

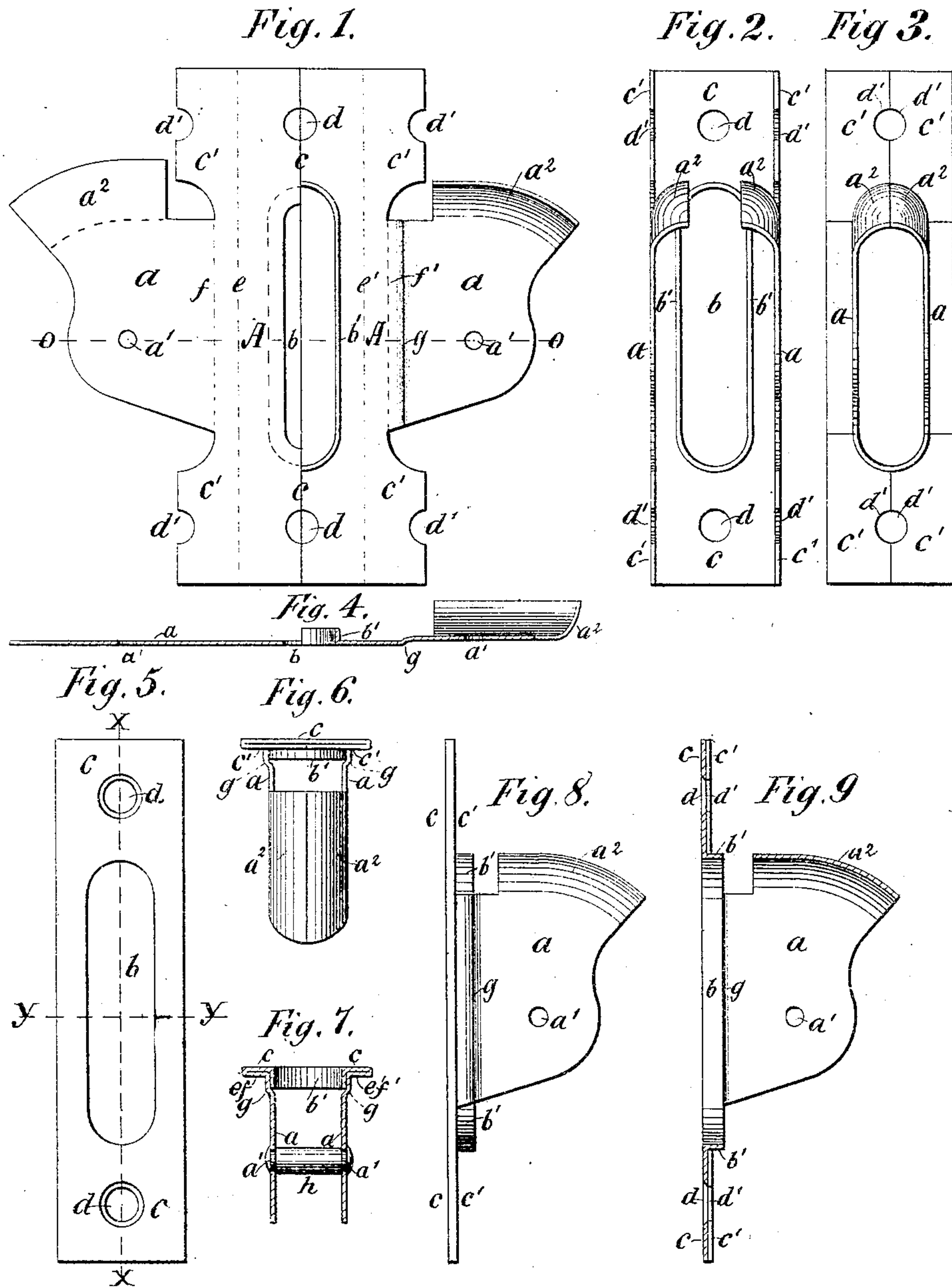
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W. LIVINGSTONE.

PULLEY HOUSING FOR SASHES OR SIMILAR PURPOSES.

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WITNESSES:

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PULLEY-HOUSING FOR SASHES OR SIMILAR PURPOSES.

SPECIFICATION forming part of Letters Patent No. 778,685, dated December 27, 1904.

Application filed April 4, 1903. Serial No. 151,189.

To all whom it may concern:

Be it known that I, WILLIAM LIVINGSTONE, a citizen of the United States, and a resident of Flushing, in the county of Queens and State of New York, have invented certain new and useful Improvements in Pulley-Housings for Sashes or Similar Purposes, of which the following is a specification.

My invention relates to an improvement in pulley-housings for sashes and other purposes, and especially to that variety thereof which are made from sheet metal; and it consists of certain novel features of construction whereby a pulley-housing can be produced from a single sheet-metal blank of such configuration as to contain within its area not only all the elements of a complete housing, but the provision for greater strength and rigidity around the opening for the pulley, just where other housings are actually the weakest.

The object of my invention, therefore, is to construct a pulley-housing from a sheet-metal blank which shall retain the best features of the cast-iron model and be lighter, stronger, and cheaper than can be produced by any other method at present known and practiced, all of which will be hereinafter clearly and fully described and claimed, reference being had to the accompanying drawings, in which similar letters denote similar parts.

Figure 1 represents two half-plan views of the blank in its two stages of completion. Fig. 2 is a rear end view of the blank subsequent to its first bending. Fig. 3 is a rear end view of the same after the second bending to complete housing. Fig. 4 is a transverse section of the blank through line *o o*, Fig. 1. Fig. 5 is a front view of the complete housing. Fig. 6 is a top view of the same. Fig. 7 is a transverse section of the same through line *y y*, Fig. 5. Fig. 8 is a side view of complete housing. Fig. 9 is a longitudinal section of the same through line *x x*, Fig. 5.

Referring to the drawings, A A in Fig. 1 is the sheet-metal blank from which the housing is to be made, half of which on the left

of the division-line shows the blank in its first stage, while the half to the right represents it in its second stage. I use the word "stage" advisedly instead of "operation," because both stages may be accomplished in one operation. This blank contains several distinct portions intended to form the different parts of the housing. The central portion *c c* of the blank, Fig. 1, bounded by the dotted lines *e* and *e'* and intended to form the outer side of the face-plate, has two holes *d d* in its vertical center line near its upper and lower end and in the first stage of the blank a narrow oblong opening *b* between them, which in the second stage of the blank is enlarged to its proper width and length for the insertion of the pulley by the process of drawing the required quantity of metal surrounding the narrow opening into a flange or rim *b'*, surrounding the enlarged hole at right angle to the body of the blank, Figs. 1, 2, 6, 7, 8, and 9. The lateral extensions *e' e'* at the upper and lower end of the central portion *c c*, with their semicircular openings *d' d'*, are designed when bent in the proper direction on the lines *e* and *e'* and parallel to the body of the central portion *c c* to supplement its upper and lower end by meeting each other in the center line and bringing the semicircular openings *d' d'* into the exact position of the holes *d d*, while the areas of metal between the dotted lines *e* and *f* and *e'* and *f'* will overlap so much of the central portion *c c* as lies outside of the flange *b'* and abuts against it, thereby doubling the thickness of the face-plate throughout its whole area, and as the flange *b'* contributes a large share of strength and stiffness around the opening its power of resistance to any breaking strain will be assured, Figs. 1, 2, 3, 6, and 9.

The wings *a a*, Figs. 1 and 4, embrace so much of the configuration of the blank A A as lies outside of the dotted lines *f* and *f'*, being therefore supported by the whole area of metal between and including the flange *b'* and the bending-lines *f* and *f'*. These wings *a a* in the first stage are perfectly flat, while

in the second stage, Figs. 1 and 4, they are shown slightly cranked out of their normal plane and parallel to it, so as to make the depth of the depression g , Figs. 1 and 4, equal to the thickness of the flange b' , so that when the wings aa are bent back on the lines $e e'$ against the flange b' and upward at right angles to face-plate the bend g will overlap the top of the flange b' and the inner faces of the wings aa be absolutely in line with the inner sides of the flange b and the opening for the pulley, Figs. 6, 7, 8, and 9. The upper extensions a^2 and a^2 of the wings aa in the first stage of Fig. 1 are perfectly flat, while in the second stage, Figs. 1 and 4, they are shown bent up in the form of a quarter-circle whose diameter is equal to the width of the pulley-opening b . Consequently when the wings are bent into the proper position these quarter-circles will meet in the center-line between them and form a curved semicircular tube which will prevent the rope or chain from losing its contact with the pulley by the rebound of the weight, Figs. 3, 6, and 8. The holes a' and a' in the wings aa , Figs. 1 and 4, are so placed that when the wings are bent into proper position they will be exactly opposite each other to carry the pin or spindle around which the pulley is to rotate perfectly horizontal and parallel to the face-plate of the housing, Figs. 7, 8, and 9, and when in addition thereto the pin h , Fig. 7, is made with reduced ends passing through the holes aa and riveted outside of the wings against the shoulders of the pin it will readily be seen that the wings aa , held together in front by their connection with the face-plate and in the rear by the shoulders of the pin, will be absolutely rigid.

As to the manner and method of bending the blank into its proper shape on the lines $e e'$ and $f f'$, I have in the accompanying drawings selected the one which appears to strike the eye most naturally—namely, to bend it first on lines $e e'$ into an upright position at right angles to the central portion $c c$, as shown in Fig. 2, and then to change this vertical position of the central extensions $c' c'$ and of $e f$ and $e' f'$ into a horizontal one parallel to the central portion $c c$ by means of laterally-moving dies and a central guide-punch to prevent the wings aa from changing their perpendicular direction already established, (see Fig. 3,) which completes the housing.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. As an article of manufacture, a one-piece sheet-metal pulley-housing, comprising rearwardly-extending wings, and a face-plate having a central slot therein and its entire area reinforced, substantially as described.

2. As an article of manufacture, a one-piece sheet-metal pulley-housing, comprising rear-

wardly-extending wings, and a face-plate having a central slot therein and reinforcing portions above and below said wings, substantially as described.

3. As an article of manufacture, a one-piece sheet-metal pulley-housing, comprising rearwardly-extending wings, and a face-plate having a central slot therein, a flange extending rearwardly from the edge of said opening, and reinforcing portions for said face-plate having their inner edges abutting said flange, substantially as described.

4. As an article of manufacture, a one-piece sheet-metal pulley-housing, comprising laterally-extending wings, and a face-plate having a central slot therein with rounded ends and openings above and below said slot, and reinforcing portions having curved edges conforming to the ends of the slot and other edges provided with recesses registering with said openings, substantially as described.

5. A one-piece sheet-metal pulley-housing, comprising a face-plate having a central slot therein with a flange extending rearwardly from the edge thereof, and reinforcing portions, and wings extending laterally from said reinforcing portions, said wings being offset to bring the inner faces of the same substantially in alinement with the inner faces of said flange, substantially as described.

6. A one-piece sheet-metal pulley-housing, comprising a face-plate having a central slot therein with a flange extending rearwardly from the edge thereof, and reinforcing portions, and wings extending laterally from said reinforcing portions, said wings embracing the outer faces of said flange and being offset to bring their inner faces substantially in alinement with the inner faces of said flange, substantially as described.

7. A blank for forming a pulley-housing with a reinforced face-plate and rearwardly-extending wings, said blank comprising a central portion having a slot therein, marginal portions c' at opposite ends of the central portion and at opposite sides thereof, and wing portions extending laterally from the central portion between said marginal portion c' , substantially as described.

8. A blank for forming a pulley-housing with a reinforced face-plate and rearwardly-extending wings, said blank comprising a central portion having a slot therein, marginal portions c' at opposite ends of the central portion and at opposite sides thereof, and wing portions extending laterally from the central portion between said marginal portion c' , said wings having upper marginal portions provided with curved edges, substantially as described.

9. A pulley-housing made from a sheet-metal blank having the lateral extensions of the central portion of the face-plate and the

wings bent upward and sidewise to bring the wings into their proper position at right angles to the face-plate and abutting on the rim of the pulley-opening and making the whole
5 area of the face-plate of double the thickness than the metal of which the housing is made, substantially as described.

Signed at Flushing, in the county of Queens and State of New York, this 7th day of March, A. D. 1903.

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Witnesses:

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