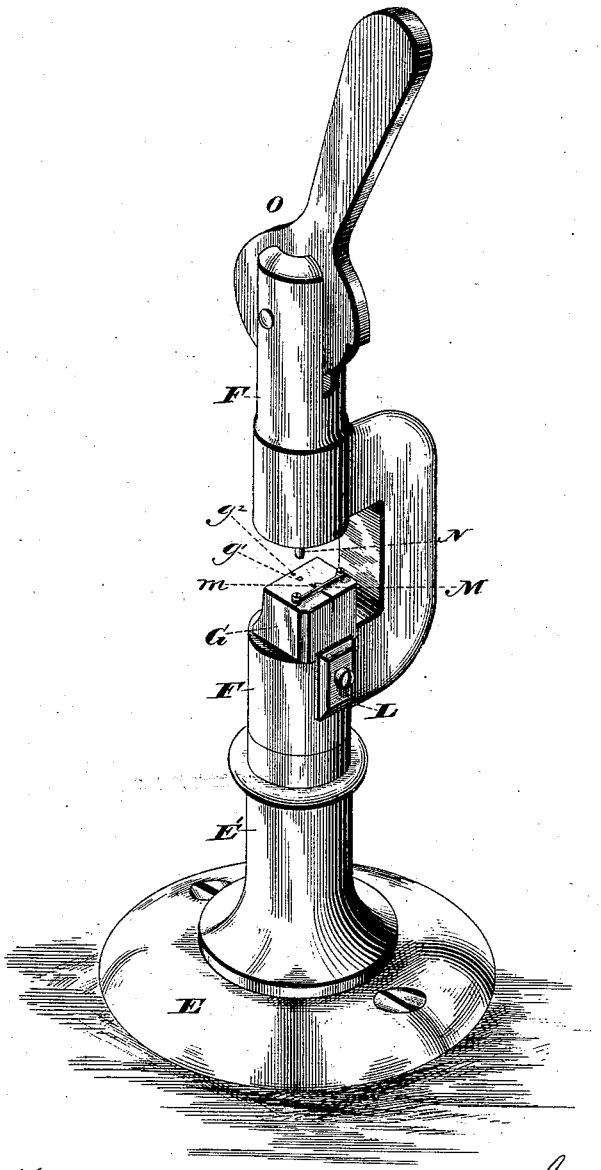
(No Model.) 4 Sheets—Sheet 1.

G. E. HUNTER.

DEVICE FOR HEADING STEADY PINS OF WATCH ESCAPEMENTS.

No. 345,635. Patented July 13, 1886.

Fig. 1.



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Henry C. Hazard

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Fig. 2.

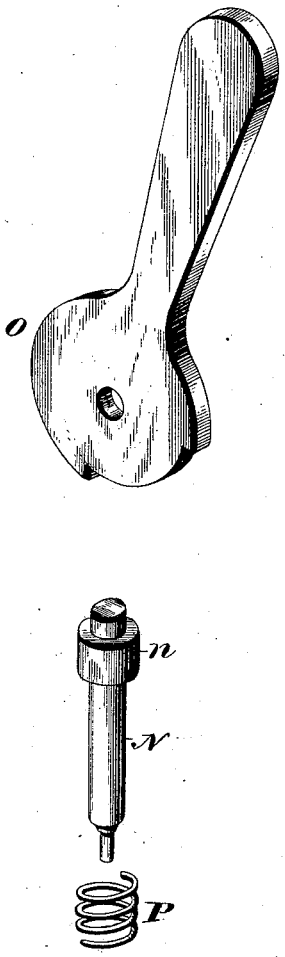

Fig. 3.

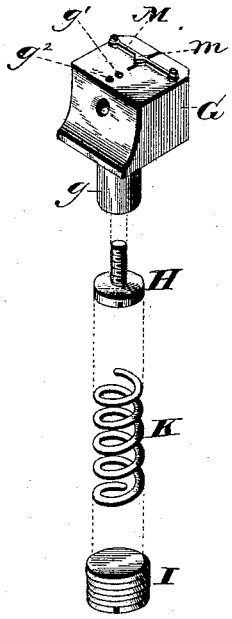

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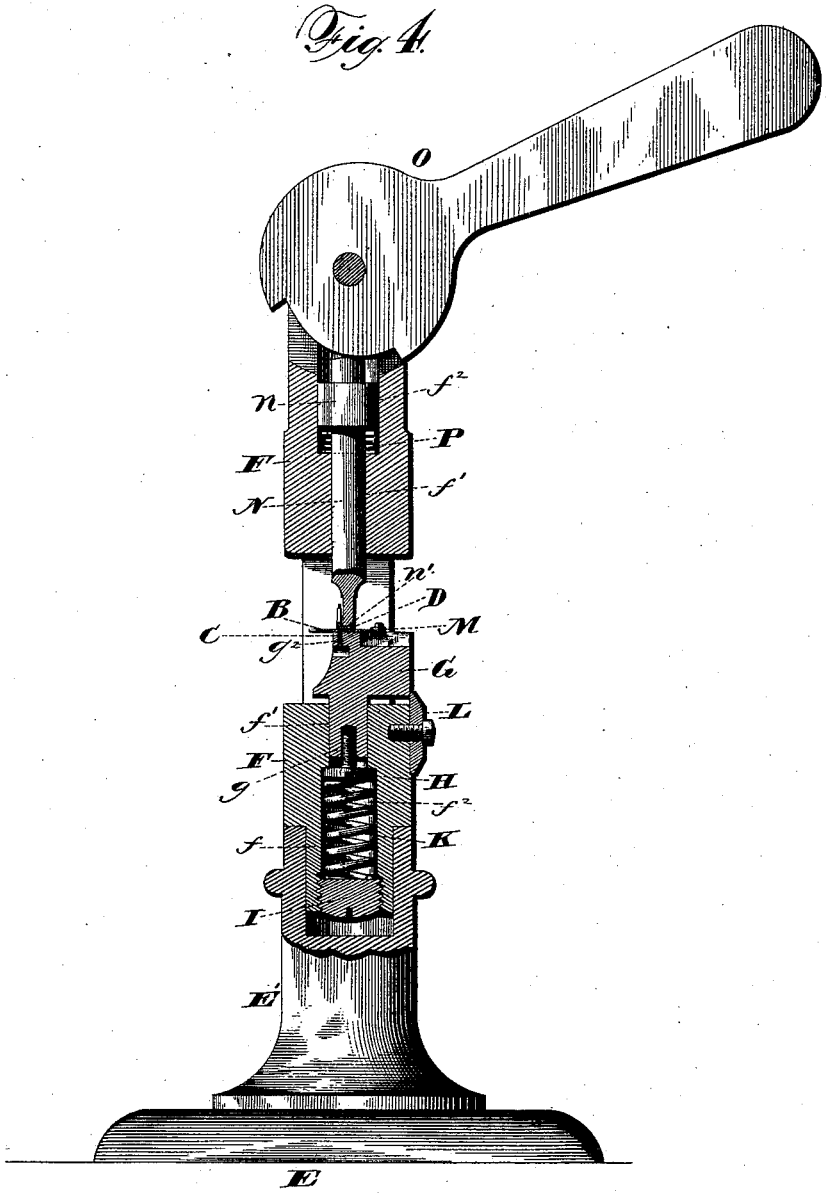
Fig. 4.



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(No Model.) 4 Sheets—Sheet 4.

G. E. HUNTER.

DEVICE FOR HEADING STEADY PINS OF WATCH ESCAPEMENTS.

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Fig. 5.

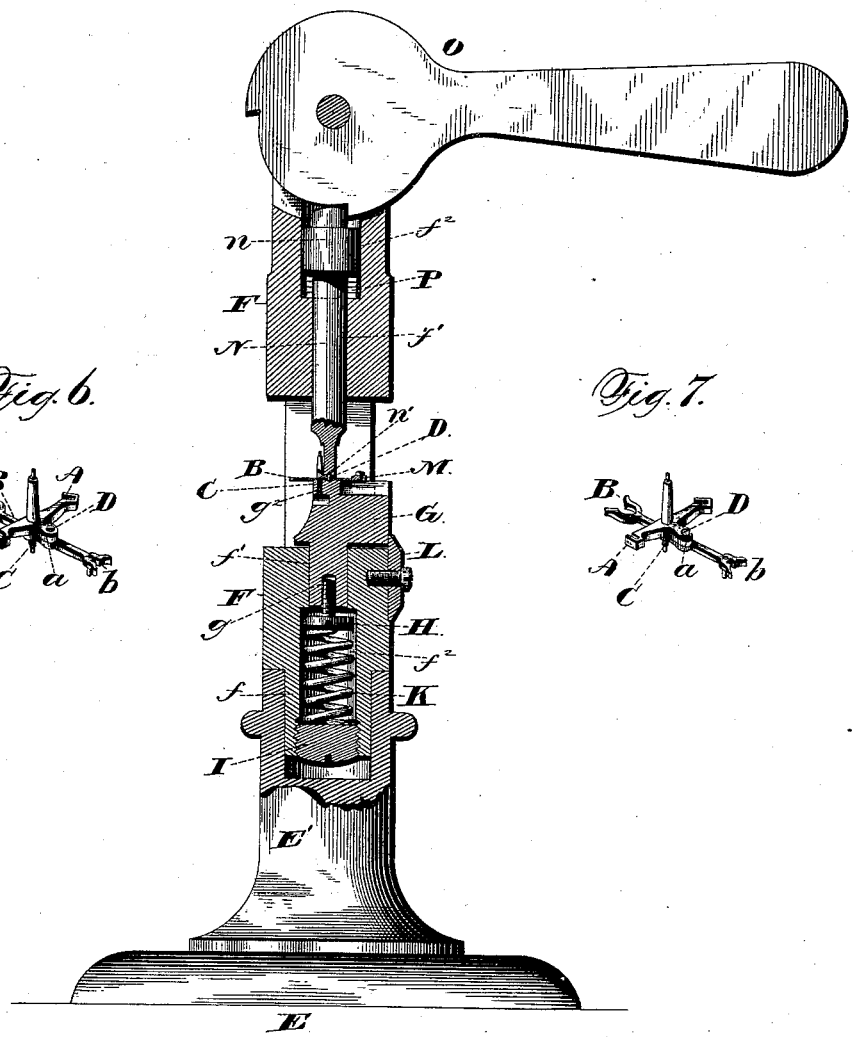

Fig. 6.

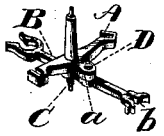

Fig. 7.

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UNITED STATES PATENT OFFICE.

GEORGE E. HUNTER, OF ELGIN, ASSIGNOR TO THE ELGIN NATIONAL WATCH COMPANY, OF CHICAGO, ILLINOIS.

DEVICE FOR HEADING STEADY-PINS OF WATCH-ESCAPEMENTS.

SPECIFICATION forming part of Letters Patent No. 345,635, dated July 13, 1886.

Application filed April 1, 1886. Serial No. 197,453. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. HUNTER, of Elgin, in the county of Kane, and in the State of Illinois, have invented certain new and useful Improvements in Tools for Heading Steady-Pins of Watch-Escapements; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my apparatus arranged for use. Fig. 2 is a like view of the spindle, spring, and operating-lever separated from each other and the frame. Fig. 3 is a perspective view of the anvil and its connecting parts separated from each other and from the frame. Fig. 4 is a vertical central section of the apparatus with the spindle moved down upon a steady-pin. Fig. 5 is a like view of the same after the anvil has been depressed by the spindle. Fig. 6 is a perspective view of a fork and pallet arranged for the action of said apparatus, and Fig. 7 is a like view of the same after having been operated upon.

Letters of like name and kind refer to like parts in each of the figures.

My invention has for its object the securing in place of the steady-pin of a lever-escapement; and to this end said invention consists in the construction and combination of the parts of the apparatus, substantially as and for the purpose hereinafter specified.

In the manufacture of watch-movements it is customary to construct the pallets A and lever B from separate pieces, which are placed upon the same arbor, C, and are secured in relative position by means of a pin, D, that passes through an arm, *a*, which projects from one side of said pallets and through the contiguous portion of said lever. Such fastening device, known as a "steady-pin," having been placed in position within said parts, is headed down by the following described mechanism:

The frame of my machine is supported by means of a base, E, from which rises a round vertical standard, E′, that is hollow and receives within its upper end the lower end, *f*, of the frame F. Said frame extends upward for a short distance, and then is provided with a lateral offset, and above the same again extends upward in a line axially with its lower part, as seen in Fig. 1. Said upper and lower parts are provided with an axial opening, *f′*, which extends entirely through the same.

Fitted into the upper end of the opening *f′* of the lower part of the frame F is the shank *g* of an anvil, G, which shank has such size as to enable it to slide longitudinally within said opening without looseness. Below said shank said opening is somewhat enlarged and within the same is a screw, H, which has its threaded body contained within a threaded axial opening in said shank and its head fitted loosely into the enlarged part f^2 of said opening *f′*, the arrangement being such that said screw prevents the withdrawal of said anvil-shank and limits its upward motion. Within the lower end of said enlarged part f^2 is fitted a threaded plug, I, and between the same and said screw H is placed a spiral spring, K, which exerts an upward pressure upon said screw and holds the same and said anvil with a yielding pressure at the upper limit of their motion. The anvil G, having the form shown in Fig. 1, is contained within the space formed by the offset between the upper and lower portions of the frame, and is prevented from rotation while left free to move vertically by means of a plate, L, that is secured to said frame and projects upward beside a plane vertical face that is formed upon said anvil.

Within the anvil G, at the axial center of the frame, is formed a round concave recess, *g′*, for the reception of one end of the steady-pin D, and adjacent to such recess is provided a vertical opening, g^2, into which may be placed one end of the arbor C, the arrangement being such as to enable the lever B to rest upon the face of said anvil, with said pin in position for heading. In order that the forks *b* of said lever may be easily and quickly centered, there is secured upon the face of said anvil a bar, M, which at its center, upon one side, is provided with a V-shaped projection, *m*, that is adapted to pass into and fill the space between said forks, when said arbor C is within its opening. Said bar is secured at its ends to said anvil and its central portion has a slight spring which facilitates the placing of said lever in and the removing of the same from position.

Within the axial opening *f′* of the upper

portion of the frame F is loosely fitted a spindle, N, which is adapted to slide longitudinally within said opening, and at its upper end is engaged by a cam-lever, O, that is pivoted within the slotted upper end of said frame. Said cam-lever, when its outer end is turned downward, operates to move said spindle downward, while a spiral spring, P, that is placed within an enlargement, f^2, of said opening f', and has its upper end in engagement with a collar, n, upon said spindle, operates to hold the latter with a yielding pressure at the upper limit of its motion and to return it to such position when permitted by the upward movement of said lever. The lower portion of the spindle N is reduced in diameter to enable it to impinge upon the pin D without coming into contact with the arbor C, and within its end is formed a round concave recess, n', which corresponds to the anvil-recess g', and coincides in position with the same.

In the use of the apparatus described, a lever with its pallets and arbor are placed in position upon the anvil, and the operating or cam lever then turned downward so as to cause the spindle to impinge upon the steady-pin. The spring which supports the anvil has such strength as to cause the latter to resist the downward pressure of said spindle until after the ends of said steady-pin have been headed down upon the lever or pallet arm, after which said anvil will yield to any increase of pressure, and thus prevent injury to or breakage of the parts of the apparatus or to the work being operated upon.

The work done by this apparatus is thorough and absolutely accurate. The ends of the steady-pin are neatly headed down and rounded, and under no circumstances can the lever and pallets thus united become accidentally separated.

Having thus decribed my invention, what I claim is—

1. As a means for riveting down the steady-pin of an escape-lever, an anvil which is adapted to receive and support said lever, a spindle that is adapted to be forced down upon the upper end of said steady-pin, and a spring which supports said anvil and is adapted to yield only to an excessive pressure by said spindle, substantially as and for the purpose specified.

2. As a means for supporting the lever B and its attachments and holding the same in position for the riveting of the steady-pin, the anvil G, provided with the recess g' and opening g^2, and the bar M, having the V-shaped projection m, substantially as and for the purpose shown.

3. In combination with the spring-supported vertically-movable anvil G, the plate L, secured to the frame F, and engaging with a plane vertical face upon one side of said anvil, substantially as and for the purpose set forth.

4. In combination with the frame F, provided with the axial opening f' and enlargement f^2, the anvil G, having the shank g, which is contained within said opening, the screw H, engaging with the lower end of said shank, the spring K, placed below said screw within said enlargement f^2, and the plug I, placed below said spring and acting as a fixed bearing for the same, substantially as and for the purpose shown and described.

5. In combination with the spring-supported anvil G, which is adapted to hold an escape-lever and its attachments, the spindle N, cam-lever O, and spring P, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of March, A. D. 1886.

GEO. E. HUNTER.

Witnesses:
W. P. HEMMENS,
W. H. CLOUDMAN.