

Nov. 25, 1952

L. J. SELF

2,619,149

METHOD OF JOGGLING

Filed May 31, 1949

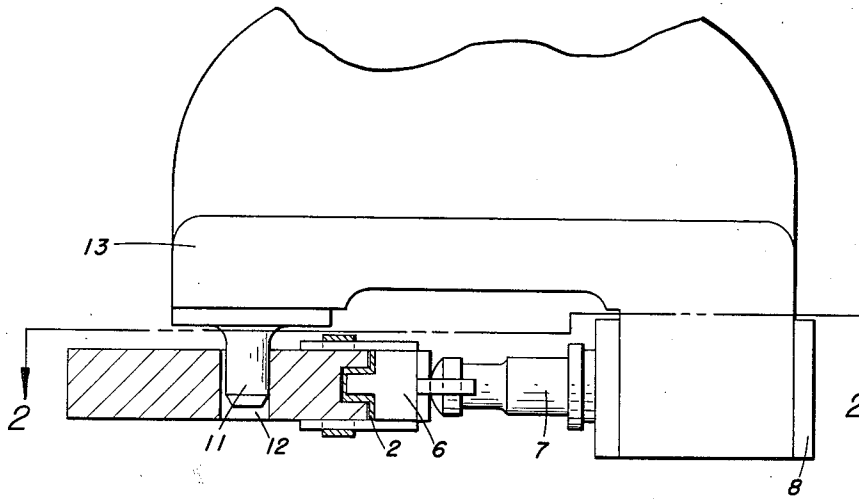


FIG. 1

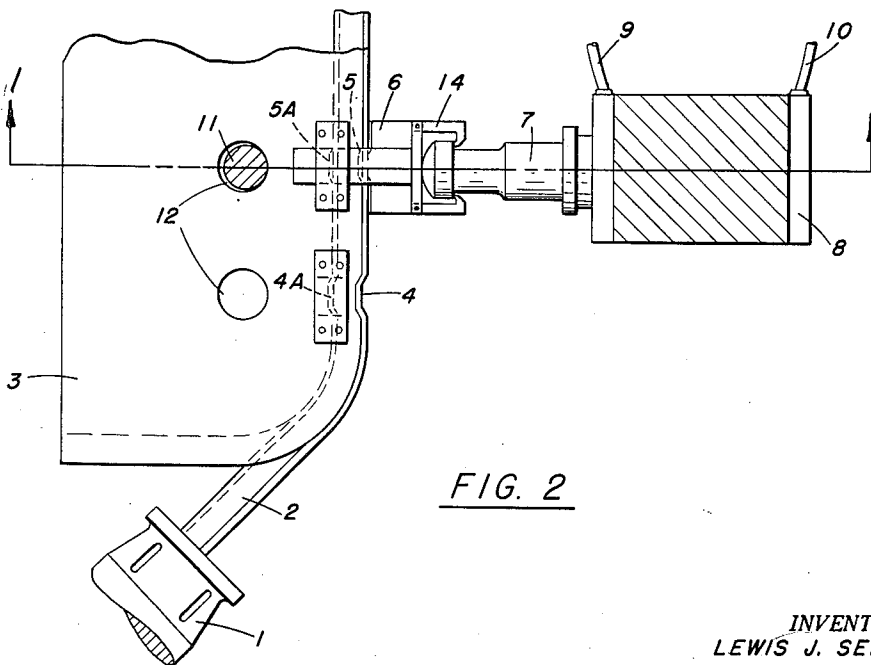


FIG. 2

INVENTOR.
LEWIS J. SELF

BY *William R. Lane*

ATTORNEY

UNITED STATES PATENT OFFICE

2,619,149

METHOD OF JOGGLING

Lewis J. Self, Inglewood, Calif., assignor to
North American Aviation, Inc.

Application May 31, 1949, Serial No. 96,366

1 Claim. (Cl. 153—3)

1

This invention pertains to apparatus for joggling sheet metal such as Duralumin used in airplane work.

The invention is more particularly adapted for use with machines of the type shown and described in Patent No. 2,357,027 in which material is stretched to between its yield point and ultimate strength and then wrapped around a die while in that condition to thereby shape the material to the contour of the die.

In aircraft work it has been found necessary to provide the formed part with indentations and recesses for various purposes. These have been provided largely by hand, or by separate joggling machines. When so joggled, there is danger of inducing undesirable stresses in the material and particularly when parts of the material are stressed to about its ultimate strength while other parts are stressed to only slightly above their yield points. Also, inaccuracies have been found to obtain when joggling is done separately from the forming operation.

Accordingly, it is an object of this invention to provide an arrangement whereby joggling can be obtained as a part of the stretch forming operation.

It is a further object of this invention to provide a joggling arrangement which may be used in combination with a stretch forming machine.

It is yet another object of this invention to provide a joggling device which can be used with existing equipment without damage thereto.

Other objects of invention will become apparent from the following description taken in connection with the accompanying drawing, in which

Fig. 1 is an elevational view, partly in section, taken along the line 1—1 of Fig. 2; and

Fig. 2 is a plan view taken along the line 2—2 of Fig. 1.

Referring to the drawing, jaws such as 1 are adapted to grip the ends of material 2, stretch the same to above its yield point, associate the stretched material with a die 3 and then wrap it about die 3 to conform to the contour of the die, as more fully explained in Patent No. 2,357,027. According to the present invention the die is provided with predeterminedly located and sized recesses or contours, such as 4 and 5, representing conformations desired to be obtained in the finished article. In the particular embodiment of the invention, material 2 is a channel section adapted to be stretch formed on die block 3, which die block may be provided with recesses 4a and 5a in the base of the channel

2

member corresponding to recesses 4 and 5. It is to be understood, of course, that the die may be provided with other contours and shapes, as well as other types of recesses, and that the section may be of any desired shape.

According to the present invention a joggle die 6 having a preselected contour conforming to the recess, such as 4, is adapted to be actuated by piston 7 of a hydraulic arrangement 8 which in turn is connected to a source of fluid under pressure by hose lines 9 and 10. A pin 11 adapted to be received in hole 12 of die 3 is connected to the hydraulic arrangement by yoke 13 or the like so as to receive directly the joggling force. This avoids any bending strain on the die 3 and permits the invention to be used with present arrangements. Die 3 may be provided with a series of holes 12 adapted to receive pin 11 at such point where a joggle operation is to be performed. A single hole 12 may be used where the contour of the die is an arc.

In the operation of the device a piece of material such as 2 is gripped by jaws 1, stretched to above its yield point but below its ultimate strength, and then associated with and wrapped around die 3. With the material in its stretched condition, the pressure exerted through the hydraulic system of jaws 1 is relieved, but the jaws nevertheless hold material 2 in stretched position. Thereupon the joggle apparatus forming this invention is arranged with pin 11 in a selected opening 12, die 6 is attached to piston 7 in any suitable manner, such as by hooks 14, and hydraulic pressure is applied by suitable controls (not shown) to cause piston 7 to force die 6 against material 2 and into a preselected recess, such as 5. This provides a joggled indentation or the like in material 2 while the material is held by jaws 1 after having been tensioned to above its yield point. This avoids spring-back, undesirable stressing of the material, and inaccuracies such as are obtained when the material is joggled separately after the stretch forming operation.

Although the invention has been described and illustrated in detail, it is to be clearly understood that the same is by way of illustration and example only and is not to be taken by way of limitation, the spirit and scope of this invention being limited only by the terms of the appended claim.

I claim:

The method of joggling material comprising the steps of gripping said material; exerting a stretching force on said material above the yield

3

point thereof; associating said material while so stretched with a die having a recess therein; wrapping said material about said die; relaxing said stretching force; and forcing a second die against said material and into said recess for thereby providing a jogged indentation in said material.

LEWIS J. SELF.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date	
1,258,206	Fetcher	Mar. 5, 1918	15

Number
1,622,590
2,303,059
2,357,027
2,437,105
2,446,089
2,485,354
2,490,695

4

Name	Date
Jolstad	Mar. 29, 1927
Misfeldt	Nov. 24, 1942
Seifried	Aug. 29, 1944
Lindsey	Mar. 2, 1948
Hochreiter	July 27, 1948
Brennan	Oct. 18, 1949
Leutheuser	Dec. 6, 1949

FOREIGN PATENTS

Country	Date
Australia	Mar. 22, 1927
Germany	Mar. 27, 1930