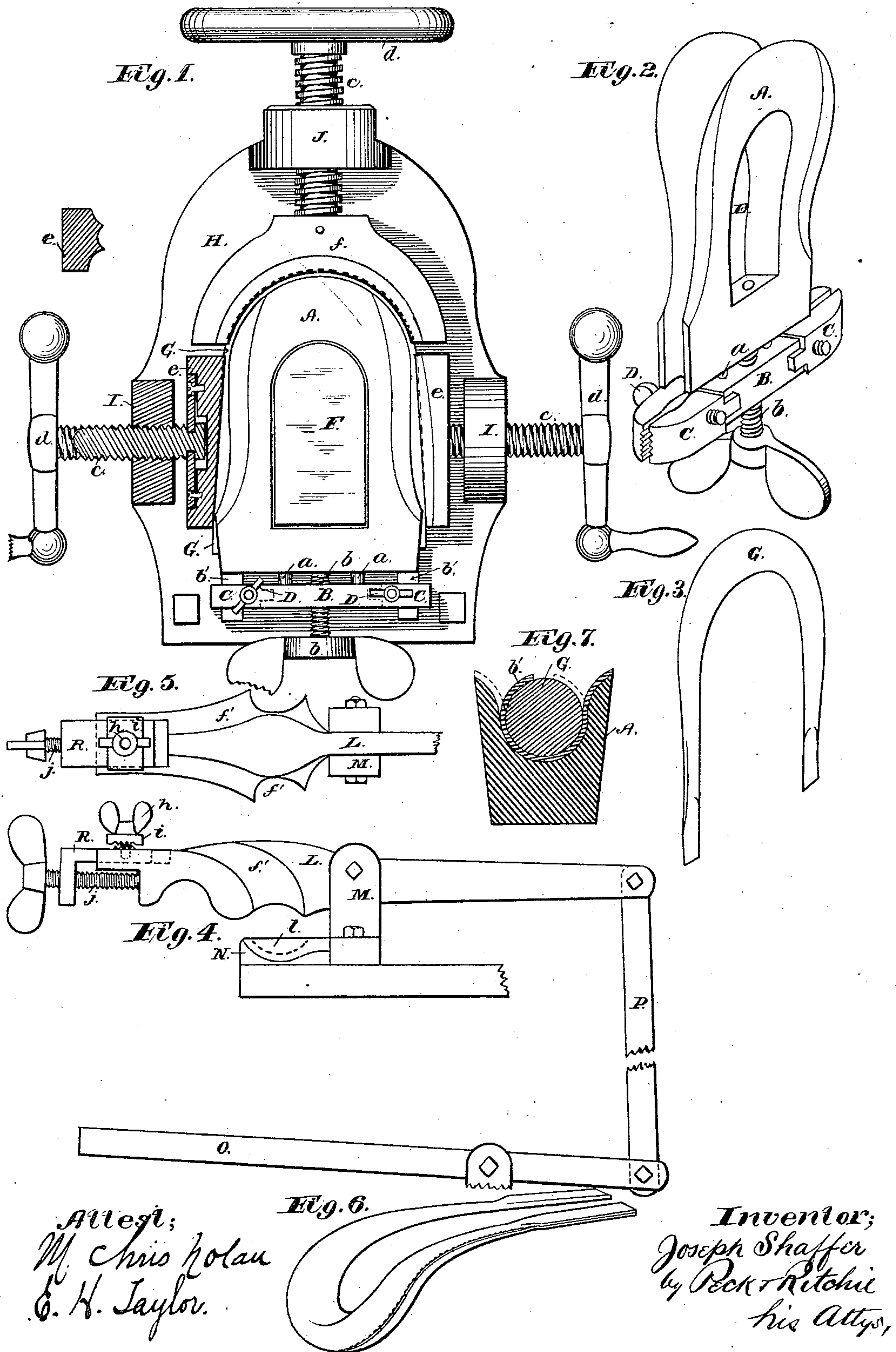


(No Model.)

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Process of and Machinery for Making Cruppers.
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PROCESS OF AND MACHINERY FOR MAKING CRUPPERS.

SPECIFICATION forming part of Letters Patent No. 238,446, dated March 1, 1881.

Application filed September 9, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SHAFFER, of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and
5 useful Improvements in Processes of and Machinery for Making Cruppers; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improvement in
10 the process of and machinery for making leather cruppers for harness; and the novelty consists in first pressing or swaging and stretching the leather in a die to give it the proper form; then trimming its edges while stretched in the die,
15 which serves as a guide for the cutting-tool; then laying it over the mandrel or male die; then stretching the edges to form the tube or envelope; then filling the tube with proper filling-matter, such as flax-seed; and, finally,
20 bending and stretching the filled crupper to its proper shape in a clamping-former.

The novelty also consists in the construction of the dies and press and formers by which the process is carried on, all as will be here-
25 with set forth and specifically claimed.

In the accompanying drawings, Figure 1 is a front elevation of my improved swaging-press. Fig. 2 is a perspective view of the fe-
30 male die and former. Fig. 3 is a perspective view of the male die or mandrel. Fig. 4 is a side elevation of the bending and finishing tool. Fig. 5 is a plan view of the same. Fig. 6 is a perspective view of the finished crupper.

The manufacture of leather cruppers as hith-
35 erto carried on has been entirely by hand, and required much skill and labor, as well as time, in its various manipulations. By my process, however, they can be made better, cheaper, and as much more quickly as machine-work
40 supersedes hand-work in general.

Referring to the accompanying drawings, in which corresponding letters of reference indi-
cate like parts in all the figures, I would thus describe my process and the machinery used.

45 A, Fig. 2, represents the female die, which is a solid piece of metal, somewhat in the shape of a horseshoe, as represented, and having a continuous gutter or channel in its outer sides and top, as shown. This gutter forms
50 the bed of the die in which the leather is first pressed, and in section it corresponds in shape

and size with the crupper. From the gutter proper reverse curves or swells extend to the outer edges of the die, which edges gage the size of the leather. At the lower end of this
55 die is a metal bar, B, having suitable clamping-jaws, C, regulated by thumb-screws D, which jaws, open in line with the lower ends of the gutter in the die. The bar B is attached to the lower end of the die by dowels or guide-
60 pins *a* and an adjusting-screw, *b*, by turning which the bar is advanced to or retracted from the die. An aperture, E, is made in the die, to enable it to be slipped over a correspondingly-
65 shaped support or projection, F, in the press, Fig. 1.

G, Fig. 3, is the mandrel or male portion of the die, and it is a piece of brass or other metal of the shape shown, and made to fit snugly in the gutter of the die A. Its size
70 corresponds with that of the interior of the finished crupper.

The first step in my process consists in taking a properly cut and moistened piece of leather, *b'*, laying it around in the gutter of
75 the die A, and doubling together its lower ends, which are then clamped in the jaws C of the bar B, as seen in Fig. 1. By now operating the screw *b* the leather is stretched and made to fit closely into the gutter. The
80 mandrel G is then slipped over the leather and fills the gutter of the die A, from which, however, it projects all around, as seen in Fig. 1. The dies embracing the leather are now
85 placed in the press, which in this instance consists of any properly-constructed base-plate, H, with lateral bearing-ears I and an upper bearing-ear, J. The projecting die-support F, which is integral with the plate H, is centrally located between the ears I. Working
90 in each of the bearings I and J are screws *c*, provided with operating-handles *d*, and carrying jaws *e* and *f*, with grooves on their inner faces, to embrace the mandrel G at the several
95 different points of contact. These jaws are of such size and length as to embrace nearly all of the exposed part of the mandrel G, and they are so fitted to the ends of the screws as to have limited play, to enable them to adjust themselves evenly to the mandrel G. This at-
100 tachment is shown at the cut-away section of Fig. 1.

By means of the screws pressure in a downward and sidewise direction is exerted upon the mandrel G, which effectually swages the inclosed leather and presses it to the desired shape. While yet in the press the screw *b* is further operated to take up any slack in the leather, and to insure its being properly stretched. I now remove the dies from the press, and with a suitable tool cut the projecting leather from around the edges of the die A, which are so shaped as to form a gage. With a properly-formed tool I now turn over the leather which projects from under the mandrel G as it lies in the gutter, and press it upon the upper side of the die G, all around, as seen in the sectional view, Fig. 7. The mandrel G is then removed, and the leather is unclamped from the jaws C, and taken out of the die A, after which it is stitched together at its edges in a sewing machine, thus forming a tube with open ends, and having the shape of the mandrel G. The filling material is then inserted and packed in any suitable or convenient manner. The crupper is now ready to be bent to the shape shown in Fig. 6, and I employ the device represented in Figs. 4 and 5, which consists of a lever-arm, L, pivoted in bearings M, extending from a base-plate, N. The rear end of the arm L is connected to a treadle, O, by a link, P, as represented.

The front end of the lever L is enlarged, and has a channel or gutter, *f'*, formed in it to receive the crupper, the loop of which is slipped under the lever until it rests in the channel *f'*, and its ends are then brought up along the sides of the lever in the channel, and are clamped upon a recessed sliding plate, R, by a screw, *h*, carrying a serrated jaw, *i*, as shown. The front end of the plate R is bent down, and has a threaded aperture in it to receive a thumb-screw, *j*, whose inner end is recessed in the end of the lever, as represented. By turning the screw *j* the crupper is stretched and bent so as to lie closely in the channel *f'*, and

to prevent its slipping I form a recess, *l*, in the base-plate, to receive the lower portion of the loop of the crupper, which is clamped by pressing with the foot upon the treadle O, and thus prevented from slipping while being bent and stretched. This latter operation completes the crupper, and by the process herein described large numbers of perfectly-formed cruppers can be made in a short time.

Having thus fully described my invention, I claim—

1. The herein-described process for making leather cruppers, which consists in swaging and stretching the leather in a die, subjecting the same to pressure in a press, stitching the edges to form a tube, filling said tube with proper filling material to give the crupper its proper sectional shape and rigidity, and, finally, bending and stretching the tube so filled to form the finished crupper, as set forth.

2. In a machine for the manufacture of leather cruppers, the die A, having an external gutter or channel, and provided with the stretcher-bar B, carrying clamping-jaws C, in combination with the mandrel G, adapted to fit into the gutter or channel of the die A, substantially as and for the purpose set forth.

3. In a machine for the manufacture of leather cruppers, the press consisting of a base-plate, H, with a die-support, F, and provided with clamping-jaws to embrace the intermediate die, substantially as described.

4. In a machine for the manufacture of leather cruppers, the clamping and bending lever L, provided with a gutter or channel, *f*, and carrying a stretching-plate, R, whereby the crupper is given its final shape, substantially as specified.

In testimony whereof I have hereunto set my hand.

JOSEPH SHAFFER.

Witnesses:

E. H. TAYLOR,
CHAS. M. PECK.