

(No Model.)

R. H. ARNOLD & E. S. STAPLES.

AUTOMATIC DAMPER.

No. 385,692.

Patented July 10, 1888.

Fig. 1.

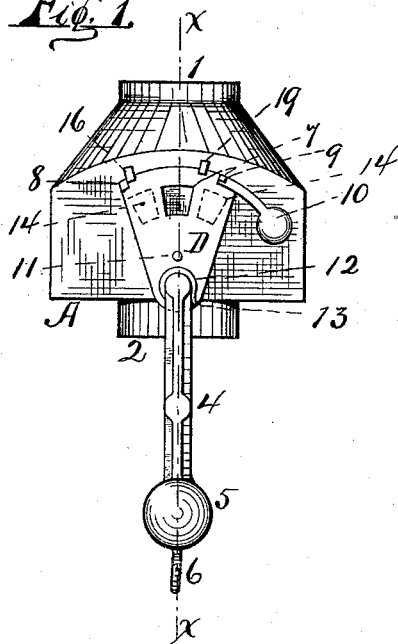


Fig. 2.

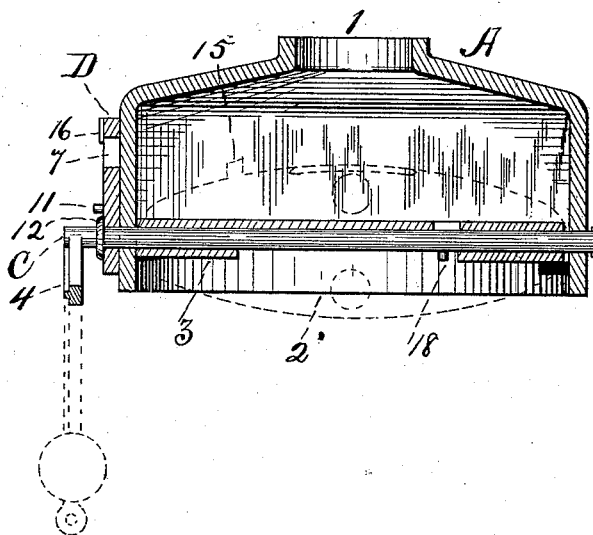


Fig. 3.

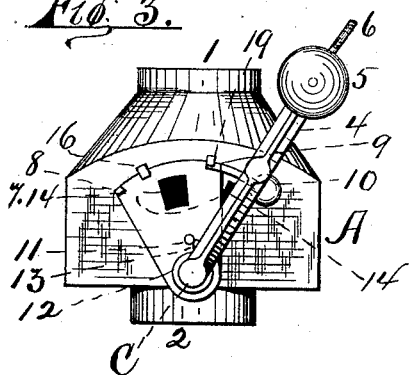
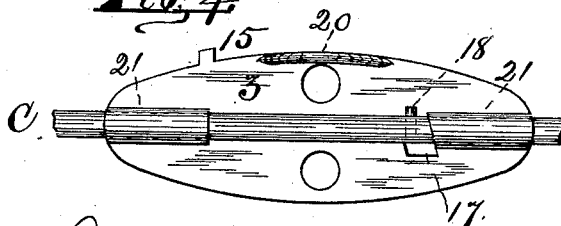


Fig. 4.



Witnesses,

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By their Attorneys
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UNITED STATES PATENT OFFICE.

ROUSE H. ARNOLD AND ELISHA S. STAPLES, OF SENECA FALLS, NEW YORK.

AUTOMATIC DAMPER.

SPECIFICATION forming part of Letters Patent No. 385,692, dated July 10, 1883.

Application filed March 26, 1883. Serial No. 268,473. (No model.)

To all whom it may concern:

Be it known that we, ROUSE H. ARNOLD and ELISHA S. STAPLES, of Seneca Falls, county of Seneca, in the State of New York, citizens of the United States, have invented certain new and useful Improvements in Automatic Dampers, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is an end elevation with damper open and cold-air slide closed. Fig. 2 is a longitudinal vertical section of Fig. 1 on line *xx*. Fig. 3 is an end elevation thereof with damper closed and cold-air slide open. Fig. 4 is a bottom plan view of the draft-shut-off damper upon its arbor and removed from the shell.

Our invention relates to dampers in the smoke-pipe of heating apparatus, whether steam, steam and hot air combined, hot air alone, or hot water, which are automatic in their action and operated by a diaphragm mechanism connected to the damper arm by a chain or cord, or in any other manner desired.

Our object is to produce an automatic damper having a compound action—viz., to first close the damper in the pipe to shut off the draft, and, secondly, thereafter to open a cold-draft slide to admit cold air into the smoke-pipe whenever the temperature rises above a specified point, and to close the cold-air openings, and following that to open the main-draft damper again whenever the temperature falls below the specified point.

It consists in the several novel features of construction and operation, which are hereinafter described, and are set forth in the several clauses of claim hereunto annexed.

It is constructed as follows: A is the body or shell of the damper, provided with the upper pipe-opening and collar, 1, the lower pipe-opening and collar, 2, to receive the pipe-sections, which shell is usually cast in one piece.

C is the damper-shaft, extending across the shell and journaled in holes on either side thereof, upon which we mount the draft-shut-off damper 3. Upon the projecting outer end is an arm, 4, and upon that is the weight 5, which may be integral with the arbor or adjustable thereon, and upon this ball is the eye 6, in which we fasten one end of the chain or cord.

D is the cold-air slide, provided with one or more openings, 7, and having a lug, 8, on one corner, a lug, 9, on the opposite corner, and a weighted arm, 10, upon that side, and a stud, 11, at about the position shown in the drawings. This slide is loosely and pivotally mounted upon the arbor C, between the collar 12 thereon and the end of the shell, and upon this collar, at substantially the point shown, we place a stud, 13.

In the front end of the shell, as shown by the dotted lines in Fig. 1, we make one or more openings, 14, both of which are in Fig. 1 covered by the slide, and in Fig. 3 are uncovered. The dotted lines in Fig. 2 show the draft-damper 3 open, and upon one side or edge thereof are a projecting stud, 15, and a weight, 20. This damper is provided with longitudinal and central tubular bearings for the shaft C, and is also provided with a slot, 17, adjacent to one of these bearings 21. Upon one side of the shaft C, and in proper position to at certain times coincide with the slot 17, we place a stud, 18.

It is operated as follows: As the temperature rises to the desired point, the operation of the diaphragm mechanism, (not shown) through its cord connection, lifts the arm 4, rotating the shaft C, the lug 18 engaging with the damper-body and throwing it over until the damper is closed, when the stud 15 catches or strikes against the inner face of the shell, after which the shaft will rotate freely independent of the damper. Just about the time the damper is closed the lug 13 engages with the stud 11, and the continued rotation of the shaft throws the cold-air slide over to the left until the opening or openings 7 coincide first partially and at length wholly with the opening or openings 14, and thus first partially opening and uncovering the openings 14 simultaneously. The lowering of the temperature, and consequent operation of the diaphragm, first lowers the arm 4 with the assistance of the weight, and simultaneously therewith, through its weight 10, the slide D follows the arm, first gradually and finally wholly closing the opening or openings 14, and then the stud 16 and the lug 8 meet each other, and the slide is held in a closed position. Then the studs 11 and 13 disengage, and the continued downward movement of the arm 4, through the engagement of

the stud 18 with the damper, opens it and thus lets on the draft. The operation of the weight 20 is to hold the damper 3 closed, except when it is held open by the stud 18 bearing against the damper, which stud becomes disengaged from the damper when it is closed by the rotation of the shaft C. When the slide D is open, the hook 19 on the shell and the shoulder 9 on the slide engage with each other.

10 What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a damper, a cold-air slide mounted upon a main-damper arbor and operated by the rotation of the arbor and in combination 15 therewith, substantially as described.

2. A cold-air slide mounted upon the draft-shut-off arbor and operated by the rotation thereof, and provided with a weight on one side and in combination with said arbor, substantially as described. 20

3. The combination, with the damper-shell provided with openings in one end, of a cold-draft slide mounted upon the shut-off arbor, and stop-hooks upon the shell and stop-lugs 25 upon the slide and a weight thereon, substantially as described.

4. The combination, with the arbor C, pro-

vided with a stud, 13, of the slide D, mounted upon said arbor and provided with a stud, 11, substantially as described. 30

5. The combination, with the arbor C, provided with the weighted arm 4 and stud 13, of the slide D, upon said arbor and provided with a stud, 11, and side weight, 10, substantially as described. 35

6. The combination, with the damper-shell, of a rotating arbor mounted therein and provided with a weighted arm and stud 13, and a cut-off damper mounted thereon, and a slide mounted upon said arbor and provided with 40 a stud, 11, substantially as described.

7. The combination, with a damper-shell, of a rotating arbor mounted therein and provided with a weighted arm, and a damper loosely mounted thereon, and a stud upon the arbor 45 engaging with the damper, substantially as described.

In witness whereof we have hereunto set our hands this 3d day of March, 1888.

ROUSE H. ARNOLD.
ELISHA S. STAPLES.

In presence of—

C. W. SMITH,
H. P. DENISON.