

(No Model.)

2 Sheets—Sheet 1.

G. HAYES.

MACHINE FOR MAKING METALLIC LATHING.

No. 402,240.

Patented Apr. 30, 1889.

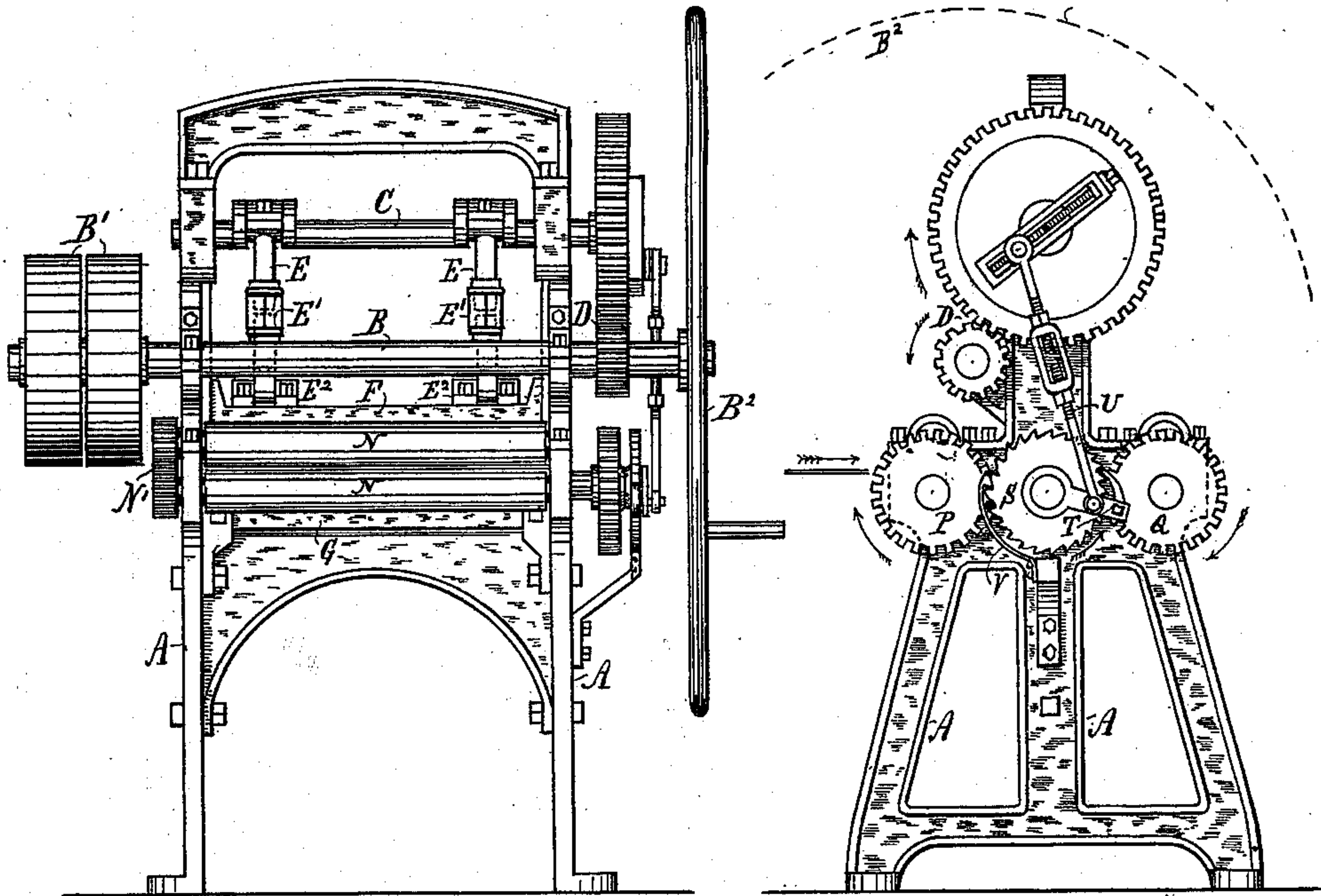


Fig. 1.

Fig. 2.

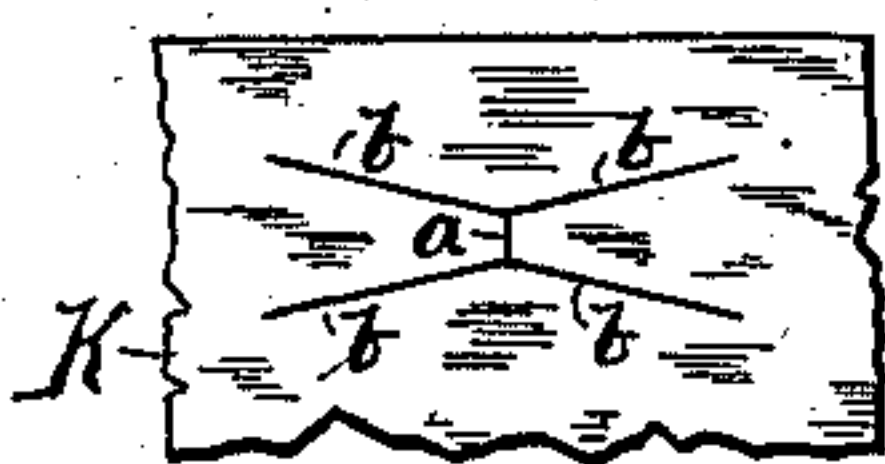


Fig. 3.

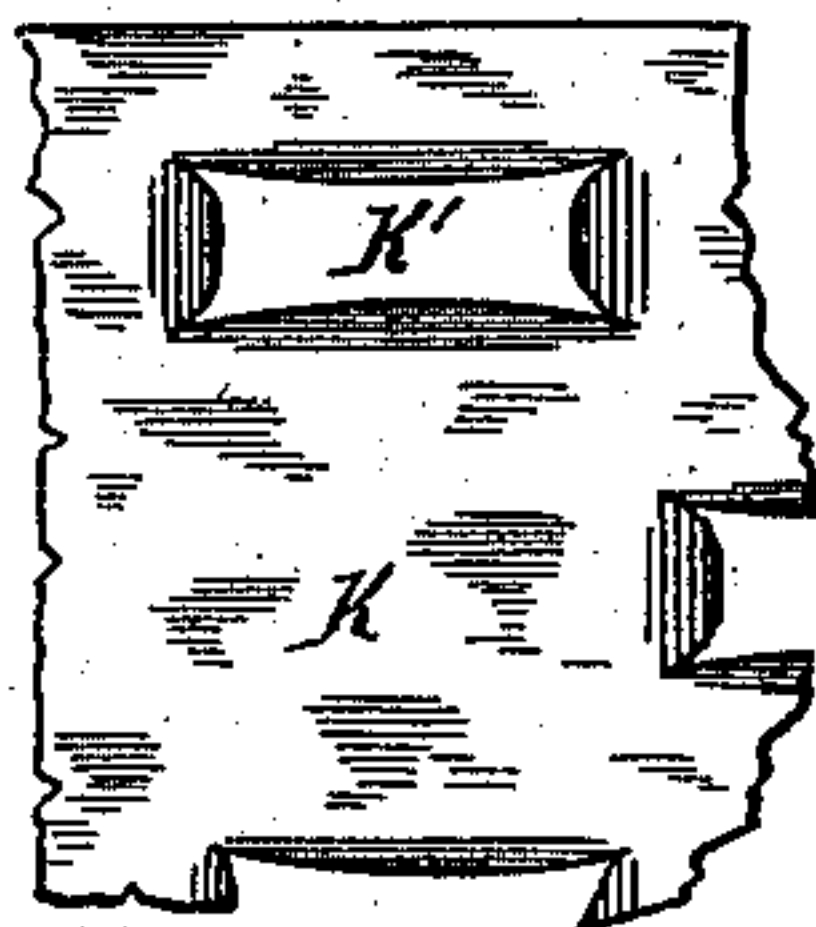


Fig. 4.

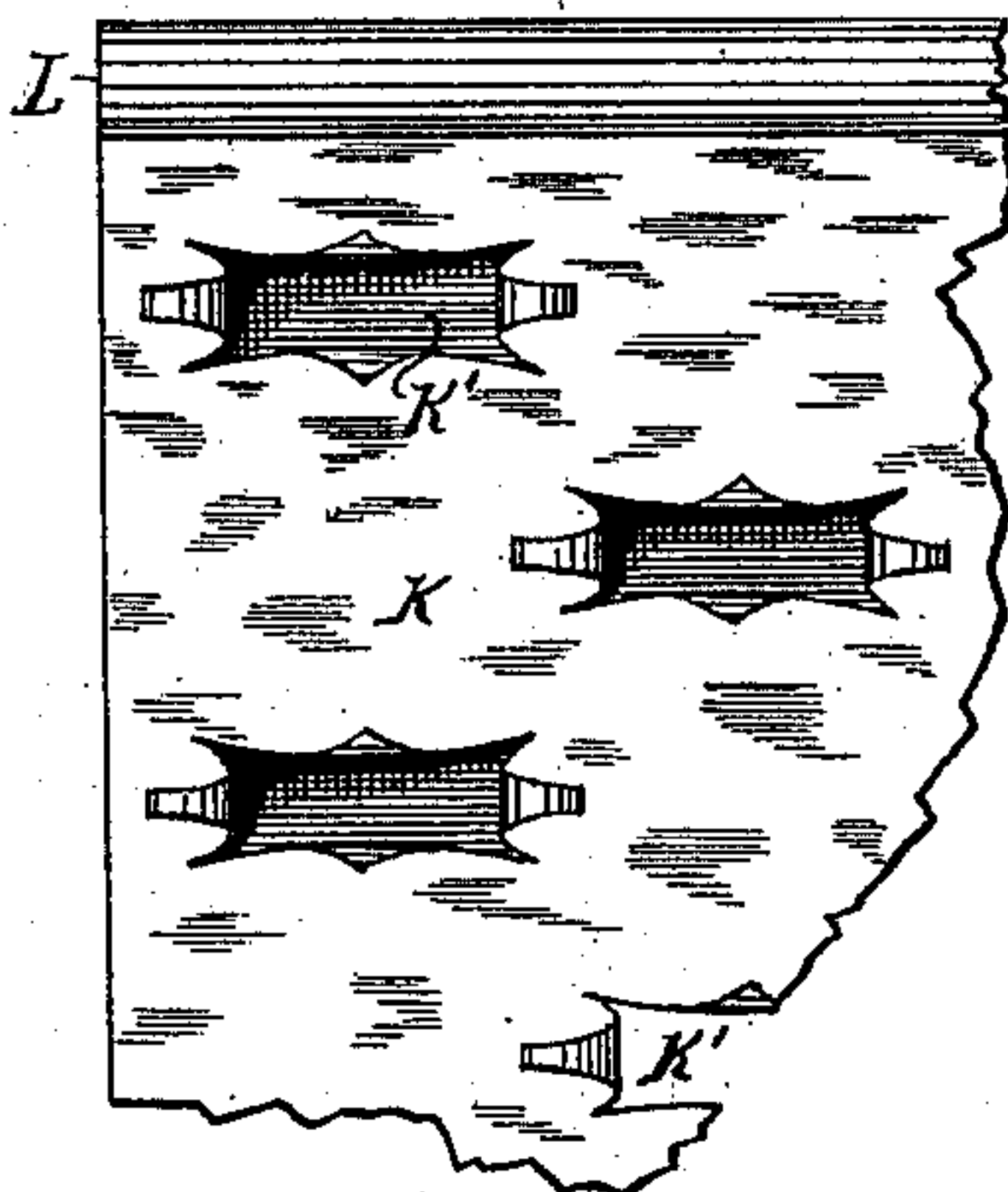


Fig. 5.

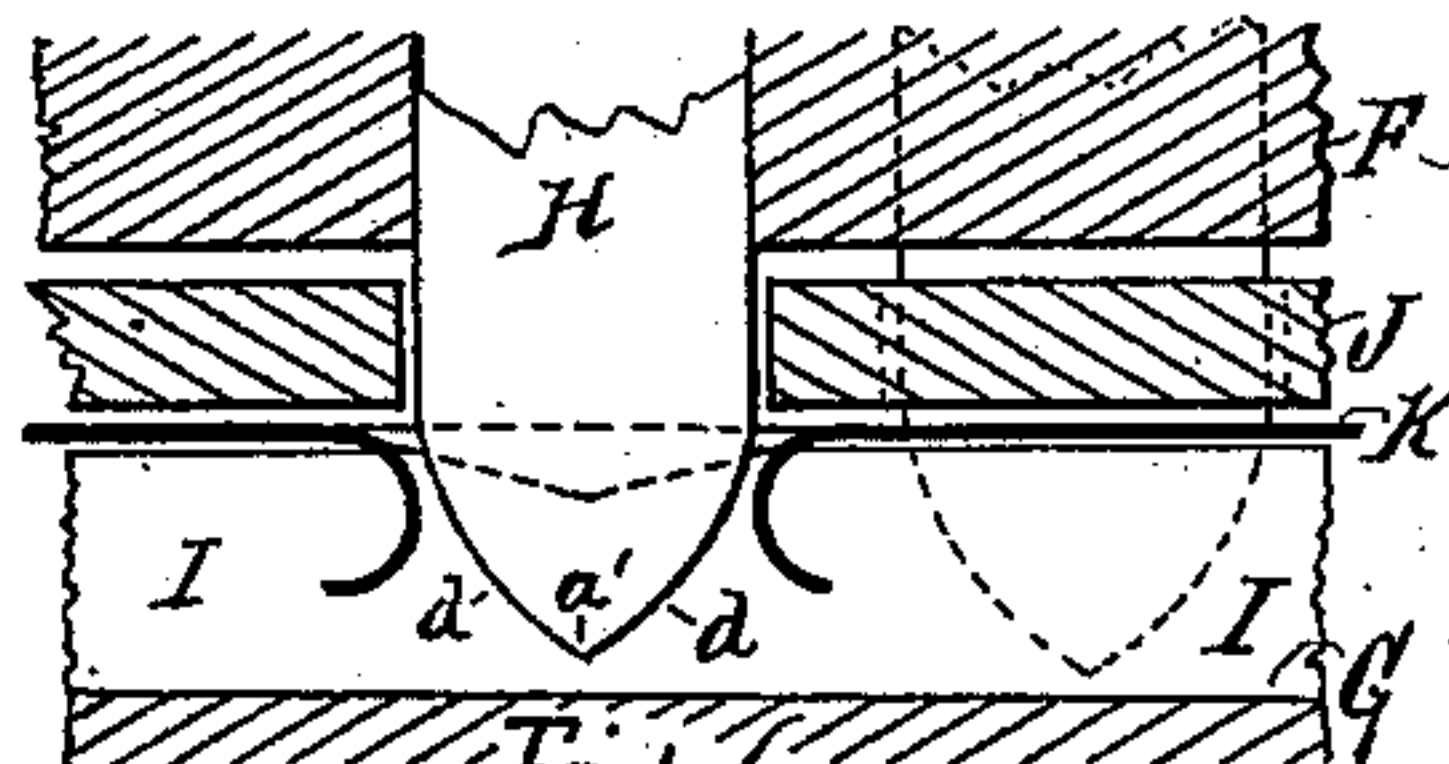


Fig. 6.

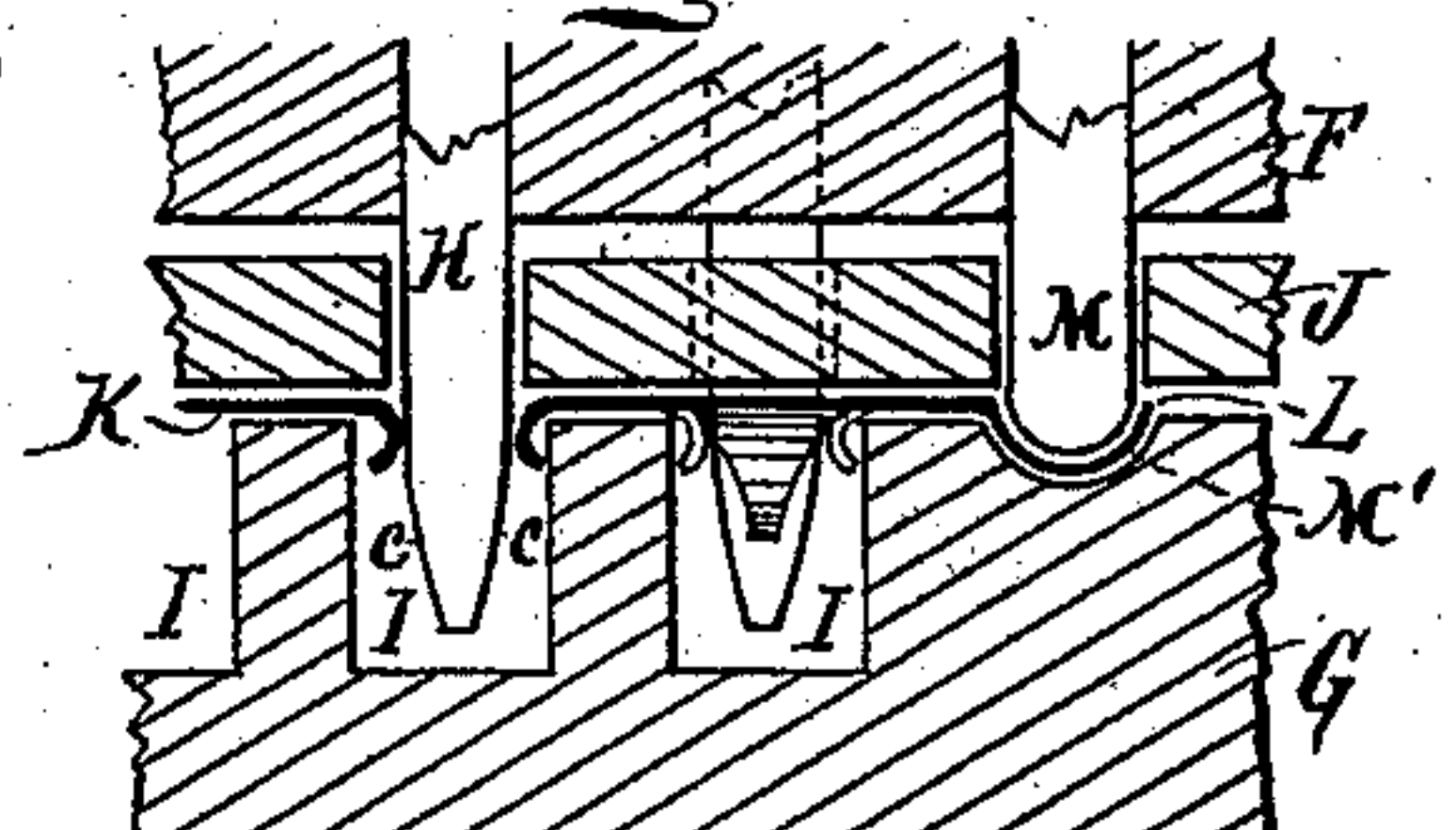


Fig. 7.

Witnesses.

August Erickson
James R. McAfee.

Inventor.

G. Hayes.

(No Model.)

2 Sheets—Sheet 2.

G. HAYES.

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No. 402,240.

Patented Apr. 30, 1889.

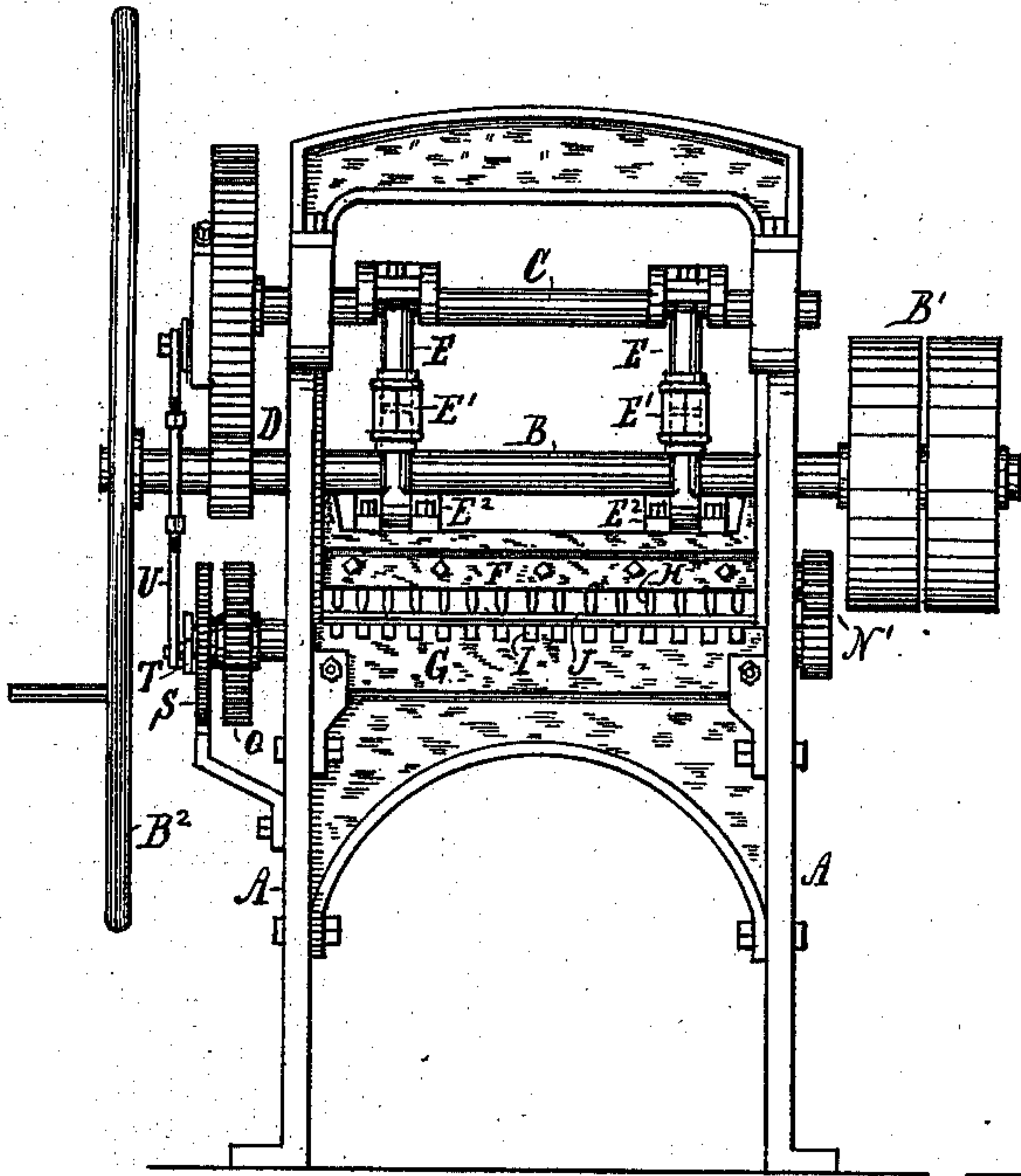


Fig. 8.

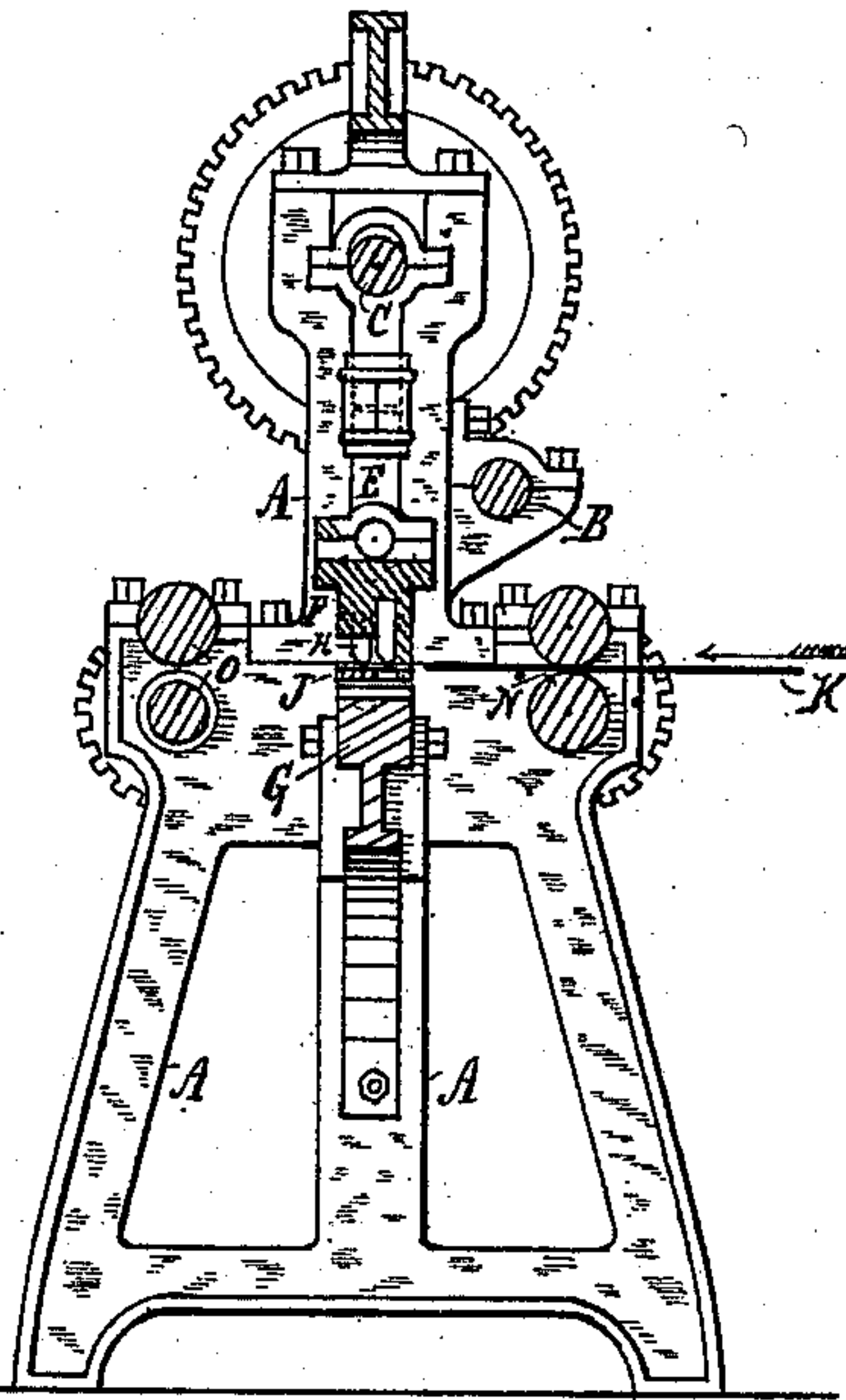


Fig. 9.

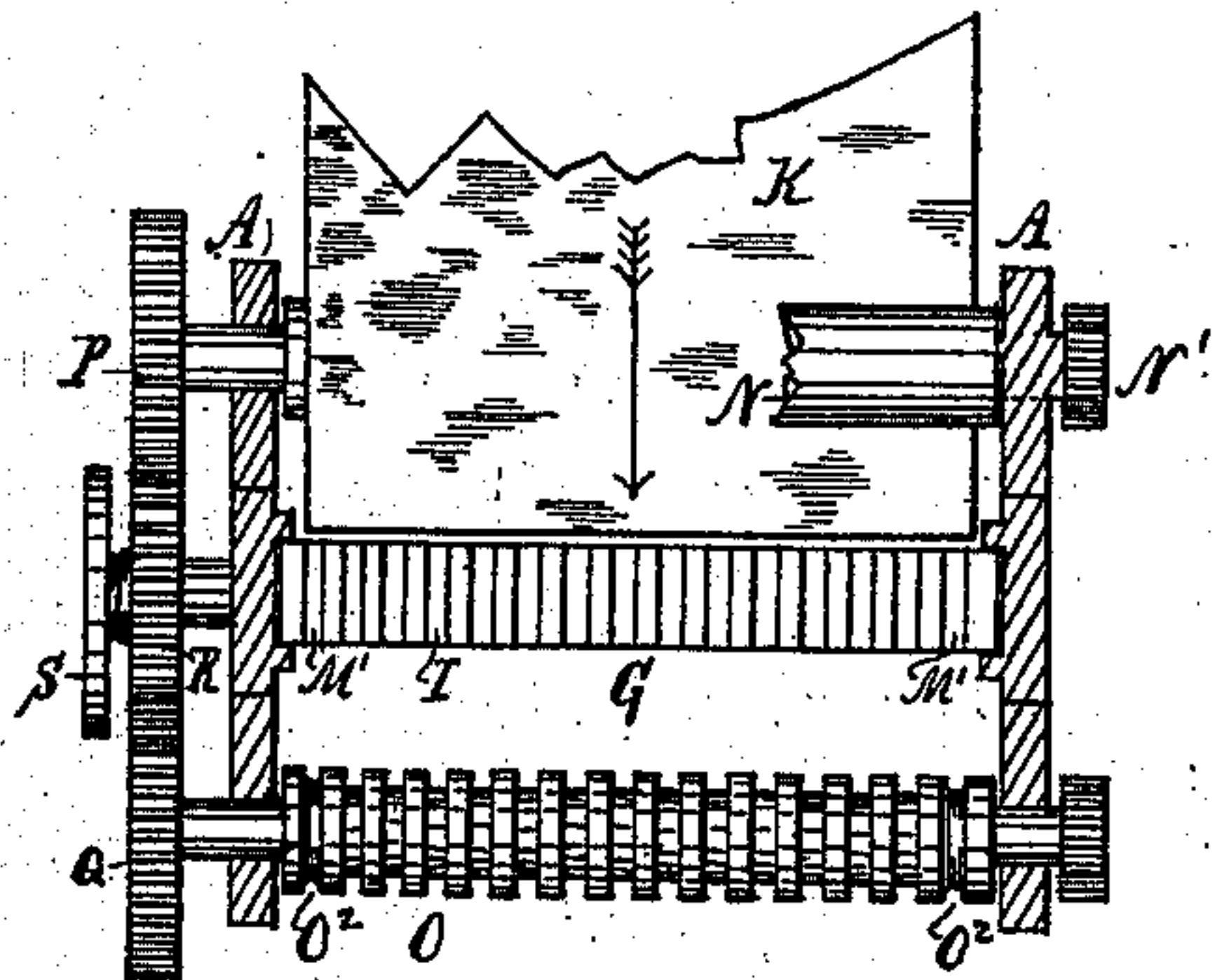


Fig. 10.

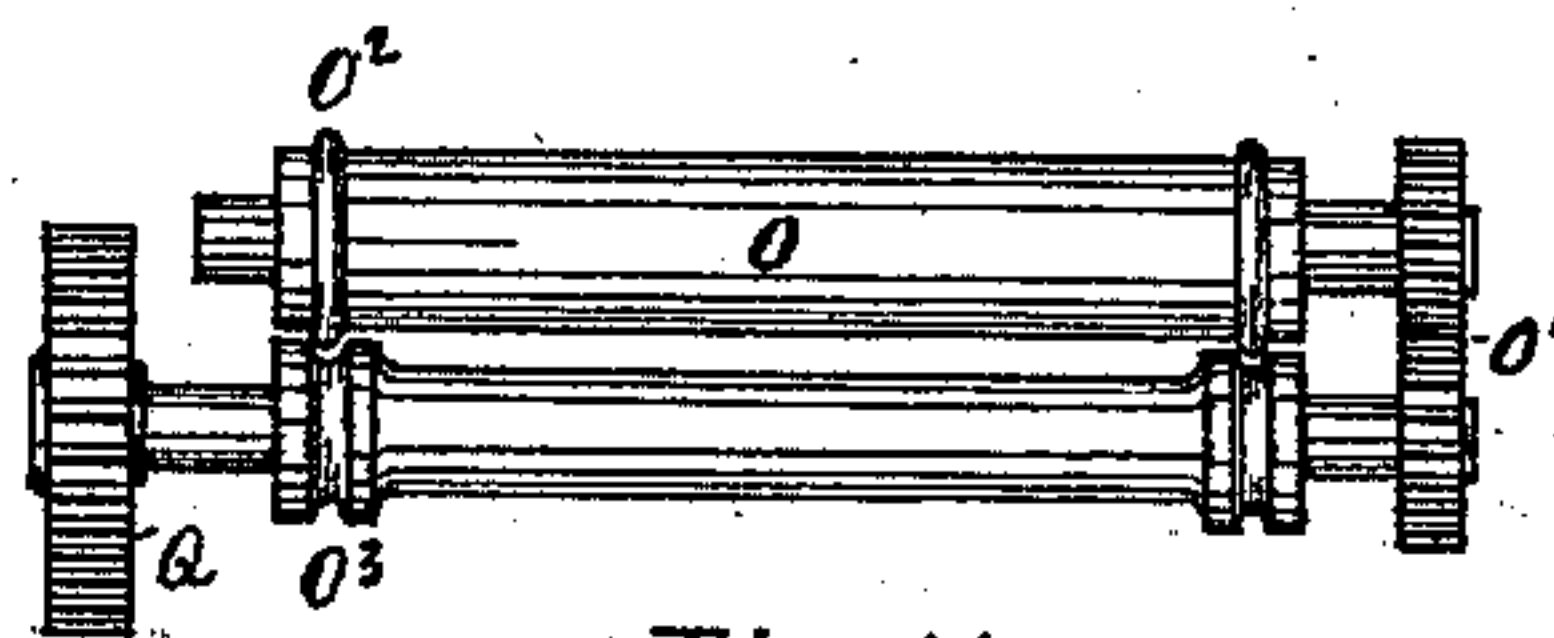


Fig. 11.

Witnesses.
August Erickson
James R. McAfee.

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UNITED STATES PATENT OFFICE.

GEORGE HAYES, OF NEW YORK, N. Y.

MACHINE FOR MAKING METALLIC LATHING.

SPECIFICATION forming part of Letters Patent No. 402,240, dated April 30, 1889.

Application filed November 26, 1888. Serial No. 291,845. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HAYES, a resident of the city, county, and State of New York, have invented a new and Improved Machine for Manufacturing Metallic Lathing, of which the following is a specification.

My invention relates to a machine specially made, designed, and adapted for the manufacture of metallic lathing; and it consists of the special devices and combinations of parts, as hereinafter fully described, reference being had to the accompanying drawings, in which—

Figure 1 represents a front elevation of the machine complete, being the feed-face. Fig. 2 is a side elevation of the same with fly-wheel removed and its position shown by dotted lines. Fig. 3 is a face view of a piece of sheet metal, showing the form of cut made by the dies of the machine while entering. Fig. 4 is a back view of a piece of metal after it has been passed through the dies of the machine and finished. Fig. 5 is a face view of a piece of sheet metal after being operated upon by the machine and therein finished for lathing purposes, by the formation of apertures with projecting tongues and lips. Fig. 6 is a sectional view of the parts which form the apertures, tongues, &c.—to wit, dies with portion of reciprocating carriage, stripper to prevent the sheet metal following the dies as they rise, and grooved bed upon which the metal lies stationary during the operation. A piece of metal is shown and the dies shown as down after having punctured the aperture and curled back the tongues. Fig. 7 is a sectional view of the parts shown in Fig. 6 on a plane at right angles thereto. An edging-die is also shown which forms a corrugation. Fig. 8 is a rear elevation or view of the discharging-face with rolls which draw out the sheet and finish edge corrugations removed to show the puncturing-dies, carriage, and bed. Fig. 9 is a vertical section of the machine from front to rear and showing a sheet of metal entering the machine. Fig. 10 is a horizontal section of the machine just above the bed, also showing sheet of metal entering the machine. This view shows the lower drawing-out and finishing roll at the rear grooved throughout its

length correspondingly with the grooved bed. Fig. 11 is a face view or elevation of the drawing-out and finishing rolls. In this case the lower roll is shown as having its central portion reduced in diameter instead of the grooving shown in Fig. 10. At the two ends are shown roll-dies as a part thereof, whereby the corrugations of the edges to the sheet are smoothed out and finished. The parts shown in Figs. 3, 4, 5, 6, and 7 are in full size.

On the drawings, A indicates the several parts of the machine constituting its framework, which may be of any suitable pattern.

B indicates the driving-shaft supplied with belt-pulleys at B', also fly-wheel B², either of which may be dispensed with when desirable.

C indicates the crank-shaft in gear with the driving-shaft by toothed wheels, as at D.

E indicates pitmen (of which there are two) connecting crank-shaft with a reciprocating carriage, F. The pitmen may be in one length or (when desirable) formed in two lengths with threaded sleeve, as at E', for adjustment as to length.

F indicates the carriage, with which dies are connected directly or indirectly by suitable means.

G indicates the bed beneath the dies, upon which the sheet of metal rests while receiving the stroke of the dies.

In Fig. 3 is shown the shape of the cut made by one of the dies as it enters, A being the first puncture, and b the cuts made by angles of the die. Fig. 4 shows the back of the sheet, which is uppermost during the passage through the machine, apertures having been formed, with the edge metal forced downward and with backward curl away from the die. Fig. 5 shows the face of the sheet adapted to receive plastering, apertures having been punctured with the edge metal turned outward and backward with a curl, forming tongues and lips; this face is always downward in the machine.

H indicates the dies, (shown full size in Figs. 6 and 7,) the first showing their form flatwise and the latter edgewise. Each die has its angles formed to cut the sheet metal as it enters, and all its faces convex about as at c

and *d*. The apex *a'* of the die is a cutting-edge also. The bed *G* is grooved to receive the downward thrust of the dies, also to accommodate the downward bending of the tongues, and also to allow of their passage outward. The grooves are indicated at *I*.

At *J* is shown a stripper-bar, slotted to allow the dies to pass downward. This stripper lies over the sheet of metal between it and the carriage. It serves to prevent the sheet sticking to the dies and rising there-with after the puncturing.

K indicates the sheet of sheet metal, and *K'* the apertures therein.

It will be seen that I set the dies in two rows, alternating, to provide that the apertures "break joint." Although I prefer to arrange them in this manner I do not confine myself to that method. The apertures, with their tongues, are formed complete with one downward stroke. To facilitate joining the sheets together upon a wall or other support for plastering, I form a corrugation at the edge, as at *L*. For this purpose dies are provided at each end of the carriage, as at *M*, having a rounded face. The groove of the bed immediately beneath is rounded also, to serve as a matrix. It is necessary that the sheet of metal should rest for the stroke downward of the dies, and move the proper distance as the dies rise to receive the next stroke. This movement is brought about by two feed-rolls at *N*, geared together at *N'*—upper and under rolls—which move the sheet forward to and through the dies, and two rolls at *O*, also upper and under, geared together at *O'*, which serve to draw out the sheet after it has left the feed-rolls *N*. The lowermost of the front and rear rolls are connected by gear-wheels *P* and *Q* and intermediate wheel, *R*. To the wheel *R* is applied a ratchet-wheel, *S*, with swinging pawl *T*, connected to the crank-shaft *C* by adjustable rod *U*, whereby intermittent motion is communicated to the rolls *N* and *O*.

I do not confine myself to the exact arrangement of pawl and connecting-rod, as any other analogous means may be substituted. A holdback-spring, to prevent backward motion of ratchet-wheel, is shown at *V*. The rolls *O* may be formed in two ways, as shown in Fig. 10, where the lowermost one is grooved throughout to correspond with the grooved bed *G*, or, as shown in Fig. 11, with the middle part reduced in size, as one wide groove. In either case I form the end grooves to the lower as a matrix, and the upper roll, provided with a male, to fit thereto, whereby a finish may be given to the corrugations formed by dies *M* at the edges of the sheet.

It is essential that the dies have curved faces terminating in a cutting-point or apex to enable them to enter and properly turn the edge metal; also, that all angles which enter the sheet metal be sharp to cut the metal

gradually while entering, without tearing away any portion to weaken the tongues. It is essential that the bed beneath shall be grooved to receive the downward thrust of the dies, to admit the projecting edge metal, (tongues and lips,) and permit of their free passage outwardly on a horizontal plane; also, that sufficiency of the metal surface of the bed be left to support the sheet metal, with shoulders to prevent further tear than desired. It is essential that rollers be provided to grip the sheet metal after it has left the feed-rollers and draw it outwardly on a horizontal plane, and that the lowermost roller be grooved or diminished in diameter centrally to permit of free passage for the projecting tongues and lips through without flattening them. It is essential that the feed and draw rollers operate in unison, and that they be moved only when the dies are out of the sheet, and remain quiescent during the puncturing, that the sheet metal may be at rest to receive the thrust. It is essential for corrugating the edges of the sheet metal that a pressing-die form the corrugation by a downward stroke corresponding with the thrust of the main dies while the sheet is at rest and held against lateral movement by the cutting-dies, and that the sheet be passed between roller-dies to finish and smooth out the grooves, for if the grooves were left to roller-dies for forming, the grooves might become uneven (or awry) under slight difference of tension. In such case side guides should be arranged outward to the rolls, which would tend to friction, and disarrange the proper feeding and exact timing requisite to bring the punctured apertures at regular and exact distances apart.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A machine for the manufacture of sheet-metal lathing, containing cutting-dies *H*, each die having its lower end formed with the cutting-edge or apex *a'*, and the convex faces *c* and *d*, also each having its upper end connected to a reciprocating carriage, *F*, the said carriage provided with moving mechanism giving it reciprocating motion, essentially as shown and described.

2. The combination of cutting-dies *H*, each having cutting-edge *a'*, also convex faces *c* and *d*, reciprocating carriage *F*, stripper *J*, and grooved bed *G*, essentially as shown and described.

3. The combination of dies *M* with carriage *F* and matrix *M'*, as and for the purpose set forth.

4. Shafts *B* and *C*, connected by gearing at *D*, pitmen *E*, carriage *F*, provided with dies *H*, stripper *J*, and grooved bed *G*, arranged and combined essentially as shown and described.

5. The shafts *C*, connecting-rod *U*, pawl *T*, ratchet-wheel *S*, gear-wheels *P*, *Q*, and *R*, with rollers *N* and rollers *O*, the lowermost of the latter being formed to admit free passage of

the punctured metal sheet through, all combined essentially as shown and described.

6. A die, H, rectangular in cross-section, having its one end formed with cutting-edge
5 (or apex) a' , and the two convex faces c , and the two convex faces d , as a device for puncturing sheet metal and turning outwardly and

backwardly the edge metal into form, as tongues and lips, essentially as shown and described.

GEO. HAYES.

Witnesses:

JAMES R. MCAFEE,
AUGUST ERICKSON.