(No Model.) 2 Sheets—Sheet 1.

A. R. BOLUSS.

VALVE FOR STEERING APPARATUS, ELEVATORS, &c.

No. 570,246. Patented Oct. 27, 1896.

Fig. 1.

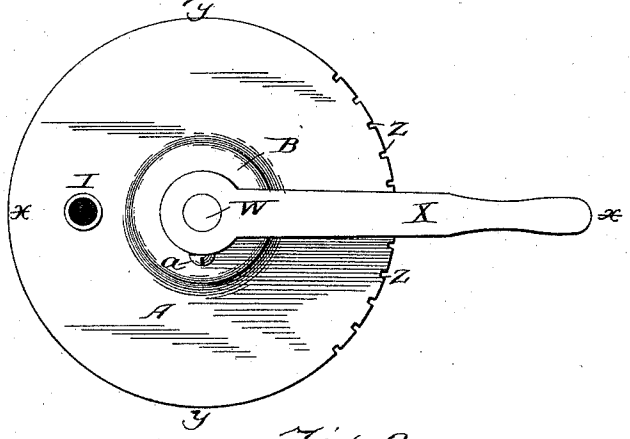


Fig. 3.

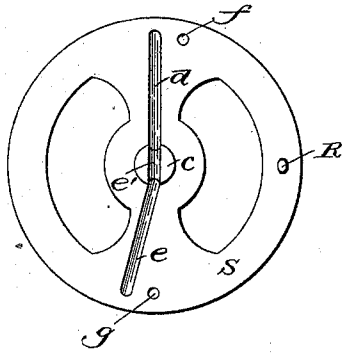


Fig. 2.

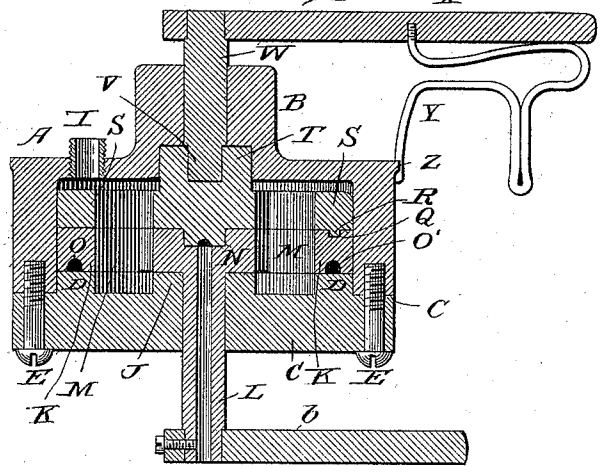


Fig. 4.

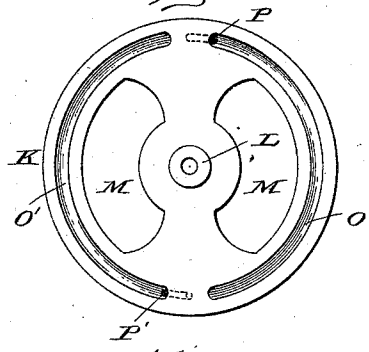


Fig. 5.

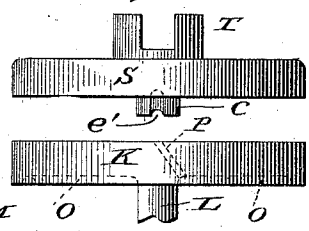
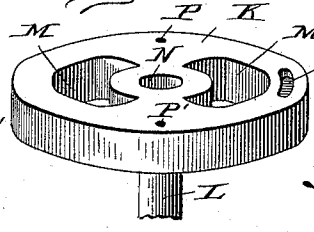


Fig. 6.



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(No Model.) 2 Sheets—Sheet 2.

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VALVE FOR STEERING APPARATUS, ELEVATORS, &c.

No. 570,246. Patented Oct. 27, 1896.

Fig. 7.

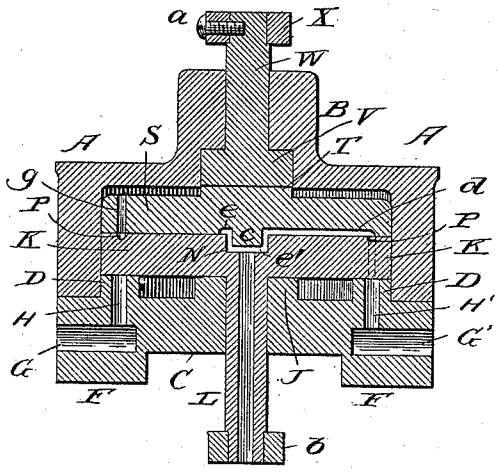


Fig. 8.

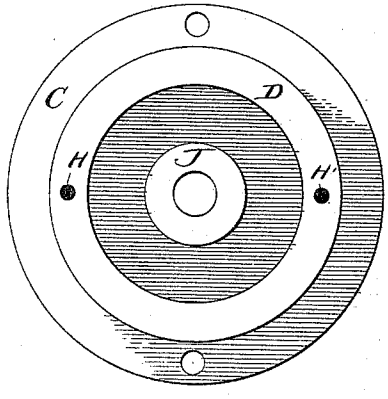
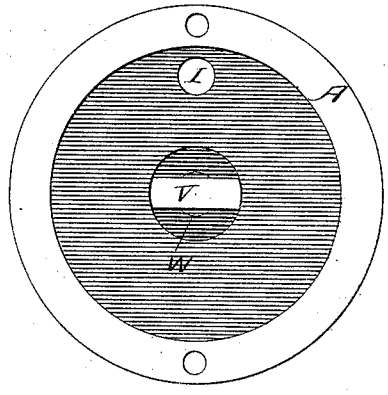


Fig. 9.



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UNITED STATES PATENT OFFICE.

ALFRED R. BOLUSS, OF JERSEY CITY, NEW JERSEY, ASSIGNOR OF ONE-HALF TO CLARENCE LINN, OF SAME PLACE.

VALVE FOR STEERING APPARATUS, ELEVATORS, &c.

SPECIFICATION forming part of Letters Patent No. 570,246, dated October 27, 1896.

Application filed May 9, 1896. Serial No. 590,885. (No model.)

To all whom it may concern:

Be it known that I, ALFRED R. BOLUSS, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Valves for Steering Apparatus, Elevators, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in valves, and particularly to that class employed in the manipulation and control of final-moving devices—such as steering apparatus, elevators, &c.

The objects of my invention are the production of a valve which will enable a final mover to be set in motion to any desired extent, checked at intermediate points, and held in such checked position and also readily reversed; and with these ends in view my invention consists in the novel construction and arrangement of parts hereinafter more fully described.

In order that those skilled in the art to which my invention pertains may fully understand the same, I will proceed to describe the construction, arrangement, and operation of the several parts, referring by letter to the accompanying drawings, in which—

Figure 1 is a top or plan view. Fig. 2 is a central vertical section taken on the line *x x* of Fig. 1. Fig. 3 is a plan view of the top disk. Fig. 4 is a bottom view of the central or cut-off disk. Fig. 5 is a central vertical section of the upper disk and central cut-off disk slightly separated. Fig. 6 is a perspective view (looking at the top) of the central cut-off disk. Fig. 7 is a central vertical section taken at the line *y y* of Fig. 1. Fig. 8 is a top view of the bottom seat of valve, and Fig. 9 is a plan view of the interior of the valve-casing.

For the sake of convenience I have shown in the drawings the valve mechanism disconnected or disassociated from any device or apparatus which it is designed to control, and have shown only a means of connection between the valve and any movable device designed to be controlled by it, as will be fully explained hereinafter.

Similar letters of reference indicate like parts in the several figures of the drawings.

A represents the valve-casing, formed on top with a central hub B to receive the lever-stem hereinafter described, and with an annular rim to constitute a cylindrical inclosing wall to the interior valve-disks. The annular rim of the casing rests upon the bottom seat C and in close contact with the ring or collar platform D. The bottom seat is secured to the cylindrical wall of the casing by screws E, as clearly shown at Fig. 2. The under side of the bottom seat is cast with vertical diametric projections F to constitute stock through which are bored horizontal ports G, communicating with vertical ports H, bored diametrically opposite each other through the ring or collar platform D.

The top of the casing A is provided with an inlet orifice or tube I for the admission of the steam or air.

The bottom seat is provided with a central and interior hub J, which is bored centrally to receive the vertical stem of the central cut-off disk.

K is the central or cut-off disk. It is formed with a central vertical stem L, and is cut away or cast open at M M to lighten the structure. The vertical stem L is bored centrally to constitute an exhaust-port to be hereinafter described, and is countersunk at the upper end, as shown at N, Fig. 6, to receive the centering-hub on the under side of the top valve-disk.

Referring to Fig. 4, the under side of the central or cut-off disk is formed with two semicircumferential grooves O O, each communicating at one end, respectively, with the two diametrically opposite and vertically oblique passages P P. (Seen at Fig. 3, the obliquity being shown by dotted lines at Fig. 4.) Midway between the two oblique passages P P and on the top surface of the central cut-off disk is formed a short groove Q, adapted to receive a vertical stud R on the under side of the upper disk S. This upper disk is cast open, as shown, to secure lightness and has an upwardly-projecting hub T

with a diametric slot to receive the T-head V of a vertical stem or rod W, passing through the central hub B and provided with an operating handle-bar X, to which is secured any suitable pawl Y for engaging with the scores or rack Z in a flange on the casing A, which are made at predetermined localities to determine the admission of the proper amount of steam or air to the valve. The handle-bar X is secured to the stem W by a set-screw *a*. The central cut-off disk is provided, as shown, with a vertical exhaust-stem L, and the radial arm *b*, secured thereto, is intended to show that the rotary movement of said stem may be, through any suitable connecting mechanism, transmitted to a ship's steering-gear or any other last mover. Recurring to the upper disk S, it is provided with the vertical stud R, heretofore referred to, and with a short centering-hub *c*, adapted to enter the seat or countersink N. It is also formed with radial passages *d e*, which intersect and communicate with a channel *e'* diametrically across the bottom and up each side of the centering-hub *c*. The outer ends of the radial passages *d e* terminate each side of vertical ports *f g*, bored through the upper disk, as clearly shown at Fig. 3.

Having described the peculiarities of construction of the several parts, I will now proceed to describe how such parts are assembled and then the operation of the same.

The central cut-off disk K is mounted upon the ring or collar platform D, so that the solid metal constituting bridges between the termini of the semicircumferential grooves O O will close the vertical ports H in the platform D, the hollow stem L passing centrally through the hub J on the bottom seat C. The upper disk S is then located on top of the central cut-off disk K, so that the short vertical stud R will project within the slot Q in the upper surface of the cut-off disk K and the centering-hub *c*, located within the slot or countersink N, and with the vertical ports *f g* out of register with the vertically oblique passages P P in the central cut-off disk. The casing A is then placed over the disks in the position shown at Figs. 1 and 2 and so that the T-head V will lie within the slot U. The casing and bottom seat are then secured together by the screws E and the valve is in condition to be secured in position where it may be needed.

I will now proceed to describe the operation of the valve. The operating medium, be it steam, air, or other equivalent, being admitted to the casing through the inlet-orifice I, and the vertical port *f* of the upper disk being in register with the oblique passage P of the cut-off disk K, the steam will pass through the oblique passage to the communicating semicircumferential groove O and, traveling around the same to its opposite terminus, will pass directly to the port H' through the ring platform D and out the port G'. A reverse movement of the upper disk S to bring the vertical port *g* in register with the oblique passage P' will cause the steam to traverse the other semicircumferential groove O into the opposite vertical port H and out the port G. This described operation illustrates how readily the operation of the valve may be reversed without any auxiliary or extraneous reversing mechanism.

The exhaust in each case above described is made through the radial passages *d* and *e*, respectively, to the channel *e'* on the end of the centering-hub *c* and through the hollow stem L of the cut-off disk.

As the short stud R on the under side of the upper disk S projects into the short groove Q in the upper surface of the central cut-off disk K, it is apparent that the rotary or axial movement of the latter is limited by the position of the upper disk and the stud thereon, and it will also be obvious that as the upper disk is successively rotated by the handle X the central cut-off disk will be permitted to further revolve a distance equal to the length of the groove Q, and thus through successive or continuous movements of the handle X the central cut-off disk K may be permitted to make a complete revolution in either direction, as may be desired.

From the construction and operation described it will be seen that if the handle X be moved a distance equal to the length of the short groove O in the upper surface of the disk K, said disk is free to be rotated a corresponding distance, and through its stem L and connection *b* cause any last mover to travel a proportionate distance. Each successive movement of the handle X produces the same result, so that, as before stated, the disk K may be caused to make a complete half-revolution, and through the medium of the pawl Y and rack Z the movement of the disk K and its connections, as well as the last mover, may be held at any desired or predetermined point. A reverse movement of the handle X will of necessity produce a reverse movement of the several parts, so that it will be apparent that through the medium of the handle X the last mover may be controlled with absolute accuracy.

It will be apparent that the ports G and G' may communicate through any suitable connection with any device or devices designed to be operated or controlled by the passage of the fluid through the valve.

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

1. In combination with the bottom seat C constructed as described, and casing A with inlet I, the central cut-off disk K with semicircumferential grooves O O', oblique passages P P', slot Q, and hollow stem L, the upper disk S with central hub *c*, radial passages *d*, *e*, ports *f*, *g*, stud R and bifurcated hub T, the vertical operating stem or rod W with T-head V, and handle X, substantially as and for the purposes set forth.

2. In combination with the seat C, valve-casing A, and contained disks K, S, construct-

ed and arranged as described, the handle X and power-transmitting device *b*, or its equivalent, substantially as and for the purpose set forth.

3. In combination with the seat C and casing A constructed and arranged as described, the contained disks K and S and means substantially as described for controlling the axial movement of the disk K, as and for the purposes set forth.

4. In a valve such as described, the central disk K, provided with a motion-transmitting stem L, having the extent and direction of its rotation controlled through the medium of the disk S, and handle X, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED R. BOLUSS.

Witnesses:

N. CURTIS LAMMOND,

M. D. BLOUDEL.