No. 711,653. Patented Oct. 21, 1902.

N. BURDICK.

DAMPER FOR STOVES, RANGES, &c.

(Application filed May 14, 1901.)

(No Model.)

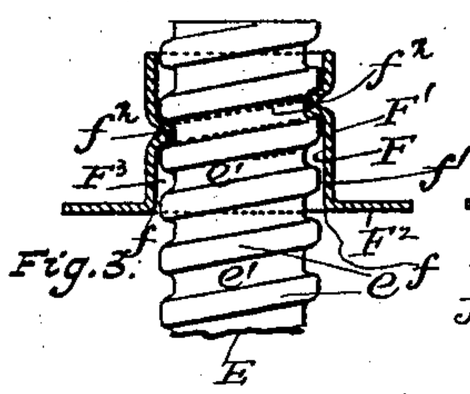


Fig. 3.

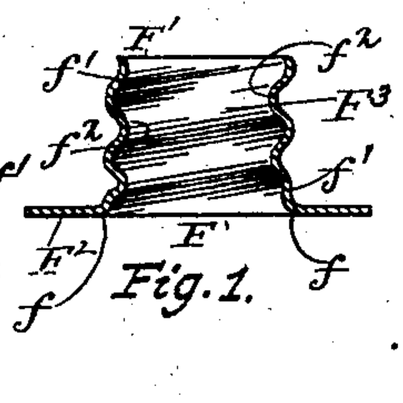


Fig. 1.

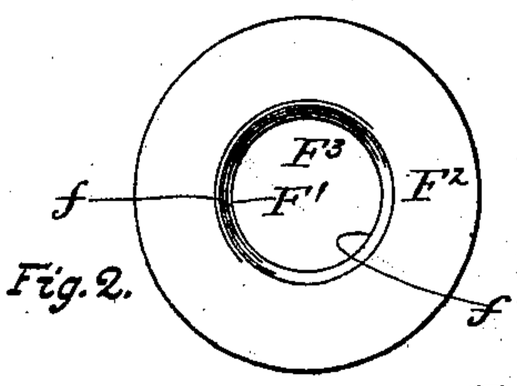


Fig. 2.

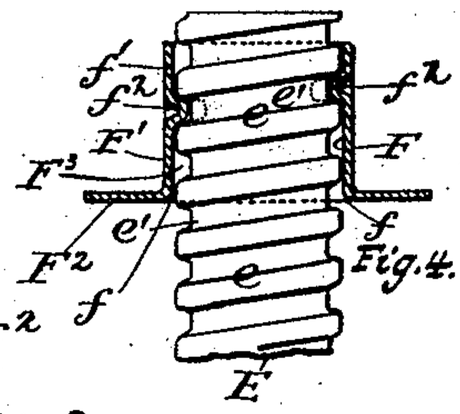


Fig. 4.

Fig. 5.

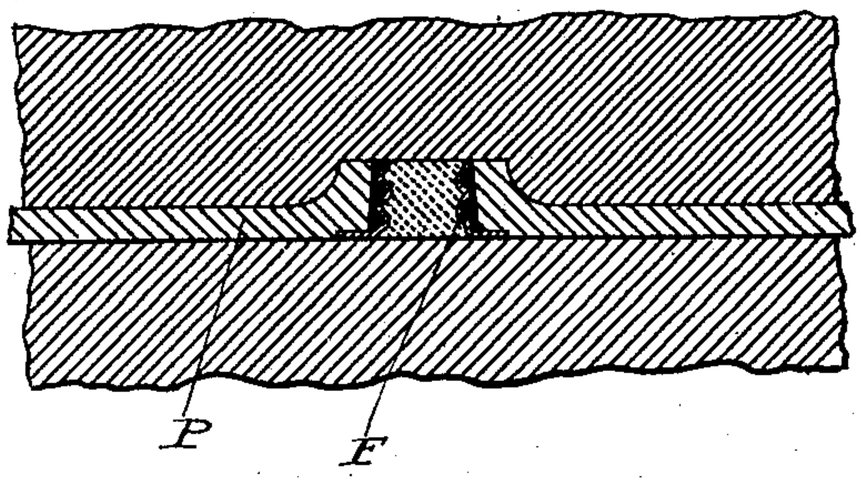


Fig. 6.

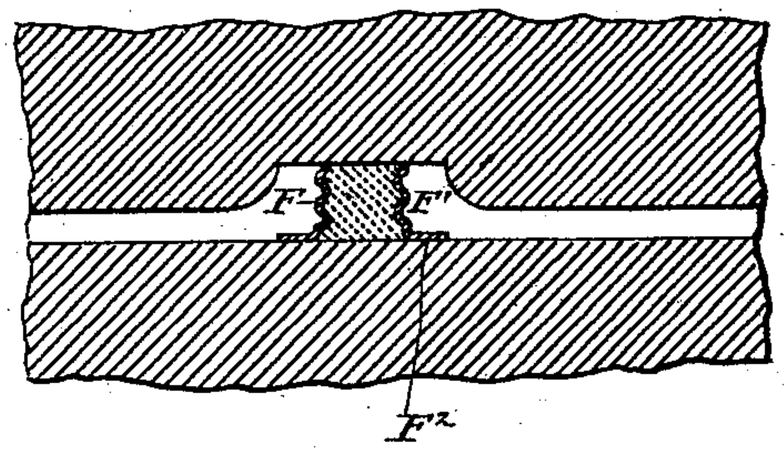


Fig. 8.

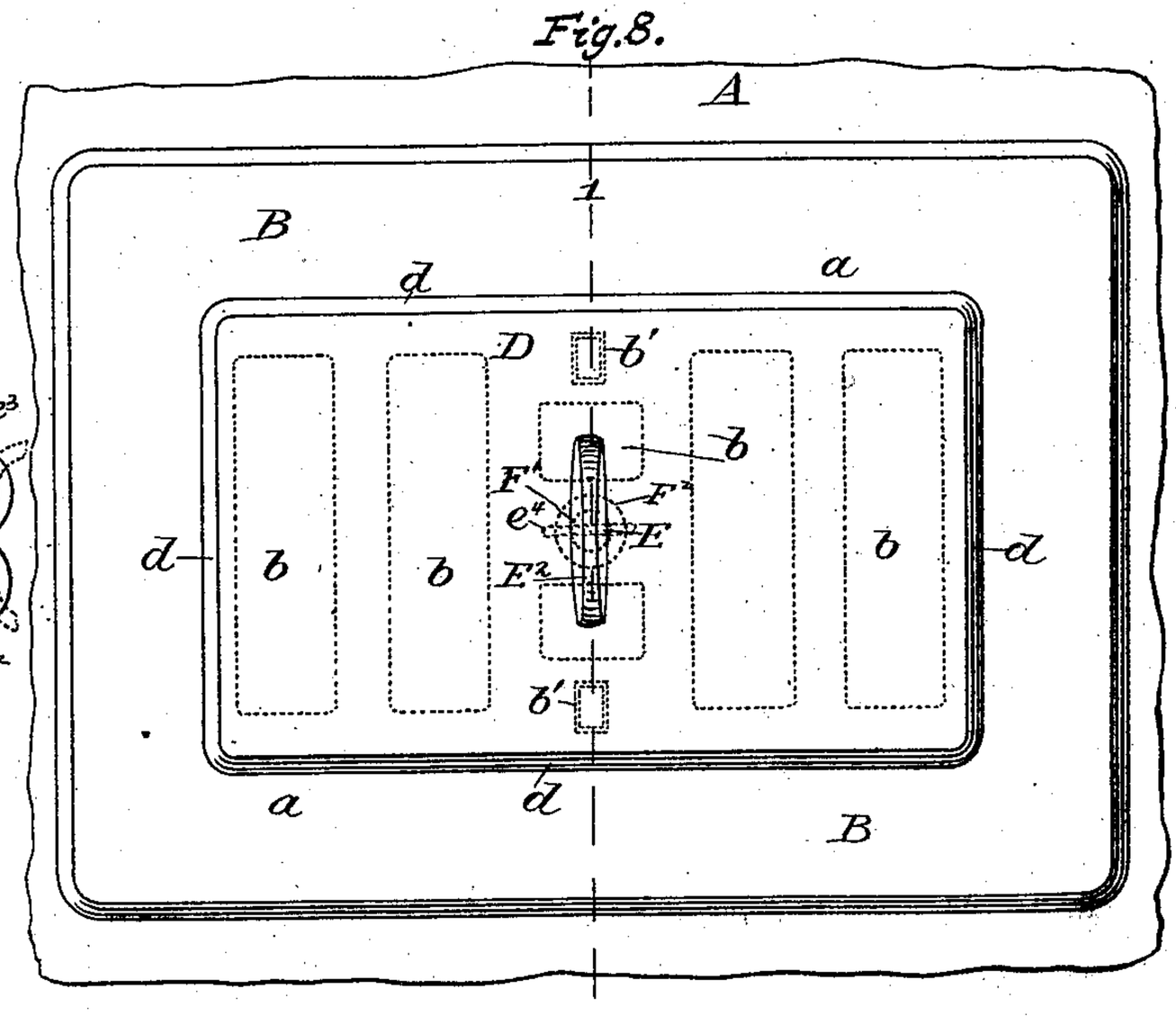


Fig. 9.

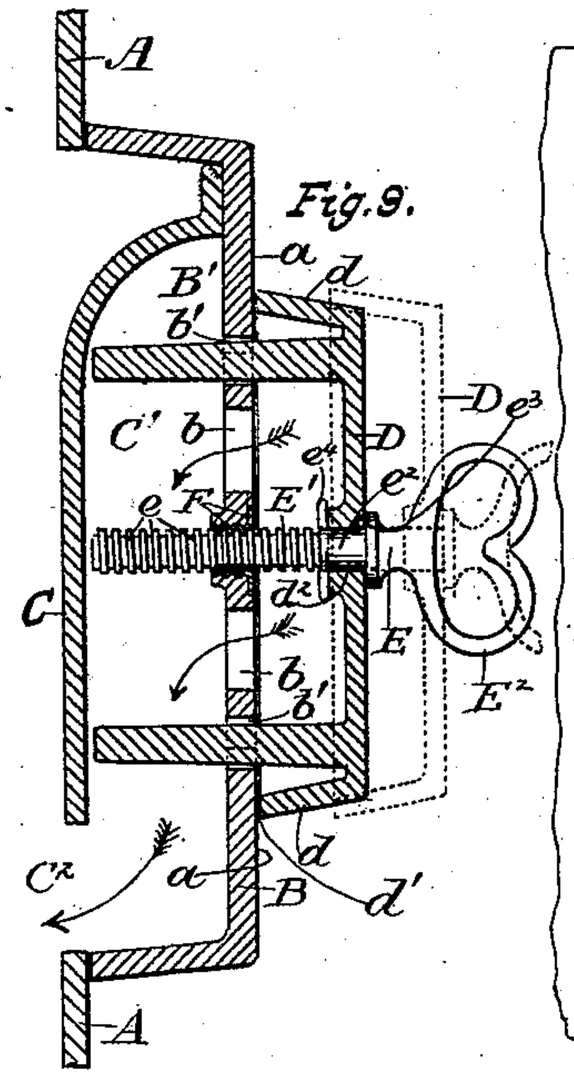
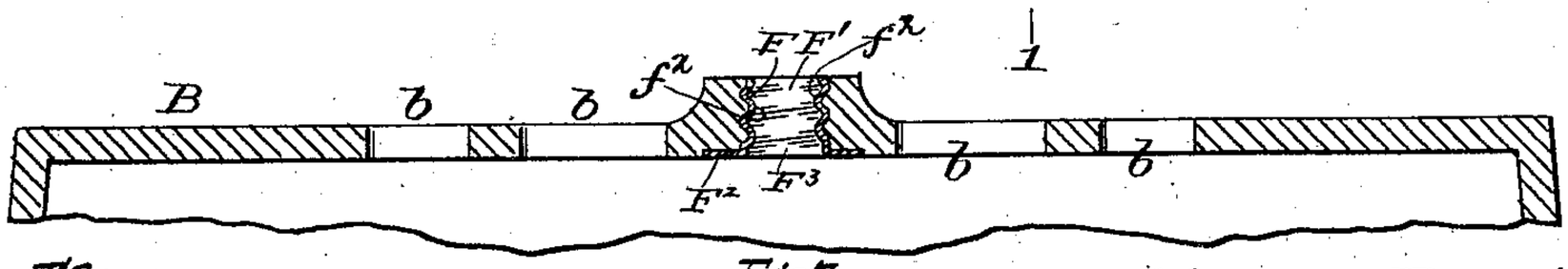


Fig. 7.



Witnesses,
Charles Breese
A. Lukins Jr.

Norman Burdick,
Inventor,
by Alex. Belkirk
attorney

UNITED STATES PATENT OFFICE.

NORMAN BURDICK, OF ALBANY, NEW YORK.

DAMPER FOR STOVES, RANGES, &c.

SPECIFICATION forming part of Letters Patent No. 711,653, dated October 21, 1902.

Application filed May 14, 1901. Serial No. 60,151. (No model.)

To all whom it may concern:

Be it known that I, NORMAN BURDICK, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented new and useful Improvements in Dampers for Stoves, Ranges, &c., of which the following is a specification.

My invention relates to improvements in a damper employing an air-admission plate which is provided with a suitable perforation having in it one or more internal screw-thread-engaging projections, formed of sheet-tin and cast metal, of said plate, fused to the exterior side of the said shell and adapted to engage with the screw-thread of an operating-spindle, which also freely works through a suitable perforation provided in a flatwise-moving damper-plate for carrying it toward and from said air-admission plate, and also relates to a sheet-tin shell of novel construction which adapts it to be readily placed in a sand mold, so as to become a part of the same in the sand and become a part of the said air-admission plate when cast; and it consists in certain novel features of construction of parts and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

The object of this invention is to remedy certain defects and obviate difficulties attending the construction of some of the parts of a damper and to facilitate the production and assemblage of the operating parts in this class of dampers. I attain these objects by means of the elements and parts shown in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an elevation in section of a spindle-engaging shell which I employ as one of the elements in this invention. Fig. 2 is a plan of the same. Fig. 3 is a modification in section of said shell. Fig. 4 is another modification in section of the same. Fig. 5 is a section of a pattern of the air-admission plate with the shell in place therein and between the nowel and cope of the mold and ready to be parted for removal of the pattern. Fig. 6 is a section of the two parts of the mold in place, with the shell in place in the mold and ready to receive the molten metal. Fig. 7 is a section of the air-admission plate after being cast, having the spindle-engaging shell united therewith by its partial fusion with the cast metal of the said plate. Fig. 8 is a plan of the damper air-admission plate, having the spindle-engaging shell forming a portion of the same latter plate and having certain adjuncts combined with the damper and air-admission plate; and Fig. 9 is a section taken at line 1 in Fig. 8.

The same letters of reference refer to similar parts throughout the several views.

In the drawings, A is a door-plate or other plate of a stove or range, which plate may be of any form of construction suitable to enter into the structure of the stove or range.

B is the air-admission plate, which may be an integral portion of a door of the stove or range or a fixed plate of the same and may be rectangular, circular, or other form, as may be preferred. In this plate B are provided suitable air-admission openings *b b*, (shown by full lines in Figs. 7 and 9 and indicated by dotted lines in Fig. 8,) and is also provided with one or more guiding-perforations *b'*. (Shown in Fig. 9 and indicated by dotted lines in Fig. 8.)

C is a hot-air-deflecting plate, which plate may be of any suitable form and proportions and suitably secured, preferably, to the air-admission plate and having its upper end portion closing the upper portion of the chamber C' between air-admission plate B and said hot-air-deflecting plate against the escape of air to the combustion-chamber (not shown) of the stove. This hot-air-deflecting plate *c* is extended to a suitable distance relatively below the plane of the lower ends of the air-admission openings *b*, provided in the said air-admission plate B. This hot-air-deflecting plate becomes heated by the heat reflected from the fire in the combustion-chamber, so as to adapt said plate to heat the air-currents passing when the damper is open through the air-admission openings *b* into the chamber C' and moving therein in contact with said plate C and then discharged into the combustion-chamber C^2 above the surface of the fire, (not shown,) as indicated by arrows in Fig. 9.

D is the damper-plate, which is solid in its body and is preferably provided all around with the flanges *d d*, having their edges *d'* fitting nicely the surface *a* of the plate B, as shown in Fig. 9. This damper-plate is pro-

vided with one or more retaining-arms, which extend inward and enter perforations b' in plate B, so as to prevent the damper-plate turning in either direction when the spindle E is revolved.

Spindle E comprises the stem E', screw-threads e, having between their spirals the spiral groove e', journal e^2, which revolves in bearing d^2 in the damper-plate, shoulder e^3, key-form keeper e^4, and handle E^2 for revolving said spindle.

The air-admission plate B is provided at a suitable place, and preferably relatively central therein, with a suitable screw-engaging perforation B', which is preferably circular in form and having projected inwardly from its circumferential metal wall and toward its center a suitable screw-engaging projection f^2, adapted to work freely in the spiral groove e' between the turns of the threads e on the stem of the spindle E. The projection f^2 may be in the form of a screw-thread having two or more turns and adapted to work between those of threads e on said spindle or consist of a single turn of a screw-thread or of one or more projections of short extension in direction of the lines of circumference of the perforation B', as may be had from one or more portions of one full turn of a screw-thread for adapting the same for engagement with the screw-threads on said spindle. For producing said spindle-receiving perforation B' and the internal screw-engaging projection f^2 in the said air-admission plate B of suitable size, form, and location I employ a suitable shell, made of sheet-tin and comprising the body F, made of any suitable form, yet preferably cylindrical, and the base-flange F', which latter is connected with the body F by the sloping portion f, running inwardly, preferably in a curved line, from the said base-flange to the wall f' of said body of this shell. Integral with the wall f' of the body F of this shell are one or more projections f^2, which extend inwardly from said walls to a suitable distance and of width to adapt them to enter into the spiral groove e' between adjoining spirals of threads e of the screw-threaded portion of the spindle E and so engage with the latter as to draw said spindle inwardly when it is turned in a proper direction and carry it outward when turned in an opposite direction. These screw-thread-engaging projections f^2 may be in the form of, say, two spirals, as shown in Fig. 1, or of a single spiral, as shown in Fig. 3, or in the form of one or two short projections of length, say, about one-sixth of the circumference of the body F of said shell, as shown in Fig. 4. This shell may be produced by any suitable means from what is known as "sheet-tin," and when produced with the elements shown and described it is adapted to form, first, a part of the mold and, last, an integral part of the air-admission plate B by a fusion of its outer side surface metal with the cast metal of said plate when in a molten condition and receiving its form by process of molding and casting. My preferred manner of introducing this shell into the mold of the plate B to be cast and have its outer surface metal fused with the metal of said plate is, briefly, this: A pattern P, Fig. 5, of plate B is provided with a perforation p, into which the shell is placed, when the two halves of the mold of sand will be rammed up in the usual manner practiced by the trade. When the parts of the mold are separated, the pattern P will be removed, leaving the shell B in place, preferably with its base-flange F' down, as shown in Fig. 6. The two parts of the mold will now be brought together, as shown in Fig. 6, when the molten metal for casting plate B will be poured in the usual manner, and the molten metal, flowing to and surrounding the body of the shell and covering the flange of the same, will by its heat fuse the exposed surface metal of said shell, so as to fuse with the cast metal of plate B. When removed from the mold, this plate B will embody in its structure the said shell (which latter will now be united with the cast-metal portion) and will be a completed article, finished for use without corework and without employment of drills and taps and labor and expense, while the diameter of the spindle-receiving perforation B' now produced, as shown in Fig. 7, will have exact correspondence with those chambers in every other one of the many produced in similar plates by means of like shells, while the screw-engaging projections f^2 will be each in form, finish, and size in exact correspondence with those produced by use of like shells, while the entrance of the outer end of the stem of the spindle E into the perforation B' will be facilitated by the sloping portion f of the shell. These shells may have their respective chambers filled with sand and be well packed with sand prior to being placed in the pattern for molding, or they may be packed with sand in the process of molding by ramming molding-sand in the chamber of the shell while ramming up the lower or upper half of the mold. The spindle E may be made and finished for use with this shell-produced spindle-receiving perforation, which is produced by means above described, by any preferred means.

By the employment of the above-described spindle-engaging shell in combination with the air-admission plate B when the latter is fused with the former in process of being cast, as described I obviate the necessity of employing drills and taps for providing a suitable spindle-engaging perforation in said plate B for reception of a nicely-fitting screw-threaded stem of the spindle and also obviate the use of sand cores which might be employed for producing the necessary spindle-engaging perforations in this class of dampers. By the use of this shell I am enabled to produce in each plate B a spindle-engaging perforation which will be in exact correspondence with those in every one of the other plates which may be cast from the same pat-

tern and also be in correspondence with the screw-threaded stems of spindles of like diameter and screw-threads, so that any one of such spindles may nicely fit in the spindle-receiving perforation of any of said plates B, and thereby obviate all liability of said spindle and damper-plate thereon to drop or sag under the weight of said damper-plate when the spindle is carrying the same, and, further, by this invention air-admission plates having each a like spindle-receiving perforation are provided with similar screw-thread-engaging projection f^2, shown and described, solely by casting and in a rapid manner and at small expense as compared with those produced by corework or by drilling and tapping.

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

1. A spindle-engaging shell of sheet-tin comprising a cylindrical body, having internal screw-engaging devices which are adapted to enter the spiral groove of a screw-threaded stem of a revolving spindle, and a radial base-flange which is adapted to prevent said shell from shifting within the sand mold of the plate to be cast and in which said shell is to be fused with the metal of such plate in the time the casting thereof is made, and having its annular corner joining said body with said base-flange made with a curved flaring form which may be adapted to guide the entrance end of a spindle to a passage within the chamber of said shell substantially as set forth.

2. The combination with a revolving spindle of a damper, which is adapted to be moved toward and from a coacting plate, and is provided with a screw-threaded stem, of a spindle-engaging shell comprising a body having a chamber of diameter corresponding with the outside diameters of the screw-threaded portion of said spindle, and also provided with internal projections which are extended toward the axis of the said shell, and adapted to freely work in the spiral groove between adjoining spiral threads of said spindle, and a radial base-flange adapted to prevent said shell from shifting in the sand mold of the plate in which said spindle is to be revolved, and having a flaring form of entrance from the base-flange to the chamber of said shell, substantially as set forth.

3. The combination with an air-admission plate having in it a spindle-engaging device which projects inward toward the axis of a circular chamber and from a wall of thin sheet metal which is fused with the metal of said spindle-engaging device and is also fused with the cast metal of said air-admission plate, and a damper-plate adapted to be moved in either direction flatwise toward or from said air-admission plate and provided with a central perforation of a revolving spindle having a suitable journal working in the central perforation of the said damper-plate and also having a screw-threaded stem of diameter corresponding with that of the chamber of the said spindle-engaging device provided in the air-admission plate and also having its spiral groove, provided between the spiral threads of its stem, nicely receiving and holding with the inwardly-projected devices provided in the circular chamber of the spindle-receiving perforation in said air-admission plate and also having a shoulder bearing on one side of the said damper-plate, a keeper passing through said spindle and having bearing on the opposite side of said plate, and devices adapted to hold the damper from revolving when the said spindle is being revolved, substantially as set forth.

NORMAN BURDICK.

Witnesses:
E. C. RIPLEY,
WILLIAM H. ROWLAND.