June 29, 1948. J. J. WALSH 2,444,123

ELASTIC COVERED FORM BLOCK FOR METAL STRETCHING PRESSES

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Fig. 1

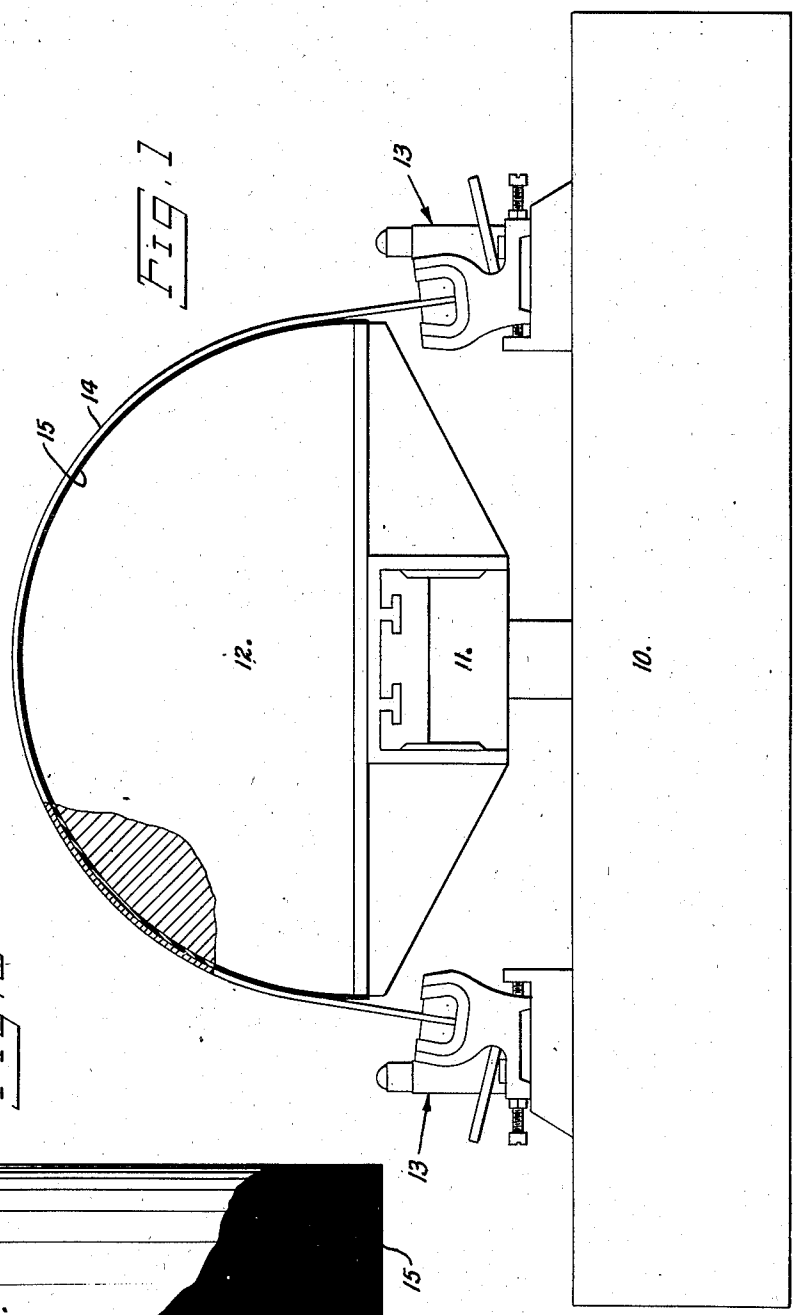
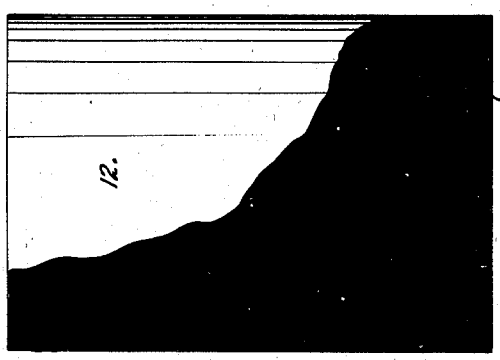


Fig. 2



INVENTOR.
John J. Walsh
BY Charles S. Wilson
ATTORNEY.

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ELASTIC COVERED FORM BLOCK FOR METAL STRETCHING PRESSES

John J. Walsh, St. Albans, N. Y., assignor to Republic Aviation Corporation, Farmingdale, N. Y., a corporation of Delaware

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2 Claims. (Cl. 153—48)

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This invention relates generally to tools used in the forming of sheet metal and particularly relates to stretch presses wherein a partially formed or wholly unformed sheet of metal is placed over a die or forming tool, and stretched to assume permanently the shape of the die.

It is proposed by the present invention to incorporate means for surfacing the working portions of a tool or die with material that will protect the sheet being formed, effect a reduction of friction between the tool and the sheet, and eliminate or reduce the necessity of lubrication.

With the above and other objects in view, as will be apparent, the invention consists in the construction, combination and arrangement of parts, all as hereinafter more fully described, claimed and illustrated in the accompanying drawings, wherein:

Fig. 1 is an end elevation, partly in section, of a stretch press modified to include the present invention: and

Fig. 2 is a plan view of the die surfaced with the liner proposed by this invention, with part of the latter broken away to expose part of the underlying tool.

Heretofore, it has been the practice to heavily grease the surface of the die or stretching block to reduce friction in the forming of sheet metal. Nevertheless even when this is done it has been found that particles of the work sheet slough off and become embedded in the grease with which the die-head is coated thereby causing scratches and defects on the inner surface of the sheet being formed with the result that after the forming of several blanks with the ordinary die as now used it becomes necessary not only to remove the grease from the die or block surface, but also to polish and then regrease it. Manifestly if this prior technique is followed the formed sheets must be cleaned to remove the grease that inevitably adheres thereto. By use of the improvements contemplated by the present invention the stretching of the blanks of sheet metal over the die or block surfaced with a sheet of rubber or other flexible material having some elasticity and constituting a liner between the head of the die or block and the work sheet, effectively minimizes friction during the stretching operation and eliminates the cleaning, greasing and polishing of the tool and formed sheet formerly necessary and employed in the conventional forming and stretching procedure.

One embodiment of the instant invention resides in covering the surface of the die or block by cementing or bonding to it a relatively thin sheet

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of rubber, canvas or other flexible material which will serve as an effective anti-friction liner during the forming operation, and which will eliminate the operations and steps of cleaning, polishing and greasing the head of the die and the cleaning of the formed sheet.

As is well known in the art, a stretch press comprises a bed or base 10 having a ram 11 which moves away from said base either through hydraulic pressure or some mechanical driving means.

The ram 11 carries a die or forming tool or block 12 which is flanked by a series of clamps 13 suitably affixed to the base 10 on either side of the die 12. The metal work sheet 14 to be formed is placed over the die 12 with its edges fixedly secured by the clamps 13.

When the ram 11 moves, the die 12 is correspondingly moved to stretch the metal 14 to conform it to the shape of the die or block 12, the marginal portions of the sheet 14 being fixedly held by the clamps 13 during this operation.

The die 12 may be made of concrete or of any other suitable material and has a surface of steel or other material. In forming sheet metal it was formerly necessary to clean, polish and then heavily grease this working surface of the die or block 12 in order to make the die operate efficiently and to minimize friction during the stretching operation.

In the embodiment of the present invention disclosed herein the surface of the die 12 is covered by a liner 15 of rubber of any useful thickness, preferably relatively thin, and while rubber has been found entirely suitable for the liner 15 other materials doubtless can be used, especially if flexible and having some elasticity or at least having more elasticity and flexibility than the work sheet and the surface of the block. In some cases it will be found advantageous to lightly oil the sheet 15 but more frequently none is applied.

The liner or sheet 15 may be cemented, bonded or otherwise affixed to the die 12 and in any event should be so attached to the die that the liner 15 will adhere to and completely cover the working surface thereof throughout its length and breadth.

The liner 15 serves as an anti-friction agent much more effectively than the grease for which it is substituted, and the cleaning, polishing and greasing operations are thus completely eliminated.

What is claimed is:

1. The combination with a stretch press including a form block, stationary clamps disposed at

the opposite sides of the block, and means for moving the block relative to the clamps, whereby a metal sheet extending over the block may be gripped at its opposed edges and be stretched to assume the shape of the block contour as the latter moves relatively to the gripped edges of the sheet, of a relatively thin, elastic and yielding rubber sheet coextensive with and adhered to said block to constitute its working surface.

2. The combination with a stretch press including a form block, stationary clamps disposed at the opposite sides of the block, and means for moving the block relative to the clamps, whereby a metal sheet extending over the block may be gripped at its opposed edges and be stretched to assume the shape of the block contour as the latter moves relatively to the gripped edges of the sheet, of a relatively thin, elastic and yielding surfacing sheet coextensive with and adhered to said block to constitute its working surface.

JOHN J. WALSH.

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