(No Model.)

E. E. MASTERS & L. J. KIMBALL.

SHUTTER WORKER.

No. 304,658. Patented Sept. 2, 1884.

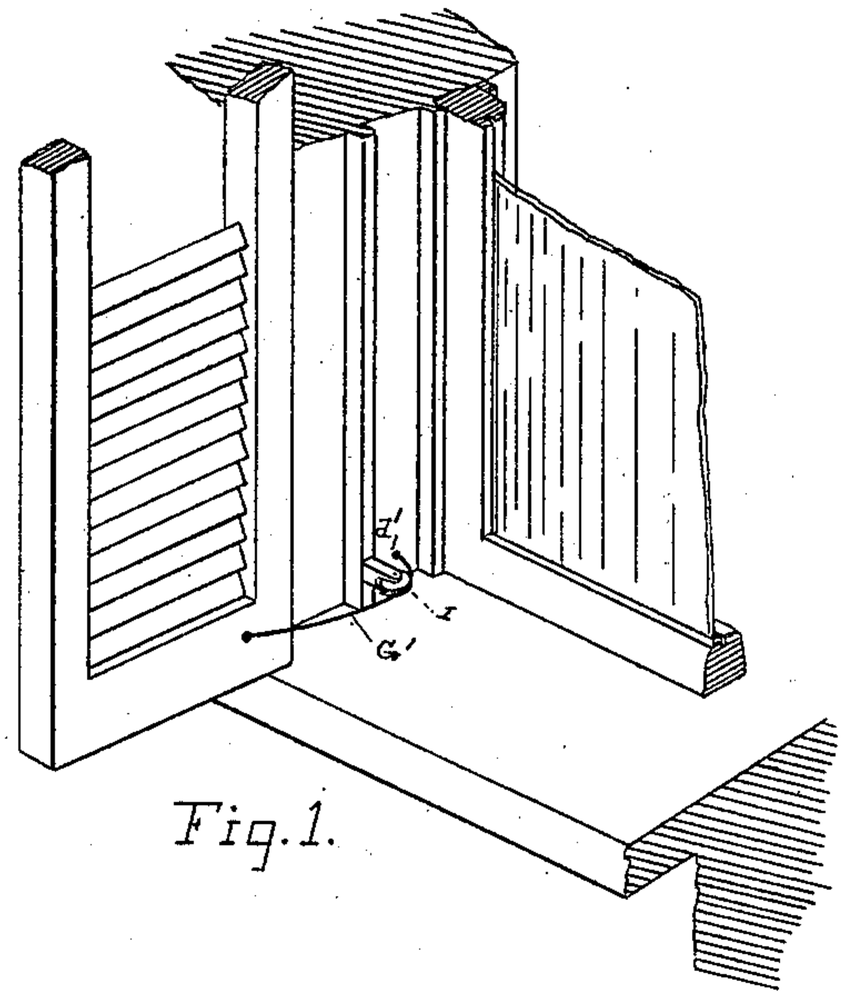

Fig. 1.

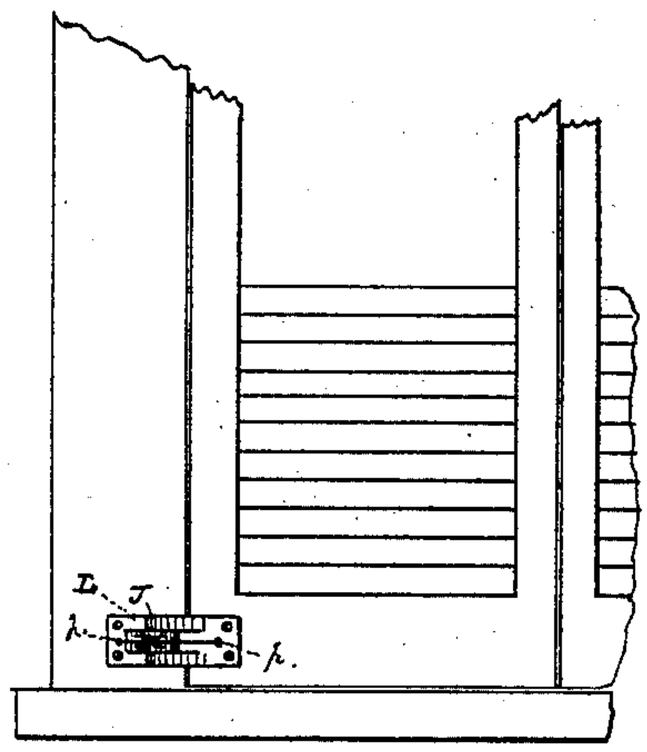

Fig. 2.

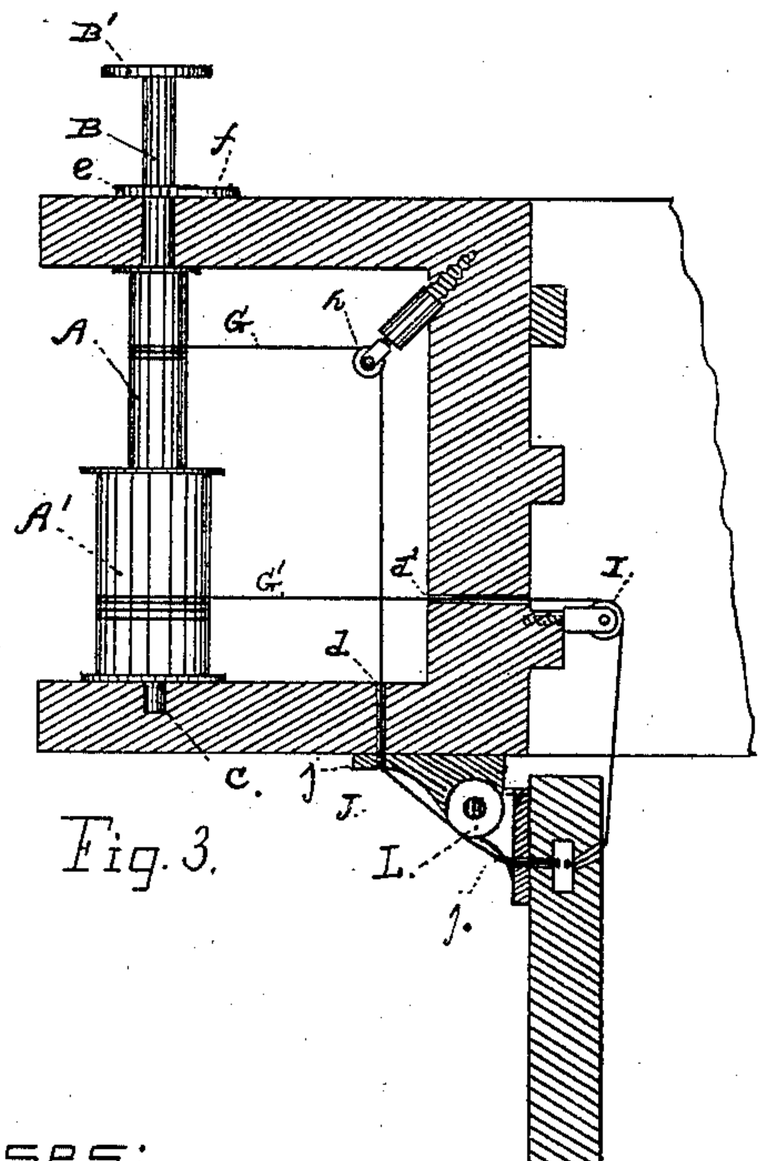

Fig. 3.

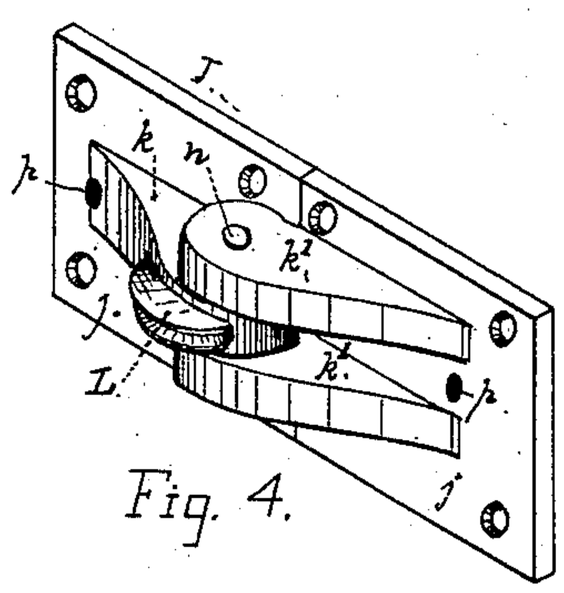

Fig. 4.

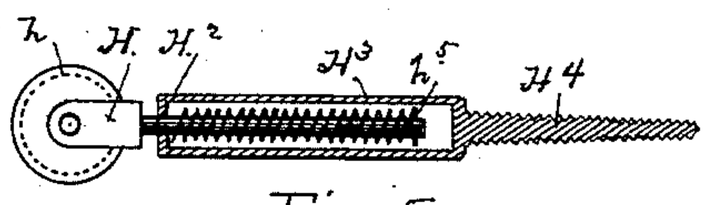

Fig. 5.

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UNITED STATES PATENT OFFICE.

EGBERT E. MASTERS AND LAVIRGNE J. KIMBALL, OF SACRAMENTO, CAL.

SHUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 304,658, dated September 2, 1884.

Application filed December 17, 1883. (No model.)

To all whom it may concern:

Be it known that we, EGBERT E. MASTERS and LAVIRGNE J. KIMBALL, citizens of the United States, residing in the city and county of Sacramento, State of California, have made and invented certain new and useful Improvements in Devices for Operating Window-Shutters; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings.

Our invention relates to devices for operating window-shutters from the inside of a room, and the parts and features comprising our improvements have for their object to produce a simple, effective, and inexpensive device for opening, closing, and locking shutters without opening the window.

The following description fully explains the nature of our said improvements and the manner in which we proceed to construct, combine, apply, and operate the same.

In the drawings herein referred to, Figure 1 shows the attached device upon an open shutter. Fig. 2 shows the attached device upon a closed shutter. Fig. 3 is a horizontal section of the worker. Fig. 4 shows the hinge of the worker. Fig. 5 is a detached view of the cord-tension pulley.

In this construction we dispense with gear-wheels and toothed segments, and in place thereof we employ cords or flexible wires running over small sheaves. The result is greater simplicity, and a smooth and noiseless action.

A winding-axle having barrels of different diameters, a set of guiding and tension-regulating sheaves, and a hinge of novel construction, specially adapted for use with the other parts, constitute the features of our improved device.

The barrels A A′ are placed inside the window-frame, and are fixed upon or form part of an axle, B, of which one end is set in a bearing-socket, *c*, in the front side of the casing, while the other end is passed through a bearing, *d*, in the back of the frame and projects into the room a sufficient amount to afford a handle, B′. A ratchet-wheel, *e*, is fixed on the handle, and a pawl, *f*, attached to the frame, affords means of locking the axle. One part of the barrel is twice the diameter of the other part, and from the smaller part, A, a cord or flexible wire, G, is carried forward to a sheave, H, that turns it at right angles, so that it may pass out through the frame at *d*. The larger part of the axle has a similar cord that is carried forward directly through the frame at *d′*, and passes over a sheave, I, on the frame outside of the rim of the sash. Around this sheave the cord turns at right angles to bring the end forward. The hinge J is formed of two leaves, *j j*, one having a single knuckle, *k*, and the outer one a double knuckle, *k′*, the two parts being connected together by a pin, *n*, in the usual manner. In the single knuckle *k* is set a sheave or grooved wheel, L, with the pin *n* passed through it to form its spindle. This wheel is on the stationary part that is screwed to the window-frame. In each plate *j* there is also a hole, *p*, to admit the cords through to the front. The cord G, from the smaller barrel, is carried over the knuckle *k* and through the holes *p* in the hinge-plate, and is secured in the shutter-frame. The other cord is fastened at the end of the inner side of the shutter. This arrangement of cords requires two different sizes of winding-barrels in order to maintain proper tension and an even motion, because the outside cord must be taken up more rapidly than the one that connects with the inside of the shutter; and in order to take up the slack and keep the cords always at regular tension we employ a tension-sheave consisting of a grooved pulley, *h*, fixed in a bearing, H, on the end of a short rod, H^2, that is inserted into a tubular case, H^3, upon which there is a solid screw-shank end, H^4. A spiral spring within the case surrounds the rod, and being confined between the head of the case and a cross-pin, h^5, on the end of the rod it exerts a constant strain upon the sheave, and through it to the cord. The shank is screwed firmly into the frame, and where the cord is to be turned at right angles, it is set diagonally, so as to draw equally upon the cords in both directions. This construction and application is shown in Figs. 3 and 5 of the drawings. These parts are strong, durable, and cheaply made. The apparatus works without noise, and requires but little power to throw a shutter. The only parts subject to wear are the cords G, and these are easily replaced at small expense.

Having thus fully described our invention,

what we claim, and desire to secure by Letters Patent, is—

1. A shutter-operating device consisting of the barrel of two diameters, A A′, the sheaves H I, the cords G G′, the handle B′, and the pawl and ratchet, as a means of locking the barrel, substantially as described.

2. In combination with a hinged shutter to be operated, the cords G G′, attached to the inside and outside of the shutter, respectively, at one end, and at the other end to winding-barrels A A′, the fixed sheaves, and the tension-sheave H, provided with a spring, substantially as set forth, and a means whereby said winding-barrels can be operated to wind up the cords from the inside of a room, substantially as herein described.

3. The two-part hinge having the grooved pulley mounted in one knuckle, substantially as herein described, for the purpose set forth.

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