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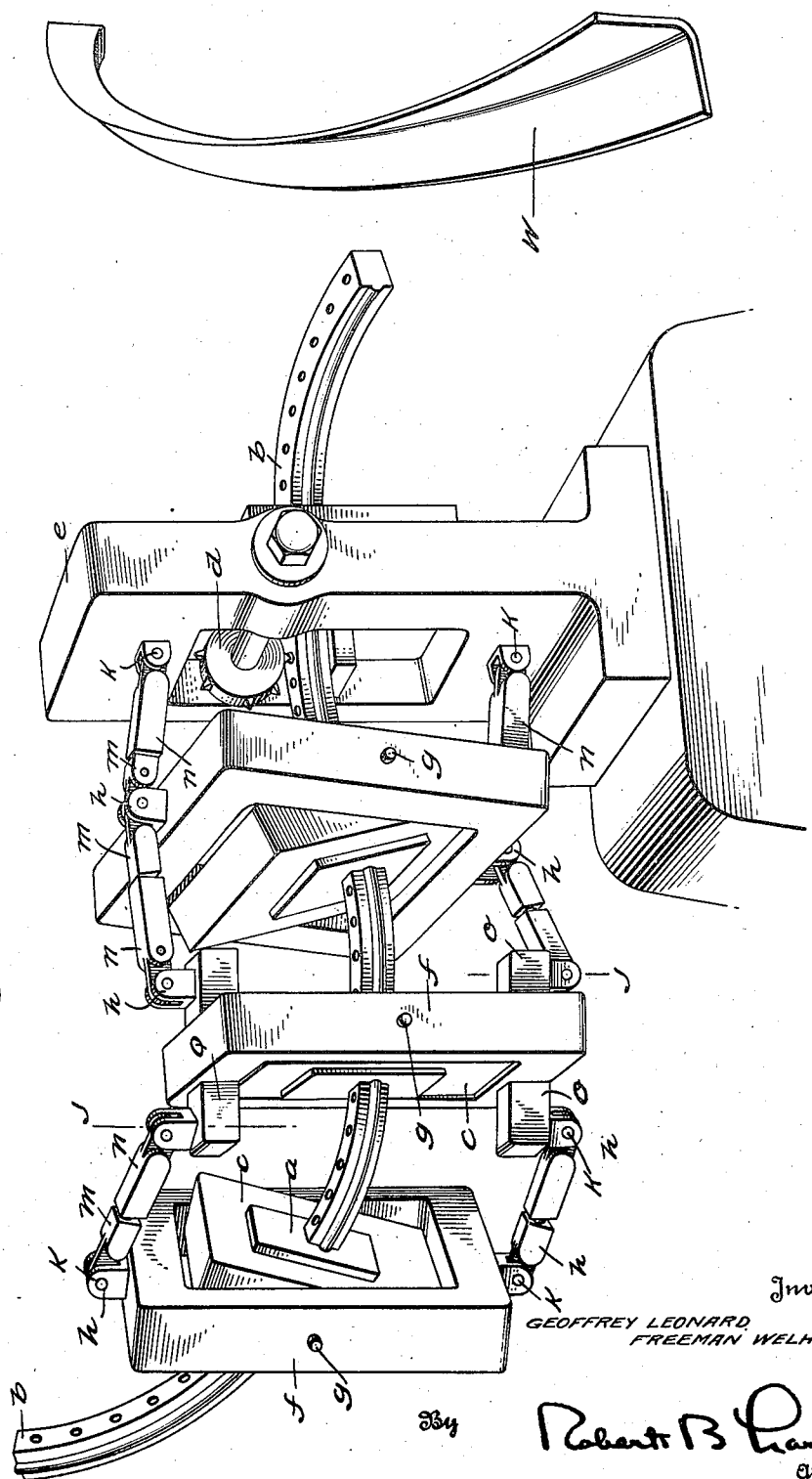
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APPARATUS FOR FLANGING SHEET METAL STRIPS

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2 Sheets-Sheet 1



UNITED STATES PATENT OFFICE

2,424,947

APPARATUS FOR FLANGING SHEET
METAL STRIPSGeoffrey Leonard Freeman Welham, South Ruis-
lip, England, assignor to The Fairey Aviation
Company Limited, Hayes, Middlesex, EnglandApplication January 15, 1946, Serial No. 641,315
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3 Claims. (Cl. 153—3)

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The present invention constitutes an improvement on, or modification of an invention forming the subject of United States application for Letters Patent Ser. No. 524,280, filed by Edward John Boddy on February 28, 1944 and issued May 6, 1947 as Patent No. 2,420,064. In that application there are provided means for flanging sheet metal plates, strips and the like comprising one or more plates, strips or like members of a shape corresponding with that of the finished article and adapted to serve as a clamping member or clamping members for the work, a plurality of frames adapted to be linked or similarly connected together and to take up positions, corresponding with the shape of said clamping member or members, forming rollers and/or dies carried by said frames, an abutment for the interconnected frames and means for moving the clamping member or members and the work through said frames to cause the rollers and/or dies to act progressively on the work. In the above referred to arrangement the interconnected frames may be situated all at the same side of the abutment or some at one side and some at the other side thereof; moreover, the connections between the abutment and the adjacent frame or frames may be in the form of universal joints, or the linking together of the frames, and of a frame or frames with the abutment, may be effected by clamping said parts to a pair of steel strips.

The above-described means function admirably when the "work" to be produced lies substantially in one general plane and the main object of the present invention is so to vary such means as to enable the "work" to be bent and formed in a compound direction, e. g. curved in two or more planes.

For this purpose and in accordance with the present invention the frames in which the forming rollers and/or dies are carried instead of being connected directly with one another, and with the abutment, are pivotally mounted within outer frames and these outer frames are connected together, and an outer frame or frames is or are connected with the abutment, by links pivoted to said outer frames about two intersecting axes so that each inner frame may turn about an axis and each outer frame together with the inner frame therein may turn about a second axis intersecting that just mentioned and each outer frame together with the inner frame therein may rise or fall relatively to an adjacent frame or frames.

In addition the links between adjacent outer frames, or between an outer frame, or frames and

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the abutment, may each be formed in two parts connected by a screwed stud or the like, hence, these two parts may be adjustable relatively to one another about their common axis and the length of the link may be varied to suit requirements.

The above and other objects of the invention will be apparent from the following specification and the accompanying drawings, in which:

Fig. 1 is a perspective view of a preferred embodiment of the invention;

Fig. 2 is a perspective view of a compound work piece produced thereby;

Fig. 3 is a cross sectional view taken on line 3—3 of Fig. 4; and

Fig. 4 is a cross sectional view taken on line 4—4 of Fig. 3.

As shown, *a* . . . are dies (or forming rollers) may be employed as in the said prior invention) through which are passed the "work," while a clamping member or members are indicated generally at *b*. The dies *a* . . . (or forming rollers, as the case may be) are carried by frames *c* . . . and the "work" is advanced by a toothed wheel *d*, the spindle of which is mounted in bearings in an abutment *e*, as before. In the present invention, however, the frames *c* . . . are not connected with one another and with the abutment *e* directly, but each frame *c* is pivoted within an outer frame *f* on a horizontal axis at *g*, and the outer frames *f* . . . have at their tops and bottoms bifurcated brackets *h* . . . pivoted thereto on vertical axes as at *j*. Pivoted in the bifurcated brackets *h* . . . and to the abutment *e* on horizontal axes *k* . . . are two-part links *m*, *n* the parts of which are angularly movable relatively to one another about a horizontal axis lying in the general direction in which the work is to be moved.

The bifurcated brackets *h* . . ., in the case of intermediate outer frames *f* are pivotally mounted on lugs *o*, *o* projecting, in said general direction, from the upper and lower members of the outer frames *f* . . .

It is apparent that the two parts *m* and *n* of the links are connected with one another by screw studs *m'* so that the effective length of the links may be adjusted, if necessary, and in addition, in use, said parts are free to move relatively to one another about their common axis.

It will be appreciated that these means permit the inner frames *a* . . . to assume various levels and degrees of inclination to one another and, consequently, the arrangement is well adapted for the production of "work" which is curved in two

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or more planes, even "work" with a double bend and sharp radii.

While I have shown and described in this application one embodiment which my invention may assume in practice, it will be understood that this embodiment is merely for the purposes of illustration and description, and that various other forms may be devised without departing from the inventive concept as defined by the appended claims.

I claim:

1. Mechanism for flanging sheet metal plates, strips and the like, comprising an abutment, a plurality of outer frames, a plurality of inner frames supported within said outer frames for pivotal movement about a first axis, forming means mounted within said inner frames, links connecting said outer frames together and connecting at least one of said outer frames with said abutment, and means pivoting said links to said outer frames about second and third intersecting axes, at least one of said two last-mentioned axes being angularly disposed with respect to said first axis, whereby said inner frames are movable with respect to each other about a plurality of angularly related axes permitting flanging of work curved in a plurality of planes.

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2. Mechanism as set forth in claim 1 in which said links are each formed in two parts, and means connecting said parts of each link for relative movement about their common axis.

3. Mechanism as set forth in claim 2 in which said last mentioned means comprise screw studs arranged to permit variation of the effective lengths of each link.

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