

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) WEB STORAGE MEANS

(71) We, EASTMAN KODAK COMPANY, a Company organized under the Laws of the State of New Jersey, United States of America of 343 State Street, Rochester, New York 14650, United States of America, 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:—

The present invention relates to a web storage means more particularly but not exclusively for motion picture film.

In accordance with the present invention there is provided a web storage means comprising a reel having a hub on which a web may be wound in a roll with the inner end of the web disposed in a socket forming a part of the hub, a cartridge for receiving the reel in an operational orientation or a reversed orientation, and a retaining pin receivable in the socket to secure the inner end of the web frictionally to the hub, the retaining pin having abutment means which is arranged to interfere with the cartridge and so prevent free rotation of the reel if the retaining pin is in the socket when the reel is inserted in the cartridge in the reversed orientation but which does not interfere with the socket if the reel is inserted in the cartridge in the operational orientation.

According to the present invention there is also provided a reel and retaining pin for use in the web storage means, the reel comprising a hub on which a web may be wound in a roll between a pair of reel flanges, the hub having an axially extending slot through which the inner end of the web may extend from the roll-supporting surface of the hub into an axially extending socket which is disposed radially inwards of this surface but radially outwards of the spindle-engaging surface of a core portion of the hub and the retaining pin being receivable in the socket to secure the inner end of the

web to the hub, the retaining pin including abutment means which is arranged to project axially beyond the reel hub and flanges at only one side thereof when fully received in the socket to secure the inner end of the web to the hub.

In the accompanying drawings:—

Figure 1 is a perspective view of a reel constructed in accordance with one form of the invention;

Fig. 2 is a fragmentary front elevation of the reel shown in Fig. 1, but with the web retaining pin in its storage position;

Fig. 3A is an enlarged perspective view of the retaining pin shown in Fig. 1;

Figs. 3B and 3C are enlarged perspective views illustrating different embodiments of the retaining pin;

Fig. 4 is a perspective view of the reel with a portion broken away, to illustrate the manner in which the film retaining means is used;

Fig. 5 is a perspective view of the reel in a cartridge constructed in accordance with the present invention;

Fig. 6 is a fragmentary section of the parts shown in Fig. 5; and

Fig. 7 is a cross section, to an enlarged scale, of the retaining pin and retaining sleeve shown in Fig. 4 illustrating the manner in which a film is retained thereby.

Referring to the drawing, there is shown a film supply reel 10 adapted to be contained within a cartridge 32. The supply reel 10 comprises a generally hollow hub 11 having an annular outer surface 12 on which film is wound and having an inner surface 13. A plurality of arms 14 extend radially inwardly from the inner surface 13 to a core portion 15 having a suitable central opening adapted to receive a spindle (not shown). A pair of spaced side flanges 16 and 17 extend radially outwardly from the ends of the hub 11 to guide successive convolutions of film onto the hub. Side 90

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flange 16 is provided with a break 18 there-
in inalignment with a film threading slot 19
in the hub 11 such that the end portion of
a film or web can be threaded into the slot
19.

The reel structure may comprise an inte-
grally moulded part of plastics material.
Since the particular reel configuration thus
far described and the method of moulding
the same are well known in the art, further
description is deemed unnecessary.

In the disclosed embodiment, a socket,
which takes the form of a sleeve 20 having
an axial slot 21, is attached to the reel 10,
radially outwards of the core portion and
the axis, such as by integrally moulding
the sleeve with the reel hub on its inner
surface 13. The sleeve 20 is located on the
inner surface 13 such that the two semi-
circular halves of sleeve 20, separated by
slot 21, are disposed at opposite sides of the
film threading slot 19.

Circumferentially spaced from the sleeve
20, but also on the inner surface 13 of hub
11, is a storage socket or sleeve 22, the
purpose of which will become more apparent
hereinafter.

Referring to Fig. 3A of the drawing
there is shown one embodiment of a retain-
ing pin identified generally by the reference
numeral 23 which is adapted to be slidably
received by sleeve 20 and to cooperate there-
with to secure the inner end of a film roll
to the hub 11. More specifically, the pin
23 may comprise an elongated rigid body
portion 24 having a tapered end and a head
portion 25. Head portion 25 may simply
comprise an enlarged extension of body
portion 24 or may comprise a separate part
attached thereto. The body portion of pin
23 has a diameter generally complemental
to that of the sleeve 22 to be frictionally
retained therein during storage.

In operation, the end of a film is inserted
into film threading slot 19 and between the
semi-circular halves of retaining sleeve 20
as shown in Fig. 4. Elongated body portion
24 of pin 23 is then inserted into retaining
sleeve 20 so that the film is resiliently de-
formed and frictionally held between the pin
and the wall of one semi-circular half of
sleeve 20 thereby securing the film to the
reel as shown in Fig. 7. If, for example, the
pin body portion 24 has a diameter of .110
inches, the inner diameter of the sleeve is
.125 inches and the width of the slot is
.020 inches, the retaining means will
adequately retain a film having a thickness
of .005 inches without permanently deform-
ing or bending the film. Further, the head
portion 25 projects axially beyond the hub
11 and side flanges 16 and 17 at one side
of the reel. When the retaining pin is not
in use, as when the reel is used with a pro-
jector without automatic rewind, the pin 23

may be stored in socket 22 to prevent loss
of the pin, and the head portion 25 does
not then extend axially beyond the hub 11
and side flanges 16 and 17.

Referring more particularly to Figures 5
and 6, the cartridge 32 comprises a two-part
casing adapted to contain the reel 10 and
generally defining side walls 26 and 27
having axial openings 28 and 29, respec-
tively, through which the spindle (not
shown) of a projector may extend. The
opening 28 of side wall 26 has a larger dia-
meter than the opening 29 in side wall 27.
In addition, opening 28 has a radius which
exceeds the distance between the rotational
axis of reel 10 and the outermost edge of
head portion 25 of retaining pin 23, such
that pin 23 will freely orbit within opening
28 when reel 10 is rotated by the projector
spindle in cartridge 32. Opening 29, on
the other hand, has a smaller radius than the
distance between the reel axis and the outer-
most edge of head portion 25. Thus, inter-
ference will result between the abutment
means, provided by the head 25 of pin 23,
and the cartridge surfaces if it is attempted
to position the reel in the cartridge when
the reel is improperly oriented relative to
the cartridge.

Referring to Fig. 3B of the drawing, an-
other embodiment of the retaining pin,
identified by the reference numeral 23b,
comprises a pin body portion 31 having a
head portion 32 in the form of a washer-
shaped disk or annulus which serves as a
cover for the annular space between the reel
hub and core. The diameter of disk 32 is
substantially equal to that of opening 28
so that disk 32 will freely rotate within
opening 28 if the reel 10 is properly
orientated in cartridge 32. If the reel 10 is
not properly orientated, interference will
occur between the disk 32 and the smaller
diameter opening 29 to prevent complete
insertion of the reel 10 in the cartridge.

The washer 32 may be provided with
suitable abutments or dimples 33 which are
spaced and positioned to fit between two of
the arms 14 in engagement therewith to pro-
vide an alignment means which facilitates
positioning of the washer 32 concentrically
with hub 11.

Still another embodiment of the retaining
pin is depicted in Fig. 3C. This embodi-
ment, identified by the reference numeral
23c comprises a pin body portion 34 having
a head portion 35 comprising an arcuate
segment or portion of a washer or annulus
similar to that depicted in Fig. 3B. The
washer segment 35 has a radius also related
to the radii of openings 28 and 29 such
that interference will result if the reel 10
is improperly orientated in the cartridge 32.
Spaced dimples 36 may also be provided
to position the washer segment 35 con-

centrically with the reel hub. The Fig. 3C embodiment thus functions similarly to the Fig. 3B embodiment.

WHAT WE CLAIM IS:—

- 5 1. Web storage means comprising a reel having a hub on which a web may be wound in a roll with the inner end of the web disposed in a socket forming a part of the hub, a cartridge for receiving the reel in
10 an operational orientation or a reversed orientation, and a retaining pin receivable in the socket to secure the inner end of the web frictionally to the hub, the retaining pin having abutment means which is
15 arranged to interfere with the cartridge and so prevent free rotation of the reel if the retaining pin is in the socket when the reel is inserted in the cartridge in the reversed orientation but which does not interfere
20 with the socket if the reel is inserted in the cartridge in the operational orientation.
2. Web storage means as claimed in Claim 1, wherein the cartridge has spaced parallel
25 side walls between which the reel may be received, one of the side walls having an axial opening in which the abutment means is received during rotation of the operationally orientated reel in the cartridge,
30 and the other side wall being arranged to interfere with the abutment means on the retaining pin of the reel is inserted in the cartridge in the reversed orientation.
3. Web storage means as claimed in
35 Claim 2, wherein the said other side wall also has an axial opening through which a spindle may extend into the reel, this opening being of smaller diameter than the said opening in the said one side wall.
- 40 4. Web storage means as claimed in Claim 1, wherein the abutment means comprises a head formed by an enlarged portion of the

retaining pin.

5. Web storage means as claimed in Claim 1 and 2, wherein the abutment means comprises an annulus or part of an annulus which serves as a cover closing part of the
50 said opening in the side wall of the cartridge.

6. A reel and retaining pin for use in the web storage means claimed in Claim 1, the
55 reel comprising a hub on which a web may be wound in a roll between a pair of reel flanges, the hub having an axially extending slot through which the inner end of the web may extend from the roll-supporting surface
60 of the hub into an axially extending socket which is disposed radially inwards of this surface but radially outwards of the spindle-engaging surface of a core portion of the hub, and the retaining pin being receivable
65 in the socket to secure the inner end of the web to the hub, the retaining pin including abutment means which is arranged to project axially beyond the reel hub and flanges
70 at only one side thereof when fully received in the socket to secure the inner end of the web to the hub.

7. A reel and retaining pin as claimed in Claim 6, including a storage socket for the
75 retaining pin in the hub, the storage socket being arranged to receive the retaining pin so that the abutment means does not project axially beyond the reel hub and flanges.

8. A reel and retaining pin substantially as hereinbefore described with reference to
80 Figs. 1, 2, 4 and 7, and to Figs. 4A, 3B, or 3C.

9. Web storage means substantially as hereinbefore described with reference to
85 Figs. 1, 2, 4, 5 and 6, and to Figs. A3, 3B or 3C.

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centrically with the reel hub. The Fig. 3C embodiment thus functions similarly to the Fig. 3B embodiment.

WHAT WE CLAIM IS:—

- 5 1. Web storage means comprising a reel having a hub on which a web may be wound in a roll with the inner end of the web disposed in a socket forming a part of the hub, a cartridge for receiving the reel in
10 an operational orientation or a reversed orientation, and a retaining pin receivable in the socket to secure the inner end of the web frictionally to the hub, the retaining pin having abutment means which is
15 arranged to interfere with the cartridge and so prevent free rotation of the reel if the retaining pin is in the socket when the reel is inserted in the cartridge in the reversed orientation but which does not interfere
20 with the socket if the reel is inserted in the cartridge in the operational orientation.
2. Web storage means as claimed in Claim 1, wherein the cartridge has spaced parallel
25 side walls between which the reel may be received, one of the side walls having an axial opening in which the abutment means is received during rotation of the operationally orientated reel in the cartridge,
30 and the other side wall being arranged to interfere with the abutment means on the retaining pin of the reel is inserted in the cartridge in the reversed orientation.
3. Web storage means as claimed in
35 Claim 2, wherein the said other side wall also has an axial opening through which a spindle may extend into the reel, this opening being of smaller diameter than the said opening in the said one side wall.
- 40 4. Web storage means as claimed in Claim 1, wherein the abutment means comprises a head formed by an enlarged portion of the

retaining pin.

5. Web storage means as claimed in Claim 1 and 2, wherein the abutment means comprises an annulus or part of an annulus which serves as a cover closing part of the said opening in the side wall of the cartridge.

6. A reel and retaining pin for use in the web storage means claimed in Claim 1, the
55 reel comprising a hub on which a web may be wound in a roll between a pair of reel flanges, the hub having an axially extending slot through which the inner end of the web may extend from the roll-supporting surface
60 of the hub into an axially extending socket which is disposed radially inwards of this surface but radially outwards of the spindle-engaging surface of a core portion of the hub, and the retaining pin being receivable
65 in the socket to secure the inner end of the web to the hub, the retaining pin including abutment means which is arranged to project axially beyond the reel hub and flanges
70 at only one side thereof when fully received in the socket to secure the inner end of the web to the hub.

7. A reel and retaining pin as claimed in Claim 6, including a storage socket for the retaining pin in the hub, the storage socket
75 being arranged to receive the retaining pin so that the abutment means does not project axially beyond the reel hub and flanges.

8. A reel and retaining pin substantially as hereinbefore described with reference to
80 Figs. 1, 2, 4 and 7, and to Figs. 4A, 3B, or 3C.

9. Web storage means substantially as hereinbefore described with reference to
85 Figs. 1, 2, 4, 5 and 6, and to Figs. A3, 3B or 3C.

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