Nov. 1, 1932. H. ROSENBERG 1,885,548

DAMPER APPARATUS

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FIG. 1.

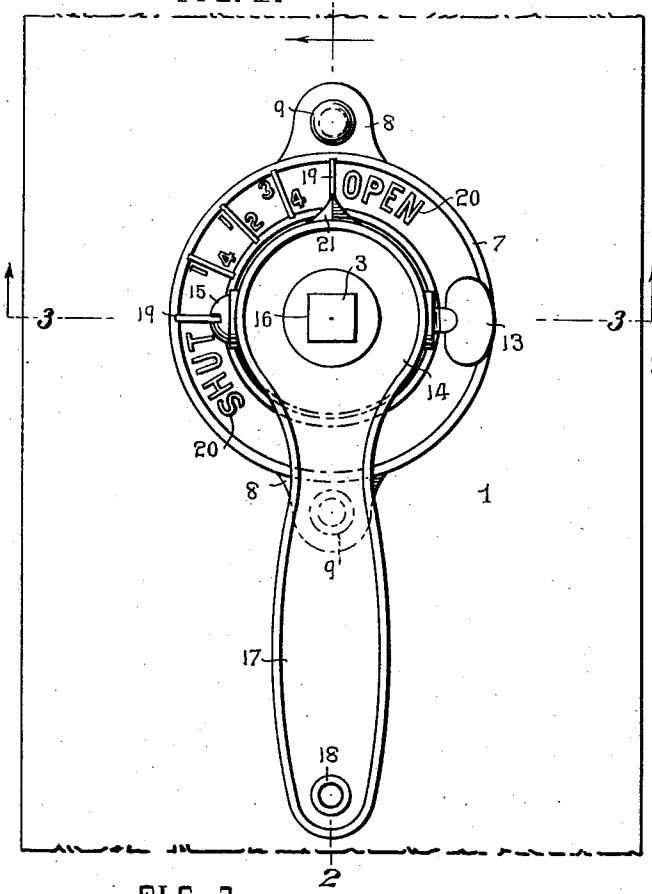


FIG. 2.

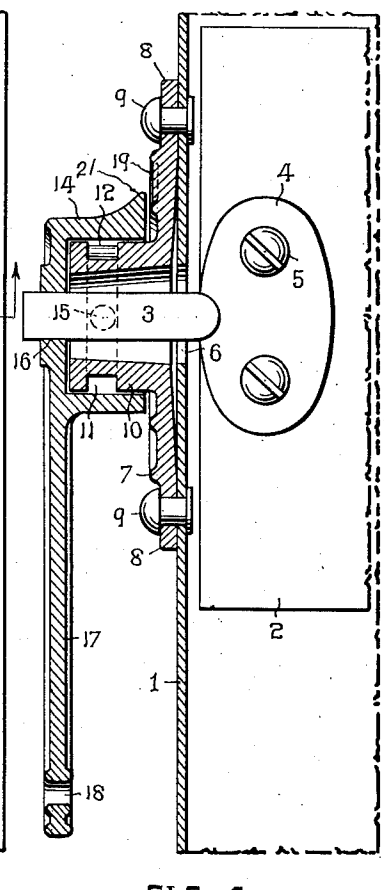


FIG. 3.

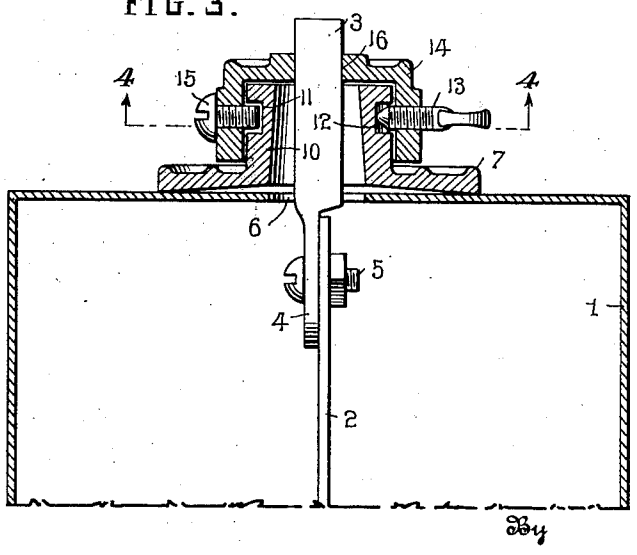
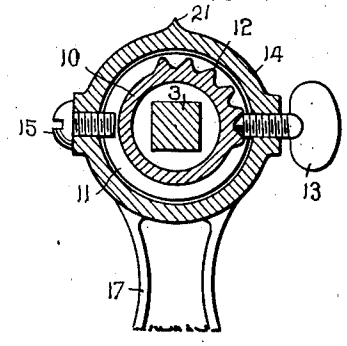


FIG. 4.



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FIG. 5.

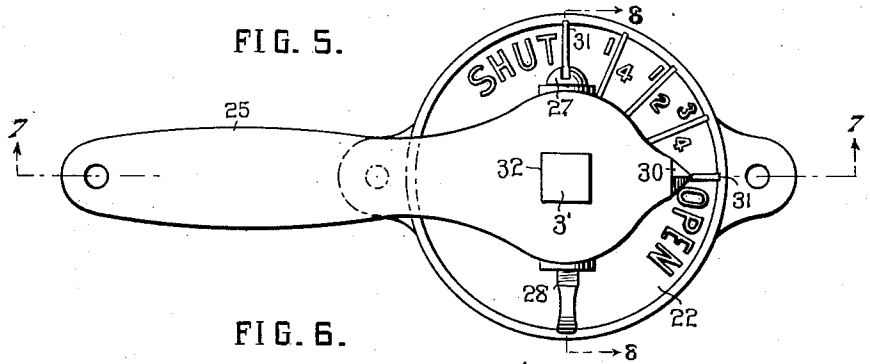


FIG. 6.

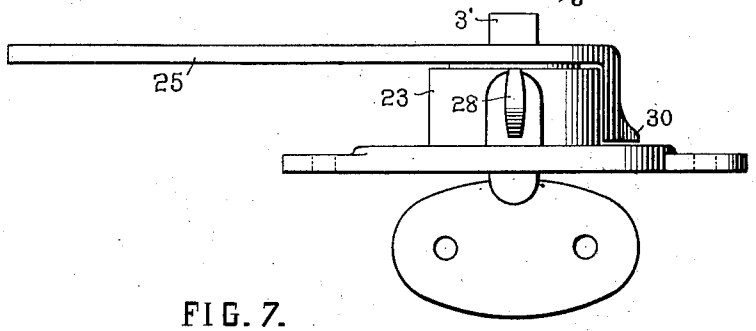


FIG. 7.

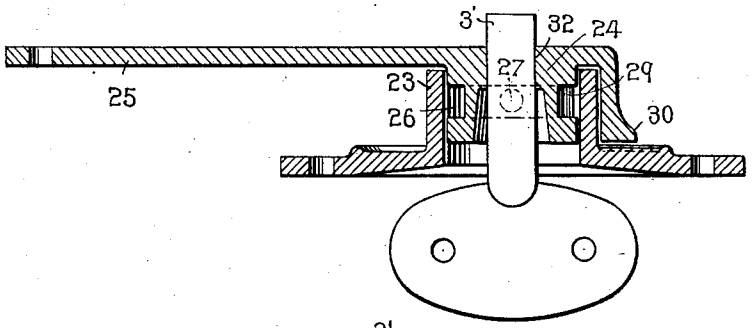
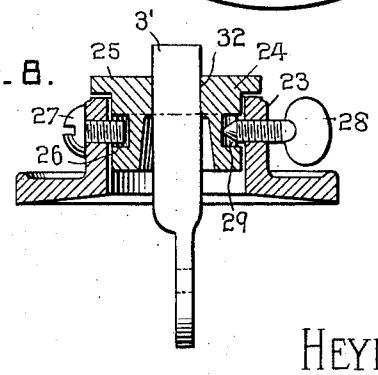


FIG. 8.



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UNITED STATES PATENT OFFICE

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DAMPER APPARATUS

Application filed May 27, 1931. Serial No. 540,481.

This invention relates to improvements in that type of damper apparatus in which a bearing plate is attached to the flue or duct into which the damper is to be inserted and is proportioned to enable subsequent introduction of the damper and to provide a bearing and actuator for the supporting rod of the damper such, for example, as the type of damper apparatus illustrated in my Patent No. 1,326,096, dated December 23, 1919.

Among the objects in view is the provision of an effective mounting for a damper at a minimum expense while enabling ready introduction and removal of the damper and also enabling effective operation of the damper in use and the retention of the damper at various set positions from time to time.

A further object is simplicity and inexpensiveness of construction assuring ease of assemblage and detachment of parts.

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 side elevation of a damper attachment embodying the features of the present invention.

Figure 2 is a vertical section therethrough taken on the plane indicated by line 2—2 of Figure 1, and looking in the direction indicated by the arrow.

Figure 3 is a horizontal section taken on the plane indicated by line 3—3 of Figure 1, and looking in the direction indicated by the arrows.

Figure 4 is a vertical, transverse section through the bearing portions taken approximately on the plane indicated by line 4—4 of Figure 3.

Figure 5 is a view similar to Figure 4 with the duct omitted and a slightly modified embodiment illustrated.

Figure 6 is an edge view thereof.

Figure 7 is a longitudinal, vertical, central section therethrough, the damper attaching plate and stem being seen in elevation, and the section being taken on the plane indicated by line 7—7 of Figure 5.

Figure 8 is a transverse, vertical section taken on the plane indicated by line 8—8 of Figure 5.

Referring to the drawings by numerals, 1 indicates a duct or flue or like passageway for air, burnt products, or the like, which passageway is controlled by an appropriate damper 2 having the usual longitudinal, outstanding stems or bearing rods 3 directly carried by an attaching plate 4 which is appropriately fixed to the damper 2 by bolts or other securing means 5. The flue or duct 1 is formed with the usual opening 6 for the ready passage of the stem 3, the opening being sufficiently large to allow a certain amount of lateral play in the insertion of the damper into place. While the corresponding opposing stem for the damper 2 is not illustrated, it is well understood that the bearing opposite the opening 6 is proportioned to provide a direct support for the stem and to allow only sufficient play to enable free rotation, so that the stem that is not illustrated is inserted first, and then the damper 2 is moved to position for thrusting the stem 3 through the opening 6.

All of the thus far described structure is of the common form long well known in the art, and it has been customary also to provide an operating lever for engagement with the stem through the opening 6 so connected as to provide an appropriate bearing for the stem which will prevent excessive play of the stem in the opening 6.

In carrying out this idea in an inexpensive and efficient manner according to the present invention, a bearing plate 7 is provided and is sometimes referred to as a dial plate because of its contour, but, of course, its shape is susceptible of a wide range of variation. Bearing plate 7 may be connected to the adjacent wall of duct 1 in any of numerous ways, but preferably by ears 8, 8 formed integral with the plate and perforated to receive the rivets or other appropriate attaching means 9, 9, engaging the ears and the wall of duct 1. Outstanding from the central portion of the plate 7, and preferably formed integral

therewith, is a tubular boss 10, the inner end of the bore or tube of the boss being preferably substantially of the same diameter as opening 6, and the said bore preferably tapering outward to the extent available consistent with the required lateral play of stem 3 in being inserted and removed. The exterior periphery of boss 10 is preferably substantially cylindrical, and is provided with a circumferential, outwardly-opening groove 11. A segment of the base of groove 11 is preferably formed with an arcuate rack or series of rounded teeth 12 for providing depressions therebetween to receive the tapered end of a locking screw 13. Detachably surrounding and finding bearing on the boss 10 is a cap 14 through one of the walls of which the screw 13 extends, and the screw 13 is preferably provided with a thumb-grip head to facilitate manual operation. The screw 13 is inserted through the wall of the cap 14 at that place enabling the inner end portion of the screw to extend into the groove 11 in position to engage the depressions between the teeth 12. Preferably diametrically opposite screw 13 (but obviously susceptible of being relatively located) is a retaining screw 15 threaded through the wall of cap 14 in position to extend into the groove 11 so as to hold the cap against disconnection from boss 10 when the screw 13 has been backed off far enough to allow the cap to be rotated or adjusted axially on and about the boss 10.

The cap 14 is formed preferably centrally with an opening 16 proportioned to snugly receive the stem 3, and as the stem is preferably squared or polysided at the place of engagement with the opening 16, the rotation or angular adjustment of cap 14 will occasion corresponding angular adjustment of stem 3 and of the damper 2, the boss 10 serving as a journal and the skirt of cap 14 as the bearing for the parts during such angular adjustment. To facilitate such angular adjustment of cap 14, the cap is preferably formed with an integral or appropriately attached handle 17 which may be directly manually operated or may be engaged by a cable, not illustrated, connected through the aperture or eye 18 to the handle to enable operation from remote control.

The dial plate 7 is preferably provided with appropriate graduation marks 19,19, and with the words "Open" and "Shut" indicated at 20, 20, or other appropriate indicia to enable the operator to readily locate the damper when and as required in the proper angular relation to control the draft through flue 1. As a further aid, the skirt of cap 14 may be provided with an index pointer 21 located to cooperate with the graduations 19.

The operation will be obvious from the foregoing and may be briefly stated. To assemble the parts, the damper is first located as above described, and then the cap 14 is applied over the protruding end of stem 3 and over the boss 10, the screws 13 and 15 either being entirely absent at the time of such application or backed off far enough to be free of the boss 10. As soon as the cap has been applied, the bolt 15 is screwed down to the seated position seen in Figure 3, and thus the cap 14 is locked against accidental displacement. The cap is then adjusted to the desired angular adjustment, and the screw 13 thrust inward until its inner end is seated in engagement with rack 12 so that the parts are locked in the given position. Further adjustment thus becomes impossible until the screw 13 is again backed off when a new position may be assumed, and the screw 13 tightened to again lock the parts in place. If remote control is employed, the screw 13 will, of course, be left sufficiently outward to be free of the rack and enable the swinging of lever 17 by the cable engaging eye 18, the securing of the cable being depended upon to hold the parts in a given adjusted position.

In Figures 5 to 8 is illustrated an embodiment substantially identically the same as that above described except for the inversion of the bearing parts whereby a part corresponding to the boss is carried by the lever and is surrounded by an outstanding collar of the bearing plate. In this structure, 22 indicates the bearing or dial plate having the outstanding collar 23 into which is extended a boss 24 carried by an operating lever 25, which boss is grooved at 26 to receive the retaining screw 27 and the set screw 28, the groove 26 having a segmental rack 29 to receive the tapered end of the set screw 28. The lever is preferably provided with a pointer 30 disposed with respect to graduations 31 on plate 22. The lever 25 is formed with an aperture 32 for receiving the stem 3′ to actuate the damper carried by said stem. The screws 27 and 28 are, of course, carried by the collar 23.

The operation is the same as that described with respect to the embodiment of Figures 1 to 4 except that the boss member is sustained by the lever and serves to provide bearing by engaging the inner face of the outstanding collar of the bearing plate or dial.

What is claimed is:—

1. In damper apparatus, the combination of a bearing plate having an outstanding tubular portion, the bearing plate being adapted to be mounted fixed to the exterior of a damper-containing flue, a damper-stem engaging member telescoping with said tubular portion and movable into and out of engagement with the tubular portion longitudinally of the tubular portion while the tubular portion is thus mounted, means detachably interlocking the said stem engaging member and tubular portion against accidental detachment while leaving said parts

free for relative movement, and means for locking said parts against relative movement.

2. In damper apparatus, the combination of a bearing plate having an outstanding tubular portion, a damper-stem engaging member telescoping with said tubular portion, means detachably interlocking the said stem engaging member and tubular portion against accidental detachment while leaving said parts free for relative movement, means for locking said parts against relative movement, the interlocking means including a groove in one of the members and means adjustably extending from the other member into the groove.

3. In damper apparatus, the combination of a bearing plate having an outstanding tubular portion, a damper-stem engaging member telescoping with said tubular portion, means detachably interlocking the said stem engaging member and tubular portion against accidental detachment while leaving said parts free for relative movement, means for locking said parts against relative movement, the interlocking means including a groove in one of the members, a screw adjustably engaging the other member and extending into the groove, and a set screw engaging the member engaged by the other screw and extending into the groove in position for engaging a wall of the groove to lock the parts against movement.

4. The combination of a bearing plate, a hollow boss outstanding therefrom and having a circumferential groove, a cap surrounding the boss and finding bearing thereon and having an opening adapted to snugly receive a stem of a damper, and a screw extending through the skirt of the cap into the groove of the boss for detachably locking the parts together.

5. The combination of a bearing plate, a hollow boss outstanding therefrom and having a circumferential groove, a cap surrounding the boss and finding bearing thereon and having an opening adapted to snugly receive a stem of a damper, a screw extending through the skirt of the cap into the groove of the boss for detachably locking the parts together, and a screw also extending through the skirt of the cap and proportioned to be threaded into the groove to a position engaging a wall of the groove to lock the parts against relative movement.

6. The combination as claimed in claim 5 wherein that portion of the wall of the groove adapted to be engaged is formed into the shape of a rack to provide depressions to be engaged by the locking screw.

7. The combination, with a bearing plate adapted to be mounted fixed to the exterior of a damper-containing flue, of a collar outstanding from the plate and being open from its outer end inward, a handle having a boss extending into the collar from outward thereof and finding bearing therein, the boss being withdrawable outwardly freely from the collar, the said boss being formed with an opening proportioned to receive the stem of a damper, and means for detachably retaining the boss against escape from the collar.

8. The combination, with a bearing plate adapted to be mounted fixed to the exterior of a damper-containing flue, of a collar outstanding from the plate and being open from its outer end inward, a handle having a boss extending into the collar from outward thereof and finding bearing therein, the boss being withdrawable outwardly freely from the collar, the said boss being formed with an opening proportioned to receive the stem of a damper, means for detachably retaining the boss against escape from the collar, and a locking screw threaded through the collar into position for having locking engagement with the boss for retaining the latter against relative movement with respect to the collar.

9. The combination, with a bearing plate adapted to be mounted fixed to the exterior of a damper-containing flue, of a collar outstanding from the plate and being open from its outer end inward, a handle having a boss extending into the collar from outward thereof and finding bearing therein, the boss being withdrawable outwardly freely from the collar, the said boss being formed with an opening proportioned to receive the stem of a damper, the boss being formed with a peripheral groove, and a screw threaded through the collar into the groove for locking the boss against disengagement from the collar.

10. The combination, with a bearing plate, of a collar outstanding therefrom, a handle having a boss extending into the collar and finding bearing therein, the said boss being formed with an opening proportioned to receive the stem of a damper, the boss being formed with a peripheral groove, and a screw threaded through the collar into the groove for locking the boss against disengagement from the collar, the walls of the groove throughout a segment thereof being shaped to provide a segmental rack, and a set screw threaded through the collar in position for being threaded to a location extending between the teeth of the rack.

In testimony whereof I affix my signature.

HEYMAN ROSENBERG.