E. SOKOLOWSKI & G. ISSLER.

FUNNEL FOR CHARGING CONTAINERS FOR BURSTING CHARGES WITH FUSED EXPLOSIVES.

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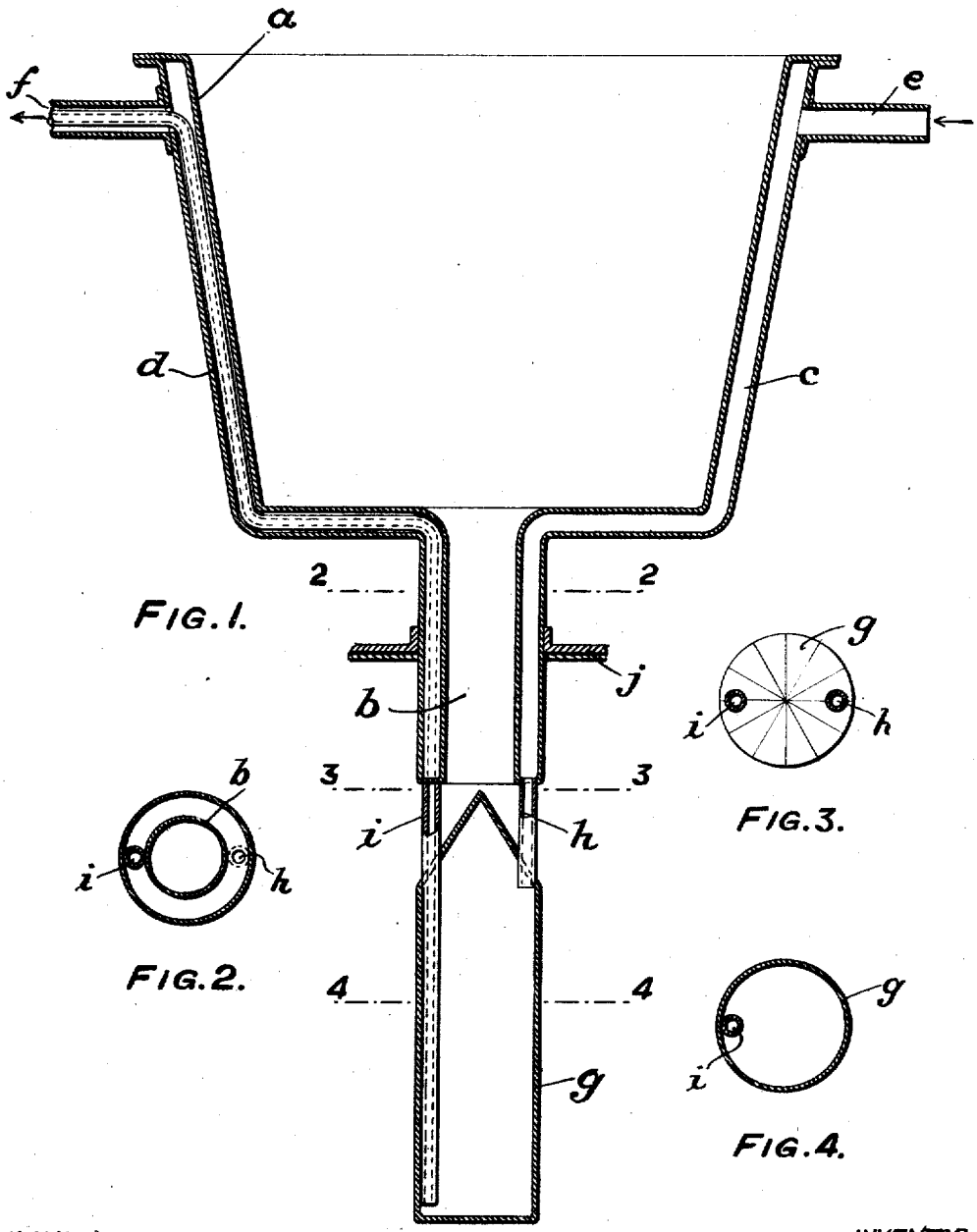

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

WITNESSES:

Robt. R. Ketchel.

E. E. Wall

INVENTOR

Ernst Sokolowski
Gottfried Issler

BY

Harding & Harding

ATTORNEYS

UNITED STATES PATENT OFFICE.

ERNST SOKOLOWSKI, OF HAMBURG, AND GOTTHOLD ISSLER, OF COLOGNE, GERMANY, ASSIGNORS TO E. I. DU PONT DE NEMOURS POWDER COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF NEW JERSEY.

FUNNEL FOR CHARGING CONTAINERS FOR BURSTING CHARGES WITH FUSED EXPLOSIVES.

1,011,511. Specification of Letters Patent. Patented Dec. 12, 1911.

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To all whom it may concern:

Be it known that we, ERNST SOKOLOWSKI, of Hamburg, State of Hamburg, and GOTTHOLD ISSLER, of Cologne, State of Prussia, Germany, have invented a new and useful Improvement in Funnels for Charging Containers for Bursting Charges with Fused Explosives, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

The object of our invention is to produce a funnel which will insure the charging of the container with the bursting charge, causing the same to chill in the container without the formation of hollow spaces, also to produce a sufficient pressure or head upon the material being cast in the container and enabling the taking up of impurities and air bubbles, which would otherwise be detrimental to the cast of the explosive in the container. Finally, to form a space in the explosive in the container for the insertion of a priming charge in the fused explosive charge.

We will first describe a funnel embodying our invention illustrated in the accompanying drawings, and then point out the invention in the claims.

In the drawings: Figure 1 is a sectional view of an apparatus involving our invention. Fig. 2 is a section on line 2—2 Fig. 1. Fig. 3 is a section on line 3—3 Fig. 1. Fig. 4 is a section on line 4—4 Fig. 1.

The funnel, as shown, consists of the main portion *a* and the neck *b*. The main portion *a* and neck *b* are jacketed, forming the jacket spaces *c* and *d*. The space *c* has a connection *e* with a source of steam supply, and the space *d* an outlet *f* to the air.

g is a hollow piece or former for producing the space in the explosive for the priming charge.

h is a pipe connecting space *c* with the interior of form *g*. This pipe *h* terminates at the upper portion of the interior of the form *g*.

i is a pipe leading from the outlet *f* to the lower portion of interior of former *g*.

The neck *b* of the funnel is provided with the flange *j* by means of which it is supported on the top of the inlet opening of the explosive container. In placing the funnel upon the container, a sheet of rubber or other plastic material is placed beneath the flange *j* and the funnel is sealed tight and automatically, by means of its own weight, and in such manner that the fused explosive is prevented from passing otherwise than into the container.

In action, the steam passes in through the pipe *k* to the space *c* and pipe *h*. At the outlet of this pipe *h* and in the space produced by the form *g*, the steam gradually condenses. The condensation water and excess steam passes into the pipe *i*, through pipe *i* to the air.

The use of this funnel maintains liquid, the liquid explosive, which is fed into the top of the funnel until entrance into the container, and thus provides for a continuous passage of said liquid explosive. This causes the filling up of any hollow spaces tending to form, and thus prevents the formation of such hollow spaces, and thus a completely dense and uniform cast is obtained. Owing to the heating of the funnel by means of the steam jacket, any choking of the funnel by partly chilled explosive is prevented.

The dimensions of the funnel should preferably be such that the contents act in a similar manner to the "dead head" of a mold so that the column of liquid explosive exerts a pressure, during the casting in the container, upon the portions of the explosive beneath it, which is being cast. Furthermore, this "dead head" takes up all impurities and air bubbles which would otherwise be detrimental to the cast. The heating of the funnel may be interrupted at will during the chilling of the explosive and the heating is finally eliminated after the chilling has sufficiently progressed.

The funnel may readily be removed, as may the form *g*, by temporarily slightly heating the funnel. This somewhat fuses the explosive immediately surrounding the funnel and the funnel can be removed from the cast without difficulty. In the space formed by the form *g*, a shell made of pasteboard, metal or other material containing the priming charge is inserted and the shell is completed.

Having now fully described our invention, what we claim and desire to protect by Letters Patent is:

1. A funnel for loading fused explosive charges, comprising a funnel proper, a neck for insertion in the container, a flange for supporting the funnel in the inlet of the container, the funnel and neck portion being jacketed, said jacket being in connection with a source of steam supply and the air.

2. A funnel for loading fused explosive charges, comprising a funnel proper, a neck for insertion in the container, a flange for supporting the funnel in the inlet of the container, a seal interposed between the flange and container inlet, the funnel and neck portion being jacketed, said jacket being in connection with a source of steam supply and the air.

3. A funnel for loading fused explosive charges, comprising a funnel proper, a neck for insertion in the container, a flange for supporting the funnel in the inlet of the container, in combination with a former supported below the neck of the funnel and adapted to enter the container, the funnel and neck having a jacketed portion in connection with a steam supply and the atmosphere.

4. A funnel for loading fused explosive charges, comprising a funnel proper, a neck for insertion in the container, a flange for supporting the funnel in the inlet of the container, in combination with a hollow former supported below the neck of the funnel and adapted to enter the container, the funnel and neck having a jacketed portion in connection with a steam supply and the atmosphere, a pipe connection between the steam side of the jacket and the interior of the former, and a pipe connection between the interior of the former and the atmosphere.

5. A funnel for loading fused explosive charges, comprising a funnel proper, a neck for insertion in the container, a flange for supporting the funnel in the inlet of the container, in combination with a hollow former supported below the neck of the funnel and adapted to enter the container, the funnel and neck having a jacketed portion in connection with a steam supply and the atmosphere, a pipe connection between the steam side of the jacket and the interior of the former terminating in the upper portion of the former, and a pipe connection between the interior of the former and the atmosphere, said last mentioned pipe terminating in the lower portion of said former.

6. A funnel for loading fused explosive charges, comprising a funnel proper, and a neck for insertion in the container, said funnel being jacketed, and having an open ended inlet for heating medium, and an open ended outlet to the atmosphere.

7. A funnel for loading fused explosive charges, comprising a funnel proper, and a neck for insertion in the container, said funnel being jacketed, and having an inlet for heating medium and an outlet to the atmosphere, said inlet and outlet being disconnected one from the other.

8. A funnel for loading fused explosive charges, comprising a funnel proper, and a neck for insertion in the container, said funnel being jacketed and having an inlet for heating medium and an outlet to the atmosphere, the dimensions being such as to produce a "dead head," said inlet and outlet being disconnected one from the other.

9. A funnel for loading fused explosive charges, comprising a funnel proper, a neck for insertion in the container, in combination with a hollow former supported below the neck of the funnel and adapted to enter the container, the funnel and neck having a jacketed portion in connection with a steam supply and the atmosphere, a pipe connection between the steam side of the jacket and the interior of the former terminating in the upper portion of the former, and a pipe connection between the interior of the former and the atmosphere, said last mentioned pipe terminating in the lower portion of said former.

In testimony of which invention, I have hereunto set my hand, at Hamburg, the 28th day of December, 1910.

ERNST SOKOLOWSKI.

Witnesses:
Dr. NAOUM,
E. H. L. MUMMENHOFF.

In testimony of which invention, I have hereunto set my hand, at Cologne, Germany, on this 21st day of December, 1910.

GOTTHOLD ISSLER.

Witnesses:
GERTRUD BONA,
LOUIS VANDORY.