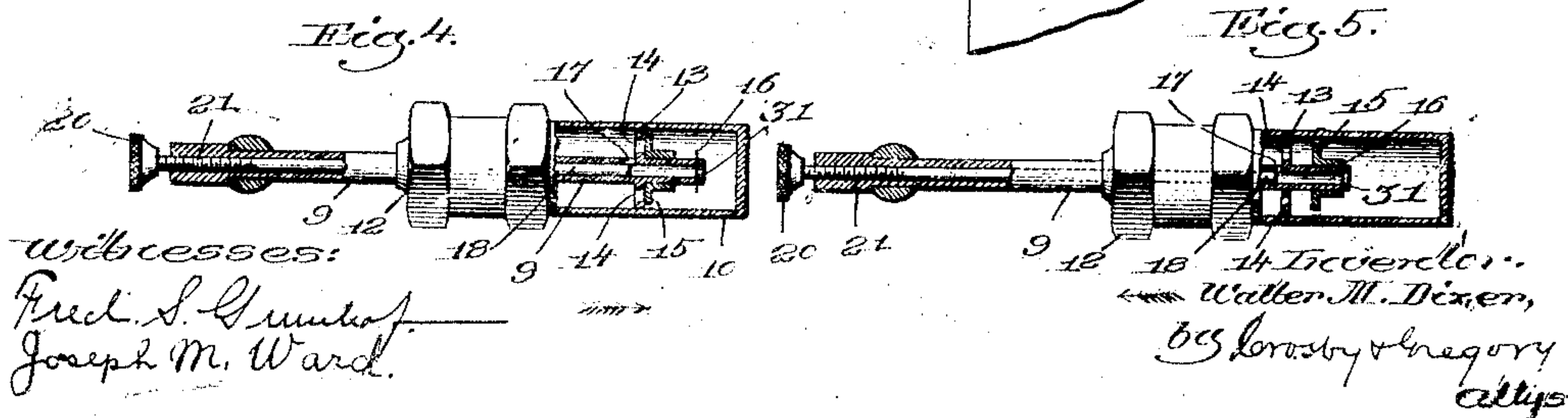
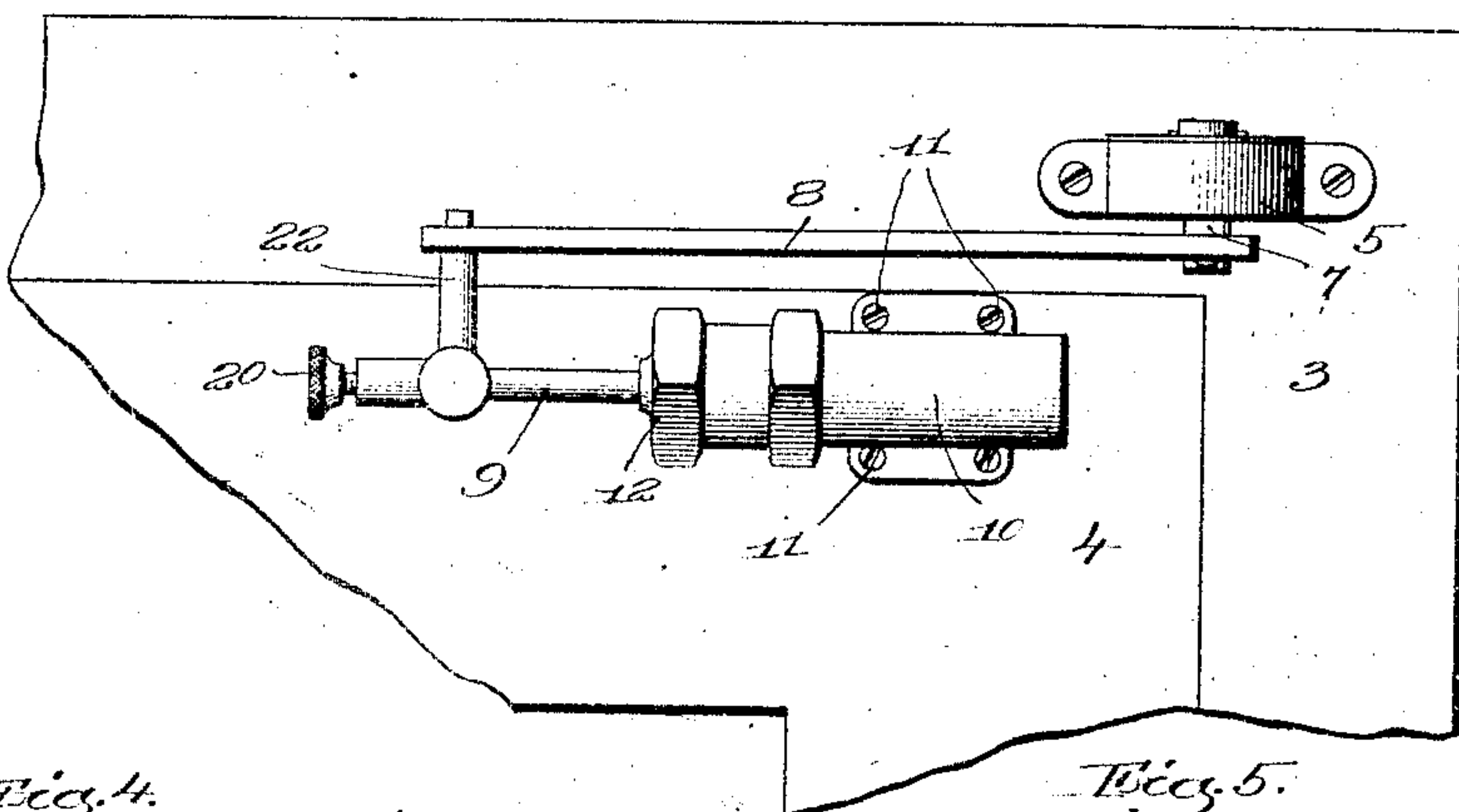
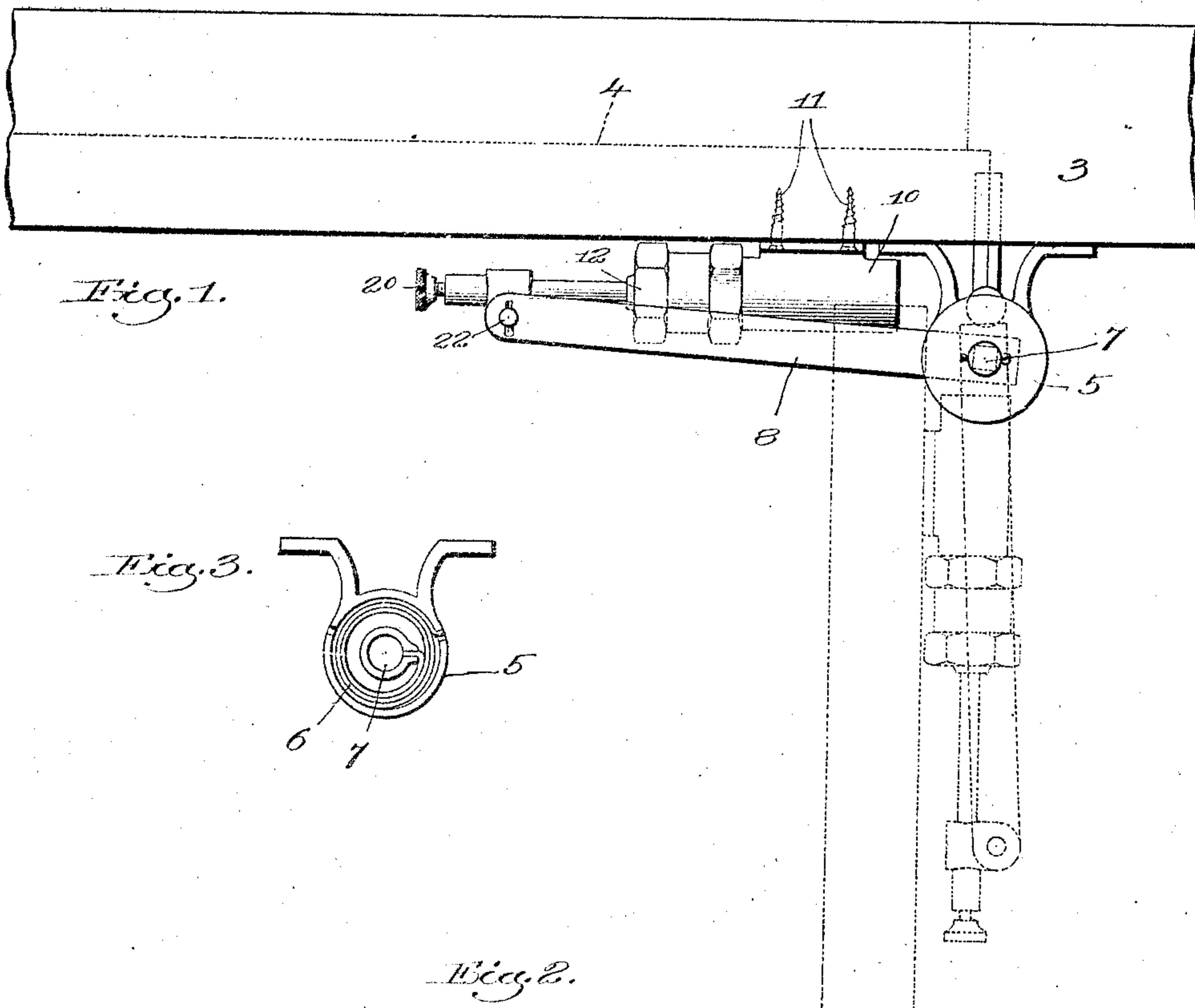


No. 866,719.

PATENTED SEPT. 24, 1907.

W. M. DIZER.  
DOOR CHECK AND CLOSER.  
APPLICATION FILED FEB. 20, 1907.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

WALTER M. DIZER, OF BROOKLINE, MASSACHUSETTS.

## DOOR CHECK AND CLOSER.

No. 866,719.

Specification of Letters Patent.

Patented Sept. 24, 1907.

Application filed February 20, 1907. Serial No. 358,389.

To all whom it may concern:

Be it known that I, WALTER M. DIZER, a citizen of the United States, residing at Brookline, county of Norfolk, and State of Massachusetts, have invented an  
5 Improvement in Door Checks and Closers, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention relates to checking devices, adapted  
10 to be used to check the movement of doors and other devices, and it relates especially to that type of checking devices commonly known to the art as a liquid check, that is, one in which the cylinder contains a liquid.

15 The object of the invention is to provide a novel device of this character which can be inexpensively manufactured and which will operate effectively to check the closing movement of a door, or the movement of a spring or other device.

20 The invention relates particularly to the construction of the piston and its check-valve, and the means for graduating the leakage opening for the purpose of varying the checking action of the device.

For the purpose of illustrating my invention, I have  
25 shown it as embodied in a door check and I will now describe such embodiment and then point out the novel features thereof in the appended claims.

In the drawings, Figure 1 is a top plan view of my improved door check and closer applied to a door;  
30 Fig. 2 is a side elevation of a portion of a door and door frame having my device applied thereto; Fig. 3 is a section through the spring box on substantially the line  $x-x$ , Fig. 1; Figs. 4 and 5 are partial sections taken longitudinally through the cylinder showing the  
35 construction of check-valve and means for graduating the leakage opening.

My device as shown is of that type in which the cylinder is secured either to the door or the door frame  
40 and the spring secured either to the door frame or the door, said spring being suitably connected to the stem of the piston in the cylinder so that the opening and closing movement of the door will move the piston relative to the cylinder.

In the present embodiment of my invention 3 is the  
45 door frame, and 4 the door. Secured to the door frame above the door is a spring-box 5 within which is a suitable spring 6, one end of which is secured to the box and the other end of which is secured to the spindle 7. The spindle 7 has fast thereto one end of an arm  
50 8, the other end of which is secured to the piston-rod 9 of the piston which operates in the cylinder 10. The cylinder 10 is secured to the door in some suitable way as by means of screws 11.

It will be noted from Fig. 1 that the spindle 7 is set  
55 out some distance from the axis about which the door swings when it opens, and as a result when the door

swings from its closed to its open position, as shown in full and dotted lines Fig. 1, the piston is moved outwardly in the cylinder, while when the door is closed or swung from the dotted to the full line position Fig. 60  
1 the piston moves inwardly.

The spring 6, of course, is so arranged that when the door is open, said spring will be wound up and the resiliency of said spring operates to close the door through the arm 8. The particular construction of  
65 the spring-box 5 and the arm 8, however, form no part of my present invention.

The piston-rod 9 extends through any suitable stuffing-box 12, and has fast thereto a piston-head 13 which is provided with one or more apertures or ports 14.  
70 Associated with the piston-head is a check-valve which permits the liquid within the cylinder to freely pass through said ports from the left-hand side thereof, but prevents it from passing through said ports in the opposite direction. While this check-valve may be  
75 constructed in various ways without departing from my invention, I prefer the construction herein shown which comprises a disk 15 freely slidable on the end of the piston-rod 9 and adapted to cover the ports 14 when in the position shown in Fig. 4. This disk or  
80 valve 15 may be retained on the piston-rod by means of a suitable pin 16. When the piston is moved toward the left Figs. 4 and 5, the check-valve 15 moves into the position shown in Fig. 5 to allow the liquid to pass freely through the ports 14, but when the piston is  
85 moved in the opposite direction, said valve closes the ports 14, as shown in Fig. 4.

The piston-rod 9 is provided with a channel or duct 31 which opens at one end into the cylinder at the right hand end of the piston-head, Figs. 4 and 5, and  
90 which is provided with a leakage port 17 that opens into the cylinder on the opposite side of said piston-head. When the check valve 15 is closed the said channel 31 provides the only communication between the two ends of the cylinder, and therefore when the  
95 piston moves to the right, Figs. 4 and 5, and the check valve is closed, the liquid at the right hand of the piston passes through said duct to the left hand thereof.

When the door is opened, the piston is moved toward the left, as shown in Fig. 5, this movement being  
100 freely allowed because of the freedom with which the liquid can pass through the ports 14, but when the door is closed, the piston moves in the opposite direction, as shown by the arrow in Fig. 4, and the speed of the closing movement of the door is determined by  
105 the size of the leakage port 17.

I have provided for graduating the size of this port by means which are operable from the exterior of the cylinder. As herein shown a valve-rod 18 is received within the hollow piston-rod 9, said valve-rod extend-  
110 ing through and beyond the end of said piston-rod and being provided with a thumb-piece 20. Said



valve-rod is screw-threaded into the piston-rod, as at 21, so that by turning it, the end thereof may be advanced to cover more or less of the leakage port 17. In this way the size of said port can be easily graduated 5 and consequently the checking action of the device can be regulated.

The arm 8 can be secured to the piston-rod 9 by any suitable means without departing from the invention.

I have shown herein the piston-rod 9 as having a 10 projection 22 extending therefrom to the upper end of which the arm 8 is swiveled.

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

1. In a check, the combination with a cylinder constructed to contain liquid, of a ported piston, a check valve 15 to close the ports in the piston when it moves in one direction, a piston-rod rigid with the piston, said piston-rod having a duct or channel which communicates with the cylinder at one side of the piston-head and which is provided with a leakage port communicating with the cylinder 20 on the other side of said piston head, and means to graduate the size of said port.

2. In a check, the combination with a cylinder constructed to contain liquid, of a ported piston, a check valve 25 to close the ports in the piston when it moves in one direction, a piston rod rigid with the piston, said piston rod having a duct or channel which communicates with the cylinder at one side of the piston head and which is provided with a leakage port communicating with the cylinder 30 on the other side of said piston head and a valve within the piston rod to graduate the size of said port, said

valve having a portion extending through and beyond the piston rod and screw-threaded thereto.

3. In a check, the combination with a cylinder constructed to contain liquid, of a ported piston therein, a piston rod on which said piston is mounted, said piston rod projecting beyond the piston, and a check valve slidably mounted on the projecting end of the piston, said check 35 having means to permit the fluid to pass from one side of the piston to the other when the check valve is closed. 40

4. In a check, the combination with a cylinder constructed to contain liquid, of a ported piston therein, a piston-rod on which said piston is mounted, said piston-rod projecting beyond the piston, and a check valve slidably mounted on the projecting end of the piston-rod, said 45 piston-rod having a duct therein which communicates at one end with the cylinder at one side of the piston and at the other end with the cylinder at the other side of the piston.

5. In a check, the combination with a cylinder constructed to contain liquid, of a ported piston therein, a piston-rod on which said piston is mounted, said piston-rod projecting beyond the piston, and a check valve slidably mounted on the projecting end of the piston-rod, said piston-rod having a duct therein which communicates at one 55 end with one end of the cylinder and is provided with a leakage port communicating with the other end of the cylinder, and means to graduate the size of said port.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses. 60

WALTER M. DIZER.

Witnesses:

LOUIS C. SMITH,  
BERTHA F. HEUSER.