May 8, 1923. 1,454,740

B. H. HOWARD ET AL

FEEDER FOR INGOT MOLDS

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Fig. 1.

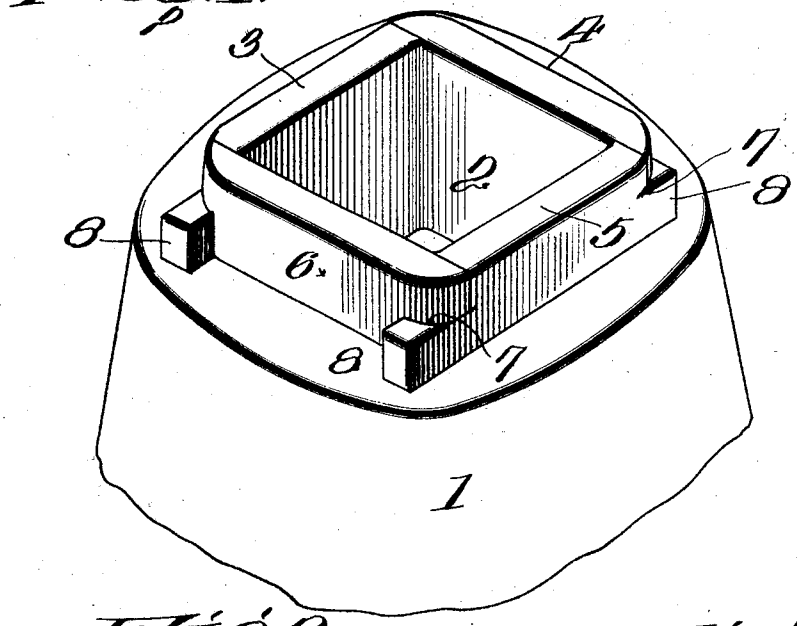


Fig. 2.

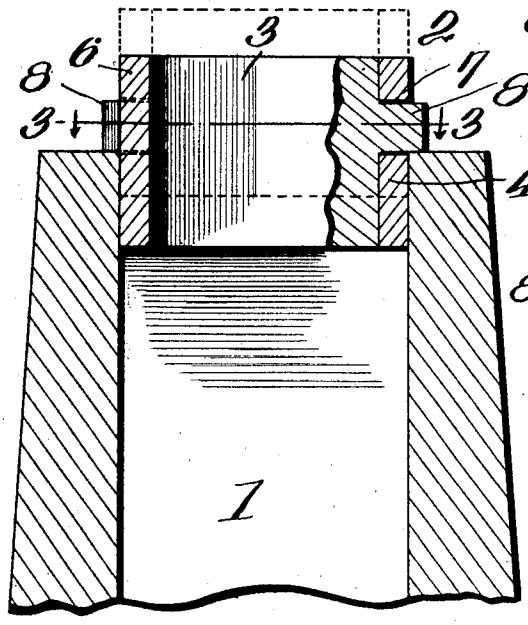
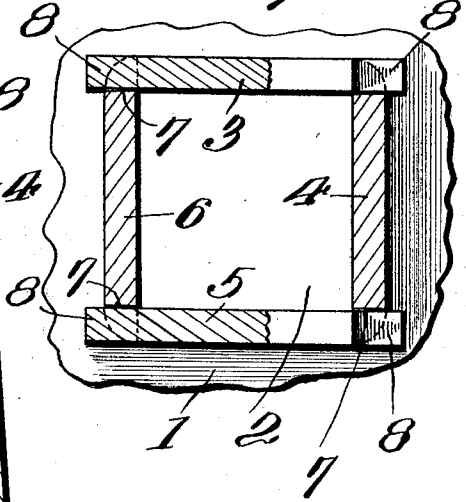


Fig. 3.



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Fig. 4.

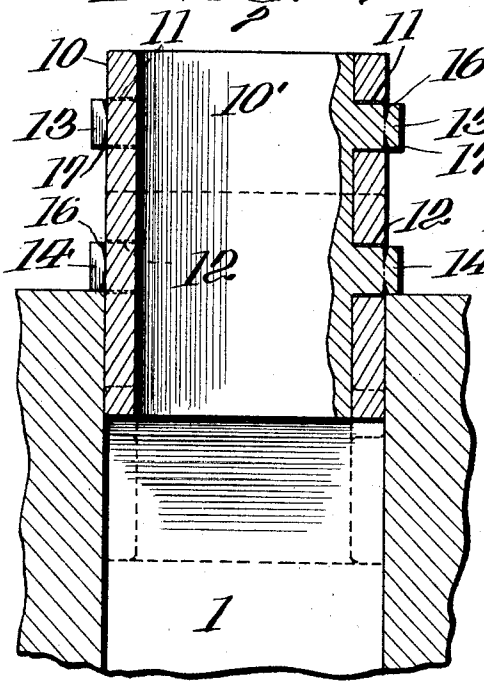


Fig. 5.

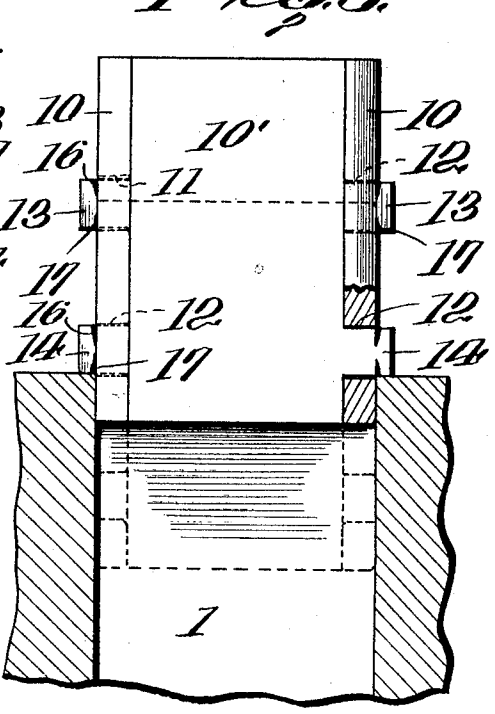


Fig. 6.

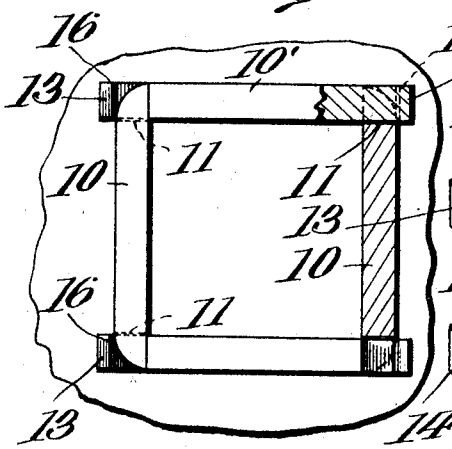
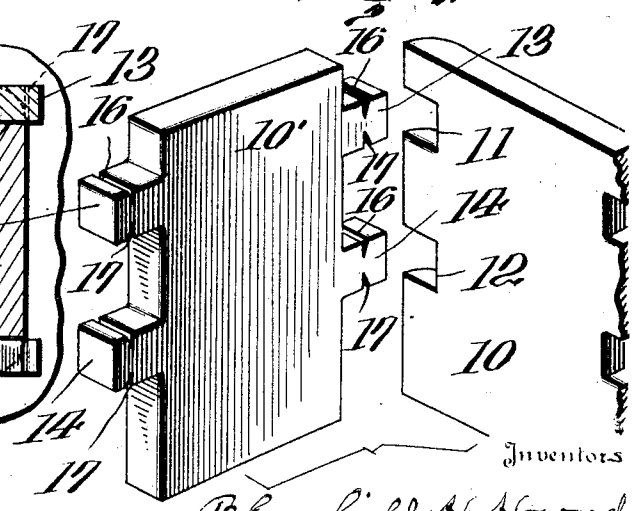


Fig. 7.



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FIG. 8.

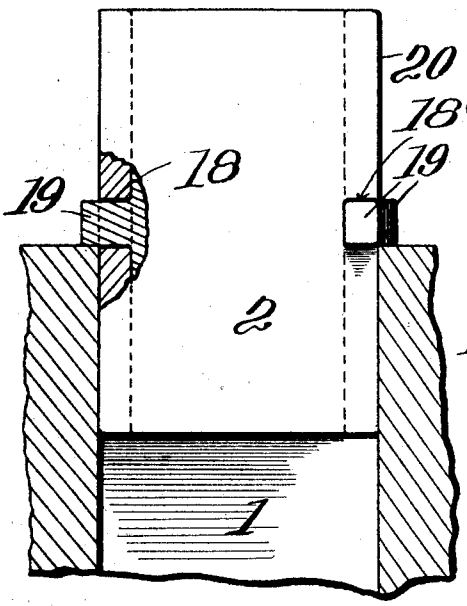


FIG. 10.

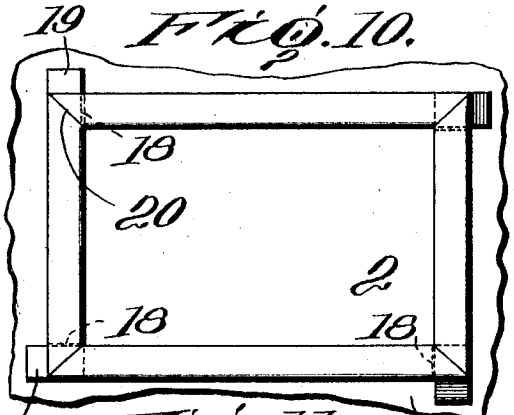


FIG. 11.

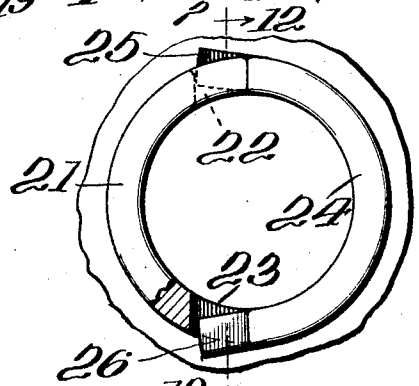


FIG. 9.

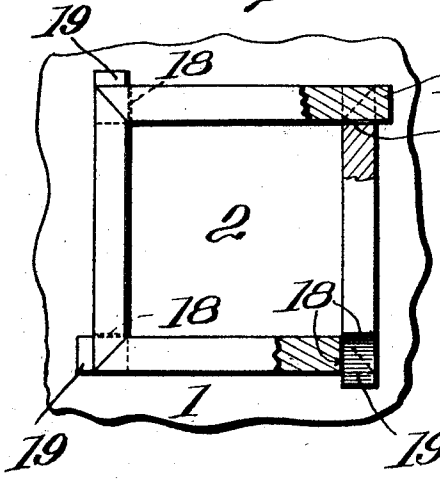
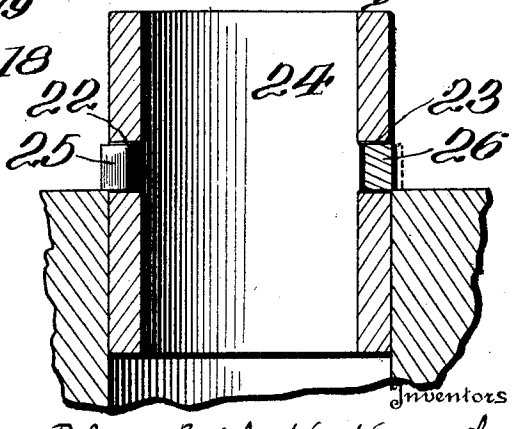


FIG. 12.



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FEEDER FOR INGOT MOLDS

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Fig. 13.

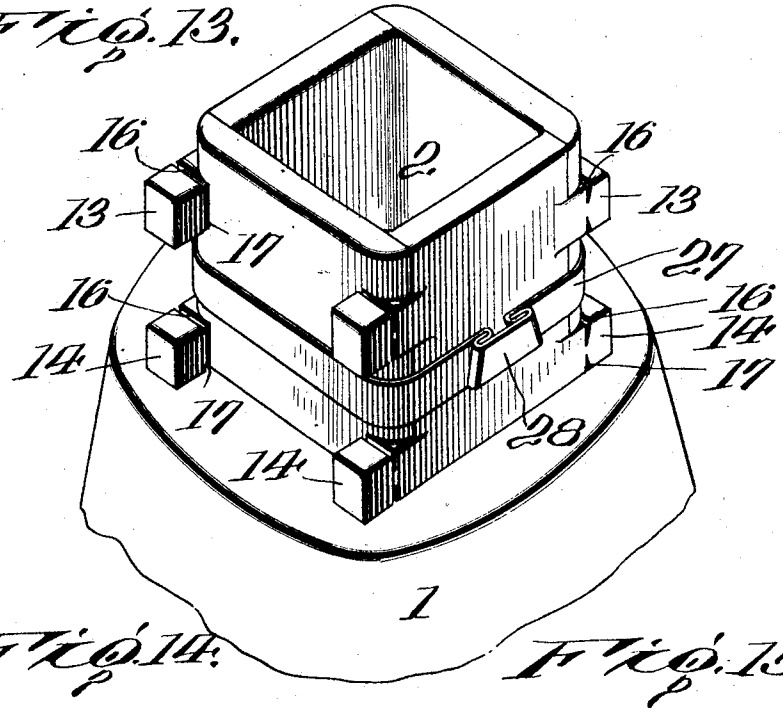


Fig. 14.

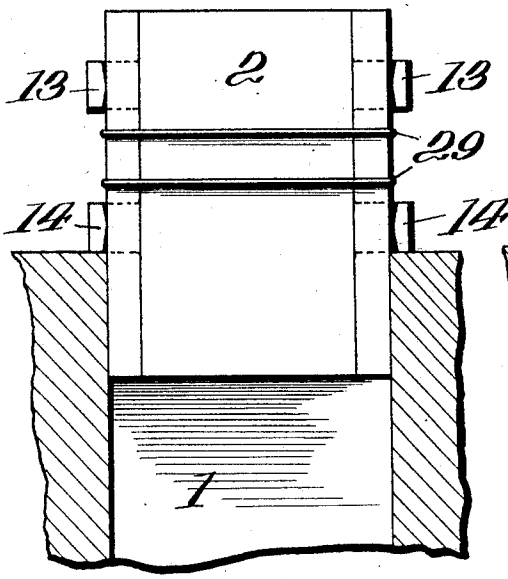
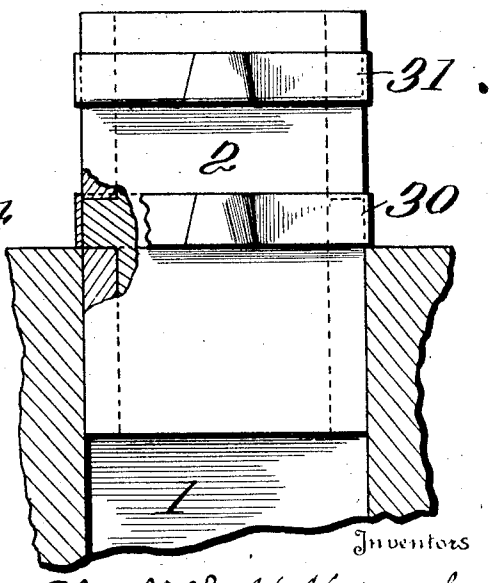


Fig. 15.



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UNITED STATES PATENT OFFICE.

BLOOMFIELD H. HOWARD, OF WASHINGTON, DISTRICT OF COLUMBIA, AND ERNEST J. TURNER, OF PITTSBURGH, PENNSYLVANIA.

FEEDER FOR INGOT MOLDS.

Application filed January 27, 1923. Serial No. 615,319.

To all whom it may concern:

Be it known that BLOOMFIELD H. HOWARD and ERNEST J. TURNER, citizens of the United States, residing, respectively, at city of Washington, District of Columbia, and Pittsburgh, county of Allegheny, State of Pennsylvania, have invented certain new and useful Improvements in Feeders for Ingot Molds, of which the following is a specification.

Our invention relates to improvements in feeders for ingot molds.

The object of our invention is to provide a reversible sectional feeder for ingot molds, having all of the advantages of the one piece feeder, to prevent seams and holes known as "piping" and also reduce segregation to a minimum.

Another object of our invention is to provide a sectional feeder which can be readily set up off of the mold and the several sections locked together against lateral movement, the said locking means serving as a support for the feeder, for holding it on the upper end of the mold partly in the bore thereof and having means whereby the distance the feeder enters the mold may be varied.

A further object of our invention is to provide a sectional feeder which takes up about one-fourth the space of the one piece feeder in shipment and at the same time there is less liability of the same breaking in transportation and the breaking of one section does not destroy the entire feeder and thus obviating the greater portion of the loss by breaking in transportation.

A still further object of our invention is to provide a simple, cheap and effective sectional mold feeder, having certain details of structure and combination of parts hereinafter more fully set forth.

In the accompanying drawings,

Figure 1 is a perspective view of an ordinary ingot mold showing our improved sectional feeder applied thereto.

Figure 2 is a sectional view of Figure 1 showing in dotted lines the feeder in an inverted position.

Figure 3 is a transverse horizontal sectional view taken on the line 3—3 Figure 2.

Figure 4 is a vertical sectional view similar to Figure 2 of a modified form of feeder, in which each edge of the sections is provided with two interlocking members whereby the feeder can assume four different positions in respect to the mold, or any number of interlocking members can be used to suit the practice of the steel industry.

Figure 5 is a sectional view of an ingot mold showing the feeder in full lines, with a feeder of the character shown in Figure 4, in an inverted position.

Figure 6 is a top plan view of Figure 5 showing the feeder partly in section.

Figure 7 is a perspective view of the male and female sections in their separated relation.

Figure 8 is a vertical sectional view of an ingot mold showing a modified form of feeder in which one edge of each section is provided with a lug and the other edge with a recess.

Figure 9 is a top plan view of Figure 8 showing one corner of the feeder broken away.

Figure 10 is a top plan view similar to Figure 9 showing an oblong feeder.

Figure 11 is a top plan view of a circular feeder partly broken away.

Figure 12 is a vertical sectional view taken on the line 12—12 Figure 11.

Figure 13 is a perspective view of an ingot mold showing the form of feeder shown in Figures 4 and 5 applied thereto and showing a retaining and strengthening band holding the sections together.

Figure 14 is a side elevation showing the mold in section and showing the retaining and strengthening bands made of ordinary wire.

Figure 15 is a side elevation similar to Figure 14 showing the interlocking means broken off and the retaining and strengthening bands supporting the feeder on the mold.

Referring now to the drawings 1 represents an ordinary ingot mold having a square opening therein and in which is placed my improved sectional feeder 2 which is of a shape to correspond with the opening in the mold. The feeder 2 is made of four sections 3, 4, 5 and 6, the sections 4 and 6 are of a width equal to the width of the opening in the mold and the edges of these sections are provided with square notches 7 at a point intermediate the ends of the sections. The sections 3 and 5 are of a width to fit in between the sections 4 and 6 and each edge is

provided with the rectangular lugs 8 of a size to snugly fit in the recesses 7 of the sections 4 and 6 and are of a length greater than the thickness of the sections 4 and 6 whereby they extend out beyond the outer walls thereof and rest upon the upper edge of the ingot mold and supports the feeder in the bore of the mold. The lugs 8 as shown in Figure 2 of the drawings are nearer one end of the feeder than the other, so that by inverting the feeder, it will extend a shorter distance in to the mold as shown in dotted lines Figure 2.

In the modification shown in Figures 4 to 7 inclusive we have shown each section 10 having each side edge provided with two notches 11 and 12 and each edge of the section 10′ having two lugs 13 and 14 adapted to enter the notches in the member 10 and said lugs forming supports for holding the feeder on the upper end of the mold, as described in respect to Figures 1 to 3 inclusive. The lugs 13 and 14 as shown are different distances from the ends of the sections for a purpose which we will presently describe. The lugs 13 and 14 are provided with horizontal notches in their upper and lower faces as indicated at 16 and 17 which weakens the lugs and allows that portion beyond the notches to be readily broken off, so that there will be no projecting portion beyond the outer wall of the feeder so that the feeder can enter the bore of the mold. As shown in Figure 4 of the drawings a considerable portion of the feeder extends into the mold but by inverting the feeder and allowing the upper lugs 13 to support it but a small portion of the feeder will enter the mold. By breaking off the upper lugs 13 of Figure 4 when in an inverted position as shown in Figure 5, a greater portion of the feeder will enter the mold, than that shown in Figure 4, or by breaking off the lower lugs 14 of Figure 4, a still greater portion of the feeder will enter the mold.

In Figures 8, 9 and 10 instead of one section carrying the lugs and the other section having the notches or recesses, one edge of each section has a notch or notches as the case may be as indicated at 18 and the other edge of the section having a lug or lugs 19 and the edges of the sections are mitered as indicated at 20 to prevent any inward movement of the sections, when on or off of the mold, as clearly shown in Figures 9 and 10 of the drawings.

In 11 and 12 we have shown a round feeder and in which case it is made of two sections but if desired could be made in three or more sections without departing from our invention. In this form the section 21 has both edges formed with notches 22 and 23 and the section 24 has its edges provided with the lugs 25 and 26 adapted to enter the notches 22 and 23. As shown in the drawings these lugs do not follow the contour of the sections and thus when the two sections are brought together they will project beyond the wall of the sections and form projections to support the feeder on the mold. While we have shown this arrangement of notches and lugs it will be understood that the same principle, as employed in Figures 8 to 10 inclusive could be used on this round form.

In Figure 13 we have shown a flat retaining and strengthening band 27 extending around the mold between the lugs 13 and 14 and having the tightening means 28 whereby the several sections forming the feeder may be tightly held together.

In Figure 14 instead of the flat retaining and strengthening band we have shown two strands of wire 29 which may have their ends twisted together or fastened in any desired manner.

In Figure 15 we have shown the retaining band as means for supporting the feeder on the mold. In this form the ends of the lugs are broken off and the two bands 30 and 31 extend around the feeder opposite the lugs and are locked thereon in the same manner as that shown in Figure 13. This arrangement allows of the adjustment of the feeder in the mold the same that described in respect to Figures 4 to 7 inclusive.

Having thus fully described our invention what we claim and desire to secure by Letters Patent is;

1. A feeder for ingot molds, comprising a body portion formed of a series of longitudinal sections provided with interlocking means for holding together said sections.

2. A feeder for ingot molds, comprising a body portion formed of a series of longitudinal sections having interlocking means for holding said sections together and extending beyond the outer wall of the body portion and forming means for supporting the feeder on the upper end of the mold.

3. A feeder for ingot molds, comprising a body portion formed of a series of longitudinal sections having interlocking means for holding said sections together, said interlocking means being, and said interlocking means forming means for supporting the feeder on the upper end of the ingot mold.

4. A feeder for ingot molds, comprising a body portion formed of a series of longitudinal sections having interlocking means intermediate the ends and forming means for supporting the feeder on the upper end of the mold.

5. A feeder for ingot molds, comprising a body portion formed of a series of longitudinal sections having interlocking means for holding said sections together, said interlocking means being intermediate the ends and extending beyond the outer wall thereof

and forming means for supporting the feeder on the upper end of the mold.

6. A feeder for ingot molds, comprising a body portion formed of a series of longitudinal sections having interlocking means intermediate the ends extending beyond the outer wall thereof and forming means for supporting the feeder on the upper end of the ingot mold, and the extended end of the interlocking means being weakened so that they can be broken off to allow the feeder to enter the mold.

7. A feeder for ingot molds, comprising a body portion formed of a series of longitudinal sections having interlocking means at the abutting corners for holding said sections together and forming means for supporting the feeder on the upper end of the ingot mold.

8. A feeder for ingot molds, comprising a body portion formed of a series of longitudinal sections having interlocking means at the abutting edges for holding said sections together and extending beyond the outer wall thereof and forming means for supporting the feeder on the upper end of the ingot mold.

9. A feeder for ingot molds, comprising a body portion formed of a series of longitudinal sections having intermediate interlocking means at the abutting edges and extending beyond the outer wall thereof and forming means for supporting the feeder on the upper end of the ingot mold, and said projecting ends weakened so that they may be broken off to allow the feeder to pass into the mold.

10. A feeder for ingot molds, comprising a body portion formed of a series of longitudinal sections having two sets of interlocking members spaced different distances from the ends of the sections and extending beyond the outer wall thereof and forming means for supporting the feeder on the upper end of the ingot mold, and said extended end of the interlocking members having a weakened portion, whereby either set of interlocking members may be broken off for varying the distance the feeder enters the ingot mold.

11. A feeder for ingot molds, comprising a body portion formed of a series of longitudinal sections having a series of interlocking members spaced regular or different distances apart from the ends of the sections and extending beyond the outer wall thereof and forming means for supporting the feeder on the upper end of the ingot mold, said extended ends of the interlocking members having a weakened portion, whereby any of the interlocking members may be broken off for varying the distance the feeder enters the mold.

12. A feeder for ingot molds, comprising a body portion formed of a series of longitudinal sections, a series of interlocking lugs holding the sections together and extending beyond the outer walls of the sections, and a strengthening and retaining band around the sections between the lugs.

13. A feeder for ingot molds, comprising a body portion, and projections carried by the outer face of the body portion and forming means for supporting the feeder within the mold and said projections weakened so that they may be broken off to allow the feeder to enter the mold different distances.

14. A feeder for ingot molds, comprising a reversible body portion, and projections carried by the outer face of the body portion and weakened so that they may be broken off to allow the feeder to enter the mold different distances.

15. A feeder for ingot molds, comprising a reversible body portion, and projections carried by the outer face of the body portion different distances from the ends of the body portion and forming means for supporting the feeder in the mold and said projections weakened so that they may be broken off to allow the feeder to enter the mold different distances.

In testimony whereof we affix our signatures.

BLOOMFIELD H. HOWARD.
ERNEST J. TURNER.