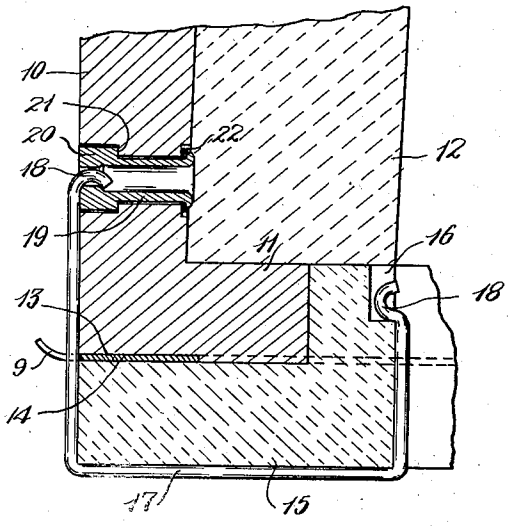
May 18, 1937. W. M. CHARMAN 2,080,848

RING SECURING MEANS

Original Filed July 21, 1933



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Patented May 18, 1937

2,080,848

UNITED STATES PATENT OFFICE

2,080,848

RING SECURING MEANS

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Original application July 21, 1933, Serial No. 681,541. Divided and this application November 15, 1935, Serial No. 49,935. In Canada May 28, 1934

6 Claims. (Cl. 22—147)

This invention relates to ring securing means. It has to do with hot tops for ingot molds of the type in which the refractory, heat insulating material of the hot top is mounted within a metal casing, in other words forms a lining for the casing. In certain hot tops of this character the casing is formed with an internal ledge which supports the principal part of the refractory lining, while a lower lining element in the form of a ring is releasably attached to the casing, this ring serving to protect the lower and inner sides of the ledge. A lining ring of this general character is disclosed in U. S. Patent 1,956,895, issued May 1, 1934 to Philip R. Ward and myself. The ring is also disclosed more or less in detail in my copending application Serial No. 681,541, filed July 21, 1933, of which the present application is a division.

This ring is held in place releasably by spring clips of special design which are covered in Patent 1,949,292, issued February 27, 1934 to Gustave A. Peterson and myself. The present invention relates to renewable socket members mounted in the casing for cooperation with these clips.

The principal object of the invention is the provision of means for insuring a good anchorage for the clips in the casing at all times, even after the latter has been in use for a long period.

Another object is the provision of a socket member of such character that it may be removed and a new one readily inserted in its place.

In the drawing the single figure is a vertical sectional detail view of a fragment of a hot top, showing a bottom ring mounted on the casing by fastening means utilizing the present invention.

In the drawing, 10 represents the metal casing of a composite hot top. At its lower end this casing is provided with an internal or inwardly projecting ledge 11, which supports the semi-permanent upper lining 12. The bottom of the hot top is recessed, as indicated at 13, for the reception of a sheet metal wiper strip 14 which projects beyond the perimeter of the hot top. This wiper strip is resilient and wipes against the inner surface of the ingot mold when the hot top is lowered thereinto in a manner which is well known in the art and disclosed more or less in detail in Patent 1,804,207, issued May 5, 1931 to Harry J. Darlington and myself.

The ledge 11 is protected on its inner and bottom surfaces by a refractory bottom ring 15 preferably, although not necessarily, made in one piece. This ring is used for one heat only. It remains upon the ingot when the hot top is stripped therefrom. Hence it must be attached to the hot top by means which will yield or fail when the stripping occurs, but which will hold the ring against accidental displacement during the handling of the hot top and during the pouring of the metal.

The ring 15 is provided on its inner side with a series of shallow pockets 16. These pockets cooperate with spring wire clips 17 that have rebent ends 18 adapted to extend into the pockets. The clips extend downwardly from the ends 18 along the inner sides of the ring, outwardly along the bottom surface of the ring, and upwardly along the outer surface thereof, through slots 9 formed in the wiper strip 14, and upwardly along the outer surface of the casing 10.

The outer extremity of the clip is turned inwardly at 18, and is caused to engage a renewable socket member 19 which is made hollow to receive the end of the clip, and is provided with a head 20 to abut against a shoulder 21 formed in the opening made in the casing to receive the socket member. At the inner side of the casing there is a shallow countersink within which rests a washer 22 over which the inner end of the hollow socket member is rolled or peened, whereby the socket member is fixed in place. This fastening at the inner end of the socket member is covered normally by the lining 12, so that there is no danger of its becoming loosened accidentally. It will be noted that the bore of the socket member is somewhat restricted at its outer end, so that the hooked end of the clip tends to engage behind the shoulder produced by the junction of the two bore portions of different diameters.

When the socket member becomes worn to such an extent that it does not readily hold the end of a clip, it may be removed and a new one inserted. If this is done whenever the upper lining 12 of the hot top is replaced, the socket members will always be in good condition.

The casing 10 is usually formed of cast iron. The socket member 19 is formed preferably of a malleable metal, and therefore, in addition to being removable and replaceable, withstands wear better than the cast iron could do.

After an ingot is poured and the metal has solidified, the hot top is stripped from the ingot. The ring 15 sticks to the ingot. The wire from which the clip 17 is formed is softened considerably by the heat of the ingot. Hence, when lifting force is exerted on the hot top either the wire parts or the ends 18 pull out of the sockets 19.

The outer surface of the socket member 19 is

circular. Consequently it may be turned about its axis. This may occur merely as an incident to the use of the device, resulting from the insertion and withdrawal of the clips. This capability of being turned adds considerably to the life of a socket member, because new surfaces may be presented to the hooked ends 18, where the wear occurs.

It will also be noted that there is considerable space in the large bore portion of the socket member. When the hot tops are stripped from the ingot the hooked portions of the clips often break off and remain in the socket members, but owing to the storage capacity of the large bore portions of the latter a considerable number of hook ends may be accommodated before any cleaning out of the socket members becomes necessary.

Having thus described my invention, I claim:

1. In a hot top, a casing, a bottom lining member covering the lower end of the casing, a clip for securing said lining member to the casing, and a metallic socket member mounted in said casing having an opening for the reception of said clip, said socket member being formed of a material different from that of said casing.

2. In a hot top, a casing, a bottom lining member covering the lower end of the casing, a clip for securing said lining member to the casing, and a metallic socket member mounted in said casing having an opening for the reception of said clip, said socket member having an outer surface that is circular in cross section.

3. In a hot top, a casing having a lower ledge, a bottom lining member covering the lower surface of said ledge, a clip for securing said member to the casing, and a removable metallic socket member mounted in said casing having an opening for the reception of said clip.

4. In a hot top, a casing, a bottom lining member covering the lower end of said casing, a spring clip for securing said member to the casing, said casing having an opening therethrough near the lower end thereof, a socket member mounted in said opening and provided with a socket for the reception of said clip, and means accessible from the inner side of the casing for securing said socket member in place.

5. In a hot top, a casing, a bottom lining member covering the lower end of said casing, a spring clip for securing said member to the casing, said casing having an opening therethrough near the lower end thereof, and a socket member mounted in said opening, said socket member having a bore therein with a restricted outer end for the reception and retention of said clip.

6. In a hot top, a casing, a bottom lining member covering the lower end of said casing, a spring clip for securing said lining member to the casing, said casing having an opening therethrough near the lower end thereof, and a socket member mounted in said opening, said socket member having a small bore in its outer end for the reception and retention of said clip, and an inner communicating larger bore, said larger bore being of greater length than the small bore.

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