

Description

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates generally to photographic cartridges, and more particularly to a pulse generating mechanism for a web-roll mounted for rotation within a cartridge.

Description of the Prior Art

Sensing mechanisms for sensing web rotation, or web transport, are well known in the prior art, as indicated in U.S. Patents No. 3,564,219, No. 3,730,453, No. 3,779,483, No. 3,917,142, No. 3,949,856, and No. 4,153,361.

Most of those patents utilize some type of sensing mechanism wherein pulses are generated for indicating a rotational velocity of the web-spool. The pulses are fed to a counter, where they are accumulated, stored, and displayed to indicate the amount of web material remaining on the spool.

One problem with prior-art sensing mechanisms, including pulse generating portions thereof, is that, mechanically, they are of relatively complicated construction, which adversely affects the reliability and cost of such mechanisms. One disadvantage of those mechanisms is that the web-roll cartridge normally interfaces with a printer or the like, and the sensing and pulse generating mechanisms are normally mounted in the interfacing structure and not within the cartridge. That necessitates a larger and more complicated interfacing structure. Another disadvantage of prior-art sensing and pulse generating mechanisms is that most of them are designed to deal with cartridges that handle web material which is insensitive to light. Such mechanisms, particularly the pulse generating portion thereof, could not be incorporated into apparatus having cartridges containing photosensitive web material without exposing the web material and thus making the apparatus inoperative. Prior-art sensing mechanisms that are capable of handling photosensitive web material and generating pulses for some specified purpose without exposing the web material, such as those mechanisms disclosed in the above-cited U.S. Patent No. 4,153,361, are wholly located outside the cartridge, thereby suffering from the disadvantage first mentioned above. The pulse generating mechanism of this invention is believed to eliminate those and other disadvantages of the known prior art.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a pulse generating mechanism for a photosensitive

web-roll mounted for rotation within a light-tight cartridge. The pulse generating mechanism of this invention comprises a flange on a web-roll, activating means angularly spaced on the flange, and sensing means outside the cartridge for sensing the activating means upon incremental rotation of the flange and web-roll. In response to such sensing, pulses are generated for use in monitoring the amount of web remaining on the web-spool.

According to one feature of this invention, the activating means on the flange comprises either ferromagnetic elements detectable by a magnetic sensor or electrically conductive elements detectable by a proximity sensor.

In accordance with another feature of this invention, the flange has a plurality of angularly spaced bosses, each one having a flat circular top surface, and the ferromagnetic or electrically conductive elements comprise metallic elements mounted on the bosses.

According to a more specific feature of this invention, the flange has an outer side surface, and the cartridge has a sidewall with inner and outer sidewall surfaces, the flange outer side surface being parallel to and closely spaced from the inner sidewall surface. The activating means on the flange comprises electrically conductive elements, and the sensing means is mounted adjacent to the outer sidewall surface in a position of alignment with each electrically conductive element as it moves therepast.

In accordance with still another feature of this invention, the flange is formed of ferromagnetic material and includes angularly spaced bosses of such material. The activating means comprises the magnetic field of each ferromagnetic boss as it passes in close proximity to an externally mounted magnetic detector.

The invention, and its objects and advantages, will become more apparent from the detailed description of the preferred embodiments presented below.

BRIEF DESCRIPTION OF THE DRAWINGS

In the detailed description of the preferred embodiments of this invention presented below, reference is made to the accompanying drawings, in which:

Fig. 1 is a perspective view of a cartridge of the type in which a preferred embodiment of the pulse generating mechanism of this invention may be incorporated, wherein one housing portion is removed to expose a web-roll wound on a web-spool;

Fig. 2 is a front perspective view of a web-roll flange comprising one of the elements of this invention with its foil disc omitted; and

Fig. 3 is a sectional view, taken substantially along line 3-3 of Fig. 2, with a segment of the web-

roll, cartridge sidewall, metallic element, and sensing means added thereto.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Because certain parts of photographic cartridges and interfacing apparatus are well known, the following description is directed in particular to those elements forming, cooperating directly with, or relating to the present invention. Elements not specifically shown or described herein are selectable from those known in the pertinent art.

Illustrated in Fig. 1 is a light-tight cartridge 10 of a type suitable for supplying a computer-output micro-filmer or the like, not shown, with long web-rolls 12 of web material, such as 105mm-wide film. The cartridge 10 typically comprises a pair of cartridge housings 14, only one of which is shown in Fig. 1, having sidewalls 16 provided with matching semicircular journals 18 for rotatably supporting cylindrical bearings 20 on a pair of identical flanges 22 on the web-roll. The cartridge housings 14 are sealed together along mating rims 24, only one of which is shown, for enclosing the web-roll. The housings 14 normally define a nose portion 26, only one of which is shown, provided with opposed inner surfaces 27, only one of which is shown, defining an exit slot through which the web is withdrawn. Plush or foam material strips, not shown, are normally applied to the surfaces 27 to prevent light from entering the cartridge interior.

The web-roll 12 comprises a web-spool onto which a long web of film or paper is wound. The web-spool comprises a cylindrical core, not shown, to which the pair of identical flanges 22 are attached or secured. Generally, for the type of cartridge herein described, the web is initially wound onto the core, the flanges are attached to the core ends to form a web-roll, the web-roll is placed in one cartridge housing, and the other cartridge housing is then secured thereto for enclosing the web-roll.

With reference to Figs. 2 and 3, each flange 28 of a pair of flanges on a web-spool comprises a circular molded-plastic member having a cylindrical hub 30 which forms a bearing for rotatably supporting the flange and a web-roll 31 in the cartridge. The flange 28 has a frusto-conical connecting element 32 with one edge thereof connected to a cylindrical guide 34 for a core end 36 and a wall 38 defining a core-end-receiving cavity 40. The wall 38 is further connected to an annular plate-like member, or plate, 42 for constraining one edge of the web-roll 31. The plate 42 is provided with a plurality of circular projecting bosses 44 radially equally spaced from the center of the flange. A plurality of openings 46 extend through portions of the plate 42 between the bosses 44. Each boss 44 has a flat circular top surface 48, all lying in the same plane, to which a metallic element 50 of foil

material or the like is attached by any suitable means, such as adhesive. Alternatively, the metallic element 50 can be omitted and the entire flange 28 with the openings 46 therein, or at least the annular plate 42 thereof, could be molded or formed of a ferromagnetic material, or ferromagnetic filled plastic. The flange 28 further has a plurality of radially extending support ribs 49 and a peripheral lip 51.

With specific reference to Fig. 3, the flange 28 is constructed so that the flat circular top surface 48 of each boss 44 is as close as possible to an inner surface 52 of a cartridge sidewall 54. Secured adjacent to the outer surface 56 of sidewall 54, in a position of alignment with the center of each boss 44 as it moves therepast during rotation of the flange, is any suitable transducer 58, which is capable of generating a pulse when a metallic element 50 or ferromagnetic boss passes in front of the transducer upon intermittent rotation of the web-roll 31 as the web is withdrawn therefrom. The pulses generated by transducer 58 preferably are fed into the memory logic of a microprocessor 60. When a predetermined number of pulses are accumulated in the logic system, which may indicate, for example, the amount of web remaining on the web-roll, the microprocessor actuates any suitable light, sound, or other indicating mechanism, not shown, for indicating to the operator that the web-roll 31 will soon expire.

This invention has been described in detail with particular reference to preferred embodiments thereof, but it will be understood that variations and modifications can be effected within the scope of this invention as defined by the following claims.

Claims

1. A pulse generating mechanism for sensing rotation of a photosensitive web-roll (31) mounted within a light-tight cartridge (10) for rotation about a rotational axis upon withdrawal of web material therefrom, said mechanism comprising:
 - a light-tight cartridge (10) comprising a flange (28) on the spool core (36) of said cartridge for constraining the web-roll, wound on said spool core said flange (28) being rotatable together with said spool core about said rotational axis;
 - a plurality of detectable elements (44, 46) angularly equally spaced from each other, radially equally spaced from said rotational axis, and rotatable in response to the rotation of said flange about said rotational axis;
 - detecting means (58) outside the cartridge (10) arranged for detecting the passage of each detectable element (44, 46) past said detecting means upon rotation of said flange (28) and said web-roll (31) about

roll, cartridge sidewall, metallic element, and sensing means added thereto.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Because certain parts of photographic cartridges and interfacing apparatus are well known, the following description is directed in particular to those elements forming, cooperating directly with, or relating to the present invention. Elements not specifically shown or described herein are selectable from those known in the pertinent art.

Illustrated in Fig. 1 is a light-tight cartridge 10 of a type suitable for supplying a computer-output micro-filmer or the like, not shown, with long web-rolls 12 of web material, such as 105mm-wide film. The cartridge 10 typically comprises a pair of cartridge housings 14, only one of which is shown in Fig. 1, having sidewalls 16 provided with matching semicircular journals 18 for rotatably supporting cylindrical bearings 20 on a pair of identical flanges 22 on the web-roll. The cartridge housings 14 are sealed together along mating rims 24, only one of which is shown, for enclosing the web-roll. The housings 14 normally define a nose portion 26, only one of which is shown, provided with opposed inner surfaces 27, only one of which is shown, defining an exit slot through which the web is withdrawn. Plush or foam material strips, not shown, are normally applied to the surfaces 27 to prevent light from entering the cartridge interior.

The web-roll 12 comprises a web-spool onto which a long web of film or paper is wound. The web-spool comprises a cylindrical core, not shown, to which the pair of identical flanges 22 are attached or secured. Generally, for the type of cartridge herein described, the web is initially wound onto the core, the flanges are attached to the core ends to form a web-roll, the web-roll is placed in one cartridge housing, and the other cartridge housing is then secured there- to for enclosing the web-roll.

With reference to Figs. 2 and 3, each flange 28 of a pair of flanges on a web-spool comprises a circular molded-plastic member having a cylindrical hub 30 which forms a bearing for rotatably supporting the flange and a web-roll 31 in the cartridge. The flange 28 has a frusto-conical connecting element 32 with one edge thereof connected to a cylindrical guide 34 for a core end 36 and a wall 38 defining a core-end-receiving cavity 40. The wall 38 is further connected to an annular plate-like member, or plate, 42 for constraining one edge of the web-roll 31. The plate 42 is provided with a plurality of circular projecting bosses 44 radially equally spaced from the center of the flange. A plurality of openings 46 extend through portions of the plate 42 between the bosses 44. Each boss 44 has a flat circular top surface 48, all lying in the same plane, to which a metallic element 50 of foil

material or the like is attached by any suitable means, such as adhesive. Alternatively, the metallic element 50 can be omitted and the entire flange 28 with the openings 46 therein, or at least the annular plate 42 thereof, could be molded or formed of a ferromagnetic material, or ferromagnetic filled plastic. The flange 28 further has a plurality of radially extending support ribs 49 and a peripheral lip 51.

With specific reference to Fig. 3, the flange 28 is constructed so that the flat circular top surface 48 of each boss 44 is as close as possible to an inner surface 52 of a cartridge sidewall 54. Secured adjacent to the outer surface 56 of sidewall 54, in a position of alignment with the center of each boss 44 as it moves therepast during rotation of the flange, is any suitable transducer 58, which is capable of generating a pulse when a metallic element 50 or ferromagnetic boss passes in front of the transducer upon intermittent rotation of the web-roll 31 as the web is withdrawn therefrom. The pulses generated by transducer 58 preferably are fed into the memory logic of a microprocessor 60. When a predetermined number of pulses are accumulated in the logic system, which may indicate, for example, the amount of web remaining on the web-roll, the microprocessor actuates any suitable light, sound, or other indicating mechanism, not shown, for indicating to the operator that the web-roll 31 will soon expire.

This invention has been described in detail with particular reference to preferred embodiments thereof, but it will be understood that variations and modifications can be effected within the scope of this invention as defined by the following claims.

Claims

1. A pulse generating mechanism for sensing rotation of a photosensitive web-roll (31) mounted within a light-tight cartridge (10) for rotation about a rotational axis upon withdrawal of web material therefrom, said mechanism comprising:
 - a light-tight cartridge (10) comprising a flange (28) on the spool core (36) of said cartridge for constraining the web-roll, wound on said spool core said flange (28) being rotatable together with said spool core about said rotational axis;
 - a plurality of detectable elements (44, 46) angularly equally spaced from each other, radially equally spaced from said rotational axis, and rotatable in response to the rotation of said flange about said rotational axis;
 - detecting means (58) outside the cartridge (10) arranged for detecting the passage of each detectable element (44, 46) past said detecting means upon rotation of said flange (28) and said web-roll (31) about



said rotational axis and means for generating pulses in response to said detecting for monitoring quantity of web material remaining on the web-roll (31),

characterized in that said detectable elements (44, 46) are arranged on said web-constraining flange (28),

- and in that the detectable elements (44, 46) are electric conductive or ferromagnetic elements whose passage is detected by said detecting means (48) through a wall (54) of the cartridge (10).

2. A pulse generating mechanism as claimed in Claim 1 wherein said plurality of detectable elements (44, 46) further includes a like plurality of bosses (44) respectively supporting said ferromagnetic elements.

3. A pulse generating mechanism as claimed in Claim 2 wherein said bosses (44) respectively have flat top surfaces (48) lying in a common plane and supporting said ferromagnetic elements.

4. A pulse generating mechanism as claimed in Claim 1 wherein said flange (28) is formed from a ferromagnetic material; and wherein said plurality of detectable elements (44, 46) further includes a like plurality of bosses (44) of such material respectively composing said ferromagnetic elements.

5. A pulse generating mechanism as claimed in Claim 4 wherein said bosses (44) respectively have flat top surfaces (48) presenting said ferromagnetic elements in a common plane.

6. A pulse generating mechanism as claimed in Claim 1 wherein said flange (28) is molded from a ferromagnetic filled plastic; and wherein said plurality of detectable elements (44, 46) further includes a like plurality of bosses (44) of such plastic respectively composing said ferromagnetic elements.

7. A pulse generating mechanism as claimed in Claim 6 wherein said bosses (44) respectively have flat top surfaces (48) presenting said ferromagnetic elements in a common plane.

8. A pulse generating mechanism as claimed in Claim 1 wherein said plurality of detectable elements (44, 46) includes a like plurality of metallic elements (50).

9. A pulse generating mechanism as claimed in Claim 8 wherein said plurality of detectable ele-

ments (44, 46) further includes a like plurality of bosses (44) respectively supporting said metallic elements (50).

10. A pulse generating mechanism as claimed in Claim 9 wherein said bosses (44) respectively have flat top surfaces (48) lying in a common plane and supporting said metallic elements (50).

11. A pulse generating mechanism as claimed in Claim 1 wherein the cartridge (10) has an outer sidewall (54) with inner and outer surfaces (52 and 56); wherein said flange (28) has an outer side surface (48) disposed in parallel, closely spaced relation to the sidewall inner surface (52); wherein said plurality of detectable elements (44, 46) includes a like plurality of ferromagnetic elements; and wherein said sensing means (58) is mounted adjacent to the sidewall outer surface (56).

12. A pulse generating mechanism as claimed in Claim 11 wherein said plurality of detectable elements (44, 46) further includes a like plurality of bosses (44) respectively having flat top surfaces (48) lying in a common plane and supporting said ferromagnetic elements.

13. A pulse generating mechanism as claimed in Claim 11 wherein said flange (28) is formed from a ferromagnetic material; and wherein said plurality of detectable elements (44, 46) further includes a like plurality of bosses (44) of such material respectively having flat top surfaces (48) that lie in a common plane and compose said ferromagnetic elements.

14. A pulse generating mechanism as claimed in Claim 11 wherein said flange (28) is molded from a ferromagnetic filled plastic; and wherein said plurality of detectable elements (44, 46) further includes a like plurality of bosses (44) of such plastic respectively having flat top surfaces (48) that lie in a common plane and compose said ferromagnetic elements.

15. A pulse generating mechanism as claimed in Claim 1 wherein the cartridge (10) has an outer sidewall (54) with inner and outer surfaces (52 and 56); wherein said flange (28) has an outer side surface (48) disposed in parallel, closely spaced relation to the sidewall inner surface (52); wherein said plurality of detectable elements (44, 46) includes a like plurality of metallic elements (50); and wherein said detecting means (58) is mounted adjacent to the sidewall outer surface (56).



16. A pulse generating mechanism as claimed in Claim 15 wherein said plurality of detectable elements (44, 46) further includes a like plurality of bosses (44) respectively having flat top surfaces (48) lying in a common plane and supporting said metallic elements (50).

Patentansprüche

1. Pulserzeugungsmechanismus zum Erfassen der Drehung einer Wickelrolle (31) für ein lichtempfindliches Band, die in einer lichtdichten Patrone (10) montiert ist, wobei sie beim Abziehen des Bandmaterials hiervon um eine Rotationsachse drehbar ist, umfassend:

- eine lichtdichte Patrone (10), umfassend einen Flansch (28) auf dem Spulenkern (36) der Patrone zum Festlegen der Bandwickelrolle, die um den Spulenkern gewickelt ist, wobei der Flansch (28) zusammen mit dem Spulenkern um die Drehachse drehbar ist;
- eine Vielzahl in Drehrichtung gleich voneinander beabstandeter, in radialer Richtung von der Rotationsachse gleich beabstandeter detektierbarer Elemente (44, 46), die als Reaktion auf die Drehung des Flansches um die Rotationsachse drehbar sind, und
- eine Detektoreinrichtung (58) außerhalb der Patrone (10), die angeordnet ist zum Detektieren des Vorbeiführens jedes der detektierbaren Elemente (44, 46) an der Detektoreinrichtung bei der Drehung des Flansches (28) und der Bandwickelrolle (31) um die Drehachse sowie eine Einrichtung zum Erzeugen von Pulsen als Reaktion auf das Detektieren zum Überwachen der Menge des Bandmaterials, das auf der Bandwickelrolle (31) verbleibt, dadurch gekennzeichnet, daß die detektierbaren Elemente (44, 46) auf dem das Band festlegenden Flansch (28) angeordnet ist,
- und daß die detektierbaren Elemente (44, 46) elektrisch leitende oder ferromagnetische Elemente sind, deren Vorbeiführen von der Detektoreinrichtung (48) durch eine Wand (54) der Patrone (10) detektiert wird.

2. Pulserzeugungsmechanismus nach Anspruch 1, wobei eine Vielzahl von detektierbaren Elementen (44, 46) weiterhin eine gleiche Anzahl von Vorsprüngen (44) aufweist, die jeweils die ferromagnetischen Elemente tragen.

3. Pulserzeugungsmechanismus nach Anspruch 2, wobei die Vorsprünge (44) jeweils flache obere

Flächen (48) aufweisen, die in einer gemeinsamen Ebene liegen und die ferromagnetischen Elemente tragen.

4. Pulserzeugungsmechanismus nach Anspruch 1, wobei der Flansch (28) aus einem ferromagnetischen Material geformt ist und wobei die Vielzahl detektierbarer Elemente (44, 46) zudem eine gleiche Anzahl von Vorsprüngen (44) dieses Materials beinhaltet, die jeweils die ferromagnetischen Elemente bilden.

5. Pulserzeugungsmechanismus nach Anspruch 4, wobei die Vorsprünge (44) jeweils flache obere Flächen (48) in einer gemeinsamen Ebene aufweisen, die die ferromagnetischen Elemente darstellen.

6. Pulserzeugungsmechanismus nach Anspruch 1, wobei der Flansch (28) aus einem ferromagnetisch gefüllten Kunststoff gegossen ist und wobei die Vielzahl detektierbarer Elemente (44, 46) weiterhin eine gleiche Anzahl von Vorsprüngen (44) dieses Kunststoffs aufweist, die jeweils die ferromagnetischen Elemente bilden.

7. Pulserzeugungsmechanismus nach Anspruch 6, wobei diese Vorsprünge (44) jeweils flache obere Flächen (48) in einer gemeinsamen Ebene aufweisen, die die ferromagnetischen Elemente darstellen.

8. Pulserzeugungsmechanismus nach Anspruch 1, wobei die Vielzahl detektierbarer Elemente (44, 46) eine gleiche Anzahl metallischer Elemente (50) aufweist.

9. Pulserzeugungsmechanismus nach Anspruch 8, wobei die Vielzahl detektierbarer Elemente (44, 46) weiterhin eine gleiche Vielzahl von Vorsprüngen (44) aufweist, die jeweils die metallischen Elemente (50) tragen.

10. Pulserzeugungsmechanismus nach Anspruch 9, wobei die Vorsprünge (44) jeweils flache obere Flächen (48) aufweisen, die in einer gemeinsamen Ebene liegen und die metallischen Elemente (50) tragen.

11. Pulserzeugungsmechanismus nach Anspruch 1, wobei die Patrone (10) eine äußere Seitenwand (54) mit inneren und äußeren Flächen (52 und 56) aufweist; wobei der Flansch (28) eine äußere Seitenfläche (48) aufweist, die parallel und in dichtem Abstand zur inneren Seitenwandfläche (52) angeordnet ist; wobei die Vielzahl detektierbarer Elemente (44, 46) eine gleiche Vielzahl ferromagnetischer Elemente aufweist;



und wobei die Sensoreinrichtung (58) in der Nähe der äußeren Seitenwandfläche (56) montiert ist.

12. Pulserzeugungsmechanismus nach Anspruch 11, wobei die Vielzahl detektierbarer Elemente (44, 46) weiterhin eine gleiche Vielzahl von Vorsprüngen (44) beinhaltet, die jeweils eine flache obere Fläche (48) aufweisen, die in einer gemeinsamen Ebene liegen und die ferromagnetischen Elemente tragen. 5 10
13. Pulserzeugungsmechanismus nach Anspruch 11, wobei der Flansch (28) aus einem ferromagnetischen Material geformt ist und wobei die Vielzahl der detektierbaren Elemente (44, 46) weiterhin eine gleiche Vielzahl von Vorsprüngen (44) dieses Materials beinhaltet, welche jeweils flache obere Flächen (48) aufweisen, die in einer gemeinsamen Ebene liegen und die ferromagnetischen Elemente bilden. 15 20
14. Pulserzeugungsmechanismus nach Anspruch 11, wobei der Flansch (28) aus einem ferromagnetisch gefüllten Kunststoff gegossen ist und wobei die Vielzahl detektierbarer Elemente (44, 46) weiterhin eine gleiche Vielzahl von Vorsprüngen (44) dieses Kunststoffes aufweist, die jeweils flache obere Flächen (48) aufweisen, die in einer gemeinsamen Ebene liegen und die ferromagnetischen Elemente bilden. 25 30
15. Pulserzeugungsmechanismus nach Anspruch 1, wobei die Patrone (10) eine äußere Seitenwand (54) mit inneren und äußeren Flächen (52 und 56) aufweist; wobei der Flansch (28) eine äußere Seitenfläche (48) aufweist, die parallel und in dichtem Abstand zu der inneren Seitenwandfläche (52) angeordnet ist; wobei die Vielzahl von detektierbaren Elementen (44, 46) eine gleiche Vielzahl von metallischen Elementen (50) einschließt und wobei die Detektoreinrichtung (58) in der Nähe der äußeren Seitenwandfläche (56) montiert ist. 35 40
16. Pulserzeugungsmechanismus nach Anspruch 15, wobei die Vielzahl detektierbarer Elemente (44, 46) weiterhin eine gleiche Vielzahl von Vorsprüngen (44) beinhaltet, die jeweils flache obere Flächen (48) aufweisen, die in einer gemeinsamen Ebene liegen und die metallischen Elemente (50) tragen. 45 50

Revendications

1. Mécanisme générateur d'impulsions destiné à détecter la rotation d'un rouleau (31) d'une bande photosensible, monté dans une cartouche (10) 55

étanche à la lumière afin qu'il puisse tourner autour d'un axe de rotation lors de l'extraction de la matière en bande, le mécanisme comprenant :

- une cartouche (10) étanche à la lumière qui comprend une joue (28) placée sur un noyau de bobine (36) de la cartouche afin que le rouleau de bande reste enroulé sur le noyau de bobine, la joue (28) pouvant tourner avec le noyau de bobine autour de l'axe de rotation,
- plusieurs éléments détectables (44, 46) régulièrement espacés angulairement les uns par rapport aux autres et également espacés en direction radiale de l'axe de rotation, et pouvant tourner lors de la rotation de la joue autour de l'axe de rotation,
- un dispositif (58) de détection placé à l'extérieur de la cartouche (10) et destiné à détecter le passage de chaque élément détectable (44, 46) le long du dispositif de détection lors de la rotation de la joue (28) et du rouleau (31) de bande autour de l'axe de rotation, et un dispositif destiné à créer des impulsions à la suite de la détection permettant le contrôle de la quantité de matière en bande restant sur le rouleau de bande (31),

caractérisé en ce que les éléments détectables (44, 46) sont placés sur la joue (28) de retenue de bande, et

- en ce que les éléments détectables (44, 46) sont des éléments ferromagnétiques ou conducteurs de l'électricité, dont le passage est détecté par le dispositif de détection (48) à travers une paroi (54) de la cartouche (10).

2. Mécanisme générateur d'impulsions selon la revendication 1, dans lequel plusieurs éléments détectables (45, 46) comportent en outre un nombre analogue de saillies (44) supportant respectivement les éléments ferromagnétiques.

3. Mécanisme générateur d'impulsions selon la revendication 2, dans lequel les saillies (44) ont respectivement des surfaces supérieures plates (48) disposées dans un plan commun et supportant les éléments ferromagnétiques.

4. Mécanisme générateur d'impulsions selon la revendication 1, dans lequel la joue (28) est formée d'une matière ferromagnétique, et les éléments détectables (44, 46) comportent en outre un nombre analogue de saillies (44) de cette matière, composant respectivement les éléments ferromagnétiques.

5. Mécanisme générateur d'impulsions selon la re-



vendication 4, dans lequel les saillies (44) ont respectivement des faces supérieures plates (48) présentant les éléments ferromagnétiques dans un plan commun.

6. Mécanisme générateur d'impulsions selon la revendication 1, dans lequel la joue (28) est formée de matière plastique chargée d'une matière ferromagnétique et moulée, et les éléments détectables (44, 46) comportent en outre un nombre analogue de saillies (44) de cette matière plastique, composant respectivement les éléments ferromagnétiques.

7. Mécanisme générateur d'impulsions selon la revendication 6, dans lequel les saillies (44) ont respectivement des surfaces supérieures plates (48) présentant des éléments ferromagnétiques dans un plan commun.

8. Mécanisme générateur d'impulsions selon la revendication 1, dans lequel les éléments détectables (44, 46) comportent un nombre analogue d'éléments métalliques (50).

9. Mécanisme générateur d'impulsions selon la revendication 8, dans lequel les éléments détectables (44, 46) comportent en outre un nombre analogue de saillies (44) supportant respectivement les éléments métalliques (50).

10. Mécanisme générateur d'impulsions selon la revendication 9, dans lequel les saillies (44) ont respectivement des surfaces supérieures plates (48) placées dans un plan commun et supportant les éléments métalliques (50).

11. Mécanisme générateur d'impulsions selon la revendication 1, dans lequel la cartouche (10) a une paroi latérale externe (54) ayant des surfaces internes et externes (52 et 56), dans lequel la joue (28) a une surface latérale externe (48) disposée parallèlement à la surface interne (52) de paroi latérale et très près de celle-ci, dans lequel les éléments détectables (44, 46) comportent un nombre analogue d'éléments ferromagnétiques, et dans lequel le dispositif (58) de détection est monté près de la surface externe (56) de la paroi latérale.

12. Mécanisme générateur d'impulsions selon la revendication 11, dans lequel les éléments détectables (44, 46) comprennent en outre un nombre analogue de saillies (44) ayant respectivement des surfaces supérieures plates (48) placées dans un plan commun et supportant les éléments ferromagnétiques.

13. Mécanisme générateur d'impulsions selon la revendication 11, dans lequel la joue (28) est formée d'une matière ferromagnétique, et les éléments détectables (44, 46) comportent en outre plusieurs saillies (44) d'une telle matière ayant respectivement des surfaces supérieures plates (48) qui se trouvent dans un plan commun et composent les éléments ferromagnétiques.

14. Mécanisme générateur d'impulsions selon la revendication 11, dans lequel la joue (28) est formée d'une matière plastique chargée de matière ferromagnétique et moulée, et les éléments détectables (44, 46) comprennent en outre plusieurs saillies (44) de cette matière plastique, ayant des surfaces supérieures plates (48) qui se trouvent dans un plan commun et qui composent les éléments ferromagnétiques.

15. Mécanisme générateur d'impulsions selon la revendication 1, dans lequel la cartouche (10) a une paroi latérale externe (54) ayant des surfaces interne et externe (52 et 56), dans lequel la joue (28) a une surface latérale externe (48) disposée parallèlement à la surface interne (52) et très près de celle-ci, dans lequel les éléments détectables (44, 46) comprennent un nombre analogue d'éléments métalliques (50), et dans lequel le dispositif de détection (58) est monté près de la surface externe (56) de la paroi latérale.

16. Mécanisme générateur d'impulsions selon la revendication 15, dans lequel les éléments détectables (44, 46) comprennent en outre un nombre analogue de saillies (44) ayant respectivement des surfaces supérieures plates (48) placées dans un plan commun et supportant les éléments métalliques (50).

