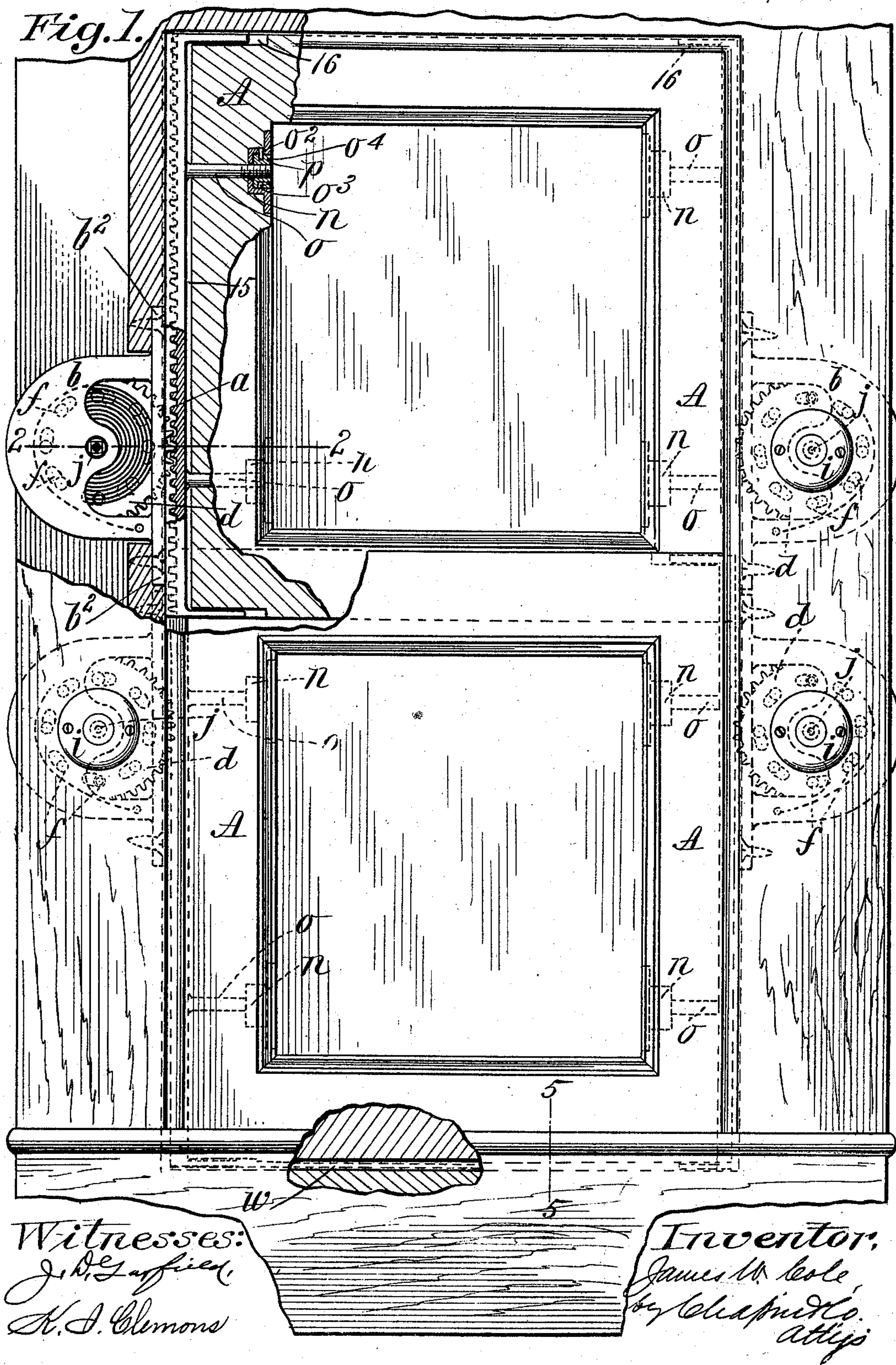


J. W. COLE.
SASH FASTENER.

No. 575,415.

Patented Jan. 19, 1897.



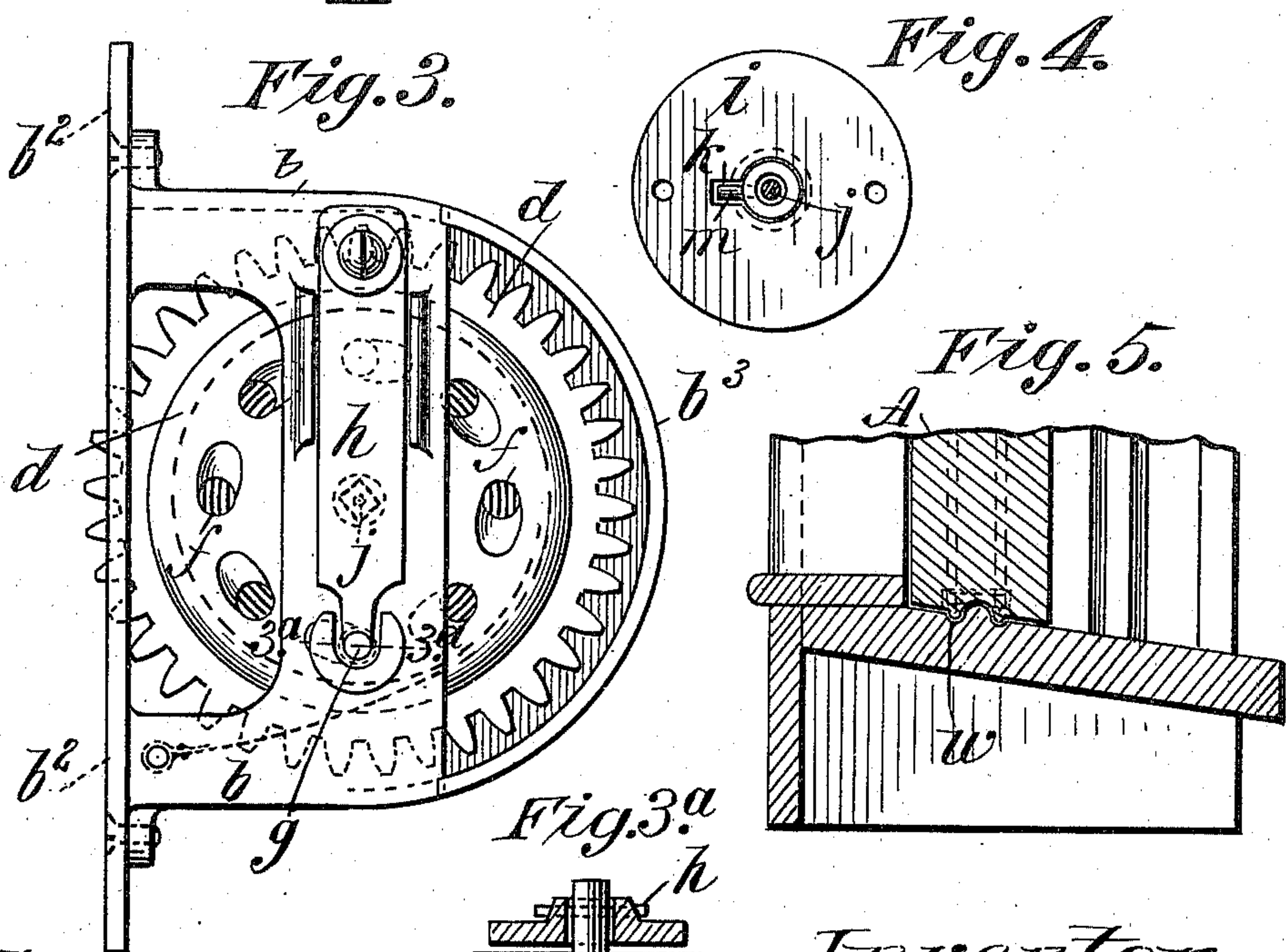
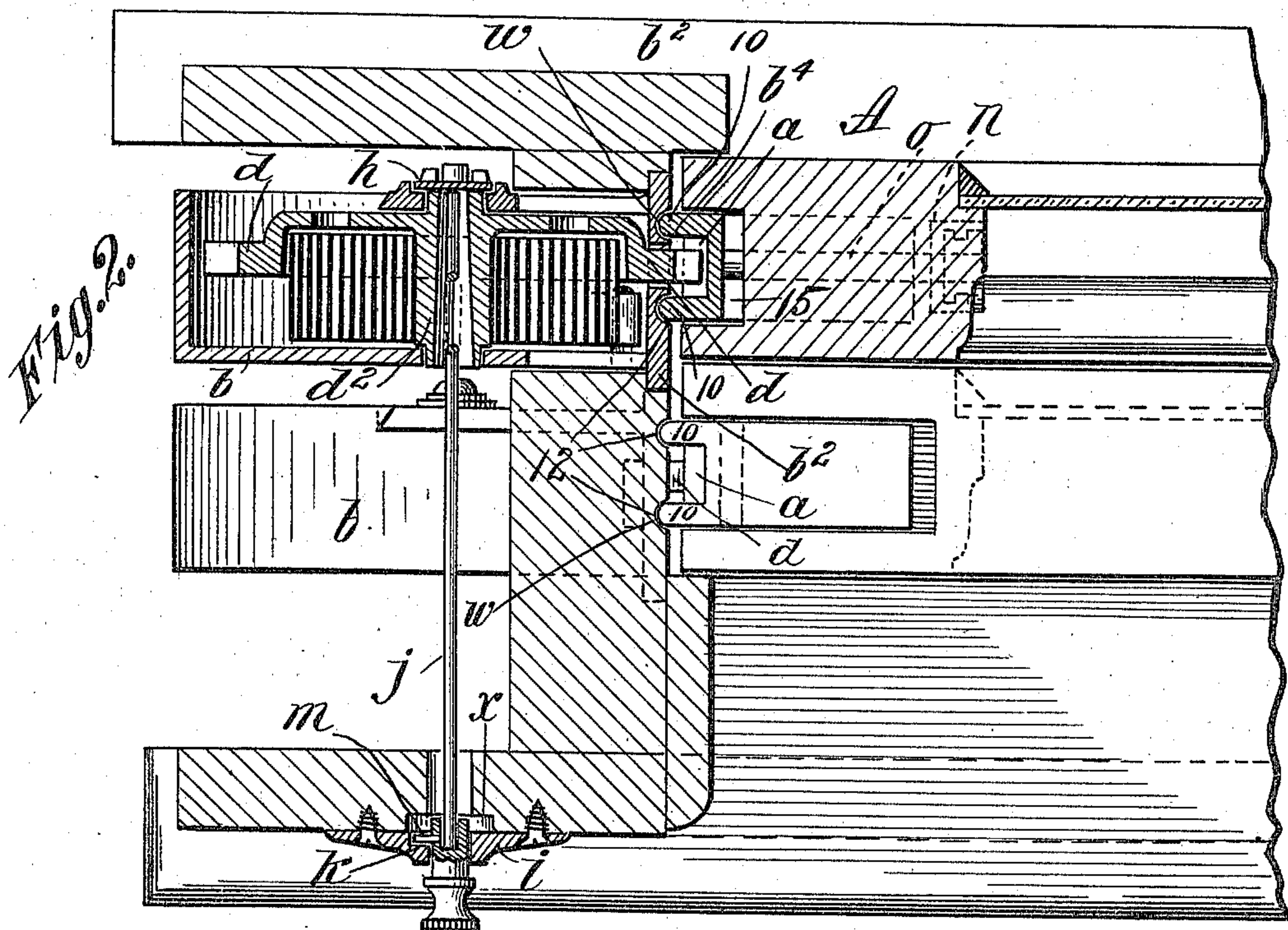
(No Model.)

3 Sheets—Sheet 2.

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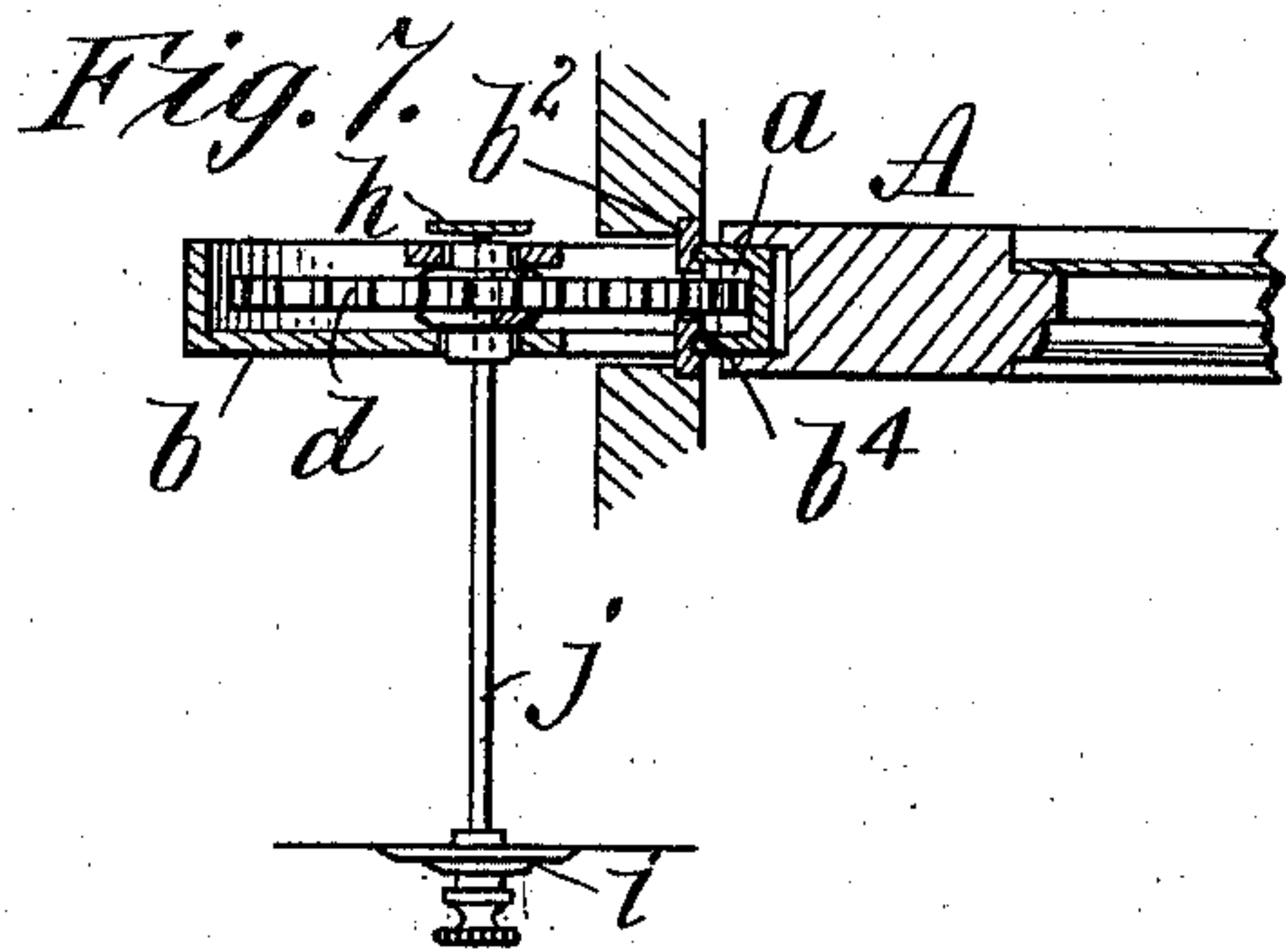
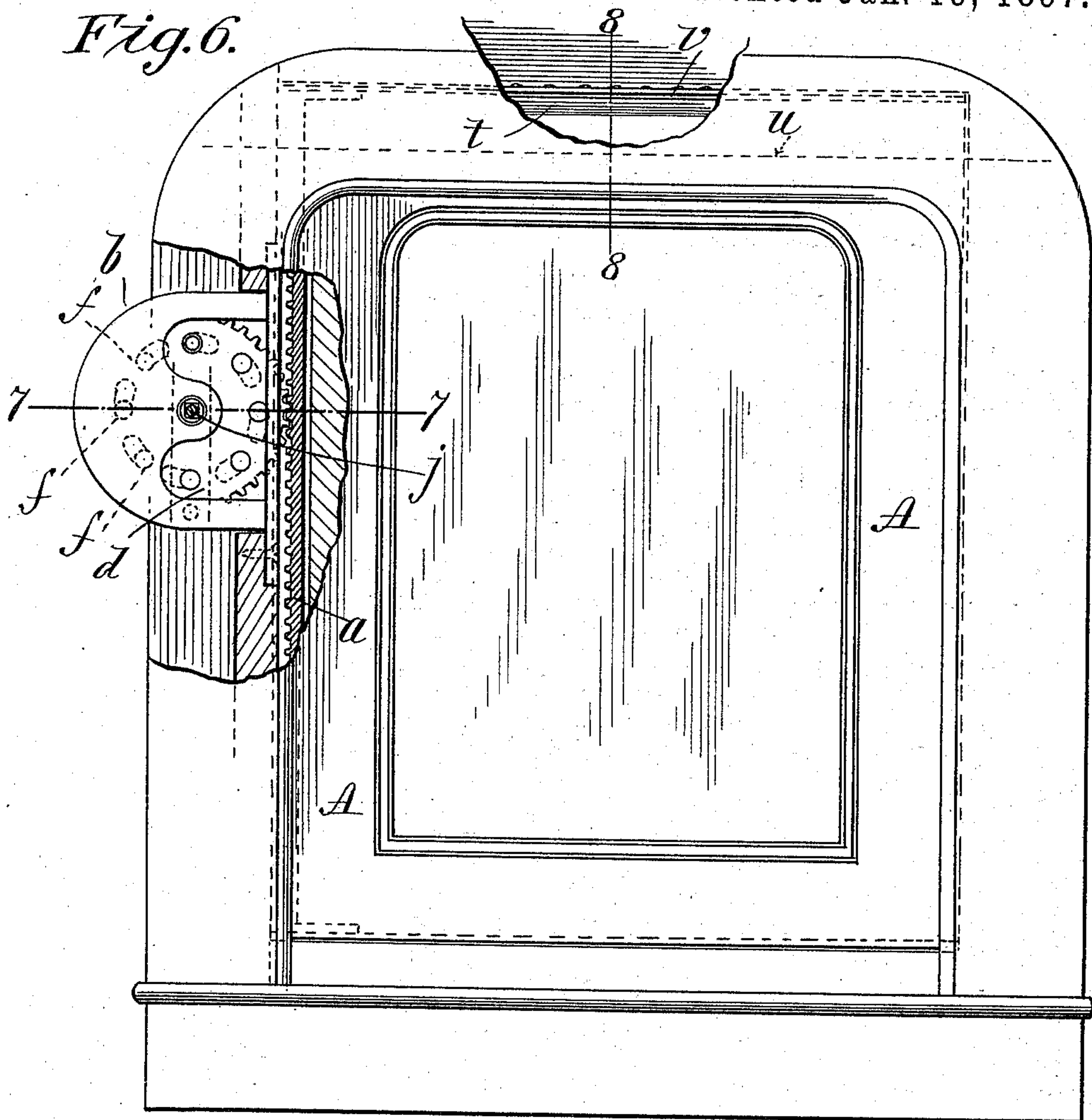
3 Sheets—Sheet 3.

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Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES W. COLE, OF NORTHAMPTON, MASSACHUSETTS.

SASH-FASTENER.

SPECIFICATION forming part of Letters Patent No. 575,415, dated January 19, 1897.

Application filed March 20, 1896. Serial No. 584,112. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. COLE, a citizen of the United States of America, residing at Northampton, in the county of Hampshire and State of Massachusetts, have invented new and useful Improvements in Sash-Locking Devices, of which the following is a specification.

The object of this invention is to improve the construction of locking mechanism for window-sashes, especially to the end of more conveniently rendering the sash locked in any desired position, to the end of counterbalancing the sash in a simple and effectual manner, of insuring good working relations between the engaged part of the sash and the part of the locking device next thereto, and of generally improving the devices; and to these ends the invention consists in constructions and combinations of parts, all substantially as will hereinafter fully appear, and be set forth in the claims.

Reference is to be had to the accompanying drawings, in three sheets, in which—

Figure 1 is a front elevation of the window-casing and the upper and lower sashes with the sash-locking devices in their operating relations, the same being in part broken away and in vertical section for greater clearness of illustration. Fig. 2 is a horizontal cross-section on a larger scale, taken on the line 2 2, Fig. 1. Fig. 3 is a side view of the locking device. Fig. 3^a is a cross-section in detail, taken on line 3^a 3^a, Fig. 3. Fig. 4 is a view of the inside of a plate at the face of the casing, which will hereinafter be referred to. Fig. 5 is a vertical cross-section on line 5 5, Fig. 1. Fig. 6 is a view similar to Fig. 1, but showing the sash-lock as applied upon a car-window, Fig. 7 being a horizontal cross-section taken on the line 7 7, Fig. 6.

Similar characters of reference indicate corresponding parts in all of the views.

Each sash A has thereon, at its vertical edges, the toothed bars or racks *a*, while in the casing next to the rack-provided edge of the sash is a metallic casing or carrier *b*, in which is mounted a spur gear-wheel *d*, which engages the rack of the sash. With this spur gear is combined means for locking it against rotation, so that it serves, in its engagement

with the rack, as a locking element for the window. The said carrier part *b* embodies a foot-plate *b*² and an approximately semicircular casing *b*³, although the design of this part may be varied considerably without detracting from its fitness to purpose. The gear-wheel is journaled for rotation in this casing and has the tubular hub *d*², while its teeth at one side project through the aperture *b*⁴ therefor in the foot-plate of the carrier to protrude into engagement with the said rack.

The gear-wheel *d* comprises ratchet-teeth or shoulders *f*, and has combined therewith a locking-pawl *g*, normally in engagement with the ratchet-wheel, and a pawl-operating device whereby the pawl may be, at pleasure, disengaged from the locking gear-wheel, thus leaving the sash free to be moved in conjunction with the rotation of the wheel. The teeth or ratchet-like stops *f*, with which the gear-wheel is provided, are, as specifically shown, produced by perforations or recesses within the face of gear *d*, each having its one boundary perpendicular, or so angular to the face as to constitute the abutment side of the ratchet, while the opposite boundary is "backed off," as seen at *f*², to constitute the slipping part of the ratchet.

The pawl consists of the stud *g*, projected at right angles from the end of a spring-bar *h*, which has its one end secured immovably upon the casing *b*, while its free end, which carries the said stud, projects through a perforation in the member *b*⁵ of the carrier-casing which spans one side of such casing, which side is, except as to the member, otherwise open.

The pawl is operated to disengage the ratcheted gear-wheel by means of the push-rod *j*, which is projected from the inner side of the window-casing through a hole suitably formed in the latter and through the hollow hub of the gear-wheel against the inner side of the pawl-carrying spring-bar *h*. At the inner side of the window-casing and surrounding the knob-provided inner extremity of the said pawl-operating rod *j* is a face-plate or bushing *i* in the form of an annulus, the inner face of which is shown in Fig. 4, this plate having next to the hole through which the shank of the handle-knob protrudes the

radial niche *k*, within which normally lies the radial stud *m* of the knob-shank. The wood-work of the casing has a countersink or enlargement *x*, over which said face-plate lies.

5 The reaction of the spring-pawl-carrying bar *h* causes the rod and knob to be so endwise moved that the stud *m* when in register will lie within the niche *k* of the face-plate. By forcing inwardly on the push-rod the stud-
10 pawl is thrown out of engagement with the ratchet of the gear-wheel, and upon such inward forcing of the rod, by also giving the rod a rotational movement as the radial stud moves within the countersink and out of
5 line with the said niche *k*, the pawl is held, because of the restraint of the inner side of the face-plate *i*, against said stud for any required length of time, out of engagement with the ratcheted gear-wheel, leaving both
20 hands free to slide the sash up or down.

As the ratchet-teeth are arranged in the sash-lock (shown in Figs. 1, 2, 3, and 6 at the left-hand side of the window) it will be clear that when the pawl *g* is in engagement the
25 window may not be moved down, although it may be forced upwardly, the ratchets slipping past the pawl as the gear-wheel rotates. Therefore to lower the window when up the knob must be pushed in to carry the stud
30 clear of the abutment sides of the ratchets; but it will be furthermore noted that the devices are duplicated at the other side of the window, particular notice being taken that the ratchet-recesses in the gear-wheel have
35 their shoulders and beveled portions reversed from the arrangement seen at the left of the sash. While, as before stated, the sash raised may not be lowered until the pawl at the left has been disengaged, the sash, on the other
40 hand, when lowered, may not be raised, except upon the disengagement of the pawl comprised in the devices at the right.

In Figs. 1, 2, and 3 a clock-spring is represented as surrounding the tubular hub of the
45 gear-wheel *d*, one end of this spring being secured to such gear-wheel, while its other end is secured to the casing *b*. This spring serves to counterbalance the weight of the sash. The gear-wheel *d* is shown cup-shaped, within
50 which more or less of the thickness of the clock-spring may lie.

In Figs. 6 and 7 the clock-spring is omitted, as it may be, its provision being not of necessity but of preference, as manifest.

55 Each sash has a rib-and-groove engagement with the window-casing for the exclusion of dust, as seen at *w*. This is practically accomplished at the vertical edges by providing outstanding ribs 10 on each rack-bar and by
60 forming the grooves 12 12 within the casing. Inasmuch as the foot or flange *b*² of the gear-carrier *b* lies flush with the slide-face of the casing, the flush face of this plate also receives such grooves.

65 In order that the sash with the ribbed rack-bar may be properly brought to position and

adjustment in relation to and combination with the gear-containing locking mechanism, the rack-bar and sash are constructed thus: The sash has the deep groove 15 in its vertical
70 edge and a rabbeted seat 16 at its top and bottom. The rack-bar lies within the said groove and has the lugs at its upper and lower ends, which lie in said seats 16. The rack-bar has near its ends the stems or long studs *o*, with
75 screw-threaded extremities, which extend through transverse holes therefor in the sash. The inner edge of the sash has the flanged bushing *n* set in the countersunk enlargement of each of the said holes for the stems *o*, with
80 the cylindrical opening therewithin, which receives the annular peripherally-grooved nut *p*. The nut is restrained from screw-threading outwardly off from the stem by the pin *o*², passed through the bushing-casing and
85 into the peripheral groove *o*³, while the nut has the spanner-holes *o*⁴, whereby to turn it to adjust the rack-bar bodily toward and from the grooved slideways of the casing within
90 which the gear-included locking mechanism is set.

In Sheet 3 of the drawings, in which a car-window and casing therefor are illustrated, the sash on being raised passes up into the hol-
95 low casing, which has the contracted opening *t* just wide enough for the free movement of the sash, there being the seats or shoulders *u u* at or near the level of the top edge of the closed sash. The sash has at its top edge the
100 strip *v*, of flexible and somewhat elastic or reactive material, as felt or rubber, which in cross-section is of inverted-trough shape. This strip *v*, as the window is closed, lies closely upon the shoulders or ledges *u u* and effectually
105 excludes dust at the top of the window.

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

1. The combination with the window-casing and the sash having a rack-bar along its edge, of a gear-wheel rotatably mounted within the casing and meshing into the rack-bar, and having a series of ratchet-teeth and a hollow
110 hub, a pawl-carrying bar having a spring-pressure to normally maintain its pawl in engagement with the ratcheted gear, and a rod playing within the window-casing and said hollow hub which has a bearing against the pawl-carrying bar, substantially as described.

2. The combination with the rack-provided sash and the window-casing having the rack-engaging gear-wheel which is ratcheted, of a pawl-carrying member, a rod mounted in the window-casing and having a sliding move-
120 ment to force the pawl-carrier for the disengagement of the pawl from the ratcheted gear, and a means for temporarily holding said rod in its inwardly-thrust position for correspondingly temporarily leaving the gear-wheel free to be rotated in either direction, substantially
125 as described.

3. The combination with a rack for the sash,

of the gear for the casing having the ratchet-teeth, the pawl-carrying bar, *h*, and pawl, *g*, the thrust-rod provided with the stud, *m*, and the face-plate, *i*, through which the extremity
5 of the rod protrudes and which overlies a recess, *x*, which is in a portion of the window-casing and to which said plate is secured, and

having the niche, *k*, in its inner face, substantially as and for the purposes set forth.

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