L. HORST.

FILM GATE.

APPLICATION FILED AUG. 29, 1921.

1,437,895. Patented Dec. 5, 1922.

Fig. 1.

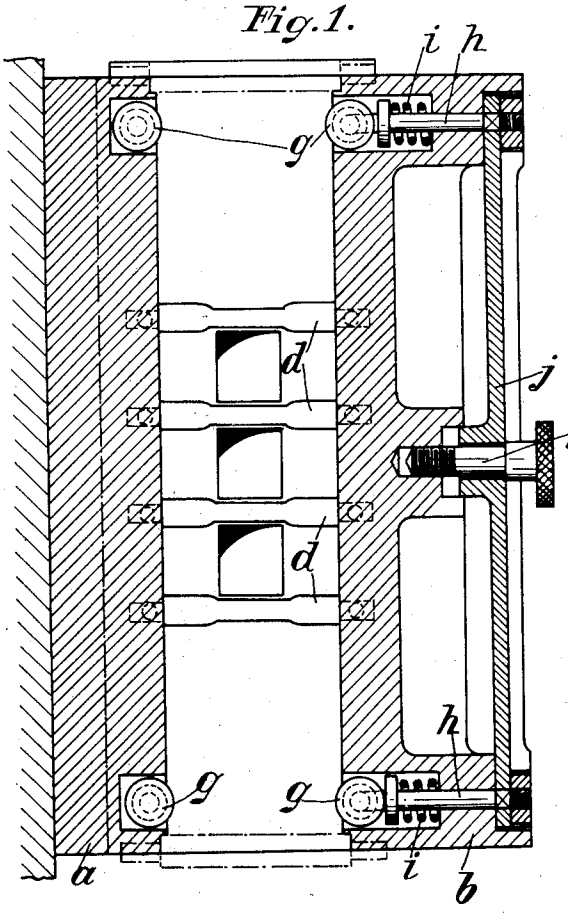


Fig. 2.

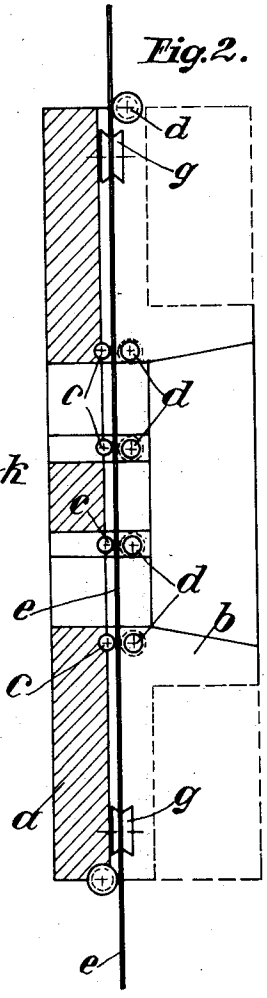
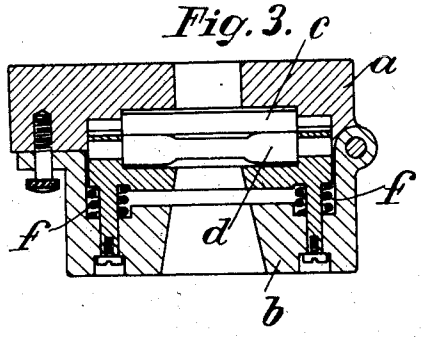


Fig. 3.



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UNITED STATES PATENT OFFICE.

LUDWIG HORST, OF BERLIN-WILMERSDORF, GERMANY.

FILM GATE.

Application filed August 29, 1921. Serial No. 496,480.

To all whom it may concern:

Be it known that I, LUDWIG HORST, a citizen of the German Republic, and a resident of Berlin-Wilmersdorf, Germany, have invented certain new and useful Improvements in Film Gates (for which I have filed applications in Germany on June 28, 1918; on June 24, 1921), of which the following is a specification.

This invention relates to a device for guiding the film-ribbon along the projecting window of a kinematographic apparatus. The purpose of the invention is to produce a device, which is simple in construction and by which the usual film-ribbons, especially polychromatic film-ribbons, can be guided along the projecting window in such a manner, that an absolutely exact coinciding of the individual pictures is insured and that the appearance of edges or borders in polychromatic projection is avoided in an effective manner.

The novel device is characterized substantially therein, that the film-ribbon is guided along the projecting window as well in its direction of movement as in the direction, which is vertical to said direction of movement, by guiding rollers, which are arranged in pairs. A further characteristic feature is, that one roller of each pair is stationarily mounted, while the other roller can be displaced under the action of a spring. According to the invention the rollers, engaging with the front side of the film ribbon, are grooved on that part of their length, which is opposite to the picture proper, so that the pictures can not be injured during the passing movement of the film-ribbon.

In the accompanying drawing, in which one embodiment of the subject-matter of my invention is illustrated by way of example,

Fig. 1 is a longitudinal section through the window of a projecting device,

Fig. 2 is a section through the window, taken in a right angle to the section of Fig. 1 and

Fig. 3 is a cross-section through the window.

As it can be seen clearly from Figs. 1 and 2, rollers *g* are arranged above and below the apertures of the window proper, which is indicated by *a*; of said rollers those, which are arranged on the left side of the film ribbon *e* are fixedly mounted. The oppositely situated rollers, which are provided on the other side of the film-ribbon, are secured to bolts *h*, which in their turn are connected to a plate *j*. The latter can be secured to the window by means of a screw *k*, which is provided with a milled head. The end of the bolt *h* connected to the roller *g* is disposed in a recess, and near roller *g* the bolt *h* carries a collar, against which is abutting the end of a spring *i* abutting with its other end against the bottom of the said recess. As is shown in Fig. 2, the rollers *g* are provided with V-shaped grooves at their circumference, in which groove the edge of the film ribbon *e* engages when passing through the window. At the back side of the film ribbon *e* small rollers *c* are mounted intermediate the two roller pairs *g*, the said rollers *c* being fixed immovably to the rigid and stationary portion of the window. Opposite to the rollers *c* and positioned in the turn-down part *b* of the window are rollers *d*, which are continually being pressed against the front side of the film ribbon *e* by the action of a spring *f*. As is shown clearly in the Figs. 1 and 3, the rollers *d* are reduced in diameter in the middle section of their length, and as a result, they will engage only the edges of the film ribbon during its passage through the window. As is evident from Figs. 1 and 2, guiding rollers *d* are journalled above and below the roller pairs *g* and at opposite sides of the film ribbon *e*, the said rollers *d* serving to guide the ribbon in a satisfactory manner in its motion when entering and when leaving the window.

By means of the novel device the film ribbon *e* is guided in an effective and simple manner without fear of its single pictures being injured and with the result, that, for instance, in projecting polychromatic films, the absolute coincidence of the individual pictures on the projection screen is secured with certainty and that the appearance of edges or borders as a consequence of inaccurate coincidence is avoided in a most effective manner.

It is of course possible to vary the details of the construction without departing from the spirit and principle of the invention.

Having thus particularly described the nature of my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A film gate comprising in combination, rollers arranged in pairs and adapted to guide the film ribbon along the win-

dow in its direction of travel as well as in the direction vertical to the direction of travel.

2. A film gate comprising, in combination, rollers arranged in pairs and adapted to guide the film ribbon along the window in the direction of its travel as well as in the direction vertical thereto, the rollers adjoining the back side of the film ribbon rigidly fixed in their position.

3. A film gate comprising, in combination, rollers arranged in pairs and adapted to guide the film ribbon along the window in the direction of its travel as well as in the direction vertical thereto, the rollers adjoining the back side of the film ribbon rigidly fixed in their position, the rollers on the front side of the film ribbon adapted to co-operate with the above said rollers.

4. A film gate comprising, in combination, rollers arranged in pairs and adapted to guide the said film ribbon along the window, the rollers on the front side of the film ribbon reduced in diameter along their middle portion opposite to the picture proper, a door adapted to turn in hinges, said rollers on the front side of the film ribbon disposed in said door under action of springs.

5. A film gate comprising, in combination, rollers arranged in pairs and adapted to guide the said film ribbon along the window, and a roller pair each disposed above and below the apertures of the window, said roller pairs adapted to engage the edges of the film ribbon, of said rollers those in engagement with one lengthwise edge of the film ribbon fixed to bolts, a fixing plate connected to said bolts, the latter provided with a collar near said rollers, said collared bolts each positioned in a recessed part of the casing of the apparatus.

6. A film gate comprising, in combination, rollers arranged in pairs and adapted to guide the said film ribbon along the the window, and a roller pair each disposed above and below the aperture of the window, said roller pairs adapted to engage the edges of the said film ribbon, those of said rollers engaging one edge of the film ribbon fixed to collared bolts, the springs on each of said bolts abutting against the collar of said bolts, said collared bolts each positioned in a recessed part of the casing of the apparatus, said springs adapted to abut with their ends away from said collars against the wall of the recess in the casing of the apparatus.

In testimony whereof I affix my signature in presence of a witness.

LUDWIG HORST.

Witness:
GEORGE RIETIG.