W. J. MURPHY.

Breech-Loading Ordnance.

No. 60,540

Patented Dec. 18, 1866.

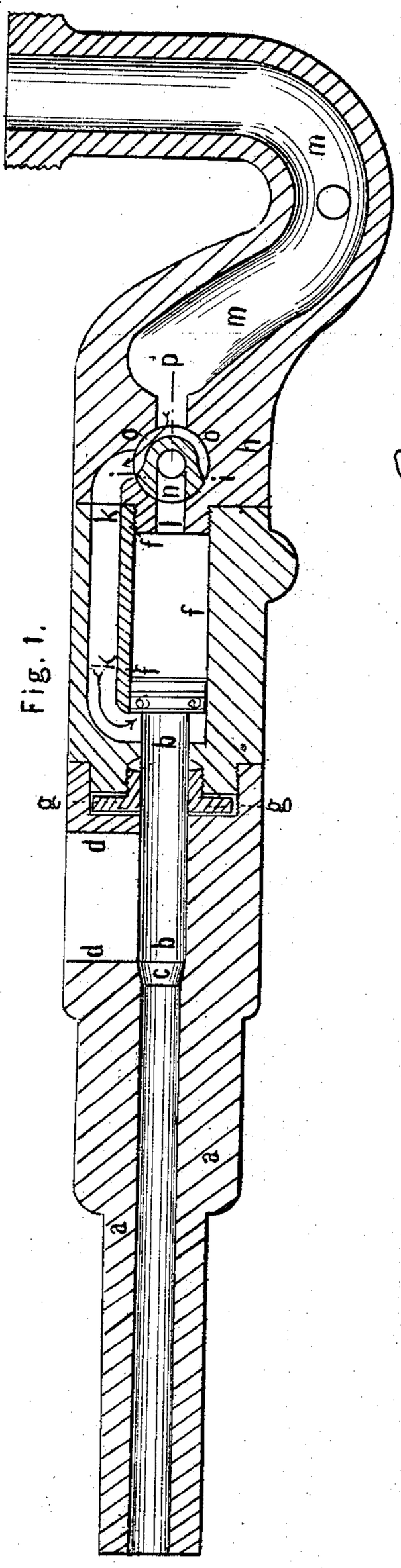

Fig. 1.

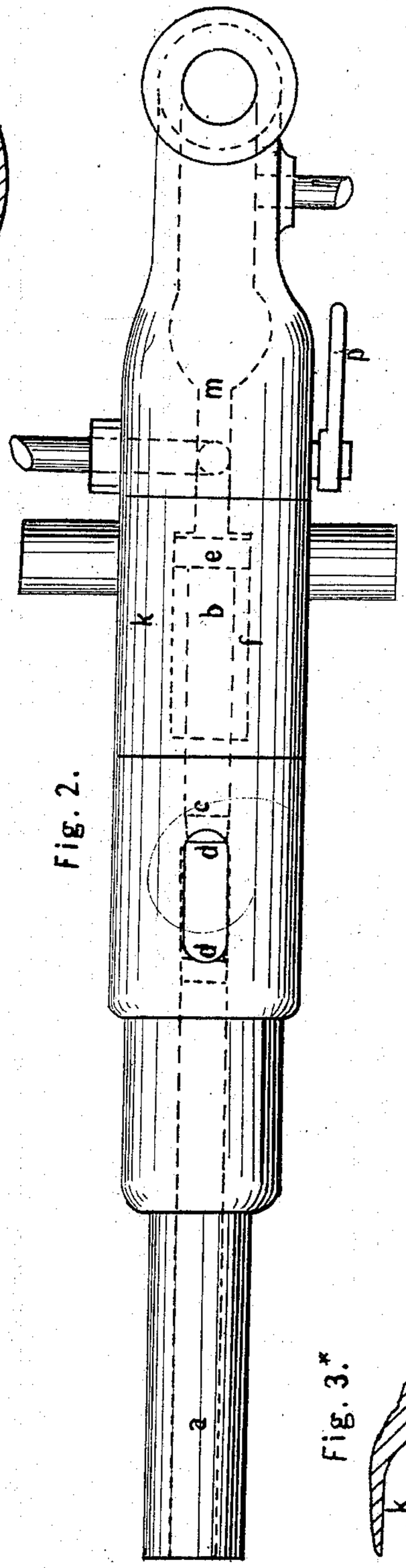

Fig. 2.

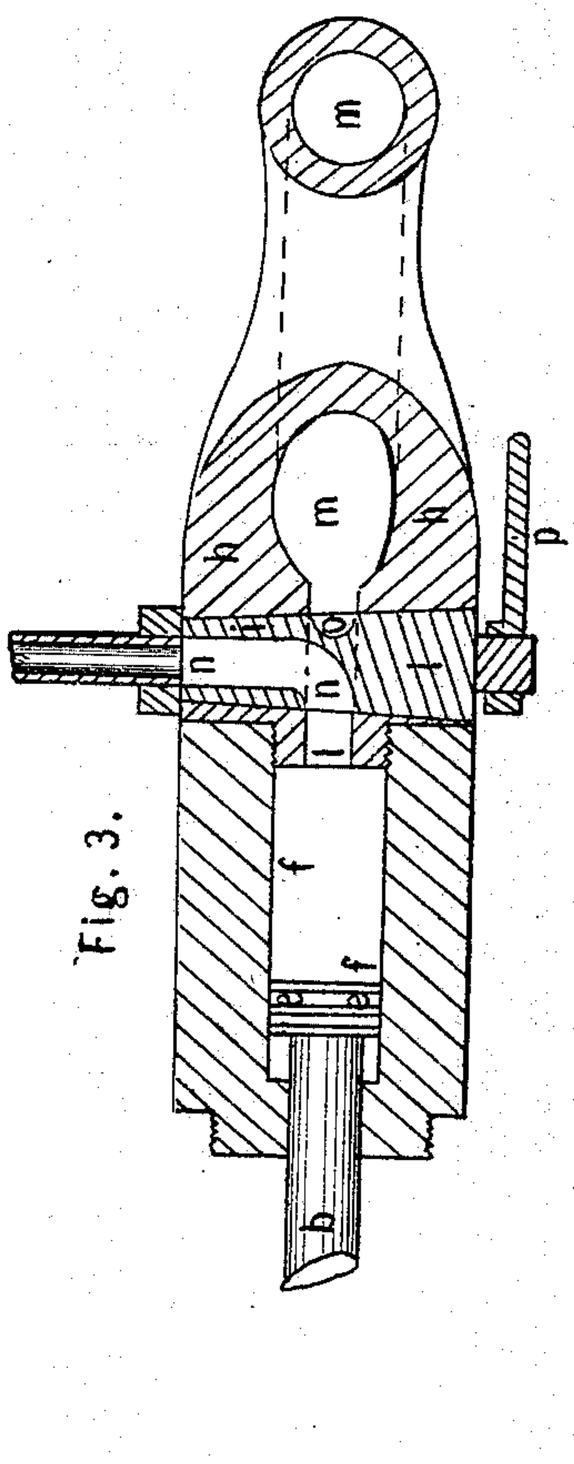

Fig. 3.

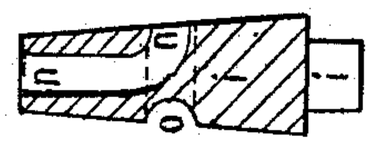

Fig. 4.

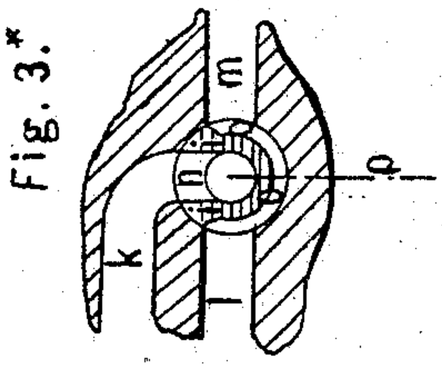

Fig. 3.*

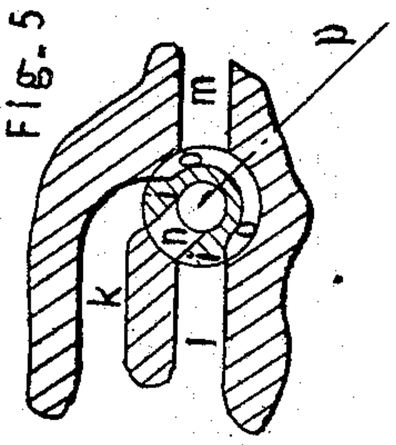

Fig. 5

Witnesses:

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IMPROVEMENT IN BREECH-LOADING ORDNANCE.

WILLIAM J. MURPHY, OF CORK, IRELAND.

Letters Patent No. 60,540, *dated December* 18, 1866.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM JEREMIAH MURPHY, of Lady's Well Brewery, Cork, in the county of the city of Cork, Ireland, kingdom of Great Britain and Ireland, have invented an improved method of and apparatus for the working of Breech-Loading Guns; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

Instead of the usual method of opening and closing the breech in heavy breech-loading guns or ordnance, I propose that the gun be fitted with a cylinder at the breech, the said cylinder to form part of the gun itself. In this cylinder I propose to place a solid piston or plunger to work up and down by hydraulic pressure, to be regulated by cocks or valves working simultaneously, one letting off water at one side of the piston or plunger, and the other letting it on at the opposite side; by these mean an up and down motion will be gained. I propose also that the head of the plunger on the up stroke fit tight into the barrel of the gun, so as to close the breech effectually. Between the cylinder and the gun, I propose to form a chamber for the reception of the charge, which can be introduced either above or below, or through the side, as may be required. When the plunger works up it will force the charge into the barrel and remain tight there until the shot is fired off; the cocks will then be opened and the piston retire back again to wait for the next charge. Instead of a vent hole, I propose that a friction fuse be placed on the top of the head of the plunger, which will be so arranged as to rub against the barrel of the gun just before going home, and thus explode, or the gun may be discharged by any of the ordinary methods. The pressure of the water being on the back of the plunger, when the gun is fired there will be no recoil, as the force of the explosion against the head of the plunger will be counterbalanced by the pressure of the water on the broad end of the piston, or the resistance may be given by closing the cock or valve so as to prevent the escape of the water from the back of the piston.

Such being the nature and object of my said invention for an improved method of and apparatus for the working of breech-loading guns, in order to enable others skilled in the art to make and use my invention, I will now proceed to describe more in detail the manner in which the same is to be or may be performed or carried into practical effect; and in order that the same may be distinctly understood, I have annexed hereunto a sheet of drawings illustrative thereof, and have marked the same with figures and letters of reference, corresponding with those in the following explanation thereof; that is to say, in the annexed drawing—

Figure 1 represents a vertical section taken through about the centre line of a breech-loading gun constructed according to my invention.

Figure 2 is a plan view of the same as seen from above.

Figure 3 is a horizontal section of the same; and

Figures 3*, 4, and 5, detached sectional views of parts of the gun.

a a is the barrel of the gun, the breech being bored out rather larger and fitted with a plunger or breech-piece, *b b*, having a conical fore-end, *c c*, which effectually closes the breech end of the barrel when the plunger is in its forward position, (as shown in figs. 1 and 3;) *d d* is an opening through which the cartridge is introduced and placed in front of the plunger, when the latter is withdrawn backwards, (as shown at fig. 2.) The plunger, *b b*, is also provided with a head or piston, *e e*, working water-tight in a cylinder, *f f*, screwed on to the breech end of the gun, the plunger itself working also water-tight through a cup-leather or other packing, *g g*. The rear end of the cylinder *f f* is closed by the breech-block, *h h*, which is screwed therein, and in which the plug *i i* works, water-tight; *k k*, *l l*, are two passages, the former leading to the fore-end of the cylinder, *f f*, in front of the piston, *e e*, and the latter leading to the rear end of the said cylinder behind the said piston; *m m* is the passage through the rear end of the breech-block, to which a pipe is to be connected, leading to the hydraulic reservoir or head of water employed to give the pressure. The plug, *i i*, (a longitudinal section of which is seen at fig. 4,) is provided with an escape opening, *n n*, passing in at the side and out at the bottom, for allowing the water to run out of the cylinder, *f f*, and a groove, *o o*, passing rather more than half round the body of the plug, for the purpose of admitting water to the cylinder. The working of the gun is as follows: The plug, *i i*, is turned by means of the handle, *p p*, into the position shown at fig. 1; the water will then flow along the passage, *m m*, round the plug, *i i*, by the groove, *o o*, and along the passage, *k k*, into the cylinder, *f f*, in front

of the piston, *e e*, and force the plunger, *b b*, back into the position shown in fig. 2, the water from behind the piston escaping through the passage *l l*, and opening *n n*, in the plug *i i*. The cartridge is now placed in the breech through the opening *d d*, and the plug *i i* is turned into the position shown at fig. 3*, by which means the water is admitted behind the piston *e e*, thrusting it and the plunger *b b*, (together with the cartridge,) forwards until the conical fore-end, *c c*, effectually closes the breech. The charge may be now exploded in any ordinary manner, the column of water between the passage *m m* and the reservoir receiving the force of the recoil, but if the pressure of the head of water should not be sufficient to resist the force of the explosion, the plug *i i* may be turned into the position shown at fig. 5, which will entirely prevent the escape of the water from behind the piston *e e*, and thus form (as it were) a solid breech to receive the force of the recoil. The gun is to be fitted with trunnions and mounted in a carriage in any suitable manner, and where the supply of water is limited the pressure may be obtained by pumping the water up into a tank at a sufficient elevation above the gun to give the required pressure.

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

1. The barrel *a a*, with its opening *d d*, and plunger or breech-piece *b*, in combination with the within described devices or their equivalents, whereby the pressure of the water may be caused to operate the breech-piece, all substantially as set forth.

2. The combination of a barrel, a movable breech-piece, and a chamber, containing a body of water, and so situated that the water will retain the breech-piece in its position during the discharge of the piece.

3. The barrel *a a*, with its opening *d d*, cylinder *f f*, plug *i i*, and openings *k l m*, or their equivalents, in combination with the plunger *b*, and its piston *c*, the whole being constructed and operating substantially as and for the purpose described.

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

WILLIAM J. MURPHY.

Witnesses:

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BRISTOW HUNT,

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