

No. 625,962.

Patented May 30, 1899.

V. BEAUREGARD.
DOOR CHECK.

(Application filed May 26, 1898.)

(No Model.)

2 Sheets—Sheet 1.

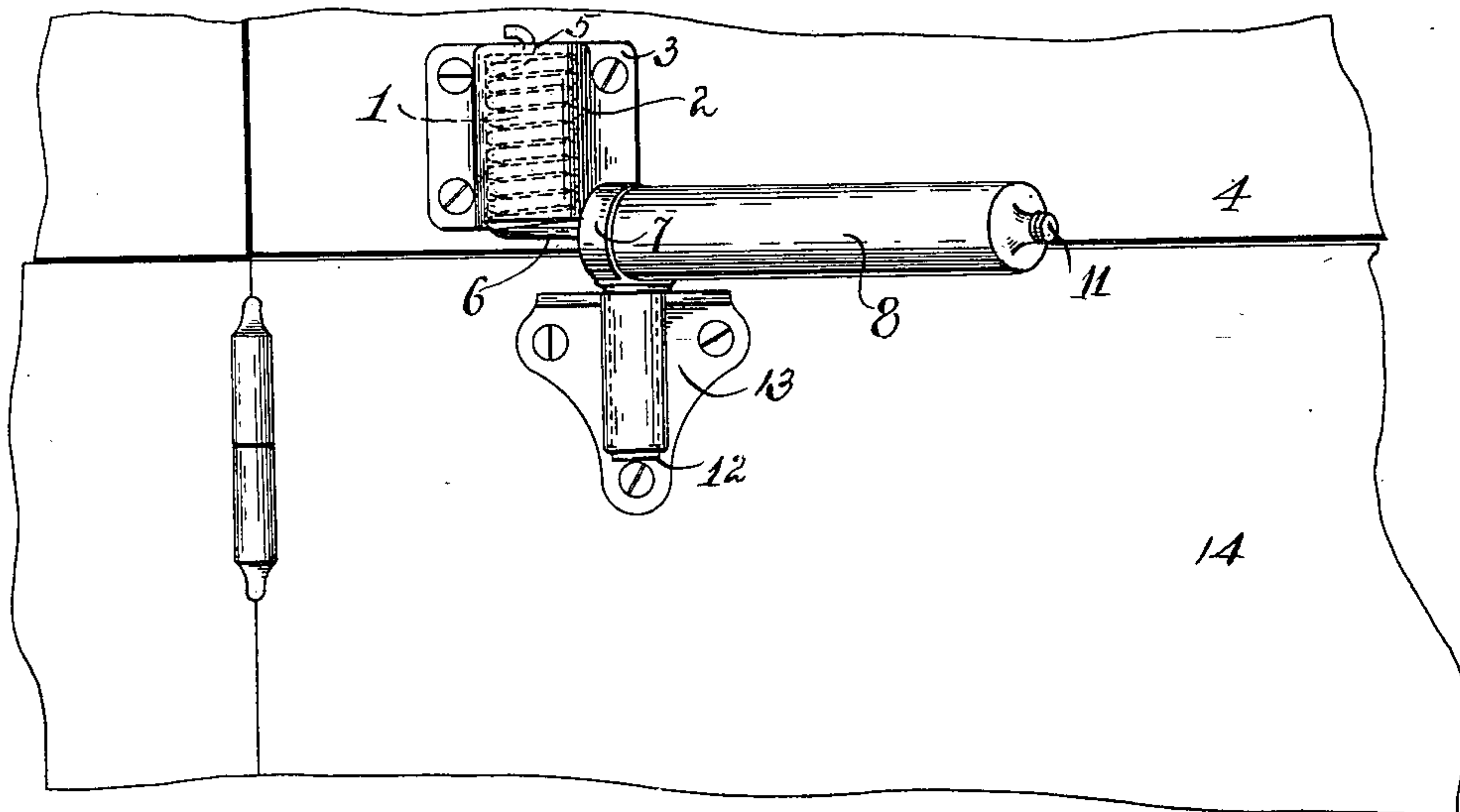


Fig. 1.

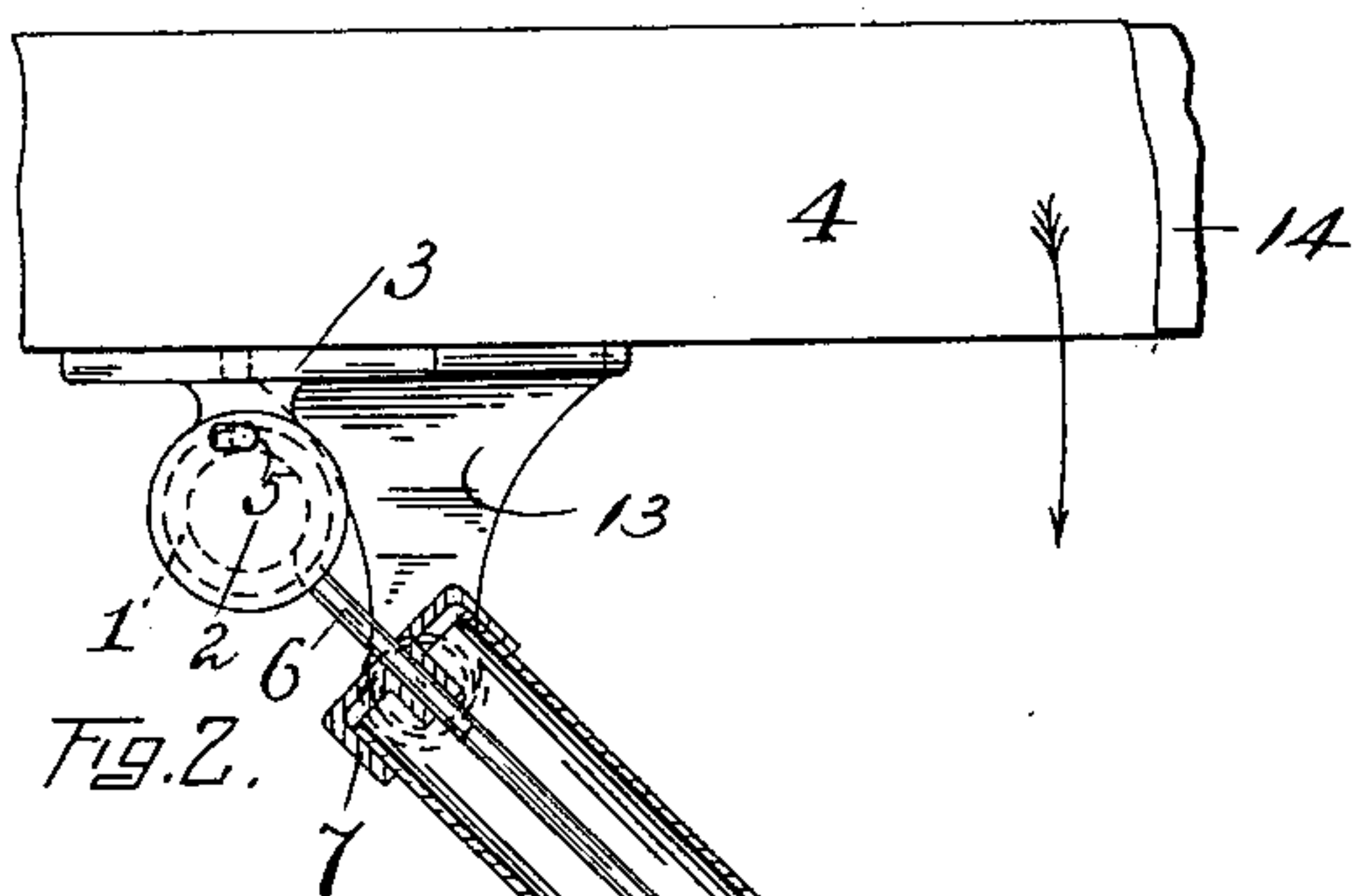


Fig. 2.

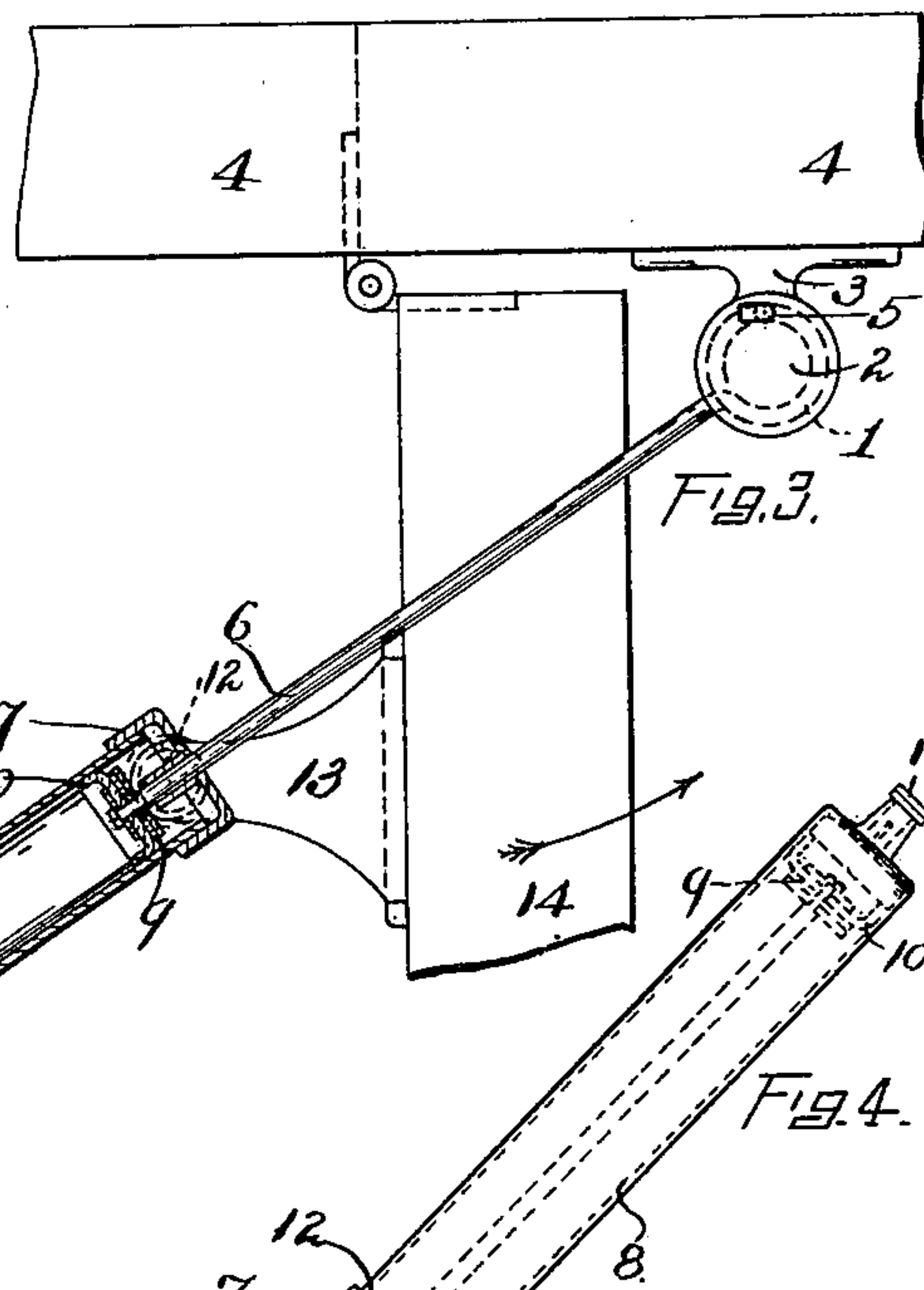


Fig. 3.

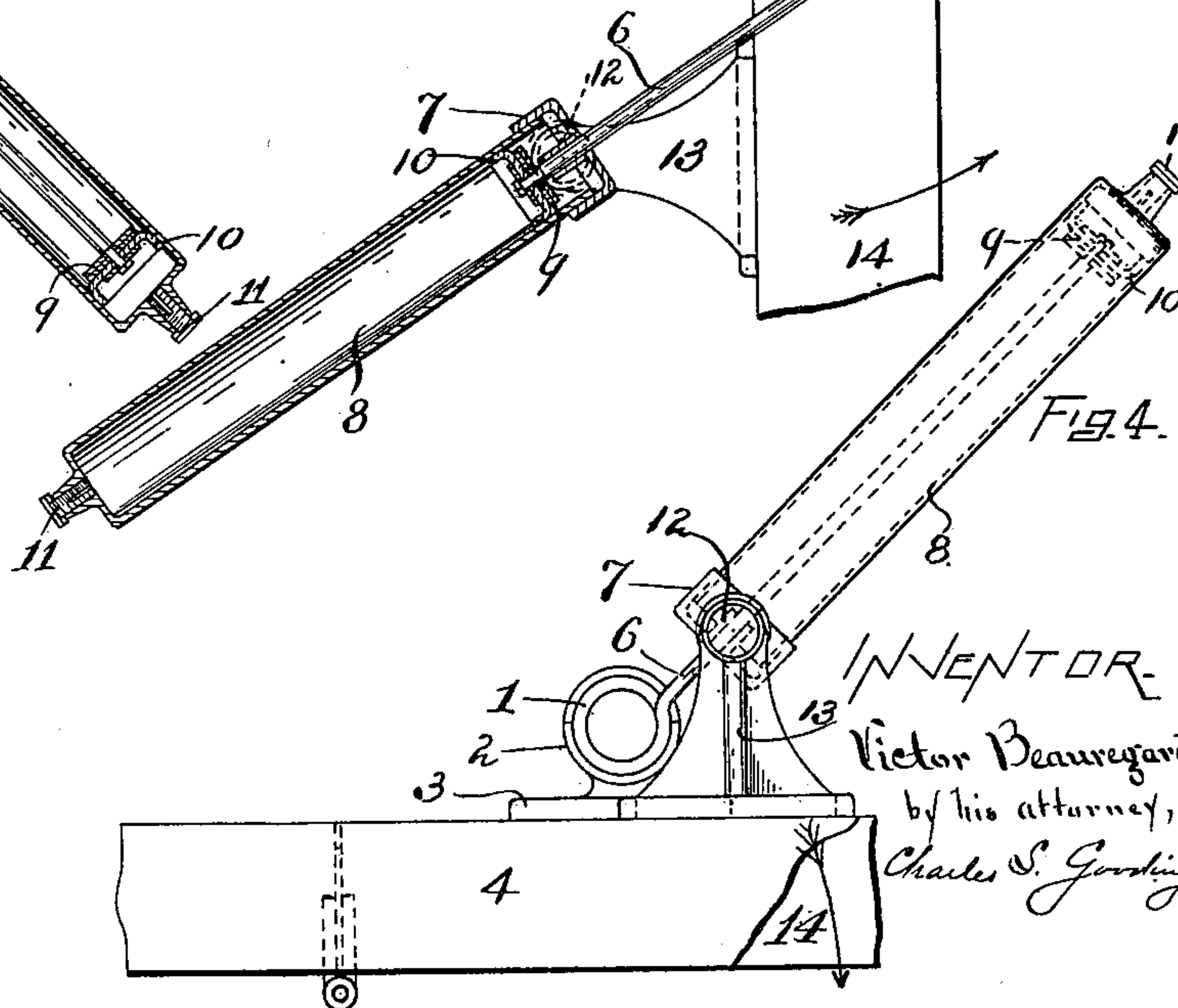


Fig. 4.

WITNESSES

Herbert E. Noble
G. F. Brown.

INVENTOR
Victor Beauregard
by his attorney,
Charles S. Gooding

No. 625,962.

Patented May 30, 1899.

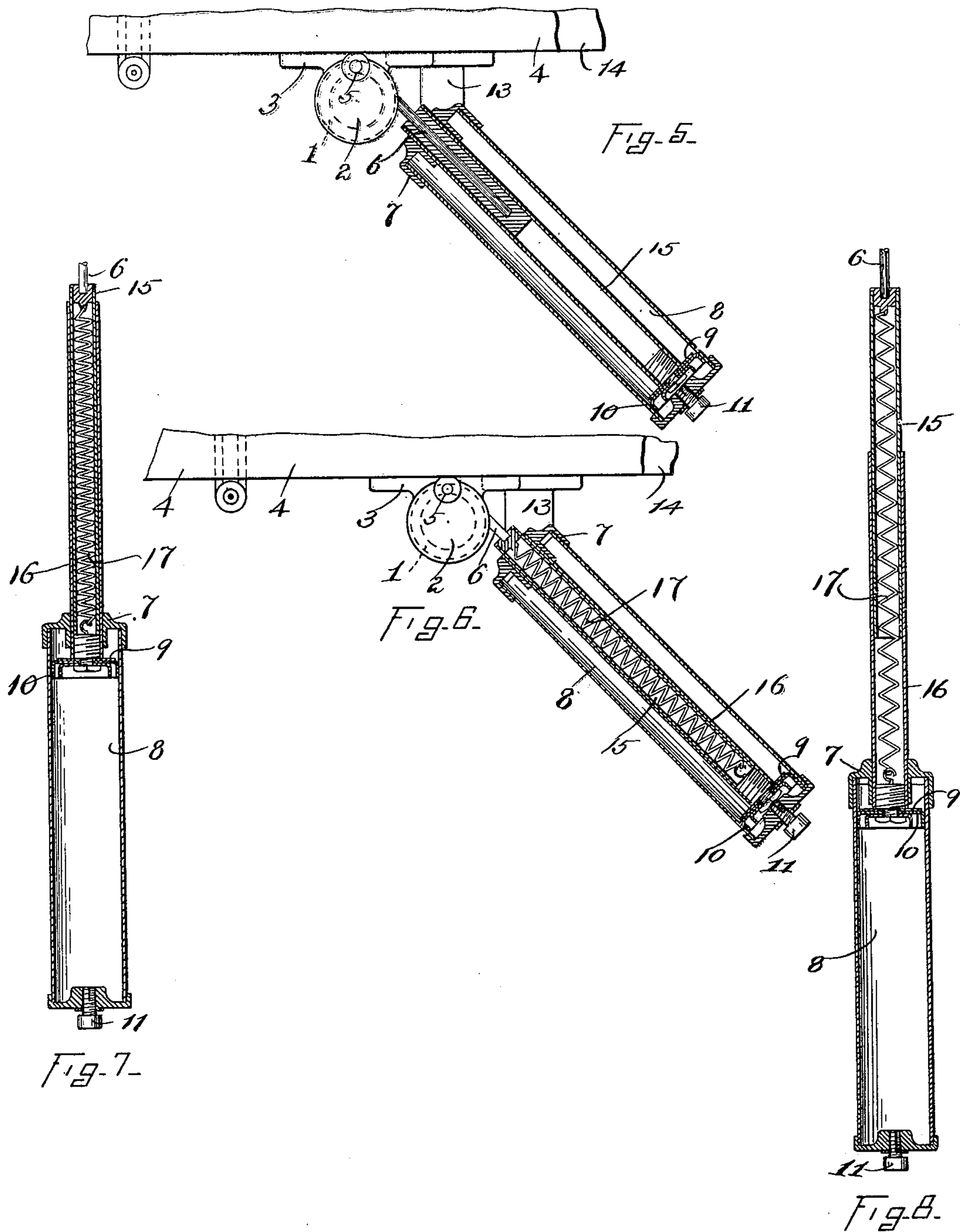
V. BEAUREGARD.

DOOR CHECK.

(Application filed May 26, 1898.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES

Herbert C. Noble.
E. L. Brown.

INVENTOR
Victor Beauregard,
by his attorney,
Charles S. Gooding.

UNITED STATES PATENT OFFICE.

VICTOR BEAUREGARD, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO CHARLES S. GOODING, OF SAME PLACE.

DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 625,962, dated May 30, 1899.

Application filed May 26, 1898. Serial No. 681,828. (No model.)

To all whom it may concern:

Be it known that I, VICTOR BEAUREGARD, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Door-Checks, of which the following is a specification.

This invention is of the class of checks known as "pneumatic," and has for its object to produce a cheap, simple, and durable door-check which may be easily applied to or disconnected from a door and which is not rendered inoperative by the varying conditions to which such devices are subjected in practical use, as fully set forth in the following specification.

The invention consists in a new and improved device for closing and "checking" the door, consisting of a spring so constructed and arranged as to close the door and also constituting an element of the mechanism whereby the door is checked.

The invention further consists in a flexible connection between the parts thereof which are attached to the door and those which are attached to the casing.

The invention still further consists in certain details of construction and combination of parts, as set forth in the following specification and pointed out in the claims thereof.

In the drawings similar numerals refer to similar parts throughout the several views.

Referring to the drawings, Figure 1 is a front elevation of my improved door-check, showing the same applied to a door with the door closed. Fig. 2 is a plan view of the same, the checking-cylinder being shown in section and the door closed. Fig. 3 is a plan view showing the door partly open. Fig. 4 is a plan view showing the check arranged to operate upon the opposite side of the door from that shown in Figs. 1, 2, and 3. Fig. 5 is a plan view of a modified form of check. Fig. 6 is a plan view, partly in section, of another modification of my improved check. Fig. 7 is a section of the checking-cylinder, showing the relative positions of the cylinder, piston, and piston-rod when the door is partly open. Fig. 8 is a section of the checking-cylinder, showing the relative positions of

the cylinder, piston, and piston-rod when the door is wide open.

In the drawings, Figs. 1, 2, and 3, a spiral torsional spring 1 is supported in a hollow cylinder 2 on the bracket 3, attached to the door-casing 4. One end of said spring passes through a hole 5 in the cylinder 2 and is fastened thereto. The free end 6 of said spring extends outwardly from said bracket 3 and, passing through the head 7 of the cylinder 8, forms a piston-rod, to which a piston 9 is fastened. Said piston 9 has a leather packing 10 attached thereto. A tapered split regulating-screw 11 regulates the exit of the air compressed in the cylinder 8 as the door closes. The head 7 has a stem 12 thereon, which turns freely in a bearing in the bracket 13, said bracket being fastened to the door 14 by screws.

The operation of the device illustrated in Figs. 1, 2, and 3 is as follows: As the door is opened the spring 1 is wound up by the cylinder 8, pivoted to bracket 13 on the door 14 and the free end 6 of said spring, the different parts assuming the positions shown in Fig. 3. As soon as the door is released the spring 1 reacts, closing the door through the medium of the free end 6 of said spring and the cylinder 8. In addition to closing the door the spring 1, through the free end 6, operates the piston 9 in the cylinder 8. When the door is opening, the piston is drawn back in the cylinder 8 by the spring 1 and the free end 6 thereof from the position shown in Fig. 2 to that shown in Fig. 3. When the door is closing, the spring 1, through the free end 6 thereof, takes the thrust of the door through the compressed air in the cylinder 8 upon the piston 9 and through the free end 6 thereof, thus checking the door. It will be seen, therefore, that the door is closed by the spring 1 and its free end 6 and that said free end of the spring also constitutes an element of the mechanism whereby the door is checked, which construction brings less strain to bear upon the hinges of the door when the checking action takes place. Another and very important advantage derived from the direct connection of the piston to the spring 1 through the piston-rod or free end 6 of said

spring is that the connection from the parts upon the door to the parts upon the door-frame is flexible in a vertical plane, so that in case the door sags upon the hinges or if
 5 the check is not set up accurately the spring 1 will move up or down and accommodate itself to the different positions of the cylinder and piston without cramping the different working parts and causing a friction which
 10 would prevent the door from closing. The importance of this feature in a device of the kind described cannot be overestimated, as any friction of the working parts necessitates a heavier spring than would otherwise be nec-
 15 essary to close the door, and a heavy spring necessitates a large cylinder, thus rendering the device cumbersome and expensive.

In Fig. 4 I have illustrated my invention applied to a door upon the opposite side from
 20 that shown in Figs. 1, 2, and 3, the spring 1 and bracket 3 being attached to the door and the cylinder pivoted to a bracket 13, attached to the door-frame. In this arrangement of the device the spring pulls the door to instead
 25 of pushing, as in Fig. 1, 2, and 3; but the operation of the check is otherwise the same as in the form described above.

In Fig. 5 I have illustrated a modified form of check in which the free end 6 of the spring
 30 1 is inclosed by a tube or piston-rod 15. Said piston-rod is rigidly attached to the free end 6, so that the operation of the device is precisely the same as that illustrated in Figs. 1, 2, and 3.

35 In order to place the cylinder 8 and spring 1 at a practical distance from the hinges of the door and to enable the door to be opened at an angle of about one hundred and eighty degrees from its position when closed and to
 40 accomplish this result without making the device large and cumbersome, I have provided an extensible or telescopic piston-rod. (Illustrated in Figs. 6, 7, and 8.) The free end 6 of the spring 1 and the tube or piston-rod 15, rig-
 45 idly fastened thereto, are of substantially the same construction as that shown in Fig. 5; but the tube 15 is not fastened directly to the piston 9, but is connected therewith by a tube 16, which incloses said tube 15 and is joined
 50 thereto by a spiral retractile spring 17. The other parts of the check are substantially the same as in the forms previously herein described. In Fig. 6 I have shown the position of the different parts when the door is closed.
 55 In Fig. 7 the relative positions of the cylinder, piston, and piston-rod are shown when the door is opened at an angle of about ninety degrees. When the door is opened to a greater angle, the parts assume the position shown
 60 in Fig. 8, the tube 16 sliding upon the tube 15 and stretching the spring 17 according to the angle at which the door is opened. The function of the spring 17 is not to close the door, as the spring 1 would close the door if the
 65 spring 17 were omitted; but the function of said spring is to govern the position of the tube 15 in the tube 16, so that when the door

is closing and arrives at about an angle of ninety degrees from its position when closed the tube 15 will be in the position shown in
 70 Fig. 7 and the compression of the air will take place from that point to the time when the door is nearly closed. Without the spring 17 the tubes 15 and 16 would be liable to cramp upon each other in the position shown in Fig.
 75 8, and thus the air in the cylinder would be compressed when said door is closing from one hundred and eighty degrees to ninety degrees with the result that the door would not be
 80 checked at the proper time, which is just before the door closes. It will thus be seen that from ninety degrees to closing the action of the spring 1 is the same as to closing and check-
 85 ing the door in each of the different forms described.

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

1. In a pneumatic check, a cylinder pivotally secured to a door or door-casing and hav-
 90 ing a piston therein, in combination with a spiral torsional spring having a free end operatively connected to the piston to form an element of the checking mechanism and its other end adapted to be fastened to a door-
 95 casing or door, substantially as described.

2. In a pneumatic check, a cylinder pivoted to a bracket adapted to be attached to a door or door-casing, a piston and piston-rod, in
 100 combination with a spiral torsional spring, one end of which is rigidly attached to the piston-rod, the other end adapted to be fastened to a door-casing or door, in such a man-
 105 ner as to form a connection, flexible in a vertical plane, between said door and door-casing, substantially as described for the purpose specified.

3. In a pneumatic door-check, a cylinder pivoted to a bracket, adapted to be attached to a door or door-casing in combination with
 110 a piston and telescopic piston-rod, consisting of two tubes, one of said tubes fast to the piston, the other rigidly attached to a spiral torsional spring, adapted to be fastened to a door-
 115 casing or door, substantially as described, for the purpose specified.

4. In a pneumatic check, a cylinder pivoted to a bracket, adapted to be attached to a door or door-casing, in combination with a
 120 piston and telescopic piston-rod, consisting of two tubes, attached to each other by a spiral spring, one of said tubes fast to the piston, the other rigidly attached to a spiral torsional spring, adapted to be fastened to a door-
 125 casing or door, substantially as described for the purpose specified.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

VICTOR BEAUREGARD.

Witnesses:

HERBERT E. NOBLE,
 E. L. BROWN.