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PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Brake for Linear Measuring Instrument

We, QUENOT & CIE S.A.R.L. of Zone Industrielle Trépillot, 25 Besançon, Doubs, France, a French Body Corporate, 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:—

Linear measuring instruments of the ten meter type comprise a tape which is often metallic and which can be extracted from a casing or frame by pulling on its extremity and which is rewound into the casing or frame by actuating the handle fast on the winding drum of the tape.

Owing to its flexibility, the tape behaves practically like a spiral spring which is contracted when the tape is wound.

The interruption of the pulling exerted to unwind the tape frees the extremity thereof which, by this spring effect, tends to retract and occupy the space left free inside the casing or frame.

The portion of the wound tape tends to uncoil so that the outer coils strike against the interior of the casing or the frame, and even a complete separation of all the wound coils from the winding drum can occur.

Such happenings necessitate unwanted re-winding of the tape, in which the crank must be turned freely for several turns to overcome the looseness of the coils in the case, the instrument being inefficient and a source of annoyance to the user.

To eliminate these disadvantages, it has been suggested to provide the casing or the frame with a brake constituted by a flexible metallic strip the centre of which is secured on the shaft of the drum and the two free extremities of which bear on a flange of the casing or the frame at its periphery, the central part of the two branches of the strip being curved to bear on the edge of the wound coils of the tape.

This device has the disadvantage in that braking takes place only on the central part of the wound coils and not on the periphery. Moreover, the rubbing of the metallic edges of the tape on the strip which is also metallic causes a rapid deterioration of the edge of the tape and of the protective enamel of the tape.

In order to prevent the abrupt rotation of the drum by traction of the tape tending to relax, the said drum has been braked by interposing on its rotating shaft a metallic elastic washer. In this manner there has been practically eliminated all danger of the wound coils becoming loose. However no suitable solution has yet been found to eliminate the loosening of the outer coils of the tape.

The object of the present invention is to provide improved braking means for the metallic tape of a linear measuring instrument which does not have the disadvantages of known braking means.

The main aspect of the invention comprises a linear measuring instrument comprising a tape wound around a drum in a casing or frame provided with a tape outlet and braking means comprising curved resilient member mounted in said casing or frame and which engages the edge of the outer coils of the tape, said engagement being maintained by elastic deformation of said member upon displacement of the outer coil of the tape by winding or unwinding.

The invention will be clearly understood from the following description of certain non-limiting embodiments shown in the accompanying drawings in which:

Figure 1 is a schematic view in diametrical cross-section of an instrument according to the invention;

Figure 3 shows in cross-sectional view an instrument similar to that shown in Figure 1

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provided with an additional braking device for the drum;

5 Figure 3 shows a braking device for use in an instrument similar to that in Figure 2;

Figure 4 is a schematic view of a modification of the invention designed for an instrument having a closed casing;

10 Figure 5 is a diametrical cross-section of the modification shown in Figure 4.

15 With reference to Figure 1, tape 1 is wound on drum 2, the assembly being enclosed in a frame 3. Tape 1 is withdrawn from frame 3 by pulling on its free end through an outlet (not shown).

The brake according to the invention comprises at least one branch 8 of flexible material, for example, of synthetic material.

20 The various branches 8 can have a common central part 9 perforated by a hole for mounting on the shaft of drum 2. The ends 10 of the branches 8 are bent as shown at 11 and are each provided on this bent portion with a traversing groove 12 which 25 accommodates cross-pieces 13 of frame 3 thus preventing the turning of branches 8 of the braking device and limiting the play of ends 10 with respect to the frame.

30 There have been shown in dotted lines various positions of the branches 8 depending on the extent of unwinding of tape 1 and as it will be noted, branches 8 in every case bear on the edge of the last coils of tape 1.

35 The manufacture of branches 8 with a synthetic material, for example, acetal resins such as those sold under the trademark name of "Delrin" or with super-polyamide such as those sold under the name of "Nylon", 40 makes possible a sufficiently efficient braking without risk of damaging the tape.

There is thus provided a portable linear measuring instrument with a metallic tape wound on a drum in which the outer coil of the tape is efficiently braked.

45 Reference is now made to Figures 2 and 3.

Here, central part 9 is provided with elastic branches 15 which bear on side 14 and urge said central part 9 against the flange 20 of drum 2. These branches 15 can be made of 50 steel or of suitable synthetic material. It can be seen that when a tape is wound onto drum 2, branches 8 will bear against the edges of the tape and form a braking effect on

the tape in addition to the braking effect on the drum provided by branches 15.

Reference is now made to Figures 4 and 5. In the case of an enclosed casing such as 16 there can be used, instead of branches such as 8, branches 17 which do not have an upper bent back part 11 nor a groove 12. 60 The extremity 18 of each branch 17 preferably has a shape corresponding to the shape of the periphery of casing 16. Evidently, the central part 9 of branches 17 can be provided with branches 15 as previously 65 described.

WHAT WE CLAIM IS:—

1. A linear measuring instrument comprising a tape wound around a drum in a casing or frame provided with a tape outlet and braking means comprising a curved resilient member mounted in said casing or frame and which engages the edge of the outer coils of the tape, said engagement being maintained by elastic deformation of said member upon displacement of the outer coil of the tape by winding or unwinding.

2. Instrument as claimed in claim 1, wherein said resilient member is mounted on the shaft of said drum and has a plurality of arms symmetrically disposed thereto.

3. Instrument as claimed in claim 2, wherein the central part of the member is in engagement with a flange on the drum; at least one of the arms is in engagement with the outer coil of the tape, and at least one of the arms bears against the casing or frame to provide a braking effect on said drum flange.

4. Instrument as claimed in claim 2 or 3, wherein the extremities of the arms in engagement with the outer coil of the tape, moveably engage the frame in a manner to prevent rotation of the resilient member in the direction of winding or unwinding of the tape but to allow transverse movement of the arms.

5. Instrument as claimed in the invention substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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provided with an additional braking device for the drum;

Figure 3 shows a braking device for use in an instrument similar to that in Figure 2;

Figure 4 is a schematic view of a modification of the invention designed for an instrument having a closed casing;

Figure 5 is a diametrical cross-section of the modification shown in Figure 4.

With reference to Figure 1, tape 1 is wound on drum 2, the assembly being enclosed in a frame 3. Tape 1 is withdrawn from frame 3 by pulling on its free end through an outlet (not shown).

The brake according to the invention comprises at least one branch 8 of flexible material, for example, of synthetic material.

The various branches 8 can have a common central part 9 perforated by a hole for mounting on the shaft of drum 2. The ends 10 of the branches 8 are bent as shown at 11 and are each provided on this bent portion with a traversing groove 12 which accommodates cross-pieces 13 of frame 3 thus preventing the turning of branches 8 of the braking device and limiting the play of ends 10 with respect to the frame.

There have been shown in dotted lines various positions of the branches 8 depending on the extent of unwinding of tape 1 and as it will be noted, branches 8 in every case bear on the edge of the last coils of tape 1.

The manufacture of branches 8 with a synthetic material, for example, acetal resins such as those sold under the trademark name of "Delrin" or with super-polyamide such as those sold under the name of "Nylon", makes possible a sufficiently efficient braking without risk of damaging the tape.

There is thus provided a portable linear measuring instrument with a metallic tape wound on a drum in which the outer coil of the tape is efficiently braked.

Reference is now made to Figures 2 and 3.

Here, central part 9 is provided with elastic branches 15 which bear on side 14 and urge said central part 9 against the flange 20 of drum 2. These branches 15 can be made of steel or of suitable synthetic material. It can be seen that when a tape is wound onto drum 2, branches 8 will bear against the edges of the tape and form a braking effect on

the tape in addition to the braking effect on the drum provided by branches 15.

Reference is now made to Figures 4 and 5. In the case of an enclosed casing such as 16 there can be used, instead of branches such as 8, branches 17 which do not have an upper bent back part 11 nor a groove 12. The extremity 18 of each branch 17 preferably has a shape corresponding to the shape of the periphery of casing 16. Evidently, the central part 9 of branches 17 can be provided with branches 15 as previously described.

WHAT WE CLAIM IS:—

1. A linear measuring instrument comprising a tape wound around a drum in a casing or frame provided with a tape outlet and braking means comprising a curved resilient member mounted in said casing or frame and which engages the edge of the outer coils of the tape, said engagement being maintained by elastic deformation of said member upon displacement of the outer coil of the tape by winding or unwinding.

2. Instrument as claimed in claim 1, wherein said resilient member is mounted on the shaft of said drum and has a plurality of arms symmetrically disposed thereto.

3. Instrument as claimed in claim 2, wherein the central part of the member is in engagement with a flange on the drum; at least one of the arms is in engagement with the outer coil of the tape, and at least one of the arms bears against the casing or frame to provide a braking effect on said drum flange.

4. Instrument as claimed in claim 2 or 3, wherein the extremities of the arms in engagement with the outer coil of the tape, moveably engage the frame in a manner to prevent rotation of the resilient member in the direction of winding or unwinding of the tape but to allow transverse movement of the arms.

5. Instrument as claimed in the invention substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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