(No Model.)

# J. SULLIVAN.

## METHOD OF MANUFACTURING FLANGED CASTINGS.

No. 334,821. Patented Jan. 26, 1886.

Fig: 1.

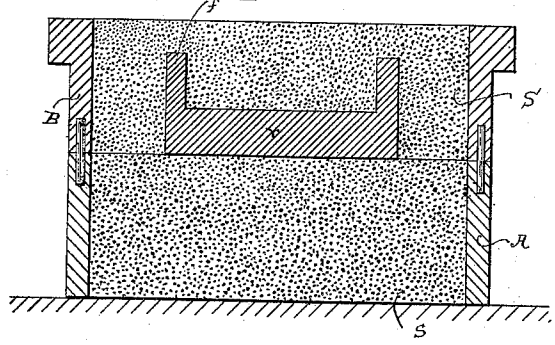



Fig: 2.

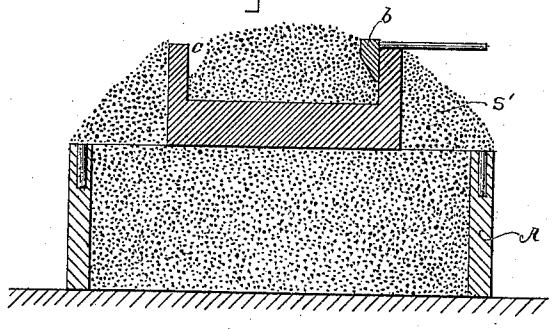
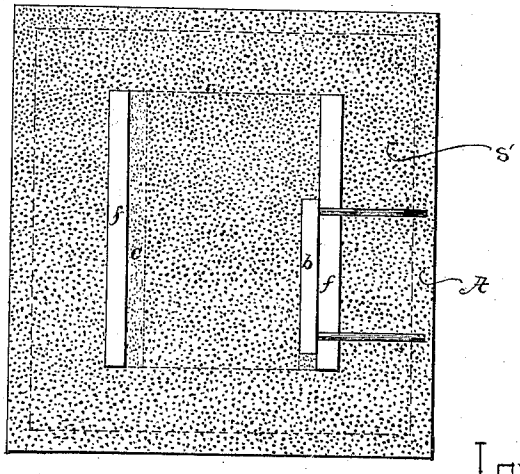



Fig: 3.




Witnesses.
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# UNITED STATES PATENT OFFICE.

JAMES SULLIVAN, OF NEWTON UPPER FALLS, MASSACHUSETTS.

## METHOD OF MANUFACTURING FLANGED CASTINGS.

SPECIFICATION forming part of Letters Patent No. 334,821, dated January 26, 1886.

Application filed November 25, 1885. Serial No. 183,985. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES SULLIVAN, of Newton Upper Falls, county of Middlesex, and State of Massachusetts, have invented an Improvement in Methods of Manufacturing Flanged Castings, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In the production of cast-metal flanged rails for spinning-frames and other cast-metal rails or beams having one or more flanges great difficulty is experienced in straightening the same ready for use, for the rails or beams become crooked because of the unequal cooling of the metal at points where it varies in thickness.

In my experiments I have devised a plan whereby the rail will remain straight while cooling, thus obviating subsequent heating and straightening, as now commonly practiced.

In accordance with my invention the sand or loam in which the flanges of the rail are cast and embedded is partially removed next the inner edge of the flange, and melted iron is poured into the space left by the removal of the sand, the said melted iron, by its contact with the flange, which is thinner than the body of the rail, keeping up the heat thereof, so that the entire rail is permitted to cool with such uniformity as to keep straight.

Figure 1 in vertical cross-section represents a molder's flask containing a flanged rail; Fig. 2, a like view with the top of the flask removed, the said figure at one side showing the sand removed next the inner side of one flange, the scraper for removing the sand being shown as applied at the other flange; and Fig. 3 is a top view of Fig. 2.

In the practice of my invention the pattern, shaped to correspond with the article to be cast, is placed upon the sand *s* in one part, herein shown as the lower part, A, of the mold or flask, and the sand *s'* is then tamped into the upper part or half, B, of the mold or flask, and then the mold is separated, the pattern is removed, and the pouring-holes are made, and the two parts of the mold are again put together, all as usual. In this condition the metal is poured into the mold, producing, as herein shown, a rail, *r*, with two flanges, *f f*, the rail being one suitable for use in a spinning-machine.

The rail is, it will be seen, thicker at its body (marked *r*) than at its flanges, and the flanges, being thinner, will cool faster, which will twist or crook the rail. To obviate this, I strike the sides of the part B of the mold until the sand is loosened sufficiently to permit the wood case of the mold to be lifted, leaving the sand *s'* covering the cast-metal rail, and while the latter is hot the molder or other person will with a scraper, *b*, of suitable shape, remove some of the sand from next the inner edge of the flange, leaving a space, as at *c*, Fig. 2. This will be done at each flange, or next the thinnest parts of the rail or beam, and immediately thereafter, and while the casting is yet hot, melted iron will be poured into the space and against the flange of the rail or beam, the said molten iron imparting sufficient additional heat to the thinner part of the casting against which it acts to enable the thinner part to cool more slowly than it otherwise would have done, and as a result thereof the cast-metal flanged beam when entirely cool and removed from the sand will be found to be straight, or corresponding with the pattern.

It is obvious that the method herein described for insuring uniform cooling of the cast-metal article may be applied to advantage in all classes of cast-metal beams or rails wherein difficulty is experienced by warping, owing to irregular cooling.

The melted iron which is poured against the casting does not adhere to said casting, because the casting is so much cooler than the melted iron poured. In order to have adhesion, both casting and iron poured would have to be in a liquid state.

I claim—

That improvement in the art or method of manufacturing flanged cast-metal rails or bars of unequal thickness which consists in pouring hot metal against the thinner part of the casting after the same has been cast and while it is yet hot, to thereby keep up or re-enforce the heat in the thinner part of the casting, prevent warping, and insure the cooling of the casting to correspond with the pattern, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES SULLIVAN.

Witnesses:
EDMOND DALY,
JAMES SULLIVAN, Jr.