

W. T. McMILLEN.

STOVE-PIPE ELBOW MACHINE.

No. 177,265.

Patented May 9, 1876.

Fig. 1.

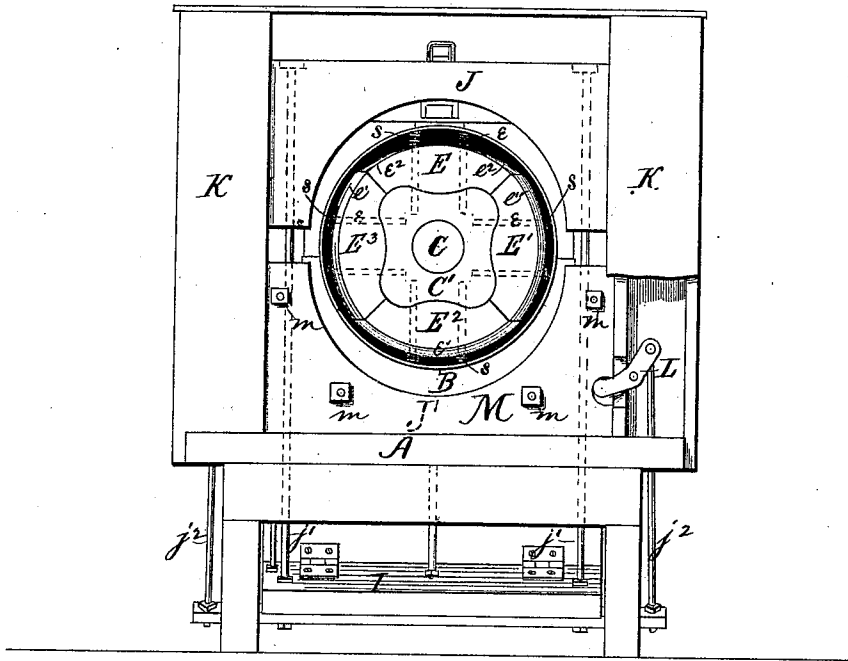
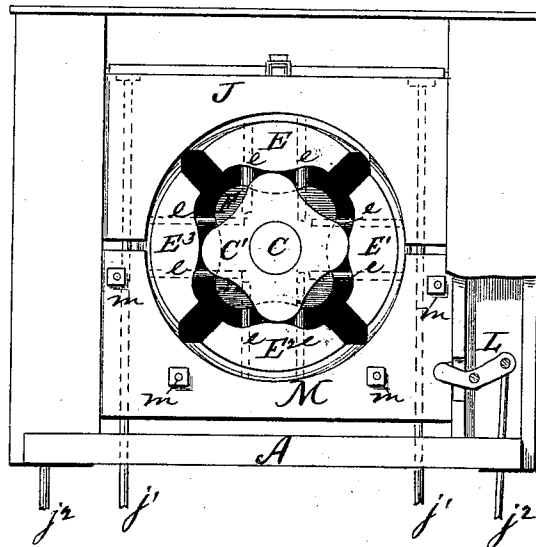


Fig. 2



WITNESSES

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Fig. 3.

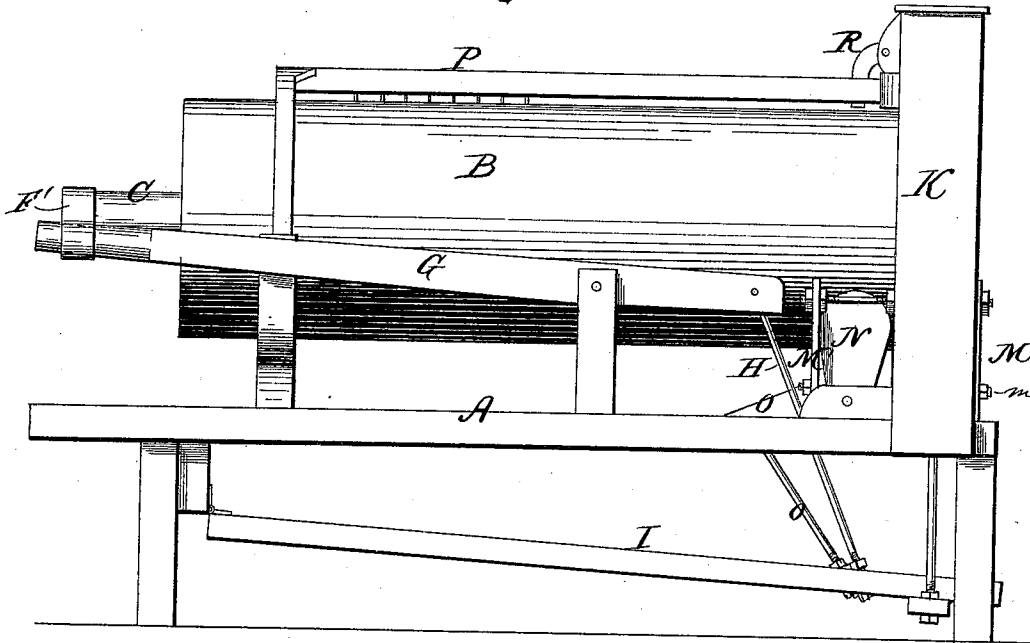
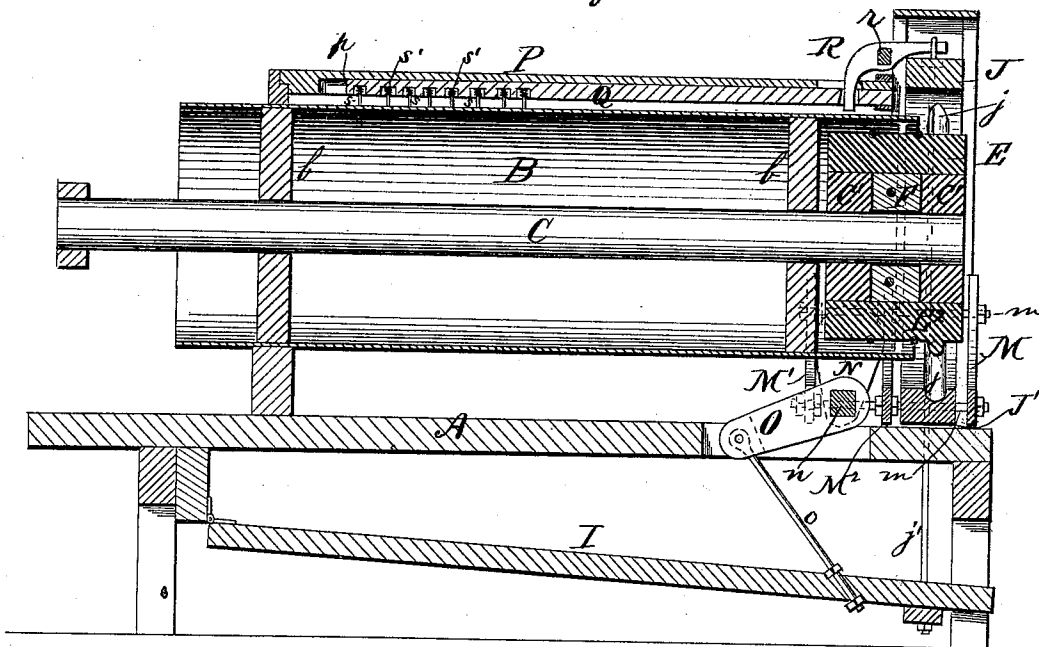


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM T. McMILLEN, OF CINCINNATI, OHIO.

IMPROVEMENT IN STOVE-PIPE-ELBOW MACHINES.

Specification forming part of Letters Patent No. **177,265**, dated May 9, 1876; application filed October 4, 1875.

To all whom it may concern:

Be it known that I, WILLIAM T. McMILLEN, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Crimping and Bending Stove-Pipe Elbows; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation, showing the dies closed and die-blocks open. Fig. 2 is a similar view, showing the dies expanded and die-blocks closed. Fig. 3 is a side elevation of the machine, and Fig. 4 is a longitudinal central section of the same.

Similar letters of reference in the accompanying drawings denote the same parts.

This invention relates to that class of machines for crimping stove-pipe elbows in which the crimp is formed on the exterior surface of the pipe, and has for its object to improve the construction and operation of such machines, so as to enable the crimps to be produced more rapidly and uniformly than heretofore. To these ends the invention consists, first, in the combination of internal expanding-dies with external contracting die-blocks, for forming the crimps; secondly, in mechanism for closing and finishing the crimps after they are formed; thirdly, in mechanism for feeding the pipe through the crimping devices; and, fourthly, in certain details of construction, hereinafter more fully described.

In the accompanying drawings, A represents the frame of the machine; B, a hollow metallic cylinder, suitably mounted thereon; C, a shaft, passing longitudinally through the cylinder B, and having its bearings in heads *b b* therein; C' C', cams of quadrangular form, with rounded corners, rigidly secured to the shaft C; and F, a block, mounted loosely upon the shaft between the cams C' C'. E¹ E² E³ are dies, each of which is mounted on short rods *e e* extending from the inner circumference of the cylinder B to the block F. The inner surfaces of said dies correspond in shape with the cams C' C', against which they are adapted to fit in their normal position. The dies E¹ E² E³ are each provided with a peripheral rib or projection, *e¹*, of uniform thick-

ness, and the die E has a rib, *e²*, gradually tapering from the ends toward the center thereof, where it vanishes.

By this construction, it will be seen that when the shaft C is rocked the dies E E¹ E² E³ are forced outward by the cams C' C', being guided by the bolts *e e*, and are returned to their normal position by the tension of suitable springs S, interposed between the dies and the inner face of the cylinder B.

The shaft C may be rocked by any suitable means. In this instance it is done through the medium of levers F' G, attached to a rod, H, connected to the treadle I of the machine.

J J' are die-blocks, mounted in ways in hollow vertical posts K, and adapted to accurately fit the dies E E¹ E² E³, when expanded by the cams C' C', said blocks being provided with grooves or recesses *j j*, to receive the peripheral ribs or projections on the dies. The upper block J is operated by the treadle I, through the medium of rods *j¹ j¹*, while the lower block J' is operated by bell-crank levers L, pivoted within the hollow posts K, the inner arm of said levers projecting through the posts into sockets in the block J, and their outer arms connected to the treadle I by rods *j² j²*. By this arrangement the jaws are caused to approach each other when the treadle is pressed, and vice versa.

M is a plate or jaw, corresponding in shape with the lower die-block J', and mounted on rods *m*, passing transversely through the latter. M¹ M² are plates, similarly formed, secured to the inner ends of the rods *m*, and N is an eccentric located on a cross-shaft, *n*, between the plates M¹ M². The eccentric N is oscillated through the medium of a crank, O, secured to the shaft *n*, and connected to the treadle I by a rod, *o*.

By the operation of these devices the plate or jaw M is made to alternately close and recede from the crimping-block J', and close and finish the crimps as they are formed by the dies. The pipe to be operated upon is placed on the cylinder B, and fed to the crimping devices by the following mechanism: P is an arm extending along the upper surface of the cylinder B, and having a longitudinal slot or groove, *p*, in which slides a plate, Q. This plate is reciprocated by a bell-crank lever, R,

mounted on a cross-shaft, *r*, and connected to the upper portion of the die-block J. Small pins *s* are inserted in holes in the plate Q, near the outer end thereof, which bear down upon the pipe on the cylinder. Behind each pin *s* is a spring, *s'*, the tendency of which is to press the pins outward. As the plate is reciprocated, the pins drop, one by one, behind the pipe onto the cylinder, and feed the pipe forward to the crimping devices, where it is crimped, and the crimps closed and finished, as hereinbefore stated.

It will be observed that each time the treadle I is pressed a crimp is formed in the pipe, and the preceding crimp closed and finished by the jaw M, while a reverse movement of the treadle feeds the pipe forward the distance of one crimp. The operation of the machine is, therefore, regular, continuous, and rapid.

One crimp can be made in a second, or sixty a minute, and as there are about twelve crimps required for each elbow five completed elbows can be produced in a minute.

It may be found necessary in practice to vary the arrangement of levers, rods, &c., but

this can be done without altering the principles of operation.

The plate Q and attachments may be raised by any suitable means to allow the pipe to be slipped onto the cylinder.

I claim as my invention—

1. In a machine for making stove-pipe elbows, the combination of a series of internal expanding-dies with external contracting die-blocks, for the purpose of forming external crimps, substantially as described.

2. The dies E E¹ E² E³, block F, rods *e e*, and cylinder B, in combination with the shaft C and cams C' C', substantially as described.

3. The crimp-closer M, in combination with the die-block J, rods *m*, plates M¹ M², and eccentric N, substantially as described.

4. The plate Q, provided with the spring-pins *s s*, combined with the cylinder B and operating mechanism, substantially as described, for the purpose specified.

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Witnesses:

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