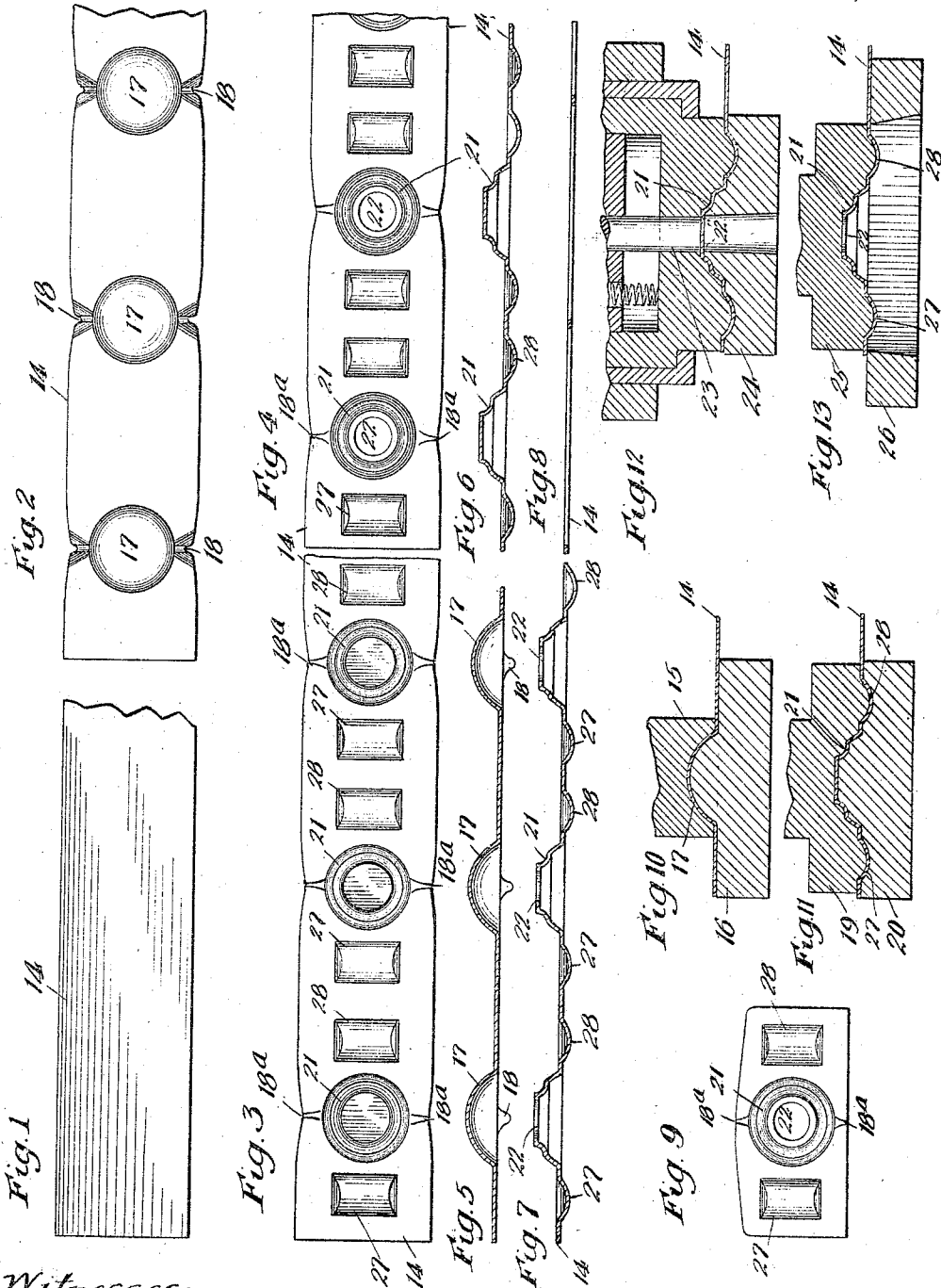


A. JOHNSTON.
PROCESS OF MANUFACTURING SHEET METAL SIDE PLATES FOR SASH PULLEY CASINGS.
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994,930.

Patented June 13, 1911.



Witnesses:

Wm. Geiger
St. M. Munday

Inventor:
Allen Johnston
By *Munday, Evans, Alcock & Clark*.
Attorneys

UNITED STATES PATENT OFFICE.

ALLEN JOHNSTON, OF OTTUMWA, IOWA.

PROCESS OF MANUFACTURING SHEET-METAL SIDE PLATES FOR SASH-PULLEY CASINGS.

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To all whom it may concern:

Be it known that I, ALLEN JOHNSTON, a citizen of the United States, residing in Ottumwa, in the county of Wapello and State of Iowa, have invented a new and useful Improvement in Processes of Manufacturing Sheet-Metal Side Plates for Sash-Pulley Casings, of which the following is a specification.

10 This invention is an improved process of making side plates for sash pulley casings by stamping them into form from sheet metal strips.

15 The invention is found in the herein detailed series of operations or formative steps performed in the manufacture of the plates from long continuous strips of sheet metal.

In the accompanying drawing forming a part of this specification, I show the work done in my process in its various stages, and also the apparatus used, Figure 1 showing the metal strips upon which the work is done, Fig. 2 showing the same after the first operation has been performed, Fig. 3 showing it after the second operation, Fig. 4 showing it after the third operation. Figs. 5, 6 and 7 are central longitudinal sections of the work as illustrated in Figs. 2, 3 and 4 respectively. Fig. 8 is a sectional view of the metal severed from the edge of the blanks at the final operation. Fig. 9 shows a side plate as it appears after the final operation of my process. Figs. 10, 11, 12 and 13 show the dies of the four presses used in my process in the order of their use.

Referring to said drawing, one of the strips suitable for the manufacture of the side plates is shown at 14 in Fig. 1. These strips are of a width suitable to be made into side plates, and are first passed through a die press having dies 15 and 16, by which bulging impressions 17 are formed in each side plate embodied in the strips 14, such impressions being spaced apart in accordance with the length desired for the side plates. The impressions as will be seen are located as near the center longitudinal plane of the strips as may be, and are round knobs, projecting from the same flat side of the strips, and are somewhat flattened on top,

and in forming them the metal outside of and surrounding the impressions being unconfined is drawn into or toward them from all directions, thereby causing a considerable contraction in the surrounding parts and resulting in the crimping as at 18 of the metal upon its flat side opposite to that upon which the impressions are formed and between such impressions and the edges of the metal. This drawing in or contraction of the surrounding metal prevents any rupture of the metal in the making of the impressions. The impressions 17 are made in successive order in each side plate blank embraced in the strips 14. I next subject these bulging impressions in their order separately to the action of a second press employing the countering dies 19 and 20, which act upon the bulges 17, and convert them into cone shaped projections 21 adapted to form one side or half of the pulley bearing. This cone forming press also acts in the same operations in which it shapes the cones, to compress and flatten the crimps 18 and force the metal displaced therein back into the plane of the strip as seen at 18^a, Figs. 3, 4, 8 and 9 so that the crimped portions in the completed plate will be substantially the same thickness as the adjacent uncrimped portions. In this operation also, the metal is somewhat stretched or elongated, thus undoing some of the contraction caused by the bulging press. All the bulges and crimps are operated upon in this manner. The next operation to which the bulging impressions are subjected one at a time and in their order is the punching of an opening 22 by a press employing dies 23 and 24, such openings being made in the small end of each of the cone shaped projections 21 into which the bulging impressions have been converted by the previous operation. Through the opening thus formed, I am enabled to insert a rivet by which the two side plates of each pulley casing may be united together as shown in the patent to me No. 694,482 of March 4, 1902, or in lieu of such rivets other means of uniting the plates may be employed and passed through said opening.

The last operation in my process is the

severing of the side plates from the strip in the order of their formation, by a press having dies 25 and 26 and in this operation the edges of the blanks may be trimmed to the exact size and shape desired.

I sometimes construct the dies 19 and 20 so that they will form bulges 27 and 28 in the ends of each side plate and at opposite sides of the cones 21 in the same operation in which the bulges are converted into cone form. These bulges project to the outside of the plates, instead of inward after the manner of the cones, and their object is to make the outer surface of the casings conform closely to the auger borings used in forming the mortises in the window frames.

I arrange the various presses mentioned side by side so that the strip of metal from which the side plates are formed may be fed by suitable feed mechanism conveniently and without loss of time from one press to another in the order in which they operate upon the metal. As one of the presses contracts the metal quite severely, while another stretches or elongates it, it will be seen that interference between them would occur if they were allowed to operate simultaneously on too closely located portions of the metal, and hence I not only time the presses so that each completes its work before another starts, but also space the presses apart so that one or more lengths of a side plate blank will intervene between each pair of adjacent presses.

I claim:—

1. The method of making sheet metal side plates for sash pulley casings consisting in forming bulging impressions on one flat side of a long or continuous strip of metal of the required width, and crimps on the opposite side from the impression, such impressions and crimps being at suitable distances apart so that one bulge and its accompanying crimps will be made in each side plate, and then stamping said bulges into cone form adapting them to serve as part bearings for the sash pulleys, said operations being performed successively on each blank.

2. The method of making sheet metal side plates for sash pulley casings consisting in forming bulging impressions on one flat side of a long continuous strip of metal of the required width, and crimps on the opposite side from the bulging impressions, and thereby shortening the strip, such impressions and crimps being at suitable distances apart so that one bulge and its accompanying crimps will be made in each side plate, and then stamping said bulges into cone form adapting them to serve as part bearings for the sash pulleys, said operations being performed successively on each blank.

3. The method of making sheet metal side

plates for sash pulley casings consisting in forming bulging impressions on one flat side of a long continuous strip of metal of the required width and crimps on the opposite side from the bulges, such impressions and crimps being at suitable distances apart so that one bulge and its accompanying crimps will be made in each side plate, then stamping said bulges into cone form adapting them to serve as part bearings for the sash pulleys and then punching openings in said bulges, said several operations being performed successively on each blank.

4. The method of making sheet metal side plates for sash pulley casings consisting in forming bulging impressions on one flat side of a long continuous strip of metal of the required width, and crimps on the opposite side from the bulges, such impressions and crimps being at suitable distances apart so that one bulge and its accompanying crimps will be made in each side plate, then stamping said bulges into cone form adapting them to serve as part bearings for the sash pulleys, then punching openings in the bulges and finally severing the blank from the strip, said operations being performed successively on each blank.

5. The method of making sheet metal side plates for sash pulley casings consisting in forming bulging impressions on one flat side of a long continuous strip of metal of the required width and crimps on the opposite side from the bulges, such impressions and crimps being at suitable distances apart so that one bulge and its accompanying crimps will be made in each side plate, then stamping said bulges into cone form and at the same time forming outward bulges 27 and 28 and then punching openings in the first mentioned bulges, said several operations being performed successively on each blank.

6. The method of making sheet metal side plates for sash pulley casings consisting in forming bulging impressions on one flat side of a long continuous strip of metal of the required width and crimps on the opposite side from said bulges, such impressions and crimps being at suitable distances apart so that one bulge and its accompanying crimps will be formed in each side plate, then stamping said bulges into cone form adapting them to serve as part bearings for the sash pulleys and in the same operation flattening the crimps and expanding adjacent metal, and then punching openings in the cone shaped impressions, said operations being performed successively on each blank.

7. The method of making sheet metal side plates for sash pulley casings consisting in forming bulging impressions on one flat side of a long continuous strip of metal of the required width and crimps on the opposite

side from said bulges, such impressions and crimps being at suitable distances apart so that one bulge and its accompanying crimps will be formed in each side plate, then stamp-
5 ing said bulges into cone form adapting them to serve as part bearings for the sash pulleys and in the same operation flattening the crimps and expanding adjacent metal, and then severing the blank, said operations being performed successively on each blank. 10

ALLEN JOHNSTON.

Witnesses:

R. W. FUNK,
F. H. RENO.