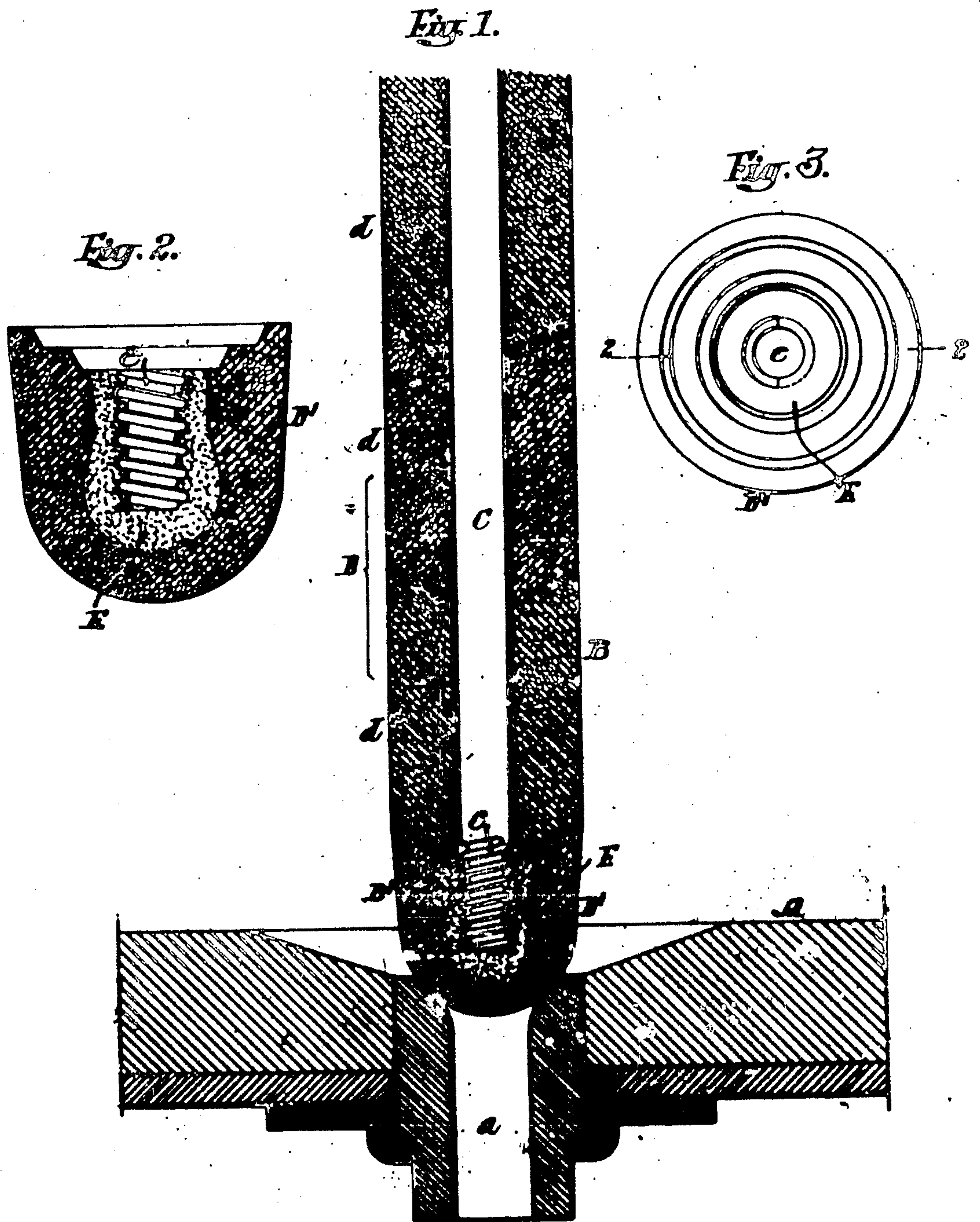


J. E. SHEAFFER.
 STOPPER FOR METAL POURING LADLES.
 APPLICATION FILED JAN. 20, 1910.

955,704.

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Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES E. SHEAFFER, OF BURNHAM, PENNSYLVANIA

STOPPER FOR METAL-POURING LADLES.

955,704.

Specification of Letters Patent.

Patented Apr. 19, 1910.

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To all whom it may concern:

Be it known that I, JAMES E. SHEAFFER, a citizen of the United States, residing in Burnham, Pennsylvania, have invented certain Improvements in Stoppers for Metal-Pouring Ladles, of which the following is a specification.

The object of this invention is to so construct a stopper used in controlling the flow of molten metal from a ladle that the metal rod will not be melted during the pouring operation. It is the usual practice to inclose the metal rod of the stopper within a protecting shell and the lowermost section of the shell is in the form of a graphite stopper head, which incloses the end of the rod. This stopper head acts as a crucible in the general practice and in a very short time the end of the rod or screw entering into the stopper head is melted and, consequently, the stopper has to be removed and a new stopper substituted for it. By my invention I materially increase the life of the stopper, so that the stopper can be used for a number of heats, whereas heretofore a stopper would barely last a single heat.

In the accompanying drawing:—Figure 1, is a vertical sectional view of sufficient of a stopper and the bottom of a ladle to illustrate my invention; Fig. 2, is a sectional view of the end of the stopper detached, the section being on the line 2—2, Fig. 2; and Fig. 3, is a plan view of Fig. 2.

A is the bottom of a pouring ladle, in the present instance of the open hearth type. This ladle has the discharge opening *a* which may be closed by the stopper B. This stopper consists, in the present instance, of a central rod C screw threaded at *c*.

D is the protecting casing for the rod consisting of a series of shells *d* flanged so as to fit one into the other to make a broken joint to prevent the heat from gaining access to the rod. The lower section D' is of graphite and incloses the end of the rod and is shaped as clearly shown in Fig. 2.

Usually the screw thread *c* screws directly into a threaded opening in the graphite shell, but this is found to be objectionable, as the graphite section forms a crucible when subjected to the heat of the molten metal and the end of the rod will be melted in a very short time, thus making the stopper useless, so that it has to be removed and a new stopper substituted for it.

I find that by the introduction of a heat

non-conductor between the graphite end section D' and the threaded end of the rod the rod is not subjected to such intense heat and will last a considerable length of time, and, in fact, will last through several heats. The non-conducting material I prefer to use is fire clay, as indicated at E, and this clay is packed into an opening in the graphite shell D'; the opening preferably being undercut or larger at the base than at the top, so that the clay will be confined in the graphite shell. A screw thread is molded in the clay and the rod can be readily screwed into the threaded opening *e*. Other means of fastening the rod to the clay may be resorted to without departing from the essential features of the invention. I find that the clay not only keeps the rod cool enough to pour any amount of metal from the ladle at one time, but that the stopper may be used several times and the clay also strengthens the graphite shell because of its cooling effect.

I claim:—

1. The combination in a stopper for metal ladles, of a central rod, a protecting shell having a graphite end section, with a body of fire clay mounted within the end section of the shell inclosing the end of the rod as to protect the rod from the heat of the molten metal.

2. The combination in a stopper for metal ladles, of a rod, a series of protecting shells inclosing the rod having a graphite end section, the end section having an undercut cavity therein, with a non-conducting material packed in said cavity and adapted to receive the end of the rod.

3. The combination in a stopper for pouring ladles, of a rod having a screw thread at its lower end, a series of protecting shells inclosing the rod, the shells being flanged so as to break joints, the shell having a graphite end section inclosing the end of the rod and having an undercut cavity therein, a body of fire clay within the cavity and having a threaded opening into which is screwed the threaded end of the rod.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JAMES E. SHEAFFER.

Witnesses:

WM. S. SETTLE,

OLIVIA SETTLE.