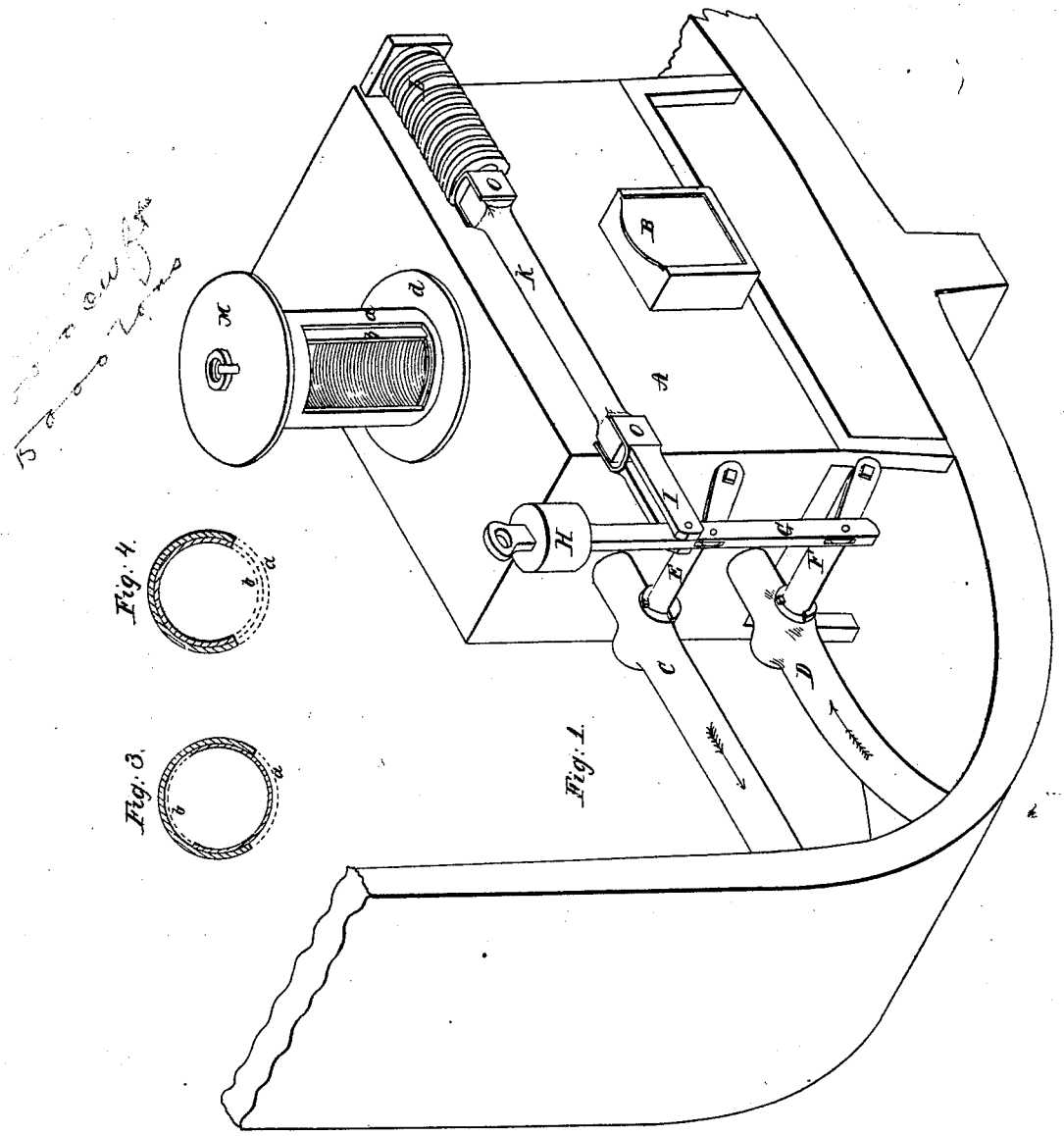
# C. W. Copeland.

## Building.

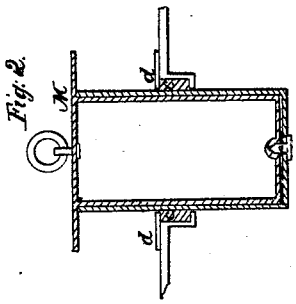
No. 6,842. Patented Nov. 6, 1849.









# UNITED STATES PATENT OFFICE.

CHARLES W. COPELAND, OF BROOKLYN, NEW YORK.

## IMPROVED METHOD OF FLOODING AND ENTERING POWDER-MAGAZINES.

Specification forming part of Letters Patent No. **6,842**, dated November 6, 1849.

*To all whom it may concern:*

Be it known that I, CHARLES W. COPELAND, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in the Construction of Powder-Magazines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, which drawings are hereinafter more fully described.

The nature of my invention consists in improvements in gunpowder-magazines for ships, whereby they are rendered more safe from explosions by the action of fire, either in the time of battle or from accidental conflagration, said magazines having also improvements for entering and leaving the same, and for conveying powder into and from it without risk from external fire. To accomplish this I construct the magazine so as to have attached to it certain pipes, which lead to and terminate in the sides and bottom of the ship, through which openings are made whereby water may flow into said pipes. In these pipes are also proper valves or cocks by which the water entering the pipes may be allowed to flow into the magazine and flood or otherwise exclude the same, as the case may be; and one part of my invention consists in apparatus attached to said cocks and pipes which is of such a nature that heat will cause an action to take place or produce such an effect that the cocks or valves will be opened, and thus cause the flooding of the magazine with water long before said magazine or apparatus shall come in contact with fire, thus protecting the ship from explosions from unsuspected fire.

Secondly, my improved magazines have a certain contrivance for entering and leaving the magazine and removing the powder therefrom, if necessary, while the ship itself was on fire.

In Figure 1 is a perspective view of the section of a ship where the magazine is usually placed. A represents the magazine; B, the common door of entrance. C D are the flooding-pipes. These pipes, it will be seen, are placed in different parts of the magazine C, entering near the top and leaving at the side of the vessel, while D is situated at the bottom, and also passes out at the bottom of the vessel. The object of this is to produce circulation of water in the magazine by a well-known law, whereby heat acting on fluids in certain places causes a change in its specific gravity, so that the equilibrium of the mass being disturbed causes the rarefied parts to seek the proper level. Thus the magazine A being full of water, heat applied externally would soonc hange the gravity of the fluid contained within it, so that a current would be produced which would set outward in C and inward in D. Thus a complete circulation is produced in the magazine A, by which any material increase of temperature of the water is prevented. E F are stop-cocks to cut off or admit the water for flooding. These are connected together by a bar G, so that they shall be opened and closed simultaneously by a proper movement of said bar. H is a heavy weight on the top of the rod G, which causes the opening of the cocks by carrying down G whenever released from certain parts, which otherwise keep the bar elevated and the cock closed. This latter apparatus is seen at I K L. This consists of a rod and spiral spring. The spring is attached to the magazine, and the end of the rod to the connecting-bar G. The spring is of sufficient power to overcome the power of the weight H, and thus keeps the bar up and the cock consequently closed. A portion of this rod, as at K, I make of some substance which will yield—that is, melt, give way, or expand by the action of a moderate degree of heat without coming in direct contact with fire, and for this purpose I prefer the article known as "gutta-percha," as that substance is known to possess the quality of becoming easily softened and plastic under comparatively low temperatures. Now, the operation of this part of my invention is thus: The hold of a vessel being on fire, the moment the temperature of the air surrounding the magazine becomes sufficiently high to soften the gutta-percha bar K, so that it would no longer have the strength to overcome the tension caused by the weight H and the springs L, then the cocks E F will be immediately opened by the descent of the weight H and bar G, as clearly seen in the drawings, so that the flooding of the magazine is at once effected. A cock of usual construction,

but not seen in the drawings, is placed under the magazine, by which the water may be drawn off.

The second part of my invention consists in means of entering and leaving the magazine without exposing the interior of the magazine to the external action of fire. At M, Fig. 1, is a perspective view showing the position in the magazine. Fig. 2 is a section. Figs. 3 and 4 are plans. This apparatus consists of two cylinders, one fitting closely within the other, but so that the inner one may revolve. For this purpose it plays upon a center or pivot *e* projecting through the bottom of the outer cylinder. In the side of each cylinder a door is cut, as at *a b*. The inner cylinder terminates in a cap M, with a ring or handle, and the outer cylinder has a closed or solid bottom. In the top of the magazine a hole is cut to receive the cylinders as combined together. The plate of the magazine around the hole has a countersunk space to receive packing, and a cap covers it to keep it in place, as seen at *c d*, Fig. 2, of which *c* represents the packing and *d* the cap. To operate this, the cylinders are raised by the ring in M, and then by turning the cap M the inner cylinder is made to revolve until the opening or door *b* in its side is made to come opposite to the opening or door of the outer cylinder at *a*, and as seen at *a b*, Fig. 4. It will now be seen that there is still no communication to the interior of the magazine, for the bottom of the cylinder acts as a continuation of the top of the magazine and plugs up the opening in it. Any person may now enter the inner cylinder, and turning the top M will inclose him in, as seen at *a b*, Fig. 3. This done, the cylinders are pressed down or lowered, and the cap M being once more turned around, as before, to make the two openings come together, the party inclosed in it can enter the magazine and return with powder, ascend, and leave, as before described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Attaching to and combining with the known magazine, (having its ejection and injection pipes for flooding and continuing a circulation of cold water through it,) and the governing-cocks connected together, a connecting-piece to be affected by heat without necessarily coming in contact with fire, this connecting-piece being governed by a spring when not caused to operate, and being capable by the action of heat to flood the magazine, the whole being arranged or constructed substantially as herein more fully described.

2. Attaching and combining with the magazine a double tube or equivalent arrangement by which articles may be conveyed into or from the magazine without in any way exposing the interior of the magazine to fire from without, by which several arrangements a perfect security is effected against firing the magazines of vessels of war, all of which is fully described herein.

CHAS. W. COPELAND.

Witnesses:
J. L. KINGSLEY,
THOMAS ATKINSON.