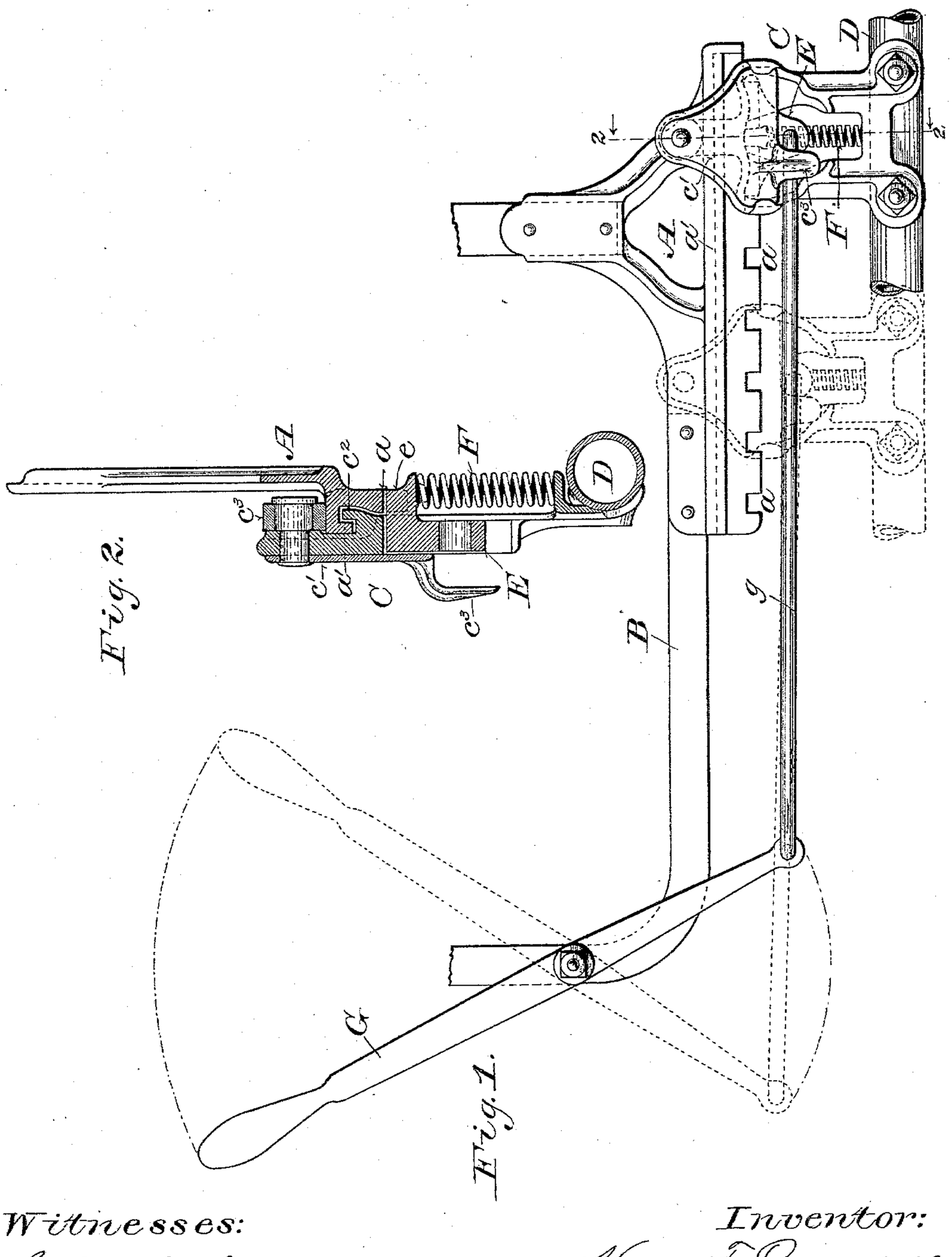
(No Model.) 2 Sheets—Sheet 1.

H. F. CRANDALL.

AUTOMATIC LOCKING AND UNLOCKING DEVICE.

No. 566,844. Patented Sept. 1, 1896.



Witnesses:
Chas. L. Goss.
John H. Hurley.

Inventor:
Henry F. Crandall,
By Wrickle Hondens Smith Potter & Riley
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

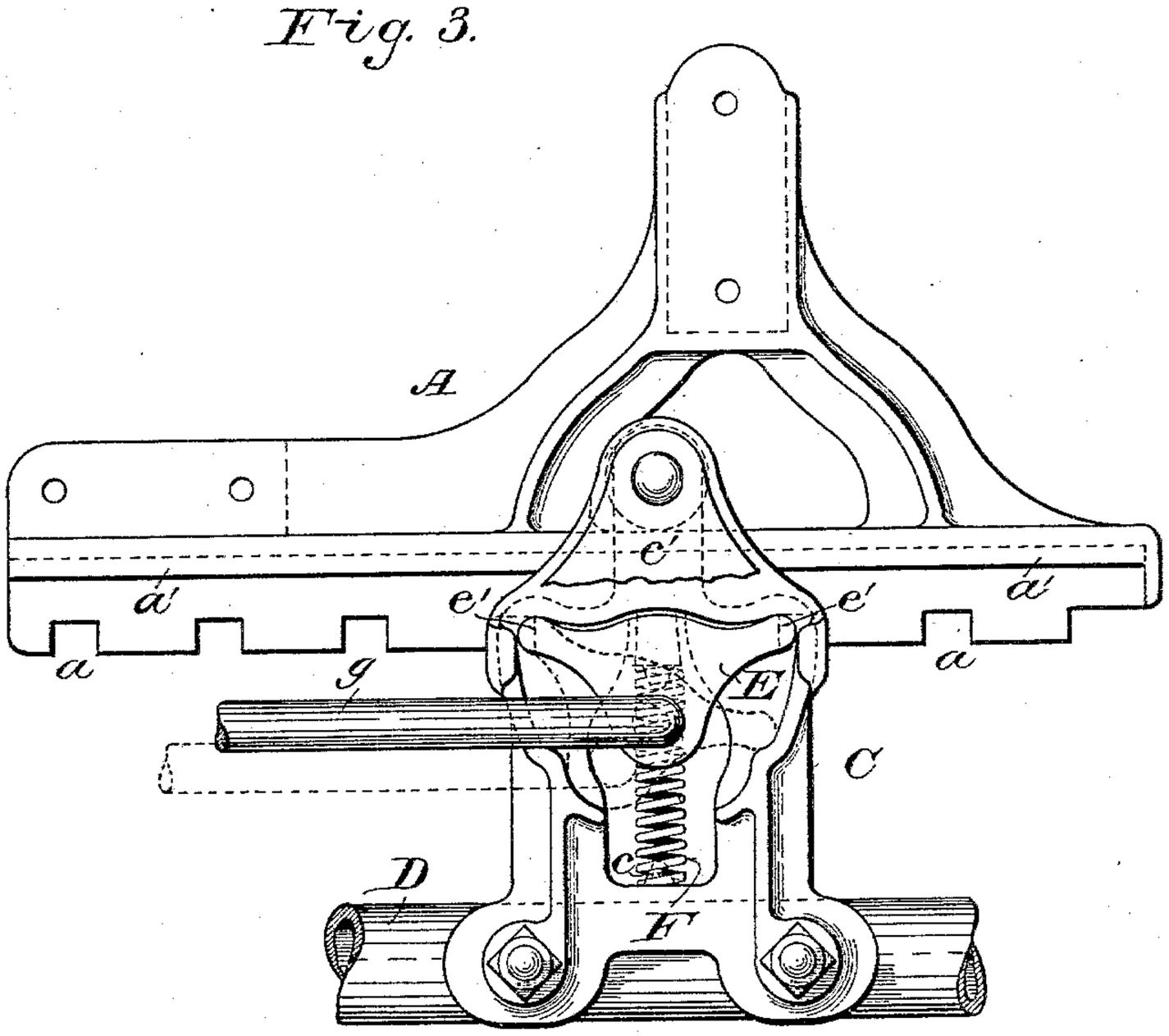


Fig. 4.

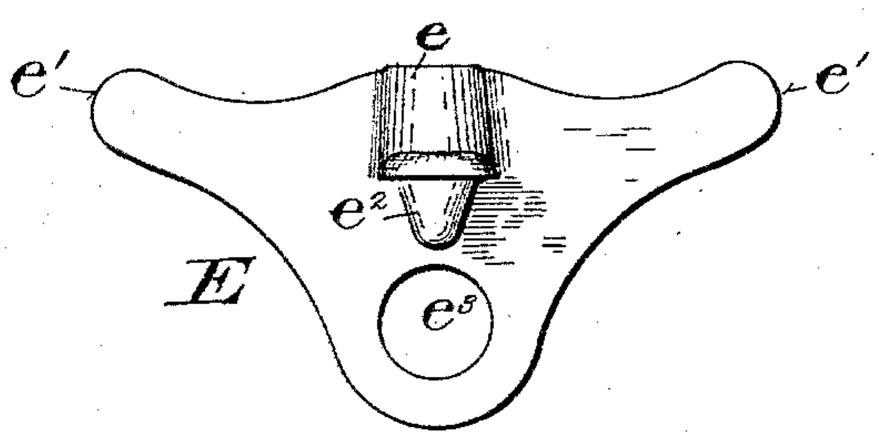
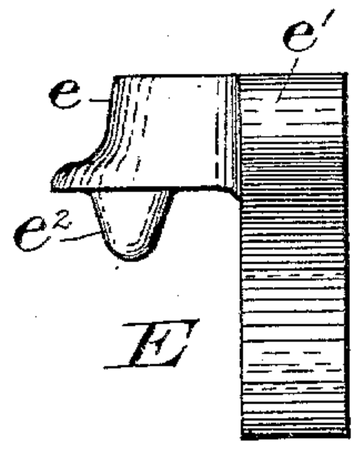


Fig. 5.



Witnesses:
Chas. L. Goss.
John H. Hurley.

Inventor:
Henry F. Crandall,
By Winkler Flanders Smith Bottum & Vilas
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY F. CRANDALL, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE MILWAUKEE HARVESTER COMPANY, OF WISCONSIN.

AUTOMATIC LOCKING AND UNLOCKING DEVICE.

SPECIFICATION forming part of Letters Patent No. 566,844, dated September 1, 1896.

Application filed September 30, 1895. Serial No. 564,108. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. CRANDALL, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Automatic Locking and Unlocking Devices; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to machines or other structures comprising two members one or both of which is movable parallel with the other in opposite directions, such, for instance, as a window sash and frame or an adjustable grain-binder and a relatively fixed part of the machine. Its main objects are to automatically lock one member to the other in any desired position and to disengage the locking device by the power applied to move one member in either direction.

It consists, essentially, of a notched plate or bar or a rack formed with or attached to one member and a locking-dog held normally in engagement with said rack by a spring and formed or provided on opposite sides with bearings, which are loosely held and seated in the other member, and of certain novel features in the construction and arrangement of component parts of the device, as hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a front elevation or plan view of my improved device. Fig. 2 is a cross-section thereof, on an enlarged scale, on the line 2 2, Fig. 1. Fig. 3 is an enlarged plan view or elevation of the main parts of the device, a portion of one member being broken away; and Figs. 4 and 5 are detail views on a still larger scale of the locking-dog, Fig. 4 being an inverted plan view and Fig. 5 an end elevation.

I have shown the device as specially adapted to a harvester for adjusting the grain-binder to operate on grain of different lengths; but I do not wish to be understood as limiting myself to this specific application of the invention, as it is suitable for other uses, as above stated.

Referring to Figs. 1 and 3, A designates one member of the locking device, which in this case is attached to a fixed part of the harvester, such as the frame B of the wind board or shield over the binder-deck. It is formed or provided with a rack or notches *a a* and an overhanging flange *a'*, as shown most clearly in Fig. 2.

C designates the other member of the locking device, consisting of a recessed head or housing attached, in the present instance, to a part, as D, of the adjustable binder-frame, a dog E, and a spring F. The dog E is formed on the under side with a tooth or lug and with pivot or fulcrum bearings *e' e'*, which are loosely seated in said head or housing approximately in a line parallel with the rack or notches *a*. The spring F bears at one end against the tooth or lug *e*, being held in place by a stud e^2, and at the other end against the opposite side of said head or housing, which is also formed with a stud *c* to hold it in place. This spring normally holds the dog in the position in which it is shown in the drawings, with its tooth *e* in engagement with one of the notches in member A. The dog is held in place in the head or housing by a cap-plate or cover *c'*. The head or housing containing the dog is formed or provided on the under side with a tongue or flange c^2 and a friction-roller c^3, which engage opposite sides of the overhanging flange *a'* on member A, and thereby guide and hold said head or housing in the proper relation thereto.

G is a lever fulcrumed to the frame B, or any suitable support having a fixed relation to member A. It is connected by rod *g* with the dog E, said rod being hooked into a hole e^3 in said dog opposite the lug *e*, and out of line with the pivot or fulcrum bearings *e'*. An overhanging projection c^3, formed on the cover *c'*, serves as a keeper to hold the rod *d* in engagement with said dog.

The device operates as follows: To shift member C to the left into the position indicated by dotted lines in Fig. 1, lever G is

thrown to the right, as indicated by dotted lines in the same figure. The initial movement of said lever first tilts the dog upon its pivot-bearing *e'* to the left, as indicated by dotted lines in Fig. 3, thereby withdrawing the tooth or lug *e* from engagement with the rack or a notch *a* of member A, leaving member C free to move upon member A. The further movement of lever G shifts said member C upon and parallel with member A, and when it reaches the desired position the lever is released, leaving dog E subject to the action of spring F, which thrusts it toward member A, forcing the tooth *e* into engagement with rack *a*. To shift member C in the opposite direction, lever G is swung to the left, its initial movement operating to turn the dog E on its pivot or fulcrum bearing *e'* farthest therefrom, and to thus disengage its tooth *e* from the rack *a*, as above explained, whereupon the further movement of lever G to the left operates to move member C upon and parallel with member A to the right into any desired position, and upon the release of said lever the spring F operates, as before stated, to throw the tooth *e* of the dog into engagement with the rack or a notch in the other member.

Various changes in the details of construction and arrangement of parts, particularly of the connections for operating the dog and shifting one member of the locking device upon the other, may be made in adapting my improvements to the various uses to which they are applicable without departing from the spirit and intended scope of my invention.

In some applications of the device, as, for instance, to a window sash and frame, the lever G may be dispensed with, the part C being applied to the sash and the dog E being provided with a handle for turning it on either of its fulcrums out of engagement with the rack or notches in the frame, and for raising and lowering the sash.

I claim—

1. An automatic locking and unlocking device consisting of two members, one of which has a rack or notches, a dog adapted to engage with said rack or notches and having oppositely-projecting pivot or fulcrum bearings loosely seated and held in the other member, which is movable relatively to the other, and a connection or handle for turning said dog on either of its fulcrum-bearings out of engagement with said rack or notches and shifting the movable member in either direction, substantially as and for the purposes set forth.

2. An automatic locking and unlocking device comprising two members, one formed or provided with a rack or notches, and the other consisting of a recessed head or housing, a dog having two pivot-bearings loosely seated and held in said head or housing and an intermediate tooth or lug, a spring holding said tooth or lug normally in engagement with the rack or notches of the other member, and a lever fulcrumed to one member and connected with the dog on the other member, one member being movable relatively to the other, substantially as and for the purposes set forth.

3. An automatic locking and unlocking device comprising two members, one formed or provided with a rack or notches, and the other movable parallel therewith and consisting of a recessed head or housing, a dog having two pivot or fulcrum bearings loosely held and seated in said head or housing, and an intermediate tooth or lug, a spring tending to hold said tooth or lug in engagement with said rack or notches, and an operating connection with said dog out of line with its bearings, adapted by its initial movement in either direction to disengage said tooth from said rack by turning the dog on one of its bearings and by its further movement to shift the dog and its connections upon the other member, substantially as and for the purposes set forth.

4. An automatic locking and unlocking device comprising two members movable one in or on and parallel with the other and formed or provided with guiding connections whereby they are held in proper relation to each other, one member being formed or provided with a rack or notches and the other having a dog loosely mounted therein and provided with an operating connection or handle and on opposite sides with pivot or fulcrum bearings, on either of which it is adapted to be turned out of engagement with the rack on the other member, substantially as and for the purposes set forth.

5. The combination with a mechanical device comprising two members, one of which is adjustable parallel with the other, of an automatic locking and unlocking device comprising a rack or notches applied to one member, a dog carried by the other member and having on opposite sides thereof fulcrum or pivot bearings, upon either of which it is adapted to be turned out of engagement with the other member, a lever fulcrumed to a support, having a fixed relation to the member provided with the rack and connected by a rod with said dog at a point out of line with its pivot or fulcrum bearings, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

HENRY F. CRANDALL.

Witnesses:
CHAS. L. GOSS,
R. C. LIVESAY.