April 7, 1953 D. F. SAWYER 2,633,891

FLANGING MACHINE

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FIG. 1.

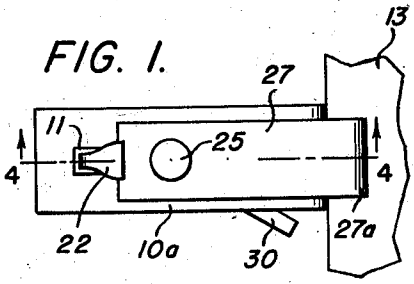


FIG. 4.

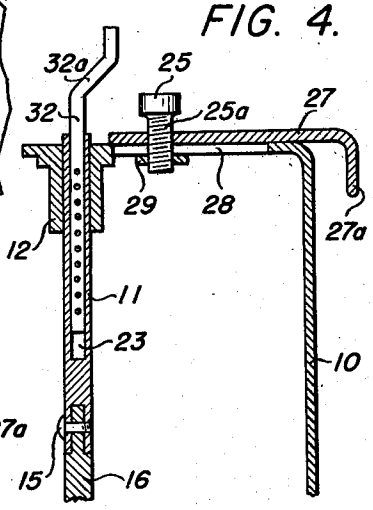


FIG. 3.

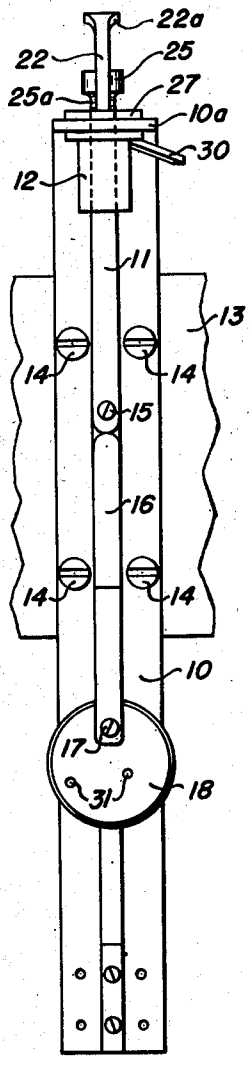


FIG. 2

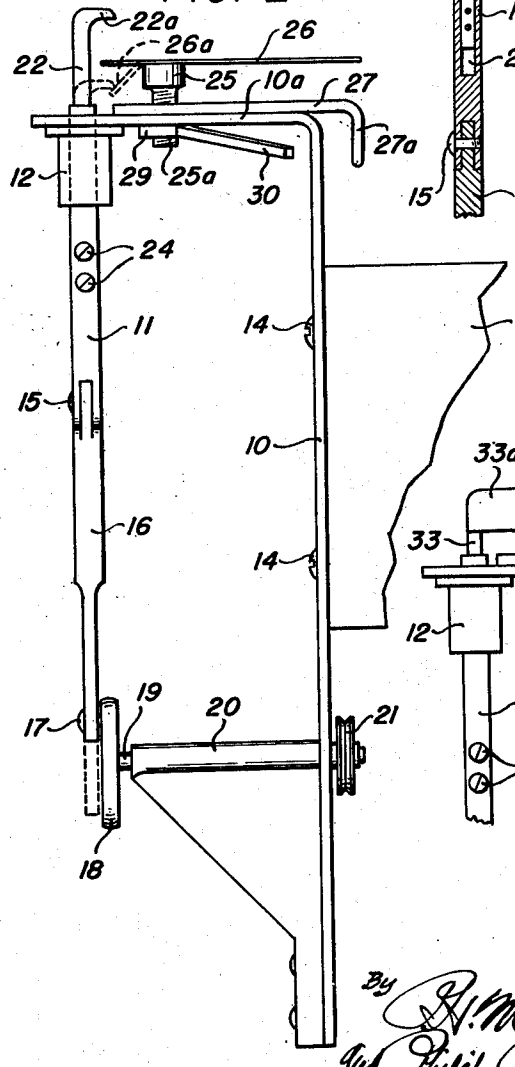
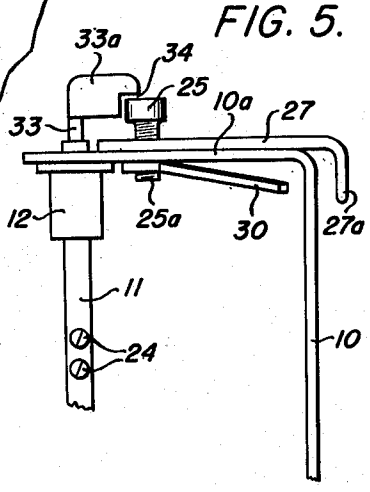


FIG. 5.



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FLANGING MACHINE

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4 Claims. (Cl. 153—21)

1

This invention relates to machines for flanging malleable sheet material, especially sheet metal.

In the making of sheet metal letters for display signs, particularly the neon tube type of electrical sign, a very effective artistic result is achieved by beveling the edges of the letters. To do so manually, however, is a tedious and time-consuming matter which is not practical except in very special instances. To do so by means of forming dies is scarcely more practical, since a complete set of dies covering the alphabet and numerals involves a very considerable initial expense and serves only for one size and configuration of letter or numeral.

In accordance with my invention, I am able to easily and economically produce almost any size or configuration of letter, numeral, or other graphic or pictorial representation, with any desired degree of bevel on any or all edges thereof. I accomplish this by the provision of a flanging machine having a flanging tool arranged for rapid reciprocation relative to an anvil upon which the sheet metal shape whose edges are to be beveled is supported during the flanging operation.

The flanging tool is preferably mounted to be driven by any standard power unit, such as a small electric motor, whereby construction and operation of the machine is considerably simplified and rendered inexpensive. Furthermore, the work-supporting anvil is made adjustable in position relative to the flanging tool, and such tool is itself preferably arranged for adjustment and replacement in a suitable holder, so that a variety of types of tools may be utilized in the machine for particular operations.

Principal objects of the invention, therefore, are:

To provide a flanging machine for sheet metal which is capable of beveling or otherwise flanging the edges of a variety of configurations, especially letters of the alphabet and numerals in the construction of electric and other types of display signs.

To provide such a machine which will handle inside edges of shapes such as the letters "O", "P", "B", etc., as satisfactorily and as easily as exterior edges thereof.

To provide such a machine whose action is to bend or draw the edges of a sheet metal shape into desired flange formation progressively as the shape is fed into the machine.

To provide such a machine whose construction is simple, not likely to get out of order, and inexpensive in initial cost and operation.

2

Further objects and features of the invention will become apparent from the following detailed description of the presently preferred specific embodiment thereof illustrated in the accompanying drawing by way of exemplifying the novel structure and functional concepts involved rather than by way of limitation.

In the drawing:

Fig. 1 represents a top plan view of the machine;

Fig. 2, a side elevation;

Fig. 3, a front elevation;

Fig. 4, a vertical section taken on the line 4—4 of Fig. 1, but illustrating a different type of forming tool in the tool holder of the machine; and

Fig. 5, a fragmentary side elevation corresponding to Fig. 2 but illustrating yet a different type of forming tool in the tool holder of the machine.

Referring to the drawing: In the embodiment illustrated, a bracket frame 10 provides a support for a reciprocative tool holder 11 which is mounted in the angularly projecting member or table 10a for sliding movement in a sleeve bearing 12, such bearing 12 being in this instance attached to and depending from the underside of the bracket projecting member 10a, as by means of welding. The sleeve bearing, it will be noted, provides a substantially vertical slideway for the tool holder 11, while the table 10a presents an appropriate work surface or face into which the slideway opens.

The bracket frame 10 may be attached to any suitable support, for example that shown fragmentarily at 13, as by means of screws 14. Thus, the machine is readily mounted for use, and just as readily demounted from its support for repairs, if necessary, or for storage.

The tool holder 11 is pivotally linked, as at 15, to a drive rod 16, which is, in turn, pivotally secured to the crank pin 17 of a drive disk 18. Such drive disk 18 is fixed to a drive shaft 19 journaled in a bearing 20, which, in the present instance, is driven from any suitable source of power, such as an electric motor (not shown), by means of a belt working over a drive pulley 21.

A suitable flanging tool, such as that illustrated at 22, is removably and adjustably secured in an elongated receiving recess 23, Fig. 4, formed in the tool holder 11, set screws 24 serving to secure the same in any given working position established by the operator of the machine.

Operatively positioned with respect to the tool holder, is an anvil 25. In the illustrated instance, the anvil 25 is adjustably positioned on the bracket projecting member or table 10a, so

as to support the work 26, Fig. 2, in a desired operative relationship with respect to the flanging tool 22.

For the purpose of vertical adjustability and also to enable convenient securement in any adjusted position, the anvil 25 is formed with a threaded shank 25a which is screwed through a positioning plate 27, the resulting assembly being mounted on top of the bracket projecting member or table 10a so that the lower part of the shank 25a projects downwardly through an elongate slot 28 which extends along such bracket member 10a in longitudinal alignment with the tool holder and flanging tool. As illustrated, the anvil 25 may be conveniently provided by a bolt having a round head with perpendicular circumferential edge.

The anvil is here secured in adjusted position by means of a nut 29, advantageously formed at or secured to the end of a handle member 30.

The positioning plate 27 is desirably provided with a handle member 27a to facilitate positioning of the anvil 25 either closer to or farther from the flanging tool.

The drive disk 18 is preferably provided with alternate receiving openings 31 for the crank pin 17, whereby the throw of the crank and the resulting reciprocative stroke of the tool holder 11 and flanging tool 22 may be made shorter or longer, as found desirable.

In operation, the work 26 is placed upon the anvil 25, which projects upwardly from the table 10a free and clear of surrounding structure other than the flanging tool 22, and is held and fed manually while the rapidly reciprocating flanging tool, which also projects upwardly from the table 10a free and clear of surrounding structure other than the anvil 25, engages and bends edges of such work, as shown, for example by dotted lines in Fig. 2.

The flanging tools employed with the machine may vary in character depending upon the nature of the results desired. The positioning of the anvil and length of reciprocative stroke of the tool will depend upon the particular flanging tool employed.

The flanging tool 22 has a head 22a formed as a lip which engages the margin of the work on the down-stroke of the machine and bends or draws such margin to a downward bevel 26a, Fig. 2, as the edge of the work is fed progressively into the machine.

In Fig. 4, a flanging tool 32 has its forming head 32a provided by an upwardly sloping offset in the tool shank.

In Fig. 5, a flanging tool 33 has its forming head 33a provided with a right-angle recess 34 for positively shaping a right-angle flange.

It should be noted that, in all instances, the flanging tool and the cooperative anvil, 25, are of such character relative to the piece of sheet material being worked upon that practically any edge portion of such piece may be beveled as desired regardless of the configuration of such piece. Thus, the inside edges of such letters as P, B, O, R, etc., may be beveled as easily as the outside edges thereof, resulting in a symmetrically formed product having the appearance of an expensive die stamping.

Whereas this invention is here illustrated and described with respect to certain presently preferred forms thereof, it is to be understood that various changes may be made therein and various other forms may be constructed on the basis of the teachings hereof by those skilled in the art without departing from the protective scope of the following claims.

I claim:

1. A flanging machine for malleable sheet material comprising a bracket frame having an angularly projecting member; a substantially vertically disposed slideway carried by said projecting member; a tool holder mounted for vertical reciprocation in said slideway, said tool holder being adapted to receive and hold in operative position a flanging tool, and said projecting member being slotted in substantially longitudinal alignment with the tool holder; a positioning plate slideably placed upon said projecting member for longitudinal sliding movement thereupon; an anvil mounted on said projecting member in operative proximity to said tool holder so as to support work in the path of reciprocation of said flanging tool, said anvil having a threaded shank screwed through said positioning plate and extending through said slotted portion of the projecting member; a securement nut threaded onto the extended end of said anvil shank; a drive rod pivotally coupled to said tool holder; and means for rotating said crank means.

2. A flanging machine for malleable sheet material, comprising a bracket frame having an angularly projecting member; a slideway carried by said projecting member; a tool holder mounted for reciprocation in said slideway, said tool holder being adapted to receive and hold in operative position a flanging tool, and said projecting member being slotted in substantially longitudinal alignment with the tool holder; a positioning plate slideably placed upon said projecting member for longitudinal sliding movement thereupon; an anvil mounted on said projecting member in operative proximity to said tool holder so as to support work in the path of reciprocation of said flanging tool, said anvil having a threaded shank screwed through said positioning plate and extending through said slotted portion of the projecting member; a securement nut threaded onto the extended end of said anvil shank; a drive rod pivotally coupled to said tool holder; crank means arranged to reciprocate said drive rod and said tool holder; and means for rotating said crank means.

3. A flanging machine for malleable sheet material, comprising a bracket frame having two members disposed substantially at right angles to each other, one of said frame members being adapted for attachment to a support, the other being apertured and forming a work table; a sleeve extending from the underside of said work table in registry with the aperture thereof, forming a slideway; a tool holder mounted for reciprocation in said slideway, said tool holder being adapted to receive and hold in operative position a flanging tool; an anvil mounted on said work table member in operative proximity to said tool holder so as to support work in the path of reciprocation of said flanging tool; a drive rod pivotally coupled to said tool holder; crank means arranged to reciprocate said drive rod and said tool holder; means journaling said crank means in said one frame member and means for rotating said crank means, said flanging tool and said anvil projecting from the work face of said work table member of the bracket frame free and clear of any other structure.

4. The combination recited in claim 3, wherein the tool holder includes an elongate recessed portion for receiving the shank of a flanging tool, and set screw means intermediate the length of

said recessed portion for anchoring the said flanging tool in adjusted position, longitudinally, relative to said tool holder.

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