

No. 753,870.

PATENTED MAR. 8, 1904.

J. E. FRENNING.
DAMPER.

APPLICATION FILED DEC. 11, 1903.

NO MODEL.

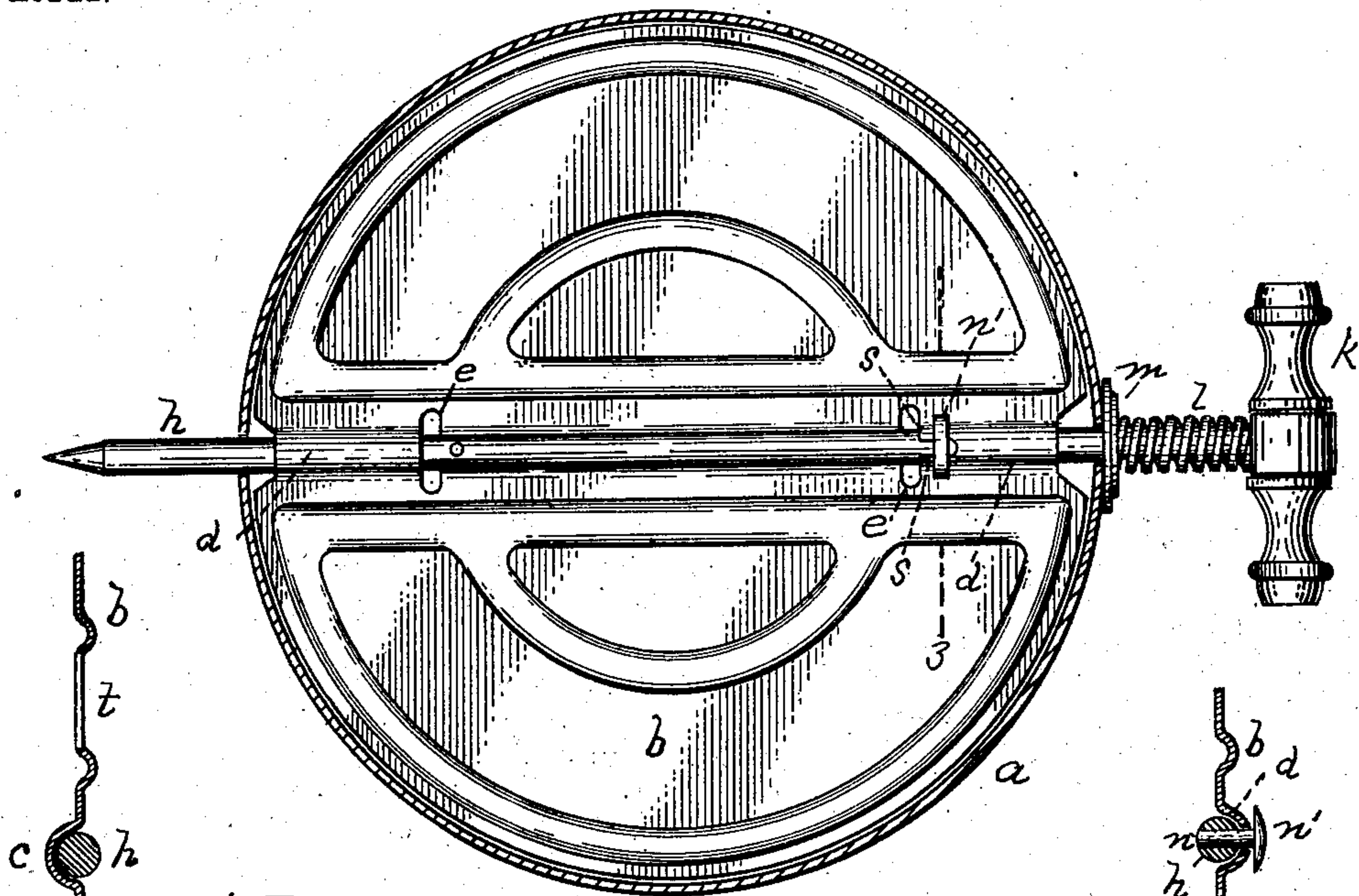


Fig. 1.

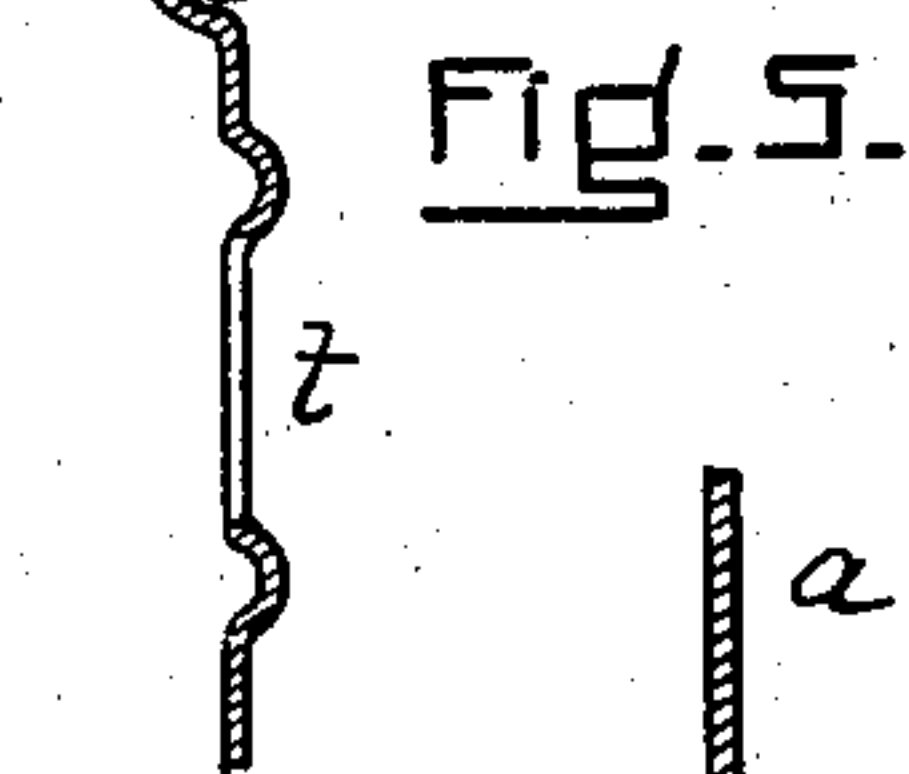


Fig. 5.

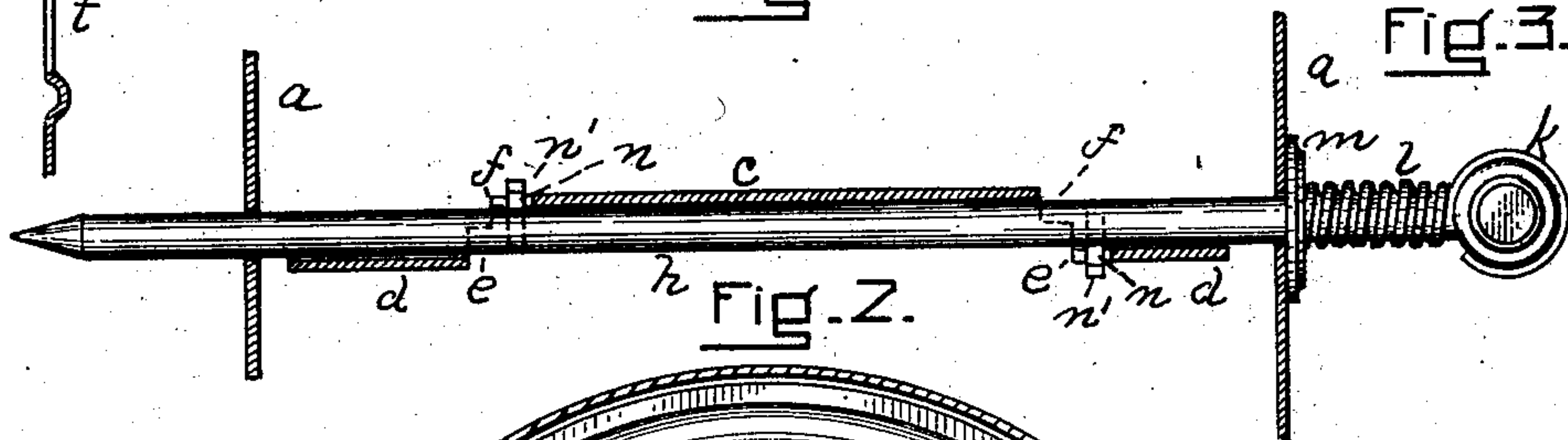


Fig. 2.

Fig. 3.

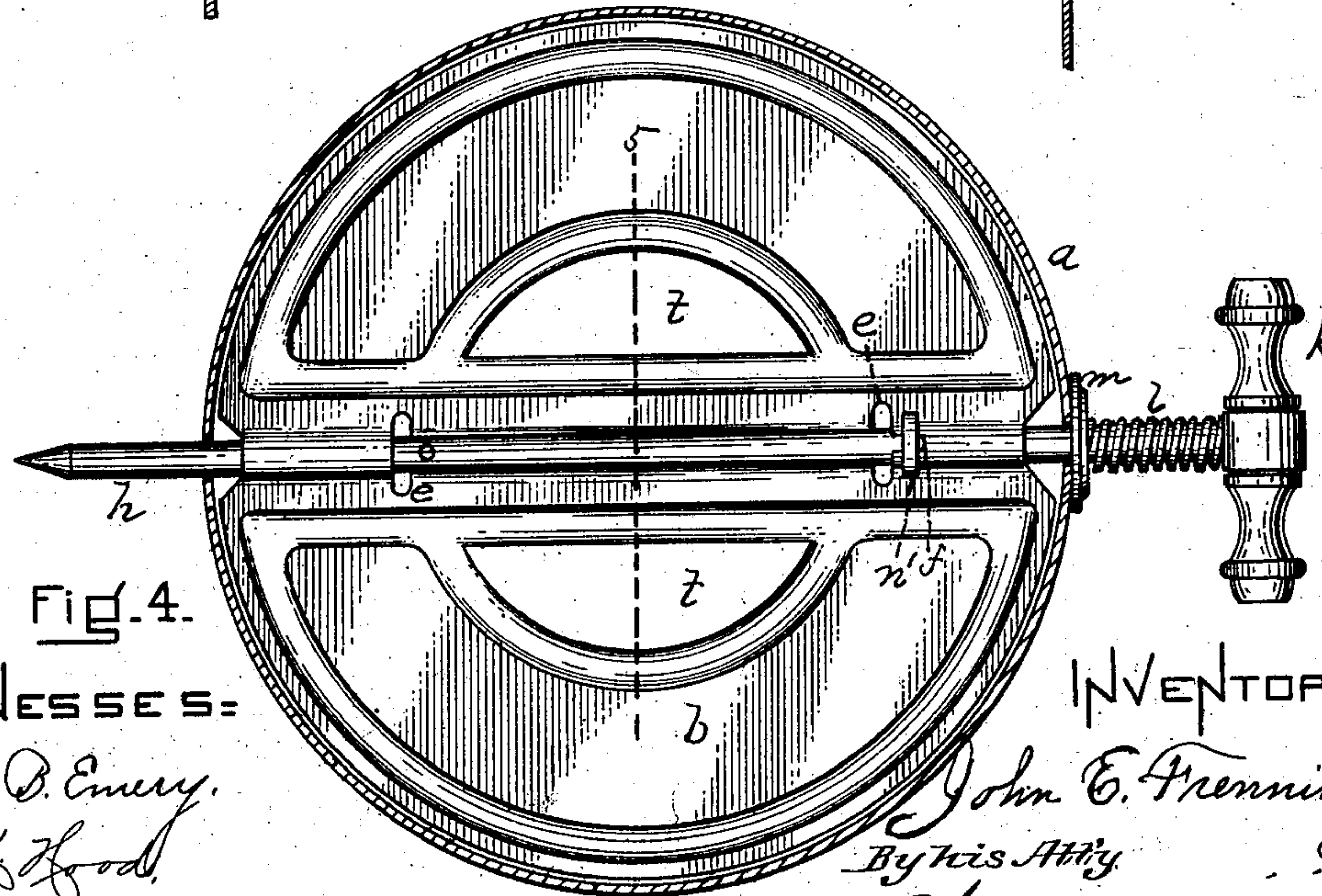


Fig. 4.

WITNESSES:

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UNITED STATES PATENT OFFICE.

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DAMPER.

SPECIFICATION forming part of Letters Patent No. 753,870, dated March 8, 1904.

Application filed December 11, 1903. Serial No. 184,707. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. FRENNING, a citizen of the United States, residing in Belmont, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Dampers, of which the following is a specification.

This invention relates to that class of dampers in which the damper proper is mounted on a spindle and secured rigidly thereto by means of locking-pins which extend from the spindle into slots in the damper.

The invention consists in a certain novel construction fully described below, whereby the edges or corners of the damper next the slots are prevented from becoming bent up, injured or torn, or broken off when the spindle is inserted in or withdrawn from the damper.

The nature of the invention is fully described below and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a damper in a closed position in a smoke-flue, which is illustrated in cross-section, the spindle being in position and the whole embodying my invention. Fig. 2 is a central vertical section of the same in position in a flue, portions of which are shown, the spindle being illustrated in elevation. Fig. 3 is a sectional detail taken on line 3, Fig. 1. Fig. 4 is a view similar to that illustrated in Fig. 1, the damper being of the style employed in hot-air pipes. Fig. 5 is a sectional detail taken on line 5, Fig. 4.

Similar letters of reference indicate corresponding parts.

In the drawings the smoke-flue and hot-air pipe are represented as in a vertical position.

Referring to Figs. 1, 2, and 3, *a* represents a smoke-flue, and *b* the damper, formed up at *c* into a central groove and formed up oppositely on the opposite side at *d* into two grooves which are in line with and on opposite ends of the groove formed by the portion *c*. By this means a central passage is made across the damper for the accommodation of the spindle, such construction not being new in this invention. At the points where the groove formed by the portion *c* connects with the

grooves formed by the portions *d* cross-slots *e* are provided at right angles therewith and on opposite sides of the spindle-passage, and connecting with these slots *e* are slots *f*, which extend in line with the spindle toward that side of the flue through which the spindle is applied. *h* represents the spindle, provided with an ordinary handle *k*, and *l* represents a spring surrounding the spindle between the handle and the guard *m*, which is loose on said spindle and is pressed against the side of the flue by the spring. The spindle is provided at opposite sides with two radial pins *n* at the same distance apart as the slots *e*. To apply the spindle to the damper in the flue, its pointed end is thrust through a suitable opening in the flue and thence into the passage in the damper formed by the parts *c* and *d* and forced against the power of the spring until the pins coincide with the slots *e*. In practice the spindle is inserted with the forward pin opposite the groove formed by the first grooved portion *d*, when said spindle is given a half-rotation through the first slot *e* and pressed in until the forward pin is nearly at the second slot and the second pin nearly at the first slot. The spindle is then forced against the power of the spring until the pins reach these slots *e*, and at this point a half-rotation is given to the spindle, the pins passing through the slots, and the spindle is released, with the effect that the pins are forced back into the connecting-slots *f*. In making this last half-rotation the pins necessarily pass around the corners *s*. When ordinary pins are provided, the tendency is for the operator to cause them to crowd and jam against and under these corners, so that they soon become bent up, injured and torn, or broken off. The reason is, of course, that the operator is apt to use as little pressure as possible when rotating the spindle instead of holding the pins firmly against the farther edges of the slots *e*. In order to prevent this injury to the corners *s*, I have provided pins with guards *n'*, said guards extending at right angles with the pins and being long enough to extend across and beyond the opposite edges of the slots *f*,

as shown, the guards operating to prevent the corners at the junction of the slots *e* and *f* from becoming jammed or pushed up, and hence torn or broken off, the grooved portion of the plate being so formed as to be very close to the spindle. The shape of these guards is immaterial provided they are long enough to overlap and protect the said corners while the pins make the last half-turn, which transfers them from the slots *e* into the slots *f*, and provided, of course, that they are not too large to pass through the slots *e*. It should be understood that the springs *l* in dampers of this kind are commonly quite strong and stiff.

In forcing in the spindle *h*, by the time the limit to which it is to be thrust in is nearly reached considerable power is required to further compress the spring. It is when the spindle has been forced as far as it will go that a half-rotation must be made in order to move the pins *n* from the cross-slots *e* around the connecting-corners *s* into the longitudinal slots *f*. In practice it is universally the case that the average workman does not apply quite sufficient force to the spindle in pushing against the spring, or just as he is about to turn it he yields a little. The result is that when an ordinary headless pin is provided the pin strikes the corner *s*, jams under it, and crowds it up, so that said corner becomes torn or broken off; but with my T-shaped pin in use the shape of the pin provides overlapping guards *n'*, so that the corner cannot become forced up, because the guards or arms *n'*, which constitute the T-shaped head, overlap and hold down the edges of the slots at the corner. In other words, they hold down the corner *s* itself, so that the pin cannot jam it up by making an inadequate turn from the slot *e* into the slot *f*; but said pin must make a clear turn around the corner—not under it—as the corner is held firmly down by the head or guards *n'* of the T-shaped pin *n*, the grooved portion of the plate being formed close to the spindle. In disassembling the parts, as well as in assembling

them, the guards operate to hold down the corner, as above described, at the junction of the slots *e* and *f*. In practice it is deemed advisable that the spread or length of the guard *n'* should be somewhat greater than the diameter of the spindle *h*, as shown in the drawings, and particularly in Figs. 1 and 4. Moreover, as above mentioned, the grooved portion of the plate is so formed as to be as close as possible to the spindle in order to prevent the head from working between the spindle and the plate.

In Figs. 4 and 5 the invention is not departed from, the only difference between said figures and Figs. 1, 2, and 3 being that the damper in Figs. 4 and 5 is provided with suitable openings *t*, as said damper is to be employed in hot-air pipes.

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

In a damper of the character described, the combination with the damper proper provided with the slots *e* and the connecting-slots *f*; of a spindle provided with locking-pins adapted to pass through the slots *e* when the spindle is rotated and extend into the slots *f* when the spindle is locked, and guards on the outer ends of said pins, said guards being adapted to extend through the slots *e*, and being of sufficient breadth or size to extend beyond the edges of the spindle-groove and to extend across and overlap the opposite edges of the slots *f*, and the corners at their junction with the slots *e* when the pins are passing around the corner at the junction of said slots *e* and *f*, for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN E. FRENNING.

Witnesses:

HENRY W. WILLIAMS,
A. K. HOOD.