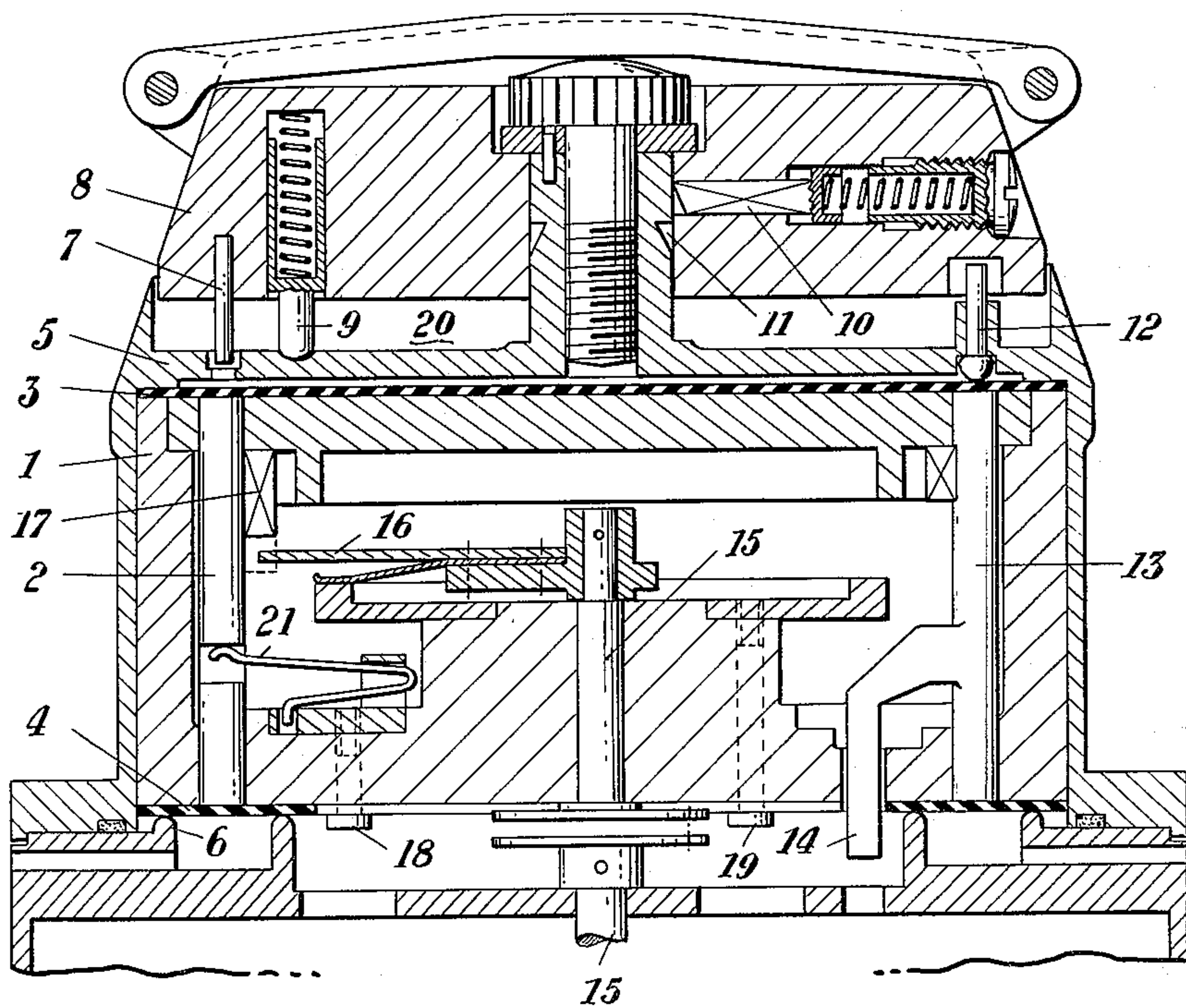


Aug. 8, 1961

G. PANERAI ET AL  
DEVICE FOR CONTROLLING FROM OUTSIDE THE MEMBERS CONTAINED  
WITHIN A HERMETICALLY SEALED BOX, APT TO BE  
IMMERSED INTO A PRESSURIZED AMBIENT  
Filed Aug. 28, 1957

2,995,639



GIUSEPPE PANERAI  
MARIA PANERAI

INVENTORS

BY *Wendert, Lindo Porack*  
Attys



1

2,995,639

## DEVICE FOR CONTROLLING FROM OUTSIDE THE MEMBERS CONTAINED WITHIN A HERMETICALLY SEALED BOX, APT TO BE IMMERSSED INTO A PRESSURIZED AMBIENT

Giuseppe Panerai and Maria Panerai, Florence, Italy

Filed Aug. 28, 1957, Ser. No. 680,832

Claims priority, application Italy Nov. 2, 1956

4 Claims. (Cl. 200-168)

The present invention relates to a device for controlling one or more members contained within a hermetically sealed box or container from outside the box or container, without the necessity of any stuffing box or similar sealing system, and operative to control rotary or axially movable elements.

More particularly, this invention provides a unit wherein the elements to be controlled are comprised of axially movable stems, the movement of which releases and controls the operation of a clockwork or causes another mechanical unit to operate, said unit being contained within the sealed box surrounding said stems.

According to this invention, said box is arranged within a container to which the external pressure is admitted; the stems to be controlled pass through apertures provided in the opposed end walls of the box so as to be movable axially of the box; the stem ends being covered by elastic membranes sealingly closing the aforesaid apertures, without hindering the axial movements of said stems, although preventing the pressurized fluid from entering the box. As aforesaid the stems pass through both the opposed end walls of the box; therefore, by acting through the membranes covering both ends of the stems, the pressure surrounding the box act on both the ends of said stems and does not affect their position.

Furthermore, the device is provided with means, operable at will and arranged outside of the box whereby one or more of said stems can be axially moved in order to obtain the desired control inside the box.

This invention will be more particularly disclosed in one preferred embodiment thereof with reference to the attached drawing wherein the sole figure shows an axial sectional view of the device.

With reference to the drawing, the device comprises a receptacle 1, in the shape of a closed cylindrical casing, inside said casing being contained a number of stems such as that shown at 2, projecting from the upper and lower end walls of the casing.

On said end walls rest two elastic membranes, 3 and 4 respectively, made either of rubber or of a substantially similar elastic material, having the shape either of a whole disc or of an annular ring, said membranes being blocked between the upper outer container 5 and the lower one 6, so as to obtain a good seal of the casing 1.

The outer pressure which may enter the outer container, does not affect the position of the stems 2, because said pressure acts to the same extent on both the lower and upper end surfaces of the stems.

At the top of the container 5 is mounted a knob 8, rotating about a central shaft thereof and serving to control the device within the container.

The knob 8 carries in its body portion the pin 7 which when the knob is rotated is brought into alignment with the desired stem. In order to limit the rotational movement of the knob 8 so as to cause the pin 7 to be aligned with the desired stem, the knob is provided with a small spring loaded plunger 9 which engages in depressions in the upper wall of outer container 5 so that pin 7 is in alignment with each stem.

When the knob 8 is depressed, which is permitted by the space 20, the pin 7, acting through the membrane 3 causes the stem 2 to move downwardly an equal dis-

2

tance. The knob 8, when depressed, remains in its depressed position because of a spring detent 10 carried by said knob and which enters the recess 11 of the guide shaft extending from the container 5 on which the knob rotates, the detent 10 thus preventing the knob 8 from moving back up.

A second plunger 12, prevented from rotating along with the knob 8 and movable axially within the top of container 5 by which it is supported, is also acted on by the knob 8 and thus depresses the stem 13.

The stem 13, by means of its arm 14 may, for instance start the operation of a clockwork the shaft of which causes an inner contact 16 of the box to rotate at a predetermined speed. It is to be noted, in this connection that the clockwork has not been shown in the figure, since it can be of any known type and in that the reference to a clockwork has been made merely as indicative of one of the possibilities offered by the invention, however without limiting in any way the scope thereof.

The contact 16, after a time from the beginning of the movement and starting depending upon the rotational speed of the shaft 15, impinges against the dog 17 carried by the stem 2 which has been lowered (the lowered position has been shown in dotted line in figure). A contact may then be closed, thus connecting the two terminals 18 and 19.

The closure of the circuit can be made to cause the actions for which the circuit has been designed.

It is to be noted that the stem or stems 2 can be provided with a spring 21 to urge each stem towards a pre-established position.

We claim:

1. In combination, a hermetically sealed cylindrical casing, said casing having a plurality of pairs of aligned bores in opposed end walls of said casing, a rod slidable in each of said bores parallel to the longitudinal axis of said cylindrical casing, at least one of said rods having an actuating means thereon, and membranes on the outside of the end walls of said casing over the ends of said rods and over said bores hermetically sealing said bores, and a knob rotatably mounted on one end of said casing for rotation about the longitudinal axis of said casing and slidable in the direction of the longitudinal axis of said casing, latching means on said knob for latching it in position in the direction of sliding, and means on said knob cooperable with one of said rods for sliding one of said rods in the bores of said casing by pressing on said membrane when said knob is moved toward said casing.

2. The combination as claimed in claim 1 in which said means on said knob is a pin projecting toward said casing, said pin being positioned on said knob for alignment with one of said rods at at least one point in the rotation of said knob.

3. In combination, a hermetically sealed cylindrical casing, said casing having a plurality of pairs of aligned bores in opposed end walls of said casing, a rod slidable in each of said bores parallel to the longitudinal axis of said cylindrical casing, at least one of said rods having an actuating means thereon, and membranes on the outside of the end walls of said casing over the ends of said rods and over said bores hermetically sealing said bores, and a knob rotatably mounted on one end of said casing for rotation about the longitudinal axis of said casing and slidable in the direction of the longitudinal axis of said casing, latching means on said knob for latching it in position in the direction of sliding, and means on said knob cooperable with one of said rods for sliding one of said rods in the bores of said casing by pressing on said membrane when said knob is moved toward said casing, and a stem mounted on the outside of said cylindrical casing for sliding movement in alignment with one



3

of said rods, said stem always being in a position to move the rod with which it is in alignment when said knob is moved toward said casing.

4. In combination, a hermetically sealed cylindrical casing, said casing having a plurality of pairs of aligned bores in opposed end walls of said casing, a rod slidable in each of said bores parallel to the longitudinal axis of said cylindrical casing, at least one of said rods having an actuating means thereon, and membranes on the outside of the end walls of said casing over the ends of said rods and over said bores hermetically sealing said bores, and a knob rotatably mounted on one end of said casing for rotation about the longitudinal axis of said casing and slidable in the direction of the longitudinal axis of said casing, latching means on said knob for latching it in position in the direction of sliding, and means on said knob cooperable with one of said rods for sliding

4

one of said rods in the bores of said casing by pressing on said membrane when said knob is moved toward said casing, and a stem mounted on the outside of said cylindrical casing for sliding movement in alignment with one of said rods, said stem always being in a position to move the rod with which it is in alignment when said knob is moved toward said casing, and a spring loaded detent on said knob engageable with said casing for indexing the rotation position of said knob.

References Cited in the file of this patent

UNITED STATES PATENTS

1,515,224	Seltzer	Nov. 11, 1924
2,040,919	Caldwell	May 19, 1936
2,213,649	Goodwin	Sept. 3, 1940
2,750,480	Freeman	June 12, 1956