

Jan. 12, 1932.

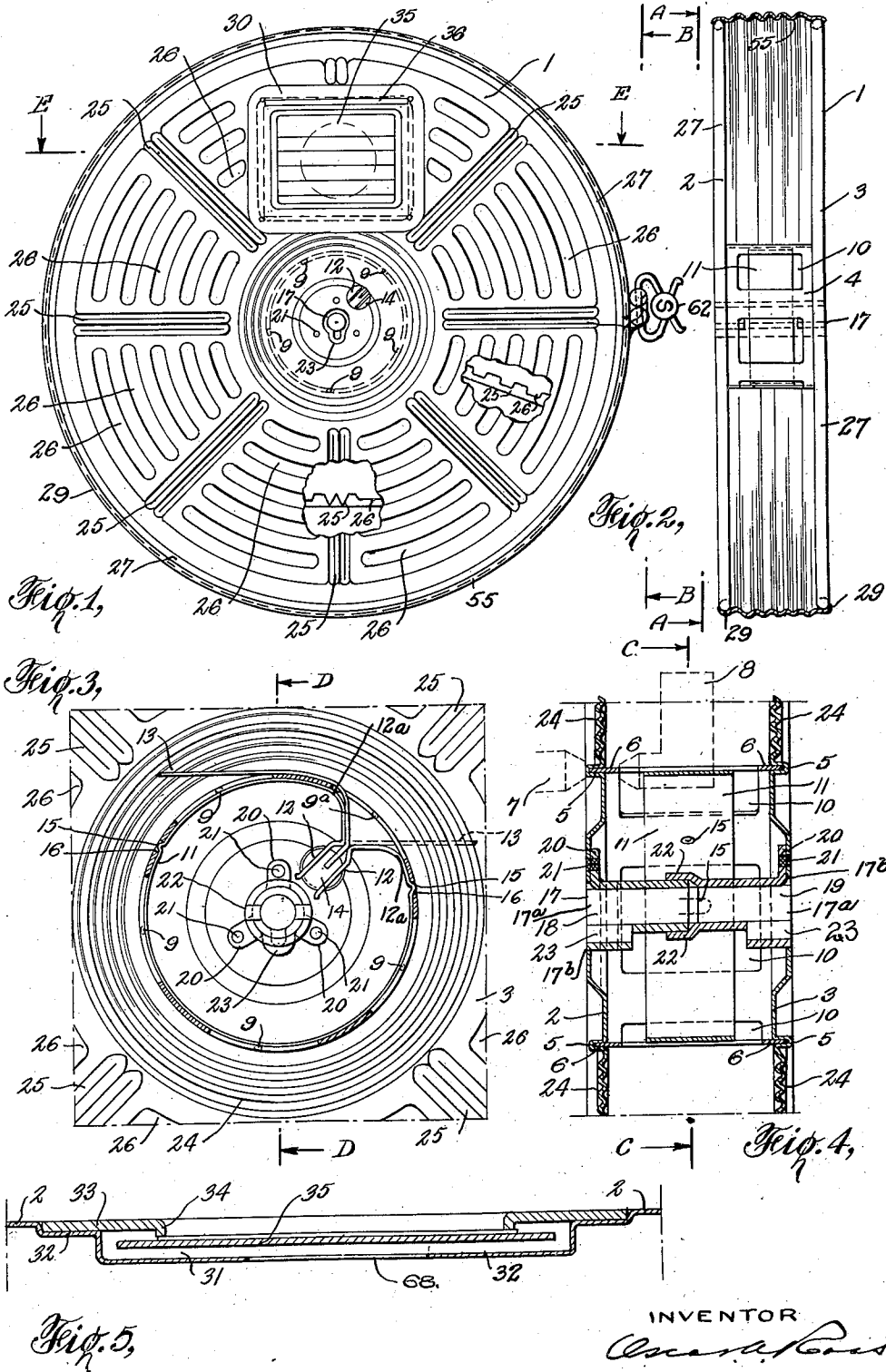
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MOTION PICTURE FILM REEL

Filed April 21, 1927

2 Sheets-Sheet 1



INVENTOR

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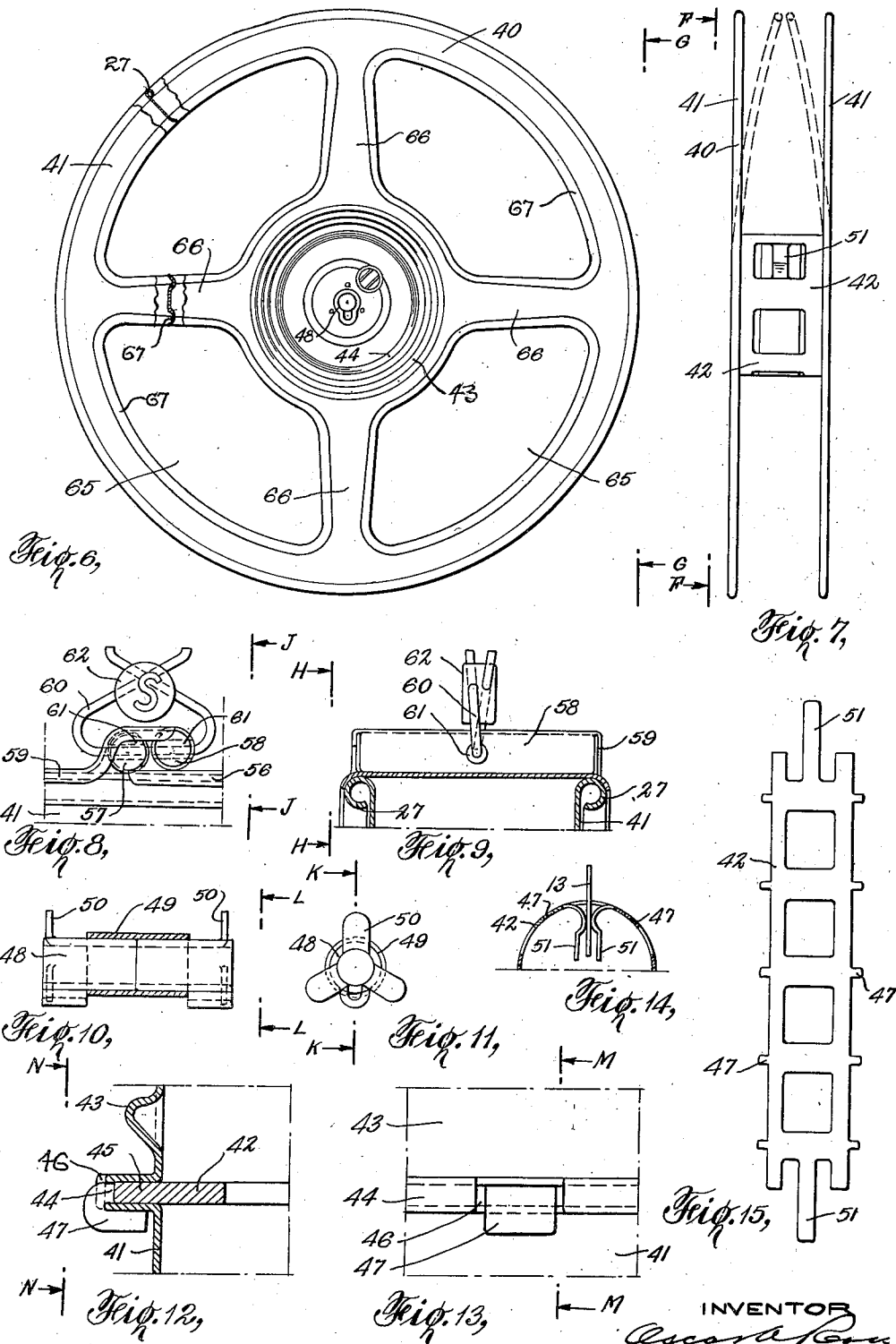
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## UNITED STATES PATENT OFFICE

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## MOTION PICTURE FILM REEL

Application filed April 21, 1927. Serial No. 185,488.

This invention relates to reels and more particularly to that class known as motion picture film reels and has for its more prominent object the production of a more simple, rugged, low cost, and efficient reel.

Another object is to furnish a reel wherein the hub portion is locked in and rigidly secured to the flanges whereby constant use and occasional abuse will not cause the flanges to become loosened from the hub.

Another object is to furnish a reel wherein resilient portions are formed in the flanges adjacent the hub whereby the flanges may be substantially sprung from normal, and, when released will return to normal position without deformation of the flanges or movement from their normal plane.

Another object is to furnish a reel wherein the edges of the flanges are "rolled", thereby preventing sharp edges which may inadvertently cut or abrade the operators handling said reels.

Another object is to furnish suitable clamping means to clasp the end of the film when loading or filling a reel. Also to arrange said clamping means in a manner whereby the film may be readily wound in either direction on the reel. Also to arrange said clamping means whereby, as the reel is unwound, the film will readily pull out from the clamping means without injury to said film.

Another object is to furnish a reel wherein the film is substantially sealed whereby reels may be shipped, transported by messenger, or stored for indefinite periods.

Another object is to furnish a reel wherein the spindle tube may be rigidly secured to the flanges before said flanges are assembled onto the hub, in this manner permitting of a more economically rigid attachment of said tube to said flanges.

Another object is to furnish a reel comprising in part a label pocket on one or both of the flanges wherein a removable label may be placed in a manner readily discernible, but well protected from damage, when handling said reel.

Another object is to furnish a reel of substantially light weight whereby the cost of

shipment of reels will be reduced to a minimum.

Other objects and advantages will appear as the description of the invention progresses, and the novel features of the invention will be pointed out in the appended claims.

This invention consists in the novel construction and arrangement of parts hereinafter described, delineated in the accompanying drawings, and particularly pointed out in that portion of this instrument wherein patentable novelty is claimed for certain and peculiar features of the device, it being understood that, within the scope of what hereinafter thus is claimed, divers changes in the form, proportions, size and minor details of the structure may be made without departing from the spirit of, or sacrificing any of the details of the invention.

In describing the invention in detail, reference is had to the accompanying drawings, wherein I have illustrated embodiments of my invention, and wherein like characters of reference, designate corresponding parts throughout the several views, and, in which:—

Figure 1 is a plan view of a film storage reel taken on line A—A of Fig. 2, and Fig. 2 is an elevated view of the same reel, unloaded, taken on line B—B of Fig. 1, and Fig. 3 is an enlarged part sectional view of the same reel taken on line C—C of Fig. 4, and Fig. 4 is a sectional view of the same enlarged part taken on line D—D of Fig. 3, and Fig. 5 is an enlarged part sectional view of the label holding pocket and is taken on line E—E of Fig. 1, and Fig. 6 is a plan view of the preferred form of shipping reel taken on line F—F of Fig. 7, and Fig. 7 is an elevated view of the same reel taken on line G—G of Fig. 6, and Fig. 8 is an enlarged part view of the film enclosing band, taken on line H—H of Fig. 9, and Fig. 9 is also an enlarged view of the same part taken on line J—J of Fig. 8, and Fig. 10 is a modified form of spindle sleeve taken on line K—K of Fig. 11, and Fig. 11 is an end view of the same sleeve taken on line L—L of Fig. 10, and Fig. 12 is an enlarged part sectional view showing a modified form of securing the flanges and

hub together and is taken on line M—M of Fig. 13, and Fig. 13 is also an enlarged elevated view of the same portion taken on line N—N of Fig. 12, and Fig. 14 is a part elevated and part sectional view of a modified form of hub wherein the film clamping means is formed from the hub stamping proper, and, Fig. 15 is a development of the complete hub stamping prior to forming.

Referring to Figs. 1, 2, 3 and 4, the reel 1, comprises flanges 2 and 3 secured to hub 4 in the following manner: Grooves 5—5 are formed in flanges 3 and 4 into which the edges 6—6 of hub 4 are pressed, after which the welding electrodes 7 and 8, shown in dotted form are applied, and a spot weld, as 9—9 obtains, firmly joining the hub and flanges, the weld 9a also joining the ends of the punching from which said hub is formed. Hub 4 is provided with openings 10—10 to permit entrance of electrodes, entrance of film clip spring 11, and reduction in weight.

Film clip spring 11, has film guiding portions 12a—12a and clip ends 12—12 normally biased to hold film 13 securely, hole 14 serving to permit introduction of a pencil or other instrument whereby said clips may be forced apart for more ready entrance of the film for anchorage by the clips, said spring is restrained to proper location by button projections 15—15 formed therein and seated in holes 16—16 of hub 4.

The spindle sleeve 17 comprises 2 stamped portions 18 and 19, such having flange projections 20—20 adapted to be spot welded to flanges 2 and 3 by welds 21—21, also female projections 22—22 adapted to join said portions at the center of completed sleeve 17 and also extensions 17a—17a, for allocating the sleeve 17 in the flange orifices 17b—17b. By this novel construction, it is possible to assemble portions 18 and 19 to their respective flanges 2 and 3 before assembly of said flanges on hub 4, in this manner permitting a very rigid attachment of the spindle sleeve 17 to said flanges. Sleeve portions 18 and 19 also comprise pin slot portion 23 formed therein, said slot, however, only extending part way through the hub, in this manner reducing weight, simplifying stamping and permitting better allocation of joining projections 22—22.

Flanges 2 and 3 of stamped formation comprise a corrugated section 24 adjoining the hub which acts as a resilient mounting for the more outward portions of the flange. In fact sufficient flexibility is obtained whereby the flanges may be restrained to touch each other, as shown by dotted position of Fig. 7.

Arranged radially in flanges 2 and 3 are the re-enforcing grooves 25—25, which also serve as a guide for allocation of film as it is wound onto the reel.

Arranged circumferentially in flanges 2 and 3 are also re-enforcing grooves 26—26,

also depressed inwardly, however, not as deeply as grooves 25—25. The reason for this is to prevent contact of said grooves with the film in event of slight indenture therein, or deformation of the surface wherein said grooves are formed.

At the extreme outer edge of the flanges 2 and 3, is the rolled head, or rim 27, serving to give a stiff mechanical structure, which cannot be readily bent or deformed, and which will not cut the operators' hands, due to inadvertent contact therewith during high rotational speeds of the reel.

When reels as 1, are made up for film storage purposes, a label pocket as 30 is preferably attached to one of the flanges, as 2. See Figs. 1 and 5. For such occasion a pocket or recess as 31, having a sub-recess 32, is formed in flange 2, and in said sub-recess is secured preferably by welding, a stamped frame member 33, having inturned edge 34, forming the opening through which the label 35 is viewed and a slot 36 through which said label is inserted.

Referring to Figs. 6 and 7, showing a service reel as 40, of substantially light construction for shipment of reels substantially long distances, and comprising flanges 41—41 of similar form, rigidly secured to hub 42. Flanges 41—41 have a corrugated section 43, similar to section 24, of flanges 2 and 3, adjacent hub 42, and are also supplied with grooves 44—44, similar to groove 5 of flanges 2 and 3, into which the edges 45 of hub 42 are rigidly allocated. Said flanges and hub may be welded together as described in connection with reel 1, or a modified construction, as shown in Figs. 12, 13 and 15, may be employed and wherein perforations as 46—46 are arranged in groove 44, through which lock lugs 47—47 are inserted, whereafter said lugs are bent over, as shown in Figs. 12 and 13, securely locking the flanges thereto.

Pin sleeve member 48 may be of the same form and mounted in the same manner as sleeve 17 of reel 1, or it may be modified in form, as shown by Figs. 10 and 11, wherein the lugs as 22—22 are omitted and an external locking sleeve as 49, may be restrained over the periphery of the half sleeve portions 50—50, in this manner forming portions 50—50 and locking sleeve 49 into one integral member rigidly secured to flanges 41—41.

In reel 40, the film end may be secured by a spring clip member 11, as shown in reel 1, or a modified form as shown by Figs. 14 and 15, may be employed, and wherein, clips as 51—51 are formed from the hub stamping proper, thereby eliminating the use of a spring as 11. In Fig. 15, the hub 42 is shown as the developed stamping from which said hub is formed.

As the flanges 2 and 3 of reel 1 are without perforation at the section in which the film

is wound, it will be apparent that by supplying a band, or cover, as 55, to encircle the outer edges of said flanges, the film will be enclosed in a substantially fire proof casing. The means for securing band 55 in place on reel 40 is shown by Figs. 8 and 9, wherein one end, as 56, is formed into a cylindrical clip, as 57, over which a similar clip, as 58, on opposite end 59, is restrained to snap, subsequent to which the wire 60 may be inserted in holes 61—61, and a seal, as 62, locked thereon, in this manner preventing band 55 from being removed from reel 40, before seal wire 60 is broken.

Flanges 41—42 are relieved by perforations 65—65 for weight reduction, the edges of said perforations being formed into a groove 67—67 to effect rigidity to the resulting spokes and remove, as 66—66, the more or less ragged metal from possible contact with the film.

What I claim is:—

1. A sheet metal flange for motion picture reels comprising, an inner hub portion arranged to be secured to one end of a reel hub, a substantially imperforate outer annular film guiding portion surrounding the hub portion, an inwardly stamped recess formed in the surface of the outer portion, an orificed plate member secured in the recess, a sub-recess formed inwardly of the first named recess for forming a space between the body of the flange and the inner face of the plate member, and re-enforcing grooves formed in the outer portion, the grooves having a depth substantially equal to the depth of the combined recesses.

2. A motion picture reel comprising, a cylindrical hub member having a sheet metal flange secured at each end thereof for forming an annular winding space arranged to receive a motion picture film therein, the major portion of the flange extending exteriorly from the periphery of the hub member to the outer edge of the flanges, a substantially rigid re-enforced portion extending from the edges of the flanges inwardly spacedly from the periphery of the hub member, the re-enforced portion forming the major portion of the flange exterior to the hub member, and a circular corrugated portion formed in the flange between the re-enforced portion and the periphery of the hub member for resiliently supporting the re-enforced portion whereby inadvertent bodily misalignment of the re-enforced portion may be effected without deformation thereof.

3. A motion picture reel comprising, a cylindrical hub member having sheet metal flanges secured to each end thereof for forming an annular winding space arranged to receive a motion picture film therein, an opening formed transversely of the hub between the flanges through which a film end may be inserted for entering the hub chamber, in-

wardly extending clamping fingers formed integrally with the body portion of the hub member adjacent the opening therein, the clamping fingers having a comparatively small width as compared to the width of the hub member between the flanges, clamping portions formed on the inner portions of the fingers, the clamping portions being constrained to resilient engagement whereby insertion of the film end through the opening will act to separate the fingers for the clamping thereof during the operation of winding the film onto the reel.

4. A motion picture film reel comprising; a cylindrical hub member, circumferentially spaced orifices formed in the surface between the ends thereof whereby the end portions form a plurality of cylindrical end webs connecting a plurality of transverse webs, metal flange members having concentric groove portions arranged to receive the end web portions therein for allocating the hub member with respect to the flange members, welds formed to rigidly join the end web portions and the groove portions whereby the flange members are rigidly secured to the hub member, a two part spindle sleeve member having each part thereof rigidly secured to a respective flange member, and coupling means for rigidly securing the parts together as the flange members are rigidly secured to the hub member by the welds.

5. A motion picture film reel comprising; a metal hub member, metal flange members rigidly secured thereto whereby an annular space for receiving the film is formed therebetween, radially disposed re-enforcing grooves formed in the flange members between the hub member and the outer edge thereof, and circumferentially disposed re-enforcing grooves formed in the flange members between the radially disposed re-enforcing grooves thereof, the radially disposed grooves being formed spacedly in the flange body from the circumferentially disposed grooves formed therein.

6. A cover for motion picture reels comprising, a metal band having a cover portion formed thereon, inwardly curved edges formed on the cover portion arranged to sealedly engage the flanges of a motion picture reel, an outwardly facing transversely disposed resilient cylindrical portion formed integrally at one end of the band, an inwardly facing transversely disposed resilient cylindrical portion formed integrally at the other end of the band, the inwardly facing portion being arranged to resiliently snap over the outwardly facing portion as the band is secured to the reel flanges, the cover portion adjacent the inwardly facing cylindrical portion being offset with respect to the cover portion engaging the reel flanges whereby the end portions of the cover are arranged to continuously engage the reel flange after the

cover has been secured onto the reel flanges, and orifices formed transversely of the cylindrical portions arranged to receive a wire seal for sealing the cover ends against removal of the cover from the reel.

7. A sheet metal flange for motion picture reels comprising, a hub portion arranged to be secured to a hub member of the reel, a substantially imperforate portion having reinforcing grooves formed in the surface thereof, certain of the grooves being formed inwardly to a uniform depth to act as guides for the winding of the film onto the reel, an inwardly stamped recess formed in the surface of the imperforate portion having an orificed plate member secured therein, a sub-recess formed inwardly of the first named recess below the orifice of the plate member for forming a label receiving chamber therebelow, the recesses being confined within the depth limits of the re-enforcing grooves, a slot formed in the plate member for removably inserting labels into the chamber to be viewed through the orifice of the plate member.

8. A sheet metal flange for motion picture reels, comprising a hub portion arranged to be secured to a hub member of the reel, a substantially imperforate portion having reinforcing grooves formed in the surface thereof, certain of the grooves being formed inwardly to a uniform depth to act as guides for the winding of the film onto the reel, and inwardly stamped recess formed in the surface of the imperforate portion having an orificed plate member secured therein, a sub-recess formed inwardly of the first named recess below the orifice of the plate member for forming a label receiving chamber therebetween, the recesses being confined within the depth limits of the re-enforcing grooves, a slot formed in the plate member for removably inserting labels into the chamber to be viewed through the orifice of the plate member, and an orifice formed in the body of the sub-recess portion positioned oppositely the orifice of the plate member for effecting removal of the label through the orifice of the plate member by ejection therethrough.

9. A motion picture reel comprising, a cylindrical metal member, sheet metal flanges secured to each end thereof arranged to form an annular winding space for receiving a motion picture film therein, an opening formed transversely of the hub member between the flanges through which the film end may be inserted to enter the hub chamber, a spring clip member supported solely by the hub member positioned in the chamber below the opening thereto, and clamping fingers formed on the clip member projecting inwardly of the opening for clamping the film end therebetween in a radially disposed position whereby the film may be wound in either direction into the annular space.

10. A motion picture reel comprising, a cylindrical metal hub member, sheet metal flanges secured to each end thereof arranged to form an annular winding space for receiving a motion picture film therein, an opening formed transversely of the hub member between the flanges through which the film end may be inserted to enter the hub chamber, a spindle member positioned in the hub chamber supported by the flanges for rotatably supporting the reel during the winding of the film thereonto, a spring clip member supported by the hub member independently of the spindle member positioned solely within the chamber, and clamping fingers formed on the clip member projecting inwardly of the opening for clamping the film end therebetween in a radially disposed position whereby the film may be wound in either direction into the annular space.

11. A motion picture reel comprising, a cylindrical metal member, sheet metal flanges secured to each end thereof arranged to form an annular winding space for receiving a motion picture film therein, an opening formed transversely of the hub member between the flanges through which the film end may be inserted to enter the hub chamber, a spring clip member supported solely by the hub member positioned in the chamber below the opening therein, clamping fingers formed on the clip member projecting inwardly of the opening for clamping the film end therebetween in a radially disposed position whereby the film may be wound in either direction into the annular space, inwardly extending projections formed in the body of the hub member for allocating the clip member whereby the clamping fingers are constrained to be positioned oppositely the opening therein.

12. A motion picture reel comprising, a cylindrical hub member having sheet metal flanges secured to each end thereof for forming an annular winding space arranged to receive a motion picture film therein, an opening formed transversely of the hub member between the flanges through which a film end may be inserted during the winding operation thereof, resilient clamping fingers formed integrally with the portion of the hub member positioned adjacently the edges of the opening, the fingers having a width less than the width of the hub member between the flanges whereby free movement thereof is permitted in the hub chamber, and clamping portions formed on the inner portion of the fingers normally constrained into engagement with each other arranged to be separated as the end of the film is inserted therebetween through the opening.

13. A unitary structure motion picture reel comprising, a hub member having sheet metal flanges rigidly secured to each end thereof for forming an annular winding

space wherein to wind a motion picture film, centrally disposed orifices formed in the flanges, a spindle member rigidly secured to one flange oppositely the orifice therein, the member having a spindle bearing portion and a male coupling portion, another spindle member rigidly secured to the other flange oppositely the orifice therein, the member also having a spindle member portion and a female coupling portion thereon, the male and female coupling portions being matingly joined upon rigidly securing the flanges to the hub member whereby the spindle bearing portions of the spindle members become substantially continuous from flange to flange.

14. A unitary structure motion picture reel comprising, a hub member having a sheet metal flange rigidly secured at each end thereof, centrally disposed spindle orifices formed in the flanges, a stamped sheet metal spindle member having a flanged portion rigidly secured to one flange oppositely the orifice therein, another stamped sheet metal spindle member having a flanged portion rigidly secured to the other flange oppositely the orifice therein, the passageway formed in one spindle member forming a continuation of the passageway formed in the other member, the inner ends of the spindle members being matingly joined together.

15. A cover for motion picture reel comprising, a metal band having a cover portion formed thereon, inwardly curved edges formed on the cover portion arranged to sealedly engage the flanges of a motion picture reel, an outwardly facing transversely disposed resilient cylindrical portion formed integrally at one end of the band, an inwardly facing transversely disposed resilient cylindrical portion formed integrally at the other end of the band, the inwardly facing portion being arranged to resiliently snap over the outwardly facing portion as the band is secured to the reel flanges, the cover portion adjacent the inwardly facing cylindrical portion being offset with respect to the body portion engaging the reel flanges whereby the end portions of the cover are arranged to continuously engage the reel flange after the cover has been secured onto the reel flanges.

16. A stamped metal cylindrical hub for motion picture reels comprising, a metal plate member having film clamping fingers formed integrally at each end thereof, the fingers being of a comparatively small width as compared to the width of the plate member, and rectangular orifices formed spacedly longitudinally of the plate member between the edges thereof arranged to form a skeleton hub having a substantially uniform integrally connected net work of metal, the edges of the plate member being continuous from one end to the other thereof.

17. A motion picture film reel comprising;

a chambered metal hub member, metal flange members rigidly secured thereto whereby an annular winding space for receiving the film is formed therebetween, a film clamping member supported by the hub member, clamping fingers formed thereon arranged to clampably engage the film end therebetween in a radially disposed manner within the chamber, and guiding portions formed on the clamping member positioned between the fingers and the periphery of the hub member for streamlineingly guiding the film whereby normal winding thereof into the space may be effected without abrupt curvature of the film by rotating the reel in either direction.

18. A motion picture film reel comprising; a chambered metal hub member, metal flange members rigidly secured to each end thereof whereby an annular space for receiving the film is formed therebetween, a film clamping member, film clamping fingers formed thereon extending inwardly into the chamber arranged to engage the end of the film, and opening formed transversely of the hub member through which the film end is inserted for engagement with the fingers and means for supporting the film clamping member by the hub member independently of the opening.

Signed at New York city, in the county of New York, and State of New York, April, A. D. 1927.

OSCAR A. ROSS.