

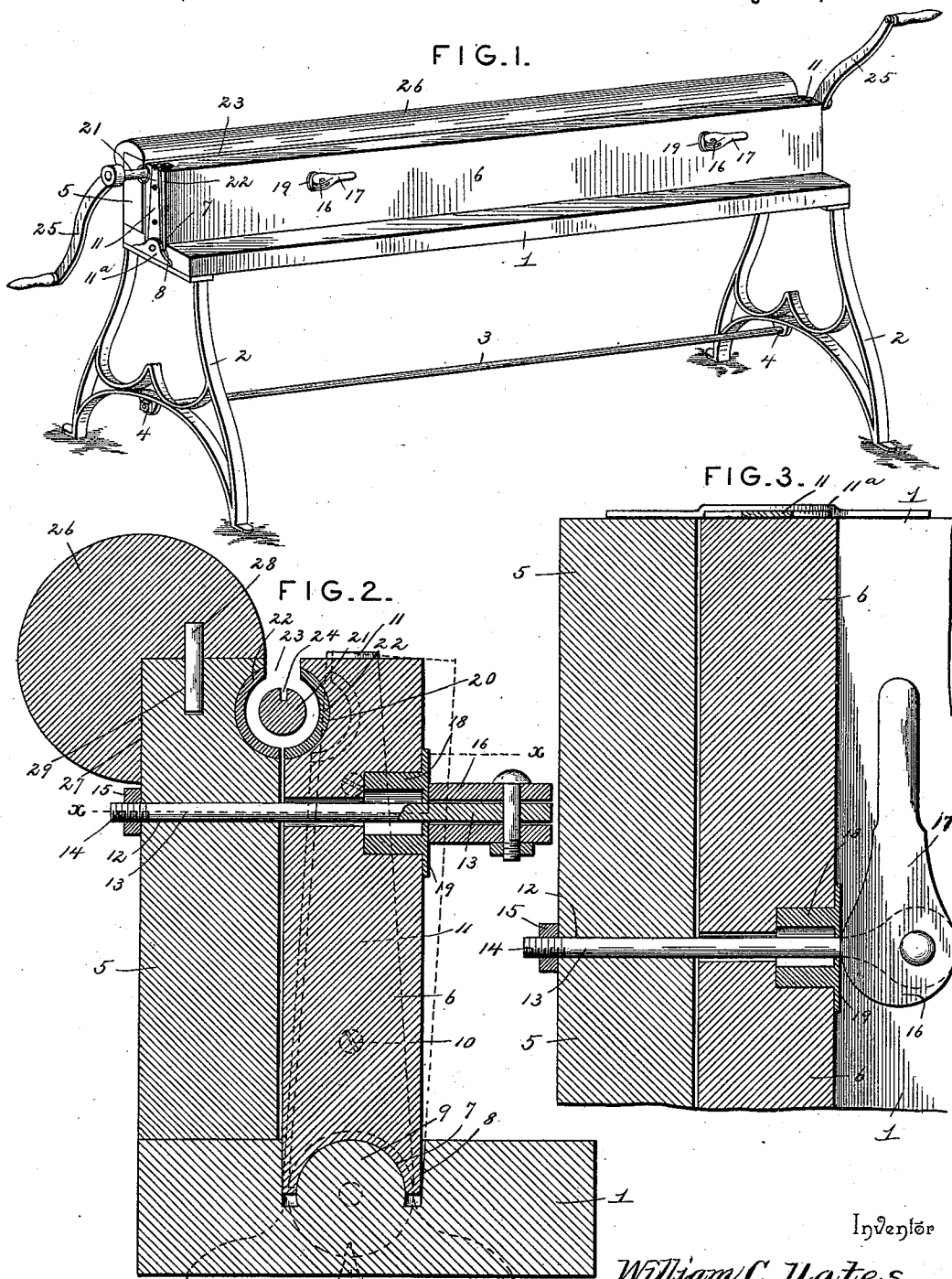
(No Model.)

2 Sheets—Sheet 1.

W. C. YATES.  
SHEET METAL BENDING MACHINE.

No. 539,499.

Patented May 21, 1895.



Inventor

William C. Yates.

Witnesses

Harry L. Amer.

J. P. Malhaupter.

By his Attorneys,

C. A. Snow & Co.

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FIG. 4.

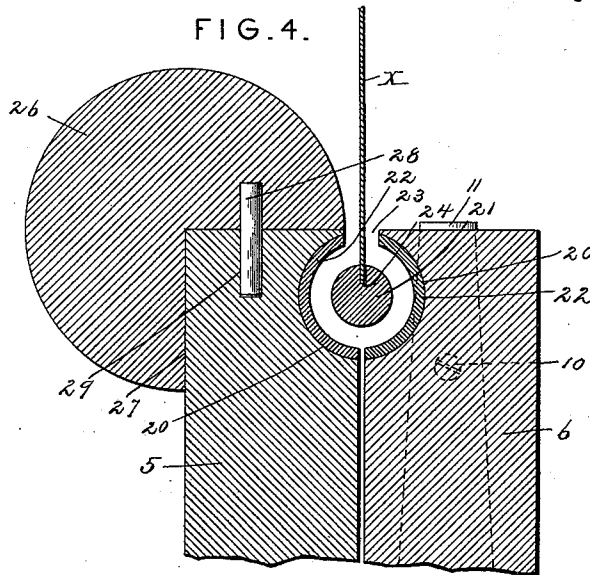


FIG. 5.

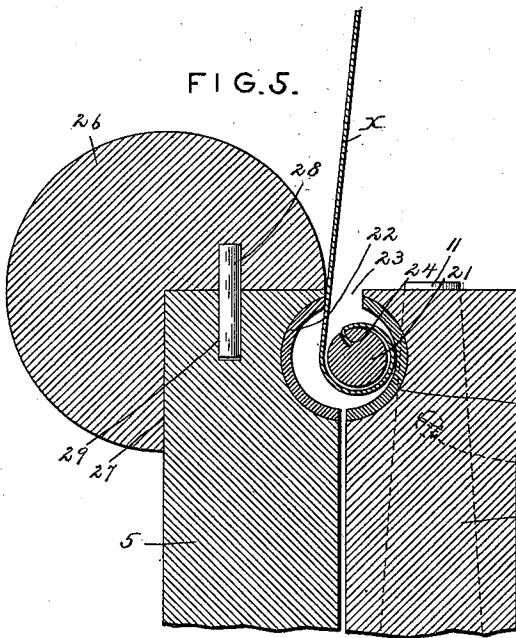
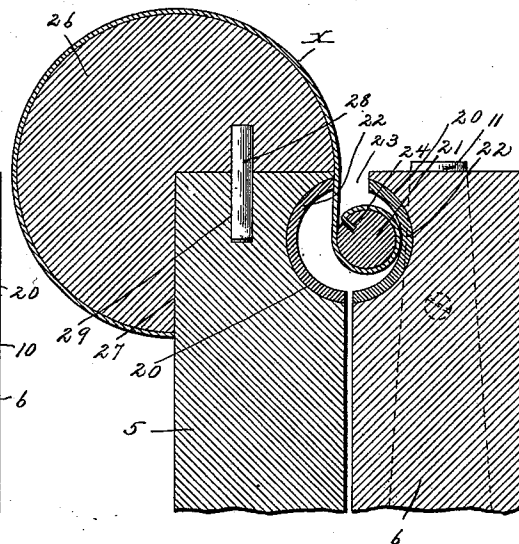


FIG. 6.



Inventor

Witnesses

Harry L. Amer.  
D. R. Thompson.

By his Attorneys.

William C. Yates.

C. A. Snow & Co.

# UNITED STATES PATENT OFFICE.

WILLIAM C. YATES, OF NEW DECATUR, ALABAMA, ASSIGNOR OF ONE-HALF  
TO L. W. BORTON, OF SAME PLACE.

## SHEET-METAL-BENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 539,499, dated May 21, 1895.

Application filed November 30, 1894. Serial No. 530,434. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM C. YATES, a citizen of the United States, residing at New Decatur, in the county of Morgan and State of Alabama, have invented a new and useful Sheet-Metal-Bending Machine, of which the following is a specification.

This invention relates to sheet metal bending machines; and it has for its object to provide a new and useful machine of this character that is especially adapted for beading and forming sheet metal eaves-troughs or gutters.

To this end the main and primary object of the present invention is to construct a machine of this character with simple and efficient means for beading and forming a sheet metal eaves-trough in practically one operation, and without having to change or remove any part of the machine either while beading or forming the trough, and the invention also contemplates a construction of machine wherein the various parts thereof are readily removable and adjustable to provide for beading and forming troughs or gutters of any desired size.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangements of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a perspective view of a sheet-metal-bending machine constructed in accordance with this invention. Fig. 2 is a vertical transverse sectional view thereof. Fig. 3 is a horizontal sectional view on the line *xx* of Fig. 2. Fig. 4 is an enlarged detail sectional view of the upper portion of the machine, showing the first stage of the operation in bending the metal to form the usual tubular bead. Fig. 5 is a similar view to Fig. 4, showing the second stage of the operation with the metal bent into a tubular bead at one edge. Fig. 6 is a similar view to Figs. 4 and 5, showing the metal bent to form a completed eaves-trough or gutter with a bead at one edge.

Referring to the accompanying drawings, 1 designates the base board of the machine that may be of any desired length according to the length of troughs or gutters that are to be formed by the machine, and said base

board 1, is supported at its opposite ends on the upper ends of the opposite leg frames 2, that are connected by a longitudinally arranged brace rod 3, bolted at its opposite ends as at 4, to the said leg frames to provide a firm leg support for the machine. The said base board 1, has suitably secured to the upper side thereof and at one edge a fixed or stationary jaw-beam 5, which extends the entire length of the base board, and like the base board, is of the same length as the greatest length of gutter that the machine is designed to form, and arranged to work at the inner side of the fixed jaw-beam 5, is the adjustable jaw-beam 6, that is a duplicate in construction of the beam 5, and is of the same length. The adjustable jaw-beam 6, is provided with a semi-circularly recessed lower edge 7, that is adapted to loosely work in the longitudinal hinge groove 8, formed in the upper side of the base board 1, and embraces the rounded hinge projection or rib 9, formed centrally within the groove 8, to provide a strong hinge connection between the adjustable jaw-beam and the base board. At its opposite ends the adjustable jaw-beam 6, has attached thereto, by means of the screws 10, the end hinge straps 11, the lower ends of which are pivoted to hinge plates 11<sup>a</sup>, fastened to opposite ends of the base board 1, by means of the screws 10<sup>a</sup>, and said straps 11, serve to secure the lower edge of the adjustable jaw-beam in position on the board 1, so that the same can be readily adjusted to and away from the fixed jaw-beam 5, as the requirements of the work may demand.

The jaw-beams 5 and 6, are both provided with the aligned bolt openings 12, at suitable points between their ends, and said bolt openings 12 accommodate therein the adjusting bolts 13, that are provided with threaded extremities 14, extended beyond the outer side of the jaw 5, to receive the adjusting nuts 15, which provide means for regulating the distance that the jaw-beam 6, can be adjusted for the work, and the unthreaded ends of said bolts 13, project beyond the outer side of the adjustable jaw-beam 6, and have pivotally mounted thereon the bifurcated cam or eccentric heads 16, of the cam levers 17, that are arranged to work at the outer side of the adjustable beam 6, and therefore entirely out

of the way of the operator at the front side of the machine, or more properly speaking, the outer side of the fixed jaw-beam 5, where the operator stands. By means of the cam levers 17, the adjustable jaw 6, may be readily opened or closed as the requirements of the work may demand, and by adjusting the nuts 15, on the bolts, the adjustment of the jaw-beam 6, may be increased or diminished as may be required by the work, and the unthreaded ends of said bolts are arranged to work in the washer collars 18, which are fitted in the outer side of the jaw beam 6, and are provided at their outer ends with the wear plates 19, facing the outer side of the jaw-beam 6, for the bifurcated cam heads of the cam levers to work against.

The jaw-beams 5 and 6, are provided in their inner sides near their upper edges with the semi-circular bearing grooves 20, that register with each other to form an inclosed bearing for the longitudinally arranged turning beading-rod 21, that works within said registering grooves to provide for bending one edge of a blank of sheet metal into a tubular bead, and said registering semi-cylindrical bearing grooves 20, have fitted therein the semi-cylindrical metallic facing plates 22, which semi-cylindrical metallic facing plates prevent the wearing out of the wooden beams 5 and 6. The upper edges of the registering semi-cylindrical bearing grooves 20, terminate short of each other to form a top slot 23, to receive the sheet metal blank X, that is introduced through the said slot and into the longitudinal rod-groove 24, formed longitudinally in one side of the beading rod 21, and said beading-rod extends longitudinally from end to end of the grooves in the jaws 5 and 6, and has attached to its opposite ends the crank handles 25, which provide means for turning the beading rod to bend one edge of the sheet metal blank into a tubular bead.

The beading-rod 21, is designed to be made in different sizes according to the size of the trough or gutter being formed, and is relatively proportioned to the size of the cylindrical form-block 26, over which the metal is bent to be shaped into the body of the trough or gutter. The cylindrical form-block 26, extends from end to end of the machine and is provided in one side with a right-angular notch 27, extending longitudinally thereof and embracing the upper outer edge of the fixed jaw-beam 5. The form-block 26, has projected from the horizontal side of its notch 27, a series of depending dowel pins 28, that are adapted to detachably fit in the pin sockets 29, formed in the top of the fixed jaw-beam 5, and this connection of the form-block with the fixed jaw-beam provides simple and convenient means whereby different sizes of the blocks 26, can be readily employed, and one block can be easily and quickly removed and replaced, but during the operation of beading and forming the trough, the said block as well as the beading rod are not removed from the

machine, as is necessary in other similar machines.

The form-block 26, fits over the entire upper edge of the fixed jaw-beam 5, and therefore leads directly off from one edge of the top slot 23, and in operating upon a blank of metal it will be understood that one edge of the sheet of metal is inserted in the longitudinal groove 24, of the beading rod, that has been previously fitted within the registering bearing grooves of the fixed and adjustable jaw beams. By now turning the rod a complete revolution as shown in Fig. 5 of the drawings, one edge of the metal will be bent into a tubular bead, and then, with the hands, the straight sheet of metal is forced down and over the form-block 26, as illustrated in Fig. 6, of the drawings, thereby completing the entire eaves-trough or gutter without changing or removing any part of the machine.

Changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a sheet metal bending machine, the combination of adjacent fixed and adjustable jaw-beams provided in their adjacent sides near their upper edges with registering semi-cylindrical bearing grooves, the upper edges of said grooves terminating short of each other to form a top slot, semi-cylindrical metallic facing plates secured in said bearing grooves, the beading rod arranged to turn in the space confined by said facing plates, and a longitudinal cylindrical form-block provided in one side with a longitudinal right angular notch embracing the upper outer edge of the fixed jaw-beam, said form-block fitting over the entire upper edge of the fixed jaw-beam and having its periphery merging into and forming a continuation of one edge of said top slot, substantially as set forth.

2. In a sheet metal bending machine, the combination of the base board provided in its upper side with a longitudinal hinge groove and a rounded hinge projection or rib arranged within said groove, the fixed jaw-beam mounted on the base board at one side of said groove, the adjustable jaw-beam provided with a semi-circularly recessed lower edge fitting in said groove and on said projection or rib, end hinge straps connected to the ends of the base board and said adjustable jaw-beam, and an adjusting device for said adjustable jaw beam, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM C. YATES.

Witnesses:

J. A. HESSE,  
JAMES ESDALE.