

(Model.)

2 Sheets—Sheet 1.

T. S. SMITH.
SASH FASTENER.

No. 398,549.

Patented Feb. 26, 1889.

Fig. 1.

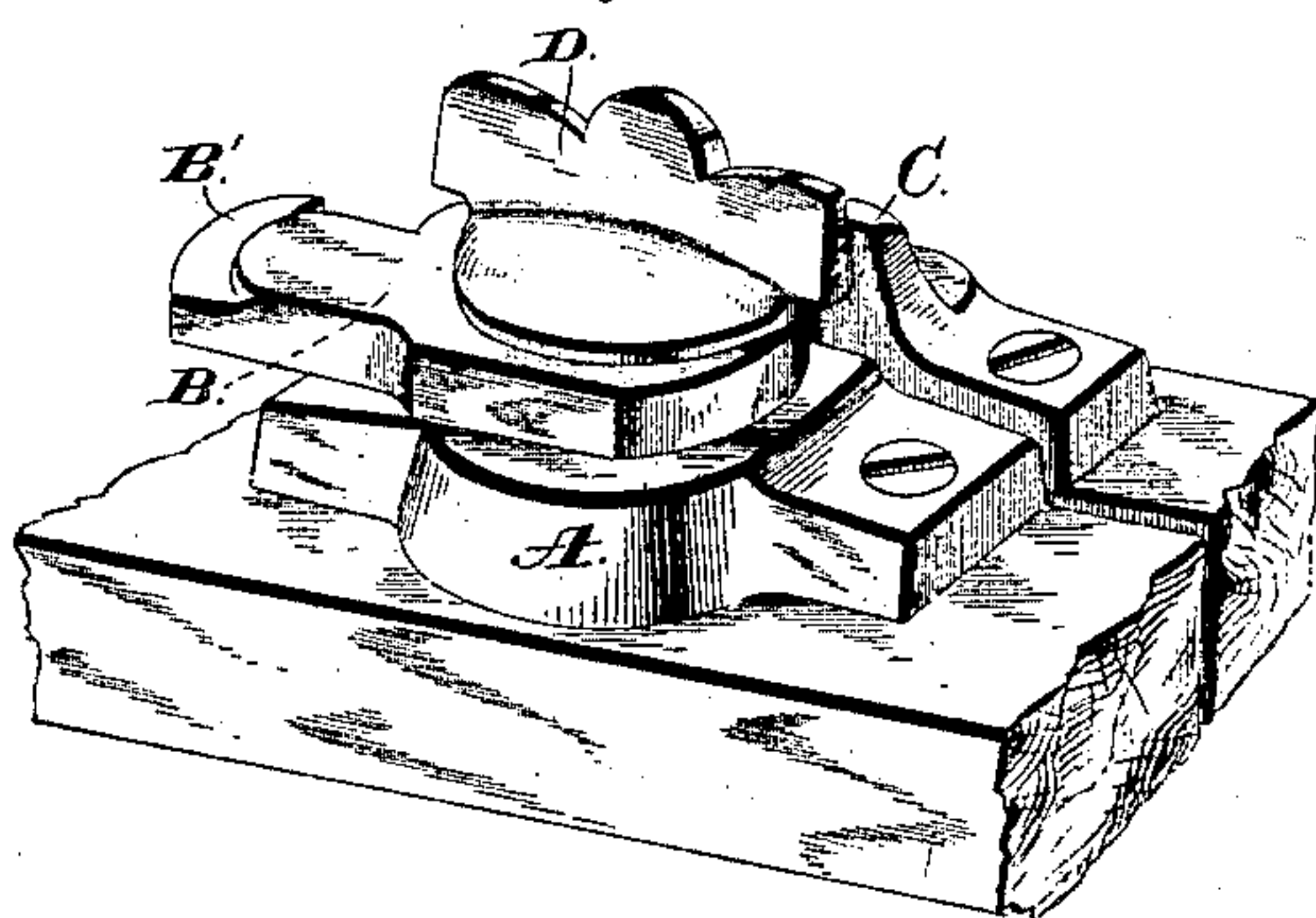


Fig. 2.

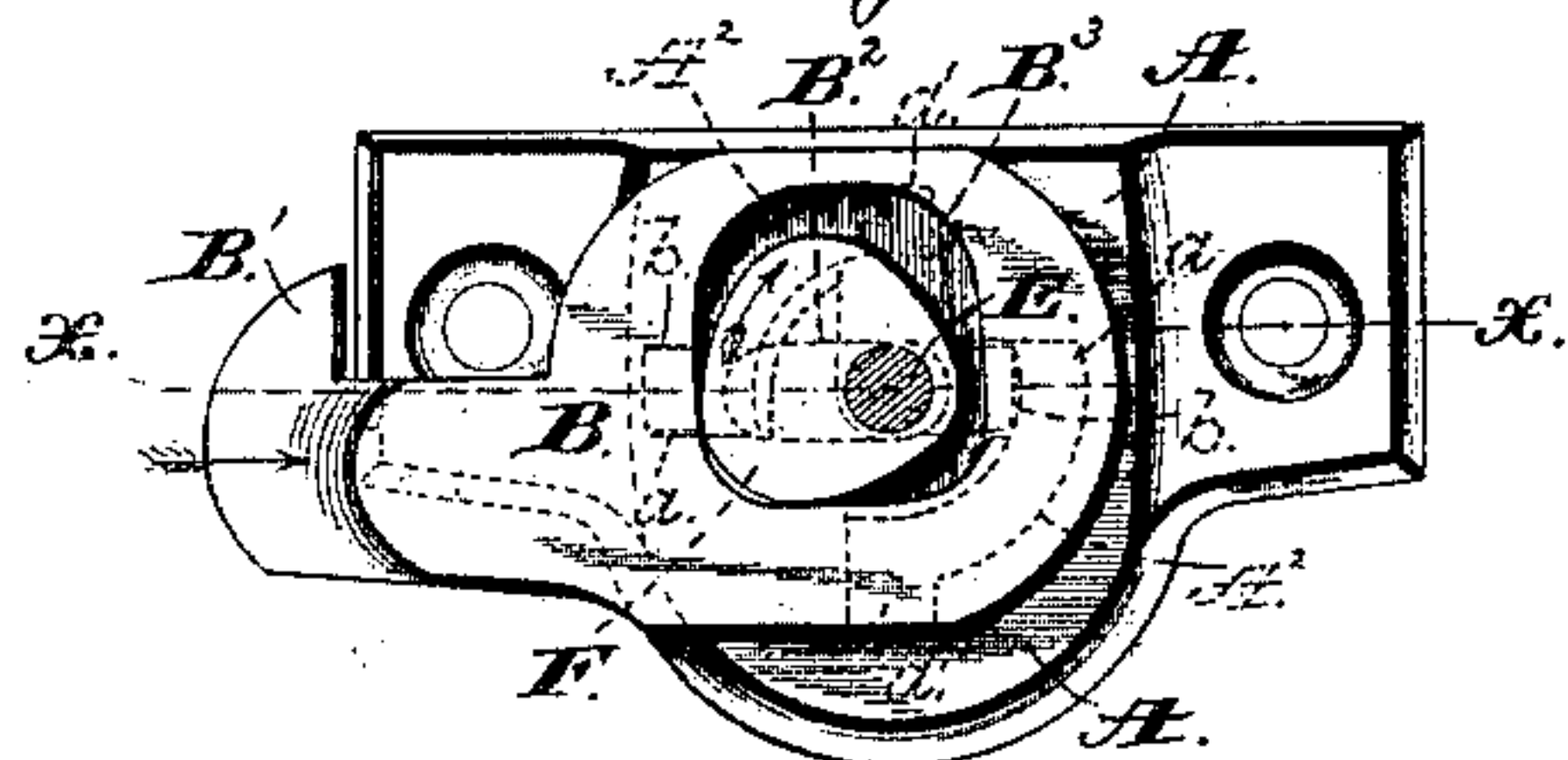


Fig. 3.

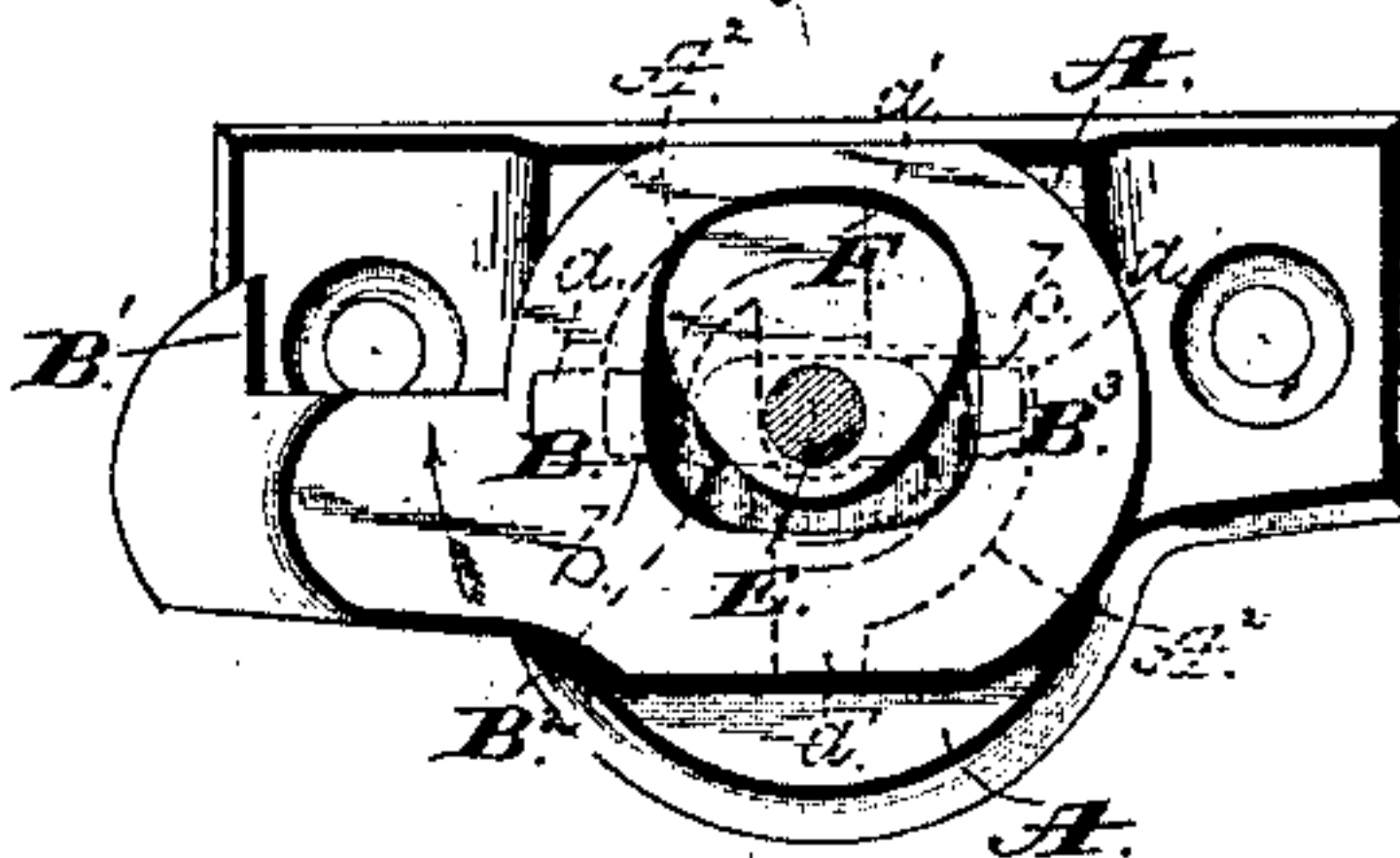


Fig. 4.

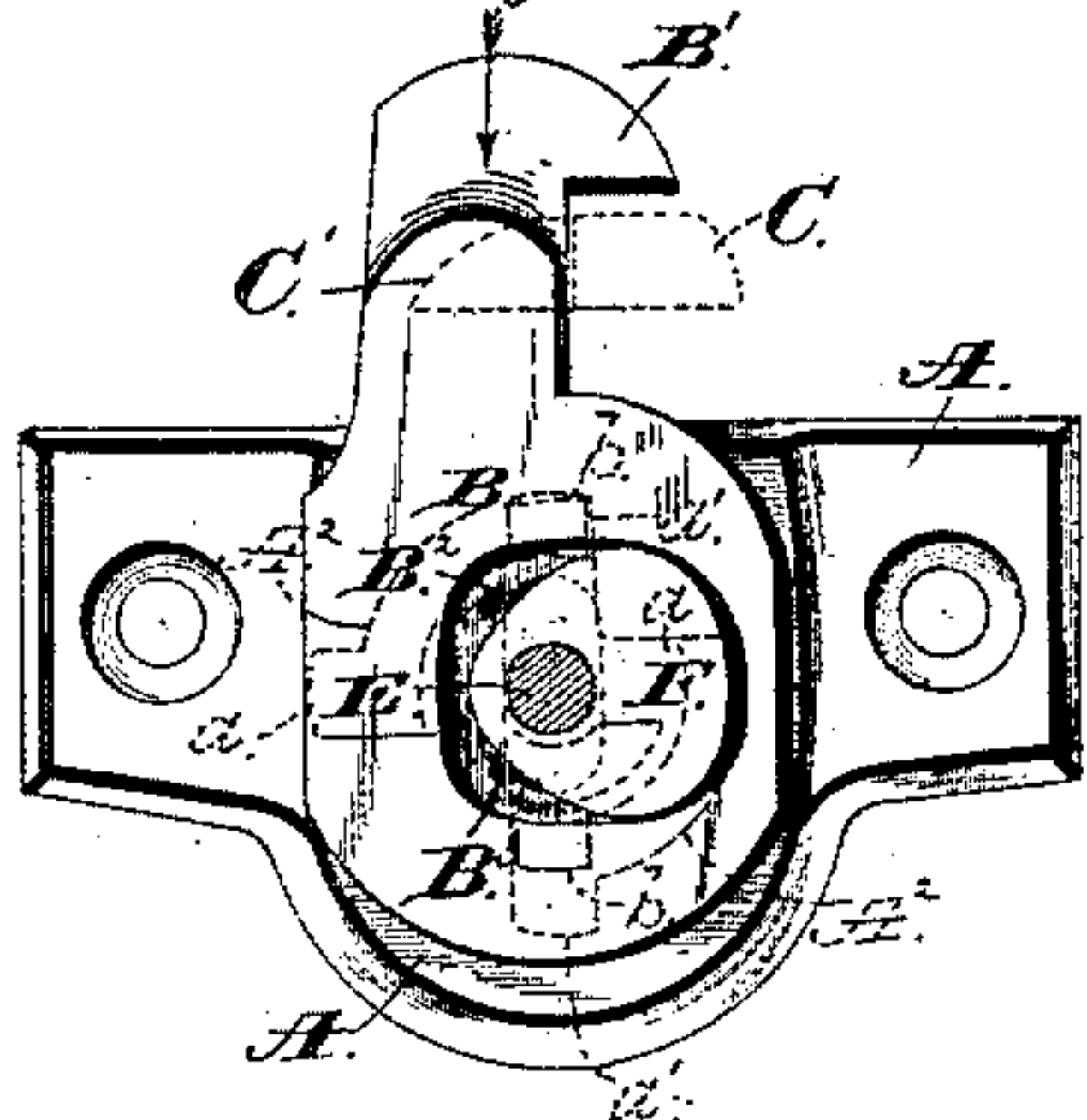
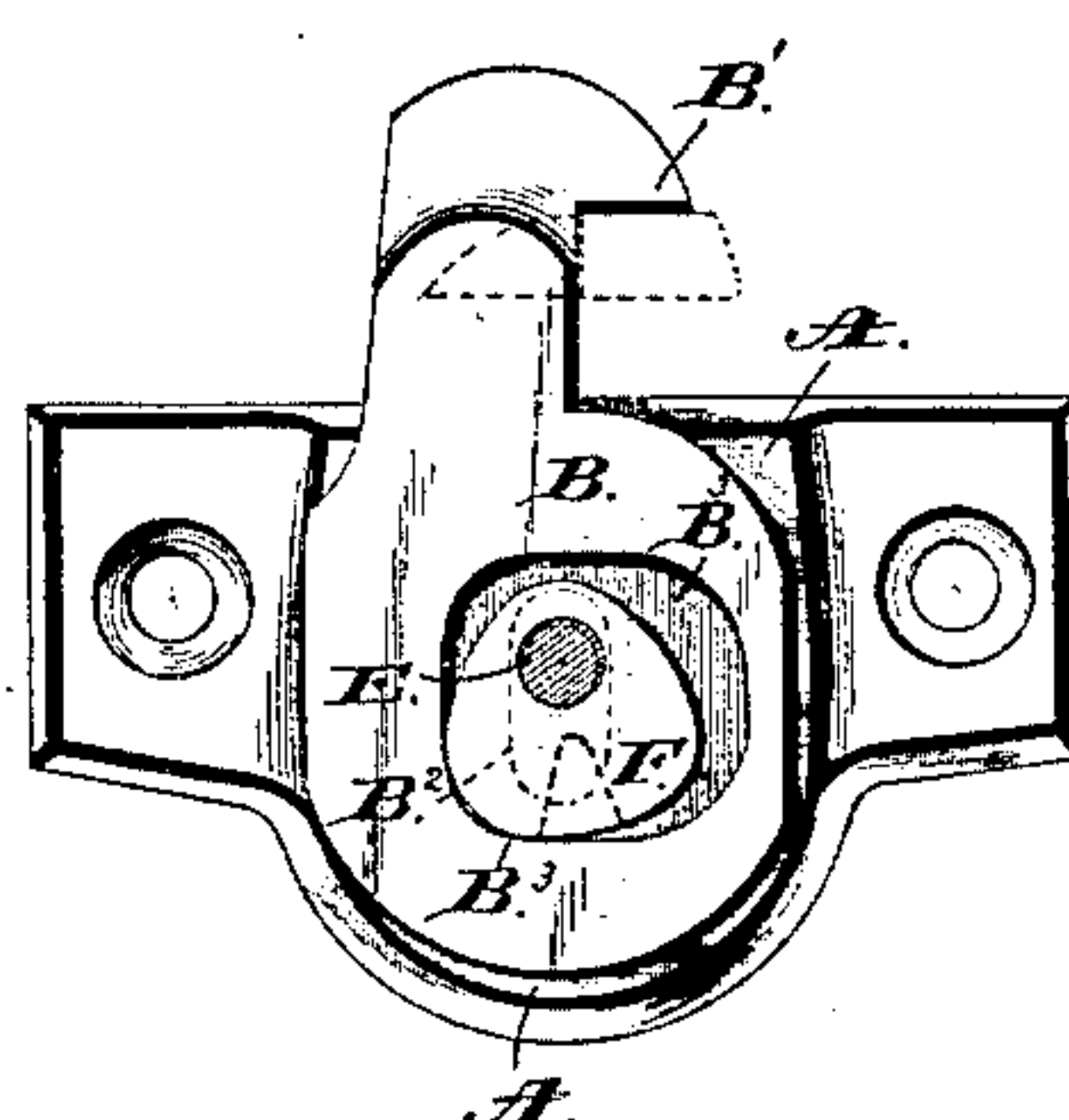


Fig. 5.



Witnesses:
Jas. E. Hutchinson.
Henry C. Hazard.

Inventor:
Thomas S. Smith
by Prindle and Russell
his Attorneys

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Fig. 6.

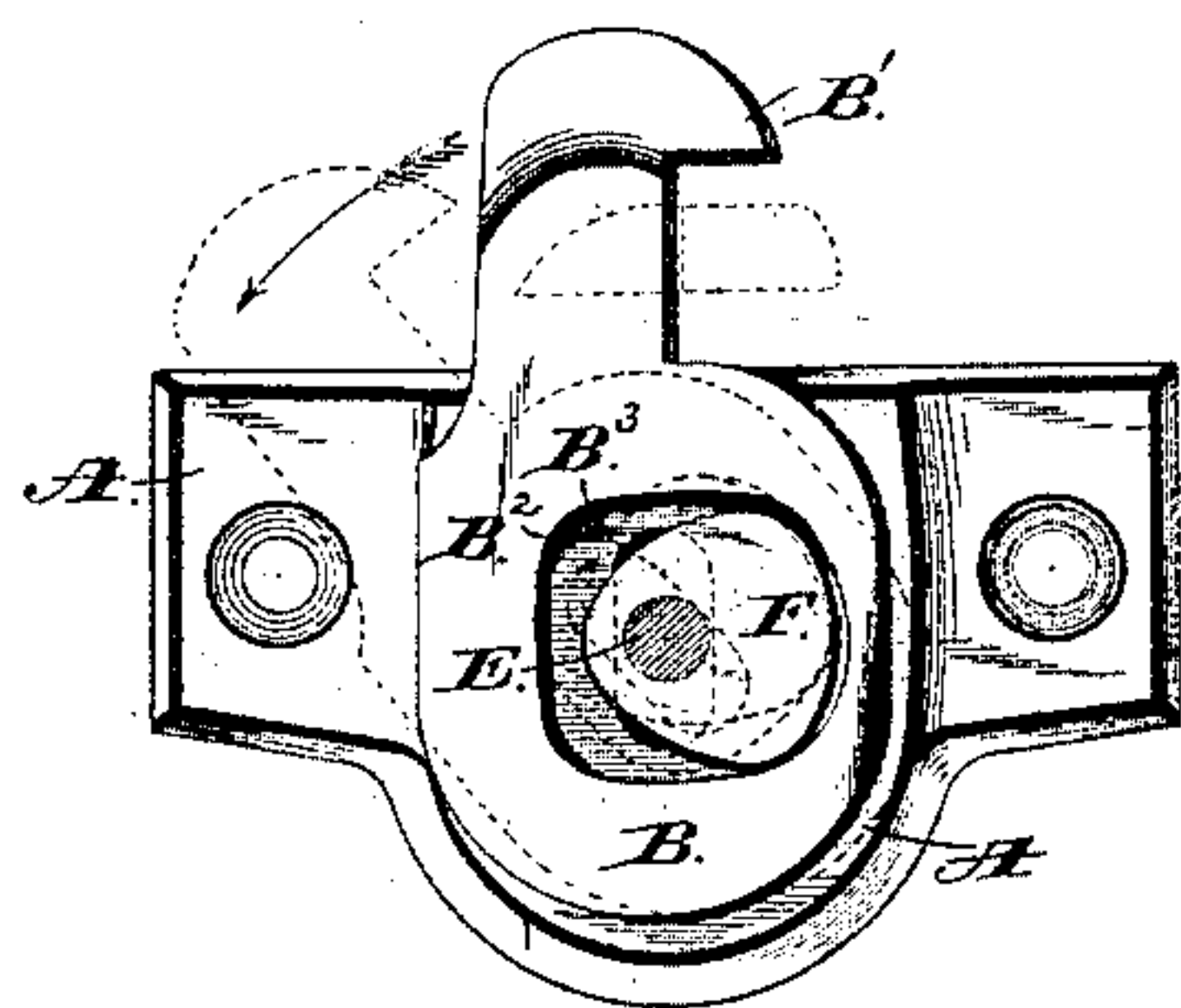


Fig. 7.

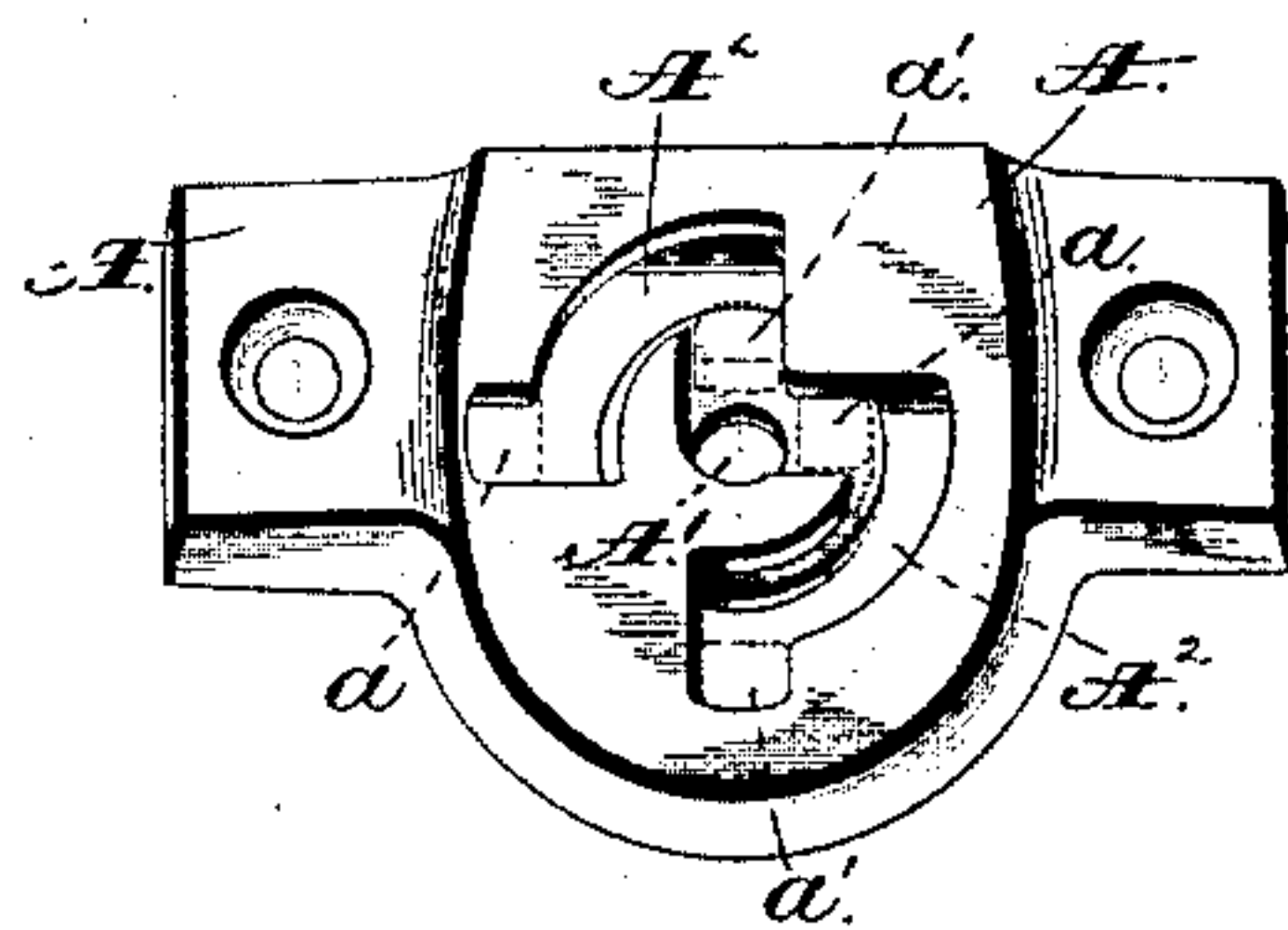


Fig. 8.

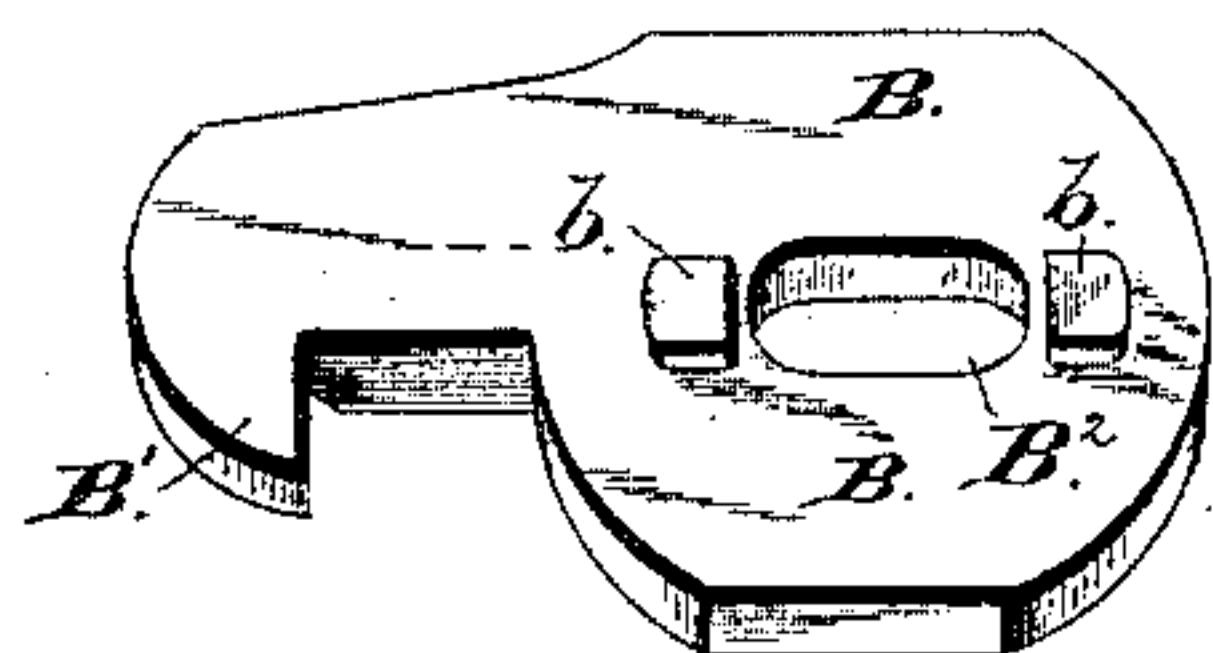
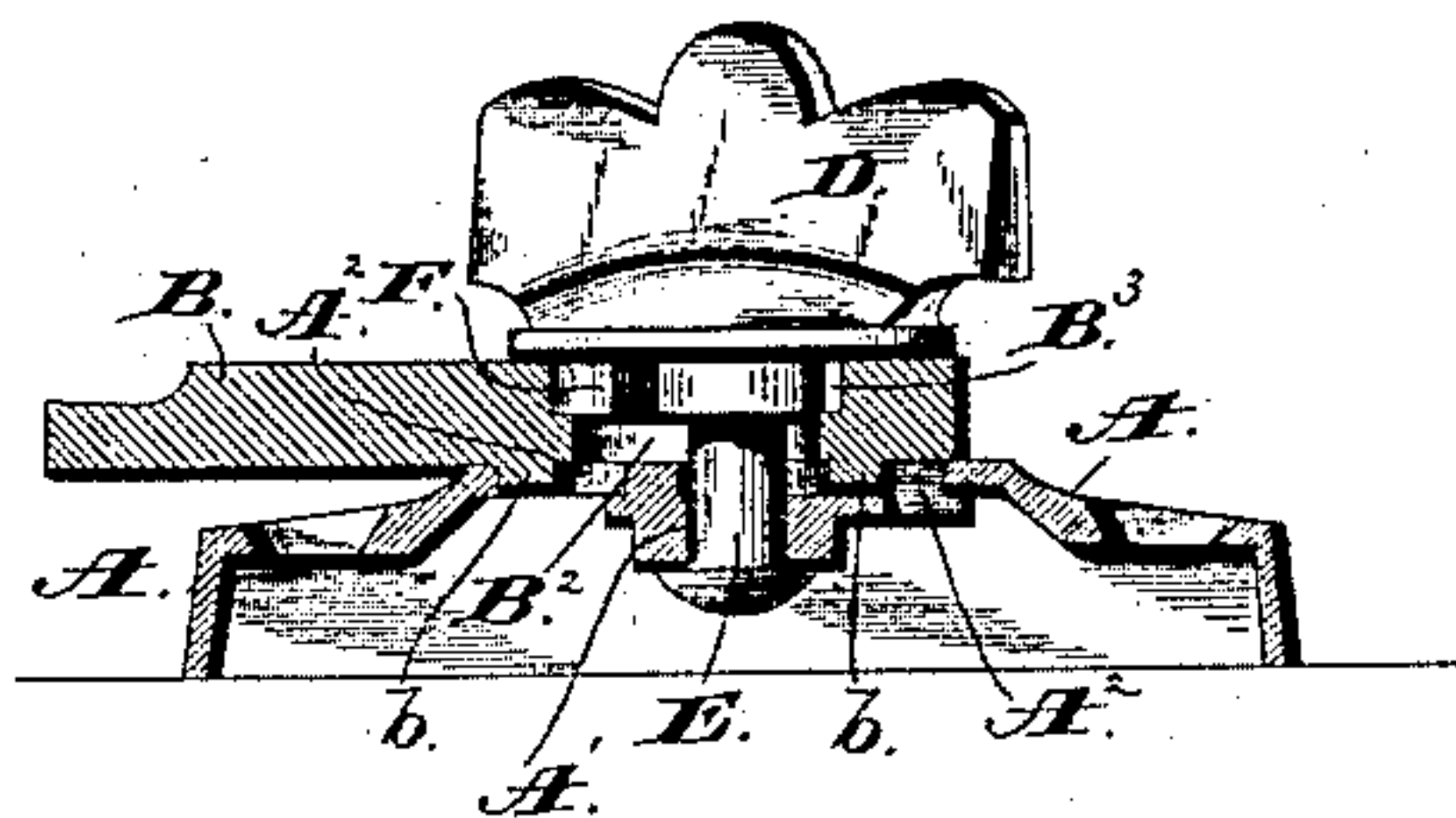


Fig. 9.



Witnesses:
Jas C. Hutchinson.
Henry C. Hazard

Inventor.
Thomas S. Smith
by Pringle and Russell
his attorneys.

UNITED STATES PATENT OFFICE.

THOMAS S. SMITH, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO
HOBART B. IVES AND COMPANY, OF NEW HAVEN, CONNECTICUT.

SASH-FASTENER.

SPECIFICATION forming part of Letters Patent No. 398,549, dated February 26, 1889.

Application filed February 3, 1888. Serial No. 262,839. (Model.)

To all whom it may concern:

Be it known that I, THOMAS S. SMITH, of Washington, in the District of Columbia, have invented certain new and useful Improvements in Sash-Fasteners; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows a perspective view of my fastener with the parts in position as when the latch is locked open; Fig. 2, a plan view of the same with the portion of the knob or turning-handle to which the operating-cam is attached removed; Fig. 3, a similar view showing the cam turned to cam the latch longitudinally, so as to unlock it preparatory to swinging it around into fastening position; Fig. 4, a similar view showing the cam turned to swing the latch into position to engage the keeper; Fig. 5, a similar view showing the latch cammed inward to draw the sashes together and lock them securely; Fig. 6, a like view showing the cam and latch in the different positions taken by them as the latch is unlocked and swung back toward its front position; Fig. 7, a detail perspective view of the base with the latch removed, but with the lugs or pins on the latch shown in the positions taken by them when the latch is in its open and closed positions; Fig. 8, a like view showing the lower side of the latch, and Fig. 9 a view of a vertical section of the fastener on line *x x* of Fig. 2.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to provide an improved sash-fastener; and to this end my invention consists in the fastener and in the construction, arrangement, and combination of the parts thereof, as hereinafter specified.

In the drawings, A designates the base-plate upon which the latch and operative parts of the fastener are supported. This base-plate is to be fastened in place on the sash, or where desired, by any suitable means. As shown, it is like the base or bottom plates of the fasteners now in the market, provided with holes for attaching screws on opposite sides of its central portion. The method or means of attaching the fastener base-plate does not, however, constitute any part of my

invention, and I do not therefore limit myself to any particular form thereof.

Upon the upper face of the base A slides and swings the latch B, consisting of the main pivotal portion resting on the base and the hook B' extending out therefrom for engagement with the keeper or stud C in the usual and well-known way. Such keeper is preferably, as shown, of a hooked form—that is, having a sidewise-extending lug or arm, C', in position to engage the upper side of the shank of the latch-hook B' when said hook is in engagement with the keeper, and so hold the latch-hook down.

In the main or pivotal portion of the latch is the usual longitudinal slot, B², cut down through the latch, and in the upper side of such latch portion is the recess or depression B³. As shown, this recess is rectangular in general shape, with the corners of the rectangle rounded; but I do not limit myself to such shape or configuration.

On the under side of the latch B are shown two guide lugs or studs, *b b*, substantially in line with and at opposite ends of the slot B². The two lugs or studs are not, however, both necessary to the proper action of my fastener. One or the other may be dispensed with without departing from my invention, and without changing the operation of the parts of the fastener. For the engagement of each guide-lug used there is in the base a curved slot, A², concentric with the pivot-pin hole A'. The one of these slots which engages the forward or outer lug *b* extends from a point at one side of the pivotal opening A' around through a quarter of a circle to a point directly in front of such opening, while the other guide-slot extends from a point diametrically opposite the rear end of the first slot around rearward to a point diametrically opposite the forward end of the same. At the forward end of the slot A² which engages the forward lug *b* on the latch a notch or offset, *a*, extends radially inward, while at the rear end of the other slot A² a similar notch, *a*, or offset extends radially outward in line with the pivotal opening A' in the base and the notch or offset from the forward end of the other notch. At the rear end of the slot engaging the forward latch-lug *b* is shown an outwardly - ex-

tending radial notch or offset, a' , and at the forward end of the other slot is the radially-inward extending notch or offset a' , diametrically opposite the notch or offset at the rear end of the other slot A' .

Where only one lug b on the latch is used, the guiding-slot for the other lug, together with its end offsets, can be dispensed with.

Extending down from the operating knob or handle D is the pivot-pin E , passing through the slot B' in latch B and the pivotal opening A' in the base. At its lower end this pin can be headed or otherwise fixed against disengagement from the pivotal opening. Said pin can be rigidly attached to or made in one piece with the knob, or the latter can be pivoted upon it, so as to turn around it.

The knob or handle D is on its under side provided with the cam F , situated within the recess B^3 in the latch. Such cam is preferably of the triangular form shown, with the pivot-pin or axis of rotation of the knob passing through it near one apex of the triangle, and the side of the cam opposite to such apex substantially concentric to the axis of rotation of the knob. Both the corners and sides of the cam are preferably rounded; but such rounding is not necessary.

The operation of my fastener is as follows: With the latch open and the parts in the position as shown in Fig. 2, the forward and rear guiding-lugs $b b$ on the latch occupy the locking-offsets $a a$ at the rear and forward ends, respectively, of their respective guiding-slots A^2 and A^2 . The latch cannot then be swung forward toward its fastening position until it has first been moved longitudinally inward to disengage the lugs $b b$ from their locking-notches in the base. The cam F , engaging the end or side of the recess B^3 toward the hook end of the latch with a portion of its outer side, as shown, holds the latch positively against such longitudinal inward movement. The latch cannot then be accidentally moved inward, so as to leave it in unlocked position, until the knob D has been turned to rotate the cam F from the position shown in Fig. 2 to that shown in Fig. 3. Until the knob and cam have been so turned the latch will be then positively locked open, and cannot in any way be accidentally swung into position to injure the bars of the upper sash as the lower sash is moved up or down. As will be observed in Fig. 2, the portion of the outer side of the cam in contact with the recess wall or side is substantially in line with the center of rotation of the cam, so that the pressure by such wall upon the cam—such as would take place if it should be attempted to force the latch inward—cannot have any tendency to rotate the cam. Upon turning the knob D to swing the cam F toward the position occupied by it in Fig. 3, said cam first passes out of engagement with the outer or front side of the recess B^3 , and, engaging the opposite rear or inner recess side with an eccentric portion of its face, cams the latch longitudi-

nally inward to clear the guide-lugs $b b$ thereon from their notches $a a$ in the base. Continued swinging of the cam F , as the latch can no longer move longitudinally on account of the engagement of the guide-lugs $b b$ on the latch with the concentric curved slots $A' A'$ in the base, will then cause the latch to swing around the pivot-pin E as a center until it arrives at the position shown in Fig. 4. During this swinging the cam has continued to have its eccentric side or portion in contact with the rear recess side. Upon arriving at the position shown in Fig. 4, so as to engage the keeper C , the latch is prevented from further swinging by the engagement of its guide-lugs with the ends of the guide-slots $A^2 A^2$ in the base. Said guide-lugs are now opposite the offsets $a' a'$, extending radially from such ends of the slots, and the cam, engaging the rear or inner wall of the latch-recess B^3 , cams the latch longitudinally inward, which movement of the latch brings the lugs or studs $b b$ into full engagement with the said locking notches or offsets from the curved guiding-slots $A^2 A^2$. The rotation of the cam now brings a portion of the outer side or face of the cam around into contact with the rear side of the recess B^3 , as shown in Fig. 5, so as to hold the latch positively in its inward or rearward position. The line of pressure of the recess-wall upon the outer cam-face is substantially in line with the pivotal center of the cam, so that such pressure can have no tendency to turn the cam. Upon turning the knob in the other direction to unfasten the sashes, the cam first disengages itself from the outer rear recess side, and then engages the former side of the recess, so as to cam the latch longitudinally outward to clear its lugs or studs $b b$ from locking-notches $a' a'$. The lugs and notches being disengaged and the latch prevented from further outward movement by the engagement of the lugs with the sides of the curved guide-slots $A^2 A^2$, further movement of the cam causes the latch to swing back until the lugs or studs $b b$ thereon come in contact with the ends of the slots $A^2 A^2$ and in line with the notches or offsets $a a$ for locking the latch open. Continued rotation of the cam then causes the latch to be cammed outward, so as to carry the latch-lugs into such offsets, and brings a portion of the outer face or side of the cam around into contact with the outer or forward recess side to hold the latch positively outward, as in the position of the parts first described.

While I prefer to have the lugs $b b$, as shown, substantially in line with the longitudinal slot B^3 in the latch, I do not limit myself to such particular location of them. They can be changed somewhat in position, the slots $A^2 A^2$ and the locking-notches $a a$ and a' being correspondingly changed, so that each notch shall be properly situated for receiving and engaging its lug when the latch is moved longitudinally.

While I prefer to have the cam F shaped

substantially as described, with its outer side concentric with its center or axis of rotation, I do not limit myself to such shape. It is sufficient if at or near the ends of the outer side of the cam there are faces adapted to squarely and positively engage the front and rear walls of the latch-recess B^3 , so as to hold the latch positively outward or inward, as described hereinbefore. As the end portions only of the outer side or face of the cam are then necessary for this engagement of the recess-walls, the central portion of such face or side can, if desired, be removed or cut away, as indicated in dotted lines in Fig. 5, without interfering with the operation of my fastener or departure from my invention.

As indicated hereinbefore, either one of the guide-lugs b on the latch and the corresponding guiding-slot in the base, with its respective notches or offsets a and a' , can be dispensed with.

My fastener, as shown and described, is simple, strong, and easy and efficient in action. It draws the sashes closely together, holds them fastened, while preventing their rattling, and is locked securely both in its open and shut positions. In neither of these positions can the guide lug or lugs on the latch become disengaged from the locking notch or notches on the base by accident, or until the operating-knob is turned. Obviously the arrangement of the guide lug or lugs and the guiding slot or slots can be reversed without departure from my invention—that is, the guide lug or lugs can be attached to the base and the engaging guideways or slots can be made in the latch. As such a change would be a mere reversal of the parts, not involving any patentable invention, I consider the resulting construction entirely within the scope of my invention, as described and claimed in the present application.

Having thus described my invention, what I claim is—

1. In a sash-fastener, in combination with the latch provided with the cam-engaging recess, the cam adapted to engage the outer side of the recess to force the latch outward and provided with an abutting portion to be swung around behind such side of the recess, so as to hold the latch positively outward, substantially as and for the purpose shown.

2. In a sash-fastener, in combination with the latch having the longitudinal slot and the cam-engaging recess, the pivot-pin engaging the slot, and the rotary cam adapted to engage the recess-side, so as to force the latch outward, and having an abutting face on its outer side adapted to be brought by the rotation of the cam around behind the recess-side, so as to lock the latch positively outward, substantially as and for the purpose set forth.

3. In a sash-fastener, in combination with the latch having the cam-engaging recess, the base, and engaging, guiding, and locking de-

vices on the base and latch, respectively, to guide the latch in its swing and lock it from swinging as it is moved longitudinally at the ends of its swing, and the rotary cam having portions to engage the latch-recess sides to swing the latch and move it longitudinally, and with abutting faces on its outer side adapted to be moved around behind the engaged recess-sides when the latch has been moved longitudinally, so as to lock the latch positively against return movement, substantially as and for the purpose described.

4. In a sash-fastener, in combination with the base provided with a curved guiding-surface having an inwardly-extending offset or notch at one end and a radial shoulder at the other, the latch having the longitudinal slot, the cam-recess, and the guide-lug, the pivot-pin engaging the slot in the latch, and the cam having the surfaces adapted to engage the recess-sides, so as to swing the latch and move it longitudinally at each end of its swing, and the abutting faces on its outer side adapted to swing around behind the recess-sides when the latch has been moved longitudinally, so as to positively lock the latch as moved, substantially as and for the purpose specified.

5. In combination with the swinging and longitudinally-moving latch provided with the cam-recess, the cam having the two eccentric sides for engaging opposite sides of the recess as the cam is swung in one direction or the other, and substantially concentric faces on its outer side for engagement with the recess-sides when the latch has been moved longitudinally, substantially as and for the purpose shown.

6. In combination with the base having a curved guiding-surface and an inwardly-extending notch at one end of such surface and a shoulder at the other end, the latch having the guide-lug, the longitudinal slot, and the cam-recess, the pivot-pin, and the cam having eccentric portions to engage opposite sides of the cam-recess and substantially concentric portions on its outer side to engage the recess-sides after the eccentric portions of the cam have acted upon them, substantially as and for the purpose set forth.

7. In a sash-fastener, in combination with the base having the two concentric slots with oppositely-extending locking-notches at their opposite ends, the latch having the two guide-lugs and the cam-recess, and the triangular cam having the two eccentric sides and the concentric outer end or side, substantially as and for the purpose shown.

In testimony that I claim the foregoing I have hereunto set my hand this 3d day of February, 1888.

THOMAS S. SMITH.

Witnesses:

WILLIAM FITCH,
GEORGE E. TEW.