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R. H. CORSWANDT ET AL

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FIG. 1

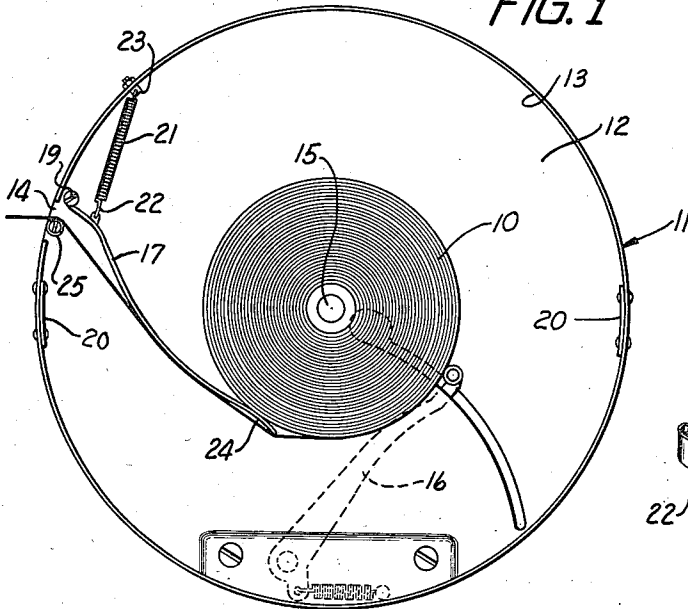
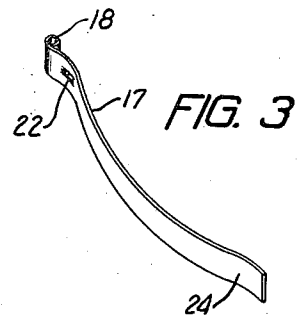


FIG. 3

FIG. 2

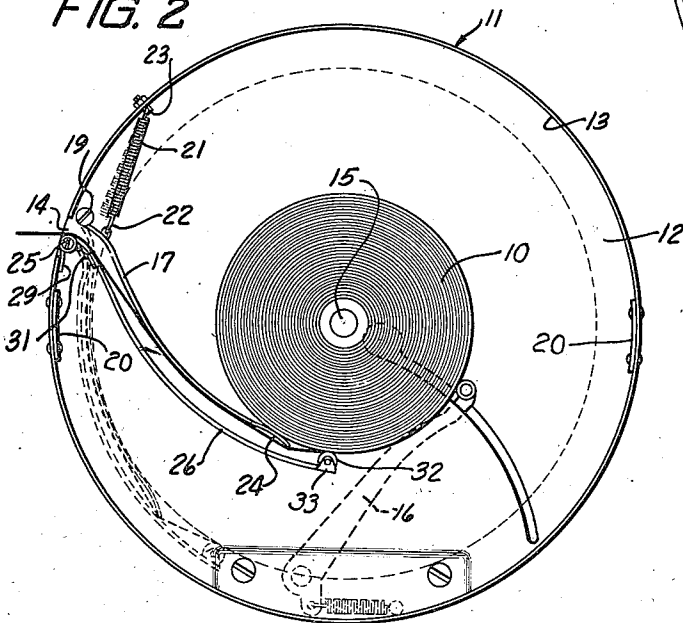
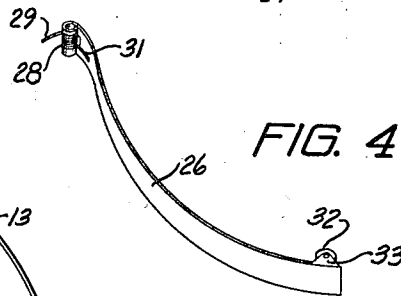


FIG. 4

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## UNITED STATES PATENT OFFICE

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## PAPER GUIDE

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8 Claims. (Cl. 242—76)

The present invention relates to containers for coils of web material and more particularly to guide and tensioning devices for aligning and governing the movements of tape drawn from a stock roll with intermittent acceleration.

It has been found that where paper stock is supplied from a roll having a relatively large peripheral mass, the motion imparted to it by intermittent pulling causes it to gather sufficient momentum to accelerate periodically, resulting in an overrunning and gathering of the free end of the tape beyond the point of egress of the container. Subsequently, when the free end is withdrawn, the overrun loops are frequently gathered in and forced through by frictional engagement with the free end, resulting frequently in considerable tangling and wrinkling of the tape. To overcome these undesirable effects, the present invention has for its object the provision of means cooperating with a container to prevent buckling and tangling of the tape and to promote direct and uniform movement of the tape.

In the specific contemplation of this invention, it is applicable to cylindrical or disc type containers such as that illustrated and described in connection with a telegraph printing apparatus shown in U. S. Patent No. 1,821,110, issued to Sterling Morton et al. In such apparatus, the roll of coil tape is of narrow width and in the case of new coils is usually of comparatively large diameter, tending towards the attainment of a small frictional component as compared with the peripheral mass. Where in arrangements of this nature a continuous motion is imparted to the roll followed by periodic interruption, the tendency is for the loose end of the coil to overrun within the container, forming irregular folds that double back and forth upon themselves within the space between the coil and the circumferential element of the container.

Accordingly, it has been proposed to arrange elements which permit the free movement of the roll of tape but which confine and govern any overrun portions so that the loops formed, if any, may not interfere with and be fed with the immediate free end as it emerges from the container.

To accomplish this result, there is provided a guide element pivoted near the egress opening of the container having its opposite end spring urged lightly against the periphery of the roll and pivoted so as to adjust itself as the roll is consumed. The guide acts as a confining member limiting the formation of loops and prevent-

ing the loops which are formed during extreme conditions from extending upwardly beyond the egress opening in the container. With this attachment, it has been found that the overrun tape is confined in an orderly manner and does not lend itself to wrinkling and tearing as was the case without the provision of the guide element.

As a further improvement to the foregoing, an auxiliary guide element was provided resembling it in curvature and constituting a parallel wall to the aforementioned guide. In addition, the auxiliary guide which is also provided with a roller, is spring urged against the periphery of the tape, at a point within a short distance of the free end of the aforementioned guide. The slight pressure of the roller carried by the auxiliary guide was found to introduce sufficient frictional engagement between the outer layer of ribbon and its next adjacent layer so as to prevent the stripping of the outer layer except between the points at which the two free ends of the guides engage the periphery of the roll. From this point, the two guides are curved gracefully in close juxtaposition toward the egress opening in the periphery of the container. The limited space provided by the confining tendencies of the guides resulted in the prevention, to a larger extent, of the overrunning tendencies and gathering of the loose ends within the container, causing instead the emission of the tape through the guideway and out of the container.

For a more comprehensive understanding of the present invention, reference may be had to the accompanying drawing and to the following detailed specification in which like reference characters have been assigned to designate corresponding parts throughout and in which:

Fig. 1 is a side elevational view of a container having the cover plate removed, and illustrating a partially consumed roll of web stock material;

Fig. 2 is a view generally similar to that of Fig. 1, featuring an embodiment of the present invention in which an auxiliary guide element has been provided to augment the function of the principal guide element;

Fig. 3 is a detailed perspective view of the principal guide element as featured in both Figs. 1 and 2, and

Fig. 4 is a detailed perspective view of the auxiliary guide element illustrated in Fig. 2.

A roll of ribbon material is indicated 10 and is contained within a protective enclosure 11 formed of circular side walls, the rear one of which is indicated 12 and the fore one, not shown, of

which is removably carried by a pair of brackets 20. A circumferential wall section 13 is provided secured to the side wall 12, having an opening at the point 14. The roll of stock is loosely supported upon a spindle 15, which is secured centrally of the container 11 to the side wall 12.

In order to indicate when a roll of paper has been consumed or to warn of the impending depletion, a spring urged lever 16 is provided which has a follower roller that is urged against the periphery and which has associated with it suitable alarm mechanism (not shown) initiated when the lever and follower roller approach a predetermined point near the spindle 15.

As thus far described, no means are provided in the assembly for preventing the accelerated rotation of roll 10 from overrunning and causing the formation of loops within the container in the peripheral space before the egress opening 14. These loop formations it has been found, if not thus confined are carried loop end foremost through the opening 14 when the threaded end of the ribbon is subsequently fed by the action of the printing or other mechanism.

To avoid this undesirable effect, a guide element 17 is provided pivotally secured at 19 to a pivot screw about which one end of the guide is turned to form an eyelet 18, see Fig. 3. A spring 21 anchored at 23 to the container engages the guide 17 at point 22, urging it gently in a counterclockwise direction about the pivot 19 so that its free end 24 engages the periphery of the roll 10. The end 24 is flared outwardly to a slight degree so as to avoid the sharp edge engagement with the outer layer of ribbon of the roll 10, while the main body portion of the guide 17 serves to check the formation of loops and to prevent the overrunning loops which are formed from extending peripherally beyond the region opposite the opening 14. Any loops formed and confined below the opening 14 have been found not to interfere with the subsequent movement of the tape but to be consumed in a regular and orderly manner when the tape is subsequently pulled outwardly.

To minimize the frictional impediment to the movement of the tape, a roller 25 is provided near the opening 14 over which the free end is supported as it is emitted from the container.

Though the gathering of loose ends and the redoubling of the tape into loop formations within the container below the guide 17 has not proven to be of any serious hindrance to the practical movement of the tape supply, it is true, nevertheless, that this overrunning has no utility in the desired operation and, that as a practical matter, the best results might be obtained by its total elimination. Towards this end the auxiliary guide 26 has been provided pivoted with the roller 25 and urged by a torsion spring 28, whose elements 29 and 31 rest against peripheral wall 11 and the guide 26 in a counterclockwise direction and similar in action to the guide 17. The free end of auxiliary guide 26 carries a follower roller 32 supported by the upturned trunnions 33. The tendency of roller 32 under the influence of spring 28 is to keep the outer layer of ribbon frictionally contiguous to its next adjacent layer throughout the periphery on the right side of roller 32, as viewed in Fig. 2. Towards the left of portion 24 of guide 17 removes the ribbon, the tendency of roller 32 has little effect, permitting the overrunning of the tape within the restricted region between the portion 24 of guide 17 and

the roller 32. Because of the narrow confines between guide 17 and guide 26, however, the available space is so limited as not to permit of the bending or looping of the ribbon strip. This is true throughout the entire channel defined by the cooperating guides, resulting in the forcing of the tape longitudinally out of the channel, as against permitting of its doubling back or bending within the channel. In this way, when, because of the moment due to the acceleration of roll 10, a larger quantity of tape is stripped from the body of the roll, it is forced entirely out of the container, thereby minimizing the accumulation of loose tape within the container while also preventing the formation of any loops as was the case where but the single guide 17 was employed.

The movement of the guides 17 and 26 towards the periphery of the roll may best be understood by noting the broken line and solid line positions indicated in Fig. 2. The independent action of guide 17, as featured in Fig. 1, may also be understood by noting the changed positions of guide 17 solely.

While the invention has been explained and described with reference to a particular embodiment thereof, it will be evident that numerous modifications and variations may be instituted without departing from the spirit or scope thereof. It is therefore intended that the specific language of the foregoing description and the detailed illustrations in the accompanying drawing constitute no restriction to the inventive concept except as indicated by the hereinafter appended claims.

What is claimed is:

1. In a container, means for pivotally supporting a roll of web material, an opening in the periphery of the container through which the free end of a roll is emanated, and a guide element leading from said opening tangentially to said roll for preventing the overrunning of loose end accumulation within said container in a direction peripherally beyond said opening.

2. A container for supporting a roll of ribbon material to permit controlled unreeling thereof including an idler spindle for supporting a roll of ribbon material, a peripheral element having an opening through which the material is to be threaded, and a guide element having one end pivoted in the proximity of said opening and the other end spring urged against the periphery of said roll.

3. In a supporting apparatus for paper ribbon supply rolls, the combination including a spindle upon which a supply roll is pivotally carried, a pair of parallelly arranged and closely spaced guide elements leading from the periphery of said roll tangentially, and spring means for urging said elements against the periphery of said roll to adjust for the diminution of a supply roll as it is consumed.

4. In a supporting apparatus for supply rolls, a ribbon material, a horizontal spindle to be inserted through the core of said roll for pivotal support thereof, a guide element pivoted at one end, spring means for urging the other end against the periphery of said roll, and a guide element pivoted at one end and arranged parallelly with respect to said first mentioned guide element including a contacting portion at its opposite end disposed in close proximity to the free end of said first mentioned guide element.

5. In a container for supporting rolls of ribbon material, a cylindrical enclosure member, a

stud centrally disposed with respect to said member for supporting rolls of ribbon material, a pressure element pivotally supported at one end and spring urged to contact the periphery of said roll, and a guide element pivotally supported at a remote end and spring urged to contact the periphery of said roll at its opposite end at a point adjacent said point of contact of said pressure element.

6. In a container for supporting rolls of ribbon material, a cylindrical housing, an idler pivot centrally of said housing, a guide element spring urged to follow the periphery of a roll supported on said pivot, and a pivotal support for said guide adjacent an opening in said cylindrical member through which the free end of the roll is threaded.

7. In a container for supporting a supply roll of web material under conditions of intermittent

unreeling, a guide element spring urged against the periphery of a roll supported in said container, said element contacting said roll at a point near its peripheral locus whereat said web is stripped from its roll, and means for pivotally supporting said element adjacent a peripheral opening in said container.

8. In a container for supporting a supply roll of ribbon material, means to prevent accumulation of ribbon folds due to overrunning of the supply roll comprising a pressure element operative on the periphery of a supply roll, a stripper element in close proximity to said pressure element, and a member affording a channelway leading from between said elements to a point of egress in the container.

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