PATENT SPECIFICATION

(11) 1 488 273

(21) Application No. 55092/74 (22) Filed 20 Dec. 1974
(31) Convention Application No. 2 364 397 (32) Filed 22 Dec. 1973 in
(33) Fed. Rep. of Germany (DT)
(44) Complete Specification published 12 Oct. 1977
(51) INT. CL.[2] G11B 23/04
(52) Index at acceptance
B8M 7 8C B1 B4
G5R B264 B37Y B38Y B481 B513 B683 B684 B685 B687 B743 B83

(19)



(54) A CARTRIDGE FOR A RECORDING MEDIUM IN TAPE OR STRIP FORM AND TAPE-HANDLING APPARATUS FOR USE WITH SUCH A CARTRIDGE

(71) We, BASF AKTIENGESELLSCHAFT, a German Joint Stock Company, of 6700 Ludwigshafen, Federal Republic of 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:

This invention relates to a cartridge for a recording medium in tape or strip form, particularly a magnetic tape, and a tape-handling apparatus when used with such a cartridge, the latter comprising a housing and a roll of tape enclosed within the housing, the roll of tape being capable of being disposed, relative to the housing, in a position in which its peripheral surface makes contact with a drive member associated with the tape-handling apparatus to be used with the cartridge subsequent to insertion of the cartridge in means provided in the apparatus for receiving the cartridge.

A tape-handling apparatus for use with a tape cartridge of the this type is described in the published German Application (DOS) No. 1,955,560. Here, the cartridge is of circular shape and has an open window in its periphery which cannot be closed and which permits a drive member to enter the cartridge for rotation of a supply roll housed therein, and also allows the tape to be withdrawn from the cartridge. The supply roll rotates upon an axle journaled in the opposite side walls of the circular cartridge but is not slidably displaceable. Movement of the roll toward the drive member, to compensate for the decreasing pack diameter, is effected by guided displacement of the whole cartridge, guidance being effected by means of guide pins on the lower cartridge wall and a cooperating guide slot in the apparatus, and also by means of guide members which embrace the cartridge at the periphery on opposite sides.

In all embodiments of this prior art tape-handling apparatus, spring-loaded displacement members bear against the outside of the cartridge housing and thus urge the roll of tape toward the drive member only indirectly. The hub is only provided with primitive bearing means in the form of the above-mentioned journals which rotate in apertures in the opposite side walls of the circular cartridge. The main disadvantages of the above-described tape-handling apparatus and cartridge are that

(a) the tape and the tape pack as a whole are not adequately protected against external influences by the cartridge,

(b) the primitive bearing means are unsuitable for high rotational speeds of the pack within the cartridge,

(c) more or less frictionless guidance of the cartridge on the apparatus is extremely expensive,

(d) correct insertion of the cartridge between the lateral guide members is not guaranteed,

(e) since the drive member enters the cartridge, the cartridge must be precisely located, so that the drive member does not come into contact with the cartridge housing,

(f) the circular shape of the cartridge makes handling and storage and filing more difficult for the amateur,

(g) owing to the fact that the cartridge must be precisely located, the requisite apparatus-associated means for guiding and displacing the cartridge are very elaborate and are consequently more liable to give trouble.

The present invention seeks to provide an improved cartridge for a recording medium in tape or strip form and an improved tape-handling apparatus when used therewith. The invention also seeks to im-

prove magnetic tape cartridges (and tape recorders for use therewith), to render their operation more reliable, their handling simpler and their mass production more economical. The invention also seeks to provide a cartridge which is simpler to store and file.

According to one aspect of the present invention, a cartridge for a recording medium in tape or strip form comprises a housing and a roll of tape enclosed within the housing whereby a part of the peripheral surface of the roll can make contact with a drive member associated with a tape handling apparatus to be used with the tape subsequent to insertion of the cartridge in means provided in the apparatus for receiving the cartridge, wherein the housing consists of two parts of substantially equal size which are pivotally connected together by connecting means in such a way that the said two housing parts, when the cartridge is in a closed position, completely enclose the roll of tape, and can be swung apart to open the cartridge, so that, when the cartridge is in an open position, at least part of the peripheral surface of the roll of tape is exposed for rotation by the drive member of the tape-handling apparatus.

Such a design ensures maximum protection for the tape pack cartridge and tape-handling apparatus while making it easy to mass-produce the units concerned.

The roll of tape can be advantageously inserted in the cartridge housing after the housing and its associated elements have been assembled, so that the risk of damage to the tape roll is considerably reduced.

Lower and upper walls of the cartridge may each be provided with at least one aperture through which an appartus associated, rotatably and — if desired — displaceably mounted spindle can enter, so that the roll of tape can be rotated essentially inside the cartridge and the tape can, if necessary, also be scanned (e.g. magnetically) therein.

In an advantageous embodiment of the cartridge, spring means are provided which hold the two cartridge parts together.

In a particularly advantageous embodiment of the cartridge two resilient members are provided in the form of a first spring arranged adjacent to the point at which the cartridge parts pivot and a second spring arranged adjacent to those sections of the cartridge parts which described the largest arc during the pivoting movement of the cartridge parts during opening of the cartridge.

By using two springs, which are advantageously arranged the greatest possible distance apart, great rigidity is imparted to the cartridge in all positions of the housing parts, thus strengthening the cartridge against flexural stress and shearing forces, and increasing the force holding the cartridge parts together, especially in the closed position.

In a further embodiment of the invention, the second spring is an element made of resilient material and having an aperture through which at least part of the roll of tape can project when the cartridge is open, the said element cooperating on each side with a projection provided on each cartridge part while the cartridge is closed, in order to keep it closed, whereas the said element coperates with one further projection on each cartridge part while the cartridge is open, in order to limit the pivoting angle of the cartridge parts.

Such a spring design having the various functions described above has proved to be both economical and advantageous in operation.

In a further particularly advantageous embodiment of the invention, the cartridge parts are provided with teeth in the region where the parts meet, which teeth improve the rigidity of the cartridge in the closed position.

A very high degree of rigidity which protects the cartridge against flexural stress in particular is achieved in this way, the rigidity already achieved with springs of suitable design and arranged in an appropriate manner being further increased.

These teeth are formed at regions of the lower and upper walls of the cartridge parts, which regions over- and under-lap each other.

In yet another advantageous embodiment of the invention, the cartridge is provided on the inside with resilient members which make contact with at least part of the peripheral surface of the roll of tape, especially when the cartridge is closed, in order to hold the roll of tape together. In this way, unintentional unrolling of the tape or the leader tape from the roll is effectively prevented. In a very simple embodiment of the invention, these resilient members consist of strips of elastic material which are held between projections provided on the cartridge parts.

According to a further aspect of the invention, there is provided tape-handling apparatus when used with a cartridge according to said one aspect of the invention, the tape-handling apparatus consisting essentially of cartridge receiving means, a drive member for rotating the roll of tape and at least one scanning means for scanning the tape, wherein the cartridge receiving means consists essentially of a split base portion having two parts and a spindle passing between said parts, and en-

gaging members so arranged on the base portion that they engage in apertures in the cartridge housing parts at predetermined points when the cartridge is placed in position on the base portion and the parts of the base portion and the engaging members can be swung apart by means of a pivoting mechanism to open the cartridge as the parts of the base portion separate.

The above-described receiving means, which is easy to manufacture and reliable in operation, ensures the trouble-free opening of the cartridge inside the tape-handling apparatus, so that damage to the tape and tape pack is avoided.

Further details of an embodiment of the invention will now be described with reference to the accompanying drawings, in which:—

Fig. 1 shows receiving means for a cartridge of the present invention which is shown here prior to insertion of a cartridge therein,

Fig. 2 is a sectional view taken along the line II-II of the cartridge of the invention shown in Fig. 3;

Fig. 3 shows the cartridge of the invention in the closed position on the tape-handling apparatus;

Fig. 4 shows the cartridge of Fig. 3 in the open position, the roll of tape being driven by the tape-handling apparatus;

Fig. 5 shows a locking spring for the cartridge;

Fig. 6 shows a detail of the teeth of the cartridge parts; and

Fig. 7 shows a roll of tape with leader for a cartridge of the invention.

Fig. 1 shows receiving means or, rather, a simple loading mechanism for a cartridge 2. When the apparatus-associated lid 1 is opened it exposes a trough 3 into which the closed cartridge 2 can be inserted manually. The trough 3 consists of two components and is preferably made of stamped-out and appropriately bent sheet metal. The two components 3*a* and 3*b* can be rotated about a pivot 4 independently of one another. The two apparatus-associated trough components 3*a* and 3*b* are directly connected to the lid 1 via rods 5 which are pivotally connected to tabs 6 and loosely attached to the lid 1 at points 7 for pivotal movement. When the lid 1 is raised, the trough 3 is closed and ready to receive the cartridge. When the lid 1 is depressed in the direction of arrow *a*, the two trough components 3*a* and 3*b* pivot through a certain angle in opposite directions, as indicated by arrows *b*. The pivoting movement of the trough components 3*a* and 3*b* is brought about by movement of the rods 5 in the direction of arrows *c*. When a cartridge is inserted, the pivot 4 for the trough components coincides with a pivot 8 for the cartridge parts, the opening angle of the trough components corresponding to the opening angle of the cartridge parts. When the apparatus-associated trough 3 swings apart, retaining means 9 embrace the trough components 3*a* and 3*b* and the upper walls 21 of the cartridge parts or directly embrace the upper, lower and side walls 21, 22 and 33 of the cartridge parts through slots (not shown) in trough components 3*a* and 3*b* to hold the cartridge parts at a predetermined height so that a roll of tape 18 on a hub 15 within the cartridge (Fig. 7) can be wound and unwound without making contact with parts of the cartridge housing.

The cartridge 2 is inserted in the trough 3 at an angle, with the front 17 of the cartridge pointing forward and downward. The front 17 is pushed below an overhanging lip 10. Projections 11 on the right and the left of the trough 3 simultaneously engage apertures at the front of the cartridge and urge the front spring inside the cartridge back to such an extent that the cartridge, after having been pressed home in the trough, is ready to be opened. To prevent the cartridge from being incorrectly inserted, for example the wrong way round, the cartridge 2 is provided with a recess 12 on one side, and the corresponding apparatus-associated trough part with a projection 13 for cooperation with said recess. When the cartridge 2 is inserted (see Fig. 2), a ball pressure mechanism 16 on a spindle or shaft 40 is actuated and the hub 15 is pressed against the conical surface of a hub-receiving member 14 within the trough. As a result, the roll of tape 18 is connected to the tape-handling apparatus, ready for operation. A spring-loaded lever 19 is an additional safety feature which ensures that the cartridge 2 attains its end position after it has been inserted. It is possible to so connect the lever 19 to a switching mechanism (not shown) that the machine cannot be operated until the cartridge 2 is properly located in the trough.

Other loading mechanism designs for the cartridge, which is now to be described in more detail, are conceivable. The cartridge 2 is a single-reel cartridge. The tape is wound on the aluminum hub 15 to form the roll 18 (cf. Fig. 7). At its outer periphery, the roll 18 is provided with a leader tape 20 which holds itself to the edges of the outer turns of tape by means of lateral teeth, so that the roll 18 is held together and the outer turns of tape cannot slip off the roll. When the cartridge 2 is closed (cf. Fig. 3) the hub 15 is held between upper and lower walls 21 and 22 of the cartridge 2 by means of ribs (not shown) in such a way that it is prevented from rotating and being displaced vertically

and radially when the cartridge is handled. An additional feature for preventing rotation of the roll 18 may consist of toothed elements (not shown) on the lower side of the hub 15 which engage matching recesses in or projections on the lower wall 22 of the cartridge. The cartridge 2 consists of two parts of equal size which are pivotally connected to one another by means of a hinge 26 for example. In an advantageous embodiment of the invention, the cartridge parts each consist of two simple injection moldings of plastics material, connected to one another in a suitable manner, for example by ultrasonic welding or by screws. The cartridge parts completely enclose the tape roll 18 when the cartridge 2 is closed, so that there is no direct access to the tape from the outside at any point. The tape roll 18 is thus afforded optimum protection against mechanical damage and dust. Where the two cartridge parts meet, portions of the lower and upper surfaces 22 and 21 over- and underlap, forming interlocking teeth 25 (see arrows *d* in Fig. 6) which bring about an increase in the mechanical strength of the cartridge 2 in the plane of separation, make the cartridge virtually dust-tight and improve protection of the tape and the tape roll 18 against mechanical damage. Other interlocking arrangements may also be used, for example a tongue-and-groove connection. An additional safeguard against bending of the cartridge 2 in the plane of separation consists of a first and a second spring. The first spring 27 — the closing spring — is arranged near the hinge 26. It may be a leaf spring, and its ends may be retained in suitable grooves 28 provided in each of the two cartridge parts. The arrangement and shape of the spring 27 in the drawings make it clear that a force which causes the teeth 25 to firmly interlock is exerted on the cartridge parts. The second spring 29 will be referred to hereinafter as the "front spring", of which one embodiment is shown in Fig. 5. The spring 29 has a rectangular opening 32 therein defined in part by a pair of shorter edges 31. When the cartridge 2 is in the closed position, the spring 29 extends between wedge-shaped projections 30 which are positioned within the opening 32, the edges 31 engaging the sides of the projections 30 which face away from the plane of separation of the cartridge. In order to constitute a simple means of compensating for slight differences in length of the front spring 29 and/or housing tolerances which occur during manufacture, these outwardly facing sides of the projections 30 are steeply inclined enabling the edges 31 to contact different parts of these steeply inclined sides depending on the distance between the two edges 31 of the opening 32 and on the distance between the two projections 30 when the cartridge 2 is in the closed position. The rectangular opening 32 in the spring 29 is so dimensioned that at least part of the tape roll 18 can pass therethrough without the turns of the tape pack or the leader tape coming into contact with the spring. The spring 29 in the relaxed state is slightly bowed, so that it bears against the inside of the cartridge front 17 after it has been fitted in the cartridge, a further retaining force being therefore applied to the teeth 25 when the cartridge 2 is in the closed position. In order to open the cartridge 2, projections 11 (see Fig. 1) pass through the apertures or slots 34 in the front wall of the cartridge opposite the ends of the spring 29, so that the latter are bent back and thus lifted clear of the projections 30. If the cartridge parts are now swung apart as described, smaller projections 35 engage the edges 31 of the spring 29, thus limiting the opening angle. The less steeply inclined sides of the wedge shaped projections 30 which face towards the plane of separation enable the curved ends of the spring 29 to readily slide up and over the projections 30 when the cartridge is closed.

As can be seen from Fig. 2, the springs 27 and 29 are confined so narrowly over their entire length inside the cartridge 2 that even slight bending or warping of the cartridge in the plane of separation of the cartridge parts causes the springs 27 and 29 to bear against the inner surfaces of the lower and upper cartridge walls, providing sufficiently strong resistance thus opposing any further bending or warping.

The spring 29 may also be designed in any other suitable manner from resilient material, for example it may be in the form of a rectangular loop of wire. It is not absolutely necessary to provide an aperture in the spring 29: an elongated, substantially U-shaped spring member would also be suitable. The spring 29 can be readily inserted subsequently in the otherwise complete cartridge 2. Using special tools, it is also possible to remove the spring 29, for example, in order to replace it, to exchange the tape roll 18 or to repair the cartridge.

To compensate for varying pack diameters due to variations in the thickness of the tape used and/or to different lengths of tape (for example in the case of pre-recorded cartridges), a spring 36 (preferably made of a plastics material such as polyester) may be inserted in each half of the housing between projections 37 provided on each of the cartridge parts, the position of the springs being governed by the size

of the full pack.

When the cartridge 2 is closed, the periphery of the roll 18 is always in contact with these springs 36. As a result, the roll 18 is effectively held together and the leader tape 20 cannot detach itself from the roll.

In an advantageous embodiment of these retaining springs, they are provided with flanged edges (not shown) which embrace the tape roll at the periphery. As may be seen from Fig. 4, the springs 36 are not in contact with the periphery of the roll when the cartridge is open.

A comparison of the positions of the tape roll 18 in Figs. 3 and 4 shows that the roll 18 in the latter drawing has already been pushed out of the aperture 38 and has reached a position in which it makes contact with the peripheral surface of a drive member 39 (shown diagrammatically in the form of a semi-circle) of a tape-handling apparatus which drives two tape packs in the tape handling apparatus operating on the contact-winding principle. In apparatus of this type, in order to maintain adequate compressive forces between the drive member — which will be referred to hereinafer as the "capstan" — and the tape packs, it is necessary for the packs to advance and retreat relative to the capstan during feeding of the tape to take the decreasing and increasing pack diameters into account. In an apparatus of this type, the shafts carrying the tape packs are advantageously so mounted that they can be radially displaced via springs toward and away from the capstan.

The shaft 40 which carries the hub 15 is mounted in the described manner so as to be displaceable along the central axis 41 of the cartridge toward the capstan 39. The hub 15 is thus displaced within the sector between the cartridge parts via the shaft 40. The roll 18 is a full tape pack from which the leading end of the leader 20 (shown in Fig. 7) is peeled by means of a peeling blade 42. The leader 20 is then guided around the capstan 39 by guide means not shown here and fastens itself to a second hub to commence the formation of a take-up roll (not shown), the tape being scanned by scanning means (e.g. a record/play-back head — not shown) as it is fed from the supply roll to the take-up roll. The leader 20 is made of a plastics film which is usually thicker than the magnetic tape itself and is spliced to the latter by known means. The cartridge design ensures that the leader 20 inside the cartridge 2 cannot detach itself from the roll; particularly the springs 36 which hold the turns of the roll together play a big part in achieving this. The distance between the periphery of the roll of tape and the inwardly facing surface of a cylindrical wall of the cartridge which surrounds the roll of tape is advantageously such that the leader remains in contact with the periphery of the roll. Similarly, the other spaces between the roll and cartridge parts are so dimensioned that the leader tape cannot jam in the cartridge or detach itself from the roll when the roll is mistakenly turned in the opposite direction, even if the end of the leader tape is standing slightly away from the periphery of the roll.

Detachment of the leader tape 20 from the roll prior to threading on the tape-handling apparatus would give rise to disturbances in predominantly automatic threading operations. After the magnetic tape has been completely unwound, the empty hub 15 bears against the periphery of the capstan. Rewinding of the magnetic tape from the takeup roll onto hub 15 of the cartridge 2 can then be effected until the maximum pack diameter has been achieved.

Referring to the embodiments described above, it will be seen that the most important advantages of the cartridge and the tape-handling apparatus of the present invention are that, owing to the design of the cartridge, the tape pack, before the cartridge is placed in position on the apparatus is effectively protected against all external influences such as dust, dirt and mechanical damage, that operation of the cartridge, after it has been placed in position on the aparatus, is both reliable and largely automatic without there being any risk of the cartridge or the tape-handling apparatus being damaged and that the cartridge as well as the components of the receiving means for the cartridge can be mass-produced easily and economically. Another important advantage over the state of the art is that the cartridge is firmly locked on the tape-handling apparatus and only the roll of tape is displaced. The simple design of the cartridge and its simple mode of operation on the apparatus makes a simple and cheap loading mechanism possible.

Notwithstanding the above-described embodiment of the invention, the cartridge described here can also be produced without aperture 44 for the admission of a spindle or shaft. Nor is it necessary for the width of the magnetic tape to be less than the pack diameter. Further embodiments of the cartridges and tape transport apparatus for use therewith are conceivable within the scope of the appendant claims, which embodiments are also claimed.

WHAT WE CLAIM IS:—

1. A cartridge for a recording medium in tape or strip form, comprising a housing and a roll of tape enclosed within the

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of the full pack.

When the cartridge 2 is closed, the periphery of the roll 18 is always in contact with these springs 36. As a result, the roll 18 is effectively held together and the leader tape 20 cannot detach itself from the roll.

In an advantageous embodiment of these retaining springs, they are provided with flanged edges (not shown) which embrace the tape roll at the periphery. As may be seen from Fig. 4, the springs 36 are not in contact with the periphery of the roll when the cartridge is open.

A comparison of the positions of the tape roll 18 in Figs. 3 and 4 shows that the roll 18 in the latter drawing has already been pushed out of the aperture 38 and has reached a position in which it makes contact with the peripheral surface of a drive member 39 (shown diagrammatically in the form of a semi-circle) of a tape-handling apparatus which drives two tape packs in the tape handling apparatus operating on the contact-winding principle. In apparatus of this type, in order to maintain adequate compressive forces between the drive member — which will be referred to hereinafer as the "capstan" — and the tape packs, it is necessary for the packs to advance and retreat relative to the capstan during feeding of the tape to take the decreasing and increasing pack diameters into account. In an apparatus of this type, the shafts carrying the tape packs are advantageously so mounted that they can be radially displaced via springs toward and away from the capstan.

The shaft 40 which carries the hub 15 is mounted in the described manner so as to be displaceable along the central axis 41 of the cartridge toward the capstan 39. The hub 15 is thus displaced within the sector between the cartridge parts via the shaft 40. The roll 18 is a full tape pack from which the leading end of the leader 20 (shown in Fig. 7) is peeled by means of a peeling blade 42. The leader 20 is then guided around the capstan 39 by guide means not shown here and fastens itself to a second hub to commence the formation of a take-up roll (not shown), the tape being scanned by scanning means (e.g. a record/play-back head — not shown) as it is fed from the supply roll to the take-up roll. The leader 20 is made of a plastics film which is usually thicker than the magnetic tape itself and is spliced to the latter by known means. The cartridge design ensures that the leader 20 inside the cartridge 2 cannot detach itself from the roll; particularly the springs 36 which hold the turns of the roll together play a big part in achieving this. The distance between the periphery of the roll of tape and the inwardly facing surface of a cylindrical wall of the cartridge which surrounds the roll of tape is advantageously such that the leader remains in contact with the periphery of the roll. Similarly, the other spaces between the roll and cartridge parts are so dimensioned that the leader tape cannot jam in the cartridge or detach itself from the roll when the roll is mistakenly turned in the opposite direction, even if the end of the leader tape is standing slightly away from the periphery of the roll.

Detachment of the leader tape 20 from the roll prior to threading on the tape-handling apparatus would give rise to disturbances in predominantly automatic threading operations. After the magnetic tape has been completely unwound, the empty hub 15 bears against the periphery of the capstan. Rewinding of the magnetic tape from the takeup roll onto hub 15 of the cartridge 2 can then be effected until the maximum pack diameter has been achieved.

Referring to the embodiments described above, it will be seen that the most important advantages of the cartridge and the tape-handling apparatus of the present invention are that, owing to the design of the cartridge, the tape pack, before the cartridge is placed in position on the apparatus is effectively protected against all external influences such as dust, dirt and mechanical damage, that operation of the cartridge, after it has been placed in position on the aparatus, is both reliable and largely automatic without there being any risk of the cartridge or the tape-handling apparatus being damaged and that the cartridge as well as the components of the receiving means for the cartridge can be mass-produced easily and economically. Another important advantage over the state of the art is that the cartridge is firmly locked on the tape-handling apparatus and only the roll of tape is displaced. The simple design of the cartridge and its simple mode of operation on the apparatus makes a simple and cheap loading mechanism possible.

Notwithstanding the above-described embodiment of the invention, the cartridge described here can also be produced without aperture 44 for the admission of a spindle or shaft. Nor is it necessary for the width of the magnetic tape to be less than the pack diameter. Further embodiments of the cartridges and tape transport apparatus for use therewith are conceivable within the scope of the appendant claims, which embodiments are also claimed.

WHAT WE CLAIM IS:—

1. A cartridge for a recording medium in tape or strip form, comprising a housing and a roll of tape enclosed within the

housing whereby a part of the peripheral surface of the roll can make contact with a drive member associated with a tape-handling apparatus to be used with the tape subsequent to insertion of the cartridge in means provided in the apparatus for receiving the cartridge, wherein the housing consists of two parts of substantially equal size which are pivotally connected together by connecting means in such a way that the said two housing parts, when the cartridge is in a closed position, completely enclose the roll of tape, and can be swung apart to open the cartridge, so that, when the cartridge is in an open position, at least part of the peripheral surface of the roll of tape is exposed for rotation by the drive member of the tape-handling apparatus.

2. A cartridge according to claim 1, wherein there is provided at least one aperture in the cartridge and in a hub on which the roll of tape is wound for the admission of a spindle associated with the tape-handling apparatus.

3. A cartridge according to claim 1 or 2, wherein the connecting means comprise at least one spring means which holds the housing parts together.

4. A cartridge according to claim 1 or 2, wherein the connecting means comprise spring means consisting of a first spring arranged adjacent to the point at which the housing parts pivot and a second spring arranged adjacent to those sections of the housing parts which described the largest arc during the pivoting movement of the housing parts during opening of the cartridge, both the first and the second spring holding the housing parts together in the closed position of the cartridge.

5. A cartridge according to claim 4, wherein the second spring is an element made of resilient material and having an opening through which at least part of the roll of tape can project in the open position of the cartridge, the said element cooperating in the closed position of the cartridge, with a projection on each housing part, in order to keep the cartridge closed and, in the open position of the cartridge, with a projection on each housing part so as to limit the pivoting angle of the housing parts when opening the cartridge.

6. A cartridge according to any of claims 1 to 5, wherein the housing parts are provided in the region where they meet to close the cartridge with means which form a substantially dustproof seal for the closed cartridge and impart rigidity to the cartridge in all positions of the housing parts when the cartridge is closed.

7. A cartridge according to claim 6, wherein said sealing and rigidity-imparting means include teeth on each housing part in the region where the housing parts meet to close the cartridge.

8. A cartridge according to claim 6, wherein said sealing and rigidity-imparting means include teeth in the form of over- and underlapping portions of the housing parts in the region where they meet.

9. A cartridge according to any of claims 1 to 8, wherein resilient members are provided inside the cartridge which make contact with part of the peripheral surface of the roll of tape when the cartridge is closed.

10. A cartridge according to claim 9, wherein the said resilient members consist of strips of elastic material which are held between projections on the housing parts.

11. A cartridge according to claim 10, wherein a plurality of projections are provided at different positions, so that tape packs of different maximum diameter can be held together by the said strips.

12. Tape-handling apparatus when used with a cartridge for a recording medium in tape or strip form according to any of claims 1 to 11, which apparatus consists essentially of cartridge receiving means, a drive member for rotating the roll of tape and at least one scanning means for scanning the tape, wherein the cartridge receiving means consists essentially of a split base portion having two parts and a spindle passing between said parts, and engaging members so arranged on the base portion that they engage in apertures in the cartridge housing parts at predetermined points when the cartridge is placed in position on the base portion, and the parts of the base portion and the engaging members can be swung apart by means of a pivoting mechanism to open the cartridge as the parts of the base portion separate.

13. In combination, a cartridge for a recording medium in tape or strip form, and a tape-handling apparatus having scanning means for scanning the tape, which cartridge is operable and closable and consists of a housing and a roll of tape wound on a hub enclosed within the housing, the roll of tape, after the closed cartridge has been located in cartridge receiving means of the apparatus and has been opened, can be brought into a position in which its peripheral surface makes contact with a drive member of the apparatus, wherein the housing consists of two parts of substantially equal size which are pivotally connected to one another by connecting means in such a way that, when the cartridge is closed, the housing parts are held together and the roll of tape is completely enclosed and that, after the cartridge has been opened, the roll of tape is at least partially accessible from outside

(16)

the cartridge, and wherein the means for receiving the cartridge consists essentially of a split base portion with an aperture which allows a spindle of the apparatus to enter an aperture in the hub the split base portion having two parts with the spindle located therebetween and being capable of being swung apart by a pivoting mechanism, in the apparatus, after engaging members on the base portion have engaged apertures in the cartridge housing parts to open the cartridge, so that at least part of the peripheral surface of the roll of tape is exposed for rotation by the drive member.

14. A tape cartridge for use with a tape handling apparatus having a tape driving capstan, a spindle mounted for rotation and also for movement transversely to its axis towards said capstan, and cartridge receiving means provided with cartridge engaging members and cartridge opening means, said tape cartridge comprising a roll of tape wound on a hub, a housing split into two parts of substantially equal size and having means pivotally connecting said two housing parts to allow movement of said two parts between a closed position in which said housing encloses said roll of tape, and an open position in which at least a part of the peripheral surface of said roll of tape is exposed to permit engagement therewith of said tape driving capstan, said housing parts having apertures permitting entry therethrough of said engaging members, spring means in said housing which urge said housing parts against each other towards the closed position, and means in said housing cooperating with said housing or parts thereof for normally latching said housing parts together in said closed position, for limiting the pivoting angle of said parts in said open position, and for maintaining the rigidity of the cartridge in its closed and open positions, said cooperating means, upon engagement of the cartridge housing parts by said engaging members incident to said entry, unlatching the housing parts to permit said parts to be pivotally moved apart to the open position on actuation of said cartridge opening means and hence said roll of tape to be moved, in response to the transverse displacement of said spindle, away from the pivoting axis of the housing parts and towards said capstan for engagement therewith.

15. A tape cartridge according to claim 14, in which said hub has an opening which, in the closed position of the cartridge, is located for access, through a further aperture in said housing, by said spindle when said cartridge is placed in a direction generally axially of said hub in a predetermined position on said cartridge receiving means.

16. A tape cartridge according to claim 15, comprising holding means positioned within said housing and which in the closed position of the cartridge holds the roll of tape so that the opening of the hub is located for access by said spindle.

17. A magnetic tape cartridge substantially as hereinbefore described with reference to, and as illustrated in, Figures 1 to 6 of the accompanying drawings.

18. A tape-handilng apparatus for use with a cartridge of recording medium in tape or strip form having a cartridge receiving means substantially as hereinbefore described with reference to, and as illustrated in Figure 1 of the accompanying drawings.

19. A magnetic tape cartridge as claimed in claim 17 including a roll of tape as illustrated in Figure 7 of the accompanying drawings.

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Printed for Her Majesty's Stationery Office by The Tweeddale Press Ltd., Berwick-upon-Tweed, 1977.
Published at the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.