

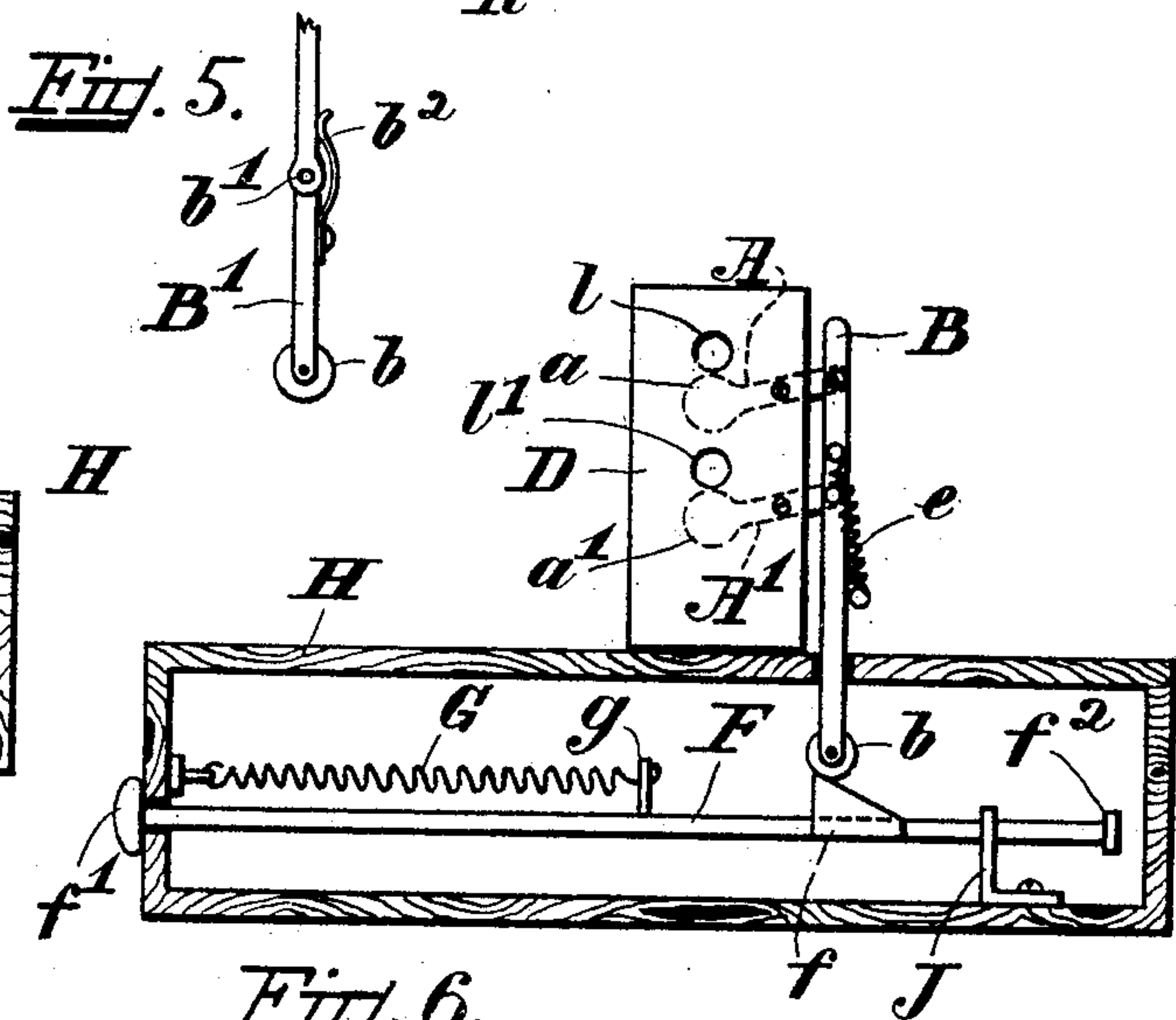
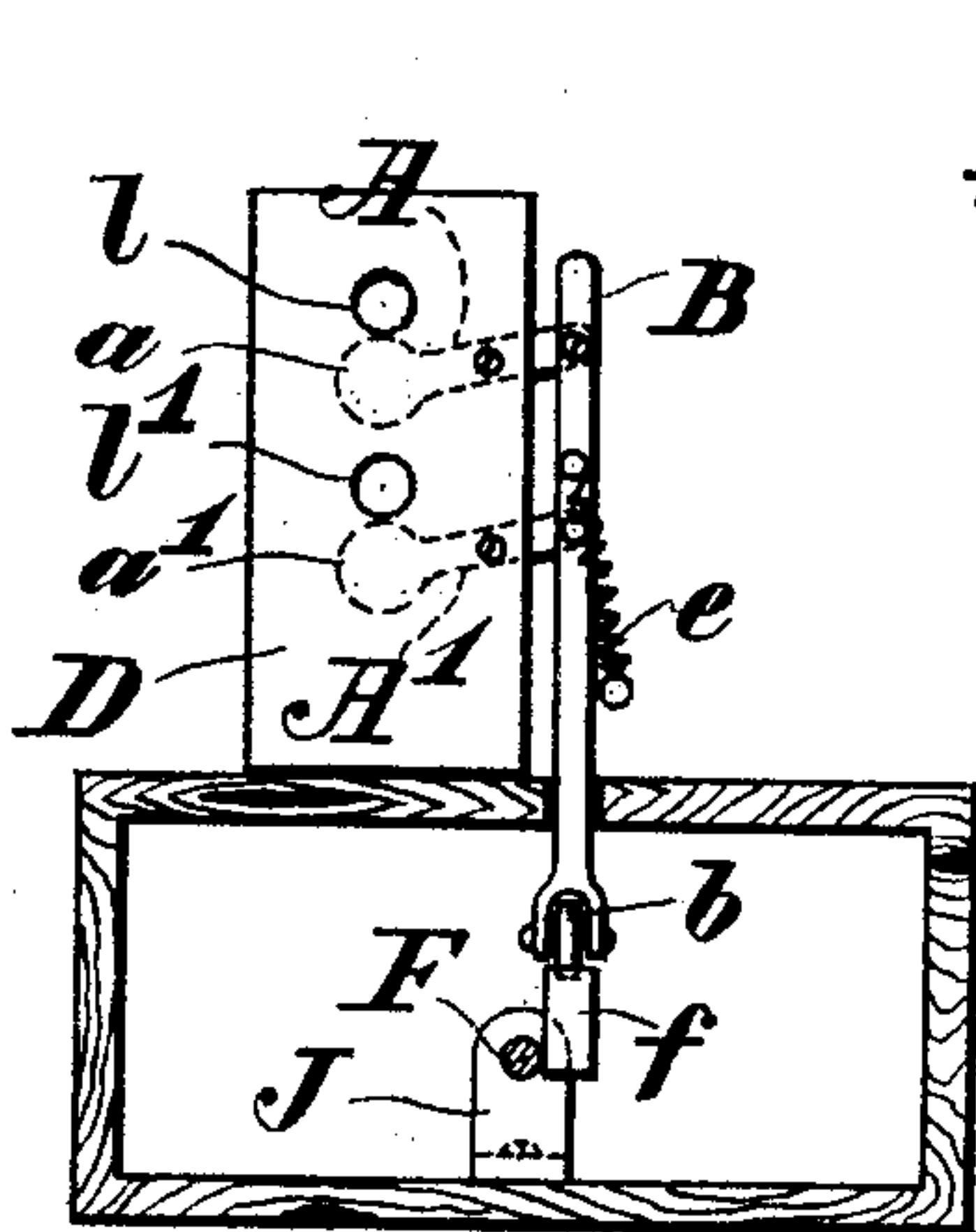
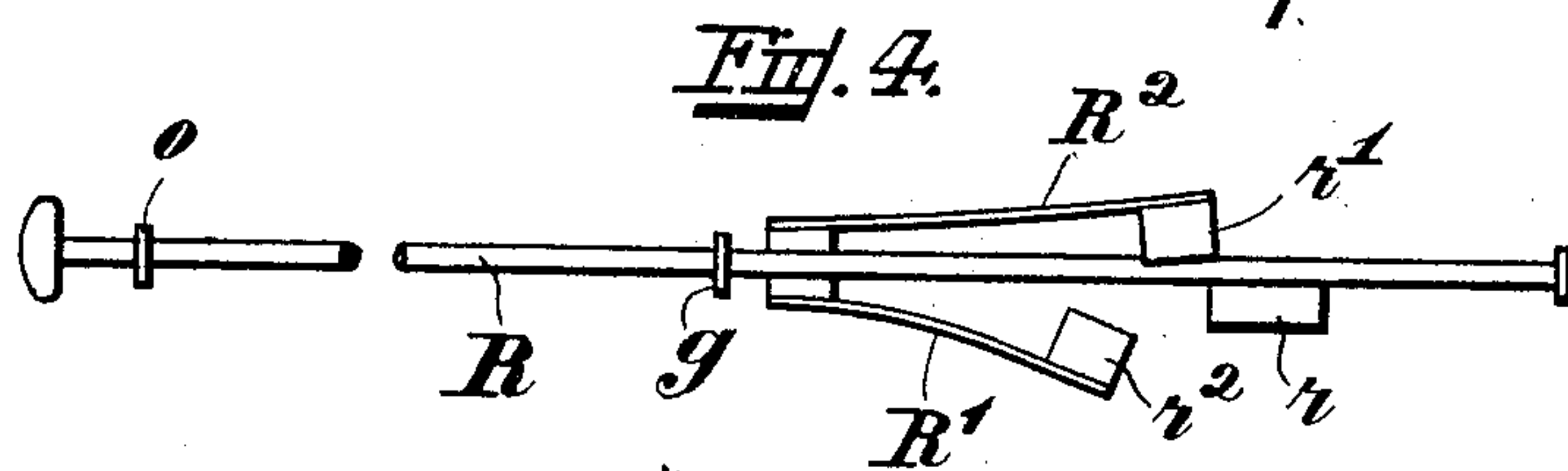
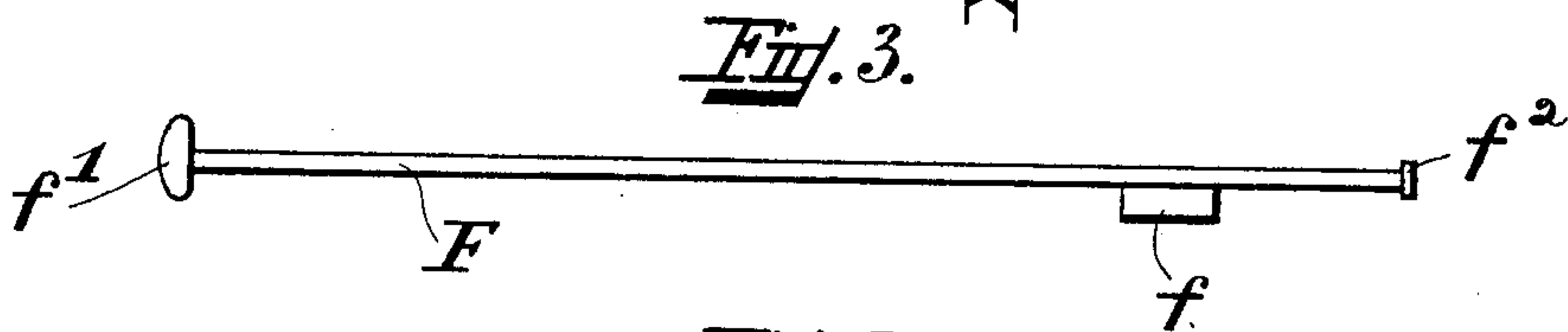
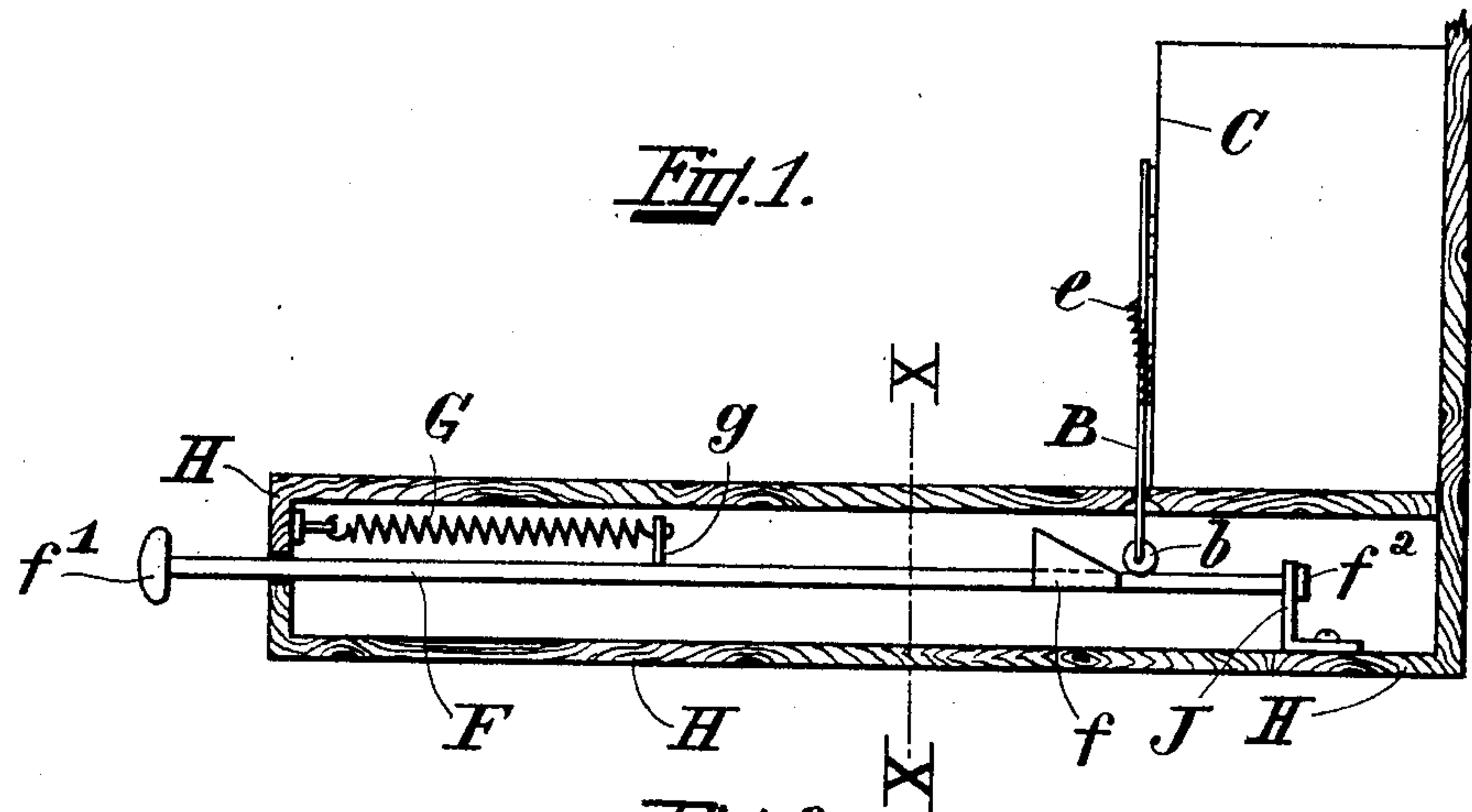
No. 634,972.

Patented Oct. 17, 1899.

W. H. WITHAM.  
CAMERA SHUTTER.

(Application filed Mar. 6, 1899.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

WILLIAM HENRY WITHAM, OF LONDON, ENGLAND.

## CAMERA-SHUTTER.

SPECIFICATION forming part of Letters Patent No. 634,972, dated October 17, 1899.

Application filed March 6, 1899. Serial No. 707,948. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM HENRY WITHAM, a subject of the Queen of Great Britain, residing at London, England, have invented  
5 a certain new and useful Improvement in Shutter-Operating Devices for Photographic Cameras, of which the following is a full, clear, and exact specification.

This invention relates to photographic  
10 shutters or shutter-operating mechanism, and more particularly to devices for producing a variable exposure by means of a push-bar or draw-bar and a double shutter.

The invention is primarily intended for use  
15 in photographic time-recorders as described in a concurrent application for a patent, Serial No. 698,362, but may be used also for other kinds of photographic cameras.

In the accompanying drawings, Figure 1 is a  
20 longitudinal section of a double shutter and push-bar embodying my invention. Fig. 2 is a transverse section of the same along line X X of Fig. 1. Fig. 3 is a plan of the push-bar. Fig. 4 is a plan of a modified push-bar. Fig.  
25 5 is a side view of a lifting bar. Fig. 6 shows a modified arrangement of the shutter and push-bar.

When the shutter is at rest, each lens tube or lens  $l$  is covered by a disk  $a$  or  $a'$ , forming one extremity of a two-armed lever A A',  
30 the opposite extremity of which is connected with a vertical lifting rod B, carrying at its lower end an antifriction-roller  $b$ . The levers A A' are situated one above the other  
35 between the base C, containing the two lens-tubes, and a cover-plate D, provided with a pair of circular openings.

The horizontal push-bar F is situated underneath the lifting bar B and provided on one  
40 side with a lug  $f$ , the top of which forms an inclined plane so arranged that by pushing the bar F forward from the position shown in Fig. 1 the antifriction-roller  $b$  will be caused to roll up the inclined plane, and thereby to  
45 remove the disks  $a$   $a'$  from the openings of the cover D, thus allowing light to enter the same. As soon as the push-button  $f'$ , attached to the bar F, is released, the latter will be drawn forward by a spring G, one end of  
50 which is attached to the push-bar at  $g$  and the other to the box containing the apparatus, and the lifting bar B, together with the le-

vers A A', will be caused to descend by a helical spring  $e$ .

The forward motion of the push-bar is limited by the contact of the push-button with  
55 the box H and the backward motion by the contact of the head  $f^2$  with the bracket J, serving to guide the push-bar. The shutters remain open as long as the operator presses  
60 on the button  $f'$ .

Fig. 4 represents a modification of the push-bar suitable for keeping the shutter open for a given length of time independent of that  
65 during which the operator presses on the push-button. In this case the vertical shutter-bar B', Fig. 5, is provided with an intermediate hinge-joint  $b'$ , and the push-bar R, Fig. 4, has in addition to the lug  $r$ , with inclined plane, a pair of lugs  $r'$  and  $r^2$ , attached  
70 to the bar R by means of short levers or springs R' R<sup>2</sup>. If a short exposure is desired, the lever carrying the lug  $r'$  is turned toward the lug  $r$  until the lug  $r'$  forms the continuation of the same. If the push-bar  
75 R, which has a longer stroke than the bar F, is pushed forward, the roller  $b$  will first roll up the inclined plane  $r$  and then over the lug  $r'$ , situated immediately behind the same. As soon as the roller has passed the lug  $r'$  it  
80 will drop down, together with the shutter-bar B, and the shutters will be closed. If the push-bar R is drawn out again by hand, the lug  $r'$  will push against the roller  $b$  and cause the lower part of the rod B' to turn  
85 forward until the roller  $b$  has passed the lug  $r$ , after which the lower part of the bar B' will again be vertical. The hinge  $b'$  must be so constructed that it will allow the lower part of the bar B' to turn from its vertical  
90 position toward the front of the box G, but not toward the back of the same. A spring  $b^2$  replaces the rod Q in its vertical position after it has been turned aside. If a longer exposure is desired, the arm carrying the  
95 lug  $r^2$  is turned toward the bar R until the lug  $r^2$  forms the continuation of the lug  $r'$ . In that case the drawing out of the push-bar R will cause the roller  $b$  to roll up the incline  $r$ , then over the lug  $r'$ , and then over  
100 the lug  $r^2$ , after which the bar B' will descend and close the shutters. If the lugs or supporting-pieces  $r'$  and  $r^2$  are both out of action, the shutter will immediately close



after it has been fully opened by the inclined plane of the lug or supporting-piece  $r$ . The construction of the push-bar  $R$  represented by Fig. 4 therefore provides for three different lengths of exposure.

The push-button  $f'$  in Fig. 1 is placed so as to stop the bar  $N$  when the roller  $b$  has reached the highest point of the lug  $f$ , but in the construction represented by Fig. 4 the stroke of the bar  $R$  is determined by a collar  $o$ , which allows the said roller to pass beyond the supporting-pieces  $r'$   $r''$ .

Figs. 2 and 6 show the lifting bar  $B$  in its elevated position and the levers  $A$   $A'$  placed so as to allow light to enter the lens-tubes. Fig. 6 differs from Fig. 2 by the position of the push-bar  $F$ , which is at a right angle to the axes of the lenses instead of being parallel with the same.

What I claim is—

1. The combination of a photographic shut-

ter, with a shutter-operating device adapted to act on the shutter by means of an inclined face, and an adjustable extension-piece adapted to be placed in line with the said inclined face, substantially as described and for the purpose specified.

2. The combination of a photographic shutter, with a shutter-operating device adapted to act on the shutter by means of an inclined face, and two independently-adjustable extension-pieces adapted to be placed one behind the other in line with the said inclined face, substantially as described and for the purpose specified.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM HENRY WITHAM.

Witnesses:

J. WETTER,  
C. ROCHE.