(No Model.)

O. C. LITTLE.

PULLEY ARM PATTERN.

No. 494,257. Patented Mar. 28, 1893.

Fig. 1.

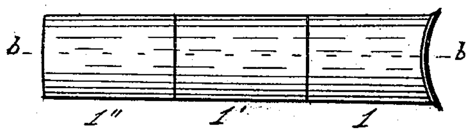


Fig. 3.

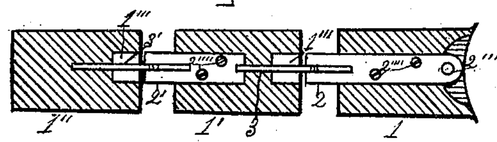


Fig. 2

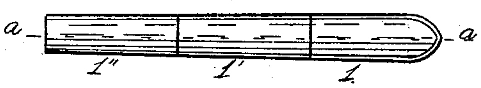


Fig. 4.

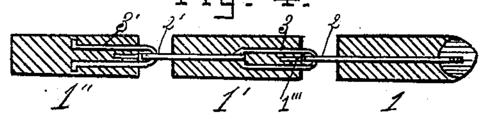


Fig. 5.

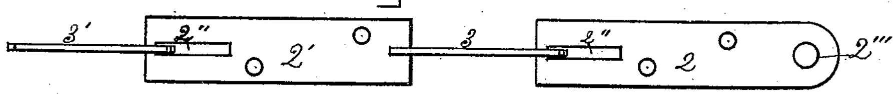


Fig. 6.

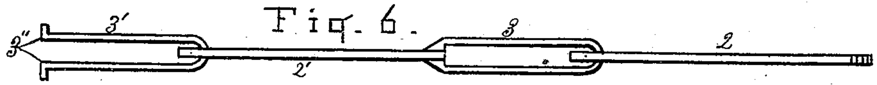


Fig. 7.

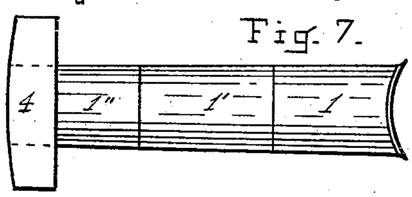


Fig. 8.

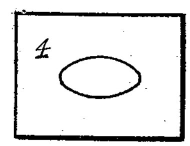
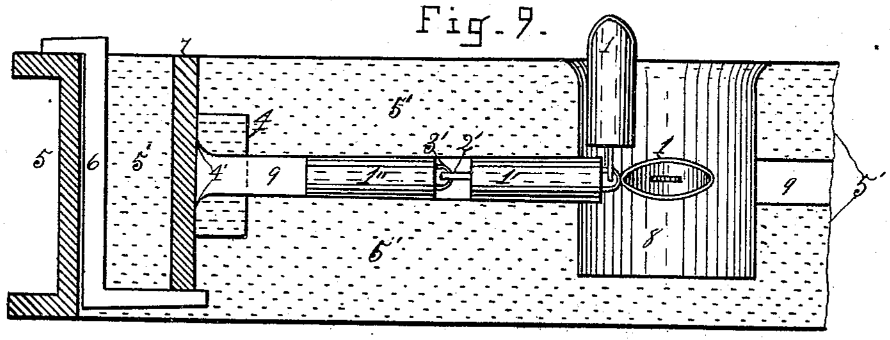


Fig. 9.



Witnesses.

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UNITED STATES PATENT OFFICE.

ORTON C. LITTLE, OF MENASHA, WISCONSIN, ASSIGNOR OF ONE-HALF TO DUNCAN T. H. MACKINNON, OF SAME PLACE.

PULLEY-ARM PATTERN.

SPECIFICATION forming part of Letters Patent No. 494,257, dated March 28, 1893.

Application filed July 7, 1892. Serial No. 439,247. (No model.)

To all whom it may concern:

Be it known that I, ORTON C. LITTLE, a citizen of the United States, residing at Menasha, in the county of Winnebago and State of Wisconsin, have invented a new and useful Improvement in Pulley-Arm Patterns, of which the following is a specification.

My invention relates to a pulley arm pattern for use in molding pulleys and the object of it is, to lessen the labor, and consequently the time employed in forming the mold into which melted metal is to be poured for the formation of said pulley.

Figure 1 is a plan view of my improved pulley arm pattern. Fig. 2 is an edge view of the arm pattern. Fig. 3 is a longitudinal section of said arm upon the line *a*, *a*, of Fig. 2, having the several sections pulled apart in a longitudinal direction, and Fig. 4, a longitudinal section upon the line *b*, *b*, of Fig. 1 and having the sections pulled apart as they are shown to be in Fig. 3. Fig. 5 is a plan view of the hinges, or connection, which connects the several sections together. Fig. 6 is an edge view of said connecting device. Fig. 7 is a plan view of the pulley arm pattern having a fillet mold upon its outer end. Fig. 8 is an end elevation of said fillet mold, and Fig. 9 is a vertical section of the larger portion of a molding flask, (the right hand side of it being broken away,) showing a pulley hub mold, a pulley rim pattern upon one side of said hub mold and my improved pulley arm pattern molded and in the process of being withdrawn from the mold through the hub mold, also showing the central arm pattern in the mold and the right hand one as having been molded and withdrawn from it. Figs. 1, 2, 3, 4, 7 and 8 are upon the same scale and Figs. 5 and 6 upon an enlarged scale with reference to each other.

Similar figures of reference indicate like parts in the several views.

1, 1′, and 1″, indicate the several sections of the pulley arm pattern; 2, 2′, and 3, 3′, pieces composing the hinges, or connecting devices for connecting the several sections together; 4, a fillet mold; 5, a portion of a molding flask; 5′, molding sand therein; 6, a bracket arm; 7, one side of a pulley rim pattern in section; 8, a pulley hub mold; 9, pulley arm molds; 8′, the cavity over the pulley hub mold for receiving the hub cope.

The pulley arm pattern I make, except for patterns where the entire arm is less than the diameter of the pulley hub, of several short sections, more or less in number according to the diameter of the pulley and, also according to the diameter of the pulley hub, in the present case three being shown, 1, 1′ and 1″, which number will usually be sufficient for pulleys of thirty inches or less in diameter, those above that size requiring more, and those under it a less number. The requirement governing the length of the arm pattern, or its several sections, being that they be short enough to be withdrawn from their mold through the hub mold. These sections are connected together by means of a loose jointed hinge, capable of being extended and contracted, and being composed of a slotted plate and a link, the plates 2 and 2′ each having a slot, 2″, into which a link, 3 or 3′, is inserted. The slots, 2″, are of sufficient length so that the link can move within it longitudinally of the plate. One of the plates being applied to one of the arm sections and a link to an adjoining section, the sections are permitted to be drawn away from each other so as to permit them to be arranged in position at right angles one with the other, as the pieces 1 and 1′ are shown to be in Fig. 9. The arm sections 1′ and 1″ are each provided with a mortise, 1‴, for receiving the tenon, (consisting of the projecting end of the plates, 2 and 2′,) so that the ends of the adjoining arm sections may come closely together and also so as to preserve said sections in their proper straight position, during the operation of molding the pulley arms. The depth of these mortises and the length of the tenons which enter them should be sufficient for preserving the pattern in the required straight form while being molded.

The end of the section, 1, is hollowed out as shown in Figs. 3 and 4 and the end of the plate 2 having the hole, 2‴, therein is extended into the cavity formed thereby but is kept within the circle of the hub pattern to be used with it and free from said hub pat-

tern so that the plate can be grasped by the fingers of the molder, or a hook inserted into the hole, 2″, for the purpose of drawing the pattern from the sand after the arm is molded. The plates are provided with screw holes and may be secured to one half of the section pattern with screws, 2‴, and the links secured by turning up spurs, as 3″, which spurs are to enter the wood of the pattern and hold the link from being drawn out of the section to which it may be attached.

The two halves of each section of the arm pattern may be secured together with glue, nails or screws, as desired.

The link 3 is represented as being welded or connected to the plate 2′, but this manner of constructing said portion of the link and plate is not essential, as the link and plate may be each one independent of the other and be separately secured to their respective sections in any convenient and firm manner.

Any other device for connecting the several sections of the pattern to each other may be employed which will hold the sections straight while being molded and also permit them to be flexed, or arranged at approximately a right angle with each other, so as to allow the withdrawal of the pattern through the hub mold.

Fillet molds, 4, are provided, one of which is to be placed upon the outer end of each arm pattern in molding a pulley. These fillet molds are movable upon the outer end of the arm pattern and serve two purposes, one being to make a variation in the length of the arm in casting, it, within the range of the dimension of the core, lengthwise of the arm, by adjusting it upon the arm pattern, the other to form, (by means of the interior form of the fillet mold,) a fillet, 4′, around the end of the arm in casting it, at the point where the pulley arm and rim join each other, and to thereby produce a greater degree of strength at said point than without the fillet. These fillet-molds I make of any good quality of core sand, or other material which is adapted for making cores.

The manner of using the pulley arm pattern is as follows: A pulley rim pattern, 7, is placed within a flask, or if the pulley is quite large it may be placed in a suitable pit, and at a depth in said flask or pit for molding the desired width of pulley face. In this case it is shown as being suspended within the flask, 5, upon the bracket arm, 6, of which there should be in practice, three or more, for supporting the rim pattern until it is held in position by the molding sand being rammed in under it, when said arms are to be removed. The molding sand, 5′, having been filled in, both inside and outside of the rim pattern to sufficient height for sustaining in position both the pulley rim and hub patterns, the hub pattern is then centered in position and more sand filled in until to a sufficient height for receiving the pulley arm patterns. The several arm patterns are then arranged in position around the hub pattern, their inner ends being fitted to the circle of the hub, and placed in contact with it, and their outer ends being each provided with a fillet mold, 4, which fillet molds are placed against the interior of the rim pattern. Sand is now filled in and rammed up, both inside and outside of the rim pattern, over said arms and around the hub pattern to the height necessary for the desired length of hub and width of pulley face. A cope should then be fitted upon the mold over the hub pattern in the space, 8′, then taken off and the hub pattern withdrawn from its mold, then each of the pulley arm patterns can be withdrawn inward by the molder, turning the sections upward as they are drawn inward, and as they are shown in Fig. 9. The rim pattern may now be withdrawn, a cope placed over both hub and rim mold, the necessary sprues and vents formed and the pulley cast in the usual and well known manner.

Having described my invention and the manner of using it, what I claim, and desire to secure by Letters Patent, is—

1. A pulley arm pattern, tapering from its inner to the outer end thereof, its inner end having a concave opening and an eye, or handle therein, and within the circle of the hub for which the pattern of the pulley arm is fitted, for allowing said pattern to be grasped by the molder and drawn inward into the hub mold, substantially as described.

2. The combination with a pulley arm pattern, tapering from its inner to the outer end thereof, of a fillet mold around said outer end, having one side thereof fitted to the inner circle of the pulley rim to be molded and the hole therein fitted for a longitudinal movement upon said outer end of the arm pattern, said hole being flaring from near its inner to the outer end thereof, and the fillet mold thereby adapted to form a fillet around the arm in casting a pulley, at the meeting point of the pulley arm and rim, substantially as described.

3. A pulley arm pattern divided transversely thereof into two, or more sections, said sections being connected together with a hinge joint, and means in said connecting joint for permitting the sections to be separated, and for the sections to turn transversely of the pulley mold in a direction at nearly a right angle, one with the other, substantially as described.

4. A pulley arm pattern, tapering from its inner to the outer end thereof, and being divided transversely thereof, into two or more sections, said sections being connected together with a hinge, whereby the sections will turn transversely of the pulley mold and in a direction at nearly a right angle one with the other, and thereby to permit the several sections of said pattern to be drawn from their mold, through, and out of the hub mold, substantially as described.

5. A pulley arm pattern, divided transversely thereof into two or more sections, said sections being connected together with a joint, consisting of a slotted plate and a link, the link being movable in the slot of said plate for permitting the sections to be separated, and the plate being hinged to the link for permitting its section to turn transversely of the pulley mold, and in a direction at nearly a right angle with the adjoining section, substantially as described.

ORTON C. LITTLE.

Witnesses:
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