June 17, 1930. M. STABILE 1,765,109

SPRUE FORMING DEVICE

Filed July 17, 1929

FIG_1_

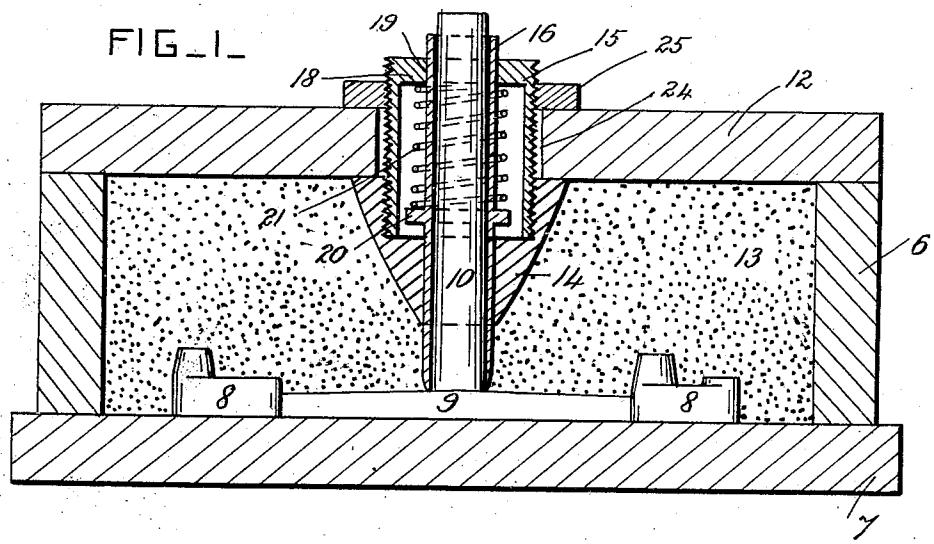


FIG_2_

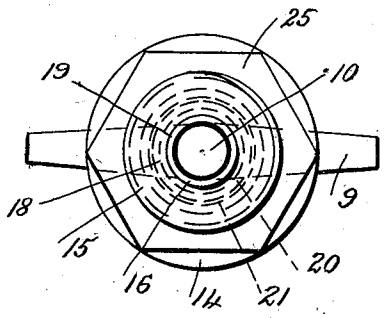


FIG_3_

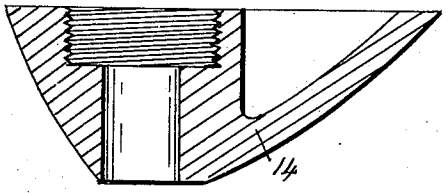
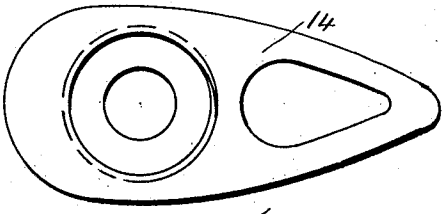


FIG_4_



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UNITED STATES PATENT OFFICE

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SPRUE-FORMING DEVICE

Application filed July 17, 1929. Serial No. 378,912.

This invention relates to devices used in connection with sand molding machines and molds as used in metal founding, for forming the sprues and pouring basins for the molds in which the metal is cast. This invention consists in the novel construction and combination of the parts hereinafter fully described and claimed whereby the sprue and pouring basin are formed when the sand is compressed or packed about the patterns, and it avoids the need of cutting or scooping away portions of the sand to form the pouring basin, through which the mold is subsequently filled with metal.

In the drawings, Figure 1 is a vertical section through a mold provided with devices for forming the sprue and pouring basin according to this invention. Fig. 2 is a plan view of the sprue forming device from above. Fig. 3 is a vertical section through the part that forms the pouring basin showing a modification. Fig. 4 is a plan view of the same.

This device can be used in connection with various approved forms of molding machine, and can be used when the molds are formed without any special machine.

The molding box or flask 6 is provided with a bottom board 7 upon which the patterns 8 of the articles to be molded are placed, and 9 is the part which forms the pouring gate or runner for the metal, and which rests on the bottom board and extends between the patterns 8. A sprue pin or peg 10 projects upwardly from the part 9, but when a single article is being molded it may project upwardly from the pattern of the article. A top board 12 is placed on the top of the box or flask 6, and 13 represents the sand in the box.

A basin-shaped member 14 is provided for forming the pouring basin in the sand of the mold. This basin-shaped member 14 may be circular and conical as shown in Figs. 1 and 2.

This basin-shaped member may also be oval or of irregular shape as shown in Figs. 3 and 4, and it may be of any convenient shape suitable for use in the various forms of mold used in metal founding.

An externally screwthreaded cylinder 15 is provided, and its lower end portion is screwed into a hole in the upper part of the basin-shaped member 14. A tubular stem 16 is provided, and its lower end, which is preferably tapered, is arranged to rest on the runner or pouring plate portion 9. The sprue pin or peg 10 is inclosed in and extends through the tubular stem 16. The cylinder 15 has an inwardly projecting flange 18 at its upper part, having a guide hole 19, and the upper part of the tubular stem 16 projects through this hole 19. The sprue pin or peg extends through the tubular stem and engages with it before the sand is packed or compressed in the mold.

The lower part of the tubular stem has a projection or collar 20 above the bottom of the basin-shaped member 14, and a helical spring 21 is arranged around the tubular stem 16, between the collar 20 and the flange 18 of the cylinder 15. The spring 21 presses the collar towards the bottom of the basin-shaped member, and permits the collar and tubular stem to slide a little upwardly when the bottom of the tubular stem is pressed against the pouring gate or runner part 9.

The screwthreaded cylinder projects through a smooth hole 24 in the top board 12 of the molding box, and the top of the basin-shaped member 14 bears against the top board 12. A nut 25 is screwed on the upper part of the cylinder which projects through the hole in the top board, and secures the basin-shaped member rigidly to the top board.

The sand is packed within the molding box or flask in any approved way, or by any approved machine.

The basin-shaped member 14 and the tubular stem are withdrawn from the sand when the top board is raised, and the patterns and the sprue pin or peg 10 are withdrawn from the sand when the bottom board 7 is removed. A pouring basin and a sprue are thereby formed in the sand, and are connected with the molds or impressions formed by the patterns of the articles to be formed. The molding box is closed, and the molten metal is poured into the mold through the pouring basin and sprue in the usual way.

As the upper part of the sprue pin engages with the lower part of the tubular stem 16 before the latter touches the sand in the molding box, the sand is prevented from entering the tubular stem. A clean sprue hole is always formed, as there is no sand inside the tubular stem to fall back into the mold; and as the tubular stem never fails to slip over the top of the sprue pin it never damages the mold, as is often the case when the sprue pin is short and a tubular slidable cutter is provided and forced through the sand in the mold into engagement with the short sprue pin.

What I claim is:

1. In a sprue forming device, a molding box or flask, a bottom board for a pattern to rest on, a top board having a hole in it, a basin-shaped member arranged under the hole in the top board and having a screw-threaded hole in its upper part and a guide hole in its lower part, an externally screw-threaded cylinder screwed into the upper hole of the basin-shaped member and projecting through the hole in the top board and having an inwardly projecting flange at its upper part also provided with a guide hole, a nut screwed on the upper projecting part of the cylinder and clamping it and the basin-shaped member to the top board, a tubular stem slidable in the guide holes of the said basin-shaped member and flange and having a projection arranged in the lower part of the cylinder, a spring arranged between the said flange and projection and operating to press the tubular stem downwardly, and a sprue pin slidable in the tubular stem and adapted to connect with the pattern on the bottom board.

2. In a sprue forming device, a molding box or flask, a bottom board for a pattern to rest on, a top board having a hole in it, a basin-shaped member arranged under the hole in the top board and provided with a guide hole in its lower part and having a cylinder at its upper part which projects through the hole in the top board and has an inwardly projecting flange at its upper part also provided with a guide hole, means engaging with the upper part of the cylinder and clamping it and the basin-shaped member to the top board, a tubular stem slidable in the guide holes of the said basin-shaped member and flange and having a projection arranged in the lower part of the cylinder, a spring arranged between the said flange and projection and operating to press the tubular stem downwardly, and a sprue pin slidable in the tubular stem and adapted to connect with the pattern on the bottom board.

3. A sprue forming device as set forth in claim 2, the said sprue pin being of sufficient length to enter the lower end of the tubular stem before the tubular stem touches the sand in the molding box, thereby preventing sand from entering the lower end of the tubular stem.

In testimony whereof I affix my signature.

MICHELE STABILE.