

(No Model.)

E. G. DURANT.
School Desk.

No. 237,259.

Patented Feb. 1, 1881.

Fig. 1.

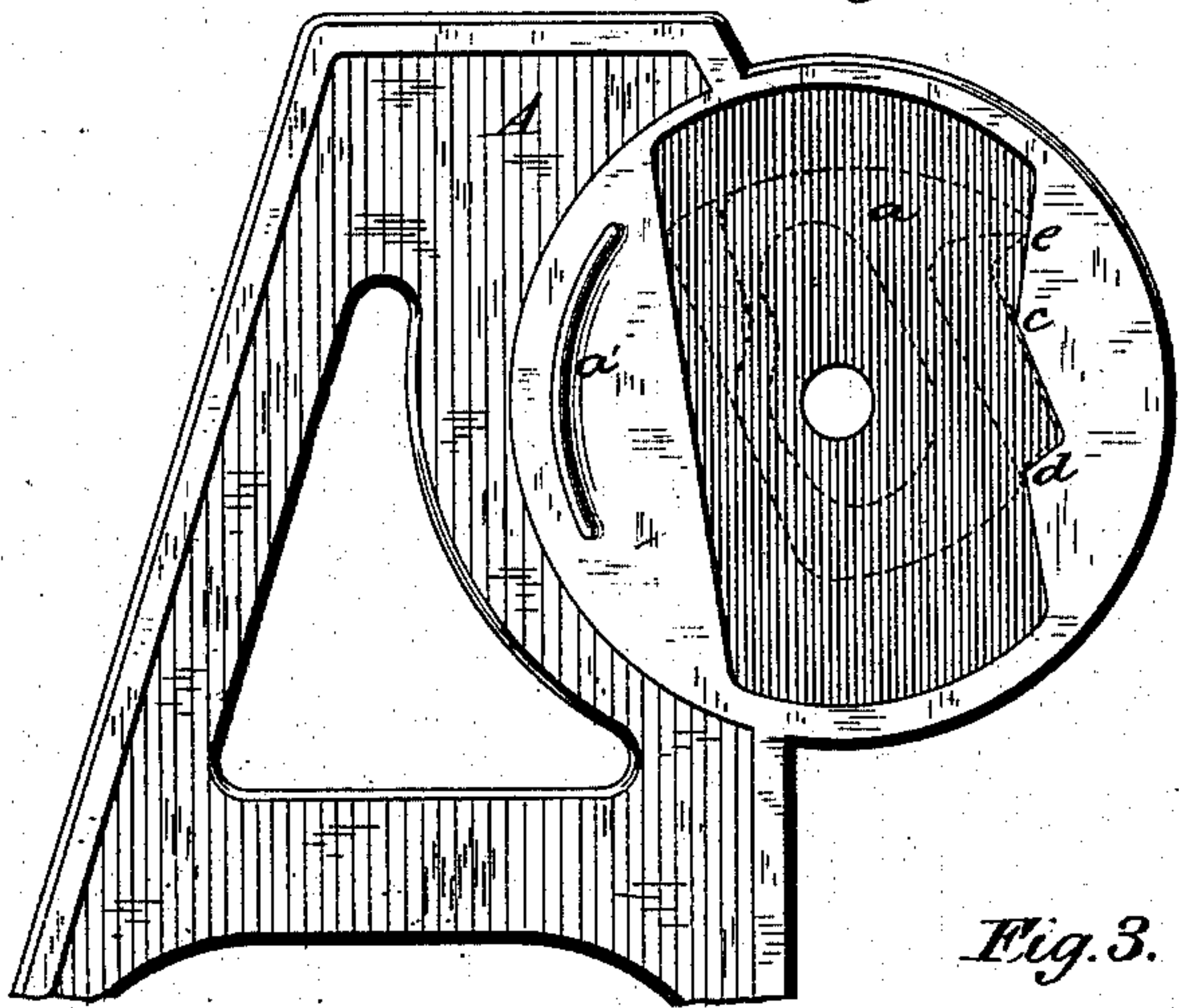


Fig. 2.

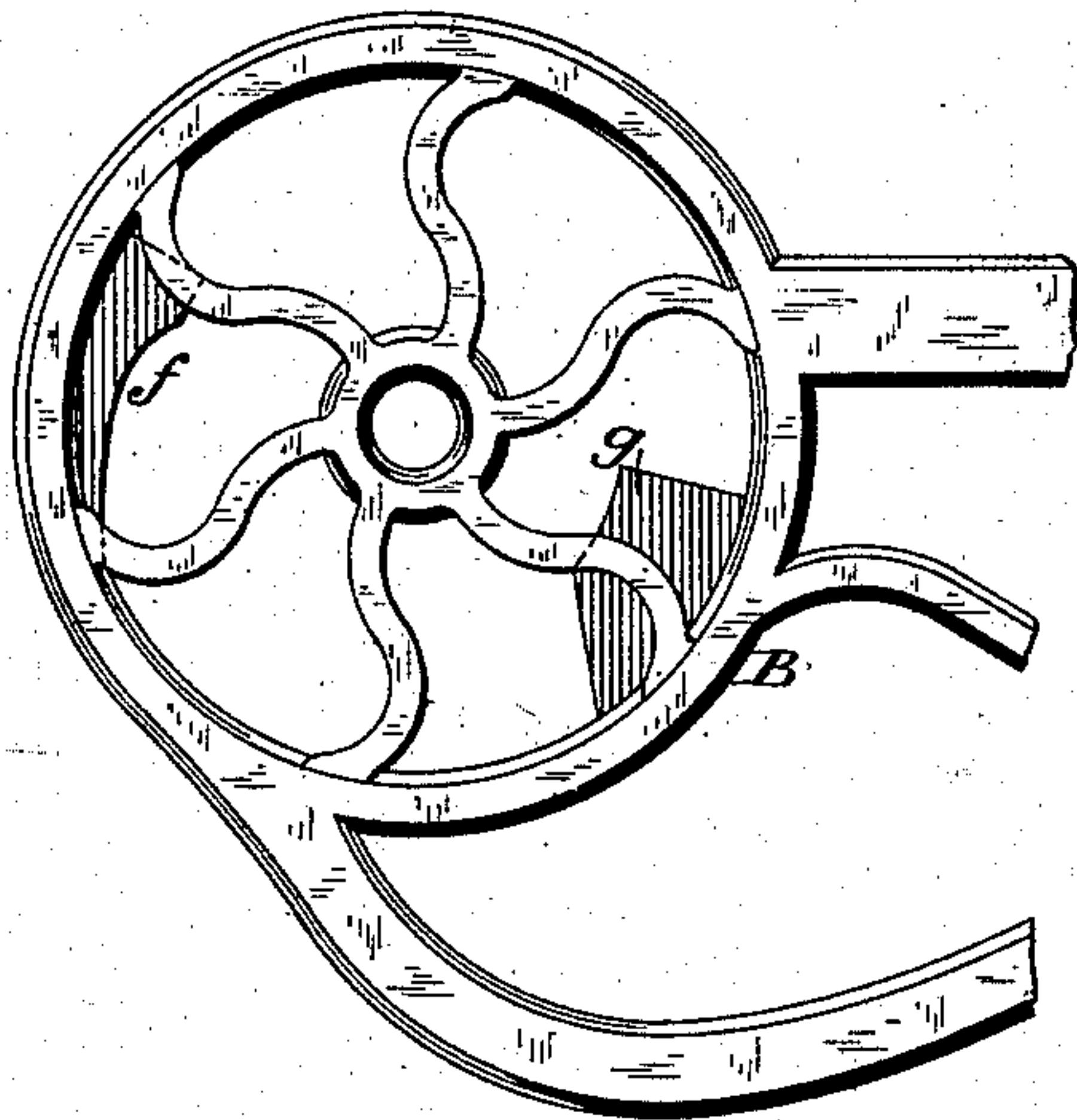


Fig. 3.

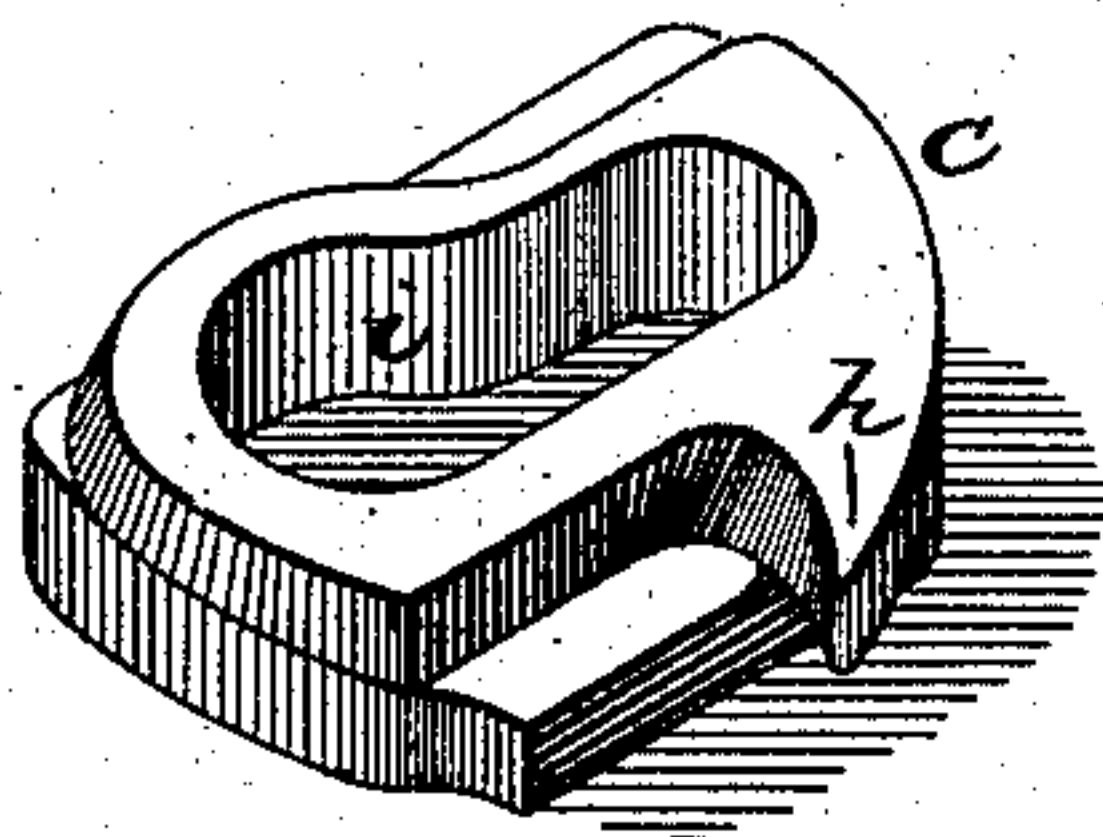


Fig. 4.

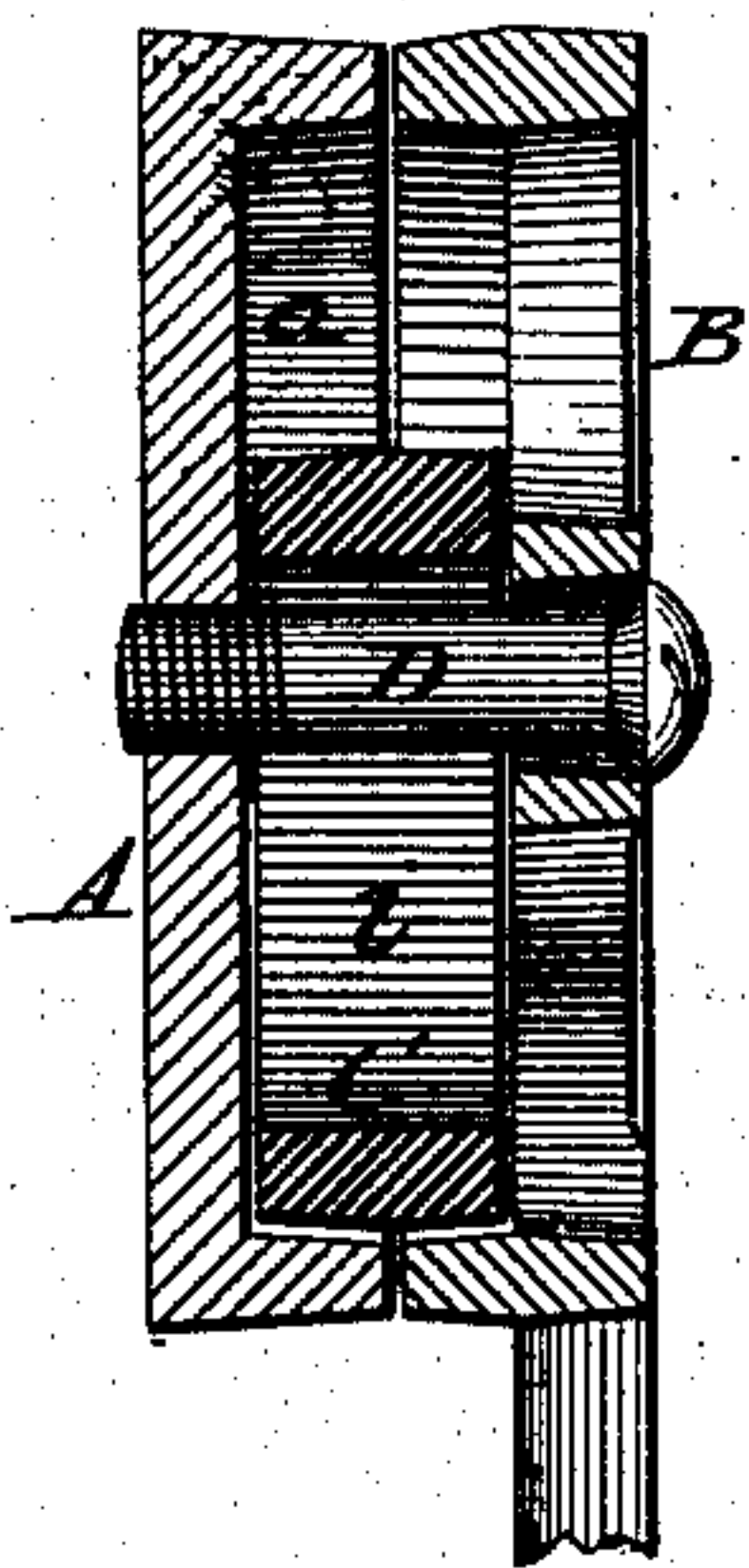


Fig. 5.

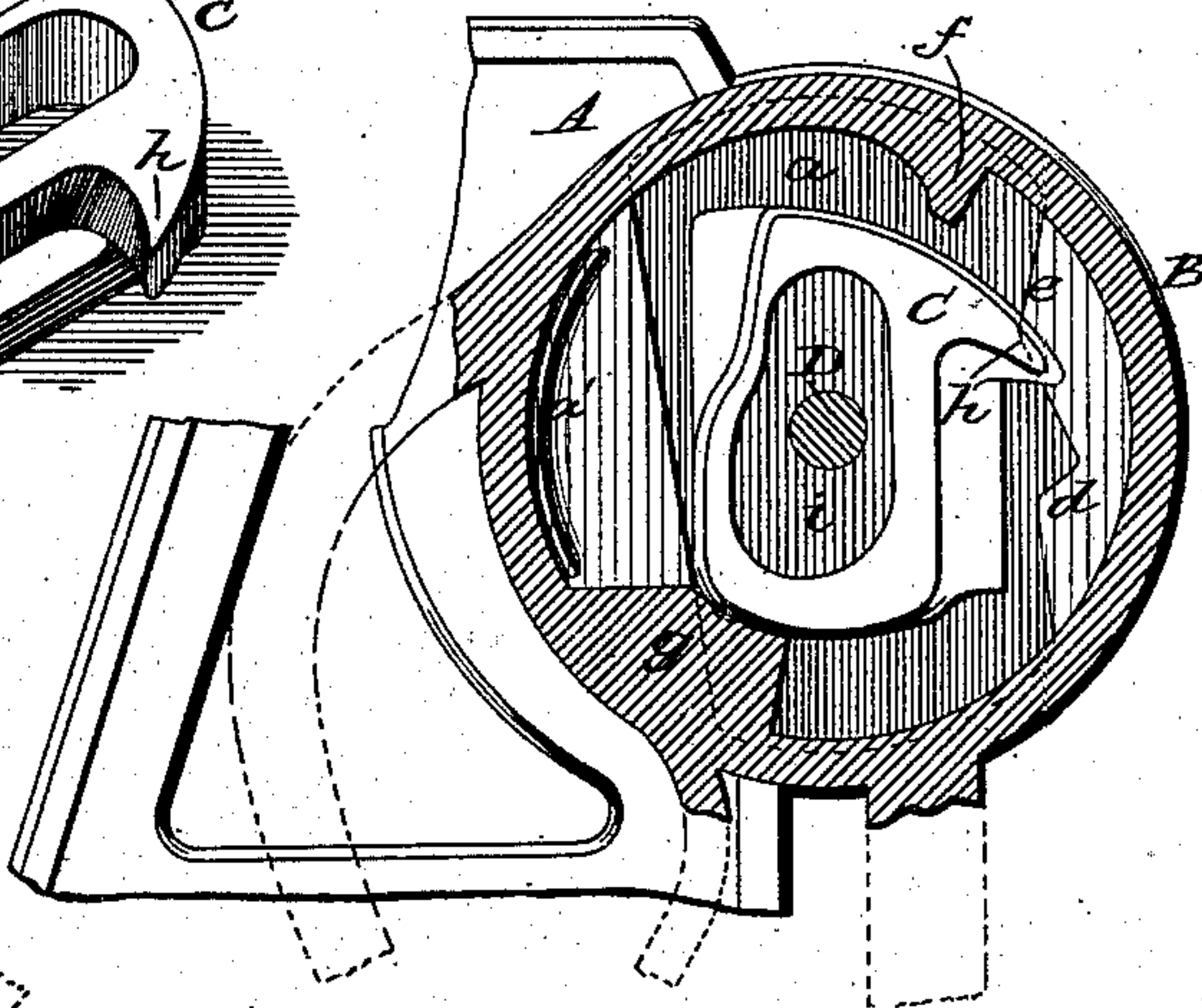


Fig. 6.

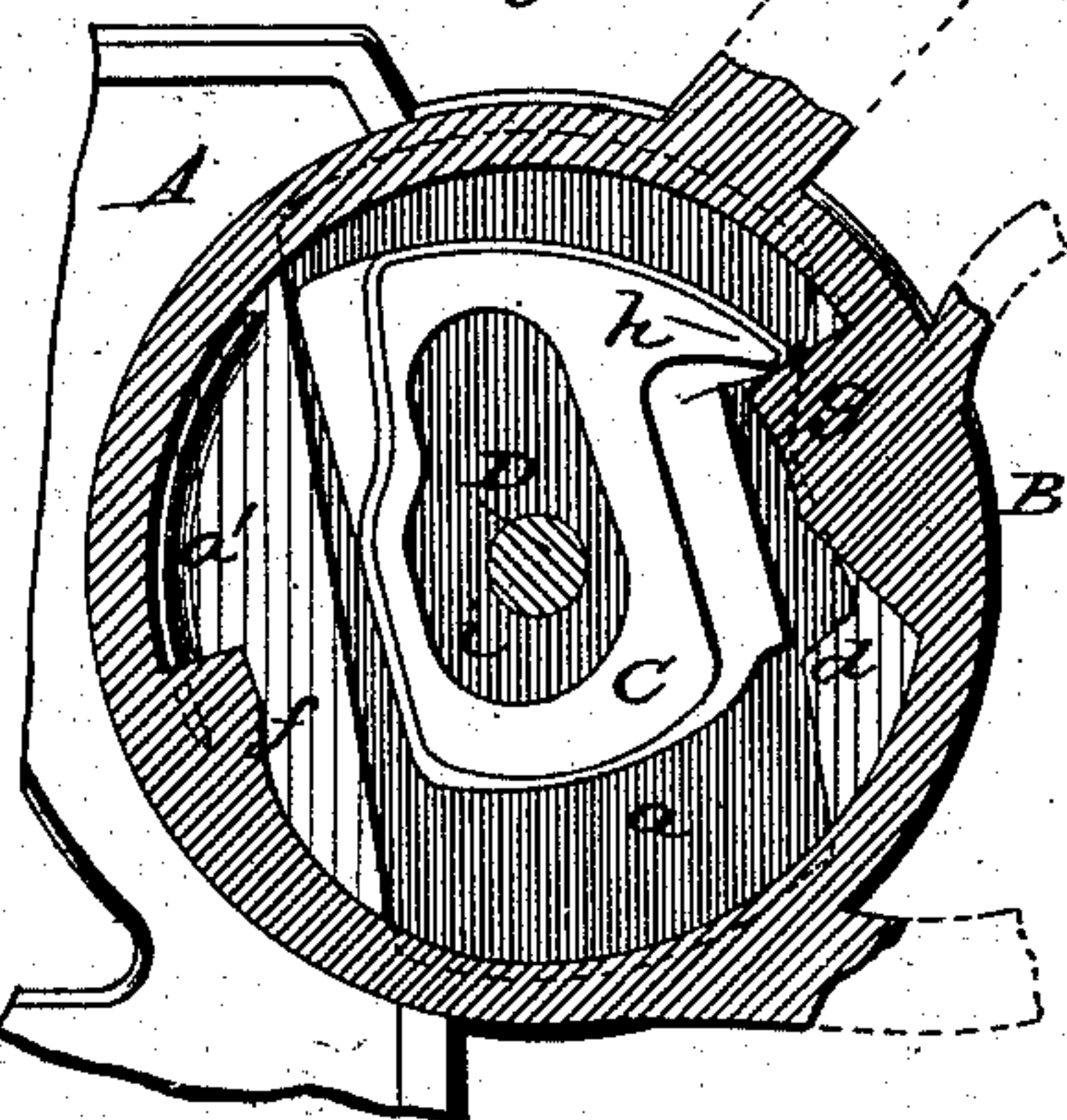
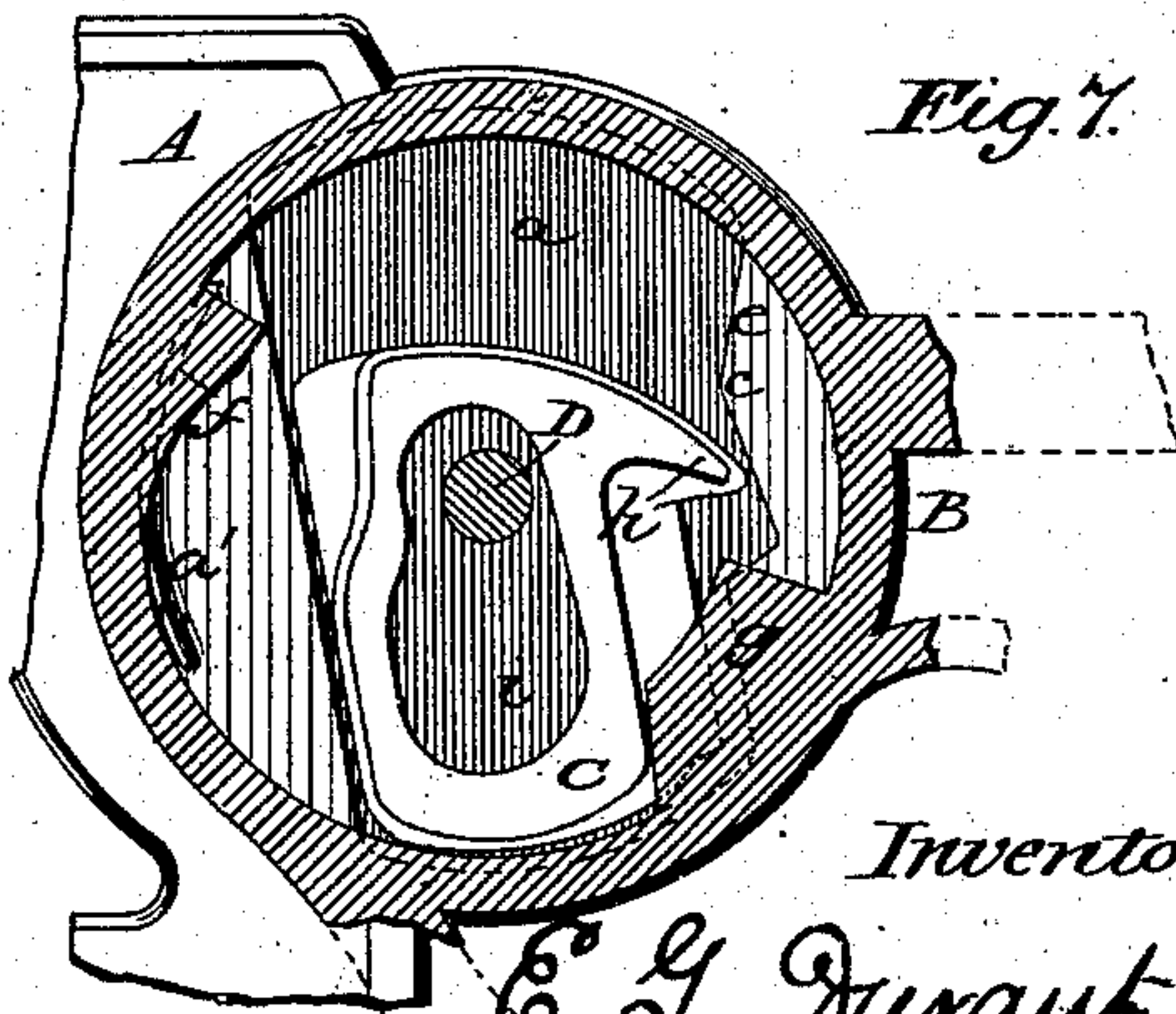


Fig. 7.



Attest.

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UNITED STATES PATENT OFFICE.

EDWARD G. DURANT, OF RACINE, WISCONSIN, ASSIGNOR OF ONE-HALF TO
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SCHOOL-DESK.

SPECIFICATION forming part of Letters Patent No. 237,259, dated February 1, 1881.

Application filed December 2, 1880. (No model.)

To all whom it may concern:

Be it known that I, EDWARD G. DURANT, of Racine, in the county of Racine and State of Wisconsin, have invented certain Improvements in School-Desks, of which the following is a specification.

This invention relates to that class of hinged or falling top desks which are provided with a locking or top-supporting mechanism of such character that upon raising the top from its depressed to its operative position, it is automatically locked in such position, and that upon raising the top still higher it is automatically unlocked in order that it may be depressed or turned down.

The invention consists in a peculiar construction and arrangement of parts hereinafter described, consisting, essentially, of a gravitating bolt or block arranged in a space between the desk-standard and the top-supporting arm in or at the hinge-joint.

Top-supporting mechanisms, adapted to be locked and unlocked by the movement of the top, have been made in a great variety of forms, but as hitherto constructed they have been open to various objections, among which were the necessity of using springs, the expense of construction, noisiness when in operation, and uncertainty of operation or action. It is to avoid the foregoing difficulties that my invention is designed.

Referring to the accompanying drawings, Figure 1 is a side elevation of the upper end of the desk-standard, showing the recess therein to receive the locking-bolt; Fig. 2, a side elevation of the top-supporting arm, a portion being broken away in order to expose the interior locking-shoulders to view; Fig. 3, a perspective view of the locking-bolt; Fig. 4, a central vertical cross-section through the joint and locking devices, complete. Fig. 5 is a vertical sectional elevation, illustrating the positions of the parts when the top is turned down out of use. Fig. 6 is a similar view, illustrating the positions of the parts when the top is raised to the extreme limit in order to unlock the supporting-bolts; Fig. 7, a similar view, showing the positions of the parts when the top is locked in a position for use.

In my improved desk the standard and the

supporting-arm are provided with circular enlargements pivoted together side by side and united by a central pivot-pin, in substantially the ordinary manner. The locking-bolt is mounted between and within the two circular faces or enlargements. The standard A is constructed, as represented in Fig. 1, with a recess, *a*, of the peculiar form represented in its outer face or side. It will be noticed, on reference to Fig. 1, that this recess has a straight slightly-inclined front face, but that on the rear side it is provided with two shoulders, *c* and *d*, and also with an enlargement, *e*, at the upper end.

The top-supporting arm B is made, as represented in Fig. 2, with a circular recess in its inner face, and two shoulders, *f* and *g*, extending inward into the recess on opposite sides of the center.

The locking-bolt C is made in the peculiar form represented in Fig. 3, with an overhanging shoulder, *h*, on the rear side, and with a central vertical slot, *i*, the lower end of which is enlarged, as represented.

In assembling the parts the locking-bolt is first dropped into the recess *a* of the standard, in which recess it is free to slide vertically from top to bottom, and also free to have a limited rocking or tipping motion, in order that when elevated to the top of the recess it may be supported therein by engaging its lower end upon the shoulder *d* of the recess, as indicated in Fig. 6, and also by dotted lines in Fig. 1. After the introduction of the bolt, the top arm B is applied over the bolt against the standard, and secured in place by the introduction of a central pivot-pin or screw, D, passing through the arm and the bolt into the standard, as indicated in Fig. 4.

The parts being arranged as above described, operate in the manner following: When the lid-supporting arm B hangs downward out of action the locking-bolt stands in a middle position with its lower end resting on the shoulder *g* of the arm, as represented in Fig. 5. Upon turning the arm forward, as in raising the desk-top, the shoulder *g* is carried backward from under the locking-bolt, which thereupon drops to its lowermost position in front of said shoulder *g*, as represented in Fig. 7,

thus locking the arm-frame in its elevated position for use. When the top is to be depressed it is turned upward from the position shown in Fig. 7 to that shown in Fig. 6, whereby the shoulder *g* of the arm is caused to engage beneath the shoulder *h* of the locking-bolt, thereby lifting said bolt to its highest position, rocking the same forward in such manner that its lower end is thrown backward to engage upon the shoulder *d* in the standard, as shown in Figs. 1 and 6. When the position of the bolt is above the lower path of the shoulder *g*, being sustained by the shoulder *d*, the arm is left free to swing downward to its original lowermost position. As the arm completes its downward motion the shoulder *f*, striking the top of the locking-bolt, tips the same in such manner as to throw its lower end from the shoulder *d*, whereupon the bolt falls to the position represented in Fig. 5, so that it may again lock the arm when the latter is raised.

While it is preferred to construct the parts in the precise manner represented in the drawings, it is manifest that they may be varied in their minor details without changing their general mode of action or departing from the limits of my invention, which includes any and all forms of locking devices in which a sliding or reciprocating gravitating bolt or dog is used between the arm and standard, and whether the same encircles the pivot or not, provided the bolt is controlled in its action by the movement of the arm and arranged to co-operate with shoulders or bearings on the arm and standard, substantially as described.

In one form of the invention which I propose to use the sliding bolt is mounted on one side of the pivot, and in another the bolt is made in two vertical parts mounted on opposite sides of the same.

As school-desks are subjected to heavy weights and severe strains it is necessary that they shall possess great strength. To secure this end it is desirable that the pivot-pin shall be relieved from the strain of supporting the arm when in use. I therefore construct the device so that the arm standard and bolt interlock directly with one another in such manner as to receive and carry the entire, or substantially the entire, strain. This may be accomplished by giving the parts many different forms, all of which will be included within the limits of my invention. One plan is illustrated in the drawings, in which it will be seen that the standard is cast with a strong lug or flange, *a'*, which engages inside of the flange or head *b* of the arm, at the front side or in front of the axis. The bolt slides in and is sustained by the solid metal of the standard, and in turn bears solidly against the shoulder *g* on the arm, in rear of the axis. In this way the parts interlock and give the arm solid support without material aid from the pivot.

I am aware that in seat-arms which fall to and stop always at one operative position studs have been applied to the standard to

relieve the pivot, and consequently I do not claim, broadly, studs to receive the strain. My construction differs from others in that I so combine the stud and the locking-bolt that, while they co-operate to sustain the arm in an operative position, they permit the arm to pass either above or below that position. My bolt is so arranged that it receives no torsional or transverse strain, but simply a compressing or crushing strain, because of its having bearings on one side against the standard and on the other against the solid shoulder of the arm, the arm and standard being also firmly interlocked with each other.

I am also aware that a gravitating ball arranged to take a frictional hold upon converging surfaces on the arm and standard, and to be carried by the arm in a circular path around a stud on the standard, is old, and I make no claim thereto. My invention is restricted to a device wherein the locking device is of an elongated or distinctively bolt-like form, as contradistinguished from a ball, and to a device in which the locking member has a movement forward and backward in substantially one path, or, in other words, has a reciprocating movement.

Having thus described my invention, what I claim is—

1. The combination of a desk-standard and a lid-arm pivoted thereto, both provided with shoulders, substantially as described, and an intermediate vertically-movable locking-bolt thrown into and out of action by the movement of the arm, substantially as described and shown.

2. In combination with a standard having a shouldered recess, *a*, and a pivoted arm, *B*, having shoulders *f* and *g*, a bolt seated in the recess and acted upon by the shoulders of the arm, substantially as described.

3. The combination, in an automatic falling-top desk, of a standard provided with a vertical recess having a shoulder on one side, a gravitating locking-bolt mounted in the recess and arranged to have a vertical and a limited lateral motion therein, and a top-supporting arm pivoted to the standard, and provided with shoulders to elevate the bolt and tip the same laterally, substantially as described and shown.

4. The combination of a desk-standard having an upright shouldered groove therein, an arm provided with shoulders or studs and pivoted to the standard, and an intermediate sliding bolt which is raised to and released from the shoulder of the standard by the swinging motion of the arm, substantially as described and shown.

5. In an automatic falling-top desk, the combination, with a vertically-reciprocating bolt mounted in the standard, of a hinged lid-arm, having a stud to raise the bolt from a locked to an unlocked position as the arm rises above its operative position, substantially as described.

6. In combination with a desk-standard, a

shouldered arm pivoted thereto, and an intermediate vertically-reciprocating bolt acted upon by the shoulders of the arm, substantially as described, the elevation of the arm above an operative position serving to lift the bolt above its locked position, and the depression of the arm from the highest position serving to release the bolt and permit it to fall, substantially as described.

10 7. The standard provided with a flange or stud to interlock with the lid-arm, and with a shoulder to give a solid support to one side of a locking-bolt, a lid-arm pivoted to the standard and interlocking with the stud thereon, 15 and having a shoulder to form a solid bearing for a bolt, and an intermediate sliding bolt to sustain the lid, which bears solidly between the bearings on the standard and arm, whereby the arm is sustained without straining the 20 pivot, but permitted to swing both above and below its operative position.

8. The combination, with the standard and the pivoted arm, both provided with shoulders, the arm being capable of swinging above and below an operative position, and constructed 25 to engage directly with the standard, of a locking-bolt to sustain the arm, arranged to bear solidly between the shoulders on the arm and standard, respectively.

9. A standard and lid-arm pivoted to each 30 other, and provided, when in an operative condition, with two interlocking points outside of the pivot, one consisting of a direct engagement between the arm and standard, and the other consisting of substantially parallel should- 35 ders on the arm and standard, and a bolt introduced squarely between said shoulders, as shown.

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Witnesses:

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JOHN F. BICKEL.