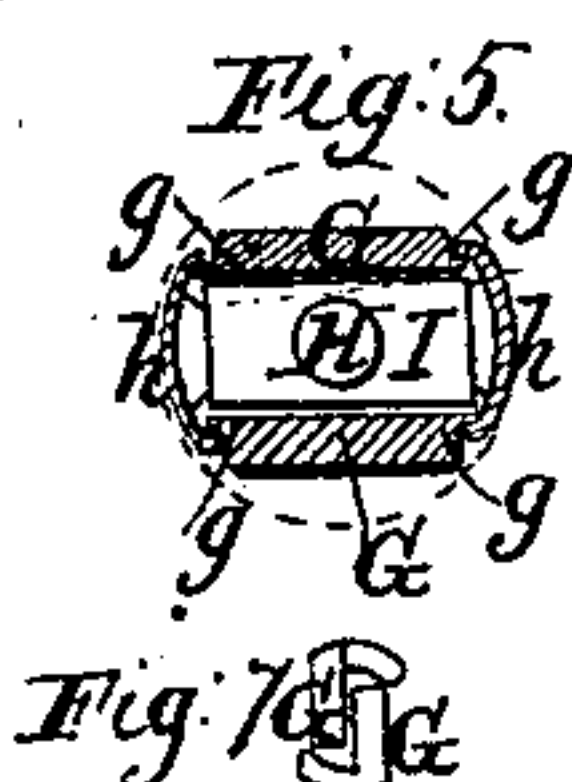
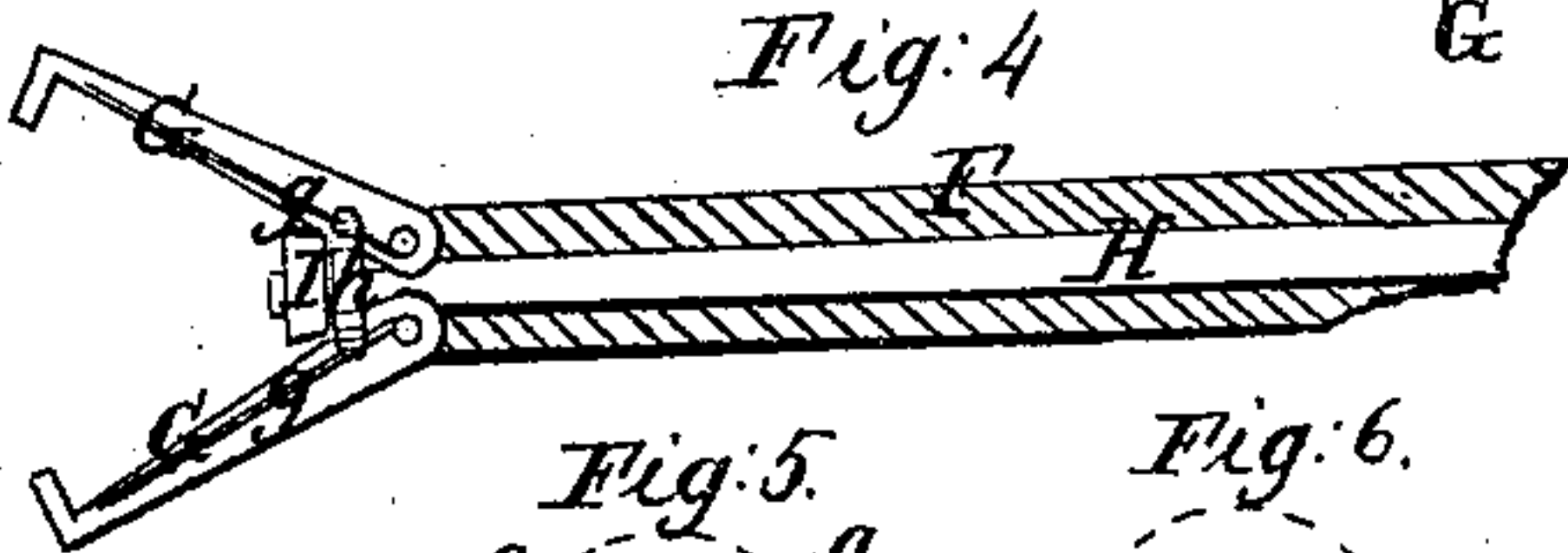
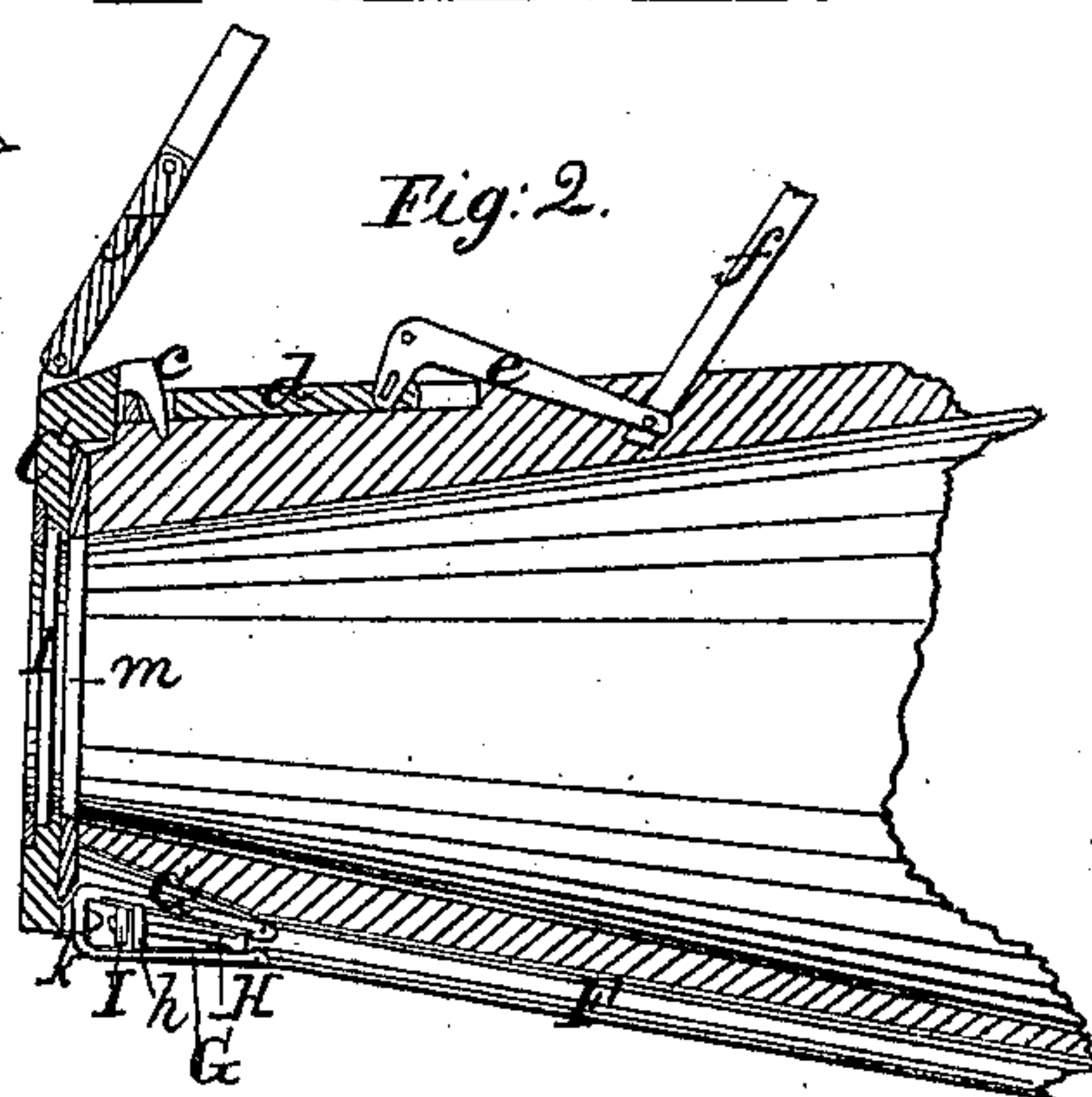
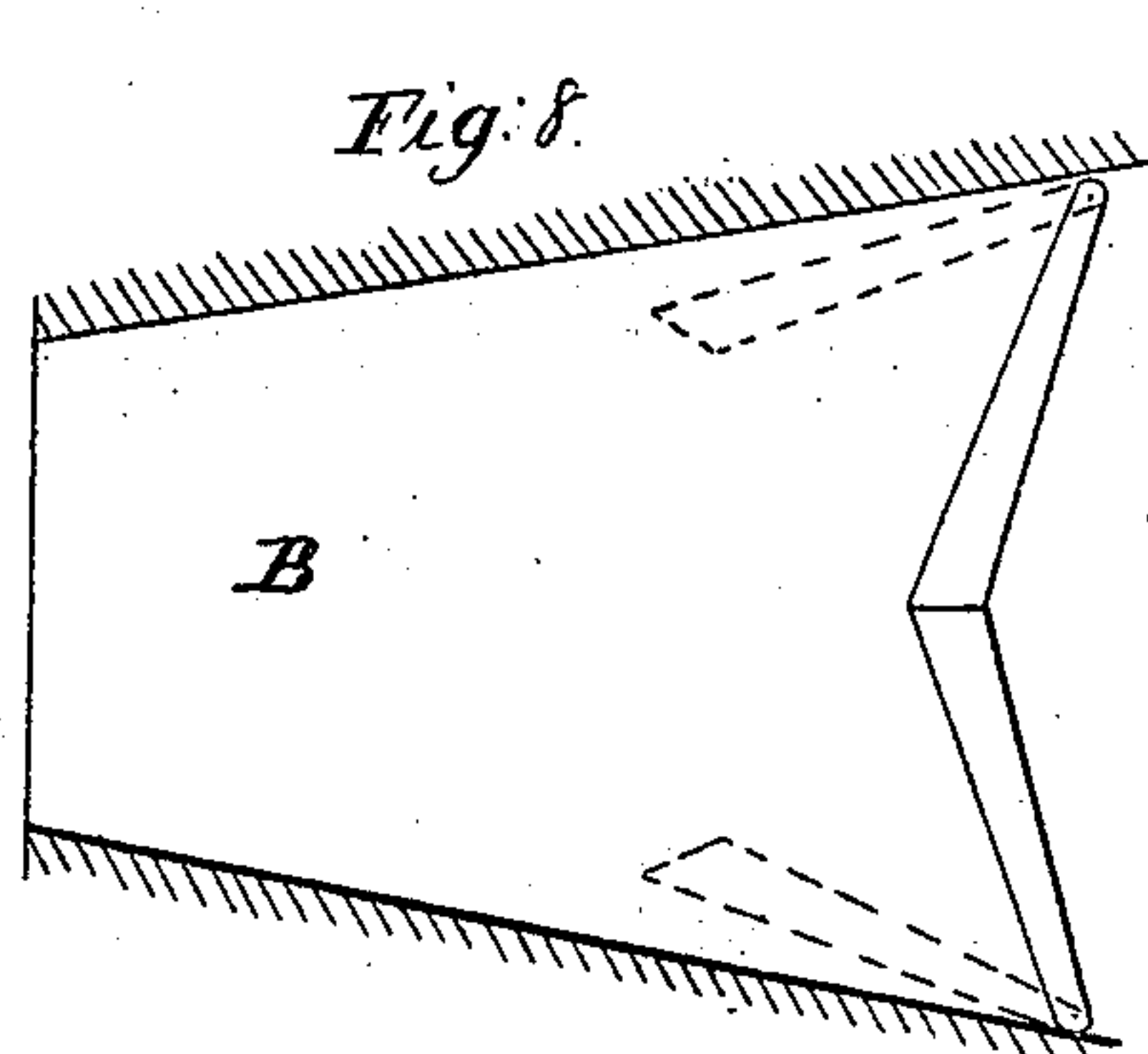
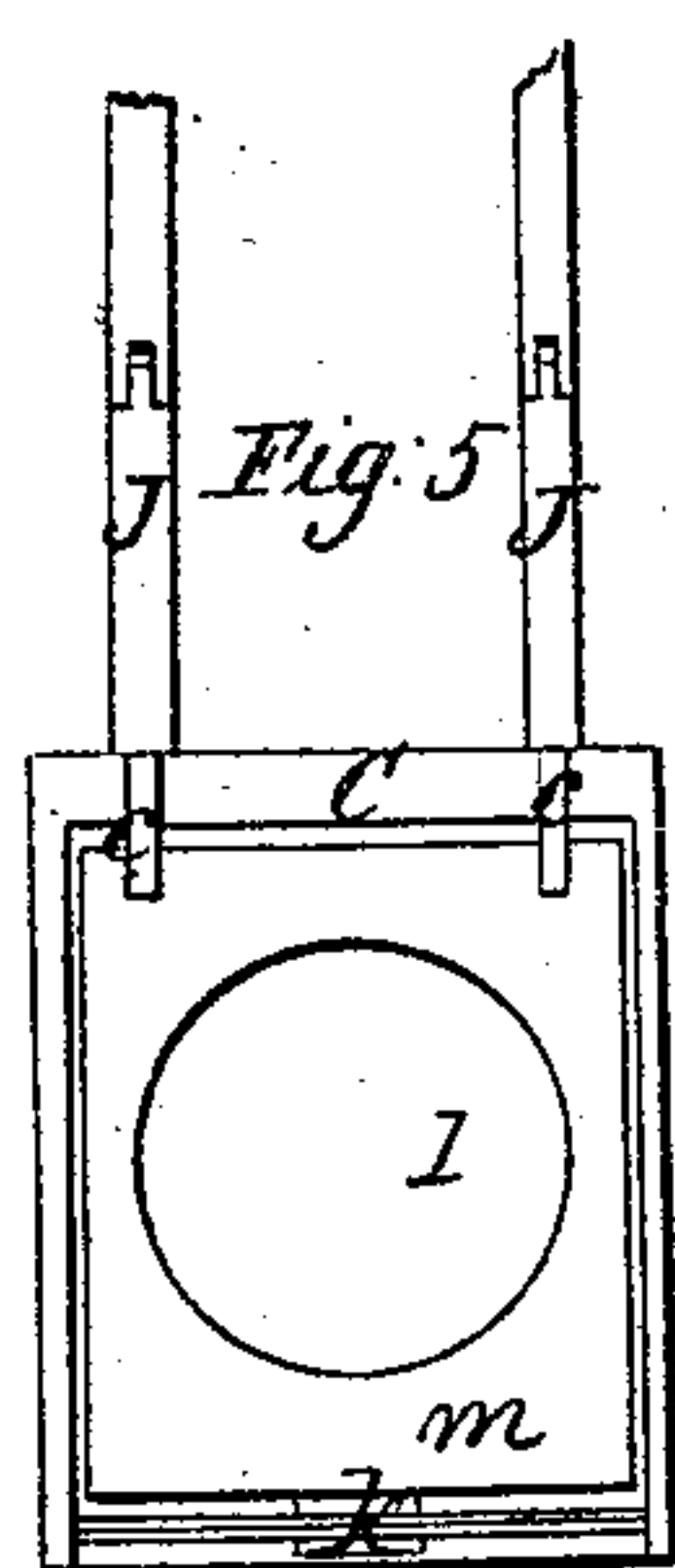
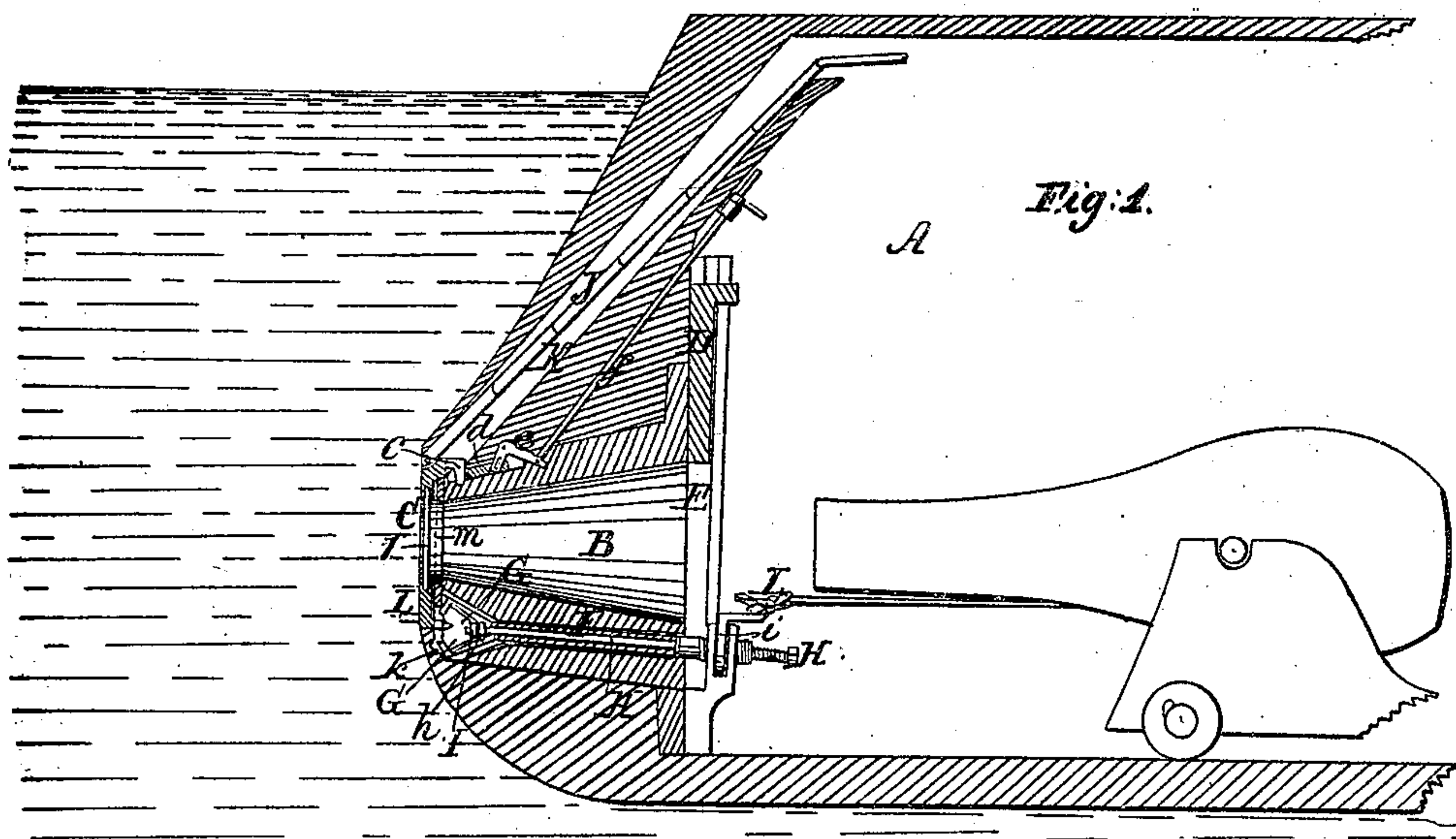


N^o 42,938.

Patented May 31, 1864.



Witnesses;
Charles Rogers
L. F. Rolfe

Inventor;
T. F. Gildeland
By his atty
R. D. Smith

UNITED STATES PATENT OFFICE.

T. F. GILLILAND, OF CHICAGO, ILLINOIS.

IMPROVED SUBMARINE PORT-HOLE.

Specification forming part of Letters Patent No. 42,938, dated May 31, 1894.

To all whom it may concern.

Be it known that I, T. F. GILLILAND, of the city of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Method of Constructing Submerged Port-Holes for Vessels of War; and I do hereby declare the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of the prow of a vessel having my invention attached. Fig. 2 is a similar section of the front end of my device enlarged. Fig. 3 is a rear elevation of the port shutter. Fig. 4 is a longitudinal section of the clamping-rod, exhibiting the attachment and operation of the nipper-hooks. Fig. 5 is a vertical cross section of the nipper-hooks on line *x x* of Fig. 4. Fig. 6 is a vertical cross-section of the clamping-rod at its inner or rear end. Fig. 7 exhibits the ends of the nipper-hooks, showing how they shut past each other. Fig. 8 exhibits a proposed method of closing the inner orifice of the port.

The nature of my invention consists in an improved method or device by which ordnance may be discharged below the water-level, for the purpose of attacking an iron-clad or other vessel at a point below the water-level and below the line of her plating.

That others may understand the construction and operation of my invention, I will particularly describe it.

A is the hull of the vessel, the water-level being indicated in Fig. 1.

B is a heavy cast-metal tube of dimensions suitable to fulfill the conditions of the description hereinafter given.

C is a port shutter covering the outer orifice of the tube B.

D is a gate closing the inner orifice of the same.

E is one of the guides or ways in which the gate D moves.

F is a clamping-rod by which the lower edge of the shutter C is drawn firmly against the mouth of the outer orifice of B.

G G are nipper-hooks, which clasp the lower edge of G when it is to be drawn back against the mouth of B.

H is the rod by which the nipper-hooks are operated.

g g are flanges running lengthwise upon the edges of the hooks G, over which the ends of the clasps *h h* are turned, as seen in Fig. 5, for the purpose of drawing the hooks together when the clasps are pushed forward by the rod H, to the end of which they are attached.

I is a block also attached to the end of the rod H, and serves to open the hooks G as it is drawn back between them, as seen in Fig. 4.

i is a nut on the rear end of the rod F, by which said rod is caused to slide forward or backward.

The upper end of the shutter C is provided with the hooks *c c*, which enter proper cavities in the upper side of B and retain that end of C in position. The sliding bar *d*, rock-shaft *e*, and rod *f* exhibit a proposed mode of increasing the pressure of the upper end of C against the mouth of B.

In the edge of the lower part of the frame of C is a hole, *k*, through which the nippers hook, as seen in Figs. 2 and 3. Through the center of the shutter C is an orifice equal in size to the outer orifice of B. This opening is closed with a plate, *l*, of some strong yet brittle material—say of glass—for a purpose as hereinafter specified. The back of the shutter C is covered with a layer of some elastic water-proof substance—as india-rubber—for the purpose of rendering the joint between the said shutter and the tube B perfectly water-tight. The shutter C is put in place or removed by means of the rods J through the channel K.

L is a device by which the gun may be fired by the act of coming in contact with another vessel, though its use may be dispensed with and the gun discharged by any of the ordinary means.

Having enumerated and described the various parts by which my invention is illustrated, I will now describe their operation.

My invention may be applied to the side or prow of a vessel and in a position sufficiently far below the level of the water to be below the line of an enemy's armor-plating.

Fig. 1 represents the invention attached to the prow of a vessel which has a projecting beak or ram. The gate D being down and so adjusted as to close perfectly the inner orifice of B, the shutter C is slid down through the channel K by means of the rods J, which may be jointed, if it is found desirable to have

them so, and should then be provided with a device at each joint by which they may be rendered rigid as they are straightened. The hooks *c* enter their appropriate cavities, which arrest its downward progress and causes it to swing across the orifice at the front of B. If necessary, the clamping-rod F is advanced by turning the nut *i*, and the hooks of the nippers G are closed through the hole *k* by advancing the clasps *h* by means of the rod H. The clamping-rod F is withdrawn by reversing the motion of the nut *i*, and the lower end of the shutter C is pressed closely against the outer end of B, so as to compress the elastic packing *m* to any degree necessary to render the joint perfectly tight. If from any cause the hooks *c* do not cause the packing at the upper end of C to be sufficiently compressed, the pressure there may be increased, as desired, by any suitable device, as shown by *d*, *e*, and *f*. It will be seen that it cannot be a difficult matter to place the shutter in position at any time, as the hooks *c* cannot fail to enter their cavities, and considerable force may be exerted by pushing downward with the rods J to force the shutter against the outer end of B, so that there can be no difficulty in catching it with the nippers G.

The place through which the various clamping-rods pass may be rendered perfectly tight by the use of ordinary stuffing-boxes, the hooks G and their appendages being so constructed that when closed together they will pass through a space large enough to accommodate the rod F. (See Fig. 5, in which the red circle represents the size of said rod.) The shutter C being in place and secured, a cock in the gate, which closes the inner orifice of the tube B, is opened to allow the water within the tube B to escape into the vessel, from whence it is expelled by the pumps. The gates closing the inner orifice of B may now be opened, and at the proper time the gun is loaded and run forward, trained so as to point directly through the center of the brittle plate *l*. The lock is set, the trigger L is connected, and the ship is ready for action.

Before engaging with an enemy the gun-room may be securely closed to prevent the smoke from the explosion from penetrating to the interior of the vessel, and at the instant of contact with the side of the enemy the rod L is pushed in by the contact and the charge in the gun is exploded. The projectile, shattering the brittle plate *l*, penetrates the side of the enemy at a point sure to prove destructive to her. Instantly upon the discharge the gate D is pushed down by suitable apparatus to prevent the influx of water through the shattered plate *l*, the shutter C is removed and another one put in its place, and in a few minutes the ship is again ready for an encounter. The broken plate *l* is replaced by a

sound one, and that shutter is again ready for use.

In addition to the sliding gate D, it is proposed to employ two swinging gates within the tube B, as shown in Fig. 8, which will then be made in a proper shape to receive them. The influx of water will cause these gates to shut automatically, and will be much more convenient than the sliding gate D.

If my device is applied to the side of a vessel, the trigger L will be dispensed with, and it is obviously not necessary that it should be used at any time.

It may be remarked that at least many of the inconveniences of firing cannon below the water-line are obviated by my invention perfectly. The gun is in no case submerged and the charge thereby liable to injury. If placed in the prow and the vessel used as a ram, the gun will be discharged at an instant when there can be but a slight film of water for it to pass through before reaching the side of the enemy, which will therefore receive the full force of the projectile. A few minutes only of time will be necessary to prepare for another encounter, and if placed in a vessel properly built and designed for this purpose only, being very swift and sufficiently plated to resist the force of shot, it cannot be conceived how she should fail to destroy or drive away any fleet against which she might be sent. It will of course be necessary to employ appliances not described or shown in this specification—such as blocks and tackles, &c.—to assist in handling the various parts, but which do not enter into or form necessary parts of my invention.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a submerged port-hole, a removable shutter to close the outer orifice of the same when constructed with a central plate to be shattered by the passing shot, and an elastic backing, substantially as described, and for the purpose set forth.

2. In combination with a removable shutter to close the outer orifice of a submerged port-hole, a channel-way, K, through which the said shutter may be passed to its place from above the water line, substantially as described.

3. In combination with the removable shutter which closes the outer orifice of a submerged port-hole, the clamping-rod F, the hooks G, rod H, hooks *c*, and rods J, being parts necessary to the proper management and security of the shutter C, constructed and operated substantially as described.

T. F. GILLILAND.

Witnesses:

LUCIUS F. ROLFE,
R. D. O. SMITH.