

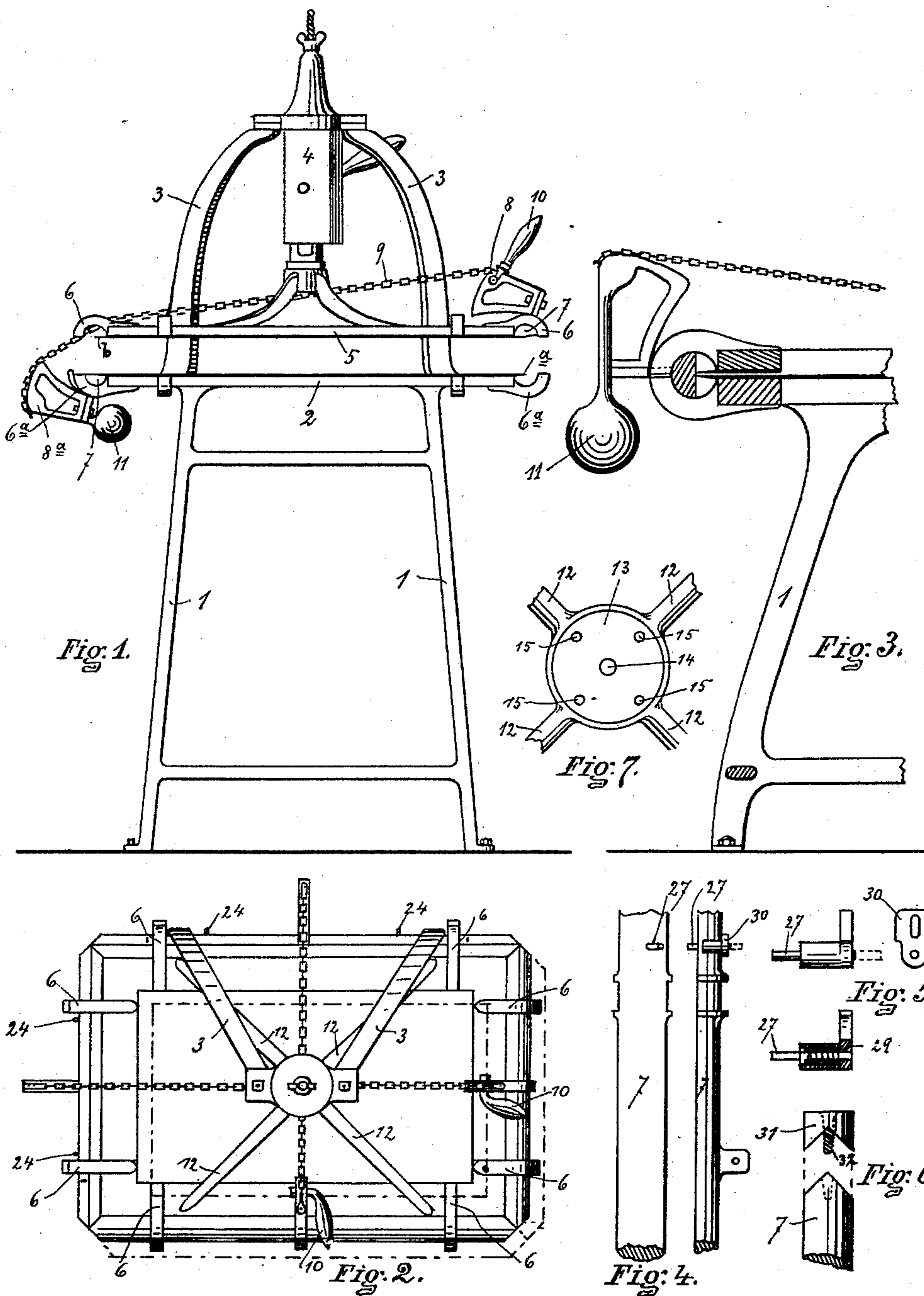
(No Model.)

2 Sheets—Sheet 1.

M. E. HASTINGS.  
SHEET METAL FOLDING MACHINE.

No. 485,192.

Patented Nov. 1, 1892.



WITNESSES.

Rich. A. George.

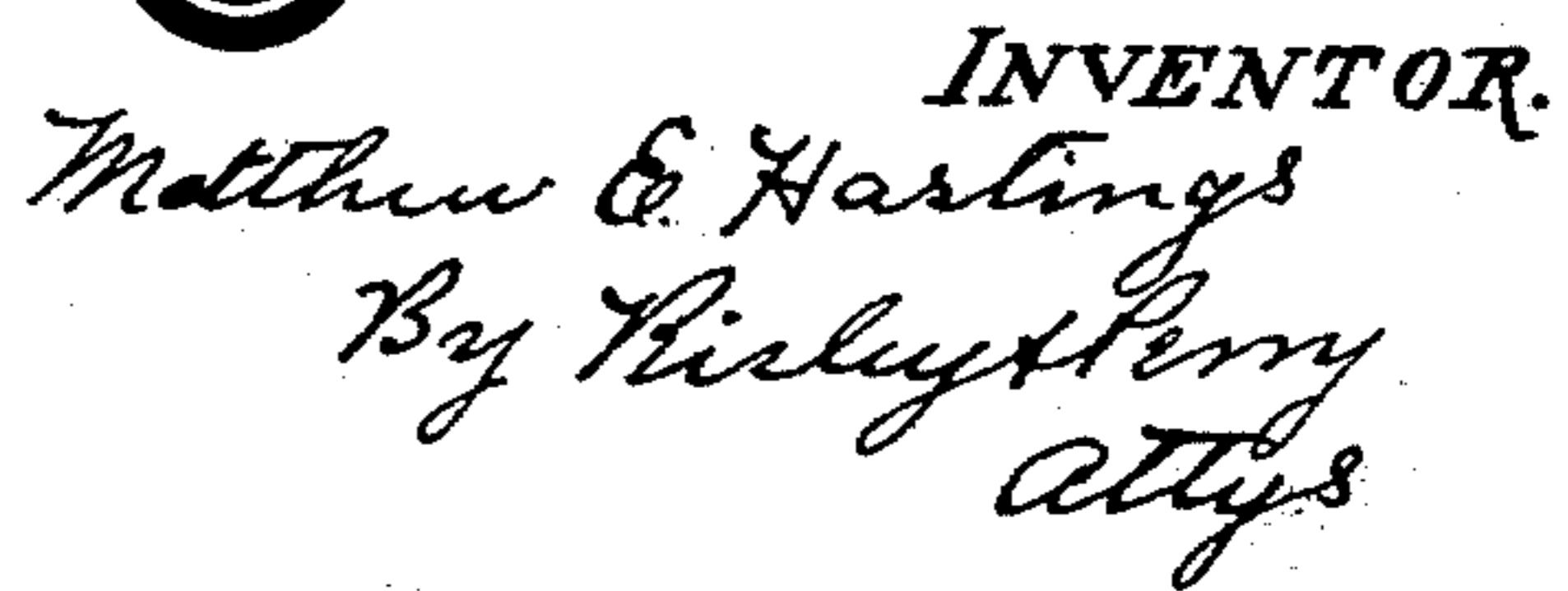
McRobinson

INVENTOR.

Matthew E. Hastings  
By Pirley & Perry  
Attys

2 Sheets—Sheet 2.

Patented Nov. 1, 1892.



# UNITED STATES PATENT OFFICE.

MATTHEW EMERY HASTINGS, OF NEW YORK MILLS, NEW YORK, ASSIGNOR  
OF ONE-HALF TO W. STUART WALCOTT, OF SAME PLACE.

## SHEET-METAL-FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 485,192, dated November 1, 1892.

Application filed December 12, 1891. Serial No. 414,888. (No model.)

*To all whom it may concern:*

Be it known that I, MATTHEW EMERY HASTINGS, of New York Mills, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Sheet-Metal-Folding Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and numerals of reference marked thereon, which form part of this specification.

My invention relates to an improvement in sheet-metal-folding machines.

In the drawings which accompany and form part of this specification, and in which similar letters and numerals of reference refer to corresponding parts in the several figures, Figure 1 shows a front elevation of my machine with one set of the turning-brakes removed. Fig. 2 shows a top view of the machine with all the brakes and mechanism in position. Fig. 3 shows a view partially in section showing the brake in half-turned position. Fig. 4 shows a brake removed from the machine. Fig. 5 shows a gage mounted in the brake for regulating the position of the sheet being operated upon by the machine. Fig. 6 shows a section of a brake and an extension-piece adapted to be applied to the end of the brake. Fig. 7 shows a section of the mounting of the presser-plate. Fig. 8 shows mechanism for operating the presser-plate in the position which it assumes, with the presser-plate resting on the table. Fig. 9 shows the same parts with the presser-plate raised from the table. Fig. 10 shows a side view of the head which receives the mechanism for operating the presser-plate. Fig. 11 shows a side view of the machine, being on a quarter-turn from the position shown in Fig. 1. Fig. 12 shows a cross-section on line A B of Fig. 8. Fig. 13 shows a cross-section on line C D of Fig. 8. Fig. 14 shows a portion of the table, a portion of the presser-plate with a sheet of metal between them, and a brake for turning the edge of the sheet in the position at the completion of the turning opera-

tion; also, the bearings in which the brakes are mounted and a gage for regulating the position of the sheet in the machine. Fig. 15 shows the same parts shown in Fig. 14 at the beginning of the operation of turning and folding the sheet.

Referring more particularly to the reference letters and numerals marked on the drawings in a more particular description of the device, 1 indicates a frame on which is mounted a table 2, and from the frame extend upwardly-projecting and curved arms 3, which carry a head 4, in which is mounted mechanism for operating the presser-plate 5, which presser-plate is of the size of the table and is provided with halved bearings 6, adapted to form with the halved bearings 6<sup>a</sup>, mounted on the table, a complete bearing when the presser-plate is in engagement with the table. In the bearing composed of 6 and 6<sup>a</sup> are mounted the brakes 7 for turning the edges of the metal sheet. The table and presser-plate are provided with thin edges, as shown at *a b*, which edges project substantially to the central line of the brakes. Two of the brakes are held in the half-bearings on the table and two in the half-bearings on the presser-plate when the presser-plate is raised from the table. On the brakes are provided segmental pulleys 8 and 8<sup>a</sup>, each adapted to receive and have secured thereto an end of one of the chains 9. On the segmental pulley 8 is provided a handle, as 10, whereby the brakes on opposite sides are simultaneously operated. The chain 9 extends from the segmental pulley carried by the presser-plate to a segmental pulley 8<sup>a</sup> on the brake, carried by the bearing on the table, and the brake is also provided with the counter-weight 11.

It will be understood that of the four brakes two of them are provided with operating-handles, as 10, and two of them with counter-weights, as 11.

The presser-plate 5 is carried by four arms, as 12, which are secured to a cup-shaped holder 13, which holder is provided with a central opening 14, (see Fig. 7,) adapted to receive a bolt for securing it to the presser-plate-operating mechanism, and is also provided with four set-screws 15 15 for adjusting the

presser-plate upon the presser-plate-operating mechanism.

The head 4 is a regular box and is set at an angle to the presser-plate and table and furnishes a guide or ways for the presser-plate-carrying mechanism, and being set at an angle causes the presser-plate to move relative to the table from the position shown in the full lines in Fig. 2 to that shown in the dotted lines in the same figure.

Within the guide-head 4 is mounted a presser-plate carrier 16, which consists, preferably, of a frame carried between the side walls of the head 4, and having a space between it and the edge walls of the head 4 to permit a lateral movement.

The frame 16 is engaged by an eccentric 17, mounted on a shaft 18 and operated by handle 19. The eccentric engages the frame 16 within an opening semicircular on the lower half and square on the sides and on the upper end, excepting a slight curvature in the center. This opening permits the movement hereinafter explained.

To the upper end of the frame 16 is attached a spring 20, which is secured at its opposite end to an adjusting-screw 21, located in the upper portion of the head of the machine. In one of the side walls of the head 4 is provided two curved slots 22, which act as guides for pins 23, secured in the frame 16. On two sides of the table are provided gages 24, which are preferably L-shaped, and are adjustable through a projection 25 on the bottom of the table and may be secured in position by set-screw 26. There are also provided in the brakes on two sides of the machine an adjustable gage 27, which consists, as shown in Figs. 4 and 5, of a pin projecting through slotted opening in the brake and provided with a spring 28 for projecting the pin, the spring being within a gage-body 29, having a slotted L-shaped projection 30 in the slot, to which engages a screw for securing the gage to the brake.

The ends of the brake are cut V-shaped, so as to permit the brakes to operate closely around all of the corners of the table, and when it is desired to operate the machine with only two brakes on opposite sides or opposite ends it is desirable to have an extension-piece to turn the sheet entirely to its edges. For this purpose I provide an extension-piece 31, which is provided with a V-shaped end adapted to engage on the V of the brake, as shown in Fig. 6, and having a screw 32 countersunk into the end and adapted to engage in the end of the brake, so that when the piece 31 is applied to the end of the brake and secured in position the brake has a square end and projects in its full width to the edge of the table of the machine.

The operation of the device is substantially as follows: A sheet of metal being inserted on the table of the machine and under the presser-plate, which is in its elevated position, the presser-plate is brought down onto

the sheet by operating the handle 19, the first part of the movement being to carry the presser-plate down onto the sheet, with the frame 16 moving vertically in the head from the position in which it is shown in Fig. 9, and the latter part of the movement is to swing the presser-plate from the position shown in dotted lines in Fig. 2 to that shown in full lines in the same figure, and the frame 16 at the same time moving across the head 4 into the position shown in Fig. 8, at the completion of which movement the halves 6 and 6<sup>a</sup> assume the position to make a complete bearing. The handles 10 of each set of brakes are then turned down, carrying the edge of the sheets on the front sides of the machine around the edge of the table. As the brakes on the front side of the table are turned down those on the rear side are turned up from the position shown in Fig. 15 to the position shown in Fig. 14, carrying the edge of the sheet around the edge of the presser-plate and folding the two back edges upward. In the movement the brakes travel either from the half of the bearing on the presser-plate to the half of the bearing on table, or vice versa, depending on whether it is front or rear brake. When the brakes have completed their movement in turning the edge of the sheet, they are released and returned to their normal position, as shown in Figs. 1 and 11, by the counter-weights 11. The presser-plate is then raised by operating the handle 19, the first movement being to carry the presser-plate diagonally to the table to disengage its edge from the turned edge of the metal sheet, and the subsequent movement is to raise the presser-plate from the table to allow the sheet to be withdrawn. As the presser-plate is raised and lowered the movement is guided and regulated by pins 23, moving in slots 22.

In the ordinary use of the machine for turning four edges of a sheet the gage shown at 27 in Figs. 4 and 5 is used, the sheet being inserted in the machine until the edge engages with the gage 27. As the brake turns over in turning the edge the gage 27 recedes into the brake, the movement being allowed by spring 28, and as the brake is returned after being operated the gage is projected by the spring.

When it is desired to use the machine for folding either the two opposite sides or the two opposite ends of a sheet, the two brakes not in use are removed and the blocks or extension-pieces 31 are applied to the ends of the brakes that are used and the sheet is inserted in the machine until it engages with the gages 24. Then by operating the brakes in use one end of the sheet will be turned up and the other end down.

It will be understood that in turning the four sides of the sheet the corners are clipped off; but in turning the two ends or two sides of the sheet the corners are not clipped off. Hence the need of blocks or extension-pieces 31.

It is evident that many modifications and changes in and from my construction may be made without departing from the equivalents of my invention.

5 What I claim as new, and desire to secure by Letters Patent, is—

10 1. The combination, in a sheet-metal-folding machine, of a table, a presser-plate, turning-brakes working around the edges of the table, having V-shaped ends, and an extension-piece adapted to be applied to the end of the brake, substantially as set forth.

15 2. The combination, with the turning-brake of a sheet-metal-folding machine, of a gage mounted on the brake, consisting of a spring-actuated pin mounted in an adjustable gage-body, and a screw for adjustably securing the body to the brake, substantially as set forth.

20 3. The combination, with the turning-brake of a sheet-metal-folding machine, of a gage mounted on the brake, consisting of a movable pin, a spring for actuating the pin and a gage-body containing the pin and spring having slotted projection, and a screw for securing the gage-body to the brake, substantially as set forth.

4. In a sheet-metal-folding machine, the combination of a table, a presser-plate adjustably mounted upon a carrier-post by means of a cup-shaped socket adapted to receive the end of the post and having a central opening for receiving a securing-bolt, and adjusting set-screws adapted to act against the end of the post, substantially as set forth. 30

5. The combination, in a sheet-metal-folding machine, of a table, a presser-plate adapted to descend upon the table, turning-brakes, a carrier post or frame on which the presser-plate is mounted, a guide-head, an eccentric or cam engaging in an opening in the post having a round lower side and parallel vertical sides, and a spring secured at one end to the upper end of the frame and at the other to an upward extension of the head, substantially as set forth. 40 45

In witness whereof I have affixed my signature in presence of two witnesses.

MATTHEW EMERY HASTINGS.

Witnesses:

MILTON E. ROBINSON,  
H. W. BOOTH.