

(No Model.)

2 Sheets—Sheet 1.

R. D. HUME.

MACHINE FOR CUTTING AND DELIVERING SHEET METAL BLANKS.

No. 576,124.

Patented Feb. 2, 1897.

Fig. 1.

Fig. 3.

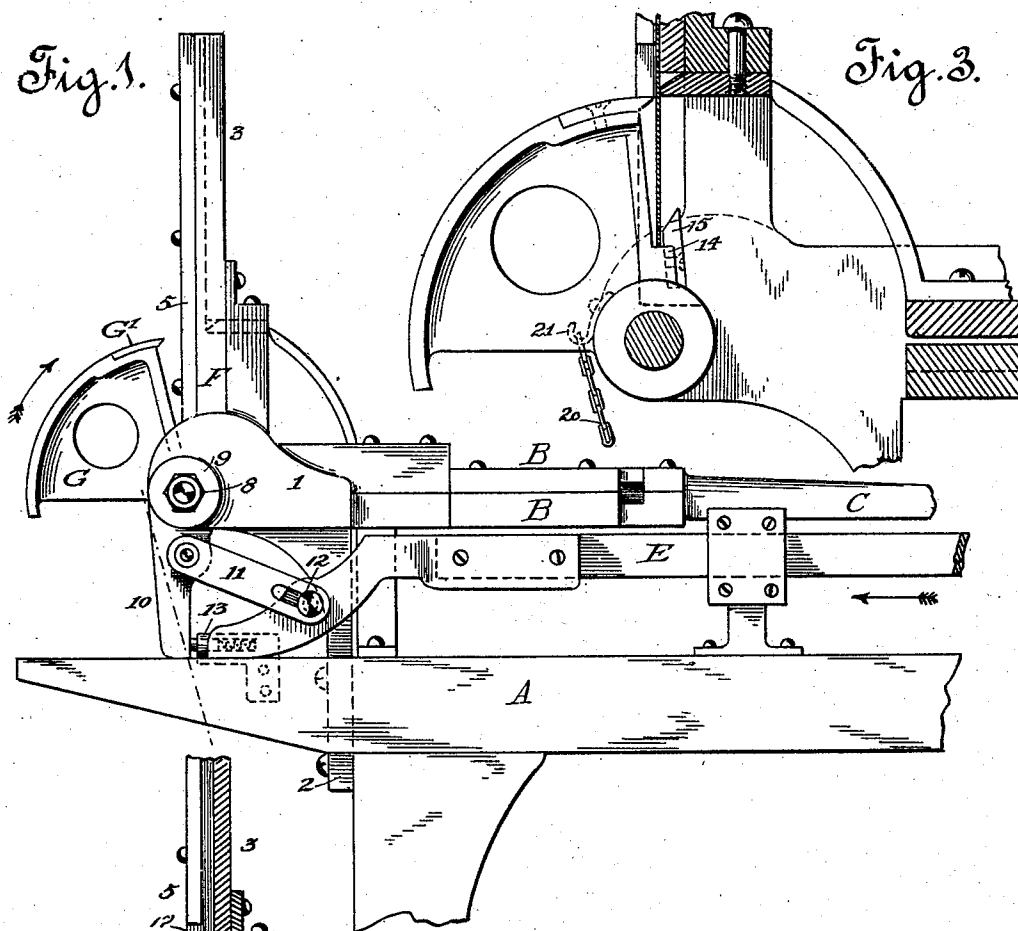
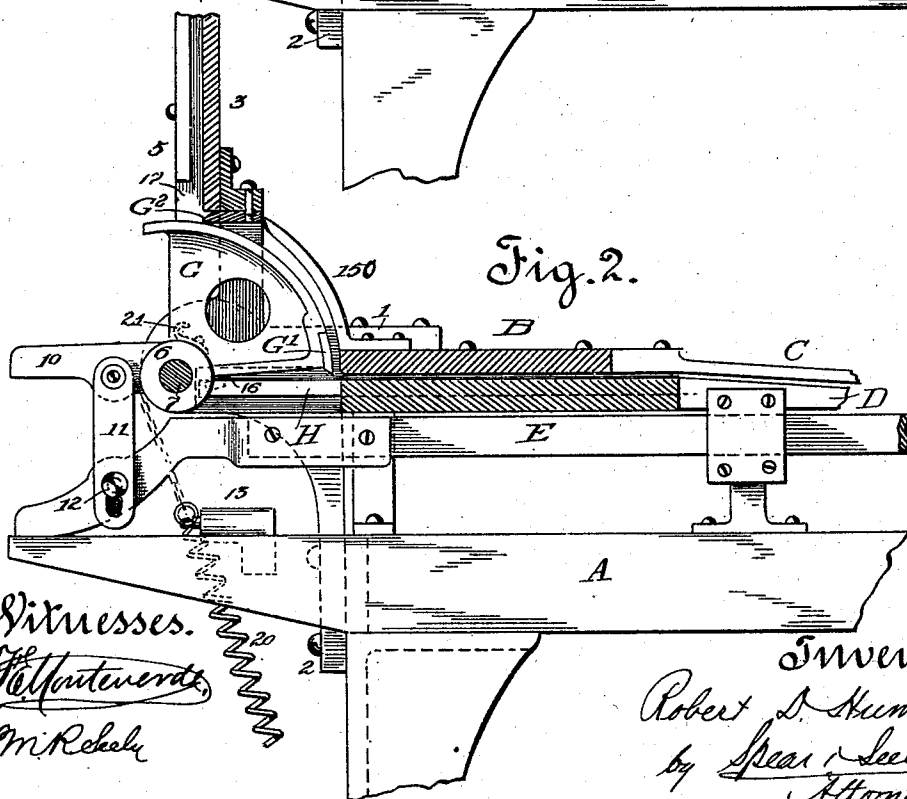


Fig. 2.



Witnesses.

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(No Model.)

2 Sheets—Sheet 2.

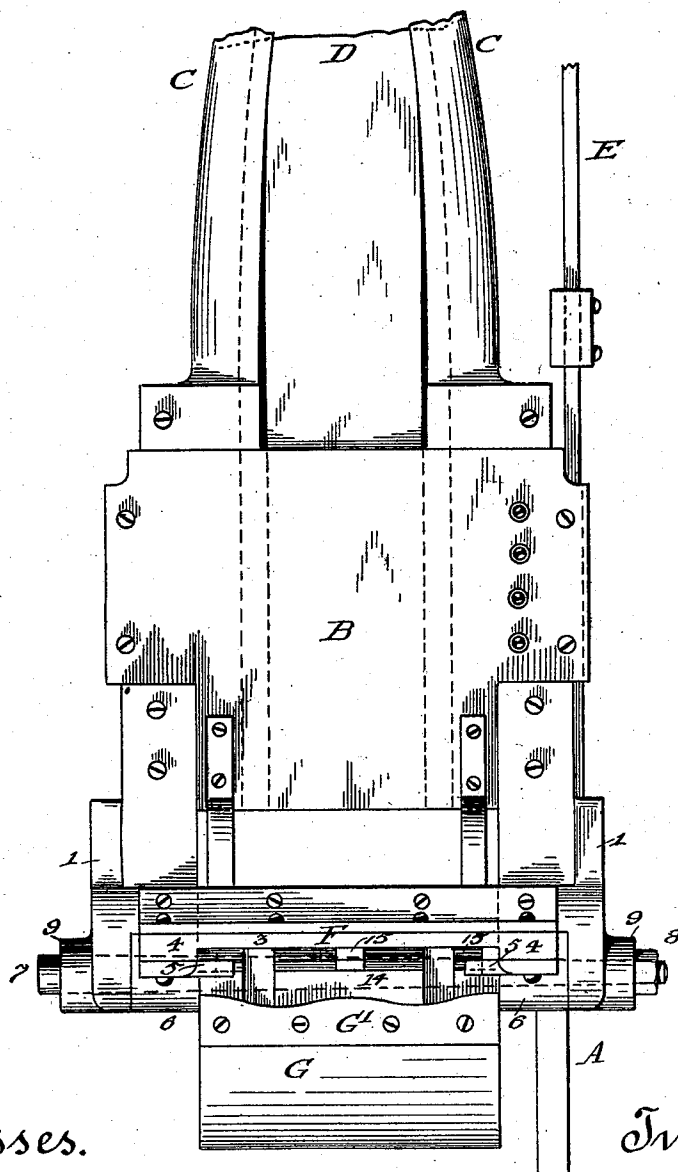
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Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

ROBERT DENISTON HUME, OF GOLD BEACH, OREGON.

MACHINE FOR CUTTING AND DELIVERING SHEET-METAL BLANKS.

SPECIFICATION forming part of Letters Patent No. 576,124, dated February 2, 1897.

Application filed February 24, 1896. Serial No. 580,477. (No model.)

To all whom it may concern:

Be it known that I, ROBERT DENISTON HUME, a citizen of the United States, residing at Gold Beach, in the county of Curry and State of Oregon, have invented certain new and useful Improvements in Machines for Cutting and Delivering Sheet-Metal Blanks; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to the cutting and delivery of flat metal blanks to be used in the manufacture of sheet-metal cans or for other purposes, and in order to give a perfectly-intelligible understanding of such invention I have illustrated it in connection with a can-making machine, showing such parts of the latter only as operate in connection with my present invention. I do this as a matter of convenience in description and illustration and to show one practical embodiment of my invention, but have no intention of limiting the latter to use in machines of this character, since it is designed to cut and feed sheet-metal blanks for all purposes.

The following description should be read in connection with the accompanying drawings, in which—

Figure 1 represents an elevation of the receiving end of a can-machine with my cutting and delivery devices in position previous to cutting a blank from a sheet of metal. Fig. 2 is a similar view, but partly in longitudinal section, with the parts in the position they assume after the blank has been cut, but before it has been delivered. Fig. 3 is an enlarged elevation of the cutter at the instant of cutting off a blank from a sheet. Fig. 4 is a plan view.

Referring briefly to such parts of a can-machine as I have considered it necessary to show for purposes of illustration, A represents the frame of such a machine; B B, plates between which is a passage through which the cut blanks are transferred; C C, forming-sheaths, and D a horn or body-former between which and the sheaths C C the blanks are bent into tubular form.

E is a reciprocating side bar operated from a driving-shaft (not shown) and from which the various mechanisms constituting the automatic can-machine derive their motions. With regard to the present case this side bar

is the means for operating the devices which constitute my invention.

Mounted above and near the end of the table is the holder F, in which the sheets of tin are placed, and by which they are guided downward to the position in which they are operated upon by the cutter. The holder is composed of a base-plate 1, having a downward projection 2, which is bolted to the end of the main frame. The holder proper is a vertical plate 3, having rearward projections 4, to which are secured strips 5 5, all forming a guide-space for the metal sheets inserted from above, Fig. 4.

The cutter-head G is of sector shape in end elevation and has a sleeve 6, which forms the bearing by which it is mounted upon a transverse pin 7. This pin, as well as the bearing 6, is tapered, so that the bearing can be tightened by adjusting the pin laterally and setting the end nut 8. The pin rests in bosses 9, formed with the base-plate 1 of the holder, and the cutter-head oscillates upon it between extremes of motion represented in Figs. 1 and 2. The cutter G' is a blade secured to one edge of the cutter-head and which makes its cut in connection with a die G², secured to the sheet-holder, Fig. 3. The edge of the cutter is waved, as shown, so as to produce a compound direct and "draw" or shearing cut—that is, there is a direct cut produced by the middle and ends of the blade and draw cuts from the middle toward the ends, and vice versa.

Projecting from one of the bearings 6 of the cutter is an arm 10, which by a link 11 and slot and pin 12 is connected to the side bar E. The reciprocation of the side bar produces an oscillatory motion of the cutter-head, as clearly shown in Figs. 1 and 2. A tension-spring 20 connects any fixed part of the frame to the cutter-head, preferably by means of a hook 21. On the return or inoperative stroke the spring 20 starts the cutter-head back quickly, so that the sheet of metal can immediately drop down, and the arm 10 strikes against a simple pneumatic stop 13, consisting of an air-cylinder and spring-piston, which takes up the jar upon that stroke. Each sheet of metal, which is of the width of one dimension of the blanks and of a length to form several of the latter, when

placed in the holder rests upon shoulders 14 of the cutter-head, Fig. 3, to which position it is guided by the beveled guides 15, also attached to the cutter-head. The sheet now stands vertically, and the forward stroke of the cutter shears it off on the line of the die G^2 . The continuation of the shearing stroke carries the severed blank forward and downward under the concave shield 150 until it lies horizontally upon the carrier or carriers II.

The carriers shown in the drawings are parts of the can-machine, their office being to carry the body-blanks to the forming-horn and sheaths. They are rods which work in grooves in the horn, Fig. 4, and derive a reciprocating movement directly from the side bar, to which they are connected by a cross-head. I will assume that this connection is understood without illustration. The extreme ends of these carriers are provided with catches 16, which hook over the rear edges of the blanks and on the forward stroke of the side bar carry them forward between the plates B B and onto the former. Thus the rearward stroke of the side bar produces, first, the cutting or shearing stroke of the cutter and also places the carriers in position to receive the severed blank, while the forward stroke causes the cutter to return to its inoperative or initial position and withdraws the carriers with the blank. The bearing-sleeve 6 is recessed, Fig. 2, to allow the carriers a free stroke under the blank. The cutter-head itself during and immediately after the cutting operation closes the lower open end of the sheet-holder and acts as an automatic stop for the remainder of the sheet.

The strips 5 5, which form a part of the sheet-holder, are shorter than the vertical plate 3, as shown in Fig. 2. The purpose of this is to leave an open space 17 in the holder, so that any waste strip or margin of the tin left from a sheet after all the blanks have been cut from it will be thrown out backward by the returning cutter-head and cannot be carried into the machine. The carriers shown in the drawings may be taken as representative of what I consider the best means for removing the severed blanks. When my cutter is used to supply body-blanks to a can-machine, these carriers are what I prefer to use, and equivalent conveying devices might be employed whatever the character of the machine might be.

I do not limit myself to the employment of a reciprocating side bar and the special means shown for connecting it to the cutter, since the oscillating motion of the cutter can be produced in other and equivalent ways. I have used the side bar in the present case because it forms part of an existing can-machine to which the present invention is adapted to supply body-blanks.

What I claim as my invention is—

1. A machine for cutting metal blanks from a sheet comprising a sheet-holder to allow the end thereof to protrude and an oscillating cut-

ter-head provided with a support for the edge of the protruding sheet, said support holding the blank after being cut and conveying it in the movement of the cutter to a delivery-point, substantially as described.

2. A machine for cutting and delivering sheet-metal blanks, comprising a sheet-holder, an oscillating cutter having a support for the edge of the sheet protruding from the holder, said support holding the blank after being cut and conveying it by the movement of the cutter to a delivery-point, and a moving carrier to receive and convey the blanks from the cutter, and means for operating the cutter and carrier.

3. A machine for cutting blanks continuously from a sheet of metal, comprising a vertical open-ended holder, an oscillating cutter-head having a support for the edge of the sheet in the holder, and oscillating past the open end of the holder, whereby the cutter severs the blank while the sheet is held vertically, and by the same stroke carries the severed blank to a horizontal position and there leaves it, substantially as described.

4. A machine for cutting and delivering sheet-metal blanks, comprising a sheet-holder, an oscillating cutter having a support for the edge of the metal sheet, a moving carrier with means for operating the carrier and the cutter, said support on the cutter serving to convey the blank to the carrier by a continuation of its cutting stroke, substantially as described.

5. A machine for cutting and delivering sheet-metal blanks comprising an open-bottomed sheet-holder, an oscillating cutter-head, having a support to receive the lower edge of a sheet in the holder, and means for oscillating the cutter-head below the sheet-holder, whereby the sheet is severed below the holder, and is carried forward and delivered by the continuation of the severing stroke of the cutter-head, substantially as described.

6. A self-feeding blank-cutter comprising an open-ended sheet-holder, which permits the sheets to drop by gravity, a pivoted cutter-head, having a shoulder near its center of oscillation to receive the dropped sheet, and means for oscillating such cutter-head past the open end of the holder; whereby such cutter severs a blank from the sheet and removes it while the cutter-head closes the open end of the sheet-holder, substantially as described.

7. In a machine for cutting and delivering sheet-metal blanks, and in combination, an open-ended sheet-holder, an oscillating cutter pivoted below said holder, and having a support for a sheet in the holder, a reciprocating carrier which receives the severed blanks from the cutter-head, and a reciprocating side bar connected to said carrier, and to said cutter-head, substantially as described.

8. In a machine for cutting blanks from sheets of metal, the combination with a sheet-holder, of an oscillating cutter-head, having a support for the sheet on the holder, an arm

projecting from said cutter-head, a reciprocating side bar and a slotted link connecting said side bar to the arm on the cutter-head, substantially as described.

5 9. In a blank-cutting machine and in combination, an open-ended sheet-holder, adapted to allow the sheet to protrude; an oscillating cutter-head; means for oscillating said cutter-head past the open end of the sheet-holder, said means having a loose connection
10 with the cutter-head to sever the protruding part of the sheet, and to close the sheet-holder; and a spring for imparting initial motion in the opposite direction to said cutter-head, in
15 order to quickly open the sheet-holder, said motion being continued and completed by the main means for operating said cutter-head, substantially as described.

10 10. In a machine for cutting blanks, and in combination, a sheet-holder, having an open end through which such sheets fall, and provided with guide-strips terminating above the open end; and a cutter-head oscillating past the open end of said holder, and having a
25 support for the sheets which fall through the open holder; whereby each blank severed from a sheet is removed by the cutter-head, which, at the same time, closes the open end of the holder; and whereby, also, after the

cutting of the last blank from any sheet, the strip or margin left is discharged beneath said
30 strips 5, while the holder is closed by the cutter-head, substantially as described.

11. In a blank-cutting machine, and in combination, an open-ended holder for metal
35 sheets through which the sheets are permitted to drop freely, a cutter-head, sector-shaped, in end view, and caused to oscillate past the open end of such sheet-holder on an arc of approximately ninety degrees, whereby a severed
40 blank is carried from a vertical to a horizontal position by said cutter-head, during which motion the cutter-head keeps the sheet-holder closed, substantially as described.

12. A machine for cutting metal blanks continuously from metal sheets, comprising an
45 open-ended sheet-holder, a support below said holder for the edge of the sheet, and a cutter-head oscillating below the open end of the holder and against the exposed part of the
50 metal sheet, substantially as described, and for the purposes set forth.

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

ROBERT DENISTON HUME.

Witnesses:

L. W. SEELY,
JOHN W. HALL.