No. 677,933. Patented July 9, 1901.

J. A. BRIGHT & W. D. DEPRIEST.

MACHINE FOR FOLDING OR EDGING METAL SHEETS.

(No Model.) (Application filed Mar. 7, 1901.)

2 Sheets—Sheet 1.

Fig. 1.

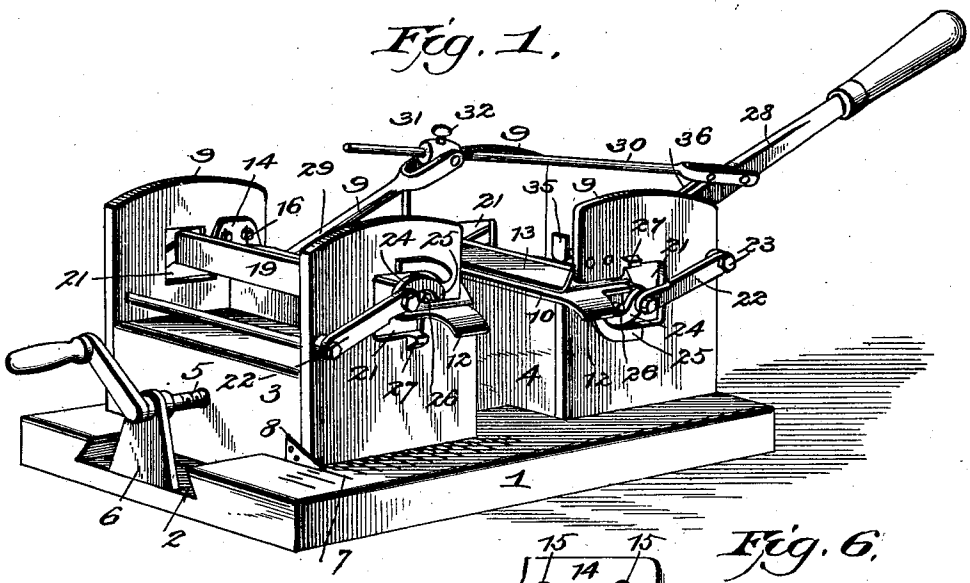


Fig. 5.

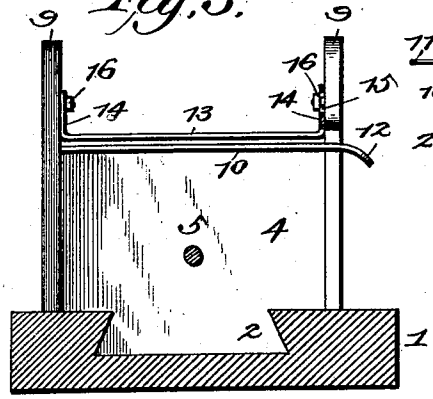


Fig. 6.

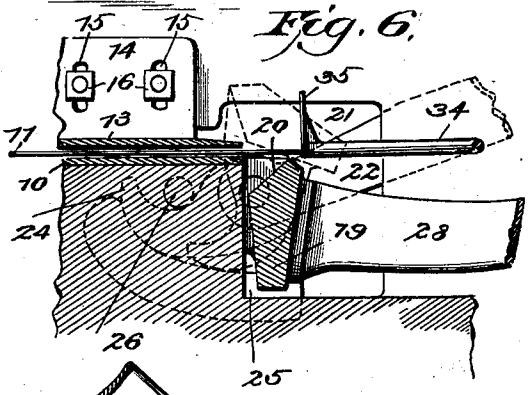


Fig. 8.

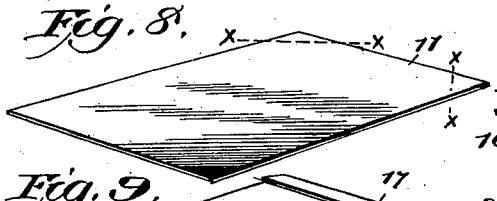


Fig. 9.

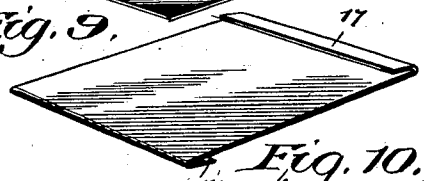


Fig. 7.

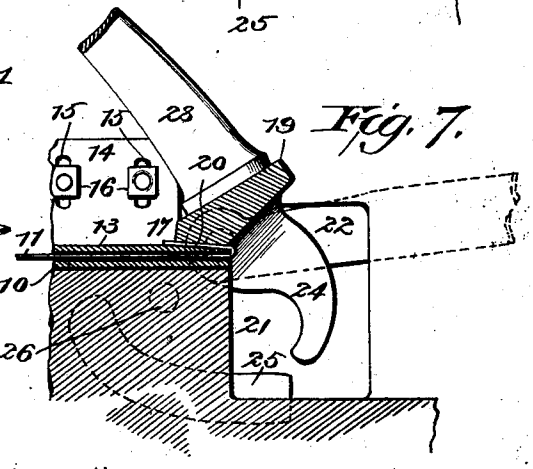
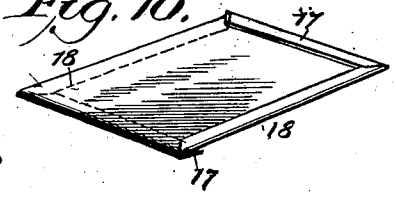


Fig. 10.



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No. 677,933. Patented July 9, 1901.

J. A. BRIGHT & W. D. DEPRIEST.

MACHINE FOR FOLDING OR EDGING METAL SHEETS.

(Application filed Mar. 7, 1901.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

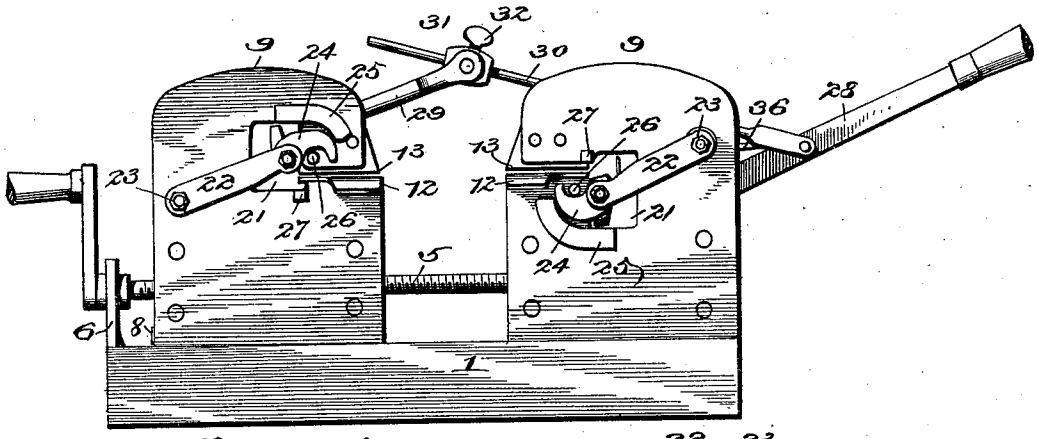


Fig. 3.

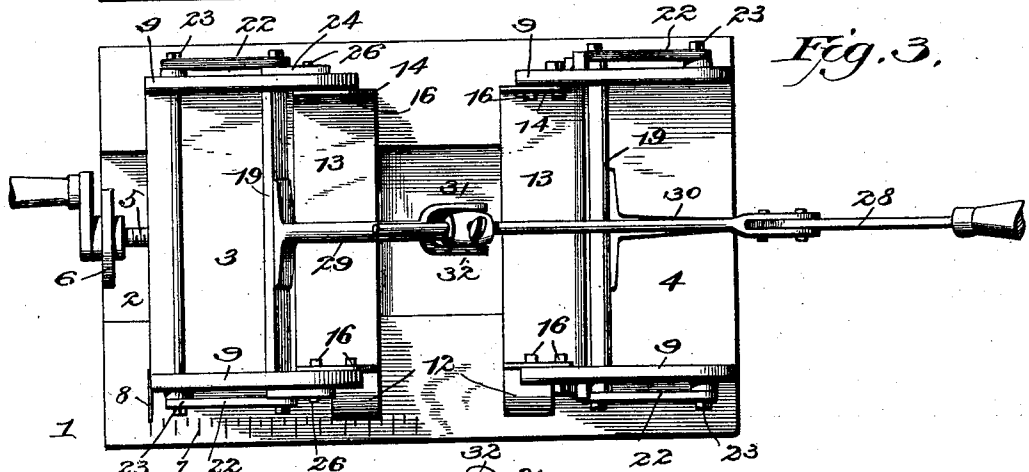
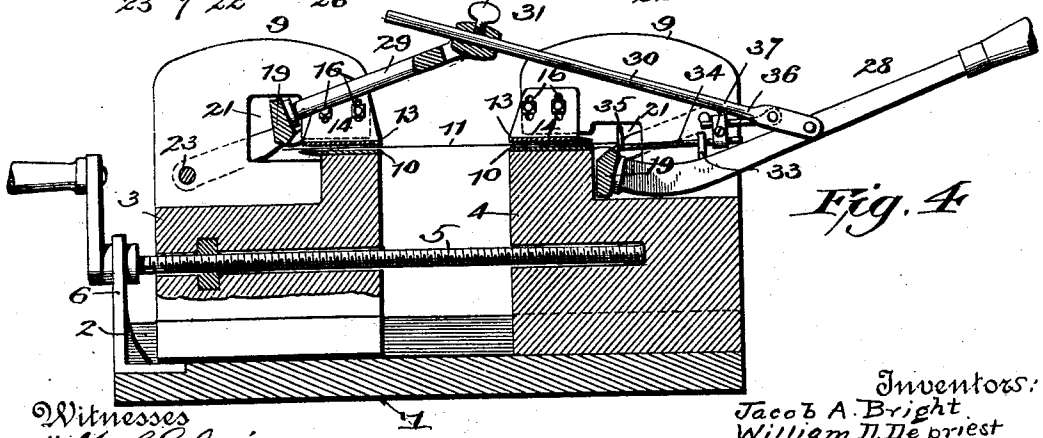


Fig. 4.



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UNITED STATES PATENT OFFICE.

JACOB A. BRIGHT AND WILLIAM D. DEPRIEST, OF MOUNT SIDNEY, VIRGINIA, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO WILLIAM L. LYON, CARDIFF T. LYON, AND EDGAR LYON, OF BALTIMORE, MARYLAND.

MACHINE FOR FOLDING OR EDGING METAL SHEETS.

SPECIFICATION forming part of Letters Patent No. 677,933, dated July 9, 1901.

Application filed March 7, 1901. Serial No. 50,148. (No model.)

To all whom it may concern:

Be it known that we, JACOB A. BRIGHT and WILLIAM D. DEPRIEST, citizens of the United States, residing at Mount Sidney, county of Augusta, State of Virginia, have invented certain new and useful Improvements in Machines for Folding or Edging Metal Sheets, of which the following is a specification.

This invention relates to sheet-metal-bending machines, and more particularly to those designed for turning over or folding the edges of metal sheets.

One object of the invention is the provision of a novel folding or edging machine adapted for adjustment to accommodate sheets of different lengths and for the accommodation of the sheet so that all of its edges may be folded and which will also be so arranged and constructed that the edges may be folded to any desired width.

A further object is to provide an improved machine for folding or edging metal sheets having novel mechanism for performing the folding or edging operation and for holding and gaging the sheet, whereby its edges will be turned or folded evenly and twisting or displacement with incident unevenness of edging absolutely prevented.

Stated generally, the object is the provision of an improved and novel machine of the class described of light, strong, durable, and portable construction and positive in its movements and adapted for hand operation.

With the foregoing and other not specifically enumerated objects in view the invention consists of a machine of the class set forth comprising certain improved features and novel combinations of parts adapted to coöperate in a novel manner, as fully set forth hereinafter in the detailed description and claims forming a part hereof.

In the accompanying drawings, Figure 1 is a perspective view of the complete machine with the parts in position for the insertion of a metal sheet prior to bending; Fig. 2, a side elevation; Fig. 3, a plan; Fig. 4, a longitudinal section; Fig. 5, a transverse section taken between the blocks; Figs. 6 and 7, sectional details illustrating the action of the folding mechanism; Fig. 8, a detail of a sheet as it appears prior to bending or folding; Fig. 9, a detail of the sheet after its first folds have been made; and Fig. 10, a detail of the sheet after it has been removed from the machine, turned quarter-way around, and folded or bent on its two remaining edges.

The bed 1 of the machine has a dovetail guide-groove 2. There are two blocks 3 and 4, the former of which is slidable in the groove 2, while the latter is fixed therein. Said blocks carry the operative mechanisms, and the block 3 is adjustable toward and from block 4 by the screw 5, journaled in bracket 6 on the bed 1. On the bed is a gage 7, over which plays a pointer or index 8 on block 3, by which the block 3 can be adjusted to the proper position to accommodate the desired length of the piece to be bent and to determine in conjunction with another gage hereinafter described the width of the folds or lips to be turned at the ends of the sheet. The blocks each have plates 9 at their sides, between each set of which extend supporting-plates 10 for the metal sheet (the blank 11 of which is shown in Fig. 8) to be bent, and these plates are provided with downwardly-curved lips 12 at the end where the metal blank is to be inserted in order to facilitate the entry of the same. Above the supporting-plates are gage-plates 13, vertically adjustable through the agency of the upright flanges 14 at their ends, in which are vertical slots 15, receiving bolts 16 on the plates 9. The gage-plates are thus made adjustable to accommodate metal blanks of different thicknesses and to prevent buckling of the blank while being edged as also, if desired, to permit the reinsertion of the blank after it has been edged to assume the form shown in Fig. 9, having lips 17 in order that it may be edged at its remaining sides, as illustrated in Fig. 10, providing lips 18.

The two edgers or folders are shown at 19 and provided with the edging-face 20 to fold the edge of the blank against the gage-plate 13 (see Figs. 6 and 7) at one end of the ma-

chine and under plate 10 at the other end, and they extend into enlarged openings 21 in plates 9 in order that they may have proper play. These folders or edgers are supported and made operative through the agency of links 22, (to which they are pivoted,) pivoted to the plates 9 at 23, and it will be observed that one of the edgers works upwardly and the other downwardly in accomplishing the edging of the sheet.

Projecting from and rigid with the edgers or folders, at the ends thereof, are curved wipers 24, which travel on cams 25 on the plates 9, said cams and wipers on the respective edgers being reversely arranged to accomplish the proper movement of the edgers. To hold the wipers against the cams and form a bearing on which they may slide, the gudgeons 26 are provided on the plates 9, while the stops 27 thereon limit the play of the links on the completion of the edging operation.

To one of the edgers is connected an operating-handle 28 and to the other an arm 29. The arm and handle are connected by a rod 30, pivoted to the handle, and a slip-coupling 31, pivoted to the arm, the rod being clamped by a screw 32. The edgers are thus made to operate simultaneously, and the clamped connection between them being adjustable provides for any desired relative adjustment. On the handle is a lug 33, through which loosely slides a gage-rod 34, having a foot 35. This rod is adjustably connected to a rod 36, pivoted to rod 30 by a coupling 37.

Operation: Assuming that it is desired to edge a twenty by twenty-eight sheet or blank for roofing purposes, the movable block is adjusted (the rod 30 being first uncoupled) by the handle and screwed until the pointer indicates twenty-eight inches on the gage 7, (this gage being adapted to indicate the distance between the outer edges of the supporting-plates 10.) Then if it is desired to turn a lip of three-eighths inch width at both ends of the blank the block will be adjusted to twenty-seven and one-fourth inches, (thus subtracting the width of both lips, which will be turned on the sheet.) The rod 30 is then reclamped. The coupling or clamp 37 is then loosened and the gage-rod 34 adjusted till just three-eighths of an inch from the edge of the gage-plate 13 and again clamped. The sheet, Fig. 8, is then slid in on the supporting-plates (the gage-plates having been previously adjusted) and made to rest against the foot 35 of the gage-rod, whereby it is held perfectly square and the turning of folds of exact width throughout is insured. On swinging the handle over the edgers will bend the edges of the blank (see Figs. 6 and 7) and form the same into the shape shown in Fig. 9. If in edging sheets it is desirable to turn all four edges, the corners can be clipped, *x x*, Fig. 8, the gage-plates can be raised a suitable distance and reclamped, the sheet or blank inserted, (turned one-quarter around,) and the remaining edges turned, Fig. 10. During the upward swing of the handle the edge or lip gage is retracted, and hence will not strike the gage-plate.

This invention, though designed for edging roofing-plates, can be used for the edging of sheets for any purpose whatever to which it is adapted.

It is obvious that many changes of construction might be resorted to in carrying out the invention without detracting from any of its advantages or materially changing its form or operation, and we do not, therefore, limit ourselves to the precise construction shown and described, but consider that we are entitled to all such modifications as fall within the spirit and scope of the invention.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a metal folder or edger, the combination with relatively adjustable blocks or heads, of means for adjusting said blocks relatively to each other, folding or edging devices on the respective heads or blocks, operating mechanism for one of said edging devices, and an adjustable operative connection therefrom to the other edging device, whereby they operate simultaneously.

2. In a metal folder or edger, the combination with relatively adjustable blocks or heads, of means for adjusting said blocks relatively to each other, folding or edging devices on the respective heads or blocks, operating mechanism for one of said edging devices, an arm on one of said edging devices, a swiveled coupling on said arm, and a rod connected to the other edging device and adjustably secured to said swiveled coupling.

3. In a metal folder or edger, the combination with relatively adjustable blocks or heads, of means for adjusting said blocks relatively to each other, a plate on the blocks for the folding thereagainst of the edges of the metal blank, an adjustable gage on one of said blocks for determining the width of the fold or lip turned, and a gage for determining the position of the blocks in relation to each other.

4. In a metal folder or edger, the combination with a plate for the folding thereagainst of the edge of the metal blank, of means for folding the edge of the blank against the plate, and a gage for the blank, operatively connected to the folding means and adapted to automatically move out of the way of said folding mechanism when the latter operates.

5. In a metal folder or edger, the combination with separated plates for the folding thereagainst of the edges of the metal blank, of folders or edgers for the respective plates, an operating-handle for one of the edgers, an operative connection between said handle and the other edger, and a gage for the blank which is connected to the operative connection last named and adapted to automatically move out of the way of the edger when the latter operates.

6. In a metal folder or edger, the combination with separated plates for the folding thereagainst of the edges of the metal blank, of folders or edgers for the respective plates, an operating-handle for one of the edgers, an operative connection between said handle and the other edger, a guide on the handle, a gage-rod extending loosely therethrough and adapted to gage the blank, a rod pivoted to the operative connection last named, and an adjustable coupling connecting the gage-rod and rod last named.

7. In a metal folder or edger, the combination with a supporting-plate for the blank, of an adjustable gage-plate movable toward and away from the supporting-plate and positioned on the opposite side of the blank from the supporting-plate to hold the blank in position.

8. In a metal folder or edger, folding or edging mechanism comprising a folder, pivoted supporting-links to which said folder is pivoted, a cam, and a wiper on the folder which travels against the cam, whereby the folder is made to travel in a fixed path.

9. In a metal folder or edger, folding or edging mechanism comprising a folder, pivoted supporting-links to which said folder is pivoted, a cam, a wiper on the folder which travels against the cam, a gudgeon for holding the wiper against the cam, and a stop for limiting the play of the folder.

10. In a metal folder or edger, the combination with plates, of oppositely-operating edging or folding mechanisms for forming the lips against said plates, comprising folders, pivoted supporting-links to which said folders are pivoted, oppositely-disposed cams for the respective folders, oppositely-arranged wipers on the respective folders which travel against the cams therefor, gudgeons for holding the wipers on their cams, stops for limiting the play of the folders, and an operative connection between the folders, whereby they are made to operate simultaneously in opposite directions.

In testimony whereof we hereunto affix our signatures in presence of two witnesses.

JACOB A. BRIGHT.
WILLIAM D. DEPRIEST.

Witnesses:
HENRY W. MOORE,
JAS. A. CRAWFORD.