

(No Model.)

2 Sheets—Sheet 1.

S. S. BRADSHAW.
REVERSIBLE WINDOW.

No. 572,521.

Patented Dec. 8, 1896.

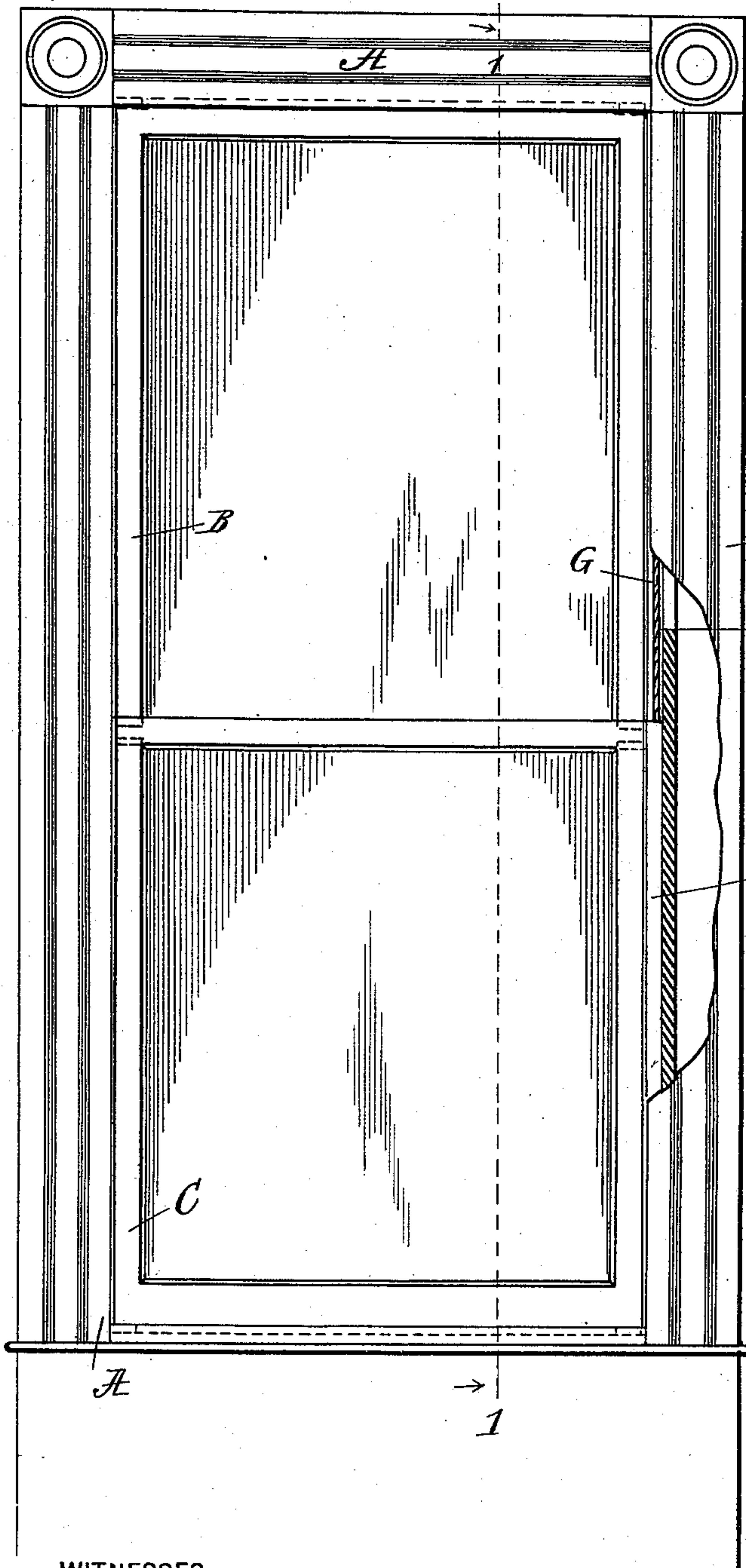


Fig. 1

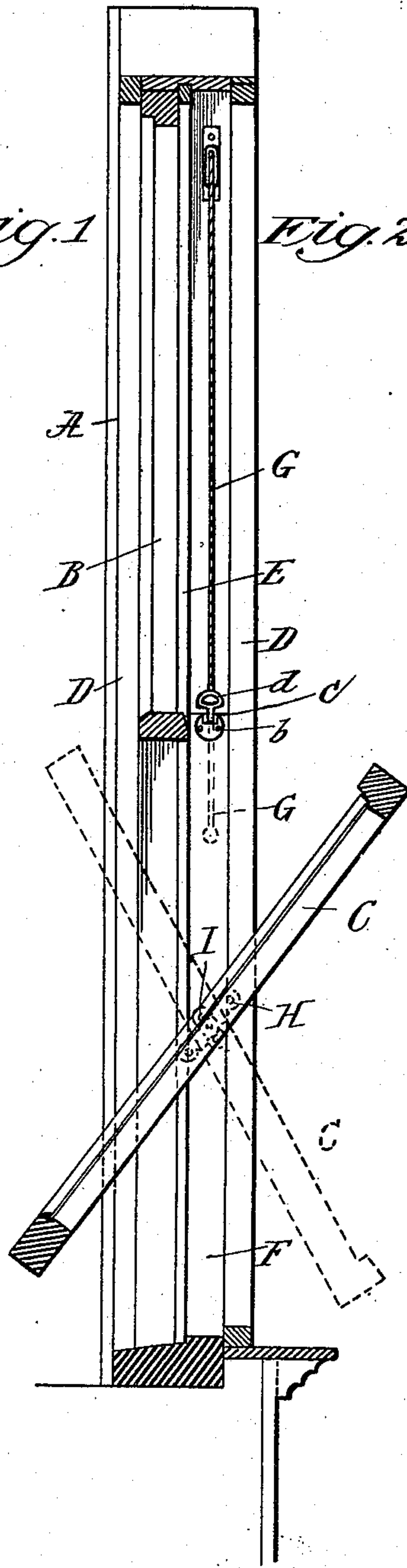


Fig. 2

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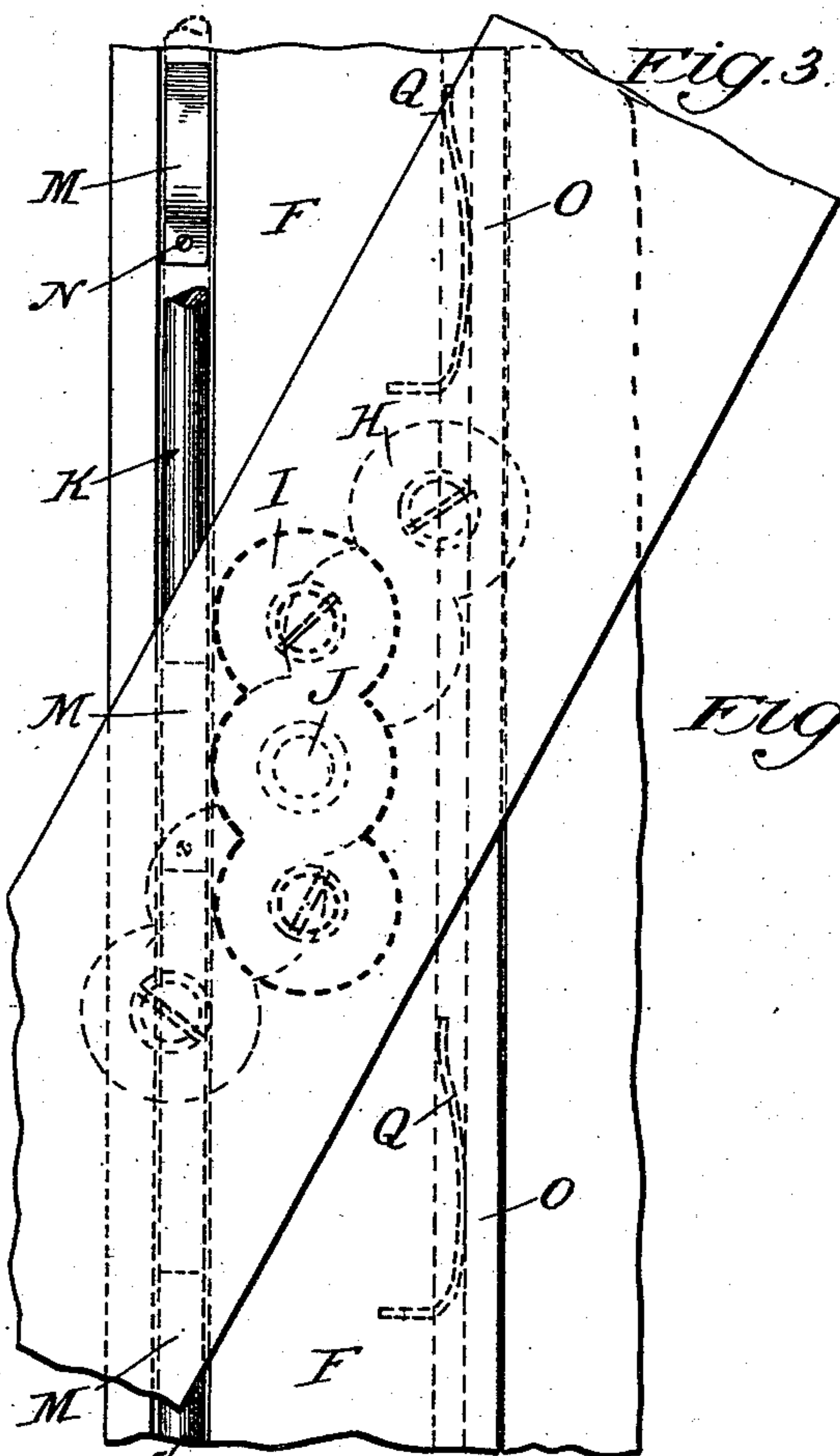


Fig. 3.

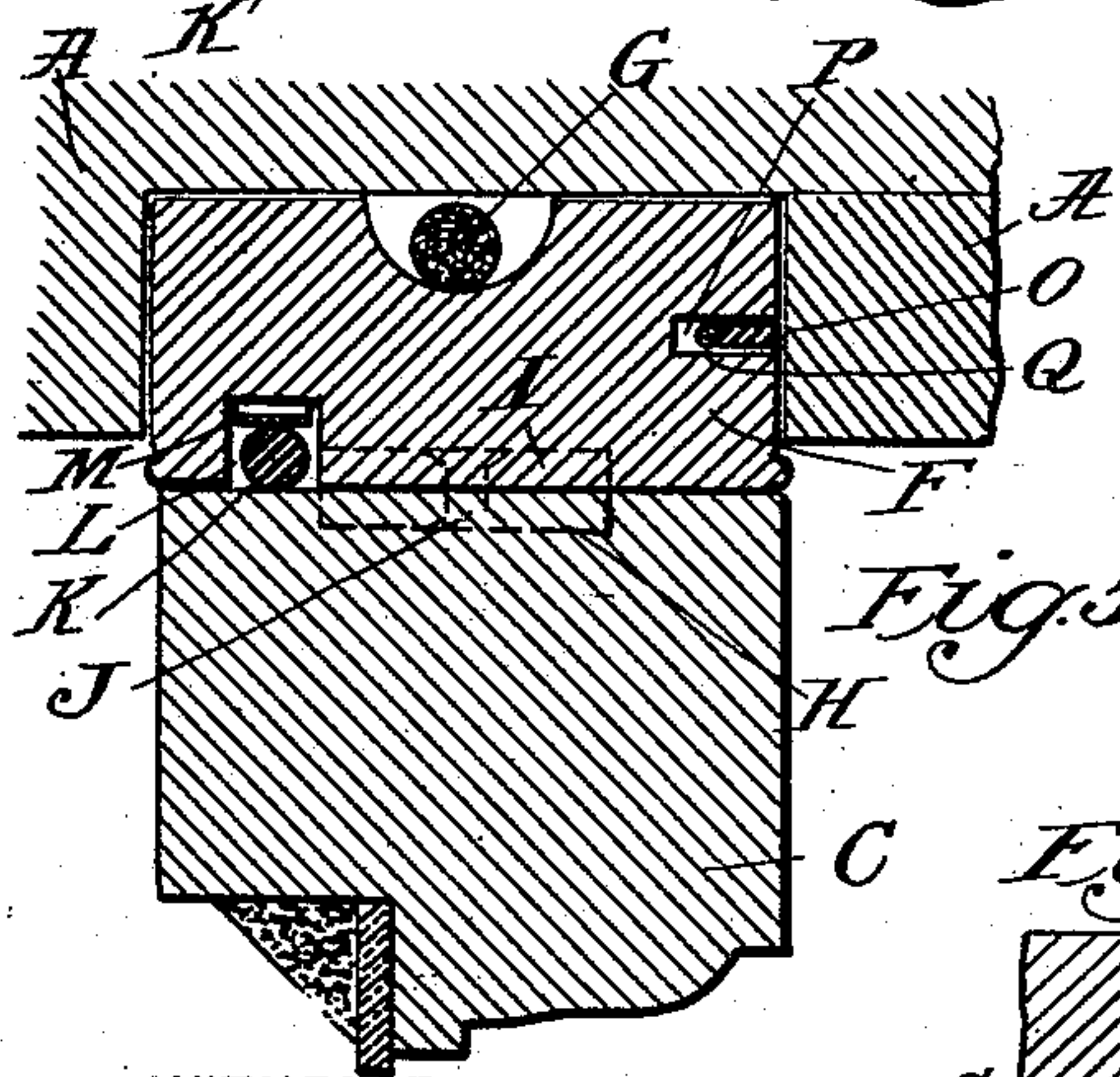
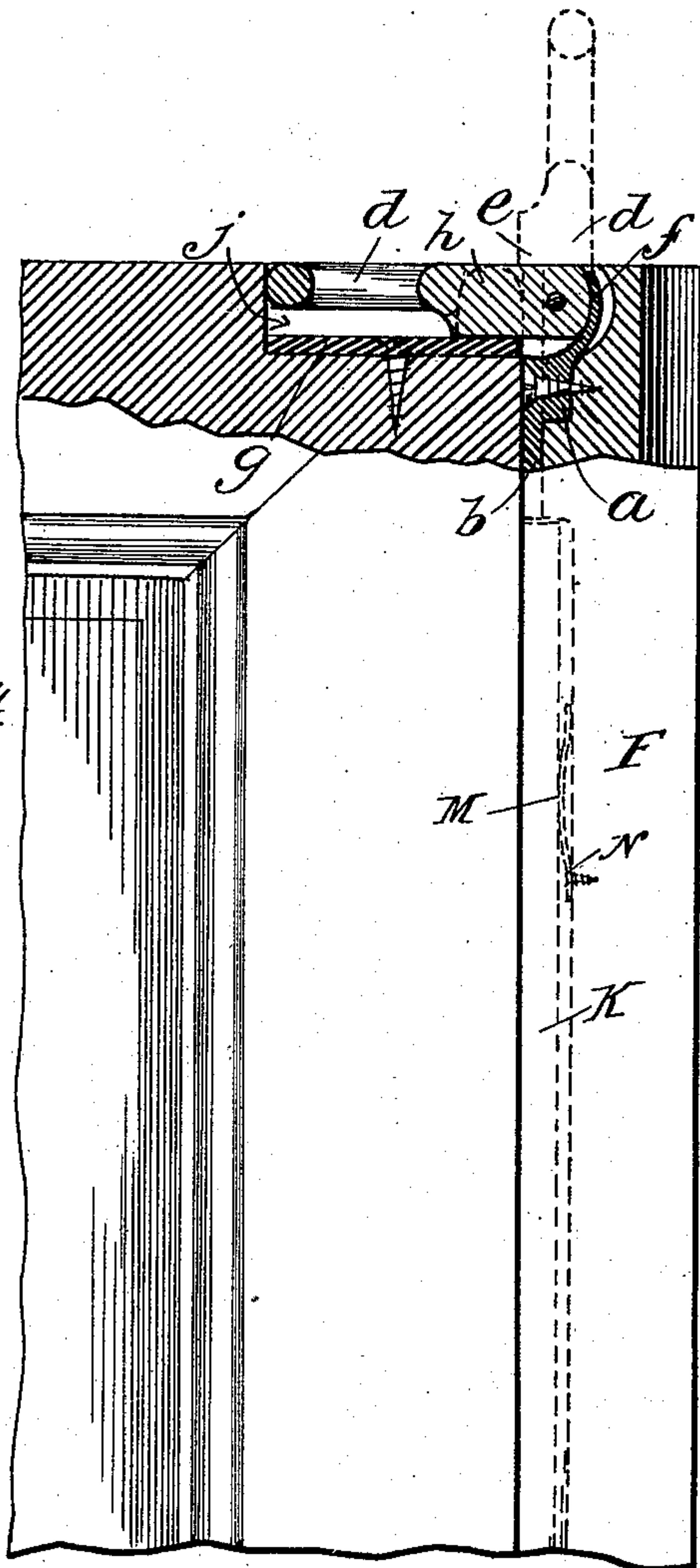


Fig. 4.

Fig. 5.

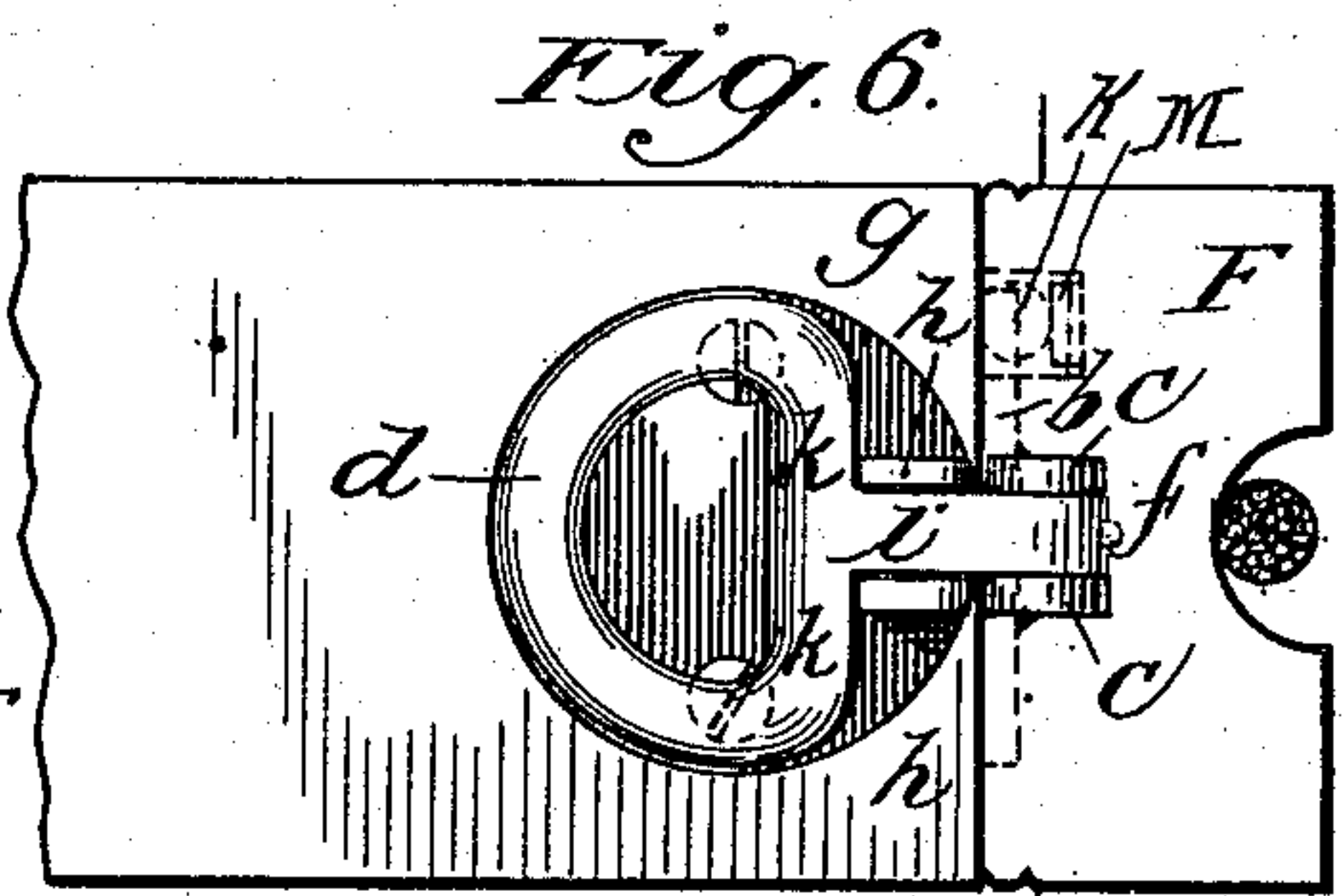


Fig. 6.

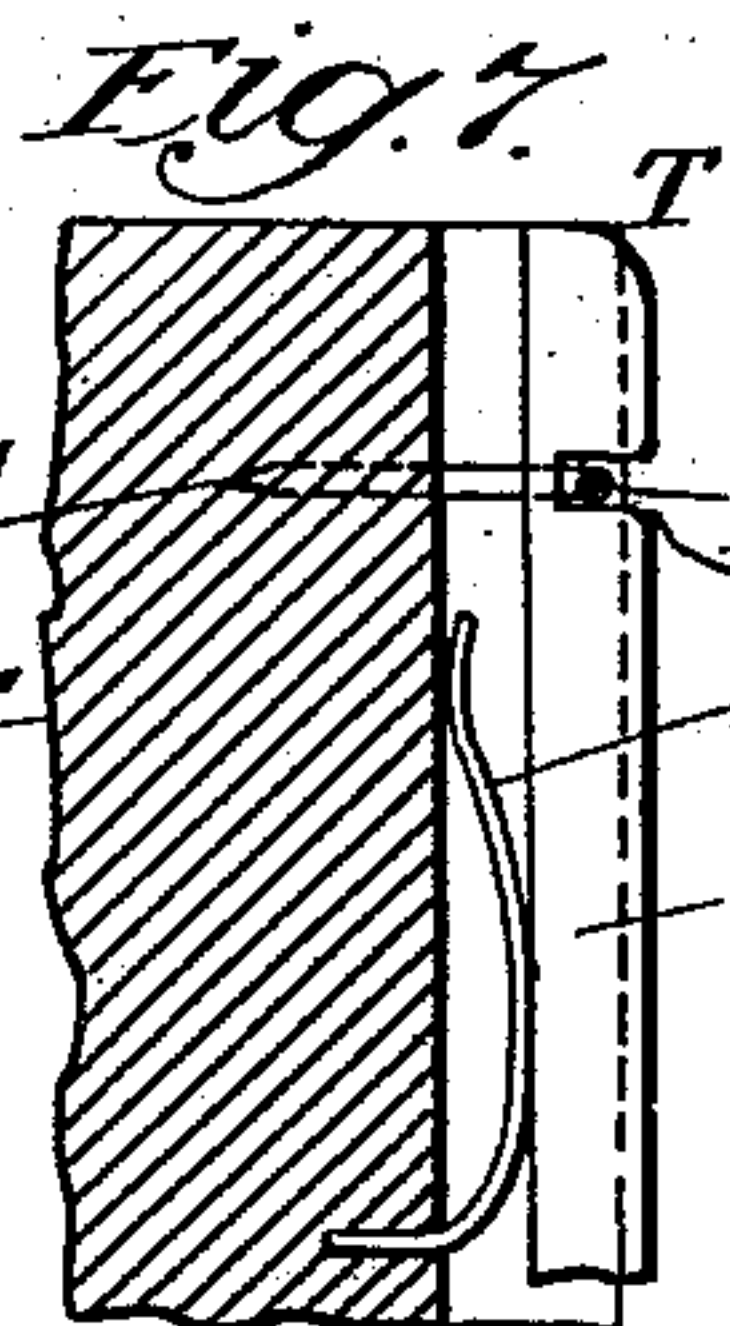


Fig. 7.

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UNITED STATES PATENT OFFICE.

SILAS S. BRADSHAW, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF
TO CHARLES LYONS, JR., OF NEW YORK, N. Y.

REVERSIBLE WINDOW.

SPECIFICATION forming part of Letters Patent No. 572,521, dated December 8, 1896.

Application filed April 6, 1896. Serial No. 586,364. (No model.)

To all whom it may concern:

Be it known that I, SILAS S. BRADSHAW, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Reversible Windows, of which the following is a specification.

My invention relates to improvements in windows of the class known as "reversible"—
i. e., windows which are so constructed that the sash is adapted to turn upon pivots, so that the surface of the glass, which is normally presented outwardly, may be presented inwardly, thus enabling the windows to be cleaned without exposing the cleaner to danger by reason of having to get bodily outside of the window or to lean out of it to gain access to the outer surface of the glass.

Windows of the class referred to have independent sliding strips which rest in and move vertically through the recesses between the stop-beads and parting-strip of the window-frame, and the sash is pivoted to these sliding strips; there being necessarily a crack or opening between the sash and the strips on each side of the window.

The purpose of my present invention is to provide inexpensive, reliable, and permanent means for sealing the crack or opening between the sliding strips and the sides of the sash; also, means to snugly close the joint between the strips and the sash and prevent movement of the latter relative to the strips when the window is in its operative position; also, means to seal the joint between the strips and the window-frame proper.

As windows of this class have heretofore been made the crack or joint between the sliding strips and the sash has been closed in a variety of ways, sometimes by interlocking surfaces which are mechanically defective and require special manipulation before the sash can be tilted, sometimes by the employment of felt, rubber, or other similar material, all of which rely upon their compressibility or flexibility to perform their functions. They have been found objectionable, first, because they lack permanence either on account of the hardening of felt-like materials, or their becoming saturated with paint, &c., or because they lose flexibility by reason of

paint, or in the case of rubber by atmospheric oxidation, so that all such means known to me are relatively short lived, and as to the means which have been heretofore used for drawing the sliding strips snugly against the edges of the sash and locking these parts together for the purposes stated they have, so far as I am aware, always been open to view on the face of the sash, thus defacing it, and being plainly in sight they induce tampering by mischievous persons, which results in derangement of the apparatus, from which fracture or at least imperfect operation is apt to result.

By my improvements I remove all of the objections incident to the old forms of sealing-strip and locking devices, and not only so but my appliances are in both cases less expensive, and in addition they embrace a sealing device which closes the joint between the sliding strips and the window-frame proper, so that in my windows not only the joint between the sliding strips and the sash, but also the joint between the sliding strips and the window-frame proper are sealed against the passage of cold, rain, dust, &c., and the latches draw the parts together and maintain their desired position relative to each other.

Referring to the drawings, Figure 1 illustrates an elevation of a two-sash window embodying my improvements. Fig. 2 illustrates an edgewise sectional view, taken on the line 1 1 of Fig. 1, looking in the direction of the arrows. Fig. 3 illustrates a detail of the invention, showing the sash in a partially tilted or reversed position. Fig. 4 illustrates a detail, partly in section, of the device whereby the sliding strips and sash are drawn together and locked. Fig. 5 illustrates a horizontal sectional view taken through the window-casing, sliding strip, and sash. Fig. 6 illustrates a plan view of one of the locking devices, that located on the upper side of the lower sash being taken as an example. Fig. 7 illustrates a detail of the devices which seal the joint between the sliding strip and the window-frame proper.

A is the window-casing, which may be made in any usual form.

B is the upper sash.

C is the lower sash.

D D are the inside and outside stop-beads.

E is the parting-strip.

F F are the sliding strips, there being one
5 on each side of the sash, as usual.

G is the weight-cord attached to the sliding strips as usual.

H and I are respectively two plates, one of them being attached to each sliding strip and
10 the other to the sides of the sash opposite one another, and J is a pivot passing through the centers of these two plates, there being one on each side of the sash, and which act as the axis on which it turns. These pivot-plates
15 are of a special construction, as shown. I do not, however, herein further describe them, nor do I claim them in this application, because they form the subject-matter of another application for Letters Patent for design filed
20 by me April 6, 1896, it being Serial No. 586,455.

The parts as thus far described (excepting the pivot-plates, as aforesaid) are or may be of any usual or preferred construction.

25 I will now refer to the features which constitute my present invention.

Referring more particularly to Figs. 3 and 5, my sealing device consists in a bar or rod K, which is located in a recess L, made either
30 in the sliding strip or in the sash. I prefer it to be in the sliding strip, because if so then when the sash is tilted it presents a smooth unbroken edge, whereas if the sealing device were attached to the sash it would be
35 liable to derangement during the cleaning operation, and also the grooves or recesses L, as well as those for the other sealing-strip about to be described, can be much more conveniently and economically made on a "stick-
40 ing" machine in the sliding strips than in the sides of the sash. I prefer to make the bar or rod of round metal in the form of a heavy wire, say, approximately, three-sixteenths of an inch in diameter. It is not essential, how-
45 ever, that it be round, although it is desirable that its surface which engages with the opposing part should be curved, so as to present no cutting edges to abrade or roughen those parts as they shear past one another,
50 and likewise it is not essential that they should be of metal. A strip of hard wood or any other suitable material may be substituted for the metal. I prefer metal, however, because of its durability and strength. These
55 sealing strips or bars K, whatever their shape and material may be, are fastened in the recesses L in any suitable manner, so as to prevent longitudinal movement, as, for instance, a small hole may be drilled through them cen-
60 trally, through which a single pin may pass, entering the sash or the sliding strip, as the case may be. The pin should preferably be located adjacent to the pivot-plates. The hole in the sealing-strip through which the
65 pin passes should be preferably larger than the pin, so that the sealing-strip may move laterally and engage with the sides of the re-

cess in which it rests under the shearing action of closing the window.

It will be noted that owing to the sash be- 70
ing centrally pivoted the upper half of the sealing-strip will be pressed laterally into contact with one side of the recess and the lower half will be pressed laterally in the op-
75 posite direction against the opposite side of the recess. Thus there will be a sealing effect not only between the sealing-strip and the sash, but also between the strip and the sides of the recess in which it rests throughout
80 practically the length of the sealing-strip, it being borne in mind that the sealing-strip practically fills the recess in which it rests. At the middle portion of the strip this action
85 does not take place, because of the crossing over of the sealing-strip from one side of its recess to the opposite side. In order to secure the close contact between the bar K and the surface against which it seals, it is necessary
90 that the bar should tend normally to move outwardly from the recess in which it fits, and this effect can be produced either by curving the bar, so that it is a spring in and of itself, or preferably by the employment of springs
95 M, located behind the bar, which force it outwardly into contact with the opposing surface. This being the form which I prefer it is the form which I illustrate. The springs
100 M are or may be fastened in the bottom of the groove or recess L by a single screw or tack N, preferably located near one end of the spring, the other end being left free and turned upwardly somewhat to avoid abrasion of the bottom of the groove during its op-
eration.

The devices which seal the joint between 105
the sliding strips and the window-frame proper are best shown in Figs. 3, 5, and 7. O is a strip of metal, wood, or equivalent material which is set in a recess P, formed lon-
110 gitudinally in the edge of the sliding strips, and Q are springs, shown in this instance as made of spring-wire, one end of which is fastened in the sliding strip and the other free
115 end is turned up to avoid abrading the strip during its operation. These springs are spaced as frequently as desired, and they tend to throw the strips O outwardly and into en-
120 gagement with the stop-beads or parting-strips, as the case may be, of the window-frame, and in order that the strips O may not move longitudinally nor separate from the
125 sliding strips during transportation or when the strips are separate from the window-frame I cut slots R in the strips O, as shown in Fig. 7, in which I set staples S, which will confine
130 the strips O against longitudinal movement and will limit their lateral movement to a degree sufficient to fully seal the joint. I round the ends of the strips O, as shown at T, and also the corners adjacent to the notches
R, so that they will smoothly slide along the stop-beads or parting-strip without abrading the wood thereof.

Referring now to the devices which draw

the sliding strips and sash toward one another and lock them together and having special reference to Figs. 4 and 6, *a* is a small casting comprising a circular plate *b*, having rearwardly-extending lugs or brackets *c c* upon it.

d is a latch pivoted to the lugs *c c* by pivot *e*. The rear edge of this latch is preferably squared and provided with a spring *f*, which engages with it, so that it will be held either in an elevated or in a depressed position by reason of the spring engaging the squared surfaces upon the latch.

g is a circular metallic plate having cast upon it two upwardly-presented lugs *h h*, which are separated by a distance not less than the width of the shank *i* of the latch *d*. This plate *g* is set in the bottom of a recess *j*, made in the upper member of the sash-frame, and the recess is of such depth that when the latch *d* is in position, so that its shank rests between the lugs *h h*, then the upper edge of the latch will be preferably about flush with the top of the upper member of the sash, and in order that the latch may draw the sliding strip and sash firmly together the latch is so made as to have parts *k k* at right angles to the shank *i*, which engage with the curved upper edges of the lugs *h*, so that when the latch is pressed downwardly, acting as a lever, the engagement of the surfaces will exert a cam-like action and draw the sliding strips and the sash together, thus not only bringing their surfaces into contact with one another, which largely and under ordinary circumstances entirely closes the joint, but also puts the sealing devices already described under pressure, which completely seals the joint.

The above-stated cam-like operation of the latch is exceedingly valuable in my combination, because without it the effect of the springs under the sealing-strip will be to force the sliding strips and the sash apart, thus opening and keeping open a wide crack, the very thing sought to be avoided, and also the lateral pressure will force the sliding strips hard against the rabbet in the window-frame and occasion great friction in lifting and lowering the sash.

In order that the latch may be easily manipulated, I prefer to make it hollow centrally, as shown, and its outer end or ring-shaped part is prevented from dropping into the recess *j* by reason of the part of the shank which is near the pivot coming in contact with the plate *g*, which prevents it from falling, so that there is always space between the plate and the ring, in which the end of one's finger may pass to lift the latch when desired.

The operation of the improvements has been so fully set forth during the preceding description that further explanation is unnecessary, excepting to call attention to the following special points:

The sealing devices between the sliding

strips and the sash as the parts shear past one another are not only pressed back into the recess or groove *L*, thus creating close contact between them and the surface against which they seal, but also they are moved laterally to one side or the other of that groove and pressed firmly against it. Consequently no air, water, or dust can enter the crack and pass around these sealing devices and enter the apartment. Also the permanence of this means of sealing the joint is substantially without limit, because during use the movement of the parts is so slight that fracture of the sealing strips or bars or of the springs *M* in rear of them (if they be used) is practically impossible. The pressures are applied and relieved in a smooth uniform manner and with very little motion of any part. Also the nature of the materials employed, preferably heavy metallic wire, which may be coppered or galvanized to resist atmospheric influences, is such that they will probably outlive the sash itself.

The statements just made apply with equal force to the sealing devices between the sliding strips and the window-frame proper, and in addition to preventing the passage of drafts, dust, rain, &c., this feature performs another function, which is of great importance, particularly in dwelling-houses, *i. e.*, it takes the place of a weather-strip, which is always a defacement to a window, and likewise is a complete "antirattle" device. Windows in dwelling-houses as now constructed, particularly if they be opened for ventilation, as is apt to be the case in sleeping-apartments, so that the sash-lock cannot be used, rattle continuously by reason of heavy vehicles passing in the street, or because of windy weather, so that wedges and all sorts of appliances have to be used in order that sleep may be enjoyed.

As to the locking devices, their simplicity and inexpensiveness will be particularly noted. They may be applied to woodwork with great ease and rapidity, because the castings in both instances are circular in outline. Consequently the recesses in the woodwork in which they are seated can be made with an ordinary bit or equivalent rotary tool, no chisel work whatever being required, excepting a single cut with a gouge to accommodate the lugs *c c* on the plate *b*. Attention is particularly called to the fact that when these locking devices are in position they are concealed from view on the upper and under sides of the sash, respectively, so that they do not attract attention, and ordinary observers would see no difference between my reversible windows and a non-reversible window. It is true that the locks which are on the upper member of the lower sash could be observed if a person examined the upper edge of that sash, but an ordinary observation would not disclose them, particularly as they are flush with the woodwork of the lower sash, and it is usually so high

as to be above the line of vision, and being flush they are protected from injury. Furthermore, since my locking devices are concealed from view, they can be made of cheaper metal and less expensively than if they were open to inspection and had to possess decorative features; also, being entirely removed from the face of the sash they do not deface the decoration of the window, either because of interrupting the optical effect or because of finger-marks, which usually accompany the manipulation of such devices.

It will be obvious to those who are familiar with this art that modifications may be made in the details of construction of the features of my improvements without departing from the essentials thereof. I therefore do not limit myself to said details.

I claim—

1. In a reversible window, the combination of sliding strips, a sash pivoted to the strips, a plurality of longitudinal grooves in the sliding strips, in each of which there are spring-actuated sealing rods or bars adapted to close the joints between the strips and the sash and the frame, respectively, for the purposes set forth.

2. In a reversible window, the combination of sliding strips, a sash pivoted to the strips, devices adapted to draw the sash and strips toward each other, and to hold them in their closed position, a plurality of longitudinal grooves in the sliding strips, in each of which there are spring-actuated sealing rods or bars, adapted to close the joint between the strips and the sash and the frame, respectively, for the purposes set forth.

3. The combination in a window of a sash, sliding strips therefor, pivots connecting the sash and the strips, spring-actuated sealing rods or bars, located between the opposing surfaces of the sash and the strips, and cam-acting locking devices adapted to draw the sash and strips together and to hold them together, for the purposes set forth.

4. The combination in a window of a sash, sliding strips therefor, pivots connecting the sash and the strips, spring-actuated sealing rods, located in the sliding strips and adapted to close the joint between the strips and the sash, and devices adapted to draw the sash and strips together, and to hold them together, for the purposes set forth.

5. The combination in a window of a sash, the stiles whereof are flat on their edges, sliding strips therefor, pivots connecting the sash and strips, a recess or groove in the sliding strips, adapted to receive a sealing-rod, spring-actuated sealing rods, located in the said grooves, adapted to engage with the flat surface of the sash-stiles and locking devices to draw the sliding strip and sash toward one

another, and to hold them together, for the purposes set forth.

6. The combination in a window of a sash, sliding strips therefor, pivots connecting the sash and the strips, spring-actuated sealing rods or bars located in a groove or recess in the sliding strips, and confined therein at one point only throughout their length, said strips being adapted to outward and also to lateral movement, for the purposes set forth.

7. The combination in a window, of a sash, the lateral edges of the stiles whereof are flat, sliding strips for the sash, pivots connecting the sash and the strips, spring-actuated rods or bars located between the opposing surfaces of the sash and strips, cam-acting locking devices to draw the strips and sash toward one another, and hold them together, and spring-actuated sealing rods or bars, located in the sliding strips and adapted to seal the joints between the strips and the window-frame, for the purposes set forth.

8. A tilting window, comprising a sash, pivoted sliding strips, and a combined joint-closing and rattle-preventing device, composed of a continuous spring-actuated rod or bar having curved ends, located in a recess in the sliding strips and constructed and arranged to close the joint between it and the window-frame, and means connected with the sliding strip, to limit the outward movement of the said rod or bar when the sliding strips are removed from the window-frame, for the purposes set forth.

9. The combination in a window of a sash, sliding strips therefor, pivots connecting the sash and the strips, locking devices to draw and hold said parts together, comprising a pivoted latch on the sliding strips and a striker-plate having lugs with cam-like surfaces, which engage with the latch to draw said parts toward each other, and to hold them together, for the purposes set forth.

10. The combination in a window of a sash, sliding strips therefor, pivots connecting the sash and the strips, and a device for drawing said parts together, and locking them in operative position, comprising a pivoted latch located upon the sliding strips and a striker-plate having upwardly-projecting lugs with cam-like surfaces which engage with the latch, and means upon the latch to prevent its extremity from engaging said striker-plate, for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 3d day of April, A. D. 1896.

SILAS S. BRADSHAW.

Witnesses:

PHILLIPS ABBOTT,
E. SIMPSON.