

PATENT SPECIFICATION (11)

1 371 370

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0271370

- (21) Application No. 44942/71 (22) Filed 27 Sept. 1971 (19)
(31) Convention Application No. 2 047 236
(32) Filed 25 Sept. 1970 in
(33) Germany (DT)
(44) Complete Specification published 23 Oct. 1974
(51) International Classification G03C 11/00
(52) Index at acceptance
G2X 11



(54) IMPROVEMENTS IN AND RELATING TO THE PREPARATION OF PHOTOGRAPHIC FILMS FOR PROCESSING

(71) We, AGFA - GEVAERT AKTIEN-GESELLSCHAFT, a body corporate recognised under German Law, of Leverkusen, 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:—

The invention relates to a method of, and apparatus for, the preparation of processing of a number of photographic films, each having a number of latent images, and each film being contained in a cartridge or cassette.

For economic developing and printing of individually packaged films, the combining of these films to form a long film strip is extremely advantageous, especially for a fully-automatic production line which carries out the developing, printing and packaging of the order automatically.

This result is particularly useful in the processing of the so-called cartridge films contained in cartridges having a supply roll and a take-up roll, and in which a film roll comprising a film and backing paper is guided through an exposure station. This type of film cartridge is widely used in amateur photography.

The invention provides apparatus for preparing a number of films contained in cartridges or cassettes for processing, each cartridge or cassette having a data carrier associated with it, which comprises means for opening the cartridges or cassettes, means for separating each film from the respective opened cartridges or cassettes, and means for joining the films together to form a strip and for transferring data from each data carrier to the strip in association with the respective film.

Such apparatus automatically joins the films contained in the cartridges or cassettes in a strip whilst data concerning the sender of each film is retained with each film.

The invention also provides a method for preparing a number of films contained in cartridges or cassettes for processing, each cartridge or cassette having a data carrier

associated with, which comprises opening each cartridge or cassette separating each film from the respective opened cartridge or cassette, joining the films together to form a strip, and transferring data from each data carrier to the strip in association with the respective film.

Advantageously, there is provided a switching arrangement, to which the leading end of each film roll is arranged to pass, and sensing means to which the switching arrangement is responsive, the switching arrangement being arranged, in one state, to allow the leading end of the backing paper or film of each film roll to pass to a station at which the films are joined into a continuous strip and, in another state, to prevent the leading end of the backing paper or the film from passing to that station, and the sensing means being arranged to cause the switching arrangement to switch from the said other state to the said one state in response to the leading end of the film being reached and so allow the leading end of the film to pass to the said station.

Advantageously, the joining and transferring means includes means for transferring each data carrier to the strip at one end of its associated film. The data carriers can pass through the processing apparatuses, without any harmful effects on those processes, and at the end of the processing the data carriers can supply the name and address of the sender of the respective film and the account which is to be debited.

Instead, the joining and transferring means may include means for reading data from each data carrier and for marking the data onto the strip in association with the respective film. The data may be stored and then marked onto the strip. The means for marking the data may be arranged to expose the data on a photo-sensitive section of the respective film. Alternatively, the means for marking the data is arranged to mechanically imprint the data on the respective film or onto the means joining that film to an adjacent film. Preferably, the means for marking the data is arranged to perforate the respec-

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tive film or the means joining that film to an adjacent film.

Apparatus for, and a method of, preparing a number of films contained in cartridges for processing in accordance with the invention, will now be described, by way of example, with reference to the accompanying drawings, of which:

Figure 1 is a diagrammatic view of a section through the apparatus; and

Figure 2 is a diagrammatic view of a section through a part of the apparatus.

Referring to Figure 1, the reference numeral 1 indicates a housing which is light-proof and surrounds the whole apparatus. The housing 1 has a light-proof introduction aperture 2 through which means for transporting cartridges into the housing 1 in the form of a vibratory chute 3 extends. Outside the housing 1, either an automatic feed device, for example, a vibratory magazine of known construction, or an operator can be stationed to transfer the cartridges to the vibratory chute 3 in a desired position. Each cartridge 4 is provided with a data carrier 4a projecting beyond the cartridge which contains both the legible form and machine-readable form data concerning the sender of the film, the account to be debited, the type of despatch for the finished pictures, and any other necessary information. The data carrier 4a is generally provided with this data at the reception point for the films and is attached to the cartridge 4, each data carrier being secured to the respective cartridge in the same position relative to the cartridge.

After the cartridges 4 have passed through the introduction aperture 2, the cartridges are transported to separating means 5 in which the data carrier 4a is cut off from each cartridge 4 by means of a blade 6, shown diagrammatically. The data carrier 4a falls through a vertical channel 7 onto a conveyor, for example, a conveyor belt 8, by which it is led to a splicing station 13 at which the films are joined into a continuous strip and at which the data is transferred to the strip in association with the respective film by securing the data carrier between one end of that film and an adjacent film in the strip.

Lengths of transparent adhesive splicing tape 9 are fed to the splicing station 13 on a conveyor in the form of a carrier strip 14 which is unwound from a reel 15 and rewound with the splicing tape 9 removed, on a reel 16. As an alternative to the use of a conveyor belt 8, the data carriers 4a separated from the cartridges may be arranged to fall onto the carrier 14 (suitably rearranged) and be transported on the carrier 14 to the splicing station. In such a case the data carriers 4a are each secured to a length of splicing tape 9 before they reach

the splicing station 13, the lengths of the tapes 9 being such that they overlap the data carriers at their front and rear ends sufficiently to adhere well to the films.

After the separation of the data carriers 4a from the cartridges 4, the cartridges are transported to a station 10, which is shown in greater detail in Figure 2. At the station 10, each cartridge 4 is broken open to a certain extent by means of a punch 11 and then in a known manner the spool body containing the film roll is engaged and separated from the remainder of the cartridge. This can be effected in any one of a variety of ways. The parts of each cartridge which have been separated from the spool body fall down through the vertical channel 12. The film is removed from the spool bodies in a manner which will be described hereinafter with reference to Figure 2. The lengths of film are led to the splicing station 13, which is shown diagrammatically. The splicing apparatus may be constructed in the way described in German Gebrauchsmuster No. 1,954,281, and is not described in detail in this Patent Specification: other known forms of splicing apparatus can be used if desired.

Referring to Figure 1, a supply reel 17 is provided for strip-like material which corresponds approximately to the film strips in its external dimensions. If no cartridges are fed into the apparatus, the leading end of the strip-like material is led to the splicing station and joined onto the trailing edge of the last film to pass through the splicing station, the strip being pulled from the reel 17. This ensures the passage of a continuous strip through a film developing machine even though there may not be enough cartridges, or the feed-in rate of cartridges to the apparatus is too slow to effect the production of a continuous strip composed solely of individual films spliced together end to end. Hence the continuity of the film developing processes is not interrupted during the operation of the apparatus.

Referring to Figure 2, the reference numeral 18 indicates an arm which carries a mandril 19 which engages a recess in one side of a spool body 20, and a similar arm 18 carrying a similar mandril 19 (not shown) engages a recess in the other side of the spool body 20, so that the spool body is rotatably supported between the arms. A drive roller 21, which is rotatably mounted on a rocker arm 22, is positioned beneath the spool body 20 and is resiliently urged against the film roll on the spool body. The roller 21 is driven in the direction of the arrow 23 by means, for example, of an endless belt (not shown). A pivotally-supported tongue 25 is urged by a spring 24 against the film roll on the spool body 20. Beneath the tongue 25, there is part of an arrangement for sensing the leading end of the film,

which comprises a feeler runner 26 which controls an electrical switch 26a. The feeler runner 26 is positioned beneath the tongue 25 at such a distance that the start of the film can pass between the tongue 25 and the runner 26.

Following the tongue 25 there is a switching arrangement in the form of a plate 27 which is pivotally mounted about the axis 29 at its leading edge. In the rest position shown in Figure 2, the plate 27 forms part of the roof of a chamber 28, which is large enough to allow rolls to form, and which is connected to a waste-collecting shaft. The armature 30 of a magnet engages the rear edge of the plate 27 and, when the magnet is energised, the armature 30 raises the plate 27 so that film can pass into a guide channel 31. The guide channel 31 leads to a guide path which leads to the splicing station 13. Thus, in one state of the switching arrangement (with the plate 27 raised), film can pass to the splicing station, while in another state (as shown in the drawing), film or backing paper cannot pass to the splicing station. The plate 27 has at its leading edge an aperture 27a through which a stop arm 30a of the magnet armature 30 projects. The arm 30a therefore extends into the path of the leading edge of the film roll (as shown in Figure 2). The length of the arm 30a is such that when the magnet 32 is energised, the arm is retracted to a position above the lower face of the plate 27.

In operation, a film cartridge 4 which has entered the inlet 2 is conveyed to the vertical channel 7. When the data carrier 4a lies over the channel 7, the data carrier is separated from the cartridge by means of the blade 6, and the data carrier drops downwards onto the conveyor belt 8. The running speed of the conveyor belt 8 (or if the data carriers are carried on the strop 14 carrying adhesive tapes 9, the speed of the strip 14) is so selected that the data carrier is in the correct position in the splicing station 13 at the latests when the leading end of the film 33 in the cartridge 4 or of the following film has reached the splicing position.

After the data carrier 4a has been separated from the cassette 4, the cartridge passes to the station 10 where the cartridge is broken open, and the spool body 20 is rotatably supported between the arms 18 as in Figure 2. The spool body 20 contains the film roll consisting of the film section 33 and backing paper 34. The roller 21, the surface of which is such that there is a high coefficient of friction between the roller and the film, when pivoted into position engages with the periphery of the roll and drives the latter in an anti-clockwise direction. The tongue 25, which is also resiliently urged against the roll, guides the beginning of the film roll, which is composed of backing

paper, away from the remainder of the roll and through the space between the feeler runner 26 and the tongue 25. After a certain distance of travel of the backing paper, the beginning of the backing paper reaches the arm 30a and, as further backing paper is fed from the roll, the backing paper arches downwardly and bears against the feeler runner 26. Due to the pliability of the backing paper, the force exerted on the feeler runner 26 is not sufficient to actuate the switch 26a. Due to the continued feed movement of the roller 21, the retention of the beginning of the leading section of the backing paper leads to the formation of a loop and eventually to the formation of a roll (as shown in dotted outline in Figure 2).

After a certain length of backing paper has been fed from the film roll, the leading edge of the film 33 is guided by the tongue 25 from the film roll. Due to the inherent tendency of the film to curve and its greater stiffness than the backing paper, the leading edge of the film slides along the underside of the tongue 25 until it reaches the arm 30a. As further film is fed from the spool 20, the film arches downwardly and bears against the feeler runner 26. Due to the greater stiffness of the film, the force exerted on the feeler runner 26 is sufficient to actuate the contact 26a. The magnet 32 is thus energised, and the armature 30 thus lifts the plate 27 into its deflected position and retracts the arm 30a. By means of a suitable self-holding contact, the magnet 32 remains energised until all the film roll has been fed from the spool 20 and until the spool 20 has been ejected from the arms 18.

When the plate 27 has been deflected, the leading edge of the film moves upwardly along the lower surface of the plate (the arm 30a having been retracted) under the influence of its tendency to curve until it enters the film channel 31. The length of the backing paper fed from the film roll by this time is such that the backing paper has moved downwards into the chamber 28 under its weight so far that it is separated from the film and cannot enter the film channel.

The unwinding of the film roll by the roller 21 is interrupted when the leading edge of the film 33 has reached the splicing station 13. After the splicing operation has been performed (as hereinbefore described) by pressure of a punch, the unwinding of the film roll from the spool is continued, and the movement of the carrier 14 is also continued. When the film roll has been completely unwound from the spool body 20, the backing paper 34 drops from the chamber 28 into the waste-collecting container (not shown) and the spool body 20 is thrown into the channel 12 and the arms 18 are re-

turned to the position for engaging the spool body of the next cartridge 4.

5 Instead of the mechanical sensing device described above for distinguishing between the film and the backing paper, sensing devices based on other characteristics of the film and backing paper, for example, smoothness of surface or reflection capacity, may be employed.

10 When no further cartridges are fed into the apparatus, strip-form material from the roller 17 is spliced to the trailing edge of the last film to pass through the splicing station, and material continues to be drawn from the reel 17 until either further films enter through the inlet 2 or the last film has left a film developing machine. The film developing machine can then be brought to a standstill.

20 In order to ensure perfect transmission of information from the data carrier 4a after the developing and printing operations, data is applied to the data carrier so that it can be read off by photo-electrical means, chemical during the developing process by means of the transparent splicing tape 9, so that there are perfectly legible gradation differences when the read-off point is reached.

30 The apparatus for engaging the leading edge of the film in the film roll can be used not only with apparatuses for splicing the films together and transferring the data to the strip of the type described, but also with other forms of splicing and transferring arrangements. For example, the necessary data can be exposed onto the film or stamped into the latter or the splicing strip. For this purpose, the apparatus for opening the cartridges is provided with a reading device which reads off the data from the data carrier accompanying each cassette and feeds to a store device. The store device retains the read-off data, at least until the leading edge of the film or the trailing edge of the film is separated from the roll on the spool body. Then by means of a suitable input device, for example, a perforator or an exposure device, the stored data can be either punched into a free section of the film or the splicing strip, or be exposed onto a photo-sensitive section of the film which has remained free of images.

55 The data carriers 4a associated with the cartridges need not be actually secured to the cartridges. Instead, they may be applied to the work pocket surrounding the cartridge, or they may form a part thereof, which can be separated from the pocket and spliced between the appropriate films.

WHAT WE CLAIM IS:—

1. Apparatus for preparing a number of films contained in cartridges or cassettes for processing, each cartridge or cassette having

a data carrier associated with it, which comprises means for opening the cartridges or cassettes, means for separating each film from the respective opened cartridges or cassettes, and means for joining the films together to form a strip and for transferring data from each data carrier to the strip in association with the respective film.

2. Apparatus as claimed in Claim 1, in which the means for separating each film from the respective cartridge or cassette includes means for so engaging the spool of the cartridge or cassette that contains the film roll that the spool can rotate, deflecting means resiliently urged against the surface of the roll and arranged to deflect the leading end of the film roll from the spool when the film roll rotates in one direction, and feeding means arranged to engage the outer surface of the film roll and to cause it to rotate in the said one direction.

3. Apparatus as claimed in Claim 2, in which the feeding means is a drive roller resiliently urged against the surface of the film roll.

4. Apparatus as claimed in Claim 2 or Claim 3, in which the deflecting means is a tongue.

5. Apparatus as claimed in any one of Claims 1 to 4, and for preparing a number of films contained in cartridges for processing, in which there is provided a switching arrangement, to which the leading end of each film roll is arranged to pass, and sensing means to which the switching arrangement is responsive, the switching arrangement being arranged, in one state, to allow the leading end of the backing paper or film of each film roll to pass to a station at which the films are joined into the continuous strip and, in another state, to prevent the leading end of the backing paper or the film from passing to that station, and the sensing means being arranged to cause the switching arrangement to switch from the said other state to the said one state in response to the leading end of the film being reached and so allow the leading end of the film to pass to the said station.

6. Apparatus as claimed in Claim 5, in which the arrangement is such that, in operation, the backing paper is allowed to separate from the film passing to the switching arrangement under the influence of the weight of the backing paper so as to be thereby prevented from passing to the said station.

7. Apparatus as claimed in Claim 5 or Claim 6, in which the arrangement is such that, in operation, when the switching arrangement is in the said one state, the leading end of the film passes upwardly to a film guide extending to the said station under the influence of its tendency to curve.

8. Apparatus as claimed in any one of

turned to the position for engaging the spool body of the next cartridge 4.

5 Instead of the mechanical sensing device described above for distinguishing between the film and the backing paper, sensing devices based on other characteristics of the film and backing paper, for example, smoothness of surface or reflection capacity, may be employed.

10 When no further cartridges are fed into the apparatus, strip-form material from the roller 17 is spliced to the trailing edge of the last film to pass through the splicing station, and material continues to be drawn from the reel 17 until either further films enter through the inlet 2 or the last film has left a film developing machine. The film developing machine can then be brought to a standstill.

20 In order to ensure perfect transmission of information from the data carrier 4a after the developing and printing operations, data is applied to the data carrier so that it can be read off by photo-electrical means, chemical during the developing process by means of the transparent splicing tape 9, so that there are perfectly legible gradation differences when the read-off point is reached.

30 The apparatus for engaging the leading edge of the film in the film roll can be used not only with apparatuses for splicing the films together and transferring the data to the strip of the type described, but also with other forms of splicing and transferring arrangements. For example, the necessary data can be exposed onto the film or stamped into the latter or the splicing strip. For this purpose, the apparatus for opening the cartridges is provided with a reading device which reads off the data from the data carrier accompanying each cassette and feeds to a store device. The store device retains the read-off data, at least until the leading edge of the film or the trailing edge of the film is separated from the roll on the spool body. Then by means of a suitable input device, for example, a perforator or an exposure device, the stored data can be either punched into a free section of the film or the splicing strip, or be exposed onto a photo-sensitive section of the film which has remained free of images.

55 The data carriers 4a associated with the cartridges need not be actually secured to the cartridges. Instead, they may be applied to the work pocket surrounding the cartridge, or they may form a part thereof, which can be separated from the pocket and spliced between the appropriate films.

WHAT WE CLAIM IS:—

1. Apparatus for preparing a number of films contained in cartridges or cassettes for processing, each cartridge or cassette having

a data carrier associated with it, which comprises means for opening the cartridges or cassettes, means for separating each film from the respective opened cartridges or cassettes, and means for joining the films together to form a strip and for transferring data from each data carrier to the strip in association with the respective film.

2. Apparatus as claimed in Claim 1, in which the means for separating each film from the respective cartridge or cassette includes means for so engaging the spool of the cartridge or cassette that contains the film roll that the spool can rotate, deflecting means resiliently urged against the surface of the roll and arranged to deflect the leading end of the film roll from the spool when the film roll rotates in one direction, and feeding means arranged to engage the outer surface of the film roll and to cause it to rotate in the said one direction.

3. Apparatus as claimed in Claim 2, in which the feeding means is a drive roller resiliently urged against the surface of the film roll.

4. Apparatus as claimed in Claim 2 or Claim 3, in which the deflecting means is a tongue.

5. Apparatus as claimed in any one of Claims 1 to 4, and for preparing a number of films contained in cartridges for processing, in which there is provided a switching arrangement, to which the leading end of each film roll is arranged to pass, and sensing means to which the switching arrangement is responsive, the switching arrangement being arranged, in one state, to allow the leading end of the backing paper or film of each film roll to pass to a station at which the films are joined into the continuous strip and, in another state, to prevent the leading end of the backing paper or the film from passing to that station, and the sensing means being arranged to cause the switching arrangement to switch from the said other state to the said one state in response to the leading end of the film being reached and so allow the leading end of the film to pass to the said station.

6. Apparatus as claimed in Claim 5, in which the arrangement is such that, in operation, the backing paper is allowed to separate from the film passing to the switching arrangement under the influence of the weight of the backing paper so as to be thereby prevented from passing to the said station.

7. Apparatus as claimed in Claim 5 or Claim 6, in which the arrangement is such that, in operation, when the switching arrangement is in the said one state, the leading end of the film passes upwardly to a film guide extending to the said station under the influence of its tendency to curve.

8. Apparatus as claimed in any one of



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Claims 5 to 7, in which the sensing means is arranged to cause the switching arrangement to switch from the said other state to the said one state in response to the differences between the stiffnesses, and/or the smoothnesses of the surfaces of, and/or the reflection co-efficients, of the backing paper and the film.

9. Apparatus as claimed in Claim 8, in which the sensing means comprises a stop so arranged in the path of film rolls fed to the switching arrangement that, in operation, each film roll arches when the leading end of the backing paper or the film meets the stop, and a feeler switch arranged to be contacted by the film roll as it arches and arranged to switch the switching arrangement to the said one state only when the force on the feeler switch reaches that for when the leading end of the film of each film roll bears against the stop, and the stop being arranged to be moved clear of the path of the leading end of the film when the switching arrangement switches to the said one state.

10. Apparatus as claimed in any one of Claims 5 to 9, in which there is provided a waste shaft into which the backing paper of each film can drop when the film has been separated from the backing paper by the switching arrangement.

11. Apparatus as claimed in any one of Claims 1 to 10, in which there is provided a reel of strip-like material which is arranged so that the leading end of the strip-like material can be secured to the trailing end of the last film in the strip at the station at which the films are joined so that the strip of film can be advanced even if further films do not enter the apparatus.

12. Apparatus as claimed in any one of Claims 1 to 11, in which the joining and transferring means includes means for transferring each data carrier to the strip at one end of its associated film.

13. Apparatus as claimed in Claim 12, in which there is provided a conveyor which is arranged so that, in operation, the data carriers associated with each cartridge or cassette fall thereon and are conveyed to the station where the films are to be joined.

14. Apparatus as claimed in Claim 12 or Claim 13, in which a conveyor for strips of splicing tape is provided, the conveyor being so arranged that the strips are conveyed to the station at which the films are to be joined and each data carrier can be attached to its associated film by application of pressure between a strip of splicing tape and the film ends.

15. Apparatus as claimed in any one of Claims 12 to 14, in which a single conveyor is provided for both data carriers and strips of splicing tape, and means is provided for securing the data carriers to the respective

strips before they reach the station at which the films are to be joined and for securing at the said station the leading end of one film and the trailing end of another to a strip of splicing tape to which the data carrier associated with one of the films has been secured.

16. Apparatus as claimed in any one of Claims 12 to 15, in which strips of transparent slicing tape are provided for joining the data carriers to their associated films to form the strip, the information on the data carriers being covered by and being readable through the splicing tape.

17. Apparatus as claimed in any one of Claims 1 to 13, wherein the joining and transferring means includes means for reading data from each data carrier and for marking the data onto the strip in association with the respective film.

18. Apparatus as claimed in Claim 17, in which the means for marking the data is arranged to expose the data on a photo-sensitive section of the respective film.

19. Apparatus as claimed in Claim 17, in which the means for marking the data is arranged to mechanically imprint the data on the respective film or onto the means joining that film to an adjacent film.

20. Apparatus as claimed in Claim 19, in which the means for marking the data is arranged to perforate the respective film or the means joining that film to an adjacent film.

21. Apparatus as claimed in any one of Claims 1 to 20, which is adapted for use with cartridges or cassettes having data carriers attached to them on entry to the said apparatus.

22. Apparatus as claimed in any one of Claims 1 to 20, which is adapted for use with cartridges or cassettes having data carriers attached to or formed as part of pockets surrounding the cartridges or cassettes.

23. A method for preparing a number of films contained in cartridges or cassettes for processing, each cartridge or cassette having a data cartridge or cassette, separating each film from the respective opened cartridge or cassette, joining the films together to form a strip, and transferring data from each data carrier to the strip in association with the respective film.

24. A method as claimed in Claim 23, in which each film is separated from the respective cartridge or cassette by so engaging the spool of the cartridge or cassette that contains the film roll that the spool can rotate, resiliently urging against the surface of the roll deflecting means for deflecting the leading end of the film roll from the spool when the film roll rotates in one direction, and engaging the outer surface



of the film roll by feeding means to rotate it in the said one direction.

25. A method as claimed in Claim 24, in which the outer surface of the film is engaged by a drive roller resiliently urged against the surface of the film roll.

26. A method as claimed in Claim 24 or Claim 25, in which a tongue is resiliently urged against the surface of the film roll for deflecting the leading end of the film roll from the spool.

27. A method as claimed in any one of Claims 23 to 26, and for preparing a number of films contained in cartridges for processing, in which the leading end of each film roll is passed to a switching arrangement, and sensing means, to which the switching arrangement is responsive, is provided, the switching arrangement, in one state, allowing the leading end of the backing paper or film of each film roll to pass to a station at which the films are joined into a continuous strip and in another state, preventing the leading end of the backing paper or the film from passing to that station, and the sensing means causing the switching arrangement to switch from the said other state to the said one state in response to the leading end of the film being reached so allowing the leading end of the film to pass to the said station.

28. A method as claimed in Claim 27, in which the backing paper is allowed to separate from the film passing to the switching arrangement under the influence of the weight of the backing paper so as to be thereby prevented from passing to the said station.

29. A method as claimed in Claim 27 or Claim 28, in which, when the switching arrangement is in the said one state, the leading end of the film passes upwardly to a film guide extending to the said station under the influence of its tendency to curve.

30. A method as claimed in any one of Claims 27 to 29, in which the sensing means causes the switching arrangement to switch from the said other state to the said one state in response to the differences between the stiffnesses, and/or the smoothnesses of the surfaces of, and/or the reflection coefficients, of the backing paper and the film.

31. A method as claimed in Claim 30, in which the sensing means comprises a stop so arranged in the path of film rolls fed to the switching arrangement that each film roll arches when the leading end of the backing paper or the film meets the stop, and a feeler switch arranged to be contacted by the film roll as it arches, the feeler switch switching the arrangement to the said one state only when the force on the feeler switch reaches that for when the leading end of the film of each film roll bears against the stop, the stop being moved clear of the path of the leading

end of the film when the switching arrangement switches to the said one state.

32. A method as claimed in any one of Claims 27 to 31, in which the backing paper of each film can drop into a waste shaft when the film has been separated from the backing paper by the switching arrangement.

33. A method as claimed in any one of Claims 23 to 32, in which the leading end of strip-like material contained on a reel can be secured to the trailing end of the last film in the strip at the station at which the films are joined so that the strip of film can be advanced even if further film do not enter the apparatus,

34. A method as claimed in any one of Claims 23 to 33, in which the data is transferred to the strip by transferring each data carrier to the strip at one end of its associated film.

35. A method as claimed in Claim 34, in which the data carriers associated with each cartridge or cassette fall on a conveyor and are conveyed to the station where the films are to be joined.

36. A method as claimed in Claim 34 or Claim 35, in which strips of splicing tape are conveyed on a conveyor to the station at which the films are to be joined and each data carrier is attached to its associated film by application of pressure between a strip of splicing tape and the film ends.

37. A method as claimed in any one of Claims 34 to 36, in which both the data carriers and strips of splicing tape are conveyed on a single conveyor to the station at which the films are to be joined the data carriers are secured to the respective strips before they reach the said station and the leading end of one film and the trailing end of another are joined to a strip of splicing tape to which the data carrier associated with one of the films has been secured at the said station.

38. A method as claimed in any one of Claims 34 to 37, in which the data carriers are joined to their respective films by strips of transparent splicing tape, the information on the data carriers being covered by and being readable through the splicing tape.

39. A method as claimed in any one of Claims 23 to 33, in which data is read from each data carrier and marked onto the strip in association with the respective film.

40. A method as claimed in Claim 39, in which the data is exposed on a photo-sensitive section of the respective film.

41. A method as claimed in Claim 39, in which the data is mechanically marked on the respective film or onto the means joining that film to an adjacent film.

42. A method as claimed in Claim 41, in which the respective film, or the means joining that film to an adjacent film, is perforated to imprint the data thereon.



43. A method as claimed in any one of Claims 23 to 42, which is adapted for use with cartridges or cassettes having data carriers attached to them.

5 44. A method as claimed in any one of Claims 23 to 42, which is adapted for use with cartridges or cassettes having data carriers attached to or formed as part of pockets surrounding the cartridges or
10 cassettes.

45. Apparatus for preparing a number of films contained in cartridges or cassettes for processing substantially as hereinbefore described with reference to, and as shown

in, Figures 1 and 2 of the accompanying 15 drawings.

46. A method for preparing a number of films contained in cartridges or cassettes for processing substantially as hereinbefore described with reference to, and as shown in, 20 Figures 1 and 2 of the accompanying drawings.

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Printed for Her Majesty's Stationery Office by Burgess & Son (Abingdon), Ltd.—1974.
Published at The Patent Office, 25 Southampton Buildings, London, WC2A 1AY,
from which copies may be obtained.

