

Dec. 6, 1960

J. W. NIELSEN

2,962,781

METHOD OF PREPARING A SAND MOLD FOR AN INGOT MOLD

Filed July 15, 1958

FIG. 1

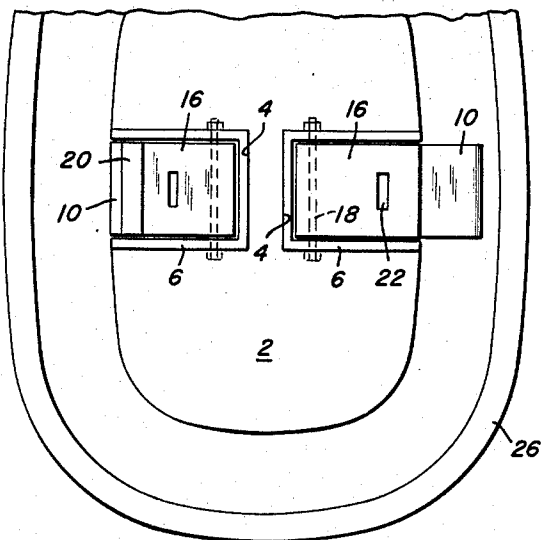


FIG. 3

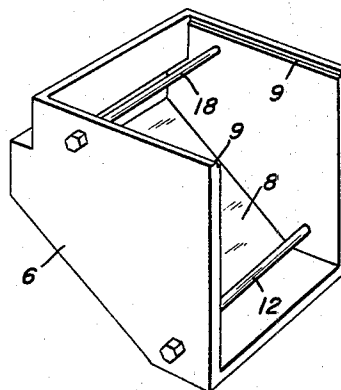


FIG. 2

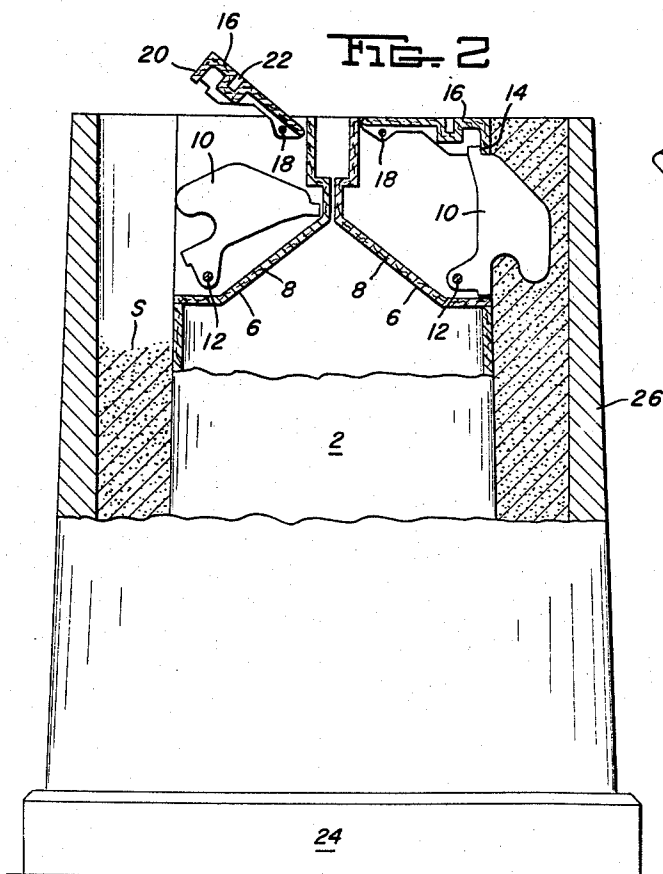


FIG. 4

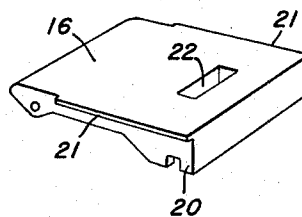
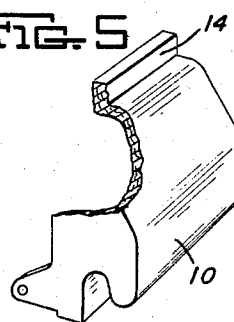


FIG. 5



INVENTOR
JOY W. NIELSEN

By *Donald L. Dalton*
Attorney

1

2,962,781

METHOD OF PREPARING A SAND MOLD FOR AN INGOT MOLD

Joy W. Nielsen, Provo, Utah, assignor to United States Steel Corporation, a corporation of New Jersey

Filed July 15, 1958, Ser. No. 748,685

2 Claims. (Cl. 22—199)

This invention relates to a method of preparing a sand mold for an ingot mold.

Ingot molds used in the production of steel are provided with opposed lifting lugs ears which are grasped by the stripping machine during removal of the mold from the ingot. The pattern commonly used in preparing a sand mold for casting ingot molds is hollow and the stripping ears of the pattern are separate from the main body of the pattern. In preparing the sand mold, the pattern with its base is set in the ramming pit and a flask is placed around the pattern on the pattern base. Sand is rammed or packed into the space between the pattern and the flask until it is even with the top of the pattern. The ears are then slid into positions that are determined by permanent guides in the pattern. When the mold is parted from the pattern, the removable ears slide out of the guides and remain in the sand mold. It is then necessary for the workmen to climb onto the mold to remove the stripping ears and patch any loose sand that may have broken free as the mold was parted from the pattern. This work is usually done while the mold is suspended from a crane, so that the work is difficult and dangerous to the workmen.

It is therefore an object of my invention to provide a method of preparing a sand mold for an ingot mold in which the stripping ears of the pattern are removed from the sand prior to the parting of the pattern from the mold.

This and other objects will be more apparent after referring to the following specification and attached drawings, in which:

Figure 1 is a top plan view of an ingot mold pattern in position within a flask;

Figure 2 is a vertical section through the ingot mold pattern in position for preparation of a sand mold;

Figure 3 is a perspective view of an insert into the pattern;

Figure 4 is a perspective view of a cover plate used on the pattern; and

Figure 5 is a perspective view of the stripping ear of the pattern.

Referring more particularly to the drawings, the reference numeral 2 indicates the main body of the pattern. The body 2 is hollow and has opposed openings 4 in the top thereof. A shell 6 is fastened to the body 2 within each opening 4 in any suitable manner. The shells 6 preferably have sloping bottom walls 8 and are open upwardly and outwardly. A ledge 9 is provided in each upper side wall of the shell. A stripping ear 10 is mounted within each shell 6 by means of a pivot pin 12 which extends between the walls of the shell 6, adjacent the bottom thereof toward the outer wall of body 2. A shoulder 14 is provided on the ear 10 at a point remote from the pivot 12. A cover plate 16 is mounted in each shell 6 by means of a pivot pin 18 extending between the walls of the shell 6 adjacent the top inner portion thereof. A vertical flange 20 is provided on the outer

2

lower end of the cover 16 and a horizontal flange 21 on each side thereof. A hand grip 22 is provided in the upper surface of the cover 16. The body 2 is mounted on a base 24.

In preparing the sand mold the pattern is positioned in the ramming pit and the flask 26 placed therearound on base 24. The ears 10 are positioned entirely within the shells 6 as shown to the left of Figure 2 and sand S is then rammed into the space between the flask 26 and pattern body 2. After the sand has been rammed around said pattern to a level just below the ear 10 as shown to the left of Figure 2, the cover plate 16 is lifted by means of hand grip 22 and the ears 10 are rotated upwardly and outwardly and the cover plate 16 lowered, so that the flange 20 engages the shoulder 14 to limit outward movement of the ear and lock it in operative position as shown to the right of Figure 2. The flanges 21 resting on ledges 9 limit the downward movement of the cover plates. The ramming of the sand is then continued until it reaches the position shown to the right of Figure 2. The cover plates 16 are then raised to unlock the ears 10, so that they can be rotated back into the mold to the position shown to the left of Figure 2. It will be noted that the position of the pivot pin 12 and the construction of the ears 10 is such that this can be done without damaging the sand mold. Thus a clear passage is provided for separating the sand mold from the pattern.

While one embodiment of my invention has been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. A method of preparing a sand mold for an ingot mold which comprises providing a pattern having a base, opposed ears on said pattern mounted for movement from within said shell to an operative position partly out of said shell and a cover plate mounted on said pattern above each of said ears for latching said ears in operative position, placing a flask on said pattern base around said pattern, ramming said sand in said flask around said pattern, and after the sand has been rammed unlatching said covers and moving said ears to a position wholly within said pattern.

2. A method of preparing a sand mold for an ingot mold comprising providing a pattern having a base, opposed ears on said pattern mounted for movement from within said shell to an operative position partly out of said shell and a cover plate mounted on said pattern above each of said ears for latching of said ears in operative position, placing a flask on said pattern base around said pattern, unlatching said covers and moving said ears to a position wholly within said pattern, then ramming said sand in said flask around said pattern until the sand reaches a level just below said ears, then moving said ears outwardly to their operative position, completing the ramming of said sand, then unlatching said covers and moving said ears to a position wholly within said pattern, and then separating the pattern from said sand mold.

References Cited in the file of this patent

UNITED STATES PATENTS

237,146	Vallee	Feb. 1, 1881
967,830	Potter	Aug. 16, 1910
1,882,652	Schmiedeknecht	Oct. 11, 1932
2,808,628	Fouron et al.	Oct. 8, 1957

FOREIGN PATENTS

212,578	Great Britain	Mar. 7, 1924
525,223	Great Britain	Aug. 23, 1940