

A. WELDON.

Apparatus for Hardening Copper Balls.

No. 141,247.

Patented July 29, 1873.

Fig. 1.

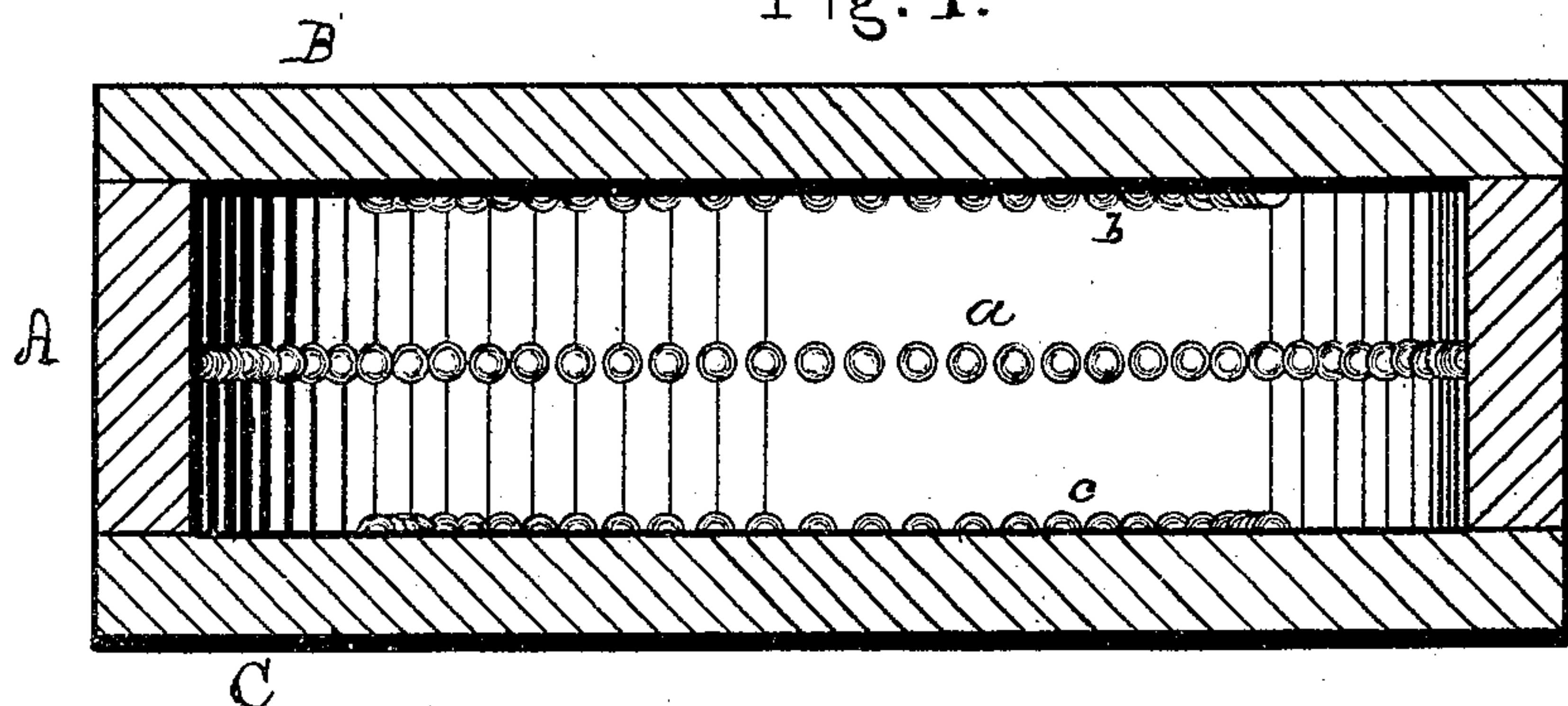
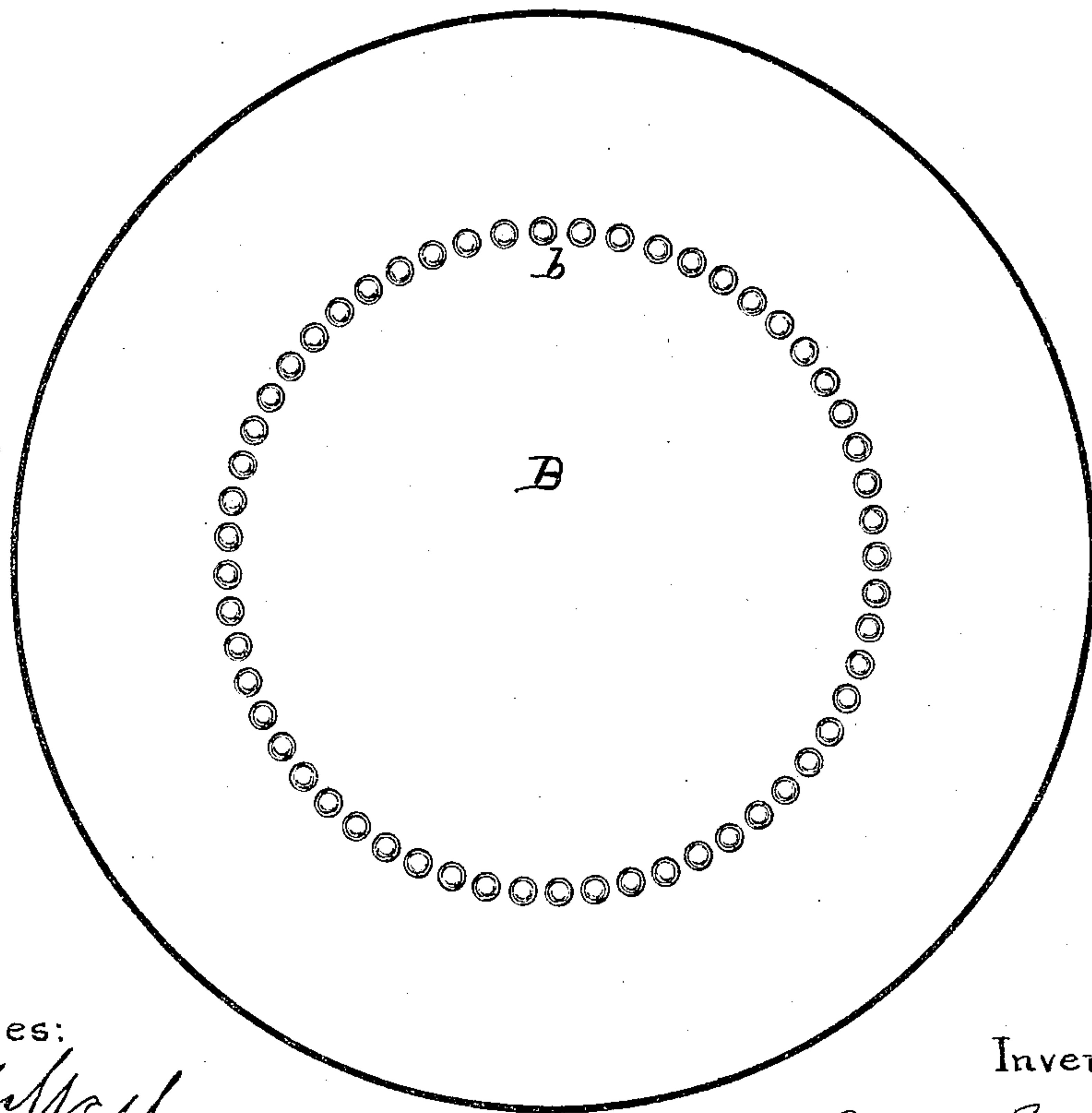


Fig. 2.



Witnesses:

E. A. West
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Inventor:

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ALFRED WELDON, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN APPARATUS FOR HARDENING COPPER BALLS.

Specification forming part of Letters Patent No. **141,247**, dated July 29, 1873; application filed June 28, 1873.

To all whom it may concern:

Be it known that I, ALFRED WELDON, of the city of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Device for Hardening Copper Balls, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section, and Fig. 2 a plan view, of the interior of one of the heads of the drum.

It is customary to use copper floats to indicate the stage of water in steam-boilers; and in order that such floats shall be strong enough to resist the pressure of the steam, they must be hardened. Heretofore the usual mode of hardening has been by spinning; but this mode does not render the float sufficiently hard. Hand-hammering has also been used for this purpose, which is a tedious process. My invention consists in a hollow close drum, having a suitable number of steel or other hard-metal heads therein; in which drum is placed the ball to be hardened, and by the rotation of the drum the ball is brought forcibly in contact with the steel heads, and thereby thoroughly hardened.

In the drawings, A B C represent a drum; *a*, a row of steel heads around the interior of the central part thereof; *b c*, rows of similar heads, one row on each end or head of the drum. This drum is to be provided with suitable bearings or placed upon a shaft, and may most conveniently be rotated by a band passing around the same. The float itself is made in the ordinary manner, provided with a short tube on the inside having a screw-thread, into which the stem is to be inserted—this first-mentioned tube and thread being all on the inside of the float to allow it to roll freely. To harden this float I place it in the drum and rotate the same, at first very slowly, and gradually more rapidly. After it has been in the drum about half an hour it may be filled

with water, the hole therein closed, and then, by rolling it about half an hour longer with the water in it, which makes the float heavier and, consequently, increases the force with which it is brought against the steel heads, it becomes so thoroughly hardened that it will resist any required amount of pressure. One of the heads of the drum may be permanently secured thereto; the other must be secured in place by screws, or in some other manner permitting its ready removal for the purpose of inserting and removing the float. As a ball will only touch the side of the drum at one point and the heads at a single point, it is not necessary to cover the interior surface of the drum with the steel heads *a b c*.

For actual use I make the drum about fifteen inches in diameter and half an inch deeper, inside, than the diameter of the float to be hardened.

The drum might be revolved by hand; but it is better to revolve it by power, thereby saving time and labor.

It is not necessary that the drum be entirely closed; there may be openings in it.

The drum can conveniently be made of wood. The side and ends should be about one and a half inch thick, the better to resist the action of the float.

By the use of my drum, floats can be easily, rapidly, cheaply, and thoroughly hardened; the work will be evenly done, and the surface of the float be left smooth.

What I claim as new is as follows:

1. The drum A B C having hard heads or protuberances *a b c* on the interior, substantially as and for the purpose specified.

2. A float hardened by being rolled in a drum having hard protuberances on the interior, substantially as specified.

ALFRED WELDON.

Witnesses:

E. A. WEST,
A. W. BOND.