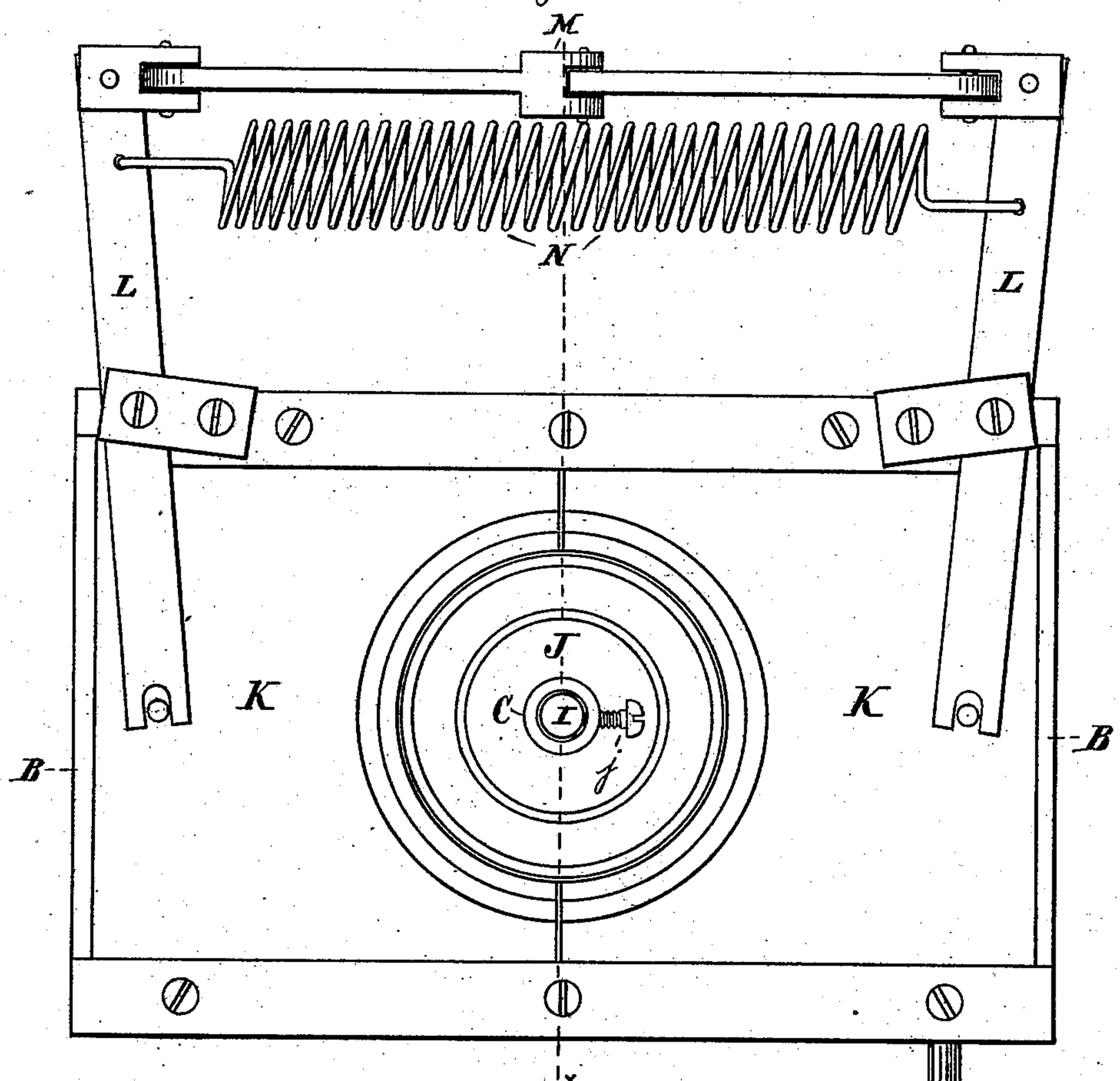
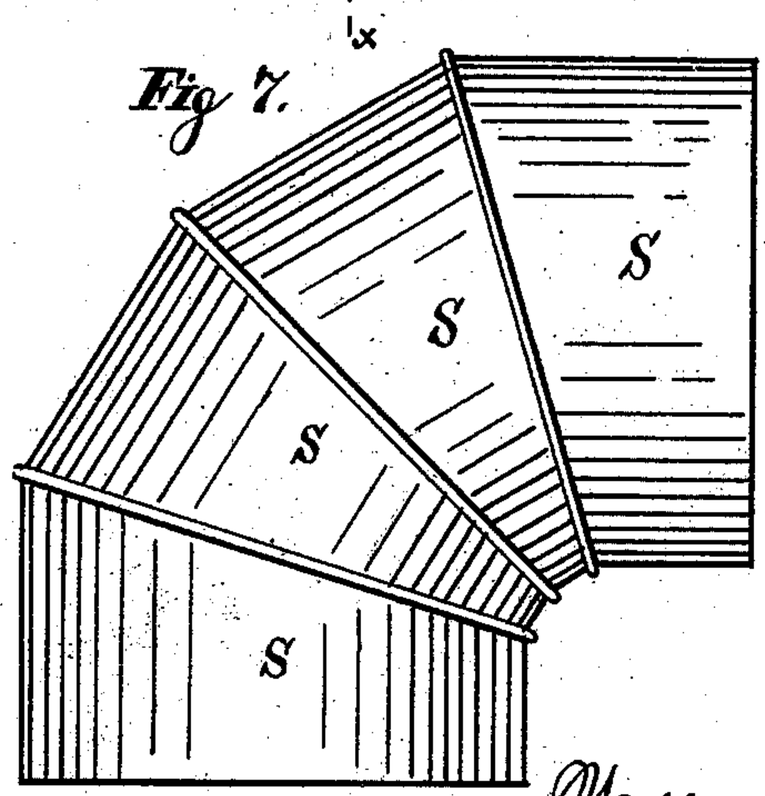


Fig 7.



WITNESSES.

Wm. E. Moore

James B. Lizius.

INVENTOR.

William A. Wheeler,

PER

C. Bradford,

ATTORNEY.

4 Sheets—Sheet 4.

W. A. WHEELER.

Machine for Forming Circumferential Crimp in Sheet-Metal Pipes.

No. 224,974. Patented Feb. 24, 1880.

Fig. 4.

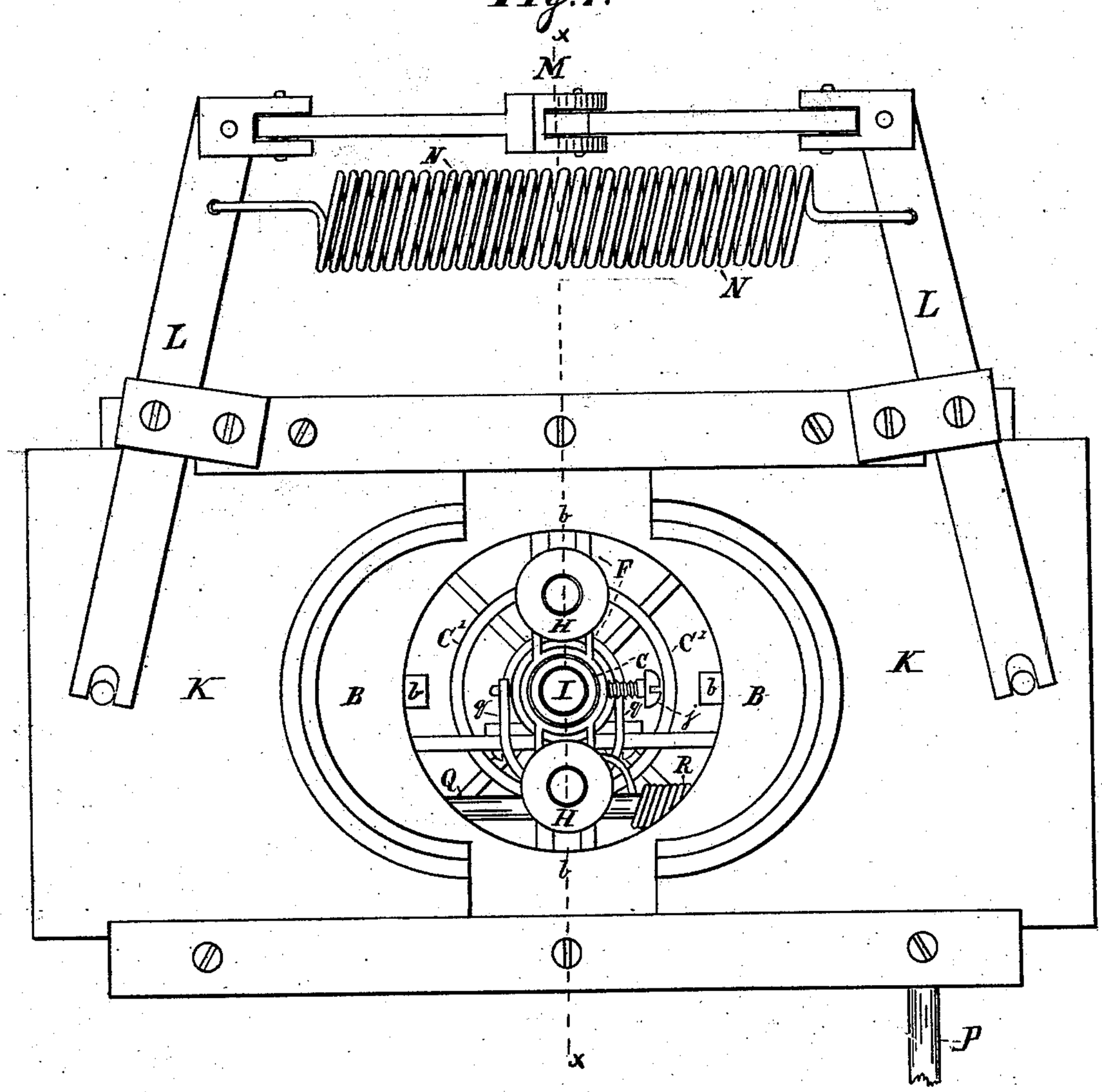


Fig. 5.

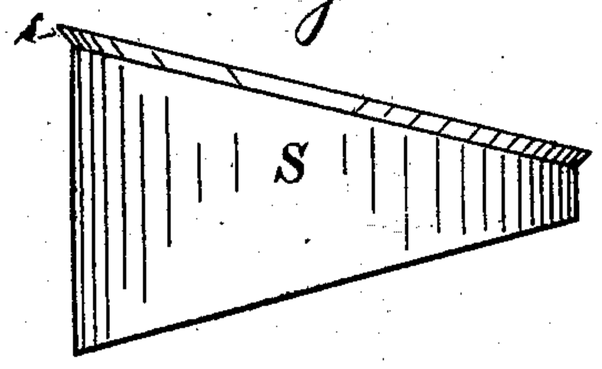
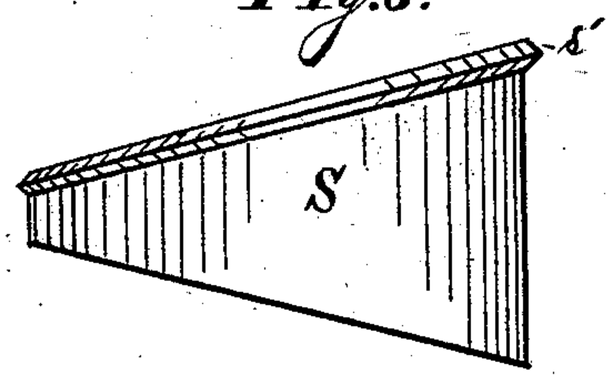


Fig. 6.



WITNESSES.

Wm. E. Moore

James B. Lyons

INVENTOR.

William A. Wheeler,

PER

C. Bradford,

ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM A. WHEELER, OF INDIANAPOLIS, INDIANA.

MACHINE FOR FORMING CIRCUMFERENTIAL CRIMPS IN SHEET-METAL PIPES.

SPECIFICATION forming part of Letters Patent No. 224,974, dated February 24, 1880.

Application filed December 19, 1879.

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 new and useful Improvements in Machines for Forming Circumferential Crimps in Sheet-Metal Pipes, of which the following is a specification, reference being had to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts.

Figure 1 is a rear elevation of a machine embodying my invention, showing, by means of dotted lines, both positions of the clamping mechanism. Fig. 2 is a transverse vertical section, looking to the left from the dotted line *x x* in Fig. 1, but showing the cross-head turned at right angles from the position it occupies in said figure. Fig. 3 is a top or plan view of the machine at rest, but in position to operate. Fig. 4 is a similar view when the outer clamps are thrown open and the central one removed. Fig. 5 is a view of one form of the sections of pipe. Fig. 6 is a view of the other form. Fig. 7 is a view of a completed elbow. Figs. 5 and 6 each show one edge as it appears before passing through the machine, and one after. Fig. 8 is a detail drawing, looking downwardly from the dotted line *z z*.

The object of my invention is to produce a machine which will rapidly form the seam-crimps on the ends of the sections of pipe used in the manufacture of sectional stove-pipe elbows, such as are shown by the drawings, Fig. 7.

In the drawings, the portions marked A A represent the legs and frame-work of the machine, and B a table mounted thereon. A hollow shaft, C, is set vertically in boxes D E on said frame in a central position. A cross-head, F, is secured to and revolves with the shaft C. This cross-head carries sliding blocks G, upon which are mounted revolving formers H, which operate, in the manner shown, to form the seam-crimps in the section of pipe which is placed in the machine. Inside the hollow revolving shaft C is a stationary rod or shaft, I, upon the upper end of which is mounted the circular disk J, which serves as the inside clamp to secure the section of pipe in position while being operated upon by the formers H. This disk or inside clamp, J, is supported by the shaft or rod I, and is secured thereto by the set-screw *j*. It is adjustable upon said shaft, being securely held at any desired point by said screw. Outside clamps, K K, slide in grooves upon the top of the table B, and, with the inside clamp, J, hold the pipe firmly in position. These clamps are operated by the vibrating arms L L, which acquire their force from the toggle-joint M, which is, in turn, operated upon by a treadle. (Not shown.) A spring, N, operates to open the clamps when the treadle-pressure is not applied. The blocks G, and with them the formers H, are also forced against the pipe by a species of toggle-joint, O, which, on account of the presence of the shaft C between the blocks G, is formed of a center portion, O′, which is sleeved upon the shaft C, and connecting-arms, which, in the drawings, Fig. 2, are shown in the form of two links, O^2, and two bell-crank levers, O^3, with the upper ends of said levers entering mortises in the under sides of said blocks G. This joint is also operated by a treadle (not shown) through the lever P and rock-shaft Q, the latter having two arms, *q q*, which engage with a ring, *o*, which surrounds the central or sliding portion of the joint. This joint is forced back when the treadle is not applied by the action of the spring R, which is coiled upon the rock-shaft, and one end of which rests upon one of the arms *q q*, and the other against the cross-bar, forming part of the frame near it. Upon the hollow shaft C is a band-wheel or belt-pulley, C′, by which it is ordinarily driven.

The operation of this machine may be briefly recapitulated as follows: A section or joint of pipe, S, is placed upon the machine over the central clamp, J. The outside clamps, K K, are then forced against it by treadle or other suitable power. The formers H, revolving, as specified, with the shaft C, are also forced against it, and quickly form groove or crimp *s* or *s′*, as seen in Figs. 5 or 6. The treadle-pressure being thrown off, the formers and clamps fly back, and the section of pipe, crimped as shown, is removed from the machine.

As will be readily understood by those ac-

quainted with such machinery, these crimps can be formed in this manner many times faster than by the hand-machines usually employed.

The capacity of the machine, as regards the size of the pipe operated upon, may be made larger or smaller by simply using different-sized inside clamps and removing or inserting rings (not shown) outside in the clamps and in the central orifice in the table.

The table B is provided with under-side projections *b b*, which project into the central orifice therein, and serve as rests to receive and support the sections of pipe. The form of crimp shown in Fig. 5 is made by simply raising these rests, so that the pipe shall not enter so far into the machine. This machine can also be used for forming grooves or seam-crimps in tin or other sheet-metal ware of suitable shapes and sizes, as well as in stove-pipe sections.

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 forming circumferential crimps in the ends of sheet-metal pipes, an inside and a set of outside clamps, and a set of revolving formers, which are moved from and toward the central shaft by a toggle-joint mechanism, in combination with each other, substantially as specified.

2. In a crimping-machine, the combination of the toggle-joint O, sliding blocks G, and revolving formers H, operating substantially as specified.

3. In a crimping-machine, the hollow revolving shaft C, carrying the formers, and the central stationary rod or shaft, I, carrying the inside clamp, J, in combination with each other, substantially as specified.

4. In a crimping-machine, the combination of the clamps K K, vibrating arms L L, and toggle-joint M, substantially as and for the purpose specified.

5. The combination of the rock-shaft Q, having spring R and arms *q*, with the toggle-joint O, having trunnioned ring *o*, substantially as and for the purpose specified.

6. In a crimping-machine, a set of formers, H H, which revolve both upon their own axes and about the central shaft, and are expanded and contracted by a toggle-joint mechanism, all substantially as specified.

7. In a crimping-machine, a table, B, having a central orifice of sufficient size to receive the end of the pipe, and also having under-side projections *b b*, to receive and support said pipe until clamped, in combination with a set of clamps, K K, substantially as shown and specified.

8. In combination with the toggle O, having trunnioned ring *o*, the rock-shaft Q, having arms *q*, substantially as and for the purpose specified.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 15th day of December, A. D. 1879.

WM. A. WHEELER. [L. S.]

In presence of—
C. BRADFORD,
JOSEPH KLINE.