

(No Model.)

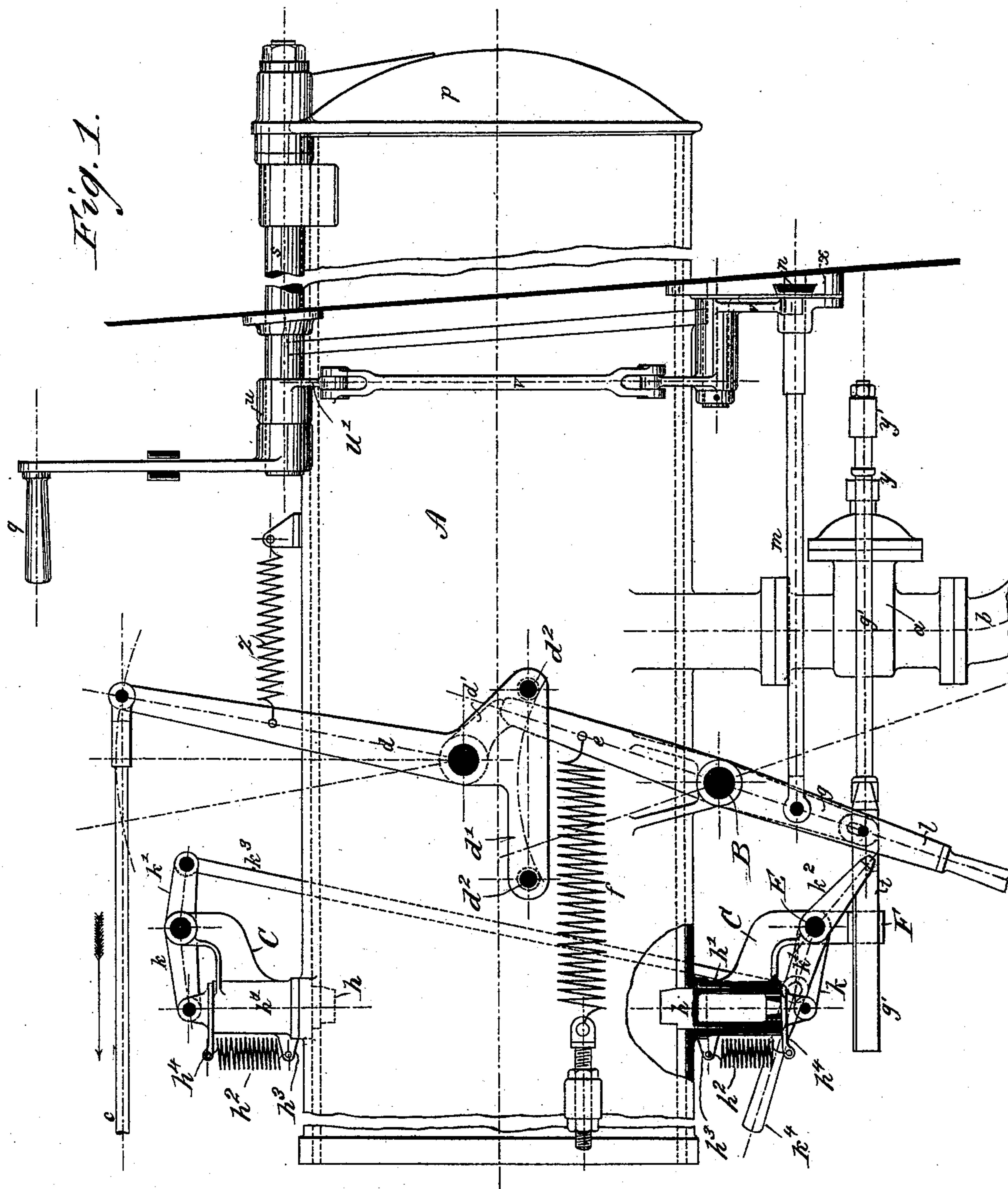
2 Sheets—Sheet 1.

E. KASELOWSKY.

SAFETY MECHANISM FOR TORPEDO TUBES.

No. 361,066.

Patented Apr. 12. 1887.



Witnesses:
Corn Twitchell
Sedgwick

Inventor:
E. Kasełowsky
By Munn & Co
Attorneys.

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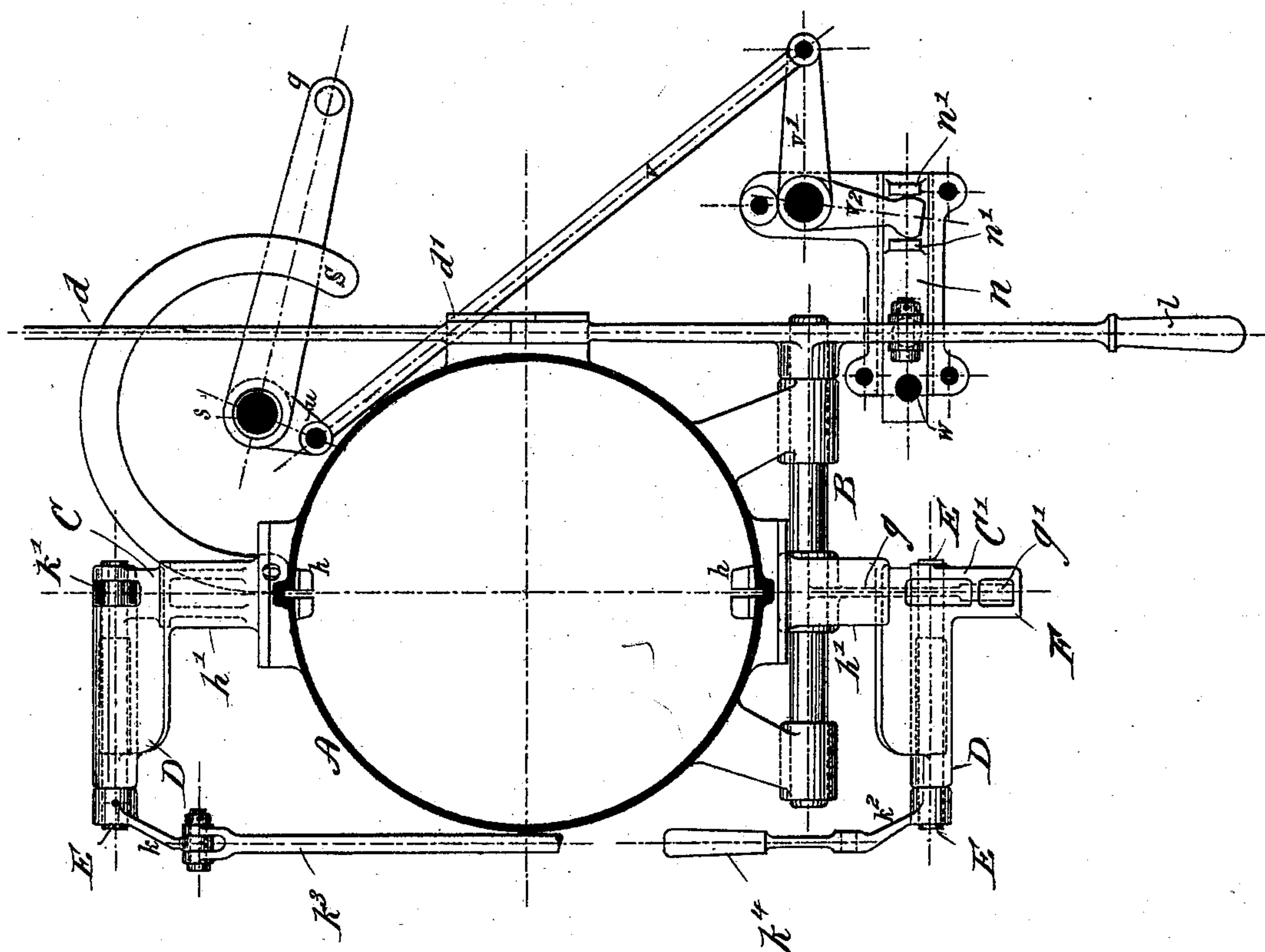


Fig. 2.

Witnesses:
Dunn Twitchell
C. Sedgwick

Inventor:
E. Kaselowsky
By Munn & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

EMIL KASELOWSKY, OF BERLIN, GERMANY.

SAFETY MECHANISM FOR TORPEDO-TUBES.

SPECIFICATION forming part of Letters Patent No. 361,066, dated April 12, 1887.

Application filed February 4, 1887. Serial No. 226,545. (No model.)

To all whom it may concern:

Be it known that I, EMIL KASELOWSKY, of Berlin, in the Empire of Germany, have invented a new and Improved Safety Mechanism for Torpedo-Tubes, of which the following is a full, clear, and exact description.

The invention relates to tubes for holding projectiles, and from which the projectile is discharged by the agency of compressed air or gas or by the expansive force of combustible gases.

The object of the invention is to provide a mechanism for the above-described torpedo-tubes, by means of which the dangers of admitting the compressed air to the tube to discharge the projectile before the cover has been removed or opened is entirely avoided; also, to furnish, in connection with the above mechanism, a means for releasing or withdrawing the brake-blocks or retaining-studs from the torpedo, all as hereinafter more fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a side view of a torpedo-tube provided with my improved safety mechanism, part of the tube being broken away, and one of the brake blocks or studs and its sleeve being shown in section. Fig. 2 is an end view the pipe connecting the torpedo with the compressed air or gas reservoir being omitted.

A is the torpedo-tube, and *b* the supply-pipe that connects the tube A with the air or gas storage reservoir, (not shown,) a controlling-valve being arranged in said pipe *b*, in the valve box or chamber *a*, for controlling the admission of compressed air, gas, or other force to the tube A, to effect the discharge of the torpedo.

All the above-named parts are or may be of the usual construction.

The trip or firing rod or lever C, located above the tube A, and to be operated by hand or otherwise, is pivotally connected with the upper or outer end of a lever, *d*, fulcrumed on the side of the tube A, and formed beyond or below its fulcrum with an elbow or triangular portion, *d'*. Secured on one end of a shaft, B, arranged transversely to and revolving in suitable bearings on the tube A, on the under

side thereof, is a hand-lever, *l*, the inner or upper end of which hand-lever passes beneath the elbow portion *d'* of the lever *d*.

To the shaft B, at about its middle, and thus inward from the end on which is secured the lever *l*, is also secured an arm, *g*, (shown in dotted lines in both figures,) the outer end of which arm *g* is pivotally secured to the rod *g'*, that operates the controlling-valve in the valve chest or box *a*, and which rod *g'* may also release the brake-blocks or retaining-studs from their hold on the torpedo, as will be presently explained.

The under side of the elbow portion *d'* of the lever *d* is milled out, as indicated in dotted lines in Fig. 1, to form a catch and receive the innermost or uppermost end of the lever *l*. The play of lever *l* is limited by the studs *d'' d''*, projecting from the under side of the elbow portion *d'* of lever *d*. As the trip-rod *c* throws the lever *d* the end of the lever *l* is released from the catch on the under side of the elbow portion *d'* of lever *d*, and the spring *f* will draw the said upper end of lever *l* backward, and thus the lower end of lever *l* will move forward to open the controlling-valve in the valve-chamber *a*, in a manner presently to be explained. A retracting-spring, Z, on top of the tube A, and connected to lever *d*, serves to prevent the said lever *d* from being thrown too far backward in obedience to the movement of the trip *c*.

The brake-blocks or retaining-studs *h h*, that hold the torpedo in the tube A, work in sleeves *h' h'* on said tube, and on each of the sleeves *h'* is formed, or to it is attached, a bracket, C, each of the brackets C being formed with an arm, D, that forms a bearing for short shafts E. On either end of the shafts E is secured levers *k k' k' k'*, the levers *k' k'* being also connected to the projecting outer ends of the studs *h h*. Referring specially to the lower stud-releasing lever, *k''* is an extension of the lever *k*; or it may be a separate lever fixed on shaft E in close contiguity to the lever *k*. The lever *k''* is pivoted on shaft E in a slot or mortise, C', in the bracket C. Depending from the bracket C is an arm, F, that forms a bearing or support for the rearwardly-extending end of the valve-operating rod *g'*, so that the said rod *g'* will be in the same vertical plane as the lever *k''*, the free end of the lever *k''* en-

tering a recess in the side of the rod g' at i . The other or rearwardly-extending end, k , of the lever k^2 is connected with the projecting end of the stud or block h , as above described, and as the rod g' moves forward in response to the turning of the shaft B by the movement of the lever l that end of the lever k lying in the recess i will be forced upward out of said recess, and the other end of said lever will be forced downward and will release the stud h , to which it is secured, from its hold on the torpedo.

The upper and lower levers k' are connected by a connecting-rod, k^3 , so that the movement of the one affects both, and both studs h will be released or withdrawn simultaneously.

In order to operate the studs or blocks h without disturbing the firing mechanism—as, for instance, when a torpedo is to be inserted in the tube A—I have formed on the lower lever k' a hand-lever, k^4 , by the aid of which the studs may be withdrawn independently of the firing mechanism. The studs h are held to the inward or working position by the action of the spiral springs h^2 , one end of each of which springs is secured to a stud, h^3 , on each of the sleeves h' , the other ends of the springs being secured to arms or flanges h^4 on the studs h .

The forward end of the valve-operating lever g' is formed with a shoulder or enlarged portion, y , which, as the rod g' moves forward, engages the shouldered outer end, y' , of the valve-stem y^2 , and thus opens the valve to admit the compressed air, gas, or other motive agent to the torpedo-tube. It will be observed from the drawings that the enlarged forward end of the rod g' does not engage the shouldered outer end of the valve-stem at the beginning of the forward thrust or stroke of said rod g' . Now, as the said rod g' acts on the lower lever, k^2 , and by means of the connecting-levers described on the brake studs or block h , the instant the said rod g' begins its forward movement it is very evident that the brake studs or blocks h will be released from their hold on the torpedo before the valve-stem y^2 is acted upon by rod g' to open the valve to admit the charge of compressed air, gas, or other agent to the torpedo-tube.

I have not shown the construction of the valve-box and valve, as they are or may be of the ordinary construction.

In order to make impossible the serious results that would arise from the admission of the compressed air or gas to the torpedo-tube while the cover remained on said tube, I make the firing mechanism depend for its operation on the removal or opening of the cover of said tube—that is to say, the firing mechanism may operate only when the torpedo-cover has been removed or opened.

On the lever l , that rotates shaft B to operate the controlling-valve by means of arm g and rod g' , there is secured a rod, m , extending forward from the said lever l to near the forward end of the torpedo-tube, the forward

movement of which rod m is impeded by a slide, n , working in a grooved block, x . To provide for the raising of slide n by the opening of cover p , the said cover is secured to the forward end of a shaft, s , extending backward of the cover p and revolving or rotating in suitable bearings on the torpedo-tube. The shaft s is rotated or turned by means of a crank-handle, q , a bowed arm, S , being secured to said crank-arm and pivotally secured to the side of tube A to brace and somewhat assist in the turning of said crank-arm q . Near the crank q is fixed, on shaft s , a collar, u , having a short arm, u' , to which is connected a link-rod, v , extending across the torpedo-tube A and connected with an elbow-lever, $v'v^2$, the arm v^2 of said lever being engaged in a recess formed by two studs, $n'n'$, at the upper end of slide n . In the lower end of slide n is formed a hole, w . Now, as the shaft s is turned by crank-arm q to raise the cover p , the system of connecting-levers $u u' v v' v^2$ serves to raise the slide n in the plate or block x until the hole w in said slide comes opposite the rod m , secured to lever l , the hole w at this point also registering with a similar hole in the block or plate x , so that the rod m may move freely forward through the slide n and the plate or block x in response to the forward movement of the lever l . As the rod m and lever l may move forward only when the stop or slide n is raised, and as the said slide is raised only by the raising or opening of the cover p of the torpedo-tube, it follows that the valve-operating rod g' , which is actuated by the turning of shaft B by lever l , can open the controlling-valve in the valve-chamber a only when the cover p of the torpedo-tube has been removed. Thus the charge of compressed air or other agent cannot be admitted to tube A to project the torpedo while the cover p remains on the tube A.

After the projectile has been fired from the tube, the valve is closed and the firing mechanism again set by throwing lever l by its handle.

If desired, the slide n might be arranged to be raised entirely above the plane of the rod m , to allow the rod m to pass under said slide instead of through the hole w therein.

The arrangement of levers, it will be understood, may be varied without departing from the spirit of my invention, especially as regards the system of levers connecting the stop or slide n with the cover p , it being plainly apparent that various means might be employed for making the desired connection.

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

1. In combination with the firing mechanism of a torpedo-tube, a rod secured to and projecting from one of the levers of the firing mechanism and abutting a stop or slide in the line of travel of said rod, arranged to be operated from the cover of the torpedo-tube by intermediate mechanism, substantially as described, to allow the firing mechanism to operate only

when the cover of the torpedo-tube is opened or removed, substantially as and for the purpose hereinbefore specified.

2. In combination with a torpedo-tube and its firing-levers, and with the cover of said tube, a shaft carrying said cover, levers connecting said shaft with a slide or stop, and a rod attached to one of the firing-levers, its opposite end abutting said slide or stop, substantially as described.

3. In combination with a torpedo-tube and with the trip-rod *c*, a lever, *d*, connected with said trip-rod and formed with a catch, a lever, *l*, mounted on a shaft, *B*, one end of which lever *l* is engaged by a catch on lever *d*, the arm *g*, also on shaft *B*, the valve-operating rod *g'*, and a spring, as *f*, for throwing lever *l* when released from the catch on lever *d*, substantially as described.

4. In combination with the trip-rod *c*, a lever, *d*, connected with said trip-rod and fulcrumed on the torpedo-tube, that part of lever *a* beyond its fulcrum being formed with a catch, a lever, *l*, mounted on a shaft, *B*, an arm, *g*, on said shaft inward from the lever *l* and connected with the valve-operating rod *g'*, a rod, *m*, connected with lever *l* and extending forward to abut a slide or stop, *n*, a shaft, *s*, on which the torpedo-tube cover *p* is mounted, and levers connecting the said shaft *s* with slide *n*, substantially as described.

5. In combination with a torpedo-tube, the

lever *l*, mounted on the same shaft from which the valve-operating rod of said tube is actuated, the trip-rod of the firing mechanism, and an intermediate lever formed with a catch for the end of lever *l*, and a spring, as at *f*, for operating lever *l* when the same is released by the trip-rod, substantially as described.

6. In combination with a torpedo-tube and the brake-blocks or retaining-studs that hold the torpedo in said tube, levers connected with the outer ends of the retaining-studs, one of said levers being arranged to be tripped by the operating-rod of the controlling-valve, and a rod connecting the levers of both retaining-studs, substantially as described.

7. In combination with a torpedo-tube and the brake-blocks or retaining-studs that hold the torpedo in the tube, levers connected with the outer ends of said studs, one of said levers having an extension arranged to be tripped by the valve-operating-rod, a connecting-rod connecting the levers of both studs, and a hand-lever for operating said retaining-studs without interference with the firing mechanism, substantially as described.

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

EMIL KASELOWSKY.

Witnesses:

L. GLASLE,

O. WICHMAUER.