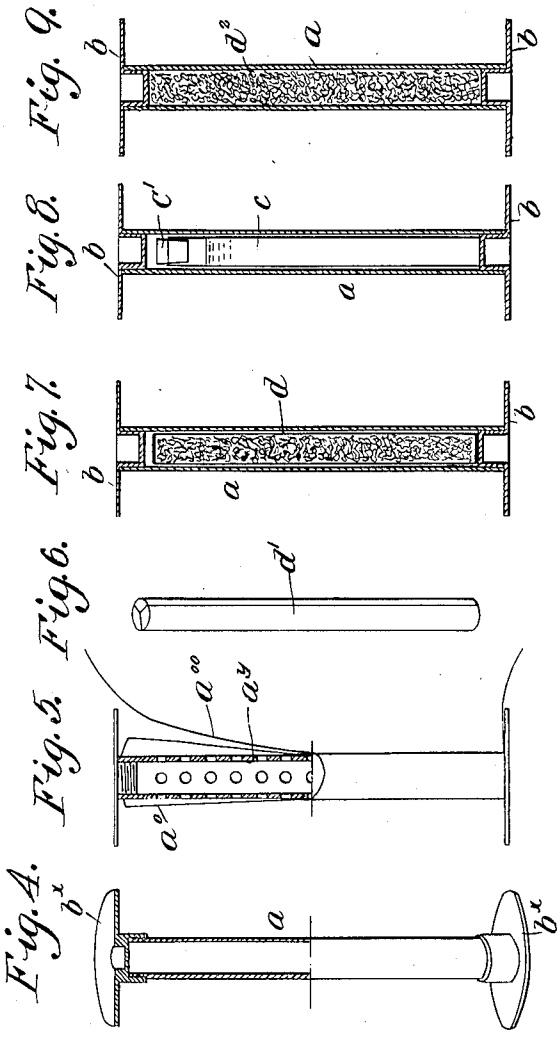
W. F. C. KELLY.

PHOTOGRAPHIC FILM ROLL SPOOL.

APPLICATION FILED FEB. 9, 1906.

916,325. Patented Mar. 23, 1909.



Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM FRASER CLAUGHTON KELLY, OF LONDON, ENGLAND.

PHOTOGRAPHIC-FILM-ROLL SPOOL.

No. 916,325. Specification of Letters Patent. Patented March 23, 1909.

Application filed February 9, 1906. Serial No. 300,278.

To all whom it may concern:

Be it known that I, WILLIAM FRASER CLAUGHTON KELLY, a subject of the King of Great Britain, residing at 22 Winchendon road, Fulham, in the county of London, England, barrister-at-law, have invented certain new and useful Improvements Relating to Photographic-Film-Roll Spools, of which the following is a specification.

This invention relates to photographic apparatus for use in roll film photography and consists in certain improvements in or connected with the bobbins upon which the sensitized films are rolled; the said films being principally employed as is well known with hand cameras.

Bobbins or spindles for the purpose above referred to have usually been constructed of wood or metal in solid form; the portion which extends between the end flanges being provided in some cases with a longitudinal slot or other means for securing the end of the film. The purpose of the aforesaid bobbins or spindles has moreover been restricted to that of unrolling the films and causing the same to travel across the focal field of the lens when required.

According to my invention the central portion of the bobbin is constructed of hollow section and serves as a receptacle for a sufficient quantity of developing chemicals to bring out the latent images on the whole length or roll of film; the aforesaid hollow central portion or receptacle being closed at the extremities by the end flanges pertaining to the bobbin.

In order that the said invention may be clearly understood and readily carried into effect I will proceed to describe the same with reference to the accompanying drawings, in which:

Figure 1 is a view partly in vertical section and partly in elevation of a bobbin constructed in accordance with my invention; Fig. 2 is an elevation of an alternative mode of securing or fastening the end flanges; Fig. 3 is a view illustrating an alternative construction of bobbin; Fig. 4 is a view illustrating the caps screwed upon the extremities of the hollow receptacle; Fig. 5 illustrates a bobbin consisting of a hollow core of perforated material covered with a layer of paper; Figs. 6 and 7 show respectively a package containing the chemicals and a bobbin consisting of a hollow core having the package placed therein; Fig. 8 illustrates a hollow core bobbin in which the chemicals are placed, the latter being inserted in a glass container; Fig. 9 illustrates a hollow core bobbin in which the chemicals are contained in loose form.

A bobbin according to my invention is constructed of any convenient material such as pasteboard, ebonite, celluloid, metal, wood, glass, papier mâché; the spindle or intermediate portion *a* being of hollow section or tubular form and adapted to contain a sufficient quantity of the necessary chemicals d^2 either in a loose, wrapped or inclosed condition for developing and producing negative pictures from the roll film *e* carried by the bobbin. The chemicals may be in a dry state or be in concentrated liquid form. The end flanges may be formed as caps for closing the extremities of the hollow or tubular central portion of the bobbin; the caps *b* in Fig. 1 being adapted for being screwed at *b'* into the extremities of the hollow receptacle while in Fig. 2 the said caps are adapted for being secured by means of a bayonet fastening as indicated at *b'*. Instead of the caps *b* screwing into the extremities as shown in Fig. 1 the caps may be screwed upon the said extremities. This method of attachment will be readily understood on reference to Fig. 4 where b^x indicates the screwed cap. Any convenient method of attachment may moreover be employed which will facilitate the removal of the ends.

In Fig. 3 I have illustrated an alternative mode of constructing the bobbin in which the hollow or tubular portion or core is composed of two or more segments or staves a^x. The end flanges *b* constitute caps and fit over and close the extremities of the segmental hollow or tubular portion. As will be readily seen upon the end flanges or caps *b* being removed the central portion will fall asunder; the contents being rendered free for use.

If desired the developing chemicals may be protected in the aforesaid bobbin by inclosing and sealing the same in glass, as shown in Fig. 8 in which *c* represents the glass container and *c'* a cork or stopper therefor, or the said chemicals may be inclosed in any convenient impermeable material such for example as paraffined or waxed paper *d*, as shown in Figs. 6 and 7, the former figure showing the package *d'* removed from the hollow receptacle *a*.

A further mode of constructing a bobbin

according to my invention is illustrated in Fig. 5 and consists in forming the core or hollow or tubular portion of perforated material a^7—ordinary perforated zinc—covered with paper or the like a^6 so as to retain the chemicals; a projecting thread a^{60} serving as a convenient means of rapidly tearing or removing the paper covering a^6. The developer may, however, be simply placed in loose form in the hollow core of the bobbin a as shown in Figs. 1 and 9.

When it is desired to develop the roll of film, the core or central portion of the bobbin may be divided or the ends removed; the opening of the bobbin rendering the developing chemicals available for use. The latter are then immersed in water contained in a suitable vessel and so form the developer.

What I claim and desire to secure by Letters Patent of the United States is:—

1. As a new article of manufacture, a combined film holder and developer comprising a hollow tube, a developing chemical within the tube, removable closures for the ends of the tube, and film wrapped around the tube.

2. As a new article of manufacture, a combined film holder and developer comprising a hollow tube, a developing chemical within the tube, removable closures for the ends of the tube providing flanges extending beyond the tube, and a film wrapped around the tube and held against displacement on the tube by the flanges.

3. A bobbin or carrier for a roll film having a central portion composed of two or more segments or staves and end flanges adapted to fit over and close the extremities of the said segmental hollow central portion or spindle.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses this fifteenth day of January, 1906.

WILLIAM FRASER CLAUGHTON KELLY.

Witnesses:

F. J. RAPSON,

A. H. STEVENS.