April 15 , 1924. 1,490,349

J. E. STROMBERG

NEGATIVE AND PRINT REEL

Filed Dec. 26 . 1922

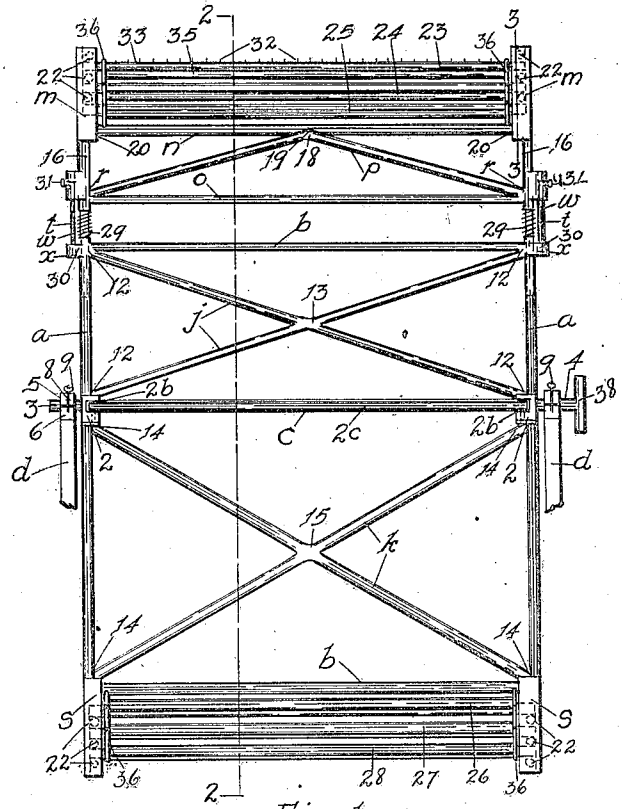


Fig. 1.

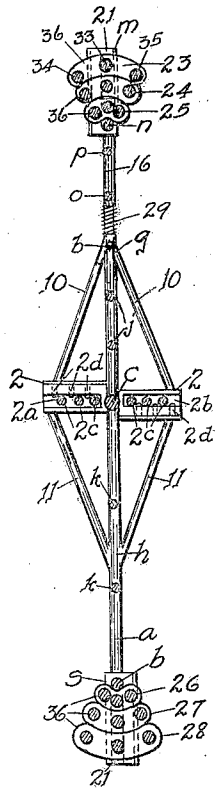


Fig. 2.

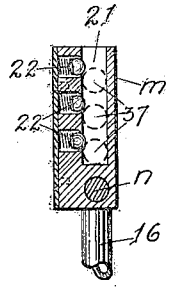


Fig. 3.

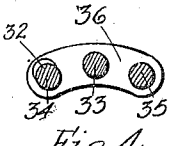


Fig. 4.

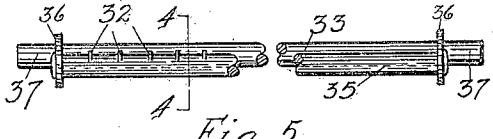


Fig. 5.

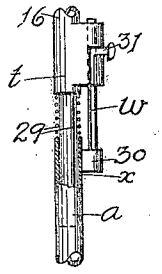


Fig. 6.

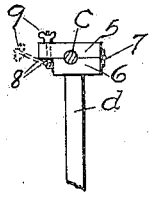


Fig. 7.

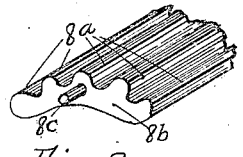


Fig. 8.

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UNITED STATES PATENT OFFICE.

JEAN E. STROMBERG, OF SAN DIEGO, CALIFORNIA.

NEGATIVE AND PRINT REEL.

Application filed December 26, 1922. Serial No. 608,947.

To all whom it may concern:

Be it known that I, JEAN E. STROMBERG, a citizen of the United States, residing at San Diego, in the county of San Diego and State of California, have invented a new and useful Negative and Print Reel, of which the following is a specification.

My invention relates to improvements in reels on which may be placed negatives, prints and films for the purpose of more easily and effectively handling and developing them in long pieces or sections, as more particularly are used in the moving picture business, and the object of my improvement is to provide a device of the kind that is capable of carrying in a proper manner long negatives, prints, etc., so that they can be handled in the development, washing and toning baths, without being liable to become twisted, tangled and damaged in the different processes, as they are liable to be when attempted to be handled without a reel or other device of the kind.

I attain this object by the device illustrated in the accompanying drawings, in which:

Figure 1 is a front elevational view of my reel, showing in broken sections a part of the reel support; Fig. 2 is a cross-sectional view of Fig. 1, through 2—2; Fig. 3 is a detail view of one of the auxiliary crossbar supports taken at 3—3 in Fig. 1; Fig. 4 is a cross-sectional view of Fig. 5 through 4—4; Fig. 5 is a detail view in broken section of one of the auxiliary crossbars; Fig. 6 is a detail view of one of the tension regulators, Fig. 7 is a detail view of the end of one of the reel supports, and Fig. 8 is a perspective view of a one-piece auxiliary crossbar.

Similar characters of reference refer to similar parts throughout the several views.

The side bar members *a*, the end crossbars *b* and the middle crossbar *c*, constitute the frame work of my invention. The two side members *a* are identical in form and structure and are each provided with a hub member 2 in which is firmly mounted the middle crossbar *c*. This hub member 2 is provided with two recesses 2^a and 2^b which are adapted to receive the ends of the intermediate separator bars 2^c. These intermediate separator bars 2^c extend from the one side bar *a* to the other side bar *a* and serve to keep the layers of the article wound on the end and auxiliary crossbars from resting against each other. They may also be provided with separating members the same as members 32 and they are held in the recesses 2^a and 2^b by ball springs 2^d which are mounted in said hub member 2 in recesses offset from said recesses 2^a and 2^b.

The crossbar *c* is of a sufficient length to provide bearing portions 3 and 4, which are revolubly mounted in the uprights *d* which form a part of a support member not shown in the drawings, but which is provided with said uprights *d* of a sufficient length to permit the reel to be freely revolved thereon.

The side bar members *a* are also each provided with a pair of braces 10 and 11 which are each mounted at one end in the extending end of the hub member 2 and at the other ends on said member *a* respectively at *g* and *h* and they are adapted to strengthen and support said side bar members *a*. An intermediate pair of braces *j* is provided, each of which extends diagonally from one to the other of the side members *a*, to which their ends are securely attached at points 12 and are securely attached to each other at 13, and a similar pair of braces *k* are similarly attached to the side bar members *a* at 14 and are similarly secured to each other at 15.

The support members *d* are similar in construction as shown in Fig. 7 and are each provided with an upper bearing member 5 and a lower bearing member 6. These bearing members 5 and 6 are held together at one end by a hinge 7 and the member 5 is adapted to be swung on the hinge 7 to engage or release the middle crossbar *c* from said supports *d*. The member 6 is provided with a swing-bolt 8 which is adapted to hold the member 5 in place on member 6, and said swing-bolt 8 is provided with a wing-nut 9 which facilitates the fastening or releasing of the member 5.

Telescopically mounted in the upper end of each of the side members *a* is an auxiliary crossbar support *m*, each of which is provided with an extended portion 16 which adapts it for its said mounting in the side member *a*.

The auxiliary crossbar supports *m* are supported by two parallel members *n* and *o* which are firmly secured at their ends to member *p* which is also firmly mounted on said auxiliary crossbar supports *m* at *r*. Said angled brace member *p* is provided at its angle 18 with a hollowed portion 19 in which is firmly mounted the crossbar *n*.

The crossbar supports *m* and *s* are each provided with a recess 21 and offset from said recess 21 there is provided a plurality of recesses in which are placed ball springs 22.

The recess 21 is adapted to receive the ends of the auxiliary crossbars 23, 24 and 25, and the pressure of the ball springs 22 hold the said auxiliary crossbars in their positions in said supports *m*.

On the opposite ends of the side bar members *a* are firmly mounted similar auxiliary crossbar support members *s* which are similar in construction and are supplied with a like number of ball springs as the cross-bar supports *m*, and are adapted to hold the ends of the auxiliary crossbar members 26, 27 and 28 the same as the auxiliary crossbars 23, 24 and 25 are held as described above.

A tension regulator member *t* (Fig. 6) is mounted on the upper end of each of the side bar members *a* at *x*, and the coil spring member 29 at its upper end is attached firmly to the portion 16 of the said support member *m* and is adapted to regulate the tension on the auxiliary cross-bars 23, 24 and 25, and 26, 27 and 28. This tension regulator member *t* is provided with a revolving locking member *w* which is revolubly mounted in the lug 30 and is adapted to be revolved therein for the purposce of locking said auxiliary crossbar supports *m*, or of releasing same. This member *w* is provided with a handle portion 31 to facilitate its revolution. As shown in Fig. 5 the lower end crossbar *b* and the member *n* may be provided with separating members 32 on their bearing surfaces, which are adapted to hold the strips of negatives or prints from moving upon one another. The auxiliary crossbars are also provided with these separator members 32 for the same purpose.

The auxiliary crossbar members shown in the drawings are each composed of three horizontal rods 33, 34 and 35 and are mounted at their ends in a curved member 36.

The rod 33 has its end 37 extended sufficiently beyond the member 36 to form the bearings for mounting the auxiliary crossbars in the recesses 21 of the auxiliary crossbar supports *m*. This curved member 36 of each of the auxiliary crossbars is of a sufficient width to provide a space between the auxiliary crossbars when said auxiliary crossbars are placed one above the other as shown best in Fig. 2. The curved members 36 of the crossbars 25 and 26 are of the same length and the curved members of the crossbars 24 and 27 are of the same length but sufficiently longer than those of crossbars 25 and 26 to extend outwardly sufficiently each way to provide a space between said auxiliary crossbars for the negative or prints placed thereon that will not allow the coils of prints or negatives to touch each other. Likewise, and for the same purpose, the curved member 36 on the crossbar members 23 and 28 are made longer than said member 36 on the crossbars 24 and 27.

These auxiliary crossbar members may also be made of a single piece of material as shown in Fig. 8 in which construction there is provided a plurality of parallel ridges 8^a which perform the same functions as the rods 33, 34 and 35 perform, and the end portion 8^b is of the same general shape as the members 36, and the bearing portions 8^c perform the same function as the portions 37 of the auxiliary crossbars hereinbefore described.

On the extended portion 4 of the middle crossbar *c* there is provided a handle member 38 which is adapted to facilitate the revolving of the reel and for use in handling the reel when removed from the supports *d*.

In operation the auxiliary crossbars and intermediate separator bars 2^e are all removed and the film, negative or print to be worked on, is wound on the reel on the lower end crossbars *b* and member *n* between the separators 32, in single layers, and when the crossbars *b* and member *n* are filled the auxiliary crossbars 25 and 26 and the intermediate separator bars 2^e are placed in their respective positions in the supports *m* and *s* and the process of winding on the article is continued, and as each set of auxiliary crossbars are covered, additional auxiliary crossbars and intermediate separators are added until the entire film, negative or print is wound on the reel. In order to remove the reel from the supports *d* the wing-nuts 9 are released and the swing-bolts 8 are swung out of engagement with the members 5, when the reel may be removed.

Having thus described my invention, what I desire to secure by Letters Patent is:

1. A reel of the kind described, comprising two parallel side bars, two crossbars mounted one on each end of said side bars, a middle crossbar mounted at the middle of said side bars with its end extending beyond said side bars to provide bearings to rest in the uprights of a reel support, a plurality of auxiliary crossbar supports mounted one on each end of said side bars and a plurality of auxiliary crossbars adapted to be mounted in said auxiliary crossbar supports.

2. In a reel of the kind described, two horizontal side bars spaced apart, two end crossbars one of which is mounted near the ends of said side bars, a middle crossbar mounted firmly near its end on said side bars, an auxiliary crossbar support member provided with a recessed portion, and a plurality of off-set recesses and an extended portion adapted to be mounted one each in one of the ends of each of the said side bars, a plurality of auxiliary crossbars

adapted to be one above the other in the first named recess in said crossbar support member, and a plurality of ball springs mounted in said off-set recesses.

3. In a reel of the kind described, a pair of horizontally spaced apart side bars, a pair of crossbars mounted on said side bars, one near each of the ends thereof, a plurality of braces mounted on said side bars, a middle crossbar mounted thereon adapted to rest at each end of a reel support, and a plurality of auxiliary crossbars each composed of a plurality of horizontal rods mounted at each end in a curved member and having the middle rod extending thru said curved members to be used as supports slidably mounted at their ends in supports on the ends of said side bars.

4. In a reel of the kind described, a pair of side bars spaced apart, end crossbars mounted on said side bars, one near each of the ends thereof, a tension member mounted in the one end of each of said side bars, auxiliary cross bar supports provided with recesses reciprocally mounted in the ends of said side bars and attached to said tension members, a plurality of auxiliary crossbars superposed above each other and mounted in the recesses of said support members, similar auxiliary recessed crossbar support members mounted in the other ends of said side bars, and a plurality of auxiliary crossbars adapted to be mounted in said recesses in said last named auxiliary crossbar support members.

5. In a device of the kind described, a pair of side bars each provided with a hub member and a plurality of braces each mounted at one end in said hub member and at the other end attached to said side bar, a pair of end crossbars each provided on its bearing surface with a plurality of spacing means mounted on said side bars, one near each end thereof, an auxiliary crossbar support provided with a recess mounted in each of the ends of said side bars, a plurality of auxiliary crossbars each provided on its bearing surface with a plurality of spacing means adapted to be mounted in the recesses in said auxiliary crossbar supports, a pair of reel supports and a middle crossbar member mounted in said side bars and provided with means for resting in said reel supports.

6. In a reel of the kind described, a reel frame composed of two side bars each provided with a recessed hub member, two end crossbars attached to the ends of said side bars, a middle crossbar mounted in said reel frame, a plurality of intermediate spacing members adapted to be mounted in said recesses in said hub members, a plurality of ball springs mounted in said hub members in recesses off-set from the main recesses, and a plurality of auxiliary crossbar members each provided with a plurality of parallel bearing surfaces adapted to be mounted at their ends in said reel frame.

7. A device of the kind described, comprising a reel frame provided with a resilient member, a plurality of recessed support members mounted on each end of said reel frame, a plurality of recessed members mounted on the sides of said frame, a plurality of intermediate crossbars adapted to be mounted in said first named recessed support members, a plurality of intermediate separating members adapted to be mounted in said recessed members on the sides of said frames, and means on which said frame may be supported.

In testimony whereof, I have hereunto subscribed my name in the presence of two subscribing witnesses.

JEAN E. STROMBERG.

Witnesses:

MINNIE KORTE,

E. E. RODABAUGH.