June 16, 1931. C. G. KRONMILLER 1,809,940

TAPE DISPENSING DEVICE

Filed Dec. 22, 1926

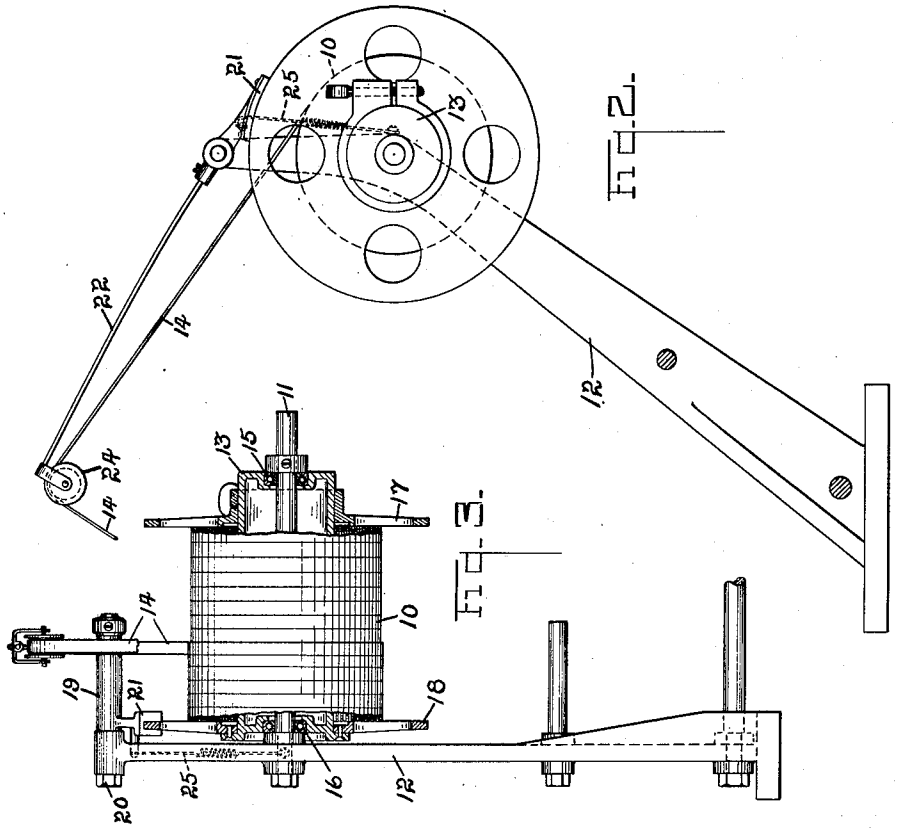


Fig. 2.

Fig. 3.

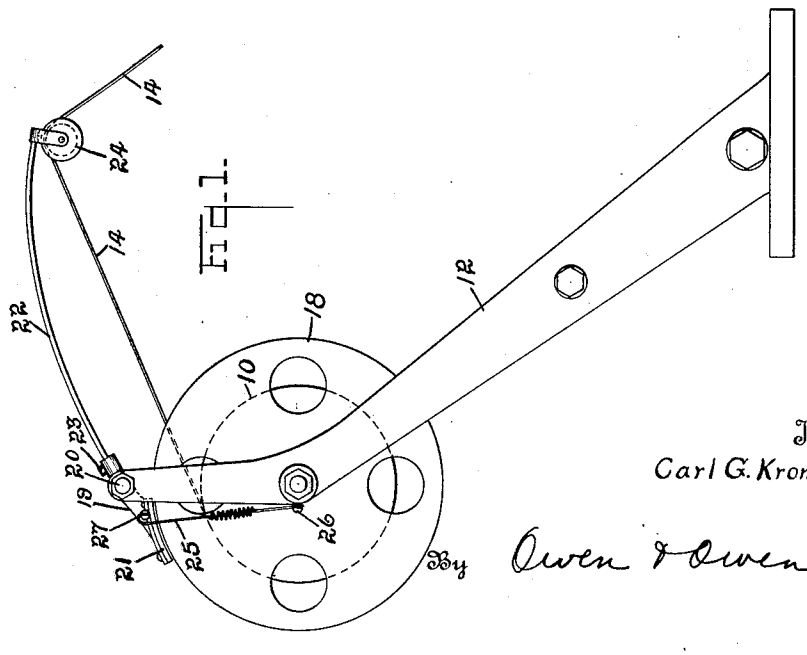


Fig. 1.

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UNITED STATES PATENT OFFICE

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TAPE DISPENSING DEVICE

Application filed December 22, 1926. Serial No. 156,428.

My invention relates to a tape dispensing device, and more particularly to a dispensing device comprising a reel and a brake therefor.

The object of my invention is to provide means for dispensing the tape at any desired speed in response to a minimum pull upon the tape, while stopping the feed immediately upon the cessation of the pull upon the tape, regardless of the momentum which the reel supplying the tape may have acquired. Details of the invention will appear as the description proceeds.

In the accompanying drawings forming a part of this specification, Figure 1 is a side view of apparatus embodying the invention; Fig. 2 is a view from the opposite side of the same apparatus; and Fig. 3 is a transverse view with parts broken away to disclose the mounting of the reel.

In the form of apparatus disclosed, a reel 10 is mounted upon a shaft 11 fixed in a suitable bracket 12. The bracket 12 may be mounted in any desired manner in suitable relation to apparatus adapted to use tape.

The reel consists of a central cylindrical member 13 upon which a tape 14 is wound. Cylinder 13 is mounted at its two ends upon shaft 11 by means of ball bearings 15 and 16. An outer collar 17 is mounted upon core 13 in position to form an outer flange for the spool of tape, and a similar collar or flange 18 is mounted at the inner end of the core next to the bracket 12.

Bracket 12 extends upward above shaft 11 and has a member 19 pivoted thereto at 20. One end of member 19 carries a brake shoe 21 adapted to rest upon flange 18. An elongated member 22, which may be spring wire, projects from member 19 in the opposite direction from shoe 21. Wire 22 may be fixed in adjusted position in member 19 by means of a set screw 23. The outer end of wire 22 carries an anti-friction wheel 24 over which tape 14 may be drawn. A tension spring 25 is attached at one end to a stud 26 on brackets 12 and at the other end to a stud 27 on member 19.

With apparatus arranged as described, tape 14 may be drawn up over pulley 24. The apparatus is arranged in such relation to the point where the tape is to be used that the tape will be drawn away from pulley 24 at approximately right angles to the normal position of wire 22. Wire 22 yields immediately to tension upon tape 14 and allows the tape to be drawn out. Owing to the considerable length of wire 22 in proportion to the distance of stud 27 from pivot 20, comparatively little tension upon the tape overcomes the tension of spring 25 sufficiently to release brake shoe 21 from flange 18 and allow free rotation of the reel upon ball bearings 15 and 16.

At any time the speed of removal of the tape is lessened, wire 22 begins to straighten and take up any slack. If the reel continues to unwind tape faster than it is demanded, tension on the tape is lessened sufficiently to permit spring 25 to bring brake shoe 21 into contact with flange 21 until the pull on the tape is once more sufficient to overcome the spring. If the pull on the tape ceases entirely, the brake quickly stops the reel. It will be understood that spring 25 sets the brake while wire 22 is still flexed in a manner similar to that in which it is shown in Fig. 1, and that the tape is maintained taut by the straightening of wire 22 if the momentum of the reel results in some unwinding of the tape after the brake is applied.

If the spool were allowed to rotate freely without any means for stopping it when the demand for tape was lessened, an abrupt lessening in the speed of use of the tape would result in an undesirable amount of tape being unwound because of the continued rotation of the spool at approximately the highest speed it had attained. In the construction disclosed, slight variations in speed are taken care of by the resiliency of wire 22, and greater variations are immediately taken care of by means of brake 21. Even where the tape is being pulled away from the reel at a considerable speed and the feeding is stopped abruptly, the brake is applied so quickly that very little slack results, and the slack which results from the slight continuance of rotation of the reel which may take place after the application of a brake is taken

up by the final straightening of wire 22, as described above.

It will be seen that a construction has been devised which will feed out tape with very slight application of tension thereto at any time, and still will not unroll a troublesome amount of tape upon abrupt cessation of the pull upon the tape, even though the spool from which the tape is fed is comparatively heavy and has considerable momentum in proportion to the friction of the spool upon its bearings.

In the construction shown, it will be seen that brake shoe 21 is on the side of pivot 20 towards which flange 18 is moving during the dispensing of the tape, so that as soon as the tape begins to bite there is a tendency for the friction to increase the pressure of the brake on the flange. This is more pronounced as the set position of the brake shoe approaches the line between pivot 20 and axis 11. This is particularly advantageous when sudden stoppage of the reel is desired. Under some circumstances it will be readily understood that the brake shoe might be mounted so as to avoid this increased biting effect; but the construction shown is very simple and effective for ordinary purposes.

Obvious changes may be made in the proportions and construction of the several parts within the scope of the appended claims.

What is claimed is:

1. In a device for dispensing tape, a reel upon which tape may be wound and having a flange at one end, an anti-friction mounting for the reel, a lever mounted upon a fulcrum adjacent said flange and having a resilient arm extending in a direction approximately at right angles to the direction in which tape is dispensed, and a short arm extending in the opposite direction, a tape-guide on the outer end of the resilient arm, a brake shoe on the short arm, and means constantly tending to set the brake with a force requiring material flexing of the arm before the brake is released.

2. In a device for dispensing tape, a reel upon which tape may be wound, a flange affixed to the reel and extending outward beyond the periphery of the reel, a rock shaft mounted outside of said flange, an arm on the rock shaft carrying a brake shoe in operative relation with said flange, a resilient arm extending from the rock shaft, and a tape guide on the outer end of the resilient arm.

3. In a device for dispensing tape, a bracket, a reel mounted on one side of the bracket and extending outwardly beyond the periphery of the spool of tape on the reel, a rock shaft mounted in the bracket and extending parallel with the axis of the reel, a resilient arm extending from the end of the rock shaft in line with the reel, a short arm extending from the rock shaft in the plane of said flange and in the opposite direction from said resilient arm, and a brake shoe mounted directly upon said short arm and in operative relation with said flange, and a spring normally rocking said shaft in a direction to apply said brake shoe, the spring being of sufficient strength to require a material flexing of the resilient arm before the brake shoe is released.

In testimony whereof, I have hereunto signed my name to this specification.

CARL G. KRONMILLER.