

Nov. 17, 1931.

E. I. SPONABLE ET AL

1,832,590

REEL

Filed Feb. 27, 1929

FIG. 1.

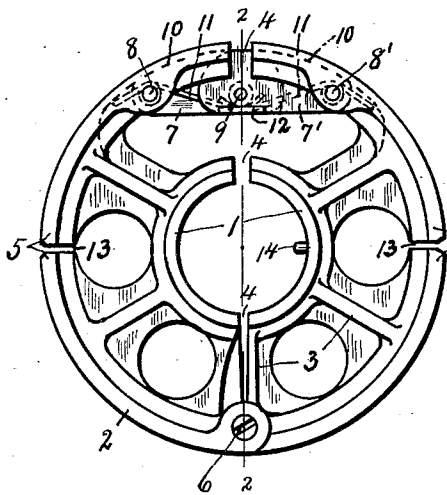


FIG. 2.

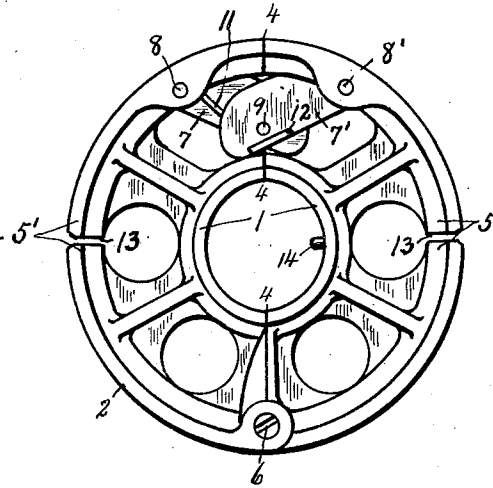


FIG. 3.

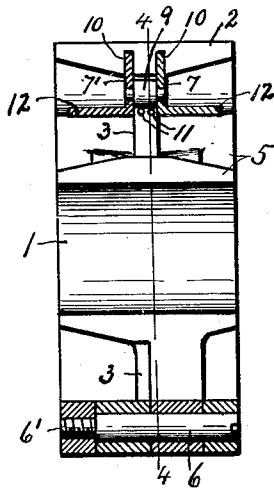
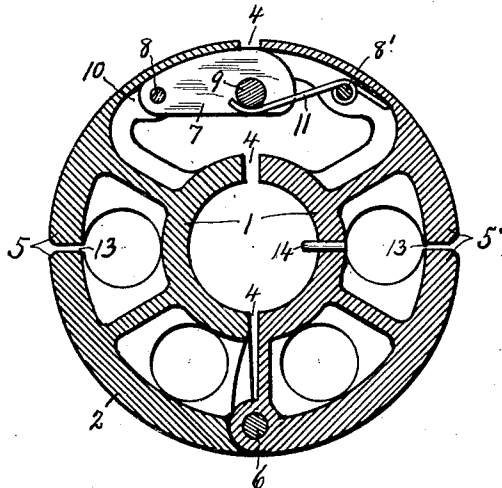


FIG. 4.



WITNESS.

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REEL

Application filed February 27, 1929. Serial No. 343,185.

This invention relates to a reel adapted to be used more particularly for the reception of photo-films in motion picture producing and projecting machines, but obviously may be used for receiving any other tape to be wound an unwound upon and from the periphery thereof.

The main object is to provide a reel with a normally circular rim or peripheral surface capable of being contracted circumferentially or radially to permit the tap wound thereon to be easily and quickly removed and replaced as a unit without materially disturbing the symmetry of the winding.

Another object is to provide the reel with means for conveniently and expeditiously varying its circumferential length or radius and for automatically returning and locking the rim to and in its circular form.

Other objects and uses relating to specific parts of the reel and its expanding and contracting means will be brought out in the following description.

In the drawings:—

Figures 1 and 2 are similar end face views of a reel embodying the various features of my invention, showing the segments in different positions of adjustment.

Figure 3 is a longitudinal sectional view of the same reel taken in the plane of line 2—2, Figure 1.

Figure 4 is a transverse sectional view taken in the plane of line 4—4, Figure 3.

As illustrated, this reel comprises a hub —1—, a rim —2— and suitable spokes —3— connecting the rim and hub, said reel being divided diametrically at —4— to form opposed substantially semi-circular segments —5— and —5'—.

These segments are preferably made of light non-corrodible cast metal, such as aluminum alloy, and are hingedly connected at their meeting ends at one side of the axis by a pivotal pin —6— near the periphery thereof while the remaining portions of the meeting faces of the segments are normally in more or less spaced relation to permit them to be moved toward and from each other for varying the circumferential length or radius of the periphery of the reel.

Suitable means is provided for effecting this relative movement of the segments toward and from each other to vary the circumferential length of the periphery thereof from its normal circular form, said means comprising, in this instance, a pair of similar toggle members —7— and —7'— extending across the division —4— between the rim and hub of the reel and having their outer ends pivoted respectively at —8— and —8'— to the corresponding segments —5— and —5'— equal distances from the division —4— and their inner ends arranged in overlapping relation and pivoted to each other at —9— to permit the toggle members to swing in radial planes toward and from the hub for contracting and expanding the rim.

These toggle members are preferably made of relatively thin metal and are arranged in axially spaced relation to move in different planes, the portion of the pivotal pin —9— between the overlapping ends of the toggle members being of slightly greater diameter than the ends of the pins passing through said members to assist in holding the overlapping ends in spaced relation.

It will be noted, however, that the outer ends of the toggle members are seated in slots —10— of corresponding thickness in the inner faces of the adjacent ends of the segments —5— and —5'— to additionally guide said members in their rocking movement and also to hold the meeting ends of the segments against relative axial movement.

The pivotal pin —9— connecting the inner ends of the toggle members —7— and —7'— is movable to and from a direct line between the axes of the pivots —8— and —8'— so that when the toggles are moved to a straightened position all portions of the peripheries of the segments —5— and —5'— will be equal distances from the axis or center of the reel and in like manner the inner peripheries of the hub portions will be concentric with said axis.

On the other hand, when the toggle joint is flexed inwardly from its normal straight position the segments will be drawn toward each other about the axis of the pivot —6— for reducing the diameter of the reel at right

angles to the plane of division and thereby effecting a corresponding reduction of the circumferential length of the rim of the reel from its normal circular form.

It, therefore, follows that if a photo-film or other tape is wound upon the periphery of the reel when the latter is in its normal circular form and it is desired to remove the winding from the reel it is simply necessary to depress the toggle joint inwardly beyond the straightened position thereby contracting the periphery of the reel sufficiently to allow the winding as a unit to be easily and quickly removed from the reel.

In a reverse manner the winding in its entirety may be replaced upon the periphery of the reel and the segments may then be extended by outward movement of the toggle joint to hold the winding in operative position thereon.

The toggle joint of the toggle members —7— and —7'— is normally spring-pressed outwardly by suitable springs —11— which are mounted upon the intermediate portions of the pivotal pins —8— and —8'— with one end bearing against the inner face of the adjacent portion of the rim of the corresponding segment and other ends engaged with the inner face of the portion of the toggle pin —9— between the members —7— and —7'— as shown more clearly in Figure 4.

The inner edges of each of the overlapping portions of the toggle members —7— and —7'— are provided with outwardly projecting ledges —12— adapted to be engaged by the finger of the operator for flexing the toggle joint inwardly against the action of the springs —11— which, as previously stated, serve to return the toggle members to their normal straightened positions when pressure upon the ledges —12— is removed.

The rim portions of the segments —5— and —5'— are divided midway between their ends by radial slots —13—, either of which may be used to receive the end of the tape for holding it in operative position during its winding upon the periphery of the reel.

The hub portion of one of the segments as —5— is provided with an inwardly projecting key or pin —14— adapted to engage a corresponding key-way or socket in the driving shaft, not shown, upon which the reel is mounted to cause the reel to rotate with the shaft.

The ends of the hub and corresponding ends of the rim of the reel are preferably disposed in the same planes while the spokes are relatively narrow axially of the reel and are arranged in spaced relation for reducing the weight of the reel, the divisions —13— being preferably registered with the spaces between the adjacent spokes.

The space between the meeting ends of the rim and hub at the toggle side of the reel

is sufficiently large radially and circumferentially to permit free operation of the toggle members without undue friction with the adjacent portions of the reel.

The hinged ends of the segments —5— and —5'— are preferably provided with apertured lugs overlapping one upon the other to receive the pivotal pin —6— which is passed through said lugs and has one end —6'— reduced and threaded to engage a corresponding threaded aperture in the outer lug of one of the segments, as shown in Figure 3.

The construction shown and described is particularly simple and efficient, but it is obvious that various changes may be made without departing from the spirit of the invention.

I claim:

1. A reel having a circular rim divided through one side for expansion and contraction, and a toggle connecting the portions of the rim at opposite sides of the division for expanding and contracting the rim, said toggle being normally spring-pressed to a straightened position for locking the rim in its expanded condition.

2. A reel having a circular rim comprising two segments hinged together at one end, a toggle connecting the other ends for expanding and contracting the rim, a split hub, spokes secured to said hub for supporting said rim segments.

3. A reel having a circular rim divided into two segments having a pivotal connection at one side and a toggle at the other side for expanding and contracting the rim, said toggle being normally spring pressed to a straightened position for locking the rim in its expanded condition.

In witness whereof we have hereunto set our hands this 14th day of February, 1929.

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FREDERICK S. BRACE.