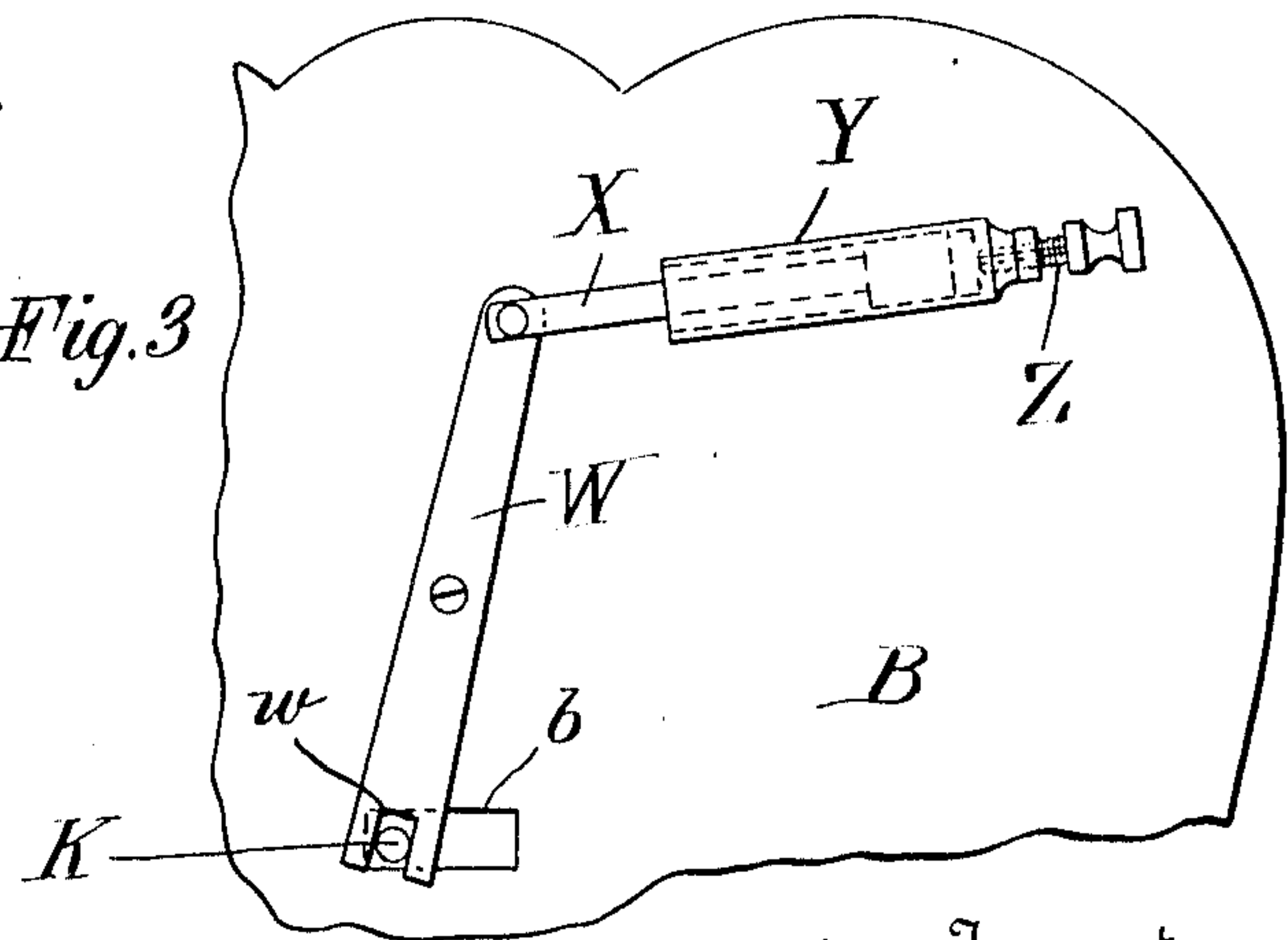
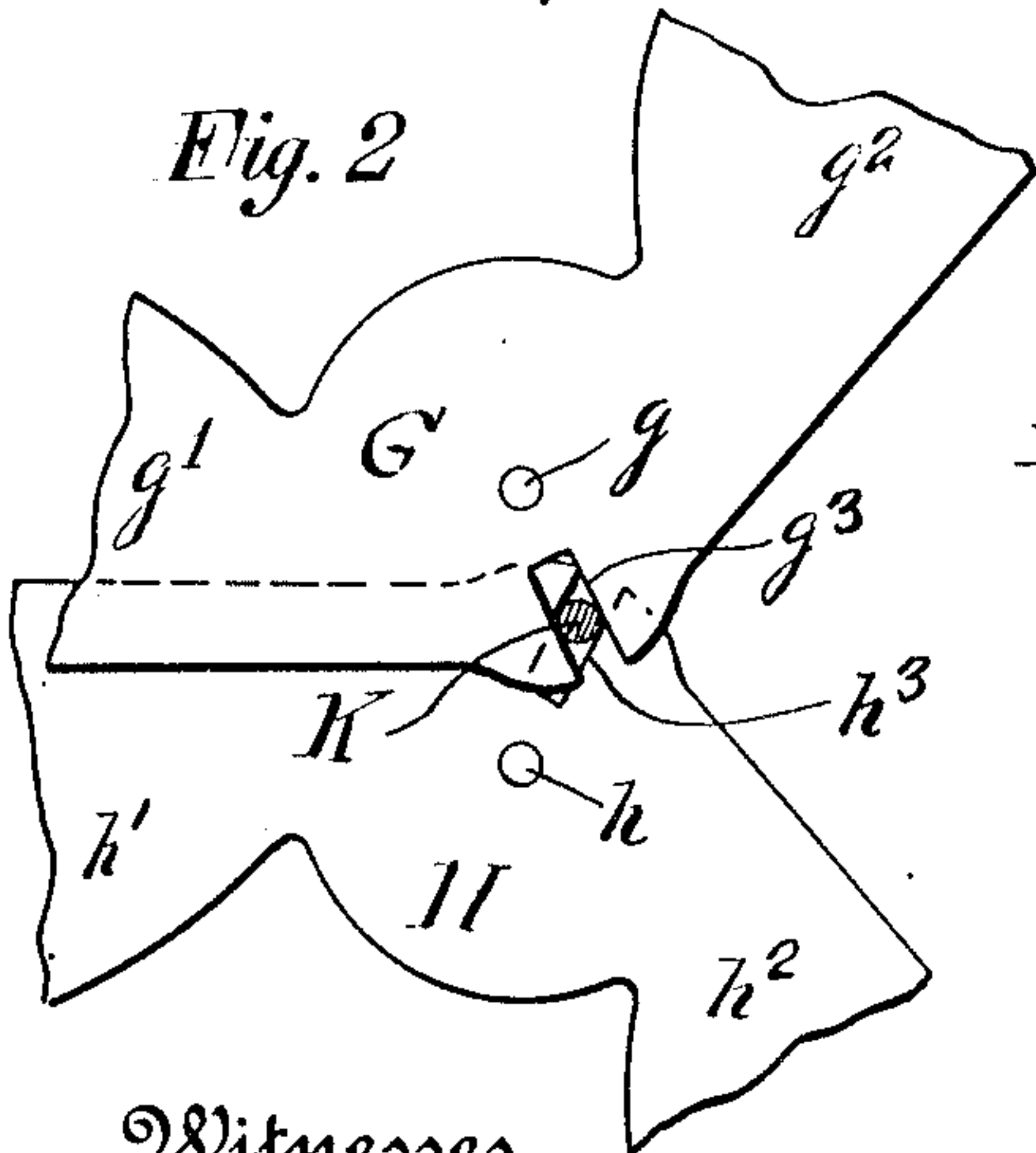
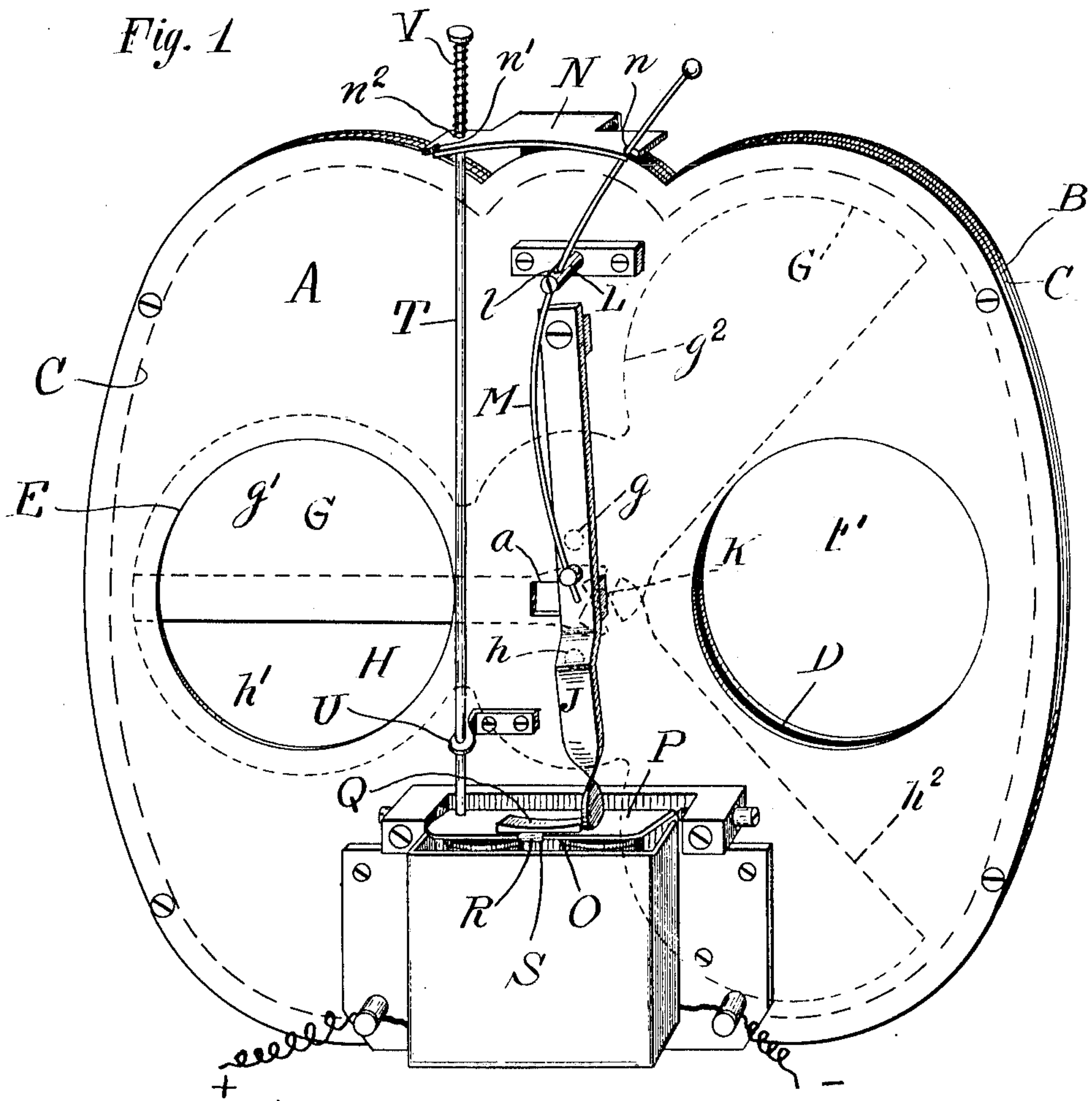


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SHUTTER.

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SHUTTER.

947,471.

Specification of Letters Patent.

Patented Jan. 25, 1910.

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To all whom it may concern:

Be it known that I, MAXIMILIAN KLAIBER, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Shutters, of which the following is a specification.

My invention relates to photographic shutters and to that class used on dissolving projecting lanterns where the lenses of the lantern are alternately or successively covered and uncovered for the purpose of projecting pictures on a screen.

One of the objects of my invention is to produce a shutter that may be put in operative condition or set by the person who changes the lantern slides, and the shutter itself operated by the lecturer so that the pictures may be thrown upon the screen at the will of the lecturer, the shutter being so constructed that it cannot be operated until the slide is changed.

Another object is to produce a shutter that may be operated by the view changer should the apparatus used by the lecturer for operating the shutter get out of order.

Other objects will appear from the hereinafter description.

The invention is illustrated in the accompanying drawing forming part of this application, in which;

Figure 1 is a front view of the shutter. Fig. 2 is a view showing the connection between the two pivoted plates of the shutter and the pin for operating the same. Fig. 3 is a view showing the cushioning device by which the speed of the shutter is varied.

In the drawing the same reference character indicates the same part in the several views.

The part lettered A is the front plate and B is the rear plate of the shutter, separated from each other by the rim C, leaving a space D between which the shutter plates swing. E and F are the openings in these plates within which the projecting lenses, not shown, are located.

G is one of the shutter plates pivoted at g . This plate consists of two wings g' , g^2 . H is the other shutter plate pivoted at h , having two wings h' , h^2 which cooperate with the wings g' , g^2 to cover and uncover the openings E and F. Each of these plates

is provided with the recess or slot g^3 , h^3 , adjacent to their pivots.

Pivoted to the front plate A is a lever J, carrying a pin K which projects into the slots g^3 , h^3 , the plates A and B being provided with slots a , b , to permit this.

Secured to the plate A is a pivoted pin L having an opening l therein through which projects a spring rod M. One end of this spring rod is connected to the lever J.

Secured to the plate B is an angle piece N having recesses or slots n , n' therein, and an opening or hole n^2 .

O is an electro-magnet having a pivoted armature P. Secured to the upper surface of this armature is a stop Q. This armature is normally held away from the magnet by the spring R and S is a catch which holds the armature down against the tension of the spring.

T is a push rod passing through the opening n^2 of the angle piece n . The lower end of this rod is supported by and passes through a bracket U, this end being directly over the armature.

V is a spring which normally holds the rod T out of engagement with the armature P.

Pivoted to the rear of the plate B is a lever W, one end of which is provided with a recess or slot w into which projects the pin K. To the other end of this lever is pivoted a piston rod X to which is connected a piston which works in the cylinder Y, this cylinder being provided with a set screw Z.

The lever J is so constructed that the free end thereof comes in contact with the stop Q when the armature P is in normal position.

In order to operate the shutter the upper end of the spring rod M is moved into one of the recesses n or n' . As shown in Fig. 1 of the drawing this spring rod is in the recess n , the said rod is under tension, the armature is in its raised position and the lower end of the lever J rests against the right end of the stop Q and this prevents the lever J from moving to the left under the tension of the spring. In this position the wings g' , h' are in contact or overlap, covering the opening E. The other wings g^2 , h^2 are separated leaving the lens opening F uncovered. In this position the operator has placed the slide in position to be projected on the screen,

not shown, when the lens E is uncovered, the operator having previously hooked the upper end of the spring rod M in the recess *n*. When the lecturer is ready to throw the covered picture on the screen he presses an electric button or moves a switch, not shown, which completes the circuit, which circuit pulls down the armature P against the tension of the spring R, whereupon the stop Q is moved out of the way of the lever J, and the spring rod M thereupon throws the lever to the left. The pin K moving to the left with this lever moves the shutter plates G, H, on their pivots, which movement separates the two wings *g'*, *h'* to uncover the opening E and the other wings *g*², *h*², move together to close the opening F. The lever J having moved to the left and the lecturer having broken the circuit, the armature P is raised by the spring R and the lever is to the left of the stop Q. The operator now moves the spring rod M from the recess *n* and hooks it in the recess *n'*, having previously changed the left hand slide. The parts are now in such position as to move the lever J to the right when the lecturer makes the circuit, and this operation of the lever J will uncover the opening F and cover the opening E. In this construction it is seen that the lecturer cannot throw a picture on the screen until the operator has changed the slide and the position of the spring rod M. When the lecturer makes the circuit there is a click at the armature which acts as a signal to warn the operator that the lecturer has caused the shutters to be moved, and makes the operator aware that it is time to shift the lever J so that the shutter will be moved in an opposite direction and that the slide should be changed. Should the magnet fail to operate, the operator by pushing down on the rod U can move the armature so that the lever J will be released to operate the shutter.

In some cases it may be desirable for the operator to move the shutters by merely switching the upper end of the spring rod M from one notch to the other. When this is desired, the armature is held by the catch S so that the stop Q will be out of the way of the free end of the lever J. It may be well to note that the pin L is pivoted so that the spring rod M will have free play.

I have provided the apparatus shown in Fig. 3 so that I can regulate the speed of the shutter. The piston moving in the cylinder Y acts as a cushion and by moving the screw Z I can vary the size of the opening in this chamber so that the air behind the piston will pass out of the cylinder, through the opening more or less freely and the speed of the shutter varied according to the speed at which the air escapes.

It is to be understood that I do not intend to limit myself to the exact construction

shown, as various changes may be made therein without departing from the spirit of my invention.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a shutter, a plate having an opening therein, means for alternately covering and uncovering said opening, a lever cooperating with said means, a spring connected to said lever, said spring being adapted to be moved in one position to move the lever in one direction and to another position to move the lever in another direction, a stop in the path of said lever, and means for moving the stop out of the path of the lever.

2. In a shutter, a plate having openings therein, pivoted plates for alternately covering and uncovering said openings, a lever connected to said pivoted plates, a pivoted spring rod connected to said lever, said rod being adapted to be moved in one position to move the pivoted plates in one direction, and to another position to move the plates in an opposite direction, an armature adjacent to the free end of said lever, a stop carried by said armature normally in the path of the lever to prevent movement of the same, and an electro-magnet for moving the stop out of the path of the lever.

3. In a shutter, a plate having openings therein, a pair of pivoted plates connected to said first mentioned plate, each of said pivoted plates having wings which cooperate to cover and uncover said openings, said plates having recesses therein, a lever pivoted to the first mentioned plate, said plate having a slot therein, a pin carried by said lever and projecting through said slot and through the recesses in the pivoted plates, a spring rod pivoted to the first mentioned plate, one end of said spring being secured to the lever, an angle piece having notches therein adapted to hold the opposite end of the spring, an armature adjacent to the free end of the lever and having a stop normally in the path of the lever, and an electro-magnet adapted to move the pivoted armature to withdraw the stop from the path of the said lever upon the completion of the circuit.

4. In a shutter, a plate having openings therein, a pair of pivoted plates connected to said first mentioned plate, each of said pivoted plates having wings which cooperate to cover and uncover said openings, said plates having recesses therein, a lever pivoted to the first mentioned plate, said plate having a slot therein, a pin carried by said lever and projecting through said slot and through the recesses in the pivoted plates, a spring rod pivoted to the first mentioned plate, one end of said spring being secured to the lever, an angle piece having notches therein adapted to hold the opposite end of the spring, an armature adjacent to the free

end of the lever and having a stop normally in the path of the lever, an electro-magnet adapted to move the pivoted armature to withdraw the stop from the path of the said lever upon the completion of the circuit, and a push rod having one end extending over the armature.

5. In a shutter, a plate having openings therein, a pair of pivoted plates connected to said first mentioned plate, each of said pivoted plates having wings which coöperate to cover and uncover said openings, said plates having recesses therein, a lever pivoted to the first mentioned plate, said plate having a slot therein, a pin carried by said lever and projecting through said slot and through the recesses in the pivoted plates, a spring rod pivoted to the first mentioned plate, one end of said spring being secured to the lever, an angle piece having notches therein adapted to hold the opposite end of the spring, an armature adjacent to the free end of the lever and having a stop normally in the path of the lever, an electro-magnet adapted to move the pivoted armature to withdraw the stop from the path of the said lever upon

the completion of the circuit, and means connected to the pin on the lever to vary the speed of the lever.

6. In an apparatus of the class described, a shutter consisting of a plate having an opening therein adapted to fit over the end of the projecting lens, means for alternately covering and uncovering said opening, a lever coöperating with said means, a spring connected to said lever, said spring being adapted to be moved in one position to move the lever in one direction, and to another position to move the lever in an opposite direction, a stop in the path of said lever, and means for moving the stop out of the path of the lever, said last mentioned means operating as a signal, as and for the purpose set forth.

In witness whereof I have hereunto set my hand at the city, county and State of New York, this 20th day of March, 1909.

MAXIMILIAN KLAIBER.

In presence of—

AGNES C. O'CONNELL,
ISABEL R. RICHARDS.