

May 14, 1929.

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1,713,277

FILM SPOOL CONSTRUCTION

Filed May 3, 1928

2 Sheets-Sheet 1

Fig. 1.

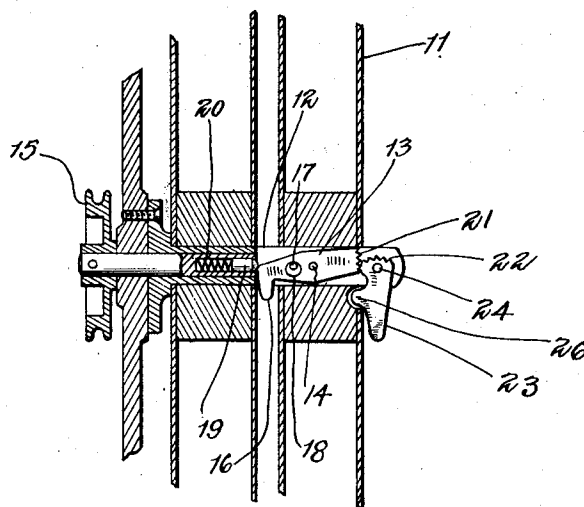
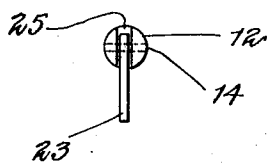


Fig 2.



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2 Sheets-Sheet 2

Fig. 3.

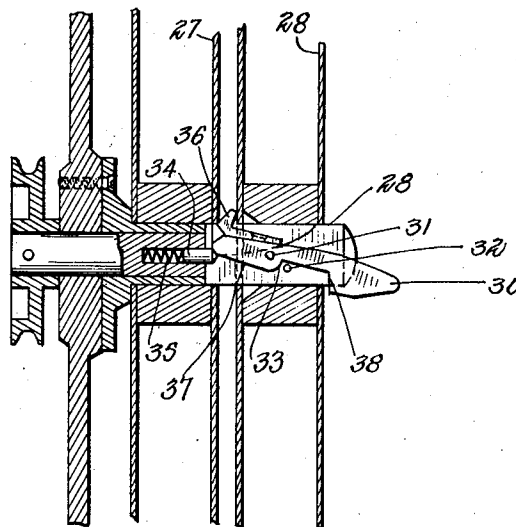


Fig. 5.

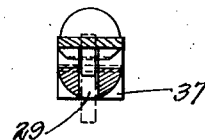
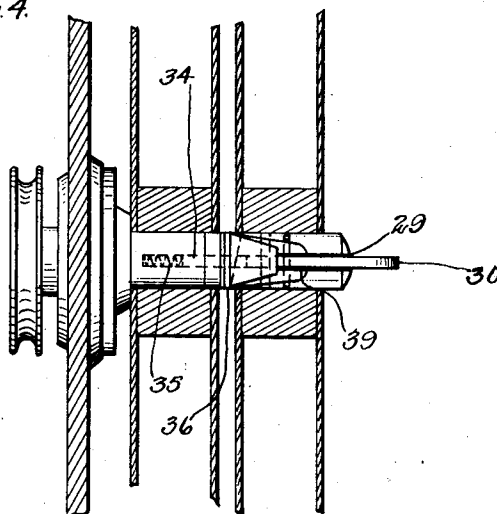


Fig. 4.



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UNITED STATES PATENT OFFICE.

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FILM-SPOOL CONSTRUCTION.

Application filed May 3, 1928, Serial No. 274,799, and in Germany May 11, 1927.

This invention relates to improvements in the film-spool arrangement of cinematographic apparatus, and it is the principal object of our invention to provide a pair of 5 juxtaposed film-spools with novel and improved means interposed between each pair of spools, positively preventing their binding during the film winding or unwinding operations by holding the spools apart on their 10 common shaft.

Another object of our invention is the provision of a film-spool arrangement allowing a ready mounting of the film spools on their shaft and removal therefrom over one end 15 of the shaft so that the operating member normally holding the spools on their shaft simultaneously allows a ready operation of the means holding the spools apart for allowing a removal of the spools.

A further object of our invention is the provision of simple and therefore inexpensive yet durable means for keeping film spools apart on their shaft, means efficient in their operation and positive in their action.

A still further object of our invention is the provision of simplified and modified means for holding the film spools apart serving simultaneously as means for allowing a ready 25 removal of the outer film spool.

These and other objects of our invention will become more fully known as the description thereof proceeds and will then be more specifically defined in the appended claims.

In the accompanying drawing forming a material part of this disclosure:

Fig. 1 is a sectional front elevation of a film-spool construction according to our invention.

40 Fig. 2 is an end view of a dog.

Fig. 3 illustrates in sectional front elevation a modified form of film-spool construction.

Fig. 4 is a plan view thereof.

45 Fig. 5 is an inner sectional end elevation of a dog or pawl.

As illustrated in Figures 1 and 2, the film-spools 10 and 11 are arranged in juxtaposition upon a common hollow axle 12, and a 50 pawl 13 or the like is pivotally mounted intermediate its ends, as at 14, within the axle 12, which is rotated by means of a pulley 15 driven by any suitable means in the customary well known manner.

This pawl 13 is substantially flat, and has 55 its inner end formed into a depending nose 16 and its movements are limited by a pin 17 protruding from the wall of shaft 12 and entering an opening 18 in the pawl 13 allowing a certain play. A pin or stud 19 within 60 the hollow shaft 12 is held in engagement with the inner, nose-shaped end 16 of pawl 13 by a spring 20 pressing with one of its ends against said stud to which it is attached and resting with its other end against the end wall 65 of the hollow shaft 12.

The outer end of the pawl 13 is provided with teeth 21 adapted to mesh with or engage the toothed end 22 of a dog 23 pivotally attached, as at 24, in a slot 25 of the shaft 12. 70

This dog, in its position shown in Figure 1 prevents a sliding of spool 11 from the shaft 12 by the frictional snapping engagement of its lip 26 into a recess formed in spool 11.

The operation of our device will be entirely clear from the above description without further explanation by the simultaneous inspection of the drawing, and it will be understood that a binding of both spools 10 and 11 during the winding up or unwinding 80 of the film will be positively prevented by the spring-controlled stud 19 pressing against the slightly bevelled upper end of pawl 13, pressing its nose 16 between the neighboring inner walls of spools 10 and 11 and keeping 85 the same separated while dog 23 with its snap-lock engagement 26 with the spool 11 will prevent a lateral displacement of the spools toward the outside.

Upon release of the dog and swinging the 90 same upwards about its pivot pin 24 the toothed end of the same will engage the toothed end of pawl 13 and raise its nose 16 and repress lug 19, into the hollow shaft so that now both spools can be readily removed 95 from the axle 12 laterally.

In the modified form of our invention illustrated in Figures 3, 4, and 5 the film-spools 27, 28 are carried by a shaft 28' slotted in the direction of its longitudinal axis, as at 29. 100

In this slot a flat lever or pawl 30 is pivoted intermediate its ends, as at 31, and its downward movements are limited by a pin 32 in the shaft wall adapted to engage a shoulder 33 formed with the lower edge of the pawl. 105 The inner end of pawl 30 is slightly bevelled and held up by the slightly bevelled end of a pin or stud 34 as illustrated in Figure 3, and

this stud is normally pressed into engagement with the lower end edge of pawl 30 by means of a spring 35 attached at one end to said stud and resting with its other end against the end wall of slot 29.

To the upper edge of pawl 30 a hook 36 is secured engaging a square opening 37 in the rim of the film-spool.

In order to prevent a disengagement of the film-spool 28 from its shaft 28', and to prevent the same from laterally falling off the shaft, the pawl 30 is formed with a lower, inner shoulder 38, and the spool 28 has a depression 39 formed in its upper face adapted to receive the hook 36 allowing a lateral removal of the spools 27, 28 from the shaft 28' upon disengagement of shoulder 38 from the spool 38.

The operation of this modified form of our invention will be entirely clear from the above description and simultaneous inspection of the drawing, as it is similar to the one described with respect to our preferred form.

It will be understood that we have described and shown some of the forms of our invention as an example of the many possible ways to practically construct the same, and that we may make such changes in the construction of the minor details as come within the scope of the appended claims without departure from the spirit of our invention and the principles involved.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In cinematographic apparatus, a film-spool arrangement comprising a hollow shaft, juxtaposed film spools on said shaft, a pawl pivoted within said shaft, means for limiting the movements of said pawl, a means on said shaft for separating the film-spools, a means for holding said separating means in the spool separating position, and a means for normally securing said spools in their relative positions on said shaft, said means allowing a lateral removal of said spools from said shaft.

2. In cinematographic apparatus, a hollow shaft, a pair of film spools on said shaft adapted for lateral removal therefrom, a pawl pivotally held in said shaft, means for limiting the movements of said pawl, a nose at the inner end of said pawl entering the space between the two spools for keeping the same separated during the film winding and unwinding operations, spring-controlled means engaging said pawl for normally holding its nose between said spools, and a dog adapted to engage the outer end of said pawl for moving its nose into a position permitting the lateral removal of the same and of the spools from the shaft, said dog normally holding the parts in operating position in said shaft.

3. In cinematographic apparatus, a hollow shaft, a pair of film spools on said shaft, adapted for lateral removal therefrom, a

means for rotating said shaft, a means for keeping said spools separated during the film winding and unwinding operations, and a dog on said shaft at the end thereof opposite to said shaft rotating means for normally keeping said spool separating means in their operative position, and the spools on said shaft and for allowing a ready removal of said spool laterally from said shaft.

4. In cinematographic apparatus, a film-spool arrangement comprising a hollow shaft, film spools in juxtaposition on said shaft, a pawl pivoted in said shaft, means for limiting the movements of said pawl within said shaft, a nose at the inner end of said pawl for holding said spools separated, a spring controlled lug in said shaft adapted to engage the upper edge of said pawl for depressing its nose into said shaft between said spools, a rack formed at the opposite end of the pawl, and a dog pivoted on said shaft, a rack formed on one end of said dog adapted to engage the rack on said pawl upon swinging the dog about its pivot to repress said lug against the action of its spring and allowing a guiding of the nose in said pawl into alignment with the pawl body within said hollow shaft to allow a ready lateral removal of the spools from the shaft, and a lip on said dog adapted to snap into a recess of one of the spools for normally holding said spools on their shaft.

5. In a film-spool arrangement, a hollow spool shaft, a pawl pivoted in said shaft, a nose on the inner end of said pawl adapted to enter between both spools for keeping the same separated during the film winding and unwinding operations, a lug pressing on said pawl for holding its nose in the spool separating position, a spring engaged to said lug at one end and resting with its opposite end against the end wall of said hollow shaft for normally holding said lug in the pawl depressing position, said pawl having an opening therein, a pin in the shaft wall adapted to engage said opening to play therein for limiting the up and down movements of said pawl in said shaft, a dog pivoted in said shaft for normally holding the spools in said shaft, and a means on said dog and pawl allowing an operation of said pawl by said dog to lift its nose from between said spools into said shaft by repressing the lug against the action of said spring to allow a lateral withdrawal of the spools from the shaft, with dog and pawl in alignment.

6. In cinematographic apparatus, a film-spool arrangement comprising a hollow shaft, film-spools in juxtaposition on said shaft, one of said spools having an opening therein, a pawl pivoted within said shaft, a hook on said pawl engaging the opening in one of said spools, means for limiting the movements of said pawl, a means for normally holding said hook in engagement with said spool for separating both spools, said means allowing an

alignment of pawl and hook for lateral disengagement of said spools from their shaft.

7. In cinematographic apparatus, a film spool arrangement comprising a hollow shaft
5 juxtaposed film spools on said shaft one of said spools having an opening and a depression therein, a pawl pivotally arranged in said shaft, a pin limiting the downward movement of said pawl, a hook on said pawl for
10 holding said spools separated during the film winding and unwinding operations adapted to engage said opening, a lug in said shaft normally keeping the inner end of said pawl
15 elevated to keep said hook in operative position, a spring engaged at one end to said hook and resting with its other end against the end

wall of the hollow space in said shaft, for normally pressing said lug into engagement with said pawl, a shoulder formed near the outer end of said pawl for normally engaging
20 the outer of said spools allowing a swinging of the pawl in alignment with said lug and for depressing the same against the action of said spring for bringing said hook into the
25 depressor of said spool and the parts into alignment in order to allow a lateral removal of the spools from their shaft.

Signed at Dresden, Saxony, Germany, this 14th day of April, A. D. 1928.

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