March 21, 1939. N. S. A. MATTSSON ET AL 2,151,130

TAPE REEL

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Fig. 1a

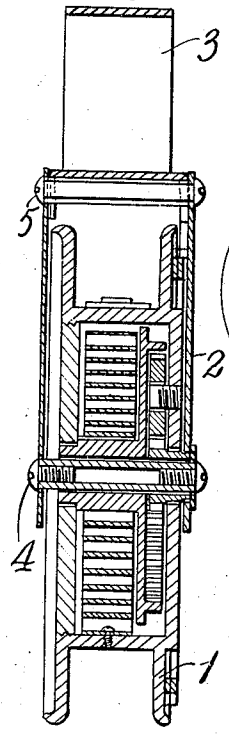
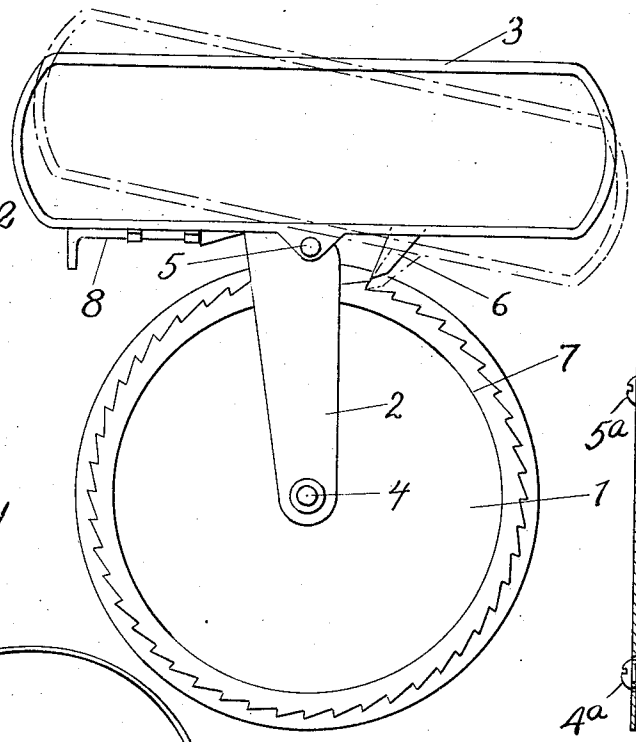
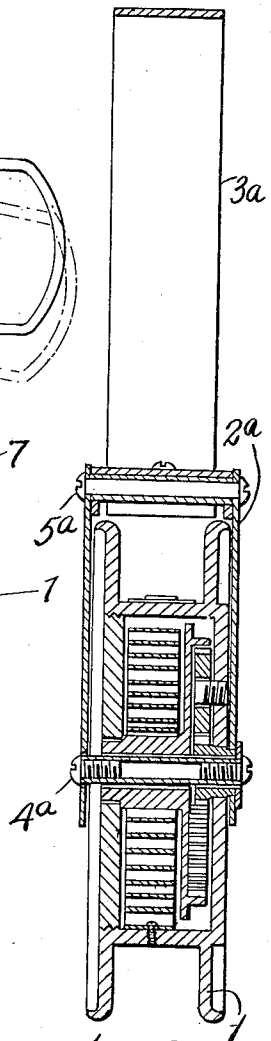


Fig. 1





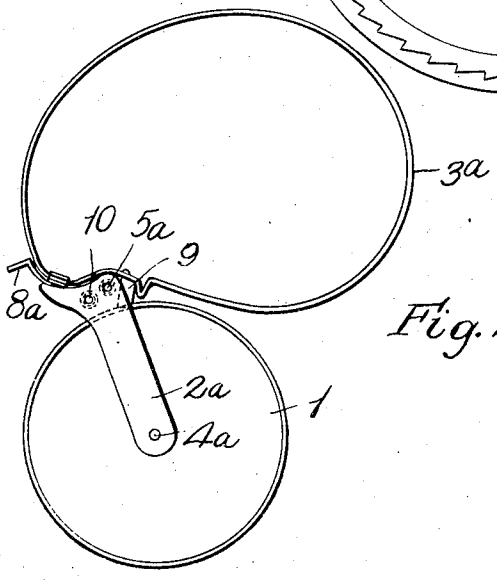


Fig. 2

Fig. 2a

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TAPE REEL

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Fig. 3

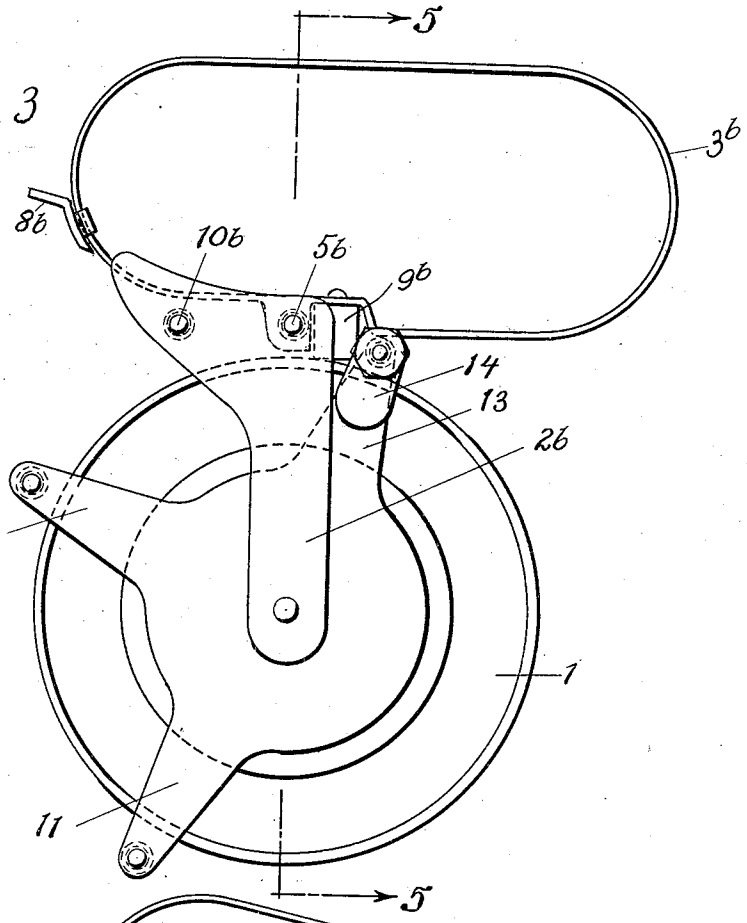
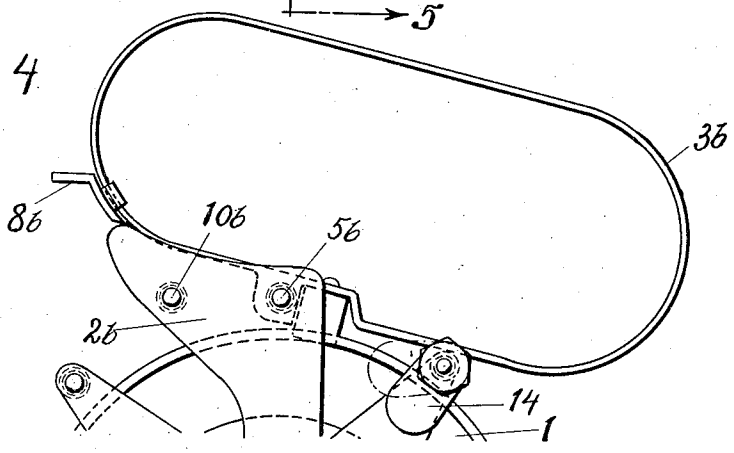


Fig. 4



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TAPE REEL

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Fig. 5

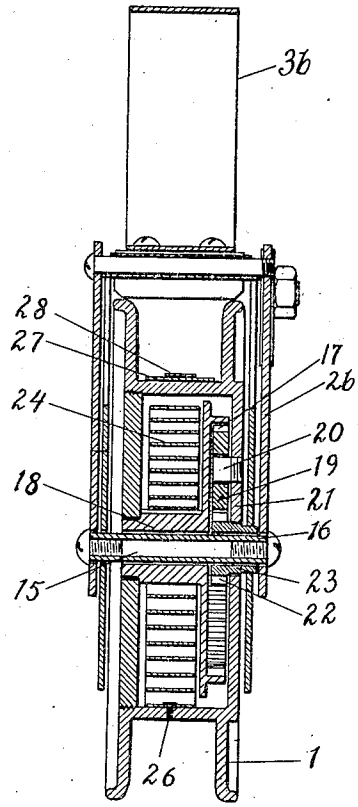


Fig. 6

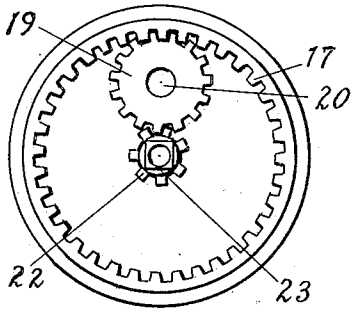


Fig. 7

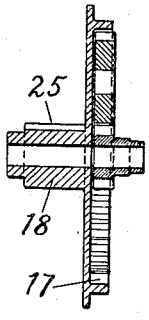


Fig. 8

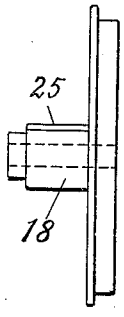
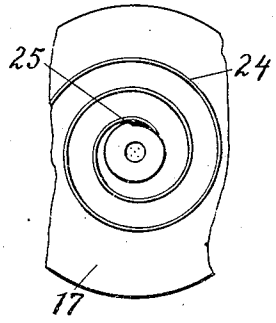


Fig. 9



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TAPE REEL

Nils Salomon Albert Mattsson and Karl Erik Dahlqvist, Kvitsleby, Sweden

Application January 8, 1936, Serial No. 58,042
In Sweden January 10, 1935

1 Claim. (Cl. 242—84.9)

Tape-reels hitherto known have some drawbacks, of which may be mentioned that a person while measuring, after the tape has been stretched out, must hold on to the inner end of the tape with one hand, while holding the tape-reel with the other hand, so that consequently both hands are occupied by the measuring.

According to the present invention this is avoided in that the tape-reel is rotatably mounted in a retaining-frame enclosing the same, at the upper end of which a handle is jointed, which is provided with a brake arrangement co-operating with the reel. This may for instance consist of a pawl attached to the handle, and arranged to co-operate with a ratchet-wheel, attached to the reel, or the brake arrangement may consist of a brake shoe attached to the handle, and arranged to co-operate with the reel.

The advantage is hereby gained, that a person can handle the tape-reel with one hand only, as one only has to move the handle forwards and downwards, in order to brake the reel.

Another inconvenience, which is inherent in the tape-reels hitherto known, is that one has to use abnormally large watch-springs for the rolling up of the tapes, for which reason only short tapes can be used, which is an inconvenience, for measuring of timber, where a great length of the tape is needed.

According to the present invention this inconvenience will be avoided in that the retaining-frame by way of the watch-spring is connected with the reel through a gear arrangement, whereby one, by means of a very short spring, can use a considerable length of tape, the unrolling of the tape at the same time being done very easily, and in such a manner, that the arrangement will work smoothly and pleasantly.

According to one form of the invention, one end of the watch-spring is attached to the reel and the other end of the same to a pinion, rotatably arranged in the reel, which pinion engages a gear rotatably arranged in the reel, which gear in its turn engages a gear, which is attached to the retaining-frame.

The retaining-frame may also be rotatably arranged in relation to the gear and the latter attached to one or several arms rotatably arranged in relation to the retaining-frame, the movement of which is limited by the retaining-frame.

One of the arms may be provided with a projection which may be readjusted in relation to the retaining-frame and, by means of which the braking effect may be regulated.

In order to prevent the watch-spring from breaking by too rapid unrolling of the tape, the inner end of the watch-spring is connected with the gear by means of a catch arrangement, which actuates the spring only by motion in one direction.

To prevent the tape from being torn apart by unrolling, the inner end of the tape is fixed to the reel by means of a bowlike spring enclosing the same, and which spring by violent pulling of the tape will be released at its inner end.

A locking device is slidably or dropably attached to the handle in order that the same when necessary may be locked in braking position relatively the tape-reel.

Some forms of the invention are illustrated in the accompanying drawings

Figure 1 shows a tape-reel in side elevation.

Figure 1*a* shows this tape-reel in section.

Figure 2 is a side view of a somewhat different tape-reel.

Figure 2*a* shows the tape-reel of Figure 2 in section;

Figure 3 shows another tape-reel in side elevation;

Figure 4 shows a portion of the tape-reel illustrated in Figure 3 in a different position;

Figure 5 is a section along the line 5—5 of Figure 3; and

Figures 6, 7, 8, and 9 illustrate various parts of the tape-reel shown in Figure 3.

Like reference numerals mark the same parts in the figures of the drawings. In Figure 1, **1** indicates the tape-reel, **2** the frame and **3** is the handle.

The tape-reel shown in Figure 1 comprises also a shaft **4**, which is rotatably mounted in the frame **2**. The reel **1** is rotatably mounted on the shaft **4**.

The handle **3** is pivotally mounted upon a shaft **5** carried by the upper end of the frame **2**, the movement of the handle **3** relatively to the frame **2** being limited by the upper end of the latter. A pawl **6** is attached to the handle **3** and is situated in front of the frame **2**. When the front part of the handle **3** is lowered and is brought into the position shown by broken lines in Figure 1, the pawl **6** will be brought into engagement with the teeth of a ratchet wheel **7**.

A tapered key **8** is attached to the lower side of the handle **3**. The key **8** may be moved relatively to the handle **3** and is used for locking the handle in its lowered position. The key **8** locks the handle by projecting between the frame **2** and the handle **3**.

The tape may be wound upon the reel 1 by any suitable means.

The device shown in Figure 2 comprises a tape-reel 1, rotatably mounted upon a shaft 4a, which is carried by a frame 2a. The frame 2a is pivotally connected by means of the pivot 5a with the handle 3a. A locking device 8a is carried by the handle 3a. Instead of the pawl shown in Figure 1, the handle 3a carries a brake shoe 9, which is adapted to engage a surface of the reel 1. A bolt 10 extends through the frame 2a and is used for limiting the movement of the handle 3a relatively to the frame 2a.

The tape-reel shown in Figures 3 to 9 comprises a reel 1 carried by a frame 2b, which is connected by means of the pivot 5b with the handle 3b carrying a locking device 8b. The frame 2b carries a bolt 10b used for limiting the movement of the handle 3b.

This tape reel is provided with three arms 11, 12, and 13. The arm 11 is used for holding one end of the tape when the latter is fully rolled up. The arm 12 is used for limiting the rearward movement of the frame 2b. The arm 13 carries a rotatable projection 14 and is used for limiting the forward movement of the frame 2b. The rotatable projection 14 is used for regulating the braking action of the brake shoe carried by the handle 3b.

As shown in Figures 5 to 9, a shaft 15 is mounted in the frame 2b and is provided with a bushing 16. A wheel 18 having inner teeth 17 is rotatably mounted on the bushing 16. The teeth 17 of the wheel 18 engage the teeth of a pinion 19, which is rotatably mounted upon a shaft 20 carried by the tape-reel casing 21 of the tape-reel 1.

The teeth of the pinion 19 also mesh with the teeth of another pinion 22 carried by a square, hollow shaft 23. Due to this arrangement, the pinion 22 is rotatable with the arms 11, 12, and 13. However, the pinion 22 is rotatable relatively to the bushing 16 upon which it is mounted.

The inner end of a coil spring 24, which is similar to that of a watch, is connected with the wheel 18 by means of a heel or member 25, as shown in Figures 7, 8, and 9. The heel 25 when rotated in a predetermined direction engages the rearwardly bent inner end of the coil spring 24. However, the heel 25 releases the spring 24 when it is rotated in the opposite direction.

The outer end of the spring 24 is connected with the tape-reel casing 21 by means of a screw 26. The tape-reel 1 with its casing 21 is rotatably mounted on the wheel 18 and the hollow shaft 23 of the pinion 22.

The operator uses the device by holding the handle 3b and unrolling the tape from the reel. By a suitable inclination of the handle 3b, the brake shoe 9b can be brought into engagement with the edge of the tape-reel 1 for braking the same, this braking action being adjustable by means of the projection 14.

The inner end of the tape 27 is held upon the tape-reel casing 21 by means of a bow-like spring 28. When the tape is unrolled, the tape-reel 1 is rotated. The pinion 22, however, which is connected with the arms 11, 12, and 13, is held in place when the projection 14 engages the frame 2b. Therefore, the pinion 19 will rotate the inner gear wheel 17. The spring 24 is thereby adjusted in accordance with the ratio of the gear wheels.

After the tape has been unrolled to the desired length, the handle 3b is tilted forward and then the brake shoe 9 engages the edge of the reel 1, causing the tape-reel to stop. When it is desired to roll up the tape, the handle is tilted backward. Then the tape-reel is released and the tape can be rolled on by the coil spring 24.

In the construction shown in Figure 3, the spring is of such length that when the outer end of the tape, which is provided with a ring, is stopped by the bolt at the end of the arms 11, the spring is still under tension, so that the arms 11, 12, and 13 are turned forward to the extent of some degrees.

The bolt at the end of the arms 12 is then adapted to prevent the rearward movement of the frame 2b further than up to the arms 12.

When the tape is pulled out, there is a rotation in the opposite direction and the bolt at the end of the arms 13 is stopped by the handle 3b, which is pivotally mounted in the frame 2b.

The bolt situated at the end of the arms 13 prevents the handle with its brake-shoe from folding down on the reel on account of the spring tension, thereby causing the bolt at the end of the arms 13 to press against the handle 3b. However, when the free end of the flexible handle is depressed, the arm 13 will be displaced and the brake-shoe will press against the wheel as shown in Figure 4 of the drawings.

The arms 11 are used as a stop for the free end of the tape, and they are also used as guides to prevent the shifting of the tape upon the reel.

As far as the slidable wedge-shaped device 8b is concerned, this device is caused to slide forward by the locking of the reel, whereby a greater space is provided between the bolt 10b and the handle 3. The arms 13 are then moved outwardly and the front part of the handle is lowered so that the brake-shoe is pressed against the reel and prevents its rotation.

The pinion 22 is provided with a square portion 23 co-operating with a square hole formed in the plate carrying the arms 11, 12, and 13 and is rotatably mounted upon the shaft 15 shown in Figure 5 and corresponding to the shafts 4 and 4a shown in Figures 1 and 2.

In the construction shown in Figure 3, the arms 11, 12, and 13 are fixed on one side to the square portion 23, so that the tension of the spring is transmitted to them, thus causing the bolt at one end of the arms 13 to rest against the handle 3. The other side of the arms is rotatably mounted on the shaft 15.

The frame 2b is rotatably mounted on both sides upon this shaft, thus causing the arms 13 to press against the handle 3b when the end of the tape rests against the bolt carried by the outer ends of the arms 11.

The constructions shown in Figures 1 and 2 are substantially similar, with the exception that in these constructions one side of the frame is fixed to the square portion which is connected to the pinion 22, while the other side is rotatably mounted upon the shaft.

It is obvious, that the invention may be varied in many respects, without departing from the spirit or scope of the invention.

What we claim is:

A tape-reel, comprising a handle, a frame, said handle being pivotally mounted upon said frame and being rotatable relatively thereto, braking means firmly connected with said handle, a reel having means engaged by said braking means

when said handle is tilted into a braking position, an arm rotatable relatively to said reel, means rotatably supporting said reel and said arm in said frame, a spring, means securing one end of said spring to said reel, and means connecting the other end of said spring to said arm, the movement of said arm being limited by said frame, said handle resting against said arm during the unrolling of the tape, whereby said handle is prevented from moving into the braking position by the increased tension of said spring.

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