2 Sheets—Sheet 1.

# N. HARPER.

## BURGLAR AND FIRE-ALARMS.

No. 183,562. Patented Oct. 24, 1876.

*Fig. 1.*

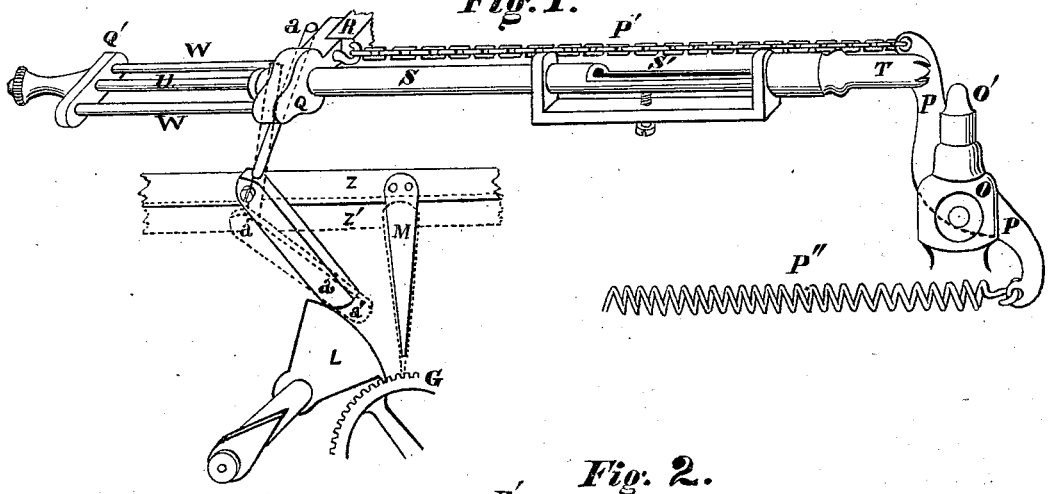



*Fig. 2.*

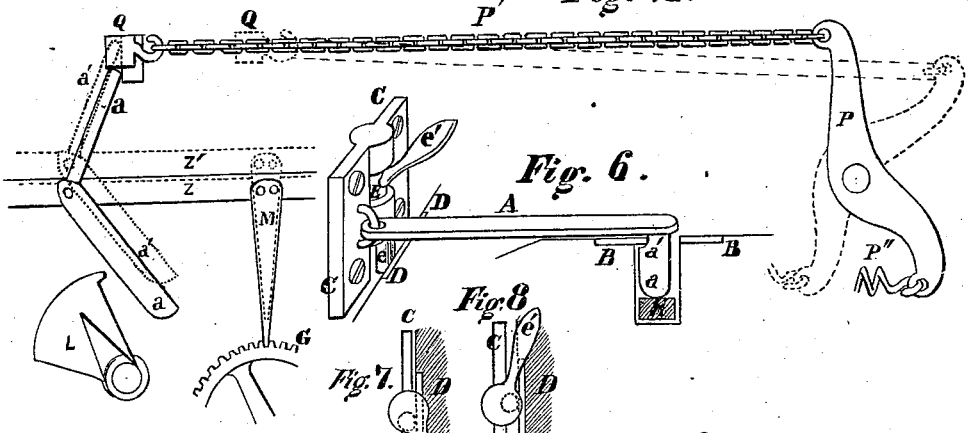



*Fig. 6.*

*Fig. 8*

*Fig. 7.*

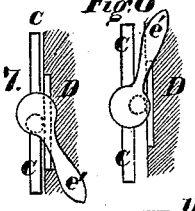



*Fig. 3.*

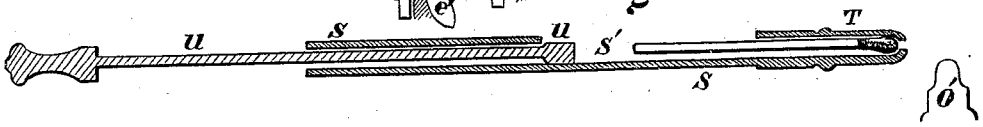




*Fig. 4.*

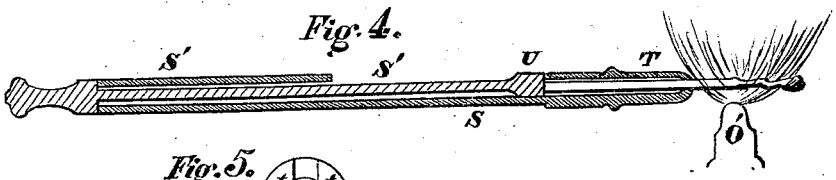
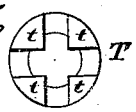



*Fig. 5.*




WITNESSES.

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W. D. Young

INVENTOR

Nathaniel Harper

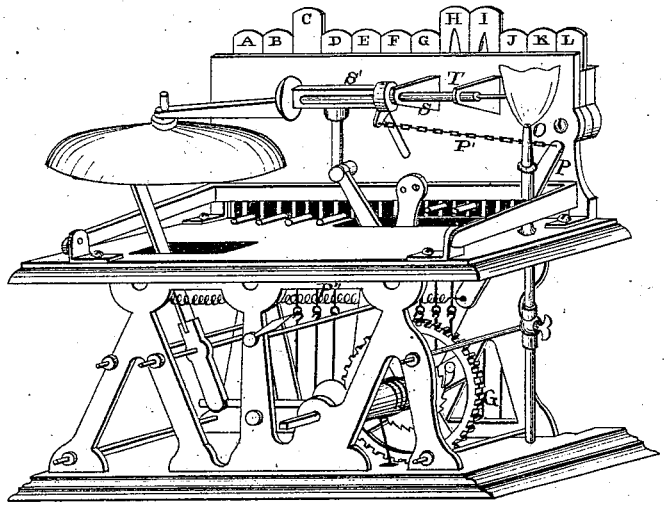
2 Sheets—Sheet 2.

# N. HARPER.

## BURGLAR AND FIRE-ALARMS.

No. 183,562. Patented Oct. 24, 1876.

*Fig. 9.*




*Witnesses:*

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*Inventor:*

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# UNITED STATES PATENT OFFICE.

NATHAN HARPER, OF NEWARK, NEW JERSEY, ASSIGNOR TO LLEWELLYN F. HASKELL.

## IMPROVEMENT IN BURGLAR AND FIRE ALARMS.

Specification forming part of Letters Patent No. **183,562**, dated October 24, 1876; application filed April 25, 1874.

*To all whom it may concern:*

Be it known that I, NATHAN HARPER, of the city of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Burglar and Fire Alarms, of which the following is a specification:

My invention relates to improvements upon the apparatus for which Letters Patent No. 25,586, of September 27, 1859, and No. 120,399, of October 31, 1871, were granted to A. Q. Ross, and consists, first, in an improved device for lighting a match; secondly, in an improved method of connecting the gas-cock with the piston which drives the match, and of causing the piston to move as required; thirdly, of an improved form of trigger for releasing the match-striking apparatus and of its combined action with the pawl setting and unsetting the alarm; and, fourthly, in a peculiar device for connecting the blinds or shutters with the alarm.

Figure 1 is a perspective view of the match-striker, trigger *a*, and cam-pawl L. Fig. 2 represents the same in different positions. Figs. 3 and 4 are sectional views of the match-striker; Fig. 5, an end view of the nipple T; Fig. 6, a perspective view of the blind and shutter fastening; Figs. 7 and 8, views of the same, showing a horizontal section through the handle *e'*.

The trigger *a* is pivoted to the hinged frame Z, to rotate on its pivot from right to left, in a line parallel with the hinged frame. The trigger is so made that when the cam-pawl L does not touch the lower end of the trigger the weight of the latter causes it to rotate till its upper end is placed under the cross-head Q, as shown in Fig. 2. The cam-pawl L is made broad at its free end to act upon the lower end of the trigger *a* in such a way that when the alarm is unset by engaging the cam-pawl L in the wheel G the cam-pawl bears against the lower end of the trigger *a* and prevents the upper end of the trigger from acting on the cross-head Q, when the hinged frame Z and the trigger *a* are raised and lowered by the opening of doors and windows, as is shown in Fig. 1. When the machine is set by turning the cam-pawl out of the wheel G, the frame Z being in its lowest position, the trigger rotates on its pivot, and its upper end passes under the cross-head Q; and when the frame Z and the trigger *a* are raised in the sounding of the alarm the trigger pushes up and disengages the cross-head Q from the stop R, as shown in Fig. 2. The cross-heads Q and $Q^1$ and the side rods W are rigidly secured to one another, and form a frame. The tube S passes freely through the cross-head Q, that the frame Q $Q^1$ W may move freely horizontally, sliding on the tube S. A piston-rod, U, is fixed in the cross-head $Q^1$, and extends through the tube S to the open slot or groove $S^1$, when the cross-head Q rests against the stop R, as shown in Fig 3. The tube S is provided at one end with a rigid nipple, T. This nipple has four points, *t t t t*, formed inside of its smaller end by cutting two grooves at right angles to each other and through the thickness of the end of the nipple, as shown in the end view, Fig. 5. These points are near enough to each other to apply friction to the head of a match and ignite it when the piston U drives the match through the nipple, as shown in Fig. 4. The lever P is secured to the key of the gas-faucet O, so that when the lever rotates it opens and closes the faucet. The chain P′ is secured to the cross-head Q, and to the upper end of the lever P. The spring P″ is secured to the lower end of the lever P, and to a suitable point under the shelf of the machine, in such a manner as to pull the lever and rotate it when the cross-head Q is liberated from the stop R, as shown by the dotted lines in Fig. 2.

The action of these parts is as follows: To set the machine, the frame Q′ Q W is pulled to the left and the cross-head Q passed over the stop R and allowed to rest against it, as shown in Fig. 1. This closes the gas-faucet. A match is placed in the groove S′, with its head in the nipple T. The cam-pawl L is turned back out of the wheel G till it does not touch the lower end of the trigger *a*. The doors and windows being closed, and the frame Z being in its lowest position, the finger M engages the wheel G, and the upper end of the trigger is under the cross-head Q. If a window or door be now opened, the frame Z

raises the finger M from the wheel G, that the gong may be rung; the trigger *a* frees the cross-head Q from the stop R, when the spring P″ rotates the lever P, which lever opens the gas-faucet and by the chain pulls the frame Q′ Q W toward the right, and the piston U drives the match through the nipple T, and thus ignites the match, which in its turn lights the gas, or a candle or lamp.

Fig. 6 represents in perspective the blind and shutter fastening. The plate B is let into the top of the window-sill directly under the lower sash, and supports the lever H in lugs cast upon its lower side. The lever H is an ordinary oscillating lever, pivoted at its center. The end shown in the drawing is depressed when the sash is down by a pin projecting downward from the sash for that purpose. The other end of the lever rises by this action and tightens the wire attached to it and running to the alarm. To allow the window-sashes to be left wide open for ventilation, the lever H may be depressed by the lug *a* on the arm or hasp A, connected with the shutters or blinds. The lug *a* is provided with an inclined surface, *a′*, which is caused to bear against the inner edge of the plate B and thus hold the lug down. The hasp A is stapled to the plate C. This plate C is let into the blind or shutter, and is flush with its inner surface; and it is placed low enough on the blind or shutter to allow the lower end *e* of the rod or bolt E to bear against the iron plate D, which is let into the outer and vertical side of the window-sill. The bolt E is mounted in bearings in the plate C, and is free to be turned partly around by the handle *e′*. The lower end *e* of the bolt is an eccentric. When the handle *e′* is turned as in Fig. 7, the eccentric *e* is flush with the plate C; but when the handle is turned as in Fig. 8, the eccentric forces the plate C away from the plate D, and consequently forces the lug *a* to bear tightly against the edge of the plate B.

The operation of this device is as follows: When the shutter or blind is to be closed, the handle *e′* is turned to the left, as in Fig. 7; then the blind is pulled quite shut and the lug *a* placed on the lever H and pushed down till the inclined plane *a′* catches under the edge of the plate B. Then the handle *e′* is turned to the right, and the eccentric *e* forces the inclined plane *a′* to press against the plate B and hold the lug *a* in its place. When the blind is forced open in any way the pressure of the eccentric *e* is removed, and the lug *a* is thrown out of its place in the plate B. The lever H then comes up, and the wire running to the alarm is thereby slackened and the alarm rings.

I claim herein as new and of my invention—

1. The improved cam-pawl L, in combination with the improved trigger *a*, hinged frame Z, cross-head Q and spring P′, lever P, and spring P″, the parts being connected and operating substantially in the manner and for the purpose set forth.

2. The eccentric E and the hasp A, in combination with the window-plate B, the parts being connected and operating substantially in the manner and for the purpose set forth.

In testimony of which invention I hereunto set my hand this 24th day of April, A. D. 1874.

NATHAN HARPER.

Witnesses:
JOHN P. BROOKS,
UZAL A. YOUNG.