March 22, 1932. E. R. GERMAN 1,850,265

MOVING PICTURE REEL CONSTRUCTION

Original Filed April 10, 1929 3 Sheets-Sheet 1

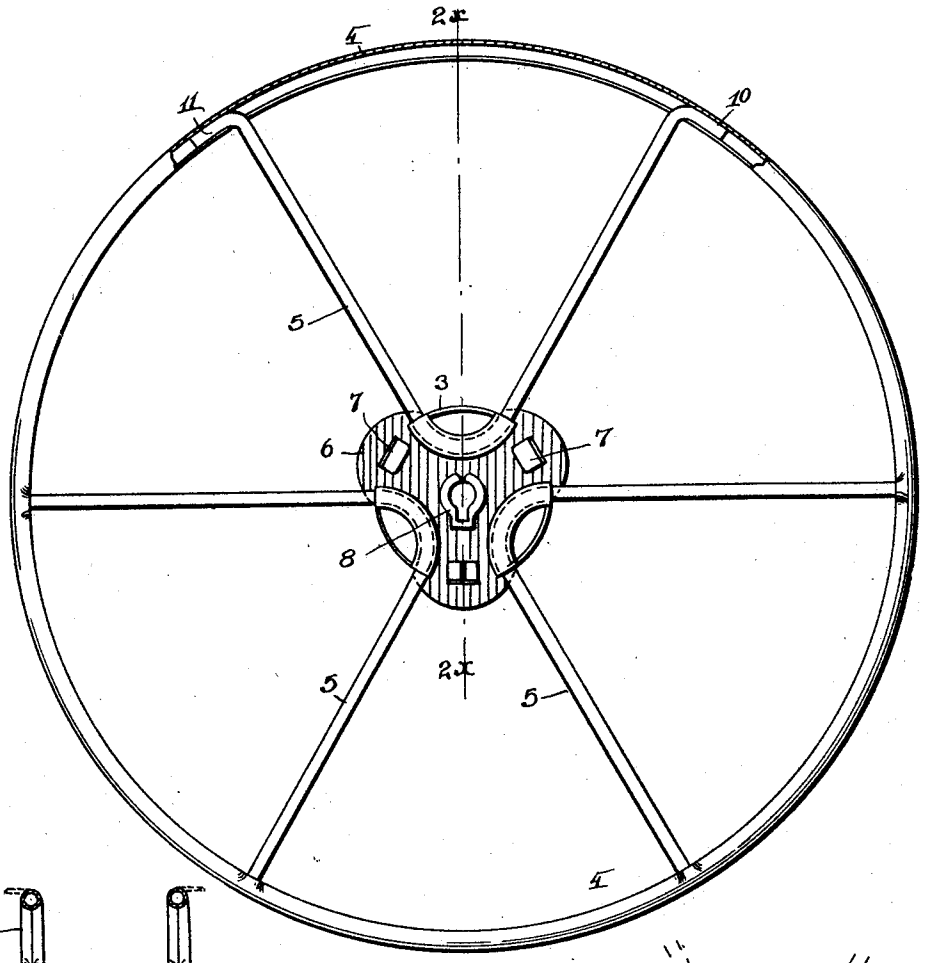


FIG. 1.

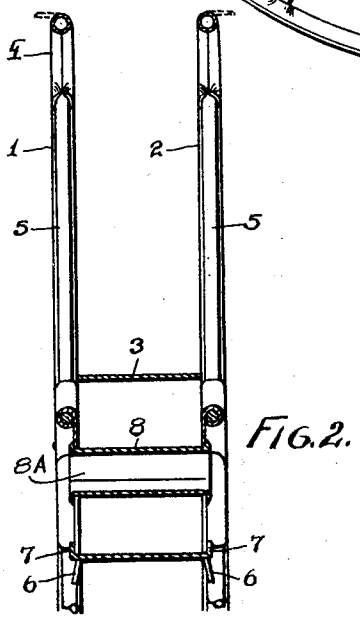


FIG. 2.

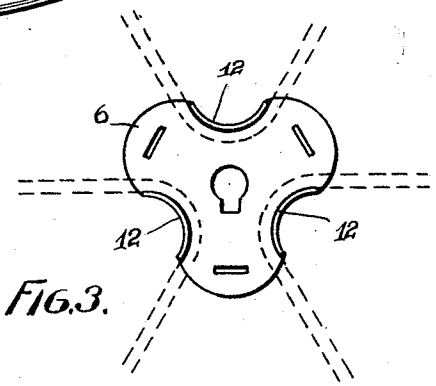


FIG. 3.

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MOVING PICTURE REEL CONSTRUCTION

Original Filed April 10, 1929 3 Sheets-Sheet 2

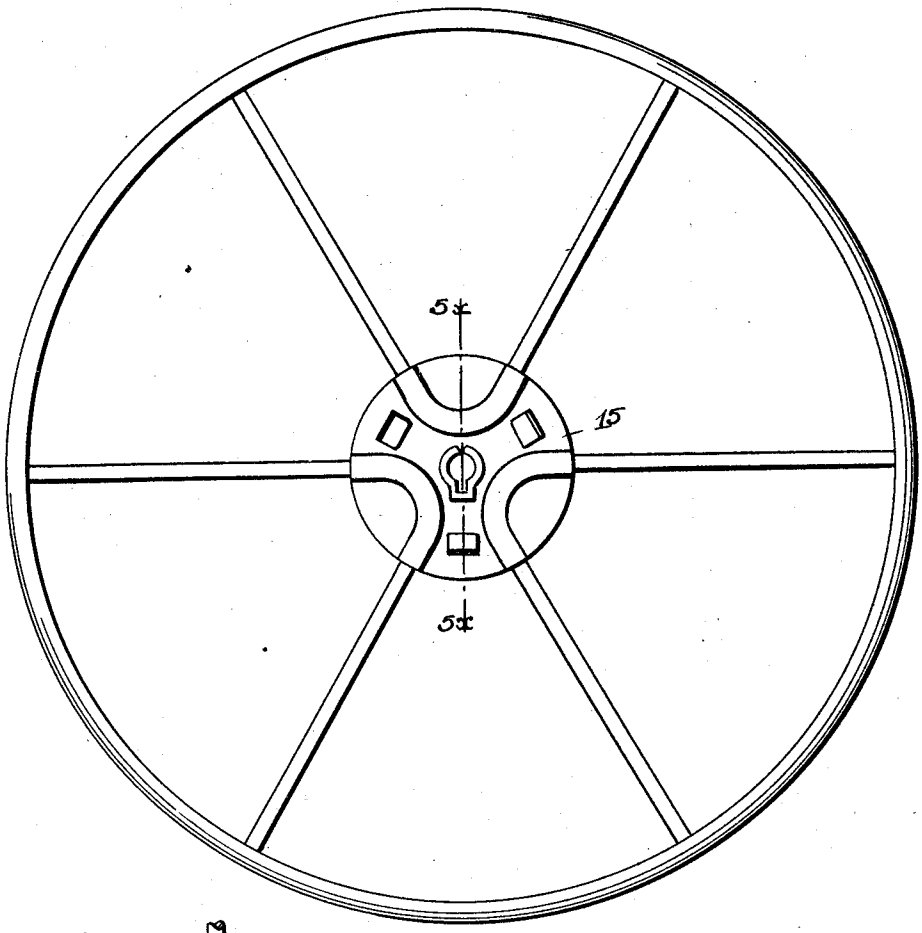


FIG. 4.

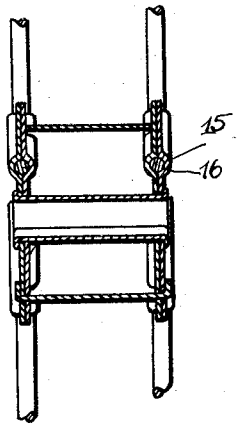


FIG. 5.

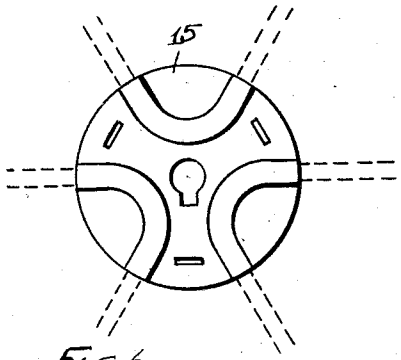


FIG. 6.

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MOVING PICTURE REEL CONSTRUCTION

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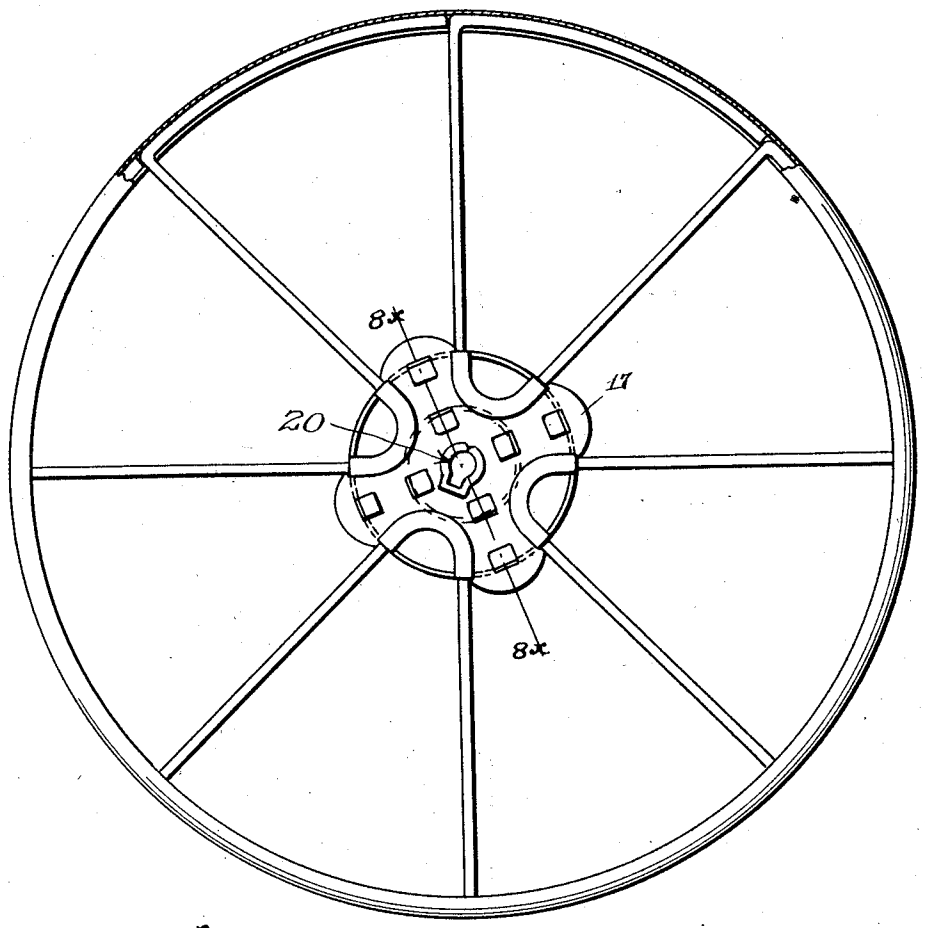


FIG. 7.

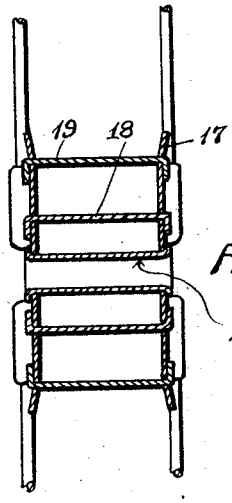


FIG. 8.

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1,850,265

UNITED STATES PATENT OFFICE

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MOVING PICTURE REEL CONSTRUCTION

Original application filed April 10, 1929, Serial No. 354,127, now Patent No. 1,819,707, dated August 18, 1931. Divided and this application filed January 27, 1930. Serial No. 423,681.

This invention relates to the manufacture and construction of reels for moving picture films and has for its various objects:

To provide an improved method for constructing such a reel.

To provide a reel that is made up of combined wire and sheet metal sections in order to make the reel strong and rigid in construction, light in weight and inexpensive in its manufacture.

To provide a reel in which the parts of the reel can be made up of finished material having a suitable finishing coating in order to eliminate the finishing of the reel after it has been assembled.

All these and other objects of this invention will be apparent from the accompanying drawings, the specification and the appended claims forming a part thereof.

In the accompanying drawings:

Figure 1 is a front elevation of the improved reel for moving picture films.

Figure 2 is a cross section of a portion of the reel, the section being taken on the line $2x$—$2x$ of Figure 1.

Figure 3 is an elevation of one of the hub plates of the reel as it appears before the spokes are fastened thereto.

Figure 4 is a front elevation of a modified form of the improved reel.

Figure 5 is a cross section of the central portion of the modified reel, the section being taken on the line $5x$—$5x$ of Figure 4.

Figure 6 is en elevation of one of the hub plates of the modified reel illustrated in Figures 4 and 5.

Figure 7 is a front elevation of another form of the improved reel.

Figure 8 is a cross section of the central portion of the modified reel illustrated in Figure 7, the section being taken on the line $8x$—$8x$ of Figure 7.

This application is a division of application Serial No. 354,127, filed April 10, 1929, and since issued as Patent 1,819,707, on August 18, 1931.

In the several figures of the drawings like reference numerals indicate like parts.

The construction of the reel and its method of manufacture forming the subject matter of this invention makes possible the manufacture of a reel for moving picture films which is strong and rigid in construction and cheaper in cost than any reel which has heretofore been made. An important feature in the construction of the improved reel lies in the combination of wire sections and sheet metal sections and the manner in which these sections are fastened together to produce the finished reel.

In the form illustrated in Figures 1 and 2 the reel comprises the sides 1 and 2 which are spaced by the sheet metal hub 3. Each side of the reel in turn is made up of the tubular rim 4, three pairs of spokes 5, 5 and the hub plate 6. The hub 3 is provided at each end with the tongues 7, 7 which engage and project thru suitable slots 8 provided in each of the hub plates and when turned down on the outside of the hub plates, as illustrated in Figures 1 and 2, clamp the sides of the reel against the sheet metal hub. A sleeve 8 extends from the central opening of one hub plate to that of the other and its ends are expanded and flared on the outside of the openings to hold the sleeve in place therein and provide the bearing with an elongated bearing surface in the reel. The sleeve and the openings in the hub plate are formed so as to provide a keyway 8A the full length of the bearing.

Each side of the reel, as above pointed out, is constructed with a tubular sheet metal rim 4, the double spokes 5, 5 and the hub plate 6. The double spokes are formed by a triangularly bent wire in which the apex 9 is rounded to provide the connecting member between the inner ends of the double spokes. The outer or free ends 10 and 11 of the triangular wire form are bent outwardly and concentric to the rim 4 in which they are anchored as will hereinafter be described. The curved connecting member between the inner ends of the double spokes is clamped to the face of the hub plate which, for this purpose, is provided with a series of upturned flanges 12, 12. These flanges have a curved outline which corresponds with the curvature of the connecting sections of the inner ends of the spokes. The curved flanges

12 of the hub plate engage between the curved connecting member of the double spokes and are folded over the wire to encircle it and firmly clamp this portion of the spokes against the face of the hub plate. From an inspection of Figure 1 it will be seen that the curved connecting section between each pair of spokes extends from the periphery well toward the center of the hub plate so that by clamping this portion of the spokes to the hub plate, in the manner shown and described, the spokes are not only clamped against it but are also rigidly held in place on the hub plates and for all practical purposes form an integral part therewith.

In the modification of the construction of the reel illustrated in Figures 4, 5 and 6 the inner curved connecting sections of the double spokes are clamped in place between a hub plate that is made up in two parts. Each part of the hub plate comprises a plate 15 having a series of curved grooves 16 formed therein corresponding in outline to the curved connecting sections of the double spokes 5, 5. The grooves in two of the plates, which together make up a hub plate, face each other and are deep enough to receive the curved connecting ends of the double spokes so that when these individual plates are clamped together they firmly hold the inner ends of the spokes anchored in place between them.

In the construction illustrated in Figures 7 and 8 four sets of double spokes are used. This is necessary in reels having a large diameter. The hub plate 17 used for this form of reel is therefore provided with four flanges that clamp the inner ends of the double spokes in place and in addition the hub plates are connected by an intermediate hub sleeve 18 which is located between the hub sleeve proper 19 and the bearing sleeve 20 to increase the strength and rigidity of the hub plates. Another change in the construction of the larger reels is in the outer ends of the spokes 5, 5 which are anchored in the tubular rim. These ends instead of being short in length and being bent to project in opposite directions are long and project in the same direction. Their length extends between the outer ends of the radial portions of the spokes and thus completely fill the tubular rim which surrounds them. The laterally projecting ends of each pair of spokes in this way fills the space in the tubular rim between its radially projecting sections and the space between these sections and the radial sections of the adjacent pair of spokes. With the increase in the number of spokes the rigidity of the tubular rim which connects them is also thus increased.

In order to prevent the sides of the hub plates, which project above the hub, from coming in contact with the edge of the film as it is wound onto or unwound from the reel, these outwardly projecting portions of the hub plates, which are located between each pair of spokes, are bent outwardly between the spokes as illustrated near the bottom in Figure 2 and near the top and bottom in Figure 8. The outer edges of these outwardly projecting flanges of the hub plates are thus located between the spokes and cannot come in contact with the edges of the film that is wound on the reel.

As will be apparent from the drawings and the description of the construction of making the reel, the surfaces of the material that are cut in the manufacture of each part of the reel are practically negligible in area and some of them are even concealed after the parts have been assembled. For this reason the material, that is the wire and the sheet metal stock, can be provided with a finishing coat before it is made up into the different parts so that after the parts are assembled and the reel is mechanically finished no further finishing or coating need be given to the reel to provide a finished appearance for it.

I claim:

1. A reel comprising a pair of sides connected together with a central hub, a hub plate on each side of said hub, each side comprising an endless tubular rim, a series of double spokes having their inner ends connected together, the outer free ends of said double spokes being anchored in said tubular rim, and means provided on each of said hub plates and engaging between and encircling the inner ends of said spokes and the connection between them for simultaneously anchoring the inner connected ends of said spokes to the hub plates and holding them in a parallel plane thereto.

2. A reel comprising a pair of sides connected together with a central hub, each side of said reel comprising an endless sheet metal rim, a series of double wire spokes projecting angularly from each other at their inner connected ends, a hub plate, the outer free ends of said spokes being anchored to said endless sheet metal rim by folding portions of said rim around said outer ends, and means engaging between and encircling the inner ends of said spokes and connection between them to clamp them to said hub plate in a plane parallel thereto.

3. A reel comprising a pair of sides connected together with a central hub, each side comprising an endless sheet metal rim, a plurality of double spokes having their inner ends connected, a hub plate, flanges struck up from said hub plate and engaging between and folded around the inner ends of said double spokes and the connection between them to clamp the inner ends of the spokes with their connection to said hub plates parallel thereto, said endless sheet metal rim being folded around the outer ends of said spokes

in spaced relation to one another to support said endless rim on said spokes.

4. A reel comprising a pair of sides connected together with a central hub, each side comprising an endless sheet metal rim, a plurality of double wire spokes having their inner ends connected, the outer ends of said spokes being bent concentrically to said endless rim, a hub plate, means for clamping the inner connected ends of said plurality of double spokes agaist the face of said hub plate parallel thereto with the connected ends of the double spokes extending radially from the periphery of the hub plate toward the center thereof to provide a radial bearing contact for said spokes with said hub plate, said endless sheet metal rim being folded into a tube around the outer concentrically projecting free ends of said plurality of double wire spokes.

5. A reel comprising a pair of parallel sides connected with a central hub, each side comprising a tubularly formed sheet metal rim, a plurality of double wire spokes having their inner ends connected with a curved section, a hub plate, curved flanges provided on said hub plate parallel to the curved section of said spokes and folded over and around the curved connecting sections of said double spokes, concentrically bent outer ends projecting from said double spokes and located within said tubularly formed sheet metal rim to reinforce said rim and fasten said rim to said spokes.

6. A reel comprising a pair of parallel sides connected together with a central hub, each side of said reel comprising an endless tubularly formed sheet metal rim, radially projecting wire spokes formed in pairs with their inner ends connected and their outer ends bent concentrically to said endless rim, said concentric ends of said spokes being embedded in said endless tubular rim, a hub plate inverted channels provided on the periphery of said hub plate and folded around the ends and a portion of the sides of the inner ends of each pair of spokes to space and rigidly fasten the spokes parallel to the hub plate.

7. A reel comprising a pair of parallel sides connected together with a central hub, each side of said reel comprising an endless tubularly formed sheet metal rim, radially projecting wire spokes formed in pairs with their inner ends connected and their outer ends bent concentrically to said endless rim, said concentric ends of said spokes being embedded in said endless tubular rim, a hub plate and means carried by said hub plate to fasten the inner connected ends of said spokes to said hub plate, said fastened connected ends of said spokes extending from the periphery of said hub plate toward the center thereof to provide long bearing contact between said spokes and said hub plate, portions of said hub plate projecting radially beyond said central hub of the reel and being bent outwardly from said hub between said wire spokes.

In testimony whereof I affix my signature.

EDGAR R. GERMAN.