H. T. SMITH.

DOOR CHECK.

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1,220,469. Patented Mar. 27, 1917.

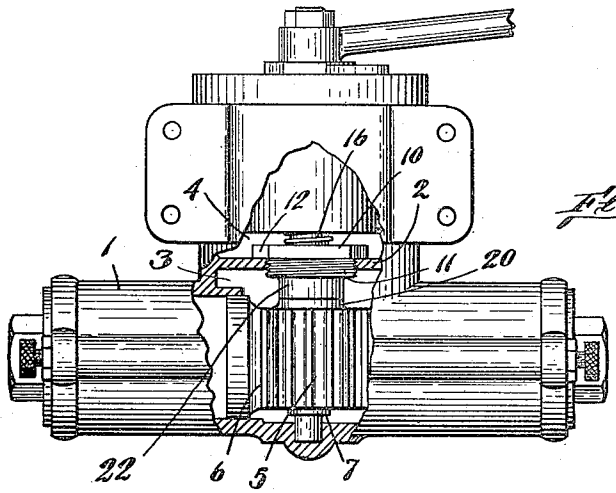


Fig. 1.

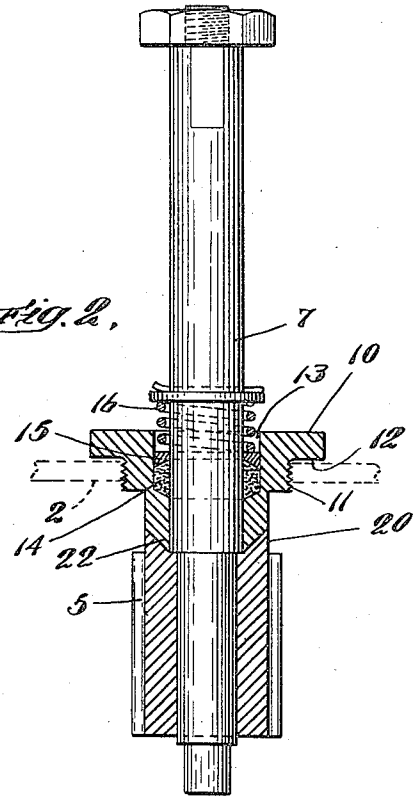


Fig. 2.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HORACE T. SMITH, OF CAMBRIDGE, MASSACHUSETTS.

DOOR-CHECK.

1,220,469. Specification of Letters Patent. Patented Mar. 27, 1917.

Application filed March 21, 1916. Serial No. 85,705.

To all whom it may concern:

Be it known that I, HORACE T. SMITH, a citizen of the United States, residing at Cambridge, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Door-Checks, of which the following is a specification.

Door checks now on the market, comprise a case having a compartment for the rack and pinion or other actuating means for the piston, and associated parts, and another compartment for a spring through which compartment the shaft of the pinion or other actuator extends, and it is designed and intended that oil shall be contained in the actuator compartment, and that the other compartment shall be dry. The shaft bearing the pinion or other actuator, which is hereafter referred to as the pinion-shaft, extends through the dry compartment and has associated with it a packing-gland, which packing-gland is tightly associated with a diaphragm which separates the two compartments, and by this means it is intended that the oil shall be prevented from entering the dry compartment.

In practice, however, some oil leaks by the packing-means usually provided, and enters the dry compartment whereupon the door check needs to be repaired.

This invention has for its object to improve the construction of this type of door check to the end that the oil contained in the oil compartment shall be effectively prevented from entering the dry compartment.

Figure 1 is a front elevation of the door check of the rack and pinion type, and commonly known on the market as the Norton door check, having my improvements.

Fig. 2 is an enlarged elevation and partial section of the pinion, its shaft and liquid tight packing-means associated therewith, embodying my invention.

1 represents the case of the door check; 2 the diaphragm dividing the case into two compartments 3 and 4. The compartment 3 is adapted to contain oil, and the compartment 4 is intended to be dry. The pinion 5, and rack 6, and associated parts are contained in the oil compartment 3, except that the shaft 7, bearing the pinion 5, or other actuator, is extended up through the diaphragm 2 and the dry compartment 4, and has its top bearing in the top of said dry compartment.

The packing-gland 10 is arranged on the shaft 7, it having a screw-threaded portion 11, which engages a threaded hole through the diaphragm 2; and also having a flange 12, at the top, adapted to receive a wrench by which it may be turned, said flange being arranged above the diaphragm 2 and adapted to be brought into engagement with the diaphragm, so that a liquid tight joint is produced at such place. Said packing-gland has an internal recess 13, which contains a packing 14, surrounding the shaft 7, and a ring 15 is normally pressed down on said packing by a spring 16. This packing cannot be pressed down sufficiently tight to prevent leakage at such point without binding so tightly as to prevent free rotation of the shaft, hence the novel means embodying this invention are employed to accomplish this result.

Herein the pinion 5, or it may be any other actuator on the shaft 7, has an annular extension 20, at its upper end, and said extension is formed with a conical seat, and the lower end of the packing-gland is extended, as at 22, and said extended end-portion is made to correspond to the conical seats, their engaging faces being ground to fit each other coextensively with their areas. By means of the conical end-portion on the packing-gland, and the conical-seat at the upper end of the pinion or other actuator, a liquid tight joint will be formed at such point, and the shaft may be freely turned, notwithstanding their tight engagement, and an additional bearing or support is provided for the shaft intermediate its length.

I claim:—

The door check herein described having an oil compartment and a dry compartment separated by a diaphragm, actuating-means arranged in the oil compartment, a shaft bearing one of the elements of the actuating-means, which is extended through the diaphragm and the dry compartment and having end-bearings, and an additional bearing and support for said shaft intermediate its length, comprising a gland stationarily supported by the diaphragm, which gland surrounds the shaft and has a conical end, and an extension with conical recess formed in

the component of the actuating-means which is borne by the shaft adapted to engage the conical end of said gland, by which said component and the shaft bearing it will be held against lateral deflection, and a joint will be formed which will be liquid tight even in case the shaft should gyrate slightly.

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

HORACE T. SMITH.

Witnesses:
B. J. NOYES,
H. B. DAVIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."