(No Model.) 2 Sheets—Sheet 1.

E. T. KEENER.

SHUTTER WORKER.

No. 437,603. Patented Sept. 30, 1890.

Fig. 1.

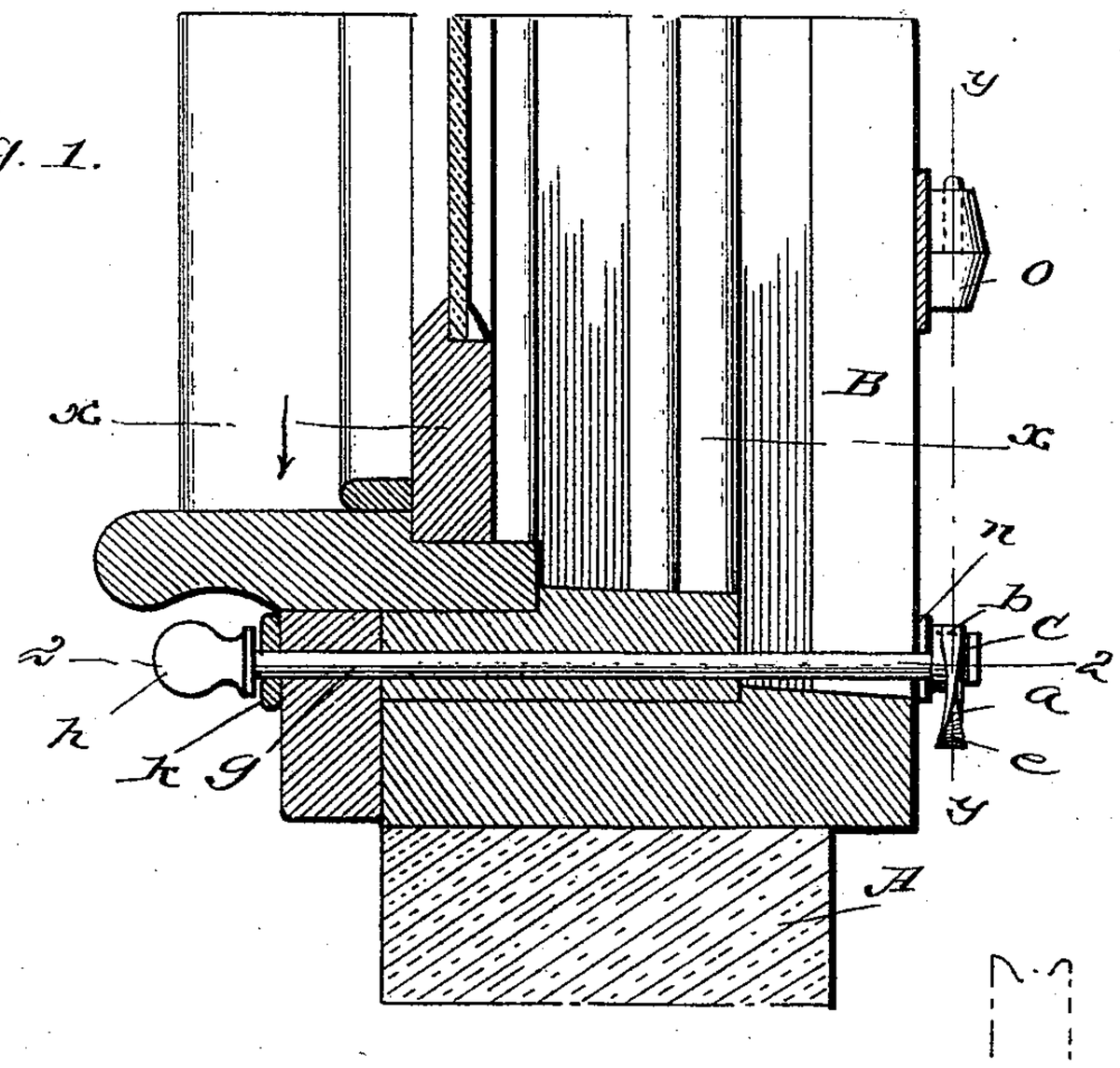


Fig. 2.

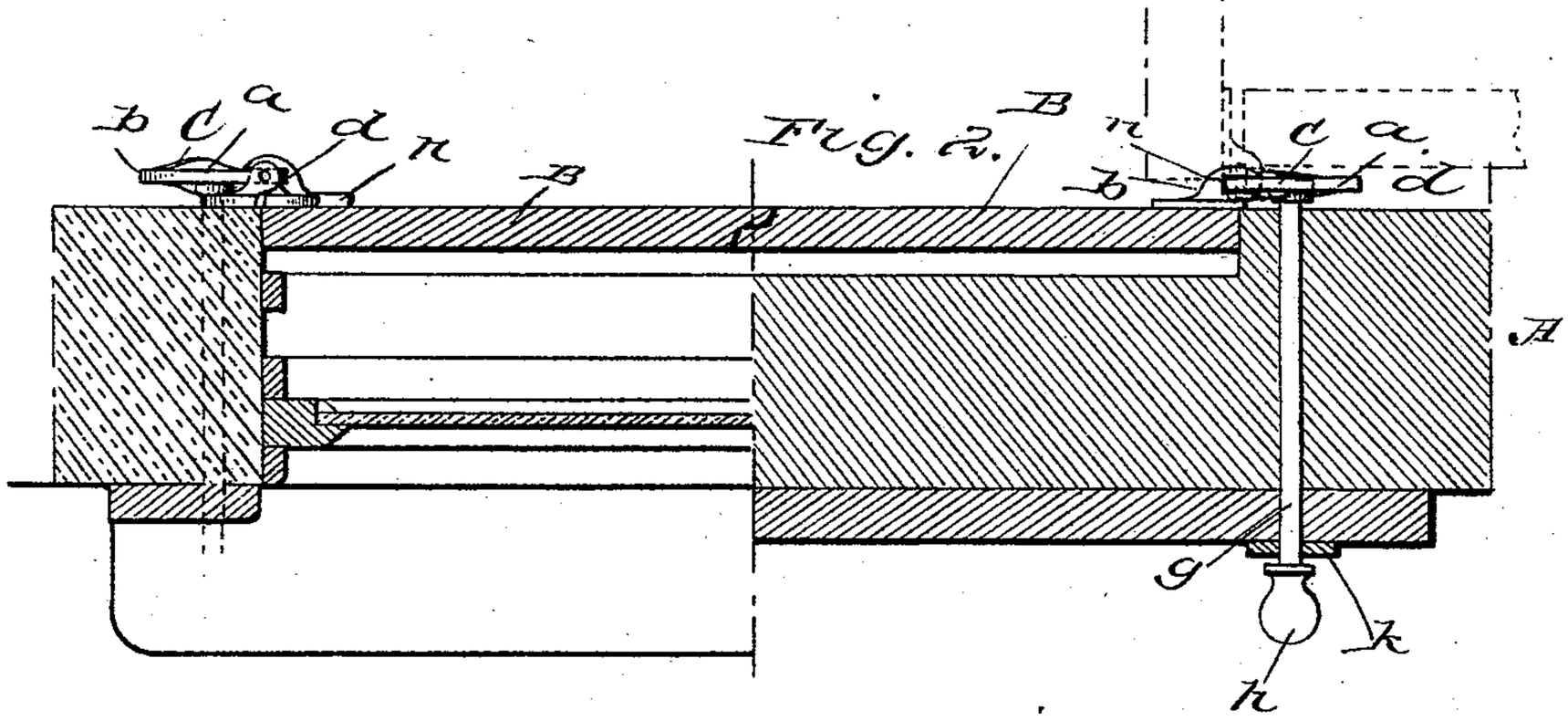
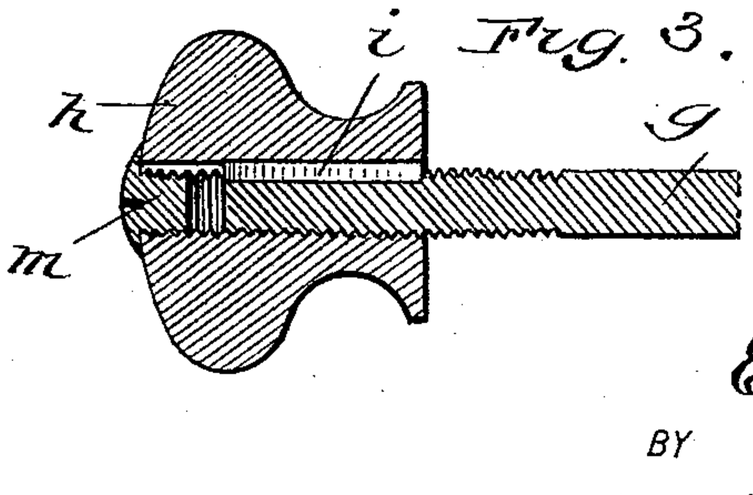


Fig. 3.



WITNESSES:

W. R. Davis.

C. Sedgwick

INVENTOR:

E. T. Keener

BY Munn & Co

ATTORNEYS

(No Model.) 2 Sheets—Sheet 2

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Fig. 4.

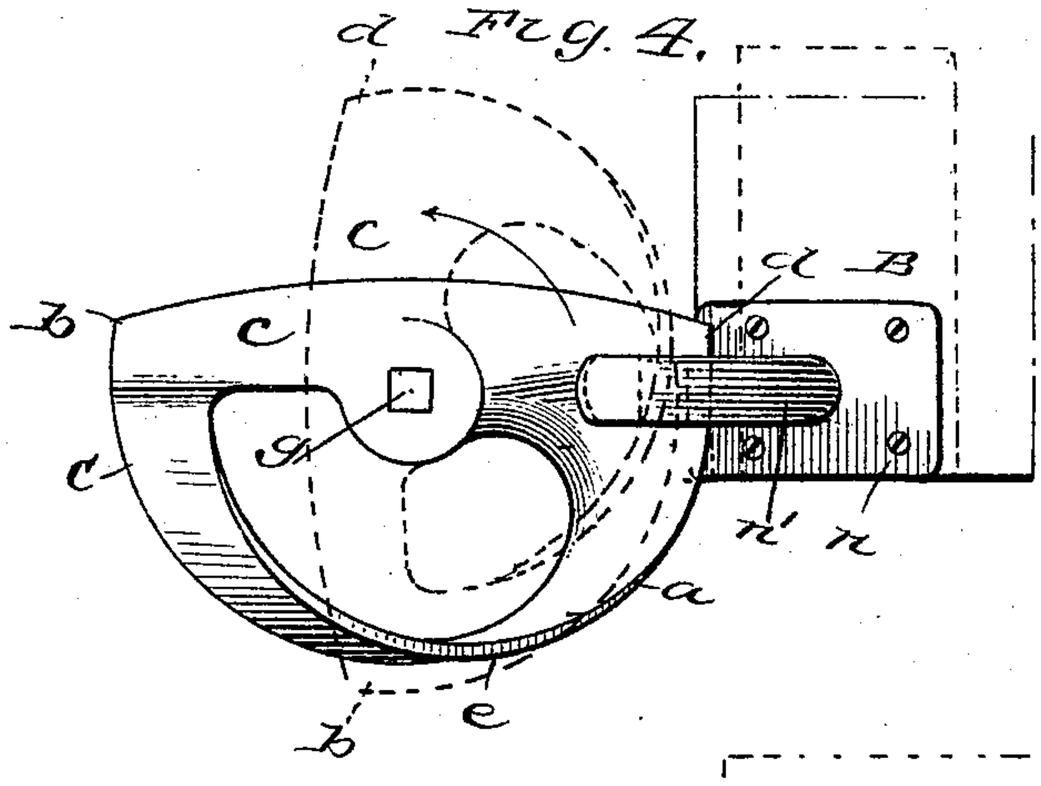


Fig. 5.

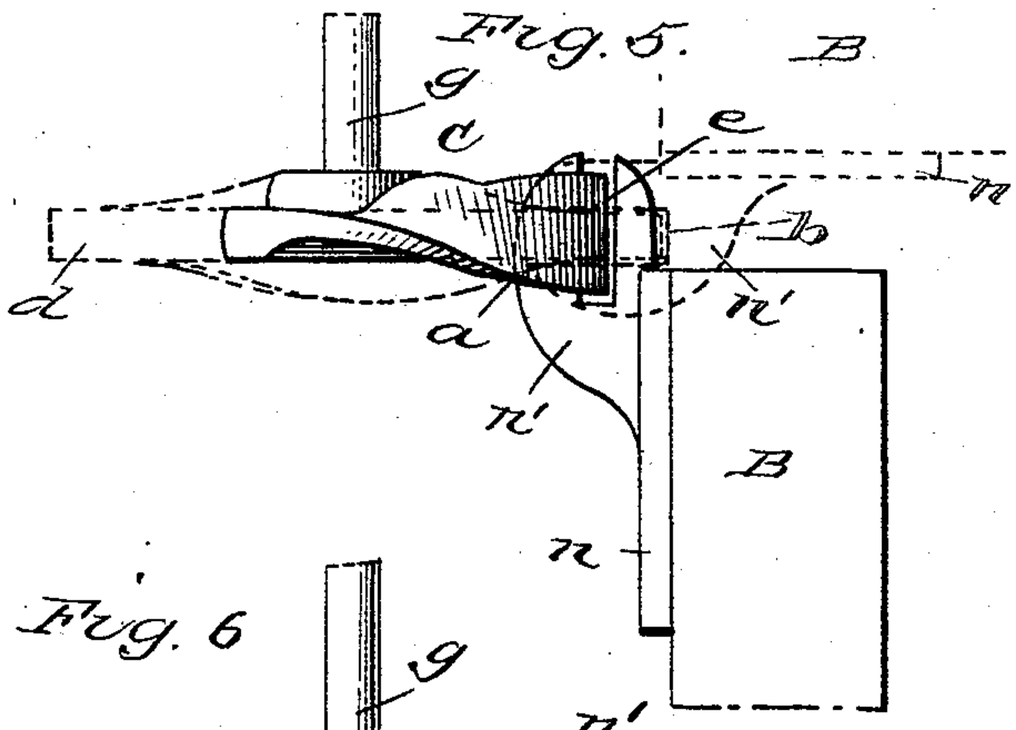


Fig. 6

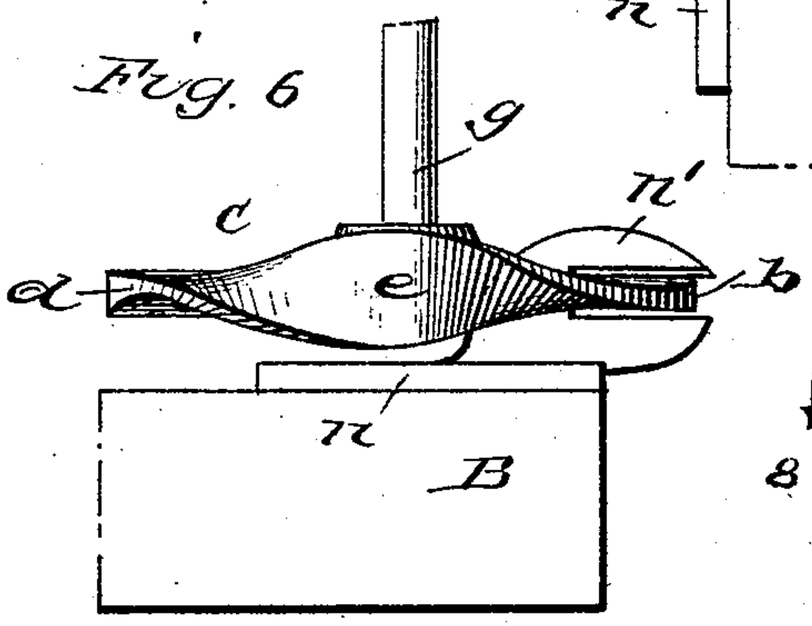


Fig. 7.

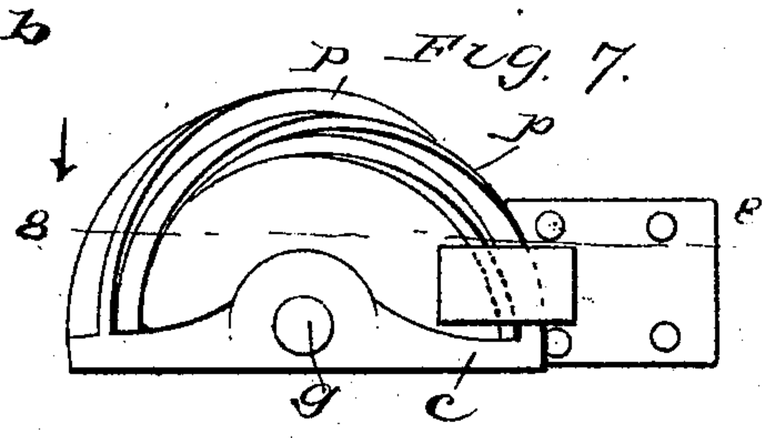
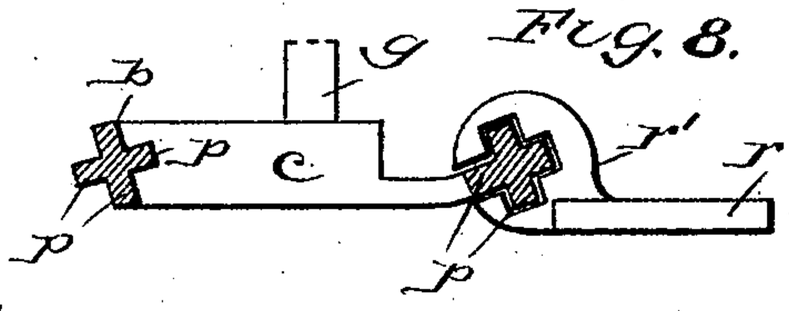


Fig. 8.



WITNESSES:

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INVENTOR:

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UNITED STATES PATENT OFFICE.

EDWIN T. KEENER, OF MOBERLY, MISSOURI.

SHUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 437,603, dated September 30, 1890.

Application filed April 23, 1890. Serial No. 349,073. (No model.)

To all whom it may concern:

Be it known that I, EDWIN T. KEENER, of Moberly, in the county of Randolph and State of Missouri, have invented a new and useful Improved Shutter-Worker, of which the following is a full, clear, and exact description.

My invention relates to an improved device for opening or closing window shutters or blinds from within the building without raising the windows, and has for its objects to provide a simple and cheap device of the character named, whereby the shutters of a window may be opened partly or entirely and held at any desired point of open or closed adjustment.

To these ends my invention consists in the construction and combination of parts, as is hereinafter described, and indicated in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a cross-section of a window-sub-sill and a portion of a window-sash in the casement that is broken, showing a shutter portion closed and the improved shutter-worker in position thereon. Fig. 2 is a plan view in section of a window-frame sash and shutter closed and the shutter-worker in position, taken on the line *x x* in Fig. 1, and in the same view a closed and half-opened shutter is shown in dotted lines in connection with the improved shutter-worker, this side of the view being taken on the line 2 2 in Fig. 1. Fig. 3 is an enlarged detached view in longitudinal section of a knob for the shutter-worker, showing means for adjustably attaching the knob upon the rocking shaft that transmits revoluble motion to the cam-head of the shutter-worker. Fig. 4 is an enlarged diagram illustrating the positions assumed by the working parts of the device when the shutter is closed and half-opened, the outer side of the shutter being represented. Fig. 5 is an enlarged detached plan of the shutter-worker, showing, the parts in the positions represented in Fig. 4. Fig. 6 is a plan view enlarged of the shutter-worker head and a shutter engaged and thrown completely open. Fig. 7 is a side view of a modified form of the cam-head and an engaging bracket-plate, which is placed on the shutter and receives motion from the cam-head, whereby the shutter is moved on its hinges; and Fig. 8 is a plan in section of the parts shown in Fig. 7, taken on the line 8 8 in said figure.

The preferred form for the shutter-working device is composed of a cam-head C, shaped as a wheel segment—that is, semicircular—having a flattened band-like rim *a*, which is gradually twisted from one corner *b*, where the rim joins the transverse bar *c*, to the opposite corner *d*, thus converting the rim *a* into a spiral band of semicircular form. The pitch of the twist given the rim *a* produces a half-turn of its edges from *b* to *d*. Consequently at the point *e*, which represents the crown of the semicircular arch of the cam-head, one-fourth of a complete twisting revolution has been given to the rim *a*, and its body at this point is disposed in a plane which is at right angles to the plane of the end portions *b d* of the rim. At the radial center of the half-circular rim *a* a hub-enlargement is produced on the cross-bar *c*, which is laterally and centrally perforated to receive a rocking shaft *g*, which is thus attached at a right angle to the cam-head C, that is affixed on one end of the same.

The location given to the shutter-working device is such that when in position the cam-head may engage with a bracket-arm on the lower outer edge of the shutter or blind to be operated. To this end the shaft *g* is inserted in a proper orifice formed through the wall of the building at such a point as will permit the rocking shaft to be therein rocked and engage its cam-head C with the arm *n*, which will be described. The length of the rocking shaft *g* is proportioned to the thickness of the wall A engaged and projection of the shutter B by its hinges, so that when in place the shaft will extend through the wall on the inner side of the same to receive an operating-knob handle *h*. As shown in Fig. 3, the knob *h* is longitudinally perforated and screw-threaded for its engagement with the inner threaded end of the shaft *g*, a suitable grooved key-seat being produced in the knob and shaft body for the sliding introduction of the locking-key *i*. When the shaft *g* is intro-

duced, a washer *k* is placed over its inner end and the knob screwed upon the shaft until end-play is taken up and the device held free to rotate. The key *i* is then inserted, and a sealing-screw *m* inserted in the outer end of the knob, which will prevent a displacement of the key, so that the knob *h* will be secured to the shaft at any desired point.

As previously mentioned, the cam-head is engaged by an arm *n*, which arm is constructed with a bifurcated end *n'*, so that when in position it extends from the shutter B, so as to engage its forked end *n'* with the flattened rim *a* of the cam-head, the arm being integral with a plate having screw-holes, whereby it can be attached upon the lower outer corner of a window shutter or blind or other suitable place thereon, the center of the forked end of the arm and of the cam-head being in the same vertical plane with the axis of the hinges *o*, as shown at *y y* in Fig. 1.

It will be evident that in use the partial rotation of the cam-head will remove it from the position shown in Figs. 1 and 4, that represents the shutter closed in the full lines of the drawing in both views, and by turning it to rock the corner *d* upwardly any degree of open adjustment can be afforded to the shutter by reason of the twisting form of the rim *a*, and, further, that at any point the shutter is required to remain the adjustment of the shutter-worker will secure the shutter, dispensing with other fastenings.

As shown in Fig. 6, a half-revolution of the cam-head will place its rim *a* above and carry the outer corner *b* into engagement with the arm *n*, which movement will throw the shutter B entirely open, reversing the position of the arm in regard to its engagement with the rim *a* of the cam-head.

The modified form given the rim of the cam-head (shown in Figs. 7 and 8) consists in providing the rim with four opposite wings *p*, which gives said rim the appearance of a Greek cross in transverse section, the spiral formation of the rim being the same as shown in figures previously described, and, as shown in Fig. 8, the projecting end *r'* of the arm *r* is shaped to conform to that of the rim which it loosely embraces, thus adapting the device to operate as a shutter-worker in a manner similar to that effected by the preferred form for constructing the device.

Having described my invention, I claim as new and desire to secure by Letters Patent—

1. A shutter-worker having a cam-head the rim of which is of circular form and twisted to produce a spiral thereon, substantially as set forth.

2. In a shutter-worker, a cam-head having its rim twisted in a spiral form and engaging a mating forked arm, substantially as set forth.

3. In a shutter-worker, the combination, with a cam-head having a twisted rim, of a forked arm which is adapted to engage the rim of the cam-head and a rocking shaft that supports and actuates the cam-head, substantially as set forth.

4. The combination, with a casement and a shutter, of a shutter-worker composed of a rocking shaft, a cam-head thereon which has a curved twisted rim, and a forked arm which is adapted to engage this twisted rim and is affixed to the shutter, substantially as set forth.

5. In a shutter-worker, the combination, with a window-casement and a hinged shutter, of a shutter-worker having a cam-head the semicircular flattened rim of which is given a spiral half-turn in its length, a rocking shaft attached to one end of the cam-head, an adjustable knob on the other end of the rocking shaft, and a forked arm which is affixed to the shutter and transmits revoluble movement to the shutter, which is received from the cam-head, substantially as set forth.

EDWIN T. KEENER.

Witnesses:
J. R. ROBERTSON,
WILSON ROBERTSON.