

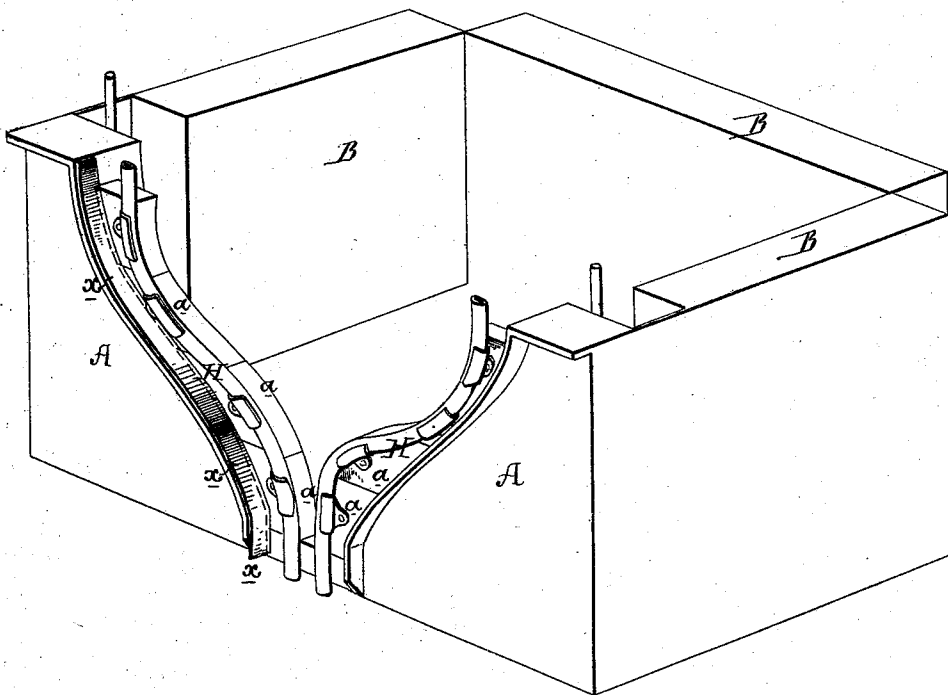
2 Sheets--Sheet 1.

F. COX.
Coffer-Dams.

No. 156,542.

Patented Nov. 3, 1874.

FIG. 1.



Witnesses,

Thomas M. Swan
Hubert Howson

Frank Cox
by his Atty.
Hansen and Son.

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FIG. 2.

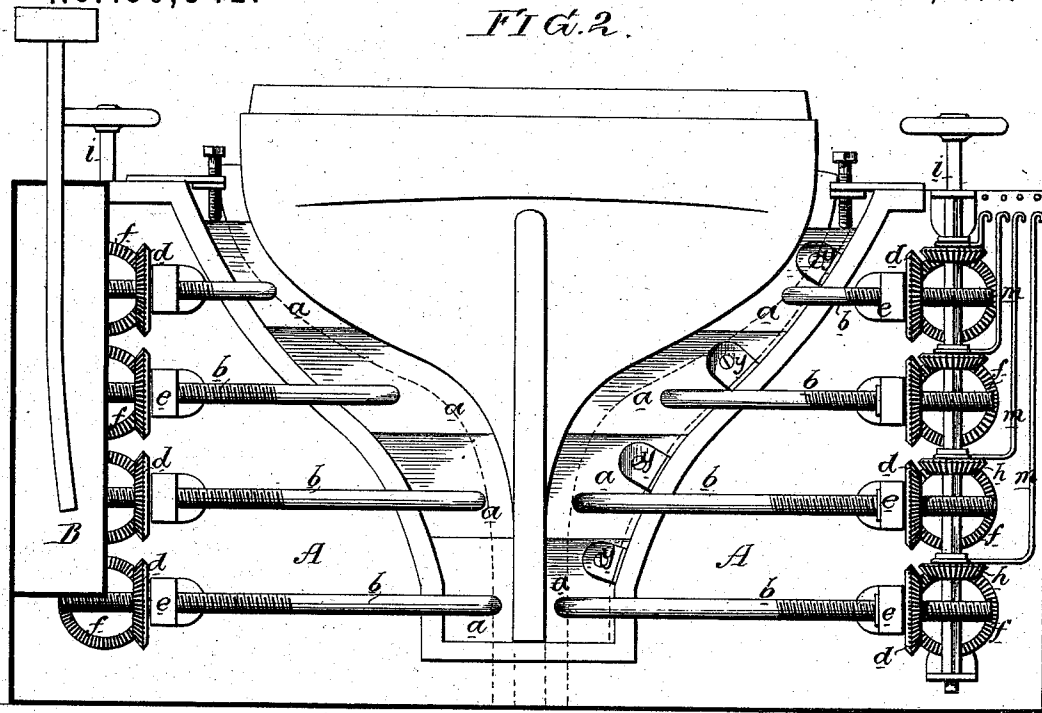
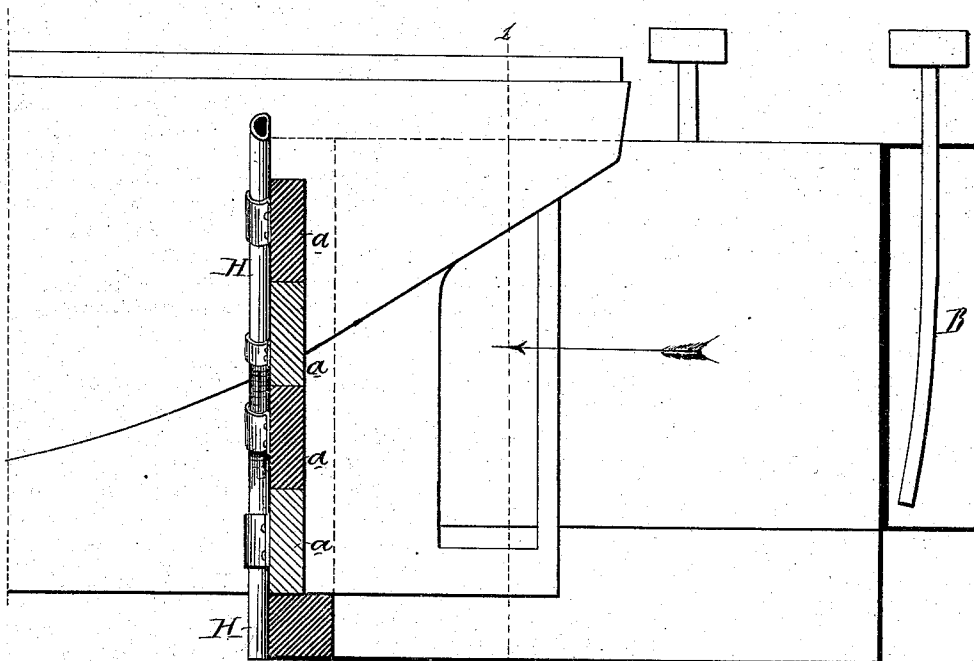


FIG. 3.



Witnesses, Hubert H. Houghton
Thomas H. Houghton

Frank Cox
by his Attor.
Hansen and Son

UNITED STATES PATENT OFFICE.

FRANK COX, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN COFFER-DAMS.

Specification forming part of Letters Patent No. **156,542**, dated November 3, 1874; application filed September 15, 1874.

To all whom it may concern:

Be it known that I, FRANK COX, of Philadelphia, Pennsylvania, have invented an Improvement in Coffe-Dams, of which the following is a specification:

The object of my invention is to remove, replace, or repair screw-propellers without resorting to the expensive and tedious operation of dry-docking the vessels to which they are attached, and this object I attain by a floating coffer-dam, combined with adjustable slides, as shown in the perspective view, Figure 1, vertical section, Fig. 2, and longitudinal section, Fig. 3. of the accompanying drawings.

The coffer-dam consists of a square or oblong vessel, best observed in the perspective view, Fig. 1, Sheet 1, the vessel being open at the top, but closed at the bottom, sides, and rear end, the front end having an opening somewhat larger than, and of a shape approximating to, that of the transverse section of the stern of the largest vessel to which the coffer-dam may have to be applied, as shown in Fig. 2, which is a transverse section of the coffer-dam looking in the direction of the arrow, Fig. 3, so as to exhibit the inside of the front end A. At each side and at the rear end of the coffer-dam is an air and water tight chamber, B, to which water is admitted when the coffer-dam has to be sunk and withdrawn when it has to be floated. To the front end A of the coffer-dam, on each side of the opening for admitting the stern of the vessel, is adapted a series of slides, *a*, and to each slide is connected a screw-rod, *b*, the nut of which is the hub of a bevel-wheel, *d*, adapted to a bearing, *e*, secured to the inside of the front end A of the coffer-dam. Each bevel-wheel *d* gears into a like wheel, *f*, and the latter into a pinion, *h*, on a vertical shaft, *i*, which extends to the top of the coffer-dam, and is there furnished with a hand-wheel or other suitable driving appliances. Each bevel-pinion *h* is so connected to a rod, *m*, which also extends to the top of the coffer-dam, that by means of the rod the said pinion *h* can be raised out of gear or lowered into gear with the wheel *f*.

In using the coffer-dam, it must first be floated to a position near the vessel, to the stern of which it has to be applied, and then

so far sunk by the introduction of water into the chambers B that the coffer-dam can be introduced beneath the stern, adjusted in relation to the same, as shown in Fig. 2, and connected to the vessel by suitable stays and guy-ropes, after which the slides *a* must be moved forward by operating the shafts *i* until they are in contact with the vessel. As the ends of these slides cannot be made to fit snugly to the sides, all vessels then must necessarily have open spaces, which I close by elastic packing-strips H, by preference made of rubber tubing, which I so connect to the ends of the slides, that on moving the latter forward the said tubing will bear against the sides of the vessel, and the water may now be withdrawn from the coffer-dam by any suitable pumping appliances, when the external pressure of water, acting on the packing-strips, will cause the latter to close all apertures, and the stern will be exposed, so that the screw-propeller may be removed and replaced, or any desirable repairs made on the exposed portion of the stern.

To prevent leakage at the points where the sliding plates enter the end A I use a packing, *x*, the plates being kept in contact with the packing by set-screws *y* on the inside of the plates.

It will be unnecessary to explain how the coffer-dam may be disconnected from the stern of the vessel.

I claim as my invention—

1. The combination of the coffer-dam, having air and water tight chambers B, with slides *a*, which admit of separate adjustment to the sides of a vessel, as set forth.

2. The combination of the slides *a* with the elastic packing-strips H.

3. The combination described, of the slides *a*, screw-rods *b*, the operating-shaft *i*, and gearing described and mechanism, by which any one or more of the slides can be operated independently of the others from the said shaft *i*.

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

FRANK COX.

Witnesses:

HUBERT HOWSON,
HARRY SMITH.