To all whom it may concern:

Be it known that I, Joseph H. Konigsberg, a citizen of the United States, residing at the city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Metal-Stirring Devices, of which the following is a specification.

This invention relates to metal melting furnaces and refining apparatus and particularly to the means for stirring the metal in the melting pot of such apparatus, for introducing a flux into said melting pot, and for carrying said flux to all parts of the molten metal in said pot. The invention is designed to be used in connection with furnaces in which a lid or cover is used to close the melting pot, and is best adapted for use in stirring, cleaning, and refining soft metals, such as for instance, type metal. The various objects of this invention will best be understood from the description which follows, and from the drawings, in which,

Fig. 1 is a vertical section of a furnace to which a preferred embodiment of my invention has been applied.

Fig. 2 is a vertical section taken on the line 2-2 of Fig. 1, showing the stirring rod and one form of the means for removably maintaining said rod in the operative position thereof.

Fig. 3 is a top plan view of a part of the same.

Fig. 4 is a view similar to Fig. 2, showing a modified form of the means for removably holding the stirring rod in place.

Fig. 5 is a top plan view of the same, and

Fig. 6 is a similar view of the same showing the position assumed by the parts when the rod is to be removed from the pot.

In the practical embodiment of my invention a furnace as 10, of the usual type is supported in the customary manner on a stand as 11, which supports the rotatable gang mold 12. The metal 13 in the melting pot 14 is molten in the ordinary way by the flame 15 and tapped through the spigot 16 into the molds. The melting pot 14 is provided with a suitable lid or cover 17 having a central aperture 18 therein, and a hinged door 19, through which door the solid metal may be inserted. Said aperture 18 is normally closed as by means of the bearing plates 20 and 21, which are suitably joined together, as by means of screws or rivets 50. In order to form a spherical bearing socket, the central portions of said plates are apertured and pressed out into spherical form, whereby the socket members 22 and 23 on the plates 20 and 21 respectively, are formed. At a point intermediate of the ends of the stirring rod 24 a ball member as 25 is provided, said ball member being movably mounted in the socket 26 formed by said socket members, whereby a suitable universal joint is provided, allowing the ends of the stirring rod to be swung in all directions about said socket as a pivot. The end 27 of the stirring rod is preferably sharpened so that a canister or cartridge as 28 containing the flux may be readily impaled on the end of the rod 24 and frictionally held on said end while in use. For stirring the molten metal in the pot 14 when desired, stirring blades as 29 are preferably secured near the lower end 27 of the rod 24, just above the sharp point thereof, as by means of a suitable set screw 30. Said rod 24 preferably terminates at its upper end in the ball 31 adapted to be readily grasped by the operator for swinging said rod in any direction about the ball and socket joint 25 and 26 above described.

It is preferably intended that the stirring rod together with the supporting means therefor, be removed when it is desired to introduce the flux into the metal. Toward this end, I provide means for removably holding said rod 24 in place, which means while secured to said rod, may be rapidly detached from, and attached to, the lid 17 when desired. In Figs. 2 and 3, I show one form of said means, while in Figs. 4, 5 and 6 I show a modified form thereof.

In that form illustrated in Fig. 2, the socket plates 20 and 21 are maintained in position by means of suitable set screws as 32 supported in the screw arms 33, said arms being suitably pivoted to the lid 17 as by means of the screws 34. For insuring the maintenance of the socket plates in the proper position, the set screws 32 are designed to enter a suitable depression as 35 in the upper face of the plate 20, while a similar preferably tapered depression as 36 in the lower plate 21 is engaged by a suitable pin as 37 upstanding from the lid 17. To release the rod 24, the set screws 32 are loosened, and the arms 33 rotated about their pivots 34 into the position

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shown in dotted lines in Fig. 2, whereupon the rod together with the plates 20 and 21 may be lifted off the cover or lid 17 exposing the opening 18. The flux may then be introduced into the pot by jabbing the point 27 of the rod through the cartridge 28 and passing said point with the cartridge thereon through the aperture 18, the lower plate 21 being readily positioned by turn-
ing said plate until the tapered pin 37 enters the holes 36. The arms 33 are then swung back into place about their pivots 34 and the set screws 32 tightened.

It will be seen that the end 27 of the stirring rod may be oscillated about the hall and socket joint so that the flux carried thereby is brought to all parts of the pot and all the metal thoroughly impregnated therewith. The fumes generated by the flux are allowed to escape through a suitable ventilating pipe as 38 in the lid 17, whereby any danger of the operator inhaling said fumes is eliminated, since the pot is entirely enclosed during the stirring and fluxing operation. It will be understood that the rod 24 may be used as a stirring rod when it is desired to mix the various component elements used in the metal even though no flux is carried thereby, the blades 30 being slightly rotated by the operator when the rod is used for this purpose.

In that form of the means for securing the rod 24 in place illustrated in Figs. 3, 4, 5 and 6, the arms as 39 are immovably fastened to the lid 17, and the set screws 33 and pins 37 are dispensed with. Instead thereof, a circular depression as 40 is made at the periphery of the aperture 18, thereby insuring proper registration of the plates 20 and 21. For rotating said plates a handle as 42 is provided. In the operative position of the stirring rod, the plates 20 and 21 are rotated by means of the handle 42 until the openings 41 have passed by the arms 39, which arms have sufficient spring action to hold said plates firmly down in the depression 40 of the lid. When it is desired to remove the rod for impaling a cartridge thereon, the plates 20 and 21 are rotated to the position shown in Fig. 6 wherein the openings 41 are directly un-
derneath the arms 39, whereupon the rod 24 together with said plates may be re-

moved from the lid, the operation being re-
versed to secure the rod again in place.

It will be seen that I have provided sim-
ple and efficient means for introducing the flux into a closed pot and for carrying the flux to all parts of the molten metal, while insuring the proper removal of the fumes or gases generated. It will also be seen that the stirring means is designed to reach all parts of the pot and may be rapidly re-

moved or fastened into place when desired. I do not wish to be limited to the specific structure shown herein, as it is clear that various modifications of the illustrative mechanism shown herein may be made without departing from the spirit and scope of this invention.

I claim:

1. In an apparatus of the character de-
scribed, a pot, a lid for said pot, an oscill-
tory stirring rod, and means for support-
sing said rod fastenable to said lid and re-
moveable from said lid with said rod as a unit.

2. Means for stirring a flux through molten metal comprising a pot for said metal, a lid having an aperture therein cov-
ering said pot, a rod adapted to be passed through said aperture, a sharp end on said rod adapted to frictionally carry a flux con-
tainer thereon, a bearing member on said rod intermediate of the ends thereof, and means secured to said lid for removably maintaining said member at said aperture.

3. In a stirring apparatus, a pot, a lid for said pot, having an aperture therein, a rod, means movably securable to said rod adapted to cover and uncover said aperture and means for detachably securing the first mentioned means to said lid.

4. In a stirring apparatus, the combination with a pot, of a stirring rod, a lid for said pot, means for pivotally supporting said rod between the ends thereof at said lid, and clamping arms upstanding from said lid for removably securing said rod supporting means on the upper surface of said lid.

5. In an apparatus of the character de-
scribed, the combination with a melting pot and an apertured lid therefor, of a stirring rod, a bearing member larger than, and adapted to cover, the aperture in said lid pivotally carrying said rod, and clamping arms securing to and upstanding from said lid for removably engaging said bearing member in the operative position of said rod.

6. In an apparatus of the character de-
scribed, a melting pot having an opening therein completely closed during the stir-
ring and cleansing operation, oscillatory means for introducing a flux into said pot and for carrying the flux through the mate-
rial in said pot, and means for ventilating said pot.

7. In an apparatus of the character de-
scribed, a melting pot, an apertured lid on said pot, and oscillatory means for intro-
ducing a flux into said pot, for stirring the contents of said pot, and for closing said aperture removably securable to said lid.

8. In an apparatus of the character de-
scribed, a melting pot, an apertured lid on
saying pot, a stirring rod adapted to have the lower end thereof passed through the aperture of said lid to the interior of said pot and to have said end removed through said aperture, means pivotally secured to said rod for supporting said rod and for closing said aperture, and means on said lid for securing said supporting means to said lid and for releasing said supporting means from said lid.

9. In an apparatus of the character described, a stirring rod, a ball intermediate of the ends of said rod, a socket member engaging said ball, and means for removably securing said socket member to said lid to close said aperture.

10. In an apparatus of the character described, a pot, an apertured lid on said pot, a stirring rod adapted to have the lower end thereof passed through the aperture of said lid, a sharpened end on said rod, and a socket member engaging said ball removably attachable to said apparatus.

11. In an apparatus of the character described, a pot, an apertured lid normally closing said pot, a stirring rod adapted to carry a flux at the lower end thereof passed through the aperture of said pot, a ball intermediate of the ends of said rod, a socket member engaging said ball, and means for removably securing said socket member to said lid to close said aperture.

12. In an apparatus of the character described, a pot, an apertured lid on said pot, a stirring rod adapted to be passed through the aperture of said lid, a sharpened end on said rod, stirring blades on said rod near said end, a ball on said rod intermediate of the ends thereof, a pair of socket plates engaging said ball, and arms upstanding from said lid for removably holding said plates over said aperture.

13. In an apparatus of the character described, removable oscillatory stirring means comprising a rod, a sharp lower end on said rod, a stirring blade on said rod near said end, a ball intermediate of the ends of said rod, a pair of apertured plates each having a central spherical portion engaging said ball, and means for holding said plates together.

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