H. ROSENBERG.

LOCK AND INDICATOR FOR DAMPERS.

APPLICATION FILED FEB. 15, 1918.

1,324,620. Patented Dec. 9, 1919.

Fig. 1.

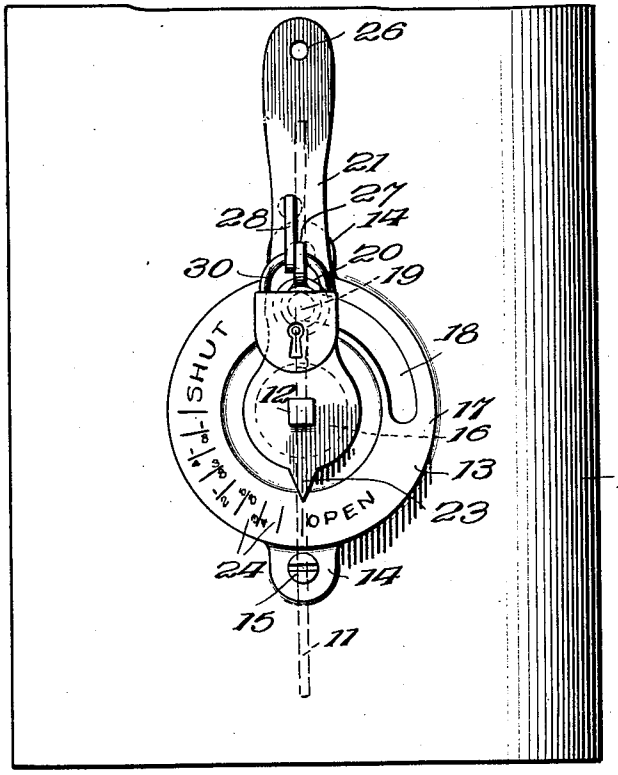


Fig. 2.

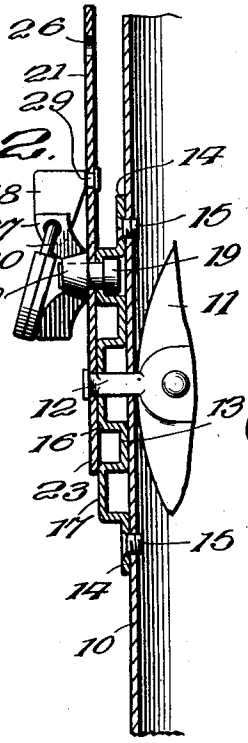


Fig. 4.

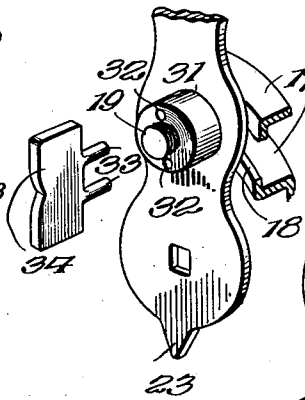
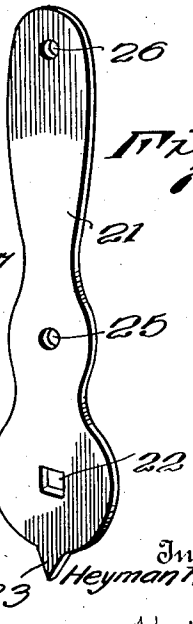


Fig. 3.



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UNITED STATES PATENT OFFICE.

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LOCK AND INDICATOR FOR DAMPERS.

1,324,620. Specification of Letters Patent. Patented Dec. 9, 1919.

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To all whom it may concern:

Be it known that I, HEYMAN ROSENBERG, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Locks and Indicators for Dampers; 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 present invention relates to dampers for controlling the passage of air and gases through pipes and ducts, and has more particular reference to an improved means for regulating the position of the damper and for securing it when adjusted.

The object of the invention is to provide a lock and indicator for attachment to dampers which are relatively simple in construction and inexpensive to manufacture, and which are provided with means for determining certain portions of the damper relative to the efficiency of the ventilating or heating system in which the damper is used.

There are a large number of damper adjustment devices which turn the dampers and hold them in position, but they lack the features of determining various positions of the damper for obtaining the desired efficiency in the heating or heat ventilating system to which the damper is applied. A damper in these systems is one of the most important adjuncts as it regulates the changing of temperature in rooms, schools, churches, auditoriums and residences, and also regulates the amount and discharge of foul air and gases. In these systems the engineer must exercise considerable skill in properly adjusting the dampers and in the adjustment and control of the same during use. It is found necessary to adjust the dampers in a certain position relative to the system installed for obtaining the desired results in the operation of steam boilers for the economy in the consumption of coal and in eliminating escape of asphyxiating gases from the system which have caused many deaths. The damper locks and indicators heretofore constructed have been found crude and unreliable for regulating the dampers to the degree of fineness required for efficiently operating the ventilating and heating systems.

It is another object of this invention therefore to provide a device for adjusting and holding a damper in the correct position, and to enable the operator to determine the correct position after a definite adjustment has been found.

With these and further objects in view as will in part hereinafter become apparent and in part be stated, the invention comprises certain novel constructions, combinations and arrangements of parts as subsequently specified and claimed.

In the accompanying drawings,—

Figure 1 is a front elevation of a damper apparatus constructed according to the present invention and as applied to a stove pipe or the like.

Fig. 2 is a vertical sectional view taken through the same.

Fig. 3 is a detail perspective view of the operating and retaining lever.

Fig. 4 is a detail, perspective view of a modified form of locking means for the adjusting lever.

Referring to the drawings by numerals, 10 designates a pipe or duct through which air or gases are adapted to flow, the passage through the pipe 10 being controlled by a damper plate 11 mounted upon a damper rod or shaft 12, the latter projecting through the side of the pipe 10 and being preferably non-circular in cross section.

The quadrant plate 13 is of sheet metal, circular in form and stamped to provide opposed outstanding ears 14 for the reception of sheet metal screws 15, or the like, for holding the plate 13 against the outer face of the pipe 10. The plate 13 is stamped to form at its central portion a raised circular boss or bearing 16 having a flat outer face suitably apertured to receive the outer end of the damper rod 12 therethrough and being circular in contour to admit free turning of the rod. Near the outer edge portion of the plate 13 the latter is provided with an outwardly pressed annular boss or ring 17 concentric to the boss 16 and having a flat outer face lying in the plane of the flat face of said boss. The ring 17 has parallel circular walls producing an annular groove-like passage therebetween. The ring 17 is provided in its outer face and at one side of the plate 13 with an arcuate slot 18 extending through substantially ninety degrees and through which projects a clamping bolt 19. The head of the bolt 19 is housed within the passageway between the

walls of ring 17, and a winged nut 20 is threaded on the outer end of the bolt 19.

A lever or handle 21, which is preferably stamped from sheet metal, is provided at one end with a non-circular opening 22 therethrough adapted to fit over the non-circular outer end of the damper rod 12. Preferably, the lever 21 is arranged upon the rod 12 in such position that the longitudinal axis coincides with the plane of the damper plate 11 so that the position of the lever 21 exteriorly upon the pipe 10 determines the position of the damper plate 11 within the pipe. The end of lever 21, having aperture 22 will, for convenience, be referred to as the inner end, and is provided with a projection 23 which may be formed integral with the handle 21 and which forms a pointer of sufficient length to traverse the outer face of the ring 17 diametrically opposite to the arcuate slot 18. The ring 17 has on its outer flat face and diametrically opposite the slot 18 a row of radial graduations 24 which may be suitably identified by numbers or the like as shown for determining the various positions of adjustment of the damper plate 11 when the handle 21 is moved and the pointer 23 traverses the graduations. The scale of graduations 24 extends through substantially ninety degrees, and the boss 17 may be provided on its outer face with suitable indicia designating the extreme open and closed positions of the damper.

The lever 21 is adapted to be secured in position when adjusted according to the position of the pointer 23 upon the scale of graduations 24, and for this purpose the lever 21 is provided intermediate its ends with a second opening 25 through which the bolt 19 is adapted to project. The binding nut 20 on the outer end of the bolt is adapted to urge the handle 21 into intimate contact with the boss 17 to frictionally retain the handle from movement.

In Fig. 1 the parts are shown as adjusted and clamped in a position, as indicated upon the scale 24, for holding the damper plate 11 half open. Under certain conditions, dependent upon the installation of the heating or ventilating system, it is found that certain results are obtained by the adjustment of the damper plate into one-quarter, one-eighth, and other minutely adjusted positions. These positions of adjustment cannot be accurately obtained by use of the damper quadrants at present in use, with the result that each person who controls the damper must necessarily experiment with the same and use the damper in various positions until the desired results are obtained. Defects in the heating or ventilating system, aside from the adjustment of the damper, have to be taken into consideration, and frequently cannot be ascertained or located when the normally required adjustment of the damper is not known. It is for these reasons that it is found necessary in the installation of these systems, and for obtaining the maximum efficiency of the same, for securing the desired results of heating and ventilating, that a means be provided for determining the exact position of the damper. The wing nut 20 is adapted to bind the lever 21 in adjusted position, and in large systems where it is desirable to have the dampers under the control of the engineer in charge only, suitable means may be provided for locking the parts in adjusted position so that they cannot be tampered with by others working around the building.

The outer end of the lever 21 may be provided with an aperture 26 through which a tag or the like may be secured for identifying the particular duct or pipe with the part of the building to which the pipe leads. This is for the purpose of contra-distinguishing a number of the dampers from each other where the system includes a plurality of pipes or flues.

One means for locking the damper in adjusted position, so that unauthorized persons cannot change the adjustment of the damper, is shown in Figs. 1 and 2 wherein one of the wings 27 of the clamping nut is provided with an aperture therethrough adapted to register with a corresponding opening formed in a pivoted lug 28, the latter having a shank 29 which is riveted or otherwise pivotally secured through the handle 21 near the nut 20. The lug 28 is adapted to be swung upon its shank 29 into overlapping relation with respect to the wing 27 of the binding nut after the latter has been properly adjusted. The shackle 30 of a pad-lock, or the like, is adapted to be placed through the openings in the wing 27 and the lug 28 for locking the parts together and preventing release of the handle 21 without first removing the pad-lock.

Another and more simplified means for locking the handle 21 in adjusted position is shown in Fig. 4, wherein the clamping bolt 19 is provided with a substantially cylindrical binding nut 31 having two or more apertures 32 in its outer end adapted to receive the fingers 33 of a key 34. The nut 31 is thus constructed so that it cannot be turned to release the handle 21 by means other than the key 34, and the key may be retained in the possession of an authorized party who is capable of correctly adjusting the damper.

From the above it will be apparent that the device is not only relatively simple but is extremely neat in design, may be used in connection with all forms of hot and cold air systems, requires but two rivets or screws for securing the ears 14 to the side of the pipe, and the ears do not require bending in order to hold the segment plate against

the pipe. While a damper rod 12 has been illustrated in the drawing, and has been above described, it is, of course, understood that any suitable bearings or other devices may be equally as well employed for supporting the damper and connecting it to the handle 21.

What I claim is:—

1. In damper apparatus of the kind described, the combination of a plate having a circular boss stamped outwardly therefrom and also having a ring stamped outwardly concentric to the boss and spaced therefrom, the walls of the ring forming a groove-like passageway, a damper shaft extending through the boss, an operating lever engaging said shaft and extending across said ring, the ring being formed with a slot in its outer face, a bolt extending through the slot and arranged with its head in the passageway of the ring and of larger dimensions than the width of the slot, the said bolt extending through the lever, and a clamping nut on the bolt at the outer face of the lever.

2. In damper apparatus of the kind described, the combination of a plate having a circular boss stamped outwardly therefrom and also having a ring stamped outwardly concentric to the boss and spaced therefrom, the walls of the ring forming a groove-like passage-way, the boss and ring each having a flat outer face lying in the same plane, a damper shaft extending through the boss, an operating lever engaging said shaft and extending across said ring, the ring being formed with a slot in its outer face, a bolt extending through the slot and arranged with its head in the passageway of the ring and of larger dimensions than the width of the slot, the said bolt extending through the lever, and a clamping nut on the bolt at the outer face of the lever, the lever having a portion extending beyond the damper shaft and provided with a pointer overlying the flat face of the ring, and said face of the ring being formed with graduations relative to which the pointer is adapted to be moved with movements of the lever.

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

HEYMAN ROSENBERG.

Witnesses:

VINCENT W. WOYTISEK, Jr.,

HUBERT HERFFELD.