

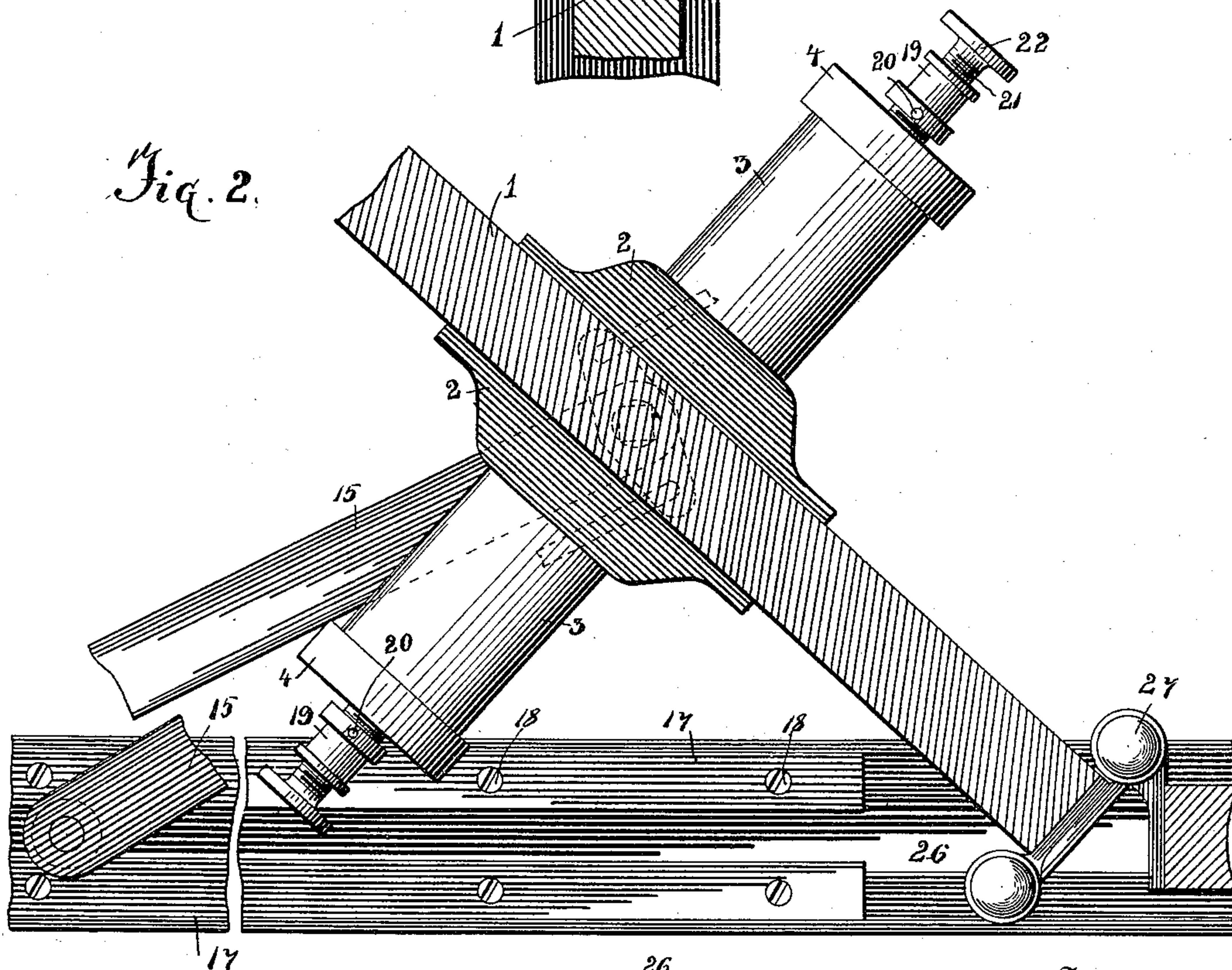
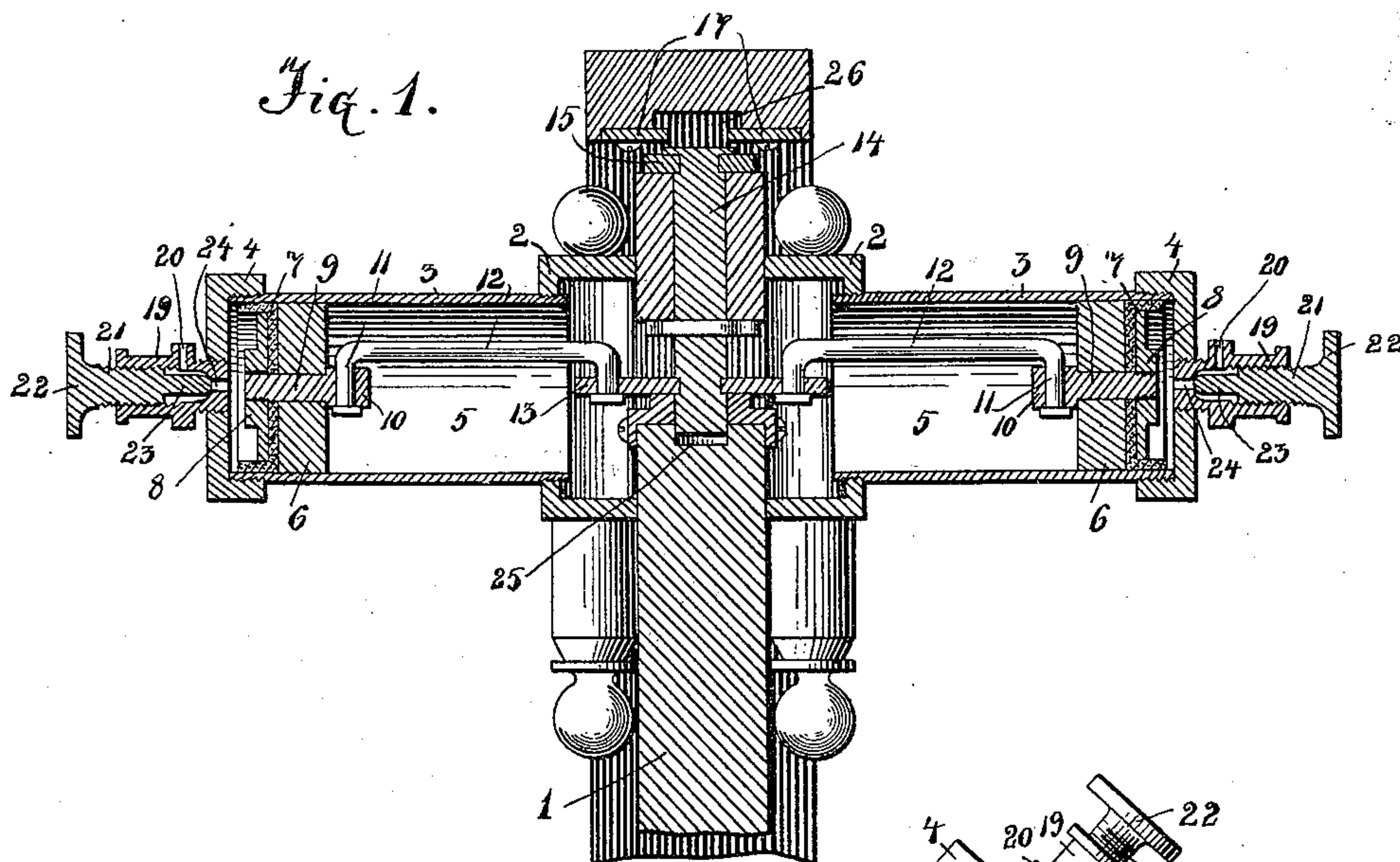
No. 610,447.

Patented Sept. 6, 1898.

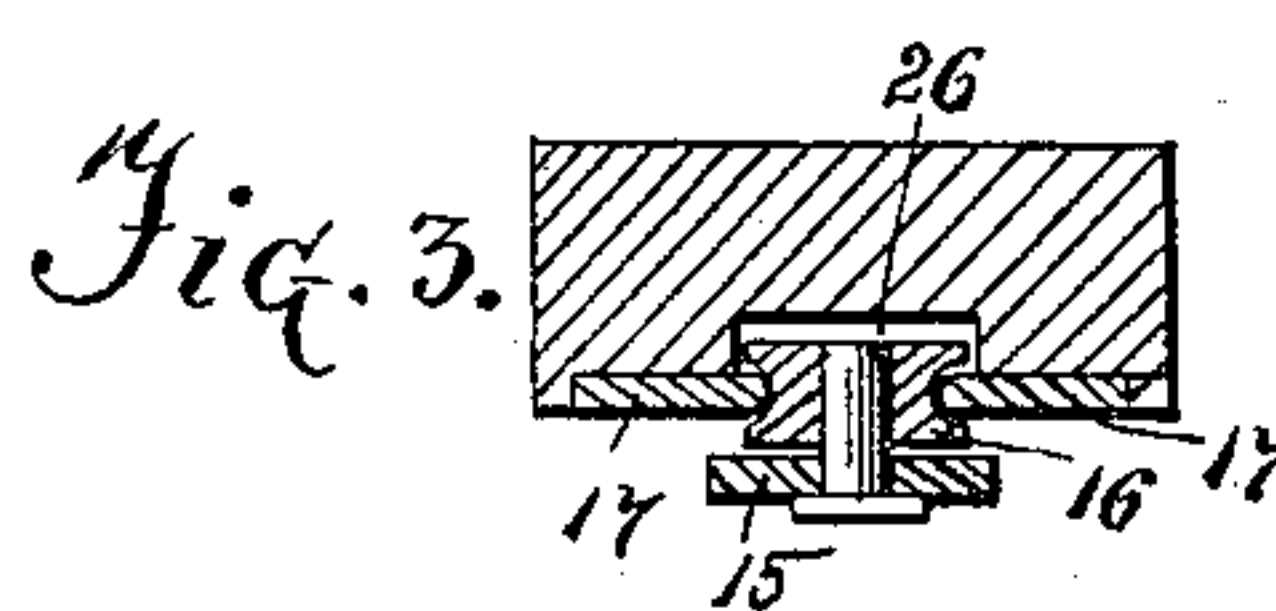
J. HORSFIELD.  
PNEUMATIC DOOR CHECK.

(Application filed June 30, 1897.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

JOHN HORSFIELD, OF CHICAGO, ILLINOIS.

## PNEUMATIC DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 610,447, dated September 6, 1898.

Application filed June 30, 1897. Serial No. 643,028. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HORSFIELD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cushions for Doors; 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.

The invention hereinafter fully described, claimed, and illustrated in the accompanying drawings comprehends certain new and useful improvements in door-checks, the object being to provide a reliably-efficient door-check of the character specified which may be very cheaply manufactured and readily applied to use upon any door.

In this application I will illustrate a door-check designed to be applied to use upon a self-closing door which has been provided for this purpose with compound or double-acting spring-hinges, thus permitting the door to swing to either side.

My improved door-check is so constructed and applied to use that it will noiselessly bring the door into a closed position, and, as will be readily understood, my improved door-check may be used upon a door which swings to but one side of its keeper, as in such case one of the chambers will be omitted.

The details of construction involved will, for convenience, be referred to by numerals, the same numeral being employed to designate the same part in all the views.

In the accompanying drawings, Figure 1 is a longitudinal central section of my improved door-check applied to use and showing part of the door in section. Fig. 2 is a bottom plan view showing part of the door in section and also showing the controlling arm or lever and the slot provided therefor. Fig. 3 is a detail showing the end of the guiding-arm and the grooved pulley mounted thereon.

The purpose is to construct a neat, simple, and efficient device for controlling the opening and closing of doors provided with double spring-hinges and which consequently open in each direction. I construct my door with a horizontal aperture which is intersected by a vertical recess extending from the top edge

of the door to a short distance below said aperture and forming a step and bearing for a vertically-disposed rock-shaft having arms extending therefrom on each side through the aperture and connected to accessory parts outside the door. By this construction the parts are actuated by the swing of the door in connection with the controlling-bar which operatively connects the rock-shaft with the door-casing. It will be seen that the rock-shaft and its adjuncts are housed in the aperture and recess in the door and occupy but little space and are practically out of sight. The door thus presents a pleasing appearance and is in harmony with the fine finish of many public and private buildings. I am also enabled by a single crank-shaft so located as to operate the devices on each side of the door, which are necessary or at least of great advantage in doors provided with double spring-hinges and which swing in either direction, as may be desired, all of which will be more fully apparent by the following description.

Referring in detail to the several parts of my invention and the accessories deemed necessary to place the same in operative position, 1 indicates a part of the door to which the device is applied, while 2 represents the securing-brackets or housings placed upon either side of the door and properly secured thereto by screws or other preferred means. Preferably centrally disposed in the outer side of said brackets is the threaded aperture designed to receive the threaded ends of the barrels 3, constituting a part of the air-chamber necessary in carrying out my invention. The outer ends of the barrels 3 are provided with the internally-threaded caps 4, designed to be screwed tightly home upon said barrels and thus complete the air-chambers 5. Designed to be reciprocated within the chambers 5 are the pistons 6, each being provided with a suitable washer 7, as of leather, rubber, or the like, each washer being held in position by the retaining-cap 8, which is seated by means of screw-threads upon the locking-bolt 9, which takes entirely through the piston thus provided and has formed upon its inner end the perforated head 10, said perforation being arranged to receive the crank end 11 of the piston-link 12, the inner end of



each piston-link being pivotally connected to the arms 13, rigidly attached to the rock-shaft 14. The rock-shaft 14 is rigidly connected to the inner end of the actuating-arm 15 in any preferred way, while the outer or free end of said arm is provided with the grooved pulley 16, designed to be engaged by the inner edges of the guiding-plates 17, properly held in position upon the frame of the door by screws 18 or otherwise. Centrally located in the caps 4 are threaded apertures designed to receive the threaded stem of the vent 19, which is substantially tubular, the outer end being of greater diameter than the inner end. The vent 19 is provided with the side aperture or vent proper, 20, while the outer enlarged end is internally threaded and receives the threaded stem 21 of the regulator 22, said regulator being provided upon its inner end with a tapered point 23, designed to close the aperture 24, provided in the inner end of the vent 19, and thus entirely seal the air-chamber or regulate the escape of air therefrom in any desired quantities. The rock-shaft 14 is of sufficient length to take into the step or bearing 25, formed in the door, while a step or bearing 26 is provided in said door to accommodate the lateral swing of the arms 13, thus permitting said arms to be brought substantially parallel with the door and by such movement alternately force the pistons 6 inwardly and outwardly as the shaft 14 is partly rotated through the action of the arm 15.

Having thus fully set forth the details of construction involved in my improved door-check, the operation thereof may be stated to be as follows: After the several parts are assembled in their respective operative positions the act of opening the door will partly rotate the shaft 14 and thereby bring the arms 13 into a position substantially parallel with the door and incidentally draw the pistons from the outer end of the air-chambers to the inner ends of said chambers, and when the door is released after the person has passed through the force of the spring-hinges 27 will bring the door into a closed position, thus restoring the arms through the action of the controlling-lever 15 into a position at right angles to the door and causing the pistons to resume their normal positions in the outer end of the air-chamber. It will be readily apparent that by properly regulating the escape of the air through the vent proper, 20, which is accomplished by a proper rotation of the regulator 22, the door will be moved very gently and noiselessly into a closed position. By entirely opening the vent it will of course be apparent that the door will be more rapidly closed. It will be seen that the construction involved is very simple and that the controlling parts are so constructed that but a minimum amount of friction will result from their use, and, further, that the washer 7 may be readily replaced by removing the cap 4 and unscrewing the retaining-

nut 8 without the necessity of disturbing any of the other parts.

In Fig. 2 I have shown by dotted lines the position of the arms 13 when the door is in a partly-opened position, and believing that the construction, advantages, and operation of my improved door-check have been made fully apparent further reference is dispensed with.

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

1. The combination with a door-casing and a self-closing door having a horizontal aperture therein and a vertical recess connected with said aperture, of an air-chamber secured thereto having a piston and means located within said aperture and recess and operatively connected with said piston and casing to actuate the piston, all arranged as set forth.

2. The combination with a door-casing and a self-closing door having a horizontal aperture therein and a vertical recess connected with the aperture, of brackets secured on each side of the aperture, an air-chamber secured to each side of said brackets, a piston in each of the air-chambers secured to each bracket and means located in said aperture and recess and operatively connected to said casing to operate the piston, as set forth.

3. The combination with a door-casing and a self-closing door having a horizontal aperture therein and a vertical recess connected with said aperture, of air-chambers having pistons therein, means to operate the pistons, located in said aperture and recess consisting of a rock-shaft provided with rigid arms and links connecting said arms and pistons and means for operatively connecting said shaft to the casing all arranged as set forth.

4. The combination with a door-casing and a self-closing door having a horizontal aperture therein and a vertical recess connected with the aperture, air-chambers having pistons therein secured to each side of said door and over said aperture, means to operate the pistons located in said aperture and recess, and a controlling-bar connected with said operative means at one end while the other end works in a groove in the door-jamb, all arranged as set forth.

5. In combination with a door, of air-chambers secured thereto provided with pistons, said door having a horizontal aperture and a vertical recess connected therewith, devices located in said aperture and recess and operating said pistons, a controller-bar connected to said devices at one end, the other end being provided with a friction-roller, guide-plates on the frame of the door forming a track for the friction-rollers, all combined as set forth.

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

JOHN HORSFIELD.

Witnesses:

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