

(No Model.)

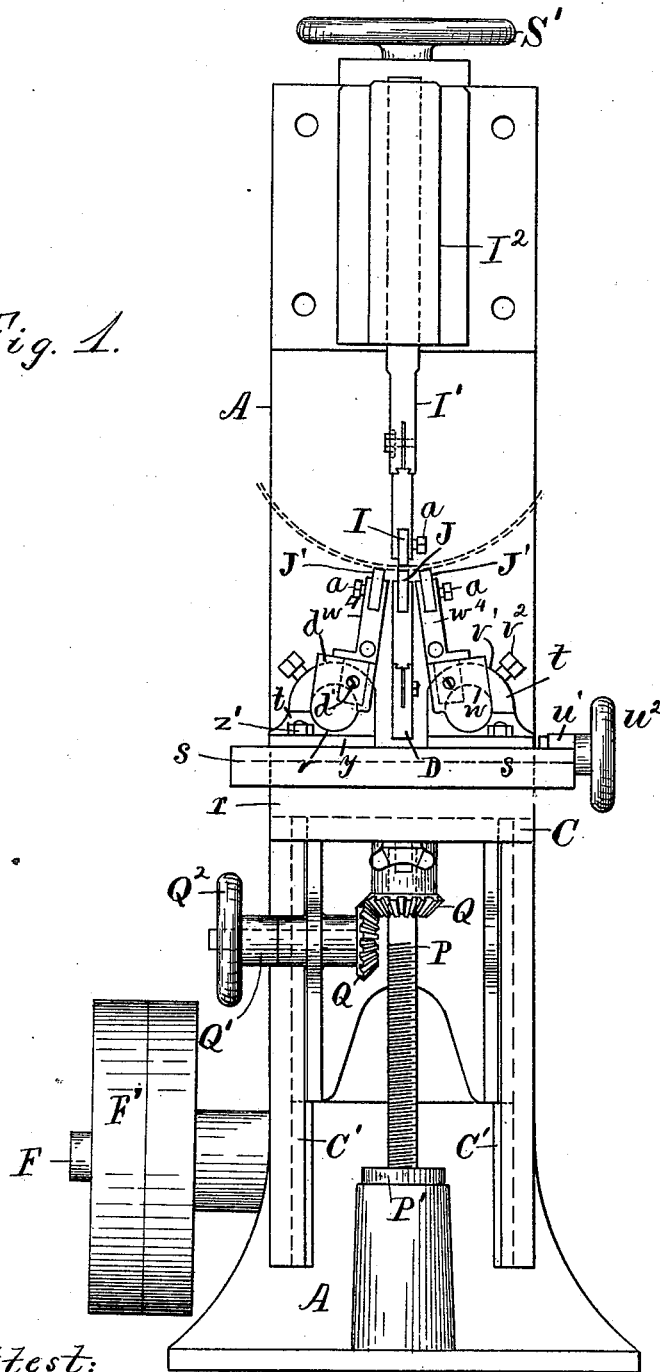
3 Sheets—Sheet 1.

F. M. LEAVITT.
SHEET METAL CRIMPING MACHINE.

No. 420,602.

Patented Feb. 4, 1890.

Fig. 1.



Attest:
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A. C. Fischer.

Inventor.
F. M. Leavitt
Crane & Miller, Attys.

(No Model.)

3 Sheets—Sheet 2.

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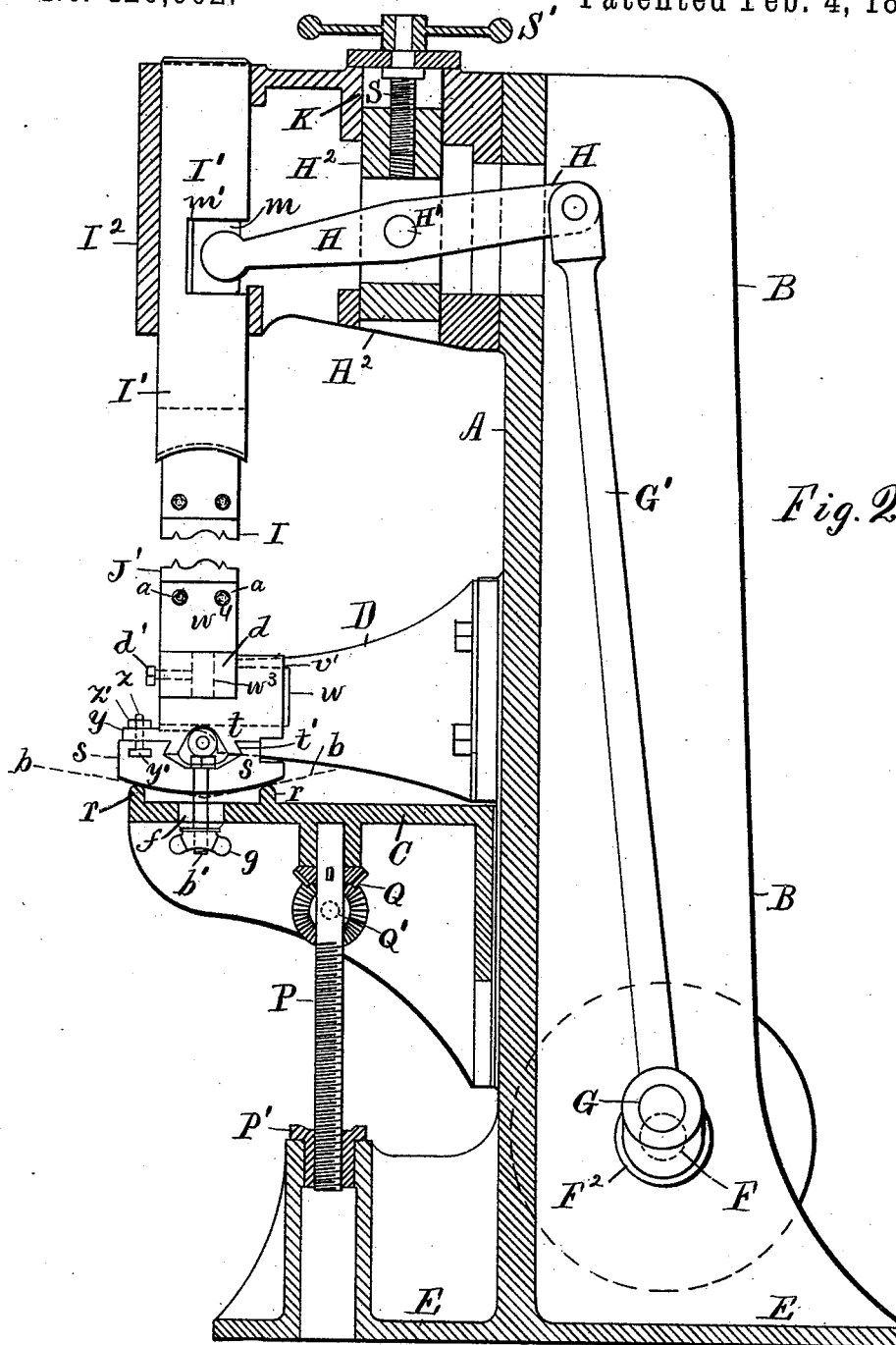


Fig. 2.

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Crane & Miller, attys.

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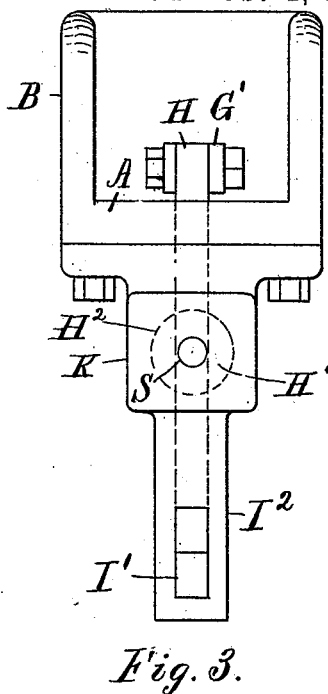
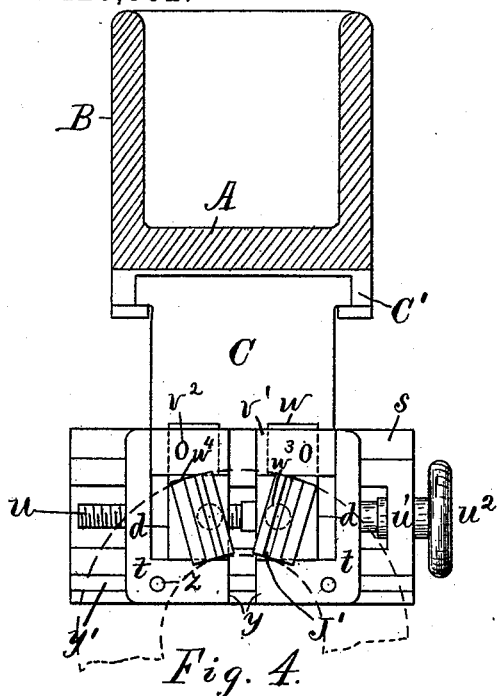


Fig. 5.

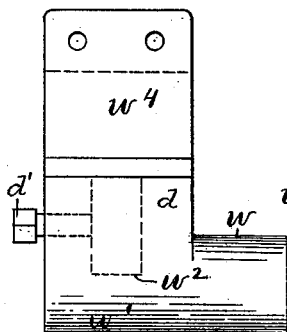
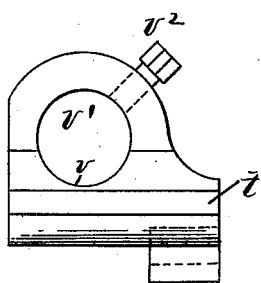


Fig. 7.

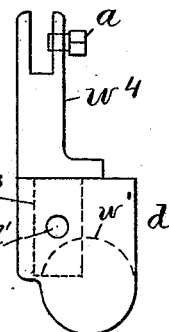


Fig. 6.

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UNITED STATES PATENT OFFICE.

FRANK M. LEAVITT, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE VULCAN COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

SHEET-METAL-CRIMPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 420,602, dated February 4, 1890.

Application filed February 9, 1889. Serial No. 299,280½. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. LEAVITT, a citizen of the United States, residing at Brooklyn, Kings county, State of New York, have invented certain new and useful Improvements in Sheet-Metal-Crimping Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention is intended as an improvement upon that claimed by A. O. Kittredge and T. S. Crane in application, Serial No. 298,796, filed February 6, 1889.

My invention consists partly in the means for adjusting the crimping-dies to and from one another, partly in the means for adjusting the lateral bending-dies to and from one another, and partly in a holder of particular construction for the lateral bending-dies. These improvements will be understood by reference to the annexed drawings, in which—

Figure 1 is a front elevation of a machine provided with my improvements. Fig. 2 is a side elevation of the same, partly in section, where hatched at the center line. Fig. 3 is a plan of the top end of the frame. Fig. 4 is a sectional plan of the frame, showing the lower crimping-dies and their supports. Fig. 5 is a front view of one of the holder-bearings for a lateral die. Fig. 6 is a front view of one of the holders for the lateral dies, and Fig. 7 is a side view of the same.

In the drawings, A is a heavy post adapted to sustain the principal operative parts of the machine. B are side flanges extending backward to brace the same.

C is a table to sustain the lateral crimping-dies J' and movable upon slides C' on the post A, and D a bracket projected from the post to sustain the lower crimping-die J.

E is the foot-plate of the machine; F, a crank-shaft provided with fast and loose pulleys F' to actuate the machine, and G a crank formed thereon and connected by rod G' with a walking-beam H for actuating the upper die I. The beam H is pivoted intermediate to its ends upon a fulcrum H', which is fixed in a movable plug H², adjustable in a socket K upon the post A by means of a screw S. The screw is journaled upon the post and

fitted to a nut in the plug H², and the fulcrum H' is shifted by rotating the screw S, which is shown in the drawings provided with the hand-wheel S', but may be actuated by other means, if desired. The adjustment of the fulcrum H' renders it possible by turning the screw S to adjust the upper die I to and from the lower die and the lateral dies while the machine is in operation, and the effect of the dies upon the sheet metal can thus be graduated at pleasure by the operator as the work progresses. The upper die I is shown carried by a vibrating holder I', which is fitted by a vertical sliding joint to a guide I², projected from the front of the column near the top. One end of the beam H is connected to the holder I' by a sliding box m, fitted to a transverse slot m' in the holder, and the rear end of the beam when vibrated by the rod G' transmits the desired vibratory motion to the die I to operate upon the sheet metal laid upon the lower die J. The bracket D projects from the front of the column at a suitable point to sustain the lower die just beneath the die I, and the table C is adjusted close beneath the bracket to sustain the lateral dies J' in suitable relation to the die J.

The table is provided with two parallel ribs r, running transverse to the dies to sustain a carrier s, which is of convex form where in contact with the ribs r, to adapt the lateral dies for an angular movement forward and backward in relation to the upper die. A bolt b' is secured in the carrier and projected through a slot f in the table to hold the carrier to the table when adjusted, a nut g being provided upon the outer end of the bolt to lock the same in the desired manner. Two holder-bearings t are fitted to guides t' upon the top of the carrier s, and a right and left hand screw u is fitted to a journal u' upon the carrier and to the two bearings to adjust them simultaneously to and from the central point. A hand-wheel u² is shown upon the screw to set the holders d, but a wrench may be used, if preferred. A flange y is shown formed upon each of the holders and projected over a T-slot y', formed in the carrier s to receive a bolt z, provided with nut z', by which the holders may be clamped upon the

carrier when properly adjusted. The holders are also shown provided with dovetailed projections to fit the guide t ; but any other form of projection may be used to guide the holders upon the carrier. Each of the holder-bearings is formed with a cylindrical recess v , terminated at one end in a socket v' , provided with a clamp-screw v^2 , and the holder d is formed with a cylindrical base w' , provided at one side with a shank w , adapted to fit the socket v' , to be clamped movably therein by the screw v^2 . The upper side of the holder is formed with a hole w^2 to fit a stud w^3 , to which is attached the clamp w^4 . This clamp is shown provided with set-screws a , the same as the holders for the dies I and J, and is thus adapted to hold the lateral die removably, as in similar constructions, so that any desired form of die may be applied to the machine at pleasure.

The bracket D is shown bolted firmly to the column, and is thus adapted to sustain the lower die J in a fixed position, while the upper die is movable to and from the same by the adjustable fulcrum H'.

In crimping curved moldings it is necessary to adjust the lateral dies vertically in relation to the die J, and the table C is therefore made movable upon the column in slides C', and is provided with an adjusting-screw P, fitted to a nut P', sustained upon the base of the machine and rotated by cog-wheels Q and a shaft Q', provided with hand-wheel Q².

The shaft and gears are affixed to the table so as to be movable therewith, and are thus readily accessible to the operator while holding the sheet metal between the dies. It will also be noticed that the screw S for adjusting the fulcrum H' is within reach of the operator and adjustable at any time during the crimping of the sheet metal.

The dies shown in the drawings are adapted to form an ogee molding, and the dies therefore require gradual adjustment toward one another as the metal is passed between them to crimp the entire length of the molding, and the object of the convex form of the carrier s is to tip the lateral dies in any desired relation to the other dies in forming such heavily-ribbed moldings. The convex side of the carrier is shown formed in the drawings concentric with a point adjacent to the operative edges of the dies, so that the centers of the lateral dies may be retained in the same relation to the centers of the other dies when the carrier is shifted.

Dotted lines b are shown drawn tangent to the ribs r and to the convex bottom of the carrier, and the bottom of the carrier may be thus shaped with the same effect as if curved.

The bearings v permit the tipping of the lateral dies to and from the lower die J, and the screws v^2 operate to hold them when adjusted at the desired angle, as in Fig. 1.

Set-screws d' are provided to hold the studs w^3 , which secure the clamps w^4 in the holders d , and such studs permit the adjustment

of the clamps and of the lateral dies in any horizontal angle when it is desired to form a curved molding with the dies. Such horizontal adjustment of the lateral dies is shown in Fig. 4, where dotted lines c represent the outline of a curved molding resting upon the dies and the proper adjustment of the dies for crimping such molding.

The bearings F² for the crank-shaft F are formed in the lower part of the flanges B, which are practically a part of the post A, and the crank-shaft is thus sustained low down upon the frame, where its vibrations will not affect the rigidity of the structure.

I hereby disclaim the application, Serial No. 298,796, filed by Kittredge and Crane, as my present improvements could not be used without employing the invention claimed in that said application. It is immaterial to my present invention how the lower die J be sustained, as my improvements in the die-holders relate chiefly to the means for supporting and adjusting the lateral dies.

Having thus set forth my invention, what I claim herein is—

1. In a sheet-metal-crimping machine, the combination, with crimping-dies, of a vertically-moving holder for the upper die, a beam H for reciprocating such holder, a crank and connecting-rod for vibrating the beam, a socket K upon the post, a movable plug B², fitted to the socket, the fulcrum H', fixed in the said plug, and a screw to adjust the plug in the socket, as and for the purpose set forth.

2. In a sheet-metal-crimping machine, the combination, with the movable die I and the lower die J, of a carrier provided with guides t' , holders fitted to such guides, a right-and-left screw journaled to the carrier for simultaneously adjusting the holders in the guides, and lateral dies held removably in the holders, as and for the purpose set forth.

3. In a sheet-metal-crimping machine, the combination, with the movable die I and the lower die J, of a carrier provided with guides t' , holders fitted to such guides, a right-and-left screw journaled to the carrier for simultaneously adjusting the holders in the guides, screws for clamping the holders upon the carrier when adjusted, and lateral dies held removably in the holders, as and for the purpose set forth.

4. In a sheet-metal-crimping machine, the combination, with the movable die I and the lower die J, of the die-holders d , provided with curved base w' and shank w , the bearings provided with curved recess v , socket v' , and set-screw v^2 to clamp the shank therein, and lateral dies J', held removably upon such holders, as and for the purpose set forth.

5. In a sheet-metal-crimping machine, the combination, with the movable die I and the lower die J, of the die-holders d , provided with curved base w' , shank w , and hole w^2 , the holder-bearings provided with curved recess v , socket v' , and set-screw v^2 , clamps w^4 ,

held adjustably in the holes w^3 by studs w^3 , and set-screws d' , and lateral dies secured in such clamps, as and for the purpose set forth.

6. In a sheet-metal-crimping machine, the
5 combination, with the movable die I and the lower die J, of the table C, provided with ribs r , arranged transversely to the dies, the carrier s , with convex bottom fitted to such ribs, the bolt b' , fitted to the carrier and the table
10 for clamping the carrier thereto, and suitable holders for sustaining the lateral dies upon the carrier, as and for the purpose set forth.

7. In a sheet-metal-crimping machine, the combination, with the movable die I and the
15 lower die J, of the table C, provided with ribs r , arranged transversely to the dies, the car-

rier s , with convex bottom fitted to such ribs, the bolt b' , fitted to the slot f in the table for clamping the carrier thereto, suitable holders sustained upon the carrier to hold the lateral
20 dies adjacent to the die J, the screw P, fitted to the nut P', attached to the base E, the gears Q, and the hand-shaft Q', journaled upon the table, as and for the purpose set forth.

25 In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANK M. LEAVITT.

Witnesses:

ANSON O. KITTEDGE,
JAMES WHITE.