

TAPE FEEDING DEVICE1) Field of the Invention

This invention relates to a tape feeding device wherein a brake member for applying a braking force to a reel receiver is associated with a switch operating member.

2) Description of the Prior Art

A conventional tape feeding device normally includes a brake member which is normally held in engagement with a pair of reel receivers under a biasing force of a resilient member. When an operating mode selecting member is manually operated to move forwardly, a brake operating plate provided between the left and right reel receivers is moved forwardly so that the brake member is moved away from the reel receivers against the biasing force of the resilient member thereby to cancel the brakeage of the brake member against the reel receivers. To the contrary, if a stopping operating member is manually operated to move forwardly, the brake operating plate is returned to its initial condition whereupon the brake member is moved back by the biasing force of the resilient member until

it is engaged with the reel receivers again to brake the reel receivers. Reference may be had to Japanese Utility Model Laid-Open No. 28124/1986 published on February 20, 1986 and Japanese Patent Laid-Open No. 5 82313/1986 published on April 25, 1986.

In such a tape feeding device, however, upon forward operation of the operating mode selecting member, the operating force of the brake member is applied directly to the operating mode selecting member. 10 This makes manual operation of the operating mode selecting member heavy. Besides, the tape feeding device involves a relatively large number of parts and is complicated in structure due to employment of the brake operating plate.

15 SUMMARY OF THE INVENTION

It is an object of the present invention to provide a tape feeding device which is simple in structure and easy in maintenance.

In order to attain the object, according to the 20 present invention, there is provided a tape feeding device which includes a switch operating member which is mounted on a chassis and displaced in response to a forward operation of an operation mode selecting member to turn a tape feeding motor switch on,

an arresting member for arresting the operation mode
selecting member at a forwardly moved position, a
stopping operating member for canceling the arrested
condition of the operation mode selecting member by said
5 arresting member, and a single brake member which is
engaged simultaneously with both of a pair of reel
receivers to stop rotation of the reel receivers when
the operation mode selecting member is moved back to its
returned position and which is disengaged simultaneously
10 from the reel receivers to allow rotation of the reel
receivers when the operation mode selecting member is
moved forwardly to its forwardly moved position,
characterized in that said brake member is made of a
synthetic resin and held in engagement with the switch
15 operating member, and a resilient element for normally
biasing the brake member in a given direction to engage
with the reel receivers is formed on the brake member
and held in contact with a fixed portion of the chassis,
whereby the brake member is moved away from the reel
20 receivers against the biasing force of said resilient
element when said switch operating member is displaced
upon forward operation of the operation mode
selecting member.

With the tape feeding device, since the brake
25 member is held in engagement with the switch operating

plate and the brakeage of the reel receivers by the
brake member is canceled by forward movement of the
switch operating member, such a brake operating plate as
in a conventional arrangement for operating a brake
5 member is eliminated and hence the tape feeding device
is simplified in structure.

A specific embodiment of the present invention
will now be described in detail by way of example with
reference to the accompanying drawings.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a tape feeding
device in its rest condition showing a preferred
embodiment of the present invention; and

FIG. 2 is a perspective view of the tape feeding
15 device of FIG. 1 when an operation mode selecting member
is in its forwardly moved position.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

Referring to FIGS. 1 and 2, there is shown a tape
feeding device embodying the present invention. The
20 tape feeding device shown includes an operation mode
selecting member 1 and a stopping operating member 2
mounted in a juxtaposed relationship for back and forth
movement on a chassis 21 and normally biased each in one
direction by a spring not shown. The tape feeding

device further includes a switch operating member 3 and an arresting member 4 mounted in an overlapping relationship on the chassis 21 for individual movement in the back and forth directions indicated by arrow marks A and B in FIGS. 1 and 2 substantially perpendicular to the direction of movement of the operation mode selecting member 1 and the stopping operating member 2. The switch operating member 3 is normally biased in the direction of the arrow mark B by a biasing force exerted by a resilient element or finger 16b of an arm 16 of a brake member 14 which will be hereinafter described while the arresting member 4 is normally biased in the direction of the arrow mark A by a torsion spring 12 mounted on the chassis 21.

The switch operating member 3 and the arresting member 4 are located in an overlapping relationship above and for individual engagement with the operation mode selecting member 1 and the stopping operating member 2. In particular, an engaging pin 5 is implanted on the operation mode selecting member 1 while a cam hole 6 is formed in the switch operating member 3. The engaging pin 5 of the operation mode selecting member 1 is fitted in the cam hole 6 of the switch operating member 3. The cam hole 6 is partly defined by an inclined slidably contacting face 6a formed on the

switch operating member 3 for sliding contact with the engaging pin 5 of the operation mode selecting member 1. When the operation mode selecting member 1 is manually pushed in in the rightward direction in FIG. 1, the

5 engaging pin 5 thereon is engaged with the inclined slidably contacting face 6a of the switch operating member 3 to move the switch operating member 3 in the direction of the arrow mark A against the biasing force of the resilient finger 16b of the brake member 14.

10 Another cam hole 7 is formed in the arresting member 4, and the engaging pin 5 of the switch operating member 1 is also fitted in the cam hole 7. The cam hole 7 is partly defined by an inclined slidably contacting face

15 7a formed on the arresting member 4 for sliding contact with the engaging pin 5 of the operation mode selecting member 1. When the operation mode selecting member 1 is manually pushed in in the rightward direction in FIG. 1, the engaging pin 5 thereon is engaged with the inclined

20 slidably contacting face 7a of the arresting member 4 to move the arresting member 4 in the direction of the arrow mark B against the biasing force of the spring 12. The cam hole 7 of the arresting member 4 is partly

25 defined also by an arresting face 7b formed in the rear of the inclined slidably contacting face 7a. When the arresting member 4 is thus returned in the direction of

the arrow mark A by the biasing force of the spring 12 as shown in FIG. 2 after the operation mode selecting member 1 is pushed in to its fully pushed in position, the engaging pin 5 of the operation mode selecting member 1 is now engaged with and arrested by the arresting face 7b of the arresting member 4 so that the operation mode selecting member 1 will thereafter be arrested at its fully pushed in position.

Another engaging pin 8 is implanted on the stopping operating member 2 while a rectangular perforation 9 is formed in the switch operating member 3. The engaging pin 8 of the stopping operating member 2 extends upwardly through and above the perforation 9 of the switch operating member 3 and is fitted in a cam hole 10 formed in the arresting member 4. The cam hole 10 is partly defined by an inclined slidably contacting face 10a formed on the arresting member 4 for sliding contact with the engaging pin 8 of the stopping operating member 2. When the stopping operating member 2 is manually pushed in in the rightward direction in FIG. 1, the engaging pin 8 thereon is slidably contacted with the slidably contacting face 10a of the arresting member 4 to move the arresting member 4 in the direction of the arrow mark B against the biasing force of the spring 12.

A leaf switch 13 serving as a tape feeding motor switch is mounted on the chassis 21 by a mounting means not shown such that it is normally in the off state but is turned on when the switch operating member 3 is moved forwardly, that is, in the rightward direction in FIGS. 1 and 2. The leaf switch 13 has a pair of terminals 13a and 13b, and the terminal 13a of the leaf switch 13 is located for abutment by the end face of the switch operating member 3. When the switch operating plate 3 is moved forwardly in the direction of the arrow mark A upon pushing in operation of the operation mode selecting member 1, the terminal 13a of the leaf switch 13 is contacted with the other terminal 13b so that the leaf switch 13 is turned on.

The brake member 14 mentioned hereinabove is made of a synthetic resin and is provided for braking a pair of reel receivers 15. The brake member 14 has a substantially U-shape in plan with two arms 16 and 17 and has a pivot shaft 14a secured to an intermediate portion thereof. The pivot shaft 14a is fitted in a round hole (not shown) formed in the chassis 21 so that the brake member 14 is supported for pivotal motion on the chassis 21. The brake member 14 further has a curved coming off preventing element or finger 14b formed at an intermediate portion thereof adjacent the

pivot shaft 14a. The coming off preventing finger 14b extends downwardly through a rectangular hole 21a formed in the chassis 21 and resiliently contacts with a lower face of the chassis 21 adjacent the rectangular hole 21a to prevent coming off of the brake member 14 upwardly from the chassis 21. The brake member 14 has an extension 16a provided in a contiguous relationship to the arm 16 thereof, and the aforementioned resilient finger 16b is branched from an intermediate portion of the extension 16a of the brake member 14. The extension 16a of the brake member 14 is normally held in contact with the end of the switch operating member 3 in a little resiliently deformed condition while the resilient finger 16b is normally held in contact with a bent lug 11 provided uprightly at a side edge portion of the chassis 21. The resilient finger 16b is provided to exert, by suitable resiliency thereof, a force to pivot the brake member 14 in the clockwise direction around the pivot shaft 14a. A pair of engaging pawls 18 are provided at an intermediate portion of the arm 16 and an end portion of the other arm 17 of the brake member 14. In order to apply a braking force to the reel receivers 15, the arresting pawls 18 are normally held in engagement with outer toothed peripheries of a pair of reel bases 19 in the form of gears which are provided at

base ends of the reel receivers 15 as seen in FIG. 1 for coaxial, normally integral rotation with the reel receivers 15 via individual friction mechanisms not shown.

5 Subsequently, general operation of the tape feeding device having such a construction as described above will be described.

 When the operation mode selecting member 1 is manually pushed in against the biasing force of the
10 spring not shown, a magnetic head not shown is advanced and contacted with a face of a tape in a tape cassette (not shown) loaded in position in the tape feeding device while the switch operating member 3 is moved forwardly in the direction of the arrow mark A.

15 Thereupon, the leaf switch 13 is turned on so that a tape feeding motor not shown starts its rotation. Meanwhile, the brake member 14 which is held in engagement with the end face of the switch operating member 3 is pivoted in the counterclockwise direction
20 around the pivot shaft 14a against the resilient restoring force of the resilient finger 16b of the brake member 14 to disengage the engaging pawls 18 thereon from the gears 19 of the reel receivers 15 as seen in FIG. 2. Such pivotal motion involves an increase in
25 amount of resilient deformation of the resilient finger

16b of the brake member 14.

The operative condition of the tape feeding device is established in this manner and is thereafter maintained due to the engagement between the arresting
5 face 7b of the arresting member 4 and the engaging pin 5 of the operation mode selecting member 1.

On the other hand, if the stopping operating member 2 is manually pushed in when the tape feeding device is in the operative condition as described above,
10 the arresting member 4 is returned in the direction of the arrow mark B so that the engaging pin 5 of the operation mode selecting member 1 is released from the engaging face 7b of the arresting member 4. The operation mode selecting member 1 is consequently
15 returned to its initial or home position by the biasing force of the return spring not shown. Thereupon, the switch operating plate 3 is allowed to be returned in the direction of the arrow mark B by the restoring force of the resilient finger 16b of the brake member 14
20 thereby to turn the leaf switch 13 off. The brake member 14 is simultaneously pivoted in the clockwise direction around the pivot shaft 14a until the arresting pawls 18 thereon are engaged with the gears 19 to stop rotation of the reel receivers 15.

25 With the tape feeding device having such a

construction as described above, a following effect can be anticipated. In particular, since the brake member 14 is operated by the switch operating plate 3 for operating the leaf switch 13, such a special member for canceling the brakeage by the brake member as in a conventional arrangement is not required and reduction in number of parts can be anticipated. Accordingly, the tape feeding device is simplified in construction.



CLAIMS:

1. A tape feeding device which includes a switch operating member which is mounted on a chassis and displaced in response to a forward
5 operation of an operation mode selecting member to turn a tape feeding motor switch on, an arresting member for arresting said operation mode selecting member at a forwardly moved position, a stopping operating member for canceling the arrested condition of said operation
10 mode selecting member by said arresting member, and a single brake member which is engaged simultaneously with both of a pair of reel receivers to stop rotation of said reel receivers when said operation mode selecting member is moved back to its returned position and which
15 is disengaged simultaneously from said reel receivers to allow rotation of said reel receivers when said operation mode selecting member is moved forwardly to its forwardly moved position, characterized in that said brake member is made of a synthetic resin and held in
20 engagement with said switch operating member, and a resilient element for normally biasing said brake member in a fixed direction to engage with said reel receivers is formed on said brake member and held in contact with a fixed portion of said chassis, whereby said brake



member is moved away from said reel receivers against the biasing force of said resilient element when said switch operating member is displaced upon forward operation of said operation mode selecting member.

5 2. A tape feeding device as set forth in claim 1, characterized in that said brake member is mounted for pivotal motion around a fixed axis on said chassis and has a coming off preventing element provided at a location thereof near the fixed axis for preventing said
10 brake member from coming off from said chassis.

3. A tape feeding device substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.
