

(No Model.)

H. W. AVERY.
PIPE DAMPER.

No. 413,841.

Patented Oct. 29, 1889.

Fig 1.

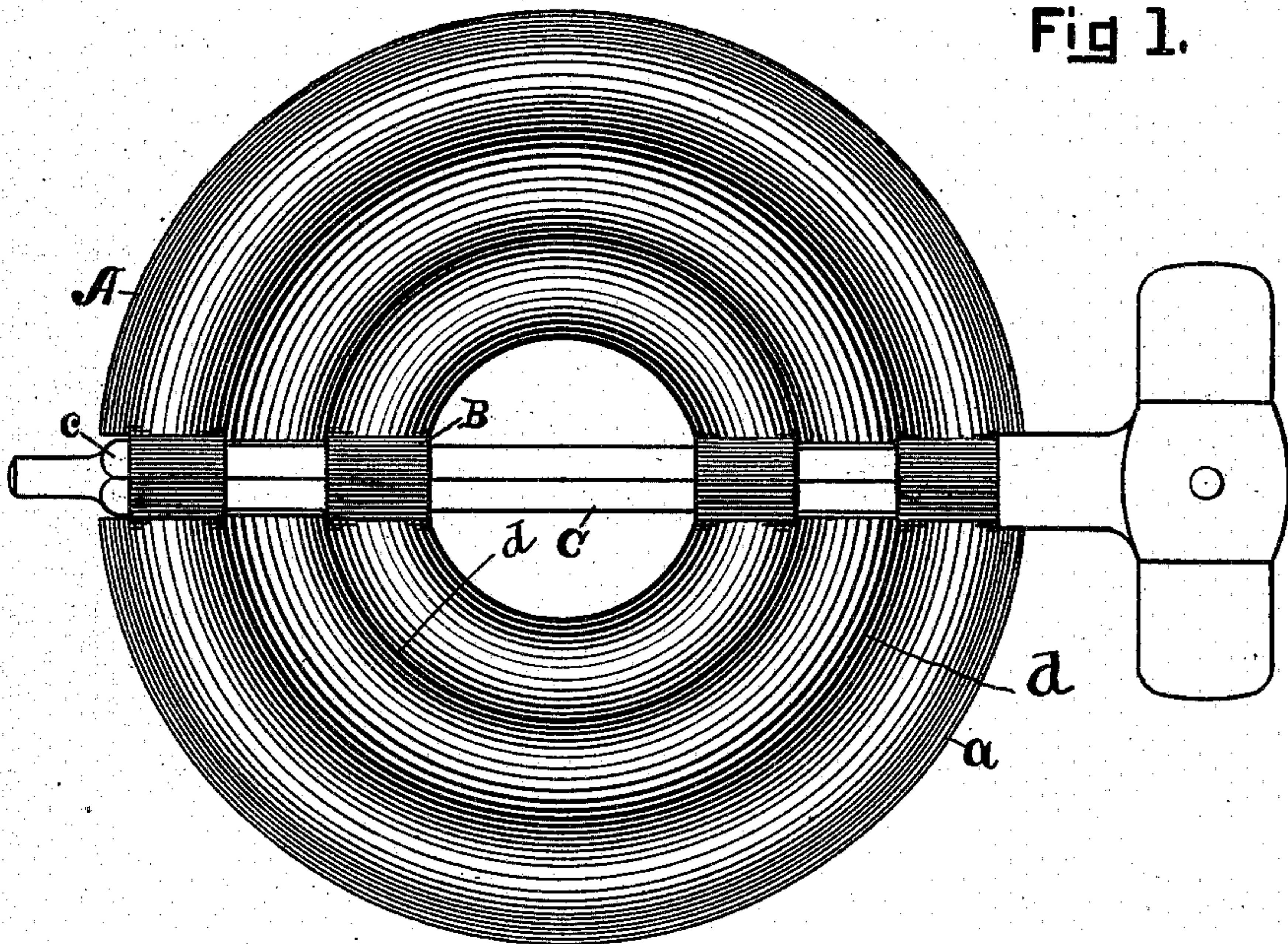


Fig 2.

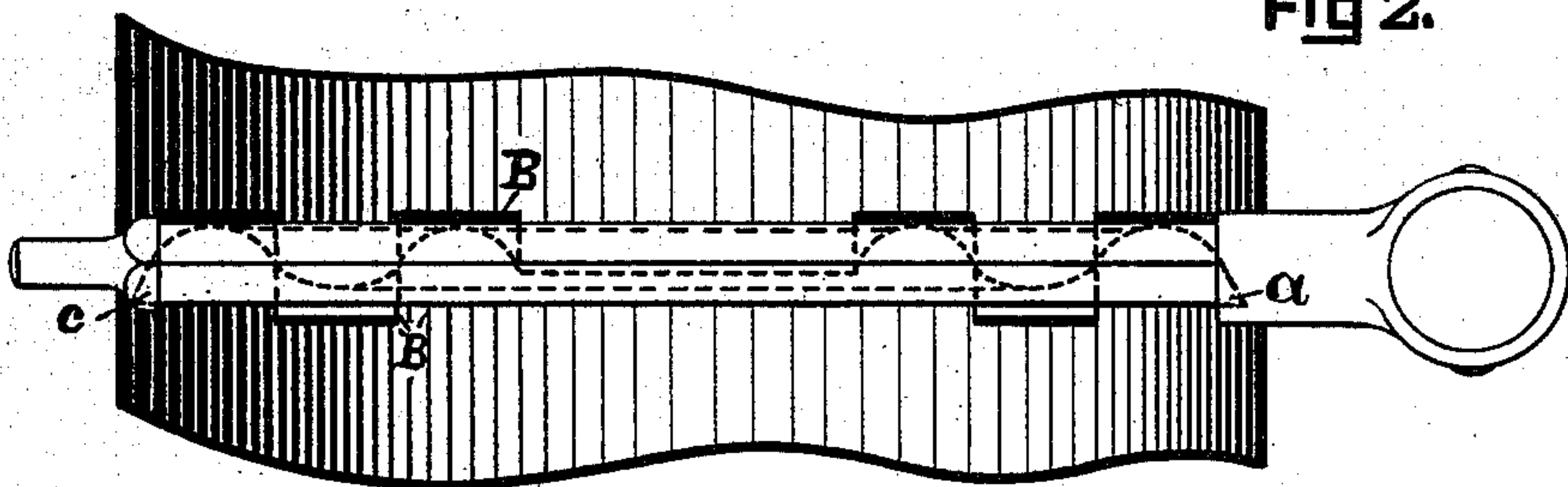
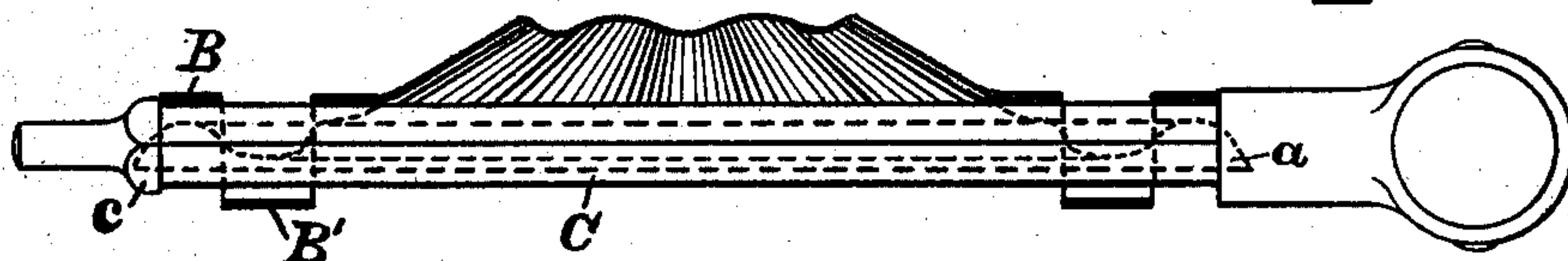


Fig 3.



WITNESSES.

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PIPE-DAMPER.

SPECIFICATION forming part of Letters Patent No. 413,841, dated October 29, 1889.

Application filed January 28, 1889. Serial No. 297,864. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. AVERY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Pipe-Dampers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of my improved damper. Fig. 2 is a central vertical sectional view thereof. Fig. 3 is a central vertical sectional view of a modified and improved form of my damper.

My invention relates to that class of dampers which are most commonly used in stove-pipes.

The object of my invention is to make an efficient and durable damper from sheet metal; and to this end it consists in the construction and combination of parts herein described, and pointed out definitely in the claims.

Referring now to the drawings, A represents a plate of sheet metal (steel being preferred) of the proper form, usually circular, having a hole through its center.

B B' represent a line of straps integral with said plate, which are cut and bent by suitable dies, so that a straight damper-rod may be connected with the damper by the straps, each alternate strap lying on opposite sides of the rod. The shape into which these straps are bent will of course conform to the shape of the damper-rod to be used. If a square rod be used, the straps will be bent in the form of a right angle and alternately in opposite directions, as shown.

In order to prevent the plate A from being warped out of shape by the action of the heat in the pipe, said plate is provided with the annular corrugations *d d*. The straps B, which lie above the horizontal central line of the damper, are bent from that part of the damper-plate which is bent upward in forming the corrugations *d*, and the lower straps B' are formed in the downwardly-bent corrugations *d*. This renders it easy to bend the straps to the proper shape and in the proper direction without bending the metal much more than it is bent in the act of corrugating it.

C represents a damper-rod adapted to be

used with the above-described damper-plate A. At one end of this rod a shoulder *c* is formed, care being taken not to make the cross-sectional area of the rod at this shoulder so great as to prevent its passing between the straps B B' to connect it to the damper-plate. This shoulder may extend around the rod, or it may be formed on the upper side of the rod only. The end of the rod beyond this shoulder, where it is supported by the pipe, is reduced in size, as shown, whereby the shoulder *c* prevents the rod from being pushed too far through the pipe. When the damper-plate is placed in the pipe, the rod is pushed through one side of the pipe, then between the straps B B', and then through the hole provided in the other side of the pipe. In so doing the shoulder *c* passes beyond the straps, when the weight of the damper-plate causes it to settle down on the smaller central part of said damper-rod. It will be found that any accidental withdrawal of the damper-rod is now impossible, because, unless precautions are taken to prevent such action, the shoulder *c* will strike against the strap B and prevent the removal of said rod.

It will be noticed that when the parts are constructed as is herein shown the shoulder *c* would cause a small space to be left around the plate and between it and the pipe. In order to fill out this space, the annular flange *a* is turned over, substantially as shown, which causes the damper-plate to fit the pipe, and also aids in preventing any warping of the plate A by the heat.

In Fig. 3 the damper-plate is shown with its central portion made conical and also corrugated. The conical shape adds strength to the damper, both from its shape and because it also permits of a smaller hole in the center of the damper to get an equal amount of draft when the damper is closed, the inclined sides of the conical portion directing the current through the hole, instead of deflecting it backward, as is the case with a flat damper.

Among the advantages of the damper herein described over a cast-iron damper are that it is lighter, is not so easily broken, and is cheaper, because in making it small pieces of sheet metal (steel) which are left after other articles are made, and which has hitherto

only been useful to sell as "scrap," can be utilized.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A sheet-metal damper-plate A, having the annular corrugations $d\ d$ and the alternately-bent straps B B', the upper straps being bent from the upwardly-bent corrugations and the lower straps from the downwardly-bent corrugations, substantially as and for the purpose specified.

2. A sheet-metal damper-plate A, having the annular corrugations $d\ d$, the alternately-bent straps B B', and the downwardly-bent annular flange a , combined with a damper-rod C, having a shoulder c , substantially as and for the purpose specified.

3. A sheet-metal damper-plate having a substantially-horizontal rim with annular corrugations, a conical central part with an opening therethrough, and the alternately-bent straps B B', substantially as and for the purpose specified.

4. A sheet-metal damper-plate having the alternately-bent straps integral therewith, combined with the damper-rod C, having the shoulder c upon the upper side of said rod, whereby the weight of the damper causes it to engage with said shoulder c , substantially as and for the purpose specified.

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Witnesses:

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