

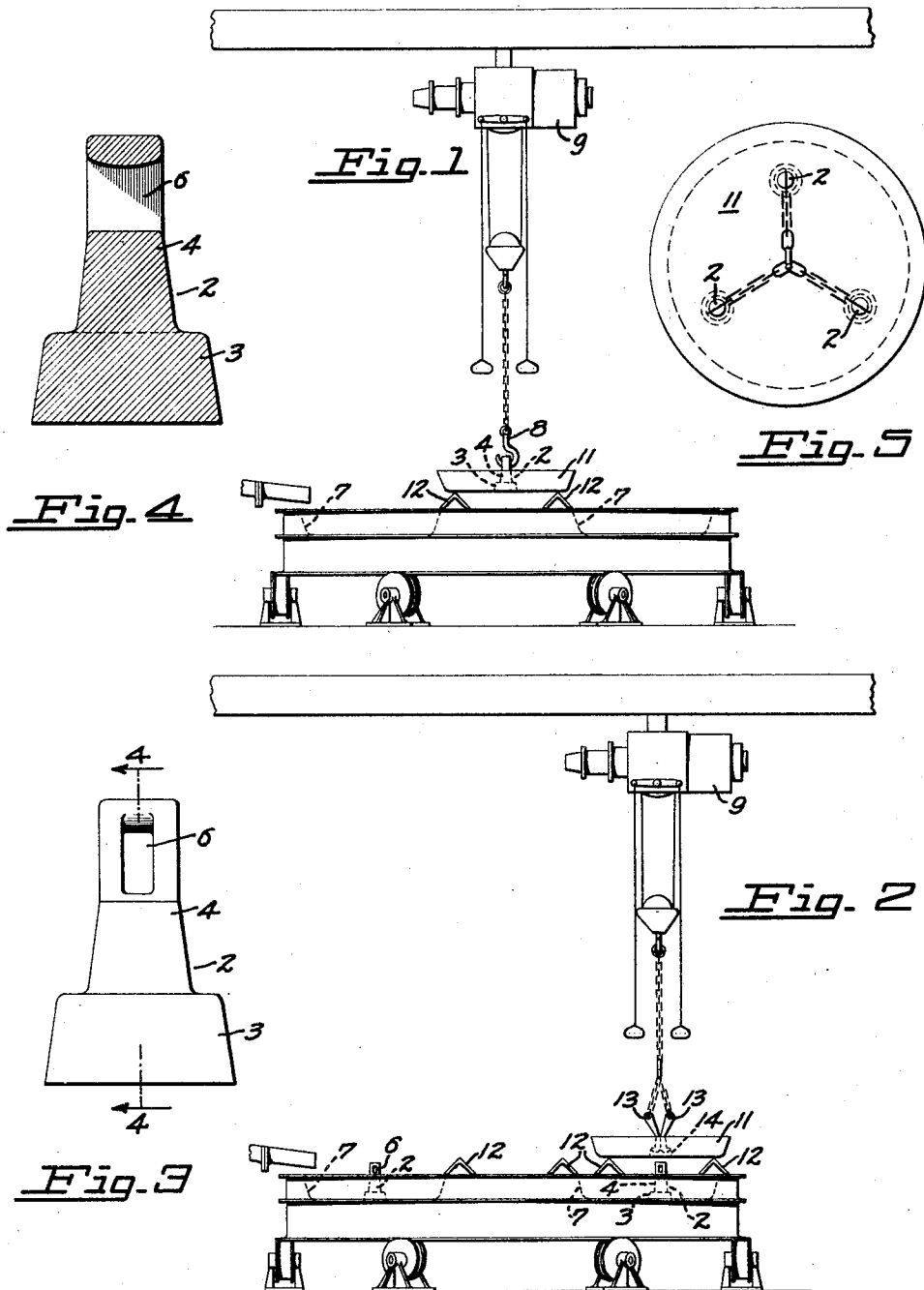
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MEANS FOR HANDLING INGOTS

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MEANS FOR HANDLING INGOTS

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My invention relates to a means of handling ingots; and it is among the objects of the invention to provide a means whereby the transportation of ingots is greatly facilitated.

Further objects of the invention include the provision of means for readily lifting the ingots from their cast position in the moulds; and of a means by which all the handling operations are accomplished with the aid of any convenient hoisting device such as a traveling crane.

The invention possesses numerous other objects and features of advantage, some of which, with the foregoing will be set forth in the following description of my invention. It is to be understood that I do not limit myself to this disclosure of species of my invention, as I may adopt variant embodiments thereof within the scope of the claims.

Referring to the drawing:

Figure 1 is a side elevational view, embodying the means and method of my invention, showing an ingot after it has been lifted from its mould; and

Figure 2 is a similar view showing an ingot ready for further transportation.

Figure 3 is a side elevational view of the ingot insert embodying my invention; and

Figure 4 is a vertical sectional view of the same taken in a plane indicated by the line 4-4 of Figure 3.

Figure 5 is a top view of an ingot showing three inserts.

In terms of broad inclusion, the means of handling ingots embodying my invention comprises casting an ingot about a preformed insert, and then lifting the ingot from its mould by means engaging the insert. The insert is next preferably removed from the ingot, and further transportation is effected by means engaging the ingot aperture formed by the insert.

In greater detail the means of handling ingots embodying my invention comprises an insert generally designated 2, having an enlarged preferably conical shaped base portion 3, and a partially tapered upwardly extending shank portion 4. This insert is made of any suitable material having a higher melt-

ing point and different coefficient of expansion than the ingot to be cast. The upper portion of the shank 4 is provided with an aperture 6 extending transversely there-through; the insert shank 4 being of sufficient height to carry the aperture above the top of an ingot mould 7. The insert dimensions will vary with the size and weight of the ingot being cast; it being obvious that a heavy ingot would require a larger insert than a lighter one.

The insert is first placed in the center of a mould, and the molten metal is poured into the mould about the insert. After the metal has set, a hook 8 of any convenient hoist, such as the crane 9, is engaged with the insert aperture 6. By this means the ingot 11 may be lifted from the mould and placed on a suitable support, such as the angle irons 12. Although an aperture is shown in the shank to permit engagement of a hook, it is obvious that the shank may be formed in other ways to facilitate engagement of a lifting means.

The hook is next disengaged from the insert; and since the coefficient of expansion of the insert is different from the ingot, and since the insert is substantially in the form of a wedge, it will either fall from its position in the ingot when the hook is removed, or will do so with the assistance of a slight tap. Further transportation is effected by suitable grappling means, such as the sister hooks 13, engaging the ingot aperture 14 formed by the insert.

The advantage of this device becomes apparent, because it permits the same means, namely the crane 9, to be used in all the handling operations. Since the lower portions of the ingot aperture are enlarged, due to the particular formation of the insert 2, the sister hooks 13 will maintain a firm grip on the ingot. It is to be noted that the insert may be used in all the transporting operations if desired; in this event, the ingot is merely lifted from the mould and then carried immediately to the desired location.

Although only one insert is shown in the ingots, it is apparent that more may be employed; and it has been found convenient at

times to use three inserts, positioned in triangular formation as shown in Figure 5. When a larger number are used, it is obvious that the inserts may be of smaller dimensions than would otherwise be necessary.

The means of my invention is particularly applicable for transporting lead ingots, in which metal inserts such as those made of steel are employed.

I claim:

1. An insert for an ingot comprising an enlarged base portion tapering upwardly and inwardly from its lower surface, a shank portion projecting upwardly from the base, and means on the upper portions of said shank to facilitate lifting the ingot, said insert having a higher melting point and a different coefficient of expansion than the ingot.

2. An insert for an ingot comprising a conical base, and a tapered shank projecting upwardly from the base, said shank having an aperture extending transversely through the upper portions thereof to facilitate lifting the ingot, said insert having a higher melting point and a different coefficient of expansion than the ingot.

3. An insert for an ingot comprising a body tapering upwardly and inwardly from its lower portions, and means on the upper portions of said body to facilitate lifting the ingot, said insert having a higher melting point and a different coefficient of expansion than the ingot.

In testimony whereof, I have hereunto set my hand.

LELAND S. ROSENER.

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