

PATENT SPECIFICATION

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(54) ROLL FILM SPOOL HOLDER

(71) We, FRANKE & HEIDECHE G.M.B.H., a German Body Corporate, trading as ROLLEI-WERKE FRANKE & HEIDECHE, of 169 Salzdahlumerstrasse, Braunschweig, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The present invention relates to a roll film spool holder for roll film cameras which is constructed as a cassette or camera insert, with or without a pressure plate and of which the main purpose is to enable the film to be changed quickly.

15 To change the film in the case of the usual roll film cameras the empty spool first of all has to be detached and re-attached, after which the new roll has to be inserted and the end passed through the slits in the spool. It is true that in the case of roll film cameras with interchangeable cassettes the film can be changed rapidly while it is running through, but film change cassettes of this kind are relatively bulky and necessitate a number of mechanical safety devices on the cassette and the camera, in order to avoid errors and faulty operations. The film changing operation is not simplified but can merely be deferred until the user is no longer moving about.

20 According to the present invention we provide a roll film spool holder, having a frame separable from the cassette or camera and having bearings for two spools located such that spools carried thereby have their axes parallel, a winding element for each spool, and a coupling member associated with each winding element for coupling its respective winding element to a film feed mechanism, one winding element and its associated coupling member being located diagonally on the frame with respect to the other winding element and its associated coupling member whereby the frame can be

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coupled to the film feed mechanism in one position through one coupling member and in another position 180° in a plane about the optical axis of the camera or cassette from said one position through the other coupling member. It is true that this does not enable the film to be changed while it is running through, i.e. with an incompletely exposed roll film. These frames, however, can be provided with film in advance, the leader being already threaded into the take-up spool, so that these frames, with their film spools, can be rapidly removed and replaced in one simple manual operation. It is thus possible to carry a number of prepared frames, which need only contain the most essential mechanical parts, and to substitute them, when necessary, for the frames with exposed film in the camera. When the spool keys are arranged crosswise, as in the invention, this also offers the advantage that the unwound spools remain in the frame and can be immediately re-utilized as take-up spools, the operation of replenishing the frames with film thus being simplified. Even if there is only one frame, the insertion of the film is rendered far easier as a result of the fact that it can be taken out of the cassette or camera for the film to be threaded into it.

Constructional embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings, wherein:—

Fig. 1 is a side view of an spool holder of the invention;

Fig. 2 is a corresponding plan view, from the lens side;

Fig. 3 is a further version, in which the spools are situated behind the image gate; and

Fig. 4 is the corresponding rear view of the frame.

On the frame 1 (Fig. 1) the film spool keys 2 and 3 for driving spools are arranged

diagonally and rotatably mounted. They are rigidly connected with the cogwheels 4 and 5, and these latter, when the frame is inserted in the camera, radially engage a corresponding driving wheel of the film feed mechanism. As film spool bearings, pins 6 and 7 situated opposite the keys 2 and 3 are affixed to springs 8 and 9 and can thus be bent outwards when the spools 10 and 11 are being extracted or inserted. The guide rollers 12, 13 and 14, 15 guide the film in a plane which, when the frame is inserted, corresponds to that of the film gate of the camera. The frame 1 could naturally also be fitted with a film pressure plate 17.

If the frame is fitted with a new unexposed spool 11, the strip of protective papers is drawn through between the rollers 13, 15 and 12, 14, and threaded into the take-up spool 10. After the exposure the film is unwound from the previous delivery spool. It is then only necessary to extract the exposed spool, after which the frame is immediately available for a new unexposed spool and the one which has hitherto served as the delivery spool can now be used as the take-up spool.

Figures 3 and 4 show a second version in which the spools 30, 31 are situated, in a manner known *per se*, behind the plane of the gate. Here again the winding keys 23 are connected with cogwheels, (of which only one 25 is shown) and rigidly mounted in the frame 21, while the bearing pins 26, 27 of the spools are affixed to the springs 28. The guide rollers 32, 33, 34 and 35 are situated on both sides of the gate, so that the film is free between them and can be pressed onto the frame of the image gate of the camera by a pressure plate 37. The distance between the pairs of guide rollers 32, 34 and 33, 34 is greater than the distance along the optical axis between the bearing pins 26, 27.

As the invention enables the frame to be inserted into the camera or a camera cassette in two different positions 180° apart, there is a risk of inserting the frame incorrectly, so that the delivery coil is coupled

with the film winding mechanism of the camera. This improbable contingency can likewise be forestalled by incorporating a "feeler bar", to prevent this incorrect insertion, in the zone of the delivery winder.

WHAT WE CLAIM IS:—

1. Roll film spool holder, having a frame separable from the cassette or camera and having bearings for two spools located such that spools carried thereby have their axes parallel, a winding element for each spool, and a coupling member associated with each winding element for coupling its respective winding element to a film feed mechanism, one winding element and its associated coupling member being located diagonally on the frame with respect to the other winding element and its associated coupling member whereby the frame can be coupled to the film feed mechanism in one position through one coupling member and in another position 180° in a plane about the optical axis of the camera or cassette from said one position through the other coupling member.

2. Roll film spool holder in accordance with claim 1, wherein the winding elements are rigidly mounted on the frame, while the bearings are mounted thereon in such a way that they can yield elastically in the axial direction.

3. Roll film spool holder in accordance with claim 1, or 2, having additional film guide rollers serving to guide the film in the image plane.

4. Roll film spool holder in accordance with claim 3, wherein the distance between pairs of film guide rollers is greater than the distance along the optical axis between the bearings, while the frame is equipped with its own resilient film pressure plate.

5. A film holder, substantially as described herein with reference to and as illustrated by the accompanying drawing.

For the Applicants:

MATTHEWS, HADDAN & CO.,
Chartered Patent Agents,
Haddan House,
33 Elmfield Road,
Bromley, Kent, BR1 1SU.

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If the frame is fitted with a new unexposed spool 11, the strip of protective papers is drawn through between the rollers 13, 15 and 12, 14, and threaded into the take-up spool 10. After the exposure the film is unwound from the previous delivery spool. It is then only necessary to extract the exposed spool, after which the frame is immediately available for a new unexposed spool and the one which has hitherto served as the delivery spool can now be used as the take-up spool.

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