(No Model.) 3 Sheets—Sheet 1.

J. J. SWEENEY.

MACHINE FOR MAKING PAPER LINED STOVE BOARDS.

No. 460,764. Patented Oct. 6, 1891.

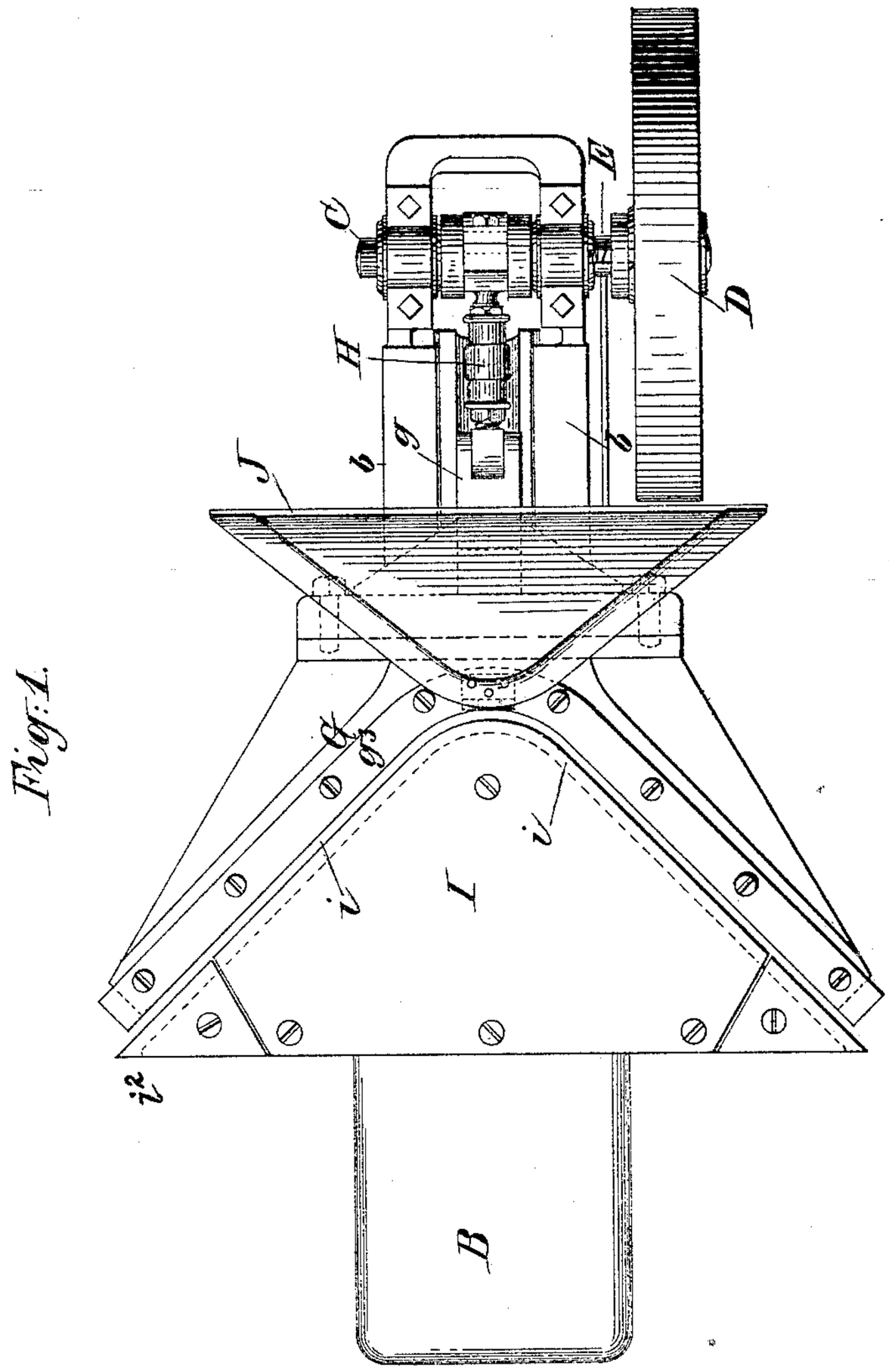

Fig. 1.

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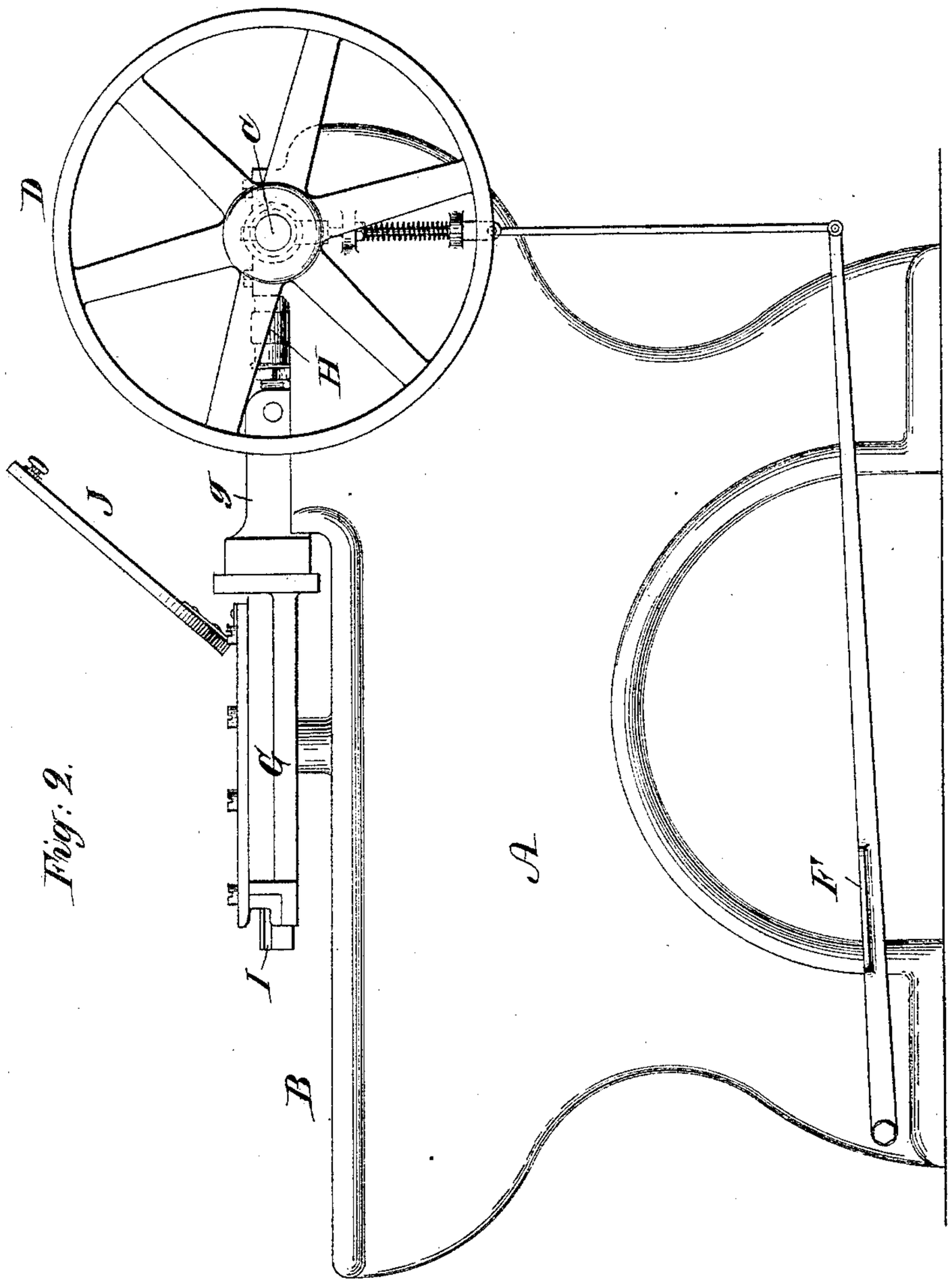

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

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Fig. 3.

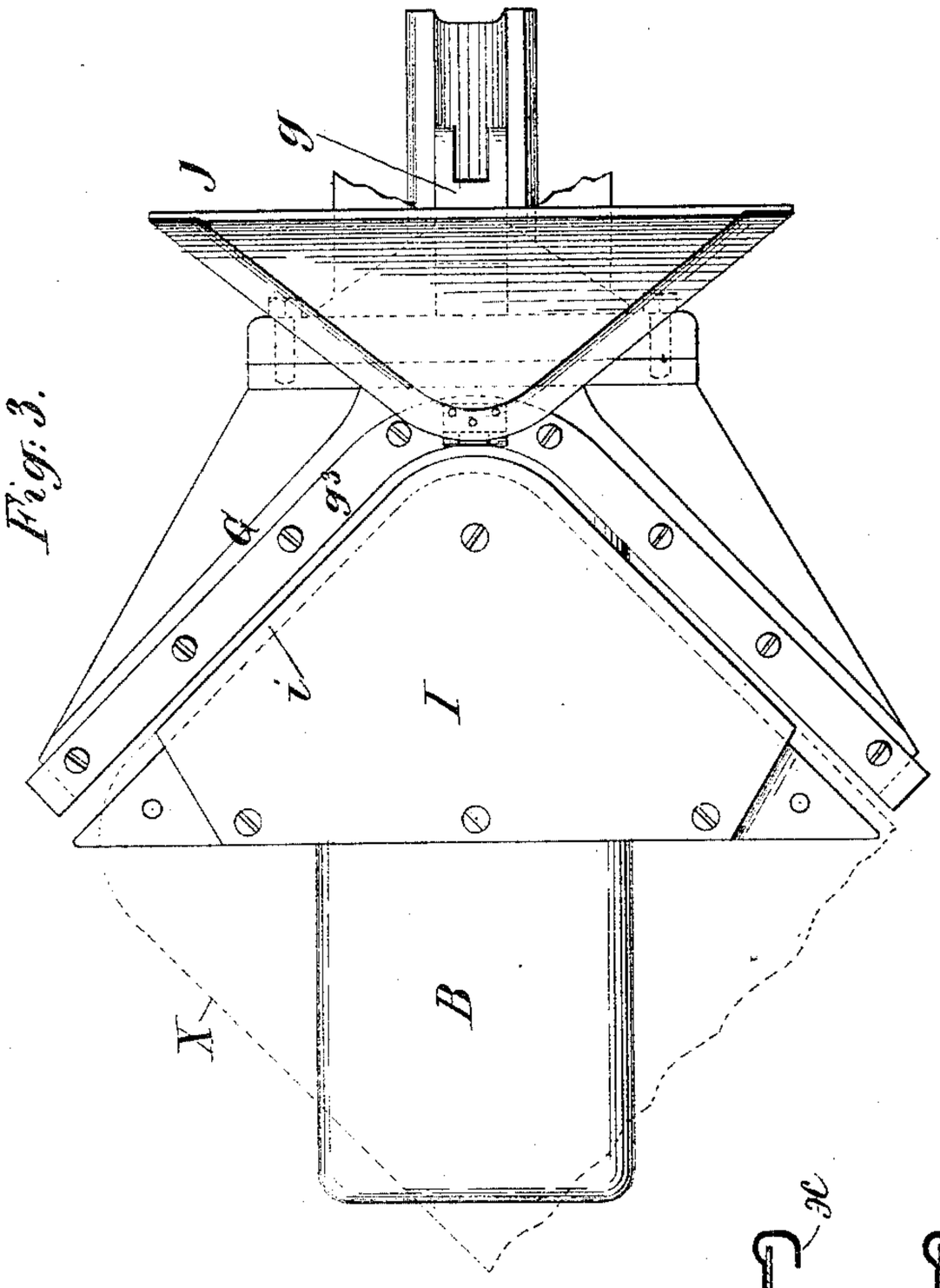

Fig. 4.

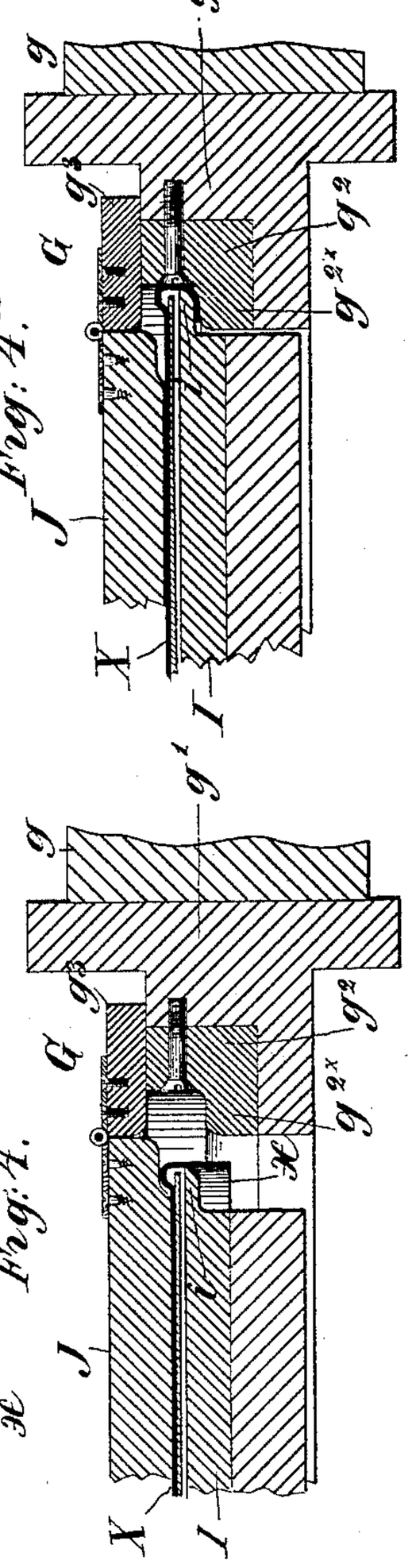

Fig. 4.ª

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

JOHN J. SWEENEY, OF NEW YORK, N. Y.

MACHINE FOR MAKING PAPER-LINED STOVE-BOARDS.

SPECIFICATION forming part of Letters Patent No. 460,764, dated October 6, 1891.

Application filed March 14, 1891. Serial No. 385,055. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. SWEENEY, a citizen of the United States, and a resident of New York city, New York, have invented certain new and useful Improvements in Machines for Use in Making Paper-Lined Stove-Boards, of which the following is a specification.

My invention relates to a machine to be employed in the manufacture of paper-lined stove-boards; and the purpose of the machine is to fold the marginal flange of the metal in over the paper at the back of the board. The machine is especially designed to operate on stove-boards of rectangular form with rounded corners, the metal employed being usually embossed tin-plate; but other sheet metals may be employed as well. In the manufacture of boards of this character the sheet of metal is cut to the proper size and contour, and the paper also cut to the proper size and contour. A flange is now turned from the edge of the former, said flange projecting back at right angles to the surface of the same, and a bead is simultaneously formed on the face of the board along the angle. I usually employ a die-press for turning this flange and forming the bead, the die operating on each of the four rounded corners in succession and including in its operation portions of the adjacent straight sides. Thus the sheet is flanged in four like operations of the die. After the sheet has been thus flanged and beaded the paper is pasted on its reverse side, and it is placed in the machine which forms the subject-matter of this invention. In four like operations this machine turns or folds the flange over the paper lining at the back of the sheet. The final operation on the board compresses the folded flange down smoothly upon the paper. This last operation I usually perform with a specially-constructed squeezing-die.

In the accompanying drawings my invention is represented as embodied in a machine of which—

Figure 1 is a plan, and Fig. 2 is a side elevation. Fig. 3 is a plan, similar to Fig. 1, of the main portion of the machine, representing the fixed die as it appears when the side extensions are removed therefrom. Figs. 4 and 4ª are sectional views of the dies on a larger scale, the former showing the reciprocating die retracted and the latter showing it advanced. Figs. 5 and 6 are fragmentary sectional views of the margin of the stove-board, the former showing it as it comes from the machine and the latter showing it as it appears when finished.

A represents the frame of the machine, and B is the bed thereof. In the frame is rotatively mounted the die-operating shaft C, which may be driven through the medium of a belt on the pulley D. This pulley is mounted loosely on shaft C, and a clutch E is provided whereby the operator may, by depressing a treadle F with his foot, put the pulley D in operative connection with the shaft C at will. A crank or eccentric in the shaft C is coupled to the reciprocating die G by means of a connecting-rod H.

The means shown for imparting reciprocating motion to a die, comprising the crank-shaft, connecting-rod, and pulley on the shaft, as well as the means whereby the operator controls this movement, comprising a clutch and treadle, are well-known mechanisms and will require no detailed description and illustration.

Mounted in a substantial and permanent manner on the bed B is the fixed die I. This die is also a support for the stove-board. It has by preference a triangular form with a rounded corner, its operating edge *i* being quite thin, measured vertically, and having exactly the contour, when seen in plan, of one corner of the board—that is, a rounded corner and straight sides tangent to the curve at the corner. I usually make the die I in two parts, the base-piece being of cast-iron and the top plate or die proper being of steel secured to the base-piece by screws or the like.

The reciprocating die G consists of a coupling-piece g, a bed-piece g', and the die-piece g^2, secured to the front of the face of the bed-piece, as seen in Figs. 4 and 4ª. This die-piece has precisely the same contour as the die I and fits up to the same, and it is provided along its operating-face with a projecting ledge or lip $g^{2\times}$, which passes under the edge *i* of the fixed die when the die G advances. On the die G is an overhanging strip g^3, to which is hinged a covering-flap J, adapted to be folded down flat upon the metal

board and held down firmly while the dies are operating.

I will now describe the operation of the machine. The operator takes the flanged metal board as it comes from the flanging-dies and with the paper pasted on its back and places it face up and flange down upon the stationary die I, being careful to place it so that the flange shall snugly embrace the operating edge *i* thereof. The stove-board X is represented in dotted lines in Fig. 3 in position on the fixed die I. The operator now folds down the flap J upon the placed board and holds it down firmly, when the several parts will appear as seen in Fig. 4, wherein *x* represents the flange on the edge of the board. He now depresses the treadle F with his foot, and this serves to set the shaft C in motion. The die G advances to the position seen in Fig. 4ª, the ledge or lip $g^{2\times}$ moving under the edge *i* of the stationary die and folding back the flange *x* of the metal board. The die G is now retracted and rests. The operator throws back the flap J, pushes the board X forward on the die I until the turned flange is clear of the edge *i*, and then lifts the board off. He now turns the board and by repetition of the operation described folds each of the remaining corners. After being removed from this machine the flange at the margin of the board appears as represented in Fig. 5. The board is then taken to the machine before referred to, where the flange is pressed down smoothly upon the paper, after which the margin of the board appears as represented in Fig. 6. It will be observed that if a line radial to the curve be drawn through the center of the curve at the rounded corner of the die I it will be parallel with the line of travel of the moving die, and that the straight sides of the die at each side of said line will be at like angles with the line of motion. Thus the moving die impinges directly and evenly on the rounded corner and insures the even folding of the metal at said corner.

As boards of several sizes are manufactured and as it is necessary at each folding operation to include the round corner of the board and a little more than one-half of each adjacent side, it follows that to adapt the machine to a considerable range of sizes of boards it is desirable to provide the die I or the upper plate thereof with removable extension-pieces i^2. (Seen in place in Fig. 1.) These are omitted from Fig. 3, the dotted lines representing a board of the smallest size capable of being treated by the machine. When the extension-pieces are on the die, the machine may be used on a board having a side nearly twice as long as the straight side of the die as extended. This construction provides for a range of sizes from the smallest to the largest boards usually made.

Other material than paper may be used for backing or lining the metal board, and this backing may be quite thin or have considerable thickness. I have referred to the paper lining as being applied to the metal after the preliminary flanging; but it may be applied to the metal before said flanging, if preferred.

The flap J holds the board down smoothly upon the die I and prevents it from buckling or bending during the folding of the flange.

Having thus described my invention, I claim—

1. In a machine for use in making sheet-metal stove-boards, the combination of an angular stationary die I, having a rounded corner and straight sides tangent to the curve at the corner and a thin operating edge *i*, and an angular reciprocating die G, provided with a die-piece g^2, corresponding in shape to the fixed die and having a lip to take under the operating edge of the latter when the dies are brought together, the stationary die having its straight sides arranged at like angles with the line of travel of the reciprocating die, as set forth.

2. In a machine for use in making stove-boards, the combination, with the angular stationary die I and the angular reciprocating die G, of the angular flap J, hinged on the die G and adapted to fold down upon the die I, substantially as and for the purpose set forth.

3. In a machine for use in making sheet-metal stove-boards, the combination, with the reciprocating die having the form described, of the stationary die I, having a rounded corner and straight sides tangent to said corner, said sides being shorter than those of the corresponding reciprocating die and provided with removable extension-pieces for prolonging its sides, substantially as and for the purposes set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN J. SWEENEY.

Witnesses:
HENRY CONNETT,
CHAS. A. WALSH.