

E. WARD.

Improvement in Dies for Shaping Harness-Blinds.

No. 129,630.

Patented July 16, 1872.

Fig. 1.

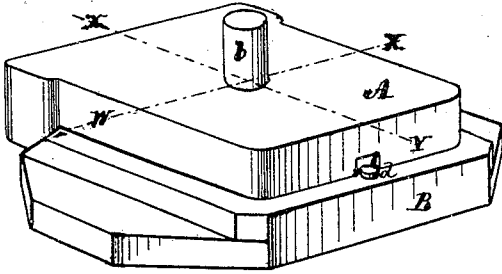


Fig. 2.

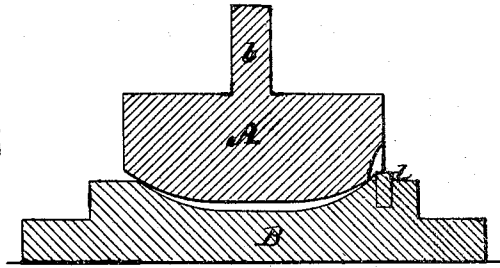


Fig. 3.

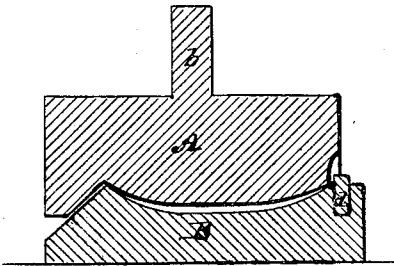


Fig. 4.

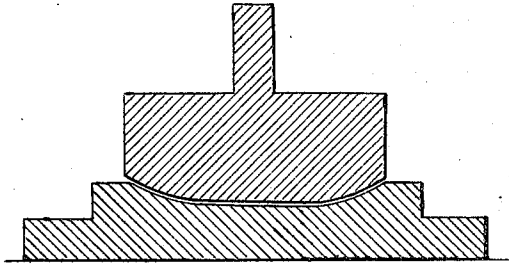


Fig. 5.

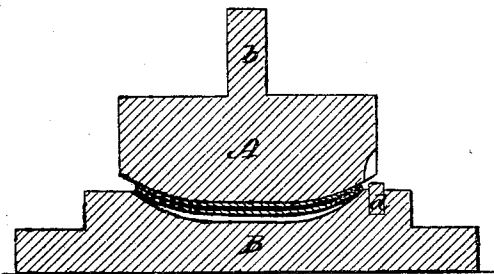
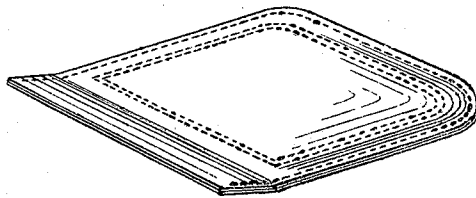


Fig. 6.



Witnesses
Phil. A. Warner
George F. Strong,

Inventor
Eugene Ward,
By Wm. Wood
Attorney.

UNITED STATES PATENT OFFICE.

EUGENE WARD, OF NEWARK, NEW JERSEY, ASSIGNOR OF TWO-THIRDS OF HIS RIGHT TO FRANCIS C. BUTLER AND ELIAS S. WARD, OF SAME PLACE.

IMPROVEMENT IN DIES FOR SHAPING HARNESS-BLINDS.

Specification forming part of Letters Patent No. 129,630, dated July 16, 1872.

To all whom it may concern:

Be it known that I, EUGENE WARD, of the city of Newark, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Dies for Shaping Harness-Blinds.

My invention relates to such dies as are employed in the manufacture of harness-blinds by an improved method of my own invention, and covered by Letters Patent issued to myself and others on the 24th day of May, A. D. 1870, and numbered 103,530; reissued July 16, 1872, No. 4,988. My improvement consists in the novel construction of the bed-die, and adaptation thereto of the plunger-die, by means of which the central portion of the winker or blind is practically free from compression while interposed between the coincident faces of the bed-die and the plunger-die and undergoing the process of being converted from the flat stitched blind-like structure into the semi-concavo-convex finished blind; and I do hereby declare that the following specification, taken in connection with the drawing furnished and forming a part of the same, is a clear, true, and accurate description thereof.

Referring to the drawing, Figure 1 represents, in perspective, a set of my improved dies. Fig. 2 represents the same in cross vertical section on line W X. Fig. 3 represents the same in longitudinal vertical section on line X Y. Fig. 4 represents, in cross vertical section, a set of dies of similar form, with corresponding coincident faces, after the usual manner of constructing "forming-dies" for working sheet metal into cup-like structures. Fig. 5 represents, in section, a set of my improved dies with a blind (in section) interposed, as if the forming operation had been completed and the blind not removed. Fig. 6 represents a finished harness-blind in perspective.

A denotes, in all the figures, the plunger-die. Its face is convex, rounded on all sides, and flattened somewhat in the center. It fully corresponds in its convexity with the inner surface of a finished blind. A shank, *b*, projects upward from its upper surface, by means of which it is connected to the plunger of a screw-press or other suitable device for operating the dies. B denotes my improved bed-die. Its face is concave, and, in general outline, it cor-

responds with the face of the plunger-die. The central portion is, however, so depressed and flattened that when the two dies are brought as closely together as they can be placed they will be in contact with each other on all sides, but only at the extreme edges. At the center, when so placed, there is a vertical space between the two faces greater than the thickness of any blind, or, at least, when bearing upon an interposed blind, it will be subjected to pressure only around or adjacent to the edges, and to no pressure adjacent to the center of the die. The sides of the recess in the bed-die are so lined or shaped with relation to the outline of the plunger-die that the pressure will be greatest at the edges of an interposed blind, and will decrease downward until it ceases entirely, as will be clearly comprehended in examining the sectional views—Figs. 2 and 3. On the upper outer edge of the bed-die are two guide-pins, *d*, which serve to facilitate the proper placing of the blinds to be pressed. The edges of the plunger-die are slightly recessed, so as to avoid contact with the guide-pins.

The operation of these dies is as follows: A bag-like structure is formed from two flat "blind-shaped" pieces of leather—one usually enameled and the other plain—joined by stitching on the top, bottom, and at the rounded end near the edge. The flat soft sheet-metal plate (usually of iron) is inserted into the opening at the unstitched end of the blind, (with or without the application of paste to either or both surfaces,) and the whole is then placed on the bed-die, with the enameled face of the blind downward, and the closed end and one edge in contact with the guide-pins *d*. The plunger-die is then brought downward to bear upon the rear side of the blind, and then forced so as to carry it downward into the recess of the bed-die. In making the metal assume the new form there is, of necessity, at the outset of the operation, more or less wrinkling or corrugating of the edges. During the latter and concluding portion of the operation the corrugations are wholly removed by pressure. During the early part of the forming operation the front or enameled leather will, like the metal, become more or less corrugated or wrinkled; but as it is entirely free from com-

pression at any point, except adjacent to the edges, the leather is free to readily adapt itself to the necessary change in form with the plate, and cannot, by any possibility, be cracked or injuriously abraded. As the plunger-die descends, and before the edges of the blind become much compressed, the portions of the enameled leather adjacent to the edges slide downward slightly without injury until adapted somewhat to the bed-die. The inner or plain leather is, of course, compressed between the surface of the die and the metallic plate with all the force which may be requisite for shaping the metal, and the inner leather is thereby made cup-like or concave; and, as the edges of the lining are securely stitched to the enameled front, and as the stiffener holds the edges in position, there is no tendency in the leather lining to leave the adjacent concave metallic surface.

When blinds are formed in dies which have truly corresponding faces similar to those shown in Fig. 4, in which pressure will occur at the center and at all points equal with that at the edges, there is a liability to wrinkle, and thereby more or less liability to abrasion or cracking in the enameled surface of the leather during the necessary subsequent removal of the wrinkles, which my present invention practically obviates. Such dies can, however, be made to operate comparatively well by inserting into the concave of the bed-die a thickness of heavy felt or thick soft

leather. It will, however, be readily seen that such an addition to such dies will practically transform them into my improved dies, for, by such insertion, the bed-die concavity will be made shallower only by one thickness of the felt or leather, while it will be made narrower by two thicknesses—one on each side of the die—and, therefore, when a blind is inserted and the plunger-die brought down, the two additional thicknesses of the felt or leather at the sides of the die will prevent the blind from being forced to the bottom of the bed-die to such an extent that the central portion would be practically free from compression, as in my improved dies. It is, however, much better to have the dies constructed as described, as more uniform and more economical results can be attained.

Having thus described my invention, I claim as new, to be secured by Letters Patent—

The concave bed-die B, provided with no central bearing-surface, but having the outline of a finished harness-blind, and curved bearing-surfaces adjacent to the edges, in combination with the plunger-die A, provided with a convex face and an outline wholly corresponding with the concave rear side of a finished harness-blind, as and for the purposes specified.

EUGENE WARD.

Witnesses:

F. A. JOHNSON,
PETER N. RYERSON.