

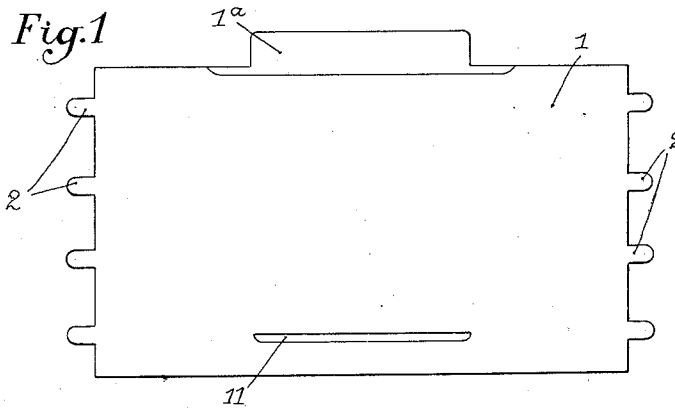
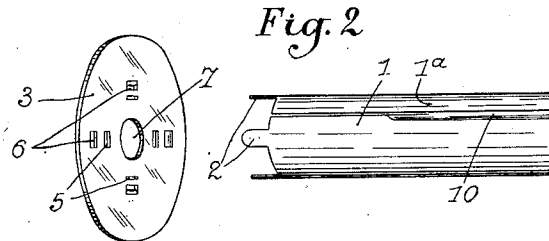
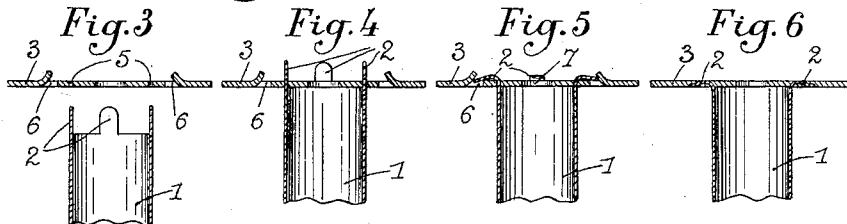
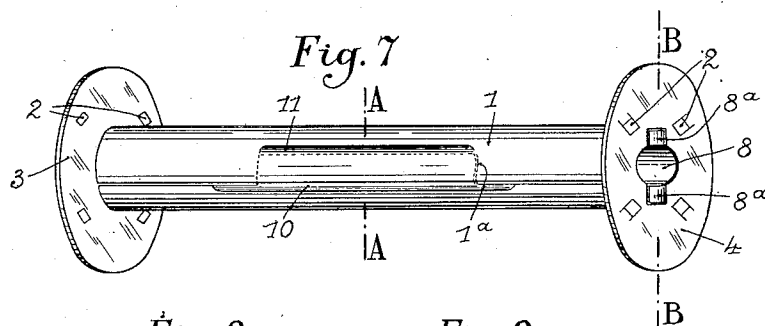
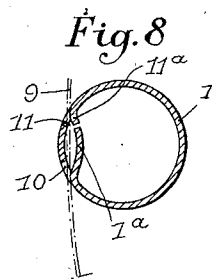
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G. E. LEFEBVRE

METALLIC BOBBIN FOR PHOTOGRAPHIC OR LIKE FILMS

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Inventor  
Georges Eugène Lefebvre  
by *Alphonse*  
his Attorney

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# UNITED STATES PATENT OFFICE.

GEORGES EUGÈNE LEFEBVRE, OF JOINVILLE-LE-PONT, FRANCE, ASSIGNOR TO PATHE CINEMA, ANCIENS ETABLISSEMENTS PATHE FRERES, OF PARIS, FRANCE.

## METALLIC BOBBIN FOR PHOTOGRAPHIC OR LIKE FILMS.

Application filed August 19, 1924. Serial No. 732,929.

*To all whom it may concern:*

Be it known that I, GEORGES EUGÈNE LEFEBVRE, citizen of the French Republic, residing at Joinville-le-Pont, Seine, in the Republic of France, have invented new and useful Improvements in Metallic Bobbins for Photographic or like Films, of which the following is a specification.

The present invention relates to a metallic bobbin for photographic films. According to the invention, said bobbin consists of a metal tube obtained by the bending of a suitably punched plate, and of two flat metal discs each disposed at an end of the said tube and thus forming the cheeks or end-pieces of the bobbin. The said cheeks are secured to the tube by the engagement of tongues, formed upon both ends of the said tube, in apertures in the said discs, the end of each tongue being held under a cut-out or struck-out portion of the corresponding disc, these struck-out portions being then flattened down in order to provide a plane surface for the discs.

To provide for the attaching of the end of the film to be wound upon the bobbin, one longitudinal edge of the said metal plate is driven, by stamping, towards the interior of the tube, and the projection which has been formed upon this edge during the punching of the said plate will serve as a guide when inserting the end of the film or the paper band attached to the latter. The tube is also provided on the opposite edge with a longitudinal slot having its inner edge also driven towards the interior, this slot cooperating with the said projection to provide for the attaching of the end of the film.

One of the discs or cheeks is pierced at its centre with a circular hole, whilst the other is pierced with an elongated aperture adapted to receive the key which serves to rotate the bobbin; the metal which has been punched in order to form the elongated aperture is bent at 90° towards the interior in order to provide a large bearing surface for the said key.

The bobbin according to the invention constitutes a simpler and less expensive construction than the known metallic bobbins. Further, it is very substantial by reason of the particular method used for attaching the cheeks to the tube, and is completely light tight. Furthermore, the aperture

serving to receive the winding key is such that the rotation of the bobbin will be made in a very reliable manner.

The appended drawing shows, by way of example, a bobbin constructed in accordance with the invention and illustrates the different stages of its manufacture.

Fig. 1 is a plan view of the metal plate or blank used for the construction of the tube, said plate being pierced near one longitudinal edge with a longitudinal slot which will serve to attach one end of the film; the projection which is adapted to guide this end of the film is shown in the form which is given to it by stamping and bending before rolling up said blank.

Fig. 2 is a perspective view of one end of the tube before the corresponding cheek being attached thereto.

Fig. 3 is a view similar to Fig. 2, but in axial section.

Fig. 4 is an axial section showing the engagement of the tongues in the said cheek.

Fig. 5 shows the succeeding operation wherein the ends of the tongues are engaged in the cut-out or struck-out portions of the cheeks.

Fig. 6 is a sectional view showing the piece after the attaching is completed.

Fig. 7 is a perspective view of the completed bobbin.

Fig. 8 is a cross section on a larger scale on the line A—A of Fig. 7. The mixed lines show the end of the film or its attached paper band, engaged with the bobbin before the winding.

Fig. 9 is a section on the line B—B of Fig. 7, showing the aperture in the cheek in which the winding key is engaged.

In the form of construction shown in the drawings, it is observed that the bobbin comprises a metal tube 1 which is formed by rolling up a suitably stamped plate (Fig. 1) of suitable shape, provided at the two lateral sides constituting the ends of the tube with tongues 2 and on one of the longitudinal sides with the projection 1<sup>a</sup>.

To one end of the tube 1 is secured the disc or cheek 3 and to the other end the disc or cheek 4. This fixation being done by first engaging the said tongues 2 in corresponding holes 5 in the said cheeks (Fig. 4). Then the tongues 2 are bent down upon the corresponding cheek by engaging the end of each tongue into a cut-out or struck-out portion 6

formed in the cheek, as shown in Fig. 5, for receiving said tongue.

The struck-out portions and the tongues 2 are then flattened down so as to provide a plane surface for the cheeks 3 and 4 (Fig. 6), the projecting parts being forced into the metal body of the cheek. In order to more positively prevent any possible projection of the tongues above the surface of the cheek, the latter may be provided with a small recess adjacent each hole 5 in order to contain the corresponding bent down tongue.

The cheek 3 is pierced with a circular aperture 7 in which is engaged a supporting axle for the bobbin, and the cheek 4 is pierced with an elongated aperture 8 into which will be engaged the key which will serve to rotate the bobbin upon its longitudinal axis for winding up the film. This aperture 8 may be punched in the said cheek, or preferably it may be punched to form the circular part as shown in Fig. 9, the radial parts being punched so as to form the two lugs 8<sup>a</sup>, these being bent at 90° towards the interior; the said lugs constitute a better bearing for the winding key, and will obviate all failures in the turning of the bobbin by means of the said key, in particular, in case the flat pin of the apparatus should not continue as far as the upper part of the key; all danger of the loose turning of the key in the tube without rotating the latter will thus be obviated.

The end 9 of the film itself, or of the paper band surrounding the film for attaching purposes, is mounted upon the bobbin as shown in Fig. 8. This end is engaged on the one hand in the slot 10 formed between the adjacent longitudinal edges of the plate constituting the said tube, and on the other hand in the longitudinal slot 11 pierced in the wall of the tube. To facilitate the insertion of the end 9 of the film or the paper into the said slots, the extension 1<sup>a</sup> of the plate and the edge 11<sup>a</sup> of the slot are driven towards the interior of the tube, for instance by stamping and come substantially into contact with each other (Fig. 8). It should further be observed that the projection 1<sup>a</sup> serves as a guide for the end of the paper or the film and provides for a braking of the paper or the film in the slot, which is comparable to the braking obtained with the

bobbins having wooden axles, this affording greater safety in the rotating of the film. The two longitudinal edges of the metal plate in the parts which are not provided with the projection 1<sup>a</sup> are brought into contact with each other according to a generatrix of the tube.

Obviously, any suitable number of tongues 2, situated at the ends of the tube 1, may be employed.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A bobbin for photographic films, comprising in combination a metallic tube formed by a blank cylindrically bent so as to bring its longitudinal edges into contact, two metallic discs forming the cheeks of the bobbin and being provided with a central aperture and circularly disposed slots, tongues being struck up in the metal of said discs close to said slots, the transverse edges of said blank being provided with tongues that are engaged into said slots and under the tongues of the said discs, and the latter tongues being forced down upon the tongues of the blank, the whole being driven down flush with the surface of the discs.

2. A bobbin for photographic films, comprising in combination a metallic tube formed by a blank cylindrically bent so as to bring its longitudinal edges into contact, two metallic discs forming the cheeks of the bobbin and being provided with a central aperture and circularly disposed slots, the transverse edges of said blank being provided with tongues that are engaged into said slots and bent down upon said discs whereby connecting firmly the latter to said tube, and a leading passage for the film or for the priming paper attached thereto limited on one side by the inner face of a portion of said tube and on the other side by two jointed tongues forming a continuous surface, one of these tongues being formed by an extension inwardly bent of one longitudinal edge of the tube and the other tongue being formed by one edge inwardly bent of a slot in the blank.

In testimony whereof I have signed my name to this specification.

GEORGES EUGÈNE LEFEBVRE.