(No Model.) 3 Sheets—Sheet 1.

J. J. SWEENEY.

MACHINE FOR MAKING STOVE BOARDS.

No. 454,951. Patented June 30, 1891.

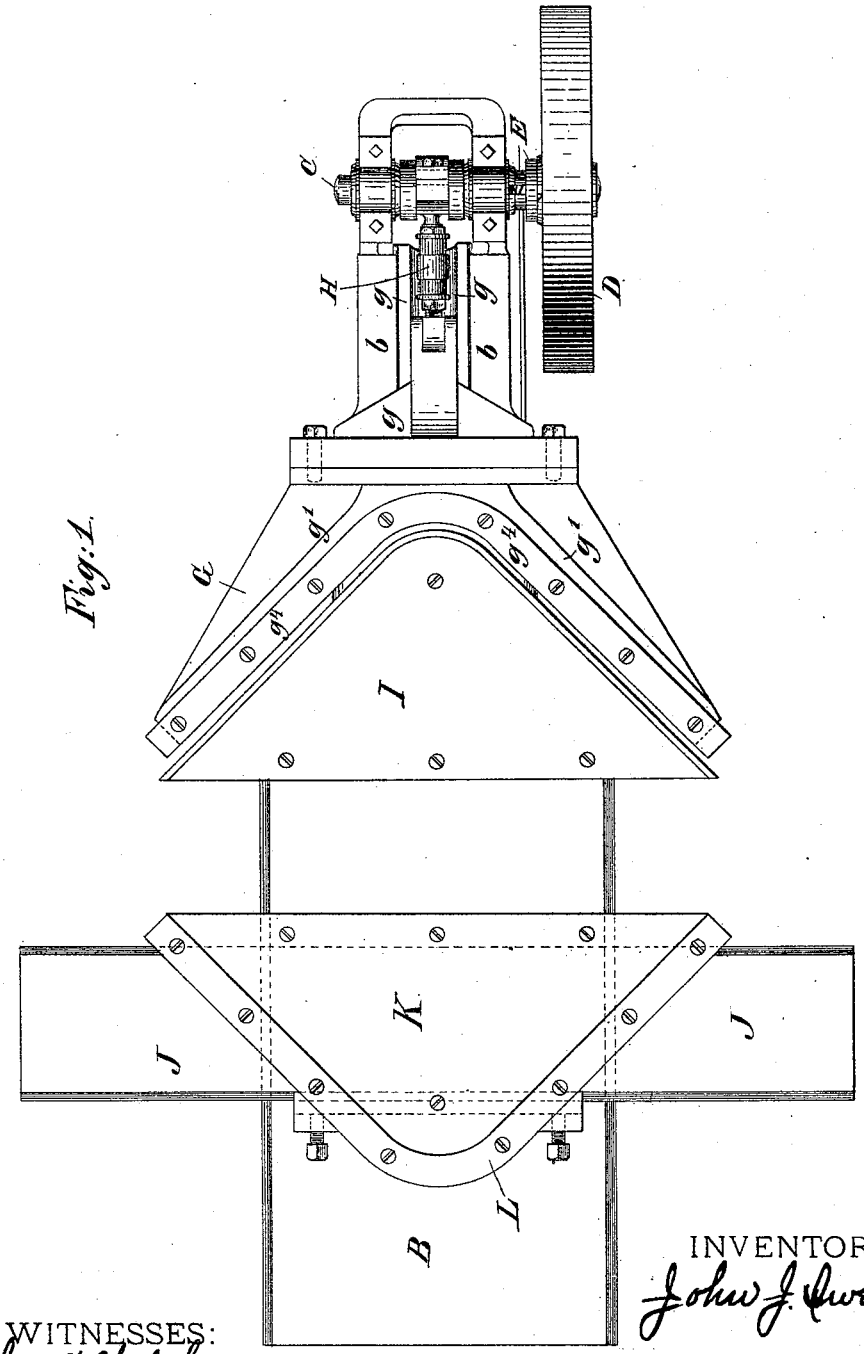

Fig. 1.

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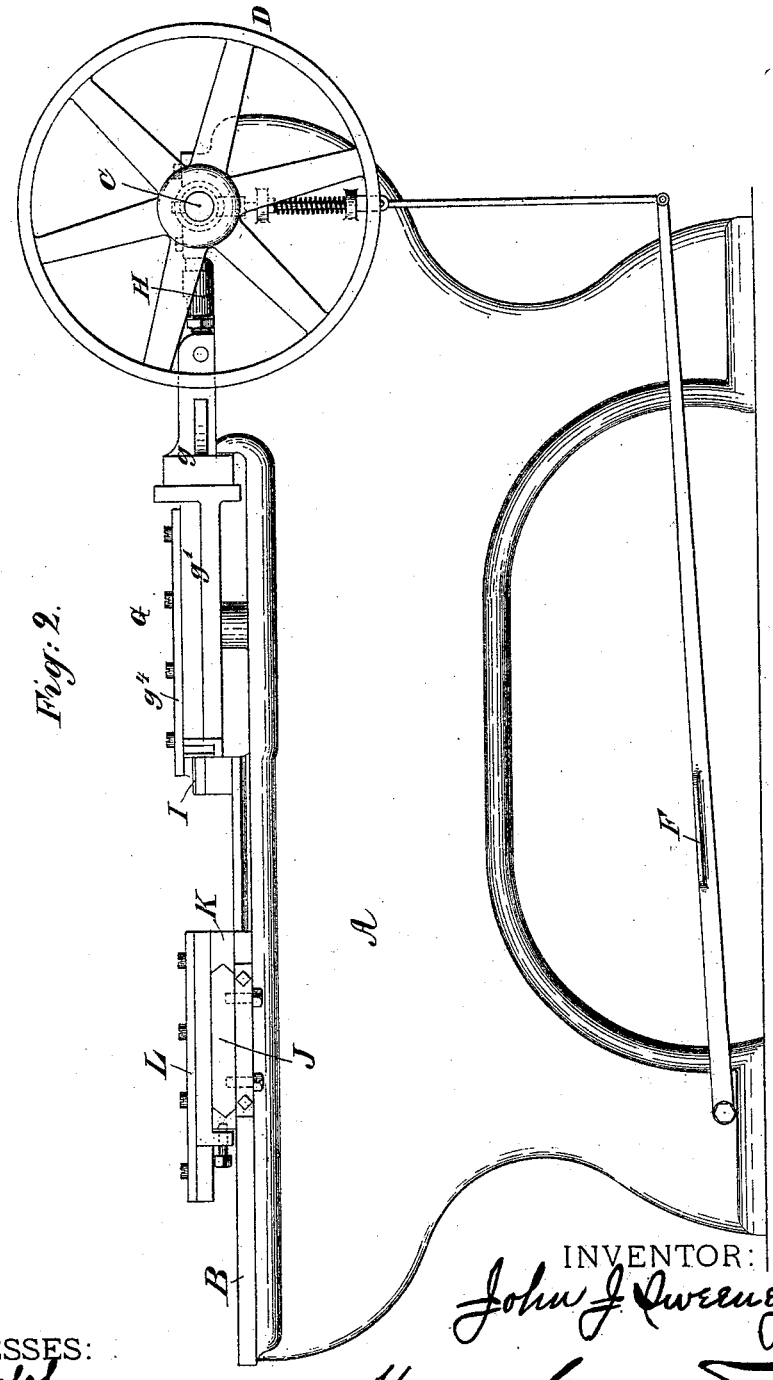

Fig: 2.

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(No Model.) 3 Sheets—Sheet 3.

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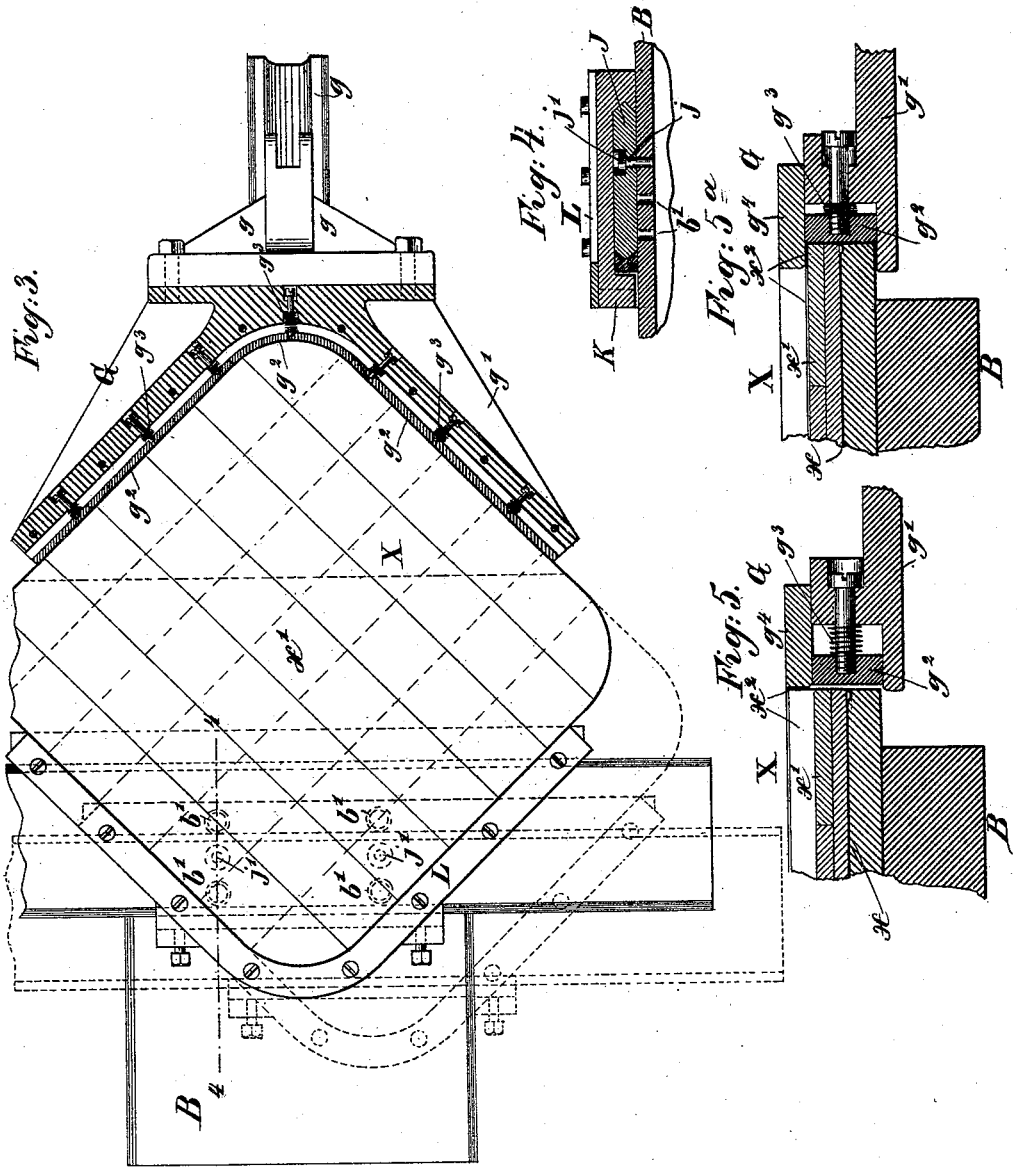

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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING STOVE-BOARDS.

SPECIFICATION forming part of Letters Patent No. 454,951, dated June 30, 1891.

Application filed March 14, 1891. Serial No. 385,056. (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 the city, county, and State of New York, have invented certain Improvements in Machines for Making Stove-Boards, of which the following is a specification.

My invention relates to a machine for making wood-lined stove-boards of rectangular form with rounded corners. In making this class of boards a sheet of metal of the proper shape has the flange turned back on its margin, said flange standing at right angles, or nearly so, to the face of the sheet. The lining or backing, which is usually of thin wood in two layers, with the grain crossed, is applied to the back of the sheet within the flange. The flange is then turned or folded down smoothly on the back of the lining, and this secures the metal and wood firmly together, the metal forming a binding over the edge of the wood.

The machine embodying my present invention has for its object the turning or folding of the flange on the metal down upon the wooden lining or backing of the stove-board, and it comprises as one of its most important features an angular die adapted to fold over the metal at each rounded corner and for a limited distance along the straight sides adjacent thereto at one operation, four operations of the die being required to complete the work on each rectangular board.

In the drawings which serve to illustrate my invention, Figure 1 is a plan of the machine, and Fig. 2 a side elevation thereof. Fig. 3 is a plan of the main portion of the machine, the folding-die being represented in horizontal section to illustrate the construction of he cushions. Fig. 4 is a fragmentary section on line 4 4 in Fig. 3. Figs. 5 and 5^a are fragmentary sectional views of the die, the stove-board, and the support for the latter on a larger scale than the principal figures. The first-named view shows the die retracted and the last-named shows it advanced.

A represents the substantial frame of the machine, and B the bed of the same. At one end of the machine is rotatively mounted a shaft C, which may be driven through the medium of a belt on the pulley D, mounted loosely on said shaft and adapted to be connected operatively therewith by an ordinary clutch E. Normally the pulley rotates freely on the shaft; but, when the operator depresses the treadle F the clutch connects the shaft and pulley and the latter drives the former. In the shaft C is a crank, which is coupled to a reciprocating die G through the medium of a connecting-rod H. I make no claim to this mechanism for imparting reciprocating motion to a die, nor to the clutch and treadle devices, as these are well known in this general class of machines; and any other suitable mechanism for imparting motion to the die G may be substituted for that herein shown.

Mounted on the bed B of the machine is a support I for the stove-board, which latter is represented in Figs. 3, 5, and 5^a and designated as a whole by the letter X. The support I may be triangular, with its corner which is presented to the die rounded, as shown. The die G is angular in form, as herein shown, it being of the same contour as the rounded corner of the stove-board X. The die comprises a coupling-piece g, which is mounted in guides b on the machine-bed, a base-piece g', which may be secured removably to the coupling-piece by bolts or screws, cushions g^2, mounted on the face of the piece g' and backed by springs g^3, and an angular folding-plate g^4, secured to the base-piece g', preferably by screws. This folding-plate projects over or above the set of yielding cushions g^2 beneath it, and when the die advances said plate moves over the top of the board and folds the upwardly-projecting flange on the metal down upon the wooden backing of the board.

It is necessary in this machine to provide an abutment at the back of the stove-board to hold it against slipping when the die is operating and to resist the pressure of the die in folding the metal, and as the machine is designed to operate on stove-boards of different dimensions and proportions it is also important that this abutment be made adjustable. The adjustable abutment I employ will now be described.

The bed B forms a dovetailed guide and support for a transversely-arranged guide-plate J, which may be moved or shifted along the bed longitudinally thereof and fixed in position thereon at the point desired by any suitable means. The means herein shown (see Figs. 3 and 4) comprises two sets of holes

b' in the bed B, two holes j in the plate J, corresponding with the respective sets or rows of holes in the bed, and two pins j' for insertion in the holes which register in order to lock the bed and guide-plate together. One set or row of holes in the bed, one corresponding hole in the guide-plate, and one pin would serve; but I prefer two of each, as it steadies the parts the better. The holes b' in the row in the bed B are so spaced as to adapt the adjustment to the different sizes of boards made. Mounted to slide on and longitudinally of the guide-plate J and transversely of the machine is a bed-piece K, on which is secured an angular plate forming the abutment L. I do not find it essential to provide means for securing the bed-piece K to the plate J, as it will adapt itself to the stove-board operated on and will not shift when the die is operating after it shall have once reached the proper position.

Having described the construction of the machine, I will now explain its operation. The operator first sets the guide-plate J on the bed B to suit the particular size of stove-board he is making and secures it in place with the pins j'. He then moves the abutment transversely along the guide J to approximately the proper position, and the machine is in condition for use. He takes a sheet of the flanged metal x and places within the flange thereon a wooden backing or lining x', which should fit snugly. The board is now placed on the support I face down, the wooden backing being uppermost and the rear corner of the board resting against the abutment L. The position of the board is clearly represented in Fig. 3. The operator now depresses the treadle F, which acts through the clutch E to set the shaft C in motion. The die G now advances and the cushions g^2 strike the edge of the board, and their forward movement being arrested their springs g^3 are compressed. The folding-plate g^4 moves on over the upper face of the wooden backing and folds the flange x^2 of the metal down upon said backing. When the die shall have completed its forward stroke, it is at once retracted and stops.

Fig. 5 shows the position of the parts when the board is in position to be operated on and the die retracted, and Fig. 5^a shows the position of the same parts when the die is at the end of its forward stroke.

The operation described folds the metal flange down at one corner of the board and part way along the adjacent straight sides, and four of such operations are required on each rectangular board. It is essential that the lateral branches of the angular die G shall extend a little more than half-way along the straight sides of the largest board; but they may extend farther, and will do so in the case of the smaller boards.

There are three cushions g^2, two straight lateral cushions and a central curved cushion. These are clearly illustrated in Fig. 3.

It will be seen that the die G is so situated and operated that the path in which it moves is at an angle of forty-five degrees with the straight sides of the folding-plate g^4, and consequently at the same angle with the sides of the stove-board adjacent to the rounded corner presented to the die. The axis of the path of the die also coincides with that radius of the curve at the corner of the board which bisects or halves the curve. This presentation of the rounded corner of the board to the die is important, as the difficulty in folding the metal down on the wood is at the rounded corners, where the metal must be slightly gathered or crimped.

I have described the construction of my machine as applicable to folding the sheet metal on a rectangular board with rounded corners, in which case the angles will all be right angles; but it will be obvious that the machine will operate equally well on any board, whether rectangular, triangular, or polygonal, provided the angles of the corners are similar, so that the same die G may fold the metal at all the corners. As herein shown, the straight sides of this die stand at an angle of ninety degrees with each other; but they may stand at some other angle. For work on boards of regular hexagonal form they would stand at an angle of one hundred and twenty degrees with each other, and six operations would be required to complete the board. The abutment L should conform in shape to the die G.

Having thus described my invention, I claim—

1. In a machine for use in making stove-boards, the combination, with the bed B and an angular rear abutment L for the board, said abutment being adjustable longitudinally and transversely of the machine-bed, of a support I for the board and the reciprocating angular die G, said die being adapted to fold the metal at the rounded corner and adjacent sides of the board, as set forth.

2. In a machine for use in making stove-boards, the combination, with the bed B and the support for the stove-board thereon, of the transversely-arranged guide-plate J, mounted in sliding bearings on the bed and adapted for adjustment longitudinally on said bed, means for securing said plate to the bed, the bed-piece K, mounted in sliding bearings on the plate J and adapted for adjustment lengthwise on the same, the angular abutment L on said bed-piece, and the reciprocating die for folding the metal down upon the wood lining of the board, substantially as 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.