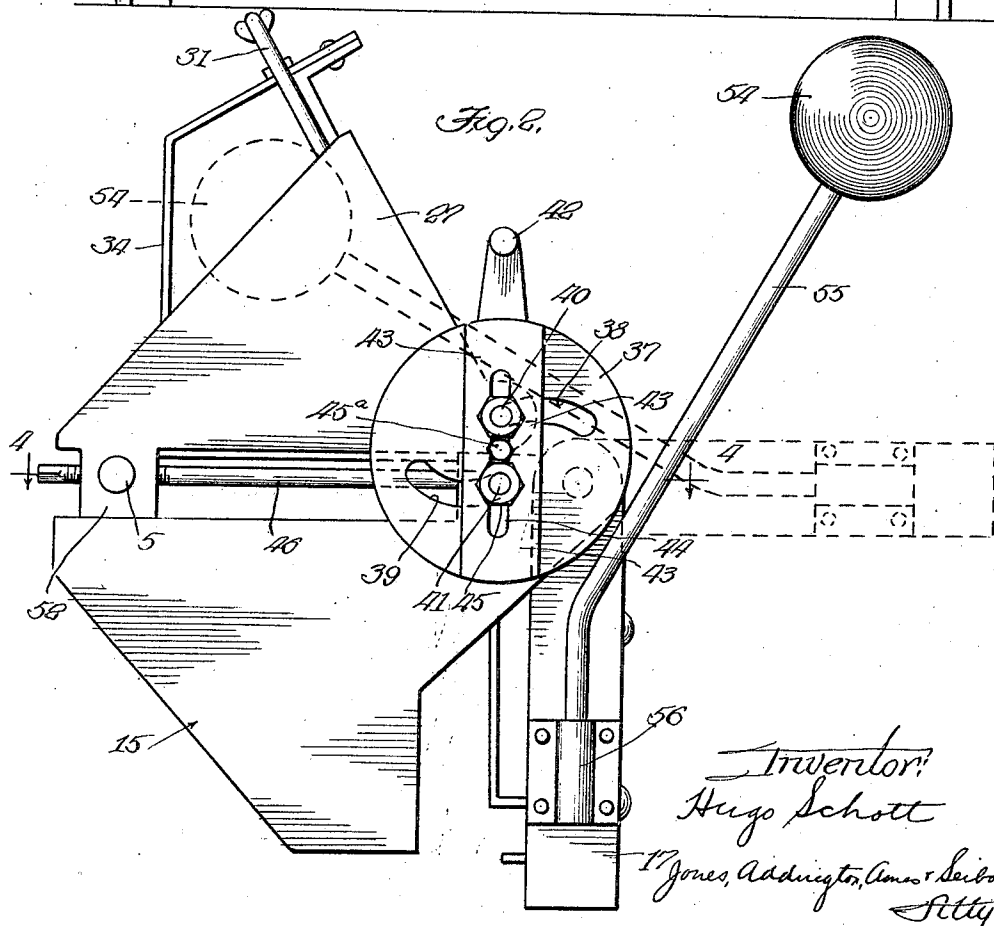
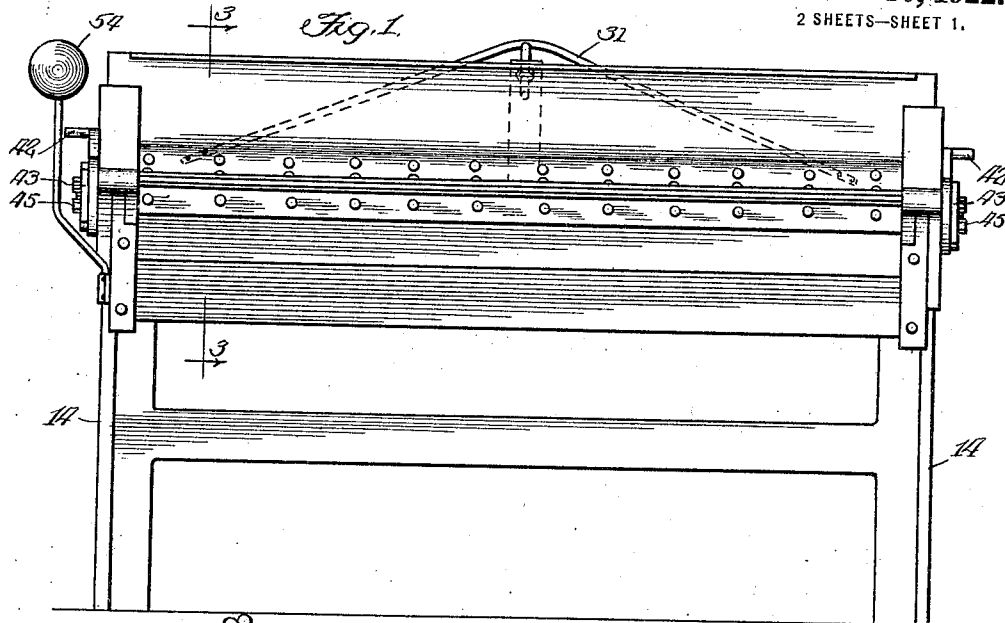


H. SCHOTT.
METAL BENDING MACHINE.
APPLICATION FILED APR. 19, 1920.

1,402,801.

Patented Jan. 10, 1922.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

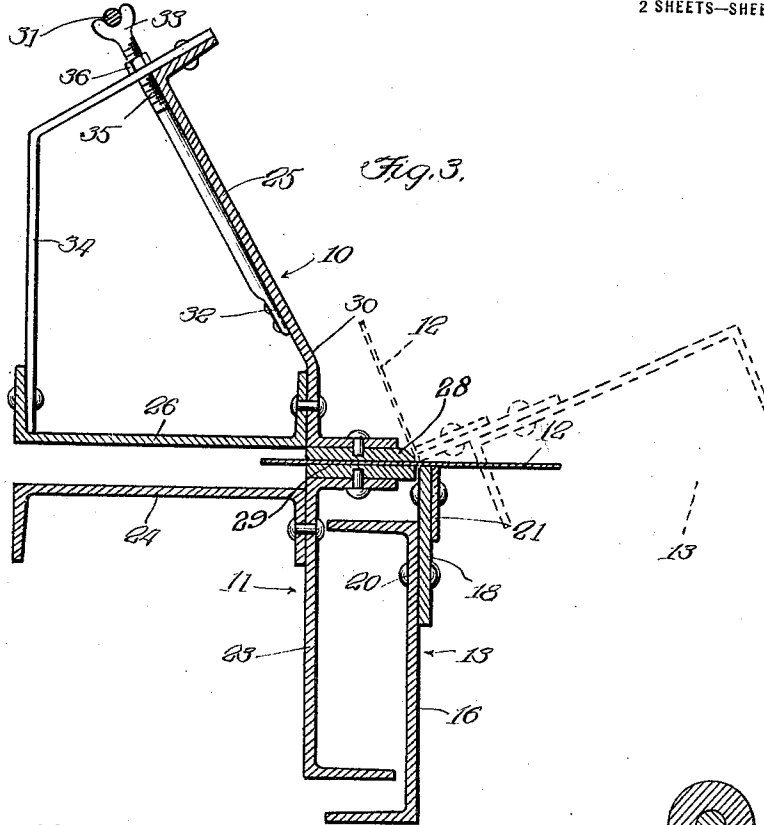


Fig. 4.

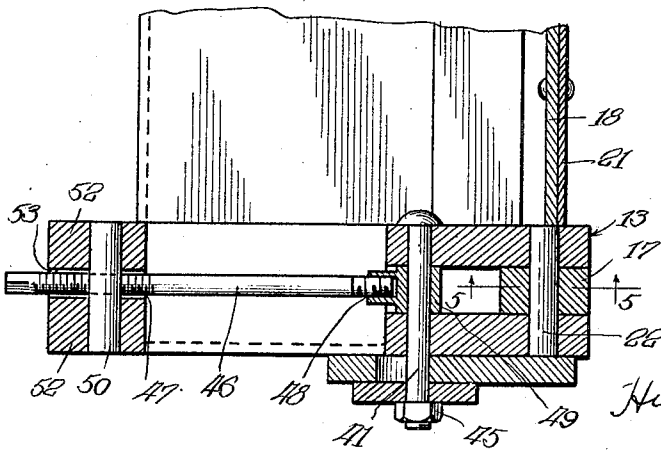
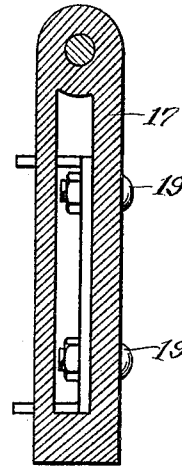


Fig. 5.



Hugo Schott
Inventor.

By Jones, Addington, Ames & Seibold Attys.

UNITED STATES PATENT OFFICE.

HUGO SCHOTT, OF CHICAGO, ILLINOIS.

METAL-BENDING MACHINE.

1,402,801.

Specification of Letters Patent.

Patented Jan. 10, 1922.

Application filed April 19, 1920. Serial No. 374,801.

To all whom it may concern:

Be it known that I, HUGO SCHOTT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Metal-Bending Machines, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to metal bending machines. More specifically it relates to machines for bending comparatively large sheets of metal.

One of the objects of my invention is to provide an improved metal bending machine, which will be strong and durable in construction, efficient in operation, and cheap to manufacture.

Further objects will appear from the detailed description to follow and from the appended claims.

In the drawings in which an embodiment of my invention is shown,—

Fig. 1 is a front elevation of a metal bending machine;

Fig. 2 is an end elevation of part of the machine shown in Fig. 1;

Fig. 3 is a vertical sectional view on the line 3—3 of Fig. 1;

Fig. 4 is a horizontal sectional view on the line 4—4 of Fig. 2, and

Fig. 5 is a vertical sectional view on the line 5—5 of Fig. 4.

In order to give a general idea of the invention, it is here stated that the construction shown comprises upper and lower sheet gripping members 10 and 11 respectively, between which the sheet 12 to be bent is gripped, and a swinging apron or bending member 13, which is swung from the full line to the dotted line position shown in Fig. 3, to bend the sheet 12 from the full line to the dotted line position. The lower gripping member 11 is stationary, being secured to and supported by the base or frame 14. The upper gripping member 10 can be moved toward and from the lower gripping member 11, to grip or release the sheet 12, and it can also be shifted from front to rear and vice versa, in order to get the proper or desired adjustment with respect to the lower gripping member. The apron or swinging member 13 is pivotally

mounted on the end castings 15 of the lower gripping member 11.

The swinging apron 13 comprises a channel member 16, a pair of pivotally mounted end castings 17, and a wear-plate or face-plate 18. The ends of the channel-member 16 are secured respectively to the pivoted end castings 17, by means of bolts 19 (Fig. 5). The wear-plate 18 is secured to the channel-member by means of rivets 20. If necessary or desirable, a reenforcing strip 21 may be riveted to the wear-plate 18. The pivotally mounted end castings 17 are swung on pivot pins 22, which pivot pins are secured to the end casting 15 of the lower gripping member 11 (Fig. 4).

The lower gripping member 11 comprises a channel-member 23, to which is riveted a second channel-member 24, both of these channel-members being secured to the end castings 15.

The upper gripping member 10 comprises a channel-member 25 to which is secured a channel-member 26, both of these channel-members being secured at their ends to the end castings 27. Face-plates or wear-plates 28 and 29 are provided for the gripping members 10 and 11 respectively. The web of the channel-member 25 is bent rearwardly as indicated at 30 in order to give ample clearance for the sheet 12 which is being bent, to enable it to be bent rearwardly farther than would be the case if the web were not bent. In order to further provide for the bending strain on the upper gripping member 10, a truss-rod 31 is provided, having its ends secured to the opposite ends of the channel-member 25 respectively, and its central portion supported by an adjustable bearing member 33. This bearing member 33 is supported on a strip or bracket 34, the threaded shank 35 of the bearing member 33 extending through an opening in the bracket, and having a nut 36 threaded on said shank above the bracket, so that by adjusting the nut 36 the tension in the truss-rod 31 can be adjusted. The bracket 34 has its ends secured to the channel-members 25 and 26 respectively.

In order to move the gripping member 10 toward or away from the stationary gripping member 11, an oscillatable cam member 37 is provided, having a pair of cam slots 38 and 39 respectively, for engagement with

a pair of bolts 40 and 41, secured to the upper and lower gripping members 10 and 11 respectively. One of these cam members 37 is provided at each end of the machine.

5 The bolt 40 is secured to the end casting 27 of the upper gripping member 10, and the bolt 41 is secured to the end casting 15 of the lower gripping member. A handle member 42 is provided for oscillating the

10 cam member 37. The arrangement of the slots 38 and 39 is such that when the cam member 37 is oscillated in one direction it will move the upper gripping member 10 away from the lower gripping member 11

15 and when oscillated in the other direction it will move the gripping member 10 toward the gripping member 11. In order to center the cam member 37 in its movement, a plate 43 is provided, having an elongated slot 44

20 therein, through which the bolts 40 and 41 extend, this slotted plate being located between the cam member 37 and the nuts 45 on the bolts 40 and 41, and being secured to the cam member 37 by means of a machine-screw 45^a, the connection, however, being

25 such as to permit the cam member 37 to rotate with respect to the plate 33. The slotted plate 43 is itself prevented from movement either forwardly or rearwardly

30 by engagement of the pins 40 and 41 in the slot 44, and the pivotal connection 45^a between the slotted plate and the cam member 37 in turn prevent the cam member 37 from movement either to the front or rear.

35 In order to adjust the upper gripping member 10 forward or backward as desired to bring the upper gripping member into the desired relation with respect to the lower gripping member, a pair of turn-buckle constructions are provided, one at each end of

40 the machine. Each turn-buckle construction comprises an operating screw 46, having oppositely threaded portions 47 and 48, the threaded portions 48 having threaded engagement with a block or casting 49 secured to the stationary gripping member 11, and the threaded portion 47 has a threaded engagement with the pin 50 secured to the upper gripping member 10. Turning the

50 double threaded screw 46 will therefore cause the pin 50 to move toward or away from the block or casting 49, and hence will cause the upper gripping member 10 to move forwardly or rearwardly. The block 49 is secured to the lower gripping member 11 by

55 means of the bolt 41 previously referred to which extends through a hole in the block 49. This permits a slight adjustment of the block 49 to enable it to accommodate itself to the adjustment of the screw 46. The pin 50 is mounted in the openings 51 in downward extending lugs 52 formed integral with the end castings 27 of the upper gripping member 10. The screw 46 extends through

60 an opening 53 in the lug 52, a slight clear-

ance being provided to enable the pin 50 and screw 46 to adjust themselves to the requirements. The lugs 52 rest on the end castings 15 of the lower gripping member 11, which thus forms a support for the rear portion of the upper gripping member 10. As the screw 46 is adjusted, the lugs 52 will slide along on the lower end castings 15.

In order to partially or wholly counterbalance the weight of the swinging apron 13 a counterweight 54 is provided, which is supported in its proper position by means of a rod 55 secured at 56 to the end casting 17 of the swinging apron 13.

The operation of the bending machine is 80 as follows: To insert the sheet 12 between the gripping members 10 and 11, the cam-members 37 are operated by means of the handle-member 42 to raise the gripping member 10 sufficiently for the insertion of 85 the sheet to be operated on. The screws 46 are adjusted to bring the upper gripping member 10 in the right relation with respect to the lower gripping member 11, and the cam-members 37 are then operated to bring 90 the upper gripping member 10 down on the sheet 12 to hold the sheet 12 firmly between the face-plates 28 and 29. The pivoted apron 13 is then swung upwardly by any suitable handle means (not shown) to bend 95 the sheet 12 about the edge or corner of the upper face-plate or wear-plate 28. The degree of the bend is determined by the amount of the swinging movement of the apron 13. 100

It will be seen that the channel-members 25 and 26 in combination with the end castings 27 form a strong, durable construction, as do also the channel-members 23 and 24 in combination with the end castings 15. 105 Also the channel-member 16 of the swinging apron forms a firm rigid support for the face or wear-plate 18. The cam-members 37 form a simple construction by means of which the gripping jaws can be opened and 110 closed, and the screws 46 form a simple adjustment by means of which the upper gripping member can be adjusted with respect to the lower stationary gripping member 11. All of the channels and plates may, if de- 115 sired, be of standard shaped steel.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the U. S. is:

1. A machine for bending sheet metal 120 comprising upper and lower gripping members for clamping the sheet which is to be bent, and a pivoted apron for bending the sheet as it is held by said gripping members, said upper gripping member comprising an 125 integral metal channel member, the lower flange of which extends forwardly from the web portion, and exerts a bearing pressure on the sheet which is to be bent, and a second integral metal channel member having its 130

web portion horizontal, and its flanges extending vertically from the web portion, the lower portion of said second channel member being located in substantially the same plane as the lower flange of said first channel member, the forward flange of said second channel member being secured to the web portion of said first channel member.

2. A machine for bending sheet metal comprising upper and lower gripping members for clamping the sheet which is to be bent, and a pivoted apron for bending the sheet after it is held by said gripping members, said upper gripping member comprising an integral channel member, the lower flange of which is bent forwardly from the web portion, and exerts a bearing pressure on the sheet which is to be bent, and a second integral metal channel member having its web portion horizontal, and its flanges extending vertically from the web portion, the lower portion of said second channel member being located in substantially the same plane as the lower flange of said first channel member, the forward flange of said second channel member being secured to the web portion of said first channel member, the web of said first channel member being bent on a longitudinal line adjacent the upper edge of the forward flange of the second channel member, to provide clearance.

3. A machine for bending sheet metal comprising upper and lower gripping members for clamping the sheet which is to be bent, and a pivoted apron for bending the sheet as it is held by said gripping members, said upper gripping member comprising an integral metal channel-member, the lower flange of which extends forwardly from the web portion, and exerts a bearing pressure on the sheet which is to be bent, and a second integral metal channel-member having its web portion horizontal and its flanges extending upwardly from the web portion, the web portion being located in substantially the same plane as the lower flange of said first channel-member, the forward flange of said second channel-member being secured to the web portion of said first channel-member, the web of the first channel-member being bent on a longitudinal line adjacent the upper edge of the forward flange of the second channel-member to provide clearance.

4. A machine for bending sheet metal comprising upper and lower gripping members for holding the sheet to be bent, and a pivoted apron for bending the sheet as it is held by said gripping members, said lower gripping member comprising an integral metal-channel having a vertical web portion, and flange portions extending forwardly from said web portion, said upper flange portion exerting a bearing pressure on the sheet to be bent, and a second channel-member having a web portion located in substan-

tially the same horizontal plane as the upper flange of said first channel-member and having flange portions extending downwardly from said web portion, the forward flange of said second channel-member being secured to the web portion of said first channel-member.

5. A machine for bending sheet metal comprising upper and lower gripping members for clamping the sheet which is to be bent, and a pivoted apron for bending the sheet as it is held by said gripping members, said upper clamping member comprising an integral metal channel-member having a vertically extending web portion, and having its lower flange portion extending forwardly from said web portion for exerting a bearing pressure on the sheet to be bent, and a second integral metal channel-member having a substantially horizontal web portion, and flange portions extending upwardly from said web portion, the forward flange of said second channel-member being secured to the web portion of said first channel-member, the web portion of said second channel-member being located substantially in the same horizontal plane as the lower flange of said first channel-member, said lower gripping member comprising an integral metal channel having a vertical web portion, and flange portions extending forwardly from said web portion, said upper flange portion exerting a bearing pressure on the sheet to be bent, and a second channel-member having a web portion located in substantially the same horizontal plane as the upper flange of said first channel-member and having flange portions extending downwardly from said web portion, the forward flange of said second channel-member being secured to the web portion of said first channel-member.

6. A machine for bending sheet metal comprising upper and lower gripping members for holding the sheet as it is bent, a pivoted apron for bending the sheet as it is held by said gripping members, and means for causing said gripping members to release or grip the sheet comprising a pin secured to the upper gripping member, a pin secured to the lower gripping member, a cam-member having a pair of curved slots therein engaging the pins respectively, a slotted plate into which said pins extend, and means for securing said slotted plate to the center of said cam-member.

7. A machine for bending sheet metal comprising upper and lower gripping members for holding the sheet as it is bent, a pivoted apron for bending the sheet as it is held by said gripping members, means for moving one of said gripping members with respect to the other, to clamp or release the sheet to be bent, means for moving said upper gripping member to the front or

rear, comprising a screw having oppositely threaded portions for cooperation with the upper and lower gripping members respectively, the rear end of said upper gripping member being slidably supported on said lower gripping member.

8. A machine for bending sheet metal comprising upper and lower gripping members for holding the sheet as it is bent, a pivoted apron for bending the sheet as it is held by said gripping members, means for causing said gripping members to release or grip the sheet, and means for moving said upper gripping member to the front or rear for adjustment with respect to said lower gripping member, said means comprising a screw having oppositely threaded portions, said upper gripping member having a downwardly extending lug for engagement with one of said threaded portions, and said lower gripping member having an upwardly extending lug for engagement with said other threaded portion.

9. A machine for bending sheet metal comprising upper and lower gripping members for holding the sheet as it is bent, a pivoted apron for bending the sheet as it is held by said gripping members, means for causing said gripping members to release or grip the sheet, and means for moving said upper gripping member to the front or rear for adjustment with respect to said lower gripping member, said means comprising a screw having oppositely threaded portions, said upper gripping member having a downwardly extending lug for engagement with one of said threaded portions, said lower gripping member having an upwardly extending lug for engagement with said other threaded portion, and said downwardly extending lug having a sliding engagement with said lower gripping member.

In witness whereof, I have hereunto subscribed my name.

HUGO SCHOTT.