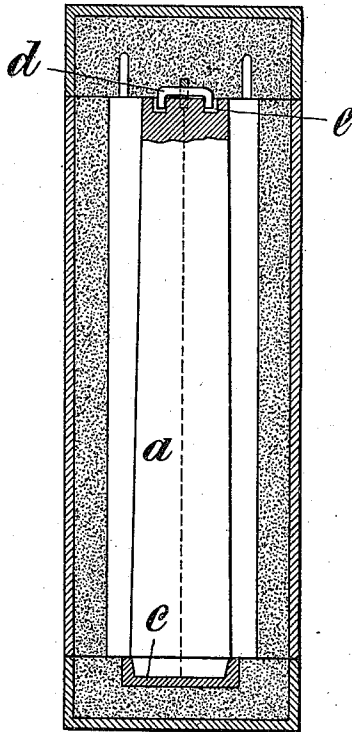


W. KURZE.  
MANUFACTURE OF HOLLOW CASTINGS.  
APPLICATION FILED SEPT. 27, 1909.

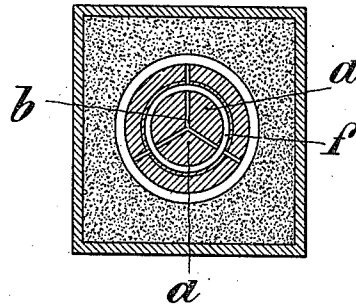
972,875.

Patented Oct. 18, 1910.

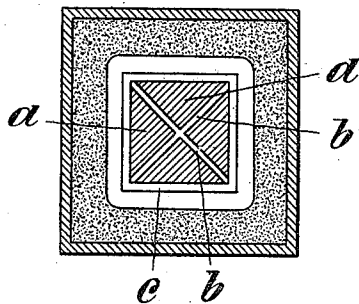
*Fig. 1.*



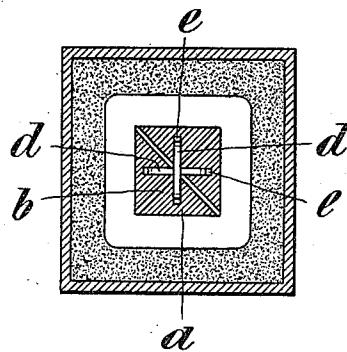
*Fig. 3.*



*Fig. 2.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

WILHELM KURZE, OF WILHELMSHÜTTE, NEUSTADT-ON-THE-RÜBENBERGE, GERMANY.

MANUFACTURE OF HOLLOW CASTINGS.

972,875.

Specification of Letters Patent.

Patented Oct. 18, 1910.

Application filed September 27, 1909. Serial No. 519,861.

To all whom it may concern:

Be it known that I, WILHELM KURZE, of Wilhelmshütte, Neustadt-on-the-Rübenberge, near Hanover, Prussia, in the German Empire, manufacturer, have invented new and useful Improvements in or Relating to the Manufacture of Hollow Castings, of which the following is a full, clear, and exact specification.

My invention relates to the manufacture of hollow castings and more particularly to a method of casting hollow objects or articles by specially preparing the core or cores prior to their use in the casting operation.

According to my invention, the cores are spread over or coated with linseed oil, which is a known binding agent for mold coating materials, after which ground silicious earth, which, *per se*, is known as a constituent of coating masses, is applied to or sprinkled over the cores, in order that the latter can be left in the casting until cool and easily removed therefrom after cooling. The removal of the cores may be effected by striking with a hammer or the like against the end of the core or the casting mold.

According to a modified form of my invention, divided metal cores can be used for the manufacture of hollow castings, in which case the inner opposed surfaces of the core sections are coated with a substance which becomes carbonized during the casting operation, so that a sufficient space is produced during the latter operation for the free play or shrinkage of the casting.

Several examples of the latter process are shown in the accompanying drawing in which:

Figure 1 is a longitudinal section of the core and of the mold. Fig. 2 a cross section of the parts mentioned. Fig. 3 illustrates a section of a modified form, and Fig. 4 a section and plan of the core shown in Fig. 1.

In order to carry out the invention with iron cores, the latter are provided with a coating of linseed oil, or other oil or substance (such as, for instance, dextrin, sugar solution, or the like) which is capable of being used as a substitute for linseed oil, after which, silicious earth (silicium di-oxid) is applied to the core to form a layer of about 1 mm. thickness. Instead of silicious earth, loam, clay, gypsum, fire-resistant earth, or similar substances may be used. After drying, the cores are blackened and placed in

the molds. In the casting operation, the coating becomes consumed and the silicious earth, together with the core, subsequently readily drops out of the casting. In this way the iron core assumes in a few minutes the temperature of the casting and cools down uniformly with it, whereby damage or inconvenience due to shrinkage is prevented. In this manner, the cores are prevented from adhering to the casting, and breaking of the casing mold is also completely avoided, so that molds cast and prepared in the usual way may be employed.

In the case of using, in the process of casting hollow bodies, longitudinally divided cores, the latter are, preferably, made of metal, or may consist of any other substance resistant to molten metal. The core is divided into several sections *a* (Figs. 2, 3 and 4) so that between these sections, clearances or shrinkage space *b* can be produced.

The sections *a* of the core, prior to the insertion of the core into the mold, are secured together by any suitable means, and thereby held in assembled position within the mold. The spaces *b* between the sections, according to the present invention, are filled with combustible material, and the outer edges thereof with graphite or other substance which resists molten metal, so that the latter cannot penetrate between the core sections. This can, for instance, be effected in the simplest way by applying varnish or the like to the inner surface of the core sections *a* and lining them with paper.

In the casting operation when the liquid metal is run in, the paper or other filling substance in the spaces *b* is burned in consequence of the heat transmitted through the metal core. Thus sufficient free space or clearance is produced to enable the casting to freely shrink without tension during cooling. When the casting is cool, the various core sections can be easily removed.

It may be mentioned that the core, as above described, can then be blackened in the usual manner, or coated with dry black lead, and can be left in the mold until the flasks are emptied. Thus the core is at once ready for re-use.

Without departing from the spirit of the invention, the securing together of the various core sections may be effected in various ways. For instance, the core sections may be firmly held together at the bottom part by a box or frame *c* (Figs. 1 and 2) of such

dimensions that no play or space remains between the core sections and the frame; or they may be held together by clamps *d* applied to their ends, which clamps are provided with claws entering slots *e* in the core sections *a*. The dimensions of these slots are such that during the cooling of the casting, they do not prevent the contraction of the parts. Instead of using clamps *d*, a ring *f*, as shown in Fig. 3, may be used, which firmly holds together the correspondingly shaped ends of the core, which after the casting operation and cooling of the casting, contracts and thereby becomes freely movable within the ring. According to this invention, this process is applicable for castings of all kinds wherein the core is capable of being divided into several sections, such as for pipes, cylinder bodies and the like.

What I do claim as my invention, and desire to secure by Letters Patent of the United States, is:—

1. Process of manufacture of hollow castings consisting in applying to a core of

iron or steel a coating of an oil and thereupon a layer of a silicious material, substantially as described.

2. Process of manufacture of hollow castings consisting in applying to a core of iron or steel a coating of linseed oil and thereupon a layer of silicious earth, substantially as described.

3. Process of manufacture of hollow castings consisting in applying to the opposed sections of a divided core of iron or steel a coating of an oil and thereupon a layer of a silicious material substantially as described.

4. Process of manufacture of hollow castings consisting in applying to the opposed sections of a divided core of iron or steel, a coating of linseed oil and thereupon a layer of silicious earth, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILHELM KURZE.

Witnesses:

MARTA L. THOMPSON,  
LOUISE KATHOR.