May 9, 1939. A. H. JUNG 2,157,097

INGOT FOR FEEDING MACHINES

Filed March 5, 1938

Fig. 1.

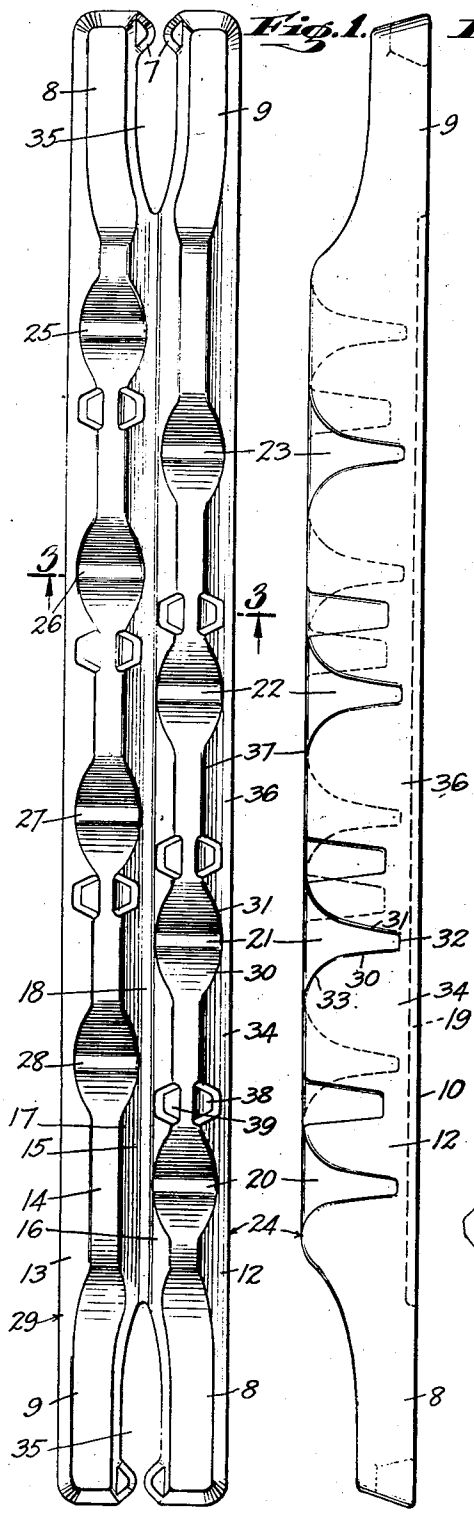


Fig. 2.

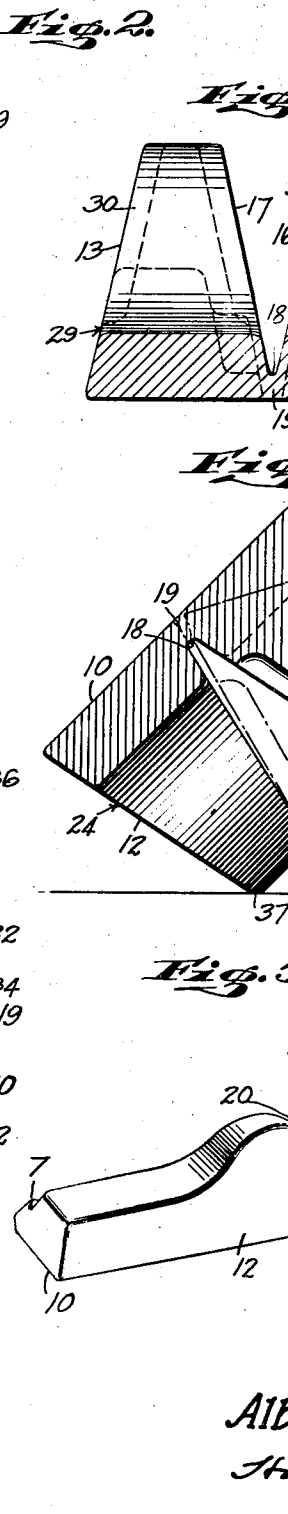
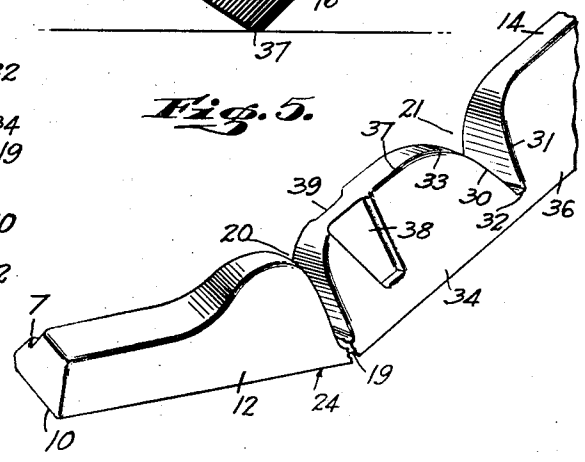


Fig. 3.

Fig. 4.

Fig. 5.



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INGOT FOR FEEDING MACHINES

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2 Claims. (Cl. 22—218)

This invention relates to ingots and particularly to ingots made of type metal which are fed by a suitable feeding machine into the melting pot of a type-casting and setting machine, and is an improvement over my prior patent No. 2,083,913, dated June 15, 1937. The ingots for use in such machines are heavy and cannot be broken up to be fed manually into the melting pot, but require the use of a feeding machine in connection therewith. Smaller ingots have been made in about eight-pound sizes, which ingots, while themselves are too large to be inserted as a whole into the melting pot of the type-casting machine, can however, be broken up readily into pieces small enough to enter the pot, and hence are also subject to accidental breakage in handling and shipping. Owing to the small size of such ingots, they require excessive handling for a given weight of metal. In shipping such small ingots, they must be boxed or crated to prevent breakage thereof when accidentally dropped, thereby involving added expense unnecessary in connection with the large ingots designed for use with feeding machines.

My invention therefore contemplates the provision of a large ingot containing about seven times the amount of metal in the small breakable ingot, and which can be easily handled and shipped without the necessity for boxing or crating, and which can readily be broken up into pieces small enough to be inserted into the pot of a type-casting and setting machine, while being strong enough to withstand accidental breakage such as that due to handling and shipping.

My invention further contemplates the provision of a comparatively large and heavy ingot adapted to be automatically fed by a feeding machine into the pot of a type-casting machine, and also adapted to be readily broken up so that the pieces may be easily inserted by hand into the pot of the machine, whereby my improved ingot has all the advantages of the previously known large ingots as well as the advantages of the smaller ingots.

My invention further contemplates the provision of an ingot provided with staggered transverse grooves or notches and with a single deeper longitudinal groove or notch separating the ingot into a plurality of independent members joined by a common base, which base may readily be broken apart first longitudinally and then transversely to separate the members completely into units of predetermined shapes, sizes and weights.

The various objects of the invention will be clear from the description which follows, and from the drawing, in which,

Fig. 1 is a top plan view of my new ingot.

Fig. 2 is a side elevation of the same.

Fig. 3 is a vertical section of the same taken on the line 3—3 of Fig. 1.

Fig. 4 is a similar view of the same, showing the position into which the ingot is turned when it is to be broken in half along its longitudinal center line.

Fig. 5 is a fragmentary perspective view of half the ingot after it has been broken, showing how the ingot is again broken transversely into the pieces small enough to enter the melting pot.

In the practical embodiment of my invention which I have shown by way of example, the ingot is cast in a single piece in a suitable mold such as that disclosed in my copending application for patent for Ingot mold, Serial No. 150,501, and comprises the substantially flat bottom 10, tapered sides 12 and 13 and top 14, it being understood that the ingot is cast in inverted position in the mold in the customary manner. In accordance with my said prior Patent No. 2,083,913 to which reference is made, a pair of spaced arms is provided at each end of the ingot, said arms 8 and 9 being provided with lugs adapted to be engaged by the hook of a feeding machine, so that the ingot ends will drop automatically into the pot when melted to a point at the inner ends of the arms 8 and 9.

Extending longitudinally through the ingot and downward from the top 14 is the tapered or V-shaped longitudinal groove 15 provided with downwardly converging flat sides 16 and 17 and the preferably concavely rounded bottom 18. Said groove 15 extends almost all the way down through the thickness of the ingot thereby leaving a comparatively thin unmutilated or solid base portion as 19 below the groove 15 and throughout the entire length of the ingot except at the end slots or openings 35. Being made along the longitudinal middle of the ingot, said groove divides the ingot longitudinally into two identical though not symmetrical halves 24 and 29. The solid base portion 19 while thin, is nevertheless strong enough to hold the ingot halves together against accidental breakage, since it provides a considerable area of metal because of its long length, which area offers the required resistance to breakage. It will be noted that the halves 24 and 29 are ar-

ranged in the ingot with the corresponding ends thereof at opposite ends of the ingot.

In addition to the longitudinal groove 15, there are provided a series of parallel transverse grooves as 20, 21, 22 and 23 in the ingot half 24, and a corresponding series of grooves 25, 26, 27 and 28 in the ingot half 29. The sides 30 and 31 of each transverse groove converge downwardly toward each other and are joined by the slightly concave bottom 32. At their uppermost ends, each of the groove sides 30 and 31 is convexly rounded as at 33 for a substantial distance. The transverse grooves divide the ingot up into a plurality of similar members as 34, 36 and the like, all connected integrally by the base 19, said transverse grooves extending downwardly through the ingot a lesser distance than the depth of the groove 15 and preferably for approximately three quarters of the total thickness of the ingot. The grooves 20 and 25 are arranged at about the same distance from the respective adjacent ends of the ingot halves 24 and 29, but at a lesser distance from said ends than the distance of the grooves 23 and 28 from the respective ends of the ingot nearest thereto. This arrangement of the grooves causes the groove 25 to be staggered relatively to the groove 23 and the groove 20 to be staggered similarly relatively to the groove 28. The remaining grooves being arranged about the same distances from each other, the groove 21 becomes arranged about halfway between the grooves 28 and 27 and similarly the groove 22 is about halfway between the grooves 27 and 26. In any case, the transverse grooves of the ingot half 24 are staggered relatively to the transverse grooves of the half 29, whereby the ingot cannot be broken across unless it is first broken longitudinally.

In other words, the cross-sectional area of the ingot at any point of its length between the slots 35 is so much greater than the area of its longitudinal section along the middle line of the groove bottom 18, that any attempt to break the ingot across by any normal force is greatly resisted, so that the ingot is not likely to break in transit or in handling.

The ingot may, however, be readily broken up when desired by first breaking the halves 24 and 29 apart. This is readily done by turning the ingot into the position shown in Fig. 4 and dropping the corner edge 37 thereof on a hard surface such as a concrete or other floor. The shock so produced, aided by the weight of the ingot half 29, causes breakage of the ingot halves apart along the weakened area of the base 19 at the groove 15 as shown by the dash-dot lines of Fig. 4. Each half of the ingot is then broken up into its component members, illustrated as five in number by merely holding one end of the ingot half and then striking the other end on the floor as shown in Fig. 5, or striking a hard object with that part of the base of the ingot adjacent the grooves 20, 21, 22 and 23 in succession. It will be understood that if the ingot is used with a feeding machine, it is not broken up, but is merely hung on the hook of such machine by inserting the hook through the slot 35 between the arms 8 and 9 so that the ingot hangs on the lugs 7. It is only in cases where no feeding machine is used and the metal is to be fed directly into the melting pot that the ingot is broken up as above described.

At each of the ingot sections 34, 36 as well as the corresponding inner sections, there are provided a pair of similar opposed finger grip recesses as 38, 39, one recess as 38 being made in the wall 12 or 13 and the cooperating opposed recess as 39 in the wall 16 or 17 of the groove 15. Said recesses are made in the respective sections at a point adjacent the transverse groove thereof, so that when the ingot is broken up, the user may insert his thumb and index finger in the opposed grooves 38, 39 to lift the broken section near one end. The other end drops due to its unbalanced weight and the section may thereby be inserted vertically into the melting pot with minimum danger of splashing molten metal.

It will be noted that while the end sections including the arms 9 are longer than the end sections including the arms 8 to provide for the proper staggering of the transverse grooves, the amount of metal in the various sections is otherwise approximately the same.

It will be understood that I have provided a large one-piece ingot taking the place of a number of smaller ingots which requires but one handling and one shipping operation without the necessity of boxing or crating as compared to the plurality of operations required on the plurality of smaller ingots of the equivalent amount of metal and the need for crating the smaller ingots for shipment.

It will also be seen that my new ingot may be used with a feeding machine, or if no feeding machine is available, it may readily be broken up into pieces of the correct size to fit into a melting pot of predetermined size and that I have provided a structure well designed to meet the severe requirements of practical use.

While I have shown and described a certain specific embodiment of my invention, I do not wish to be understood as limiting myself thereto, but intend to claim the invention as broadly as may be permitted by the state of the prior art and the scope of the appended claims.

I claim:

1. In a one-piece molded ingot for use in a typecasting machine and adapted to be shipped in its bare state, means on said ingot adapted to engage the hook of a feeding machine to suspend the ingot from the hook, a plurality of divisible sections each small enough to enter the pot of the machine, a common base on the ingot joining all of said sections and having a flat bottom, said ingot having a longitudinal groove through its middle provided with downwardly converging side walls and a rounded bottom wall close to said flat bottom to provide a fracturable longitudinal area at the bottom of the groove, said area being sufficient to withstand accidental breakage but being of insufficient extent to withstand a deliberate breaking force applied thereto, said longitudinal groove dividing the ingot into two identical but unsymmetrical halves, said ingot being further provided with a plurality of longitudinally spaced transverse grooves each extending across one of the halves of the ingot, the transverse grooves of one half of the ingot being arranged in staggered relation to the transverse grooves of the other half, each of said transverse grooves having downwardly converging sides extending from the top of the ingot to a point a substantial distance above the bottom of the longitudinal groove thereby providing a greater cross sectional area throughout the ingot than said longitudinal area, said ingot being readily fracturable longitudinally of said base by a properly applied force to separate the

halves of the ingot and each half being also readily fracturable at said transverse grooves after said halves have been broken apart.

2. A one-piece ingot of the character described provided with a deep longitudinal groove dividing the ingot into two longitudinally arranged halves and with a series of shallower transverse grooves in each half, each of the transverse grooves of one half being staggered intermediate a pair of the transverse grooves of the other half.

ALBERT H. JUNG.