UNITED STATES PATENT OFFICE

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TAPE SPLITTING MACHINE

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This invention relates to new and useful improvements in tape splitting machines and the primary object of the present invention is to provide a machine that will quickly and readily divide a roll of tape into two sections and wind the two sections cut upon two power-driven rolls.

Another object of the present invention is to reduce considerably the cost involved for obtaining rolls of various width tapes by including the necessary mechanism for splitting a relatively wide tape into two sections.

Another object of the present invention is to provide a tape splitting machine involving a novel and improved cutter holder that is conveniently adjustable whereby a tape may be split into two sections of predetermined widths.

A further object of the present invention is to provide a tape splitting machine involving a pair of holders that are adjustable, individually, toward or away from a wall supporting a cutter so that tape sections of various widths may be wound about cores or spools on the holders.

A still further aim of the present invention is to provide a tape splitting machine that is simple and practical in construction, strong and reliable in use, efficient and durable in operation, inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Referring now to the drawings in detail, wherein there is disclosed a preferred embodiment of the present invention, the numeral 10 represents a base including an elongated vertical wall 12 and supporting feet 14.

The wall 12 is formed at one end with an upper and lower pair of reinforced openings or bearing eyes 16 and 18 that receive shafts 20 and 22, respectively. The rear end of the shaft 20 is held against rotation in the eye 16 by a set screw 24 and the forwardly projecting end of the shaft 20 extends through and rotatably supports the hub 25 of a tape holder or spool 26 whose peripheral wall is formed with ribs 28 and a peripheral flange or seat 30.

A nut 32 is threaded on the outer end of the shaft 20 and urges a sleeve 34, about the shaft 20, against the forward end of the hub 26. A coil spring 36 surrounds the shaft 20 and is biased between the holder 26 and a washer 37 on the shaft 20 and resting against eye 16, to urge the holder 26 against the sleeve 34.

The rear end of the shaft 22 extends rearwardly through the eye 18 and supports a sprocket 38 that is located behind wall 12. The forward end of the shaft 22 extends centrally through and supports a pair of end plates 40 between which is secured a cylinder 42. An abrasive cover 44 is disposed about and suitably held on the cylinder 42. The end plates 40 are secured to the ends of cylinder 42 by suitable fasteners 46 and the plates 40 are held on the shaft 22 by set screws 48.

The wall 12 is formed with a pair of side-by-side, horizontal, reinforced openings or bearing eyes 50 that rotatably support roller holding shafts 54 and 56. The rear end of the shaft 54 supports a pulley 58 and a sprocket 60 whereas the forward end of the shaft 54 supports a roller or sleeve 62 that is held on the shaft for rotation therewith by a set screw 64. A pair of spacer and guide rings 66 are held about the sleeve 62 by set screws 68 whereby the spacing between the rings 66 may be varied depending upon the width of tape section that is to be guided therebetween.

The forward end of shaft 56 carries a roller or sleeve 70 that is held on the shaft by a set screw 72. Rings 74, similar to rings 66, are held on the sleeve 70 by set screws (not shown) similar to set screws 68. The rear end of the shaft 56 supports a collar or the like 75 to retain the shaft 56 in one of the eyes 50.

A pair of side-by-side reinforced openings or bearing eyes 76 are formed with the wall 12.
below the eyes 90. The eyes 76 are supported on the shafts 78 and 80. The rear end of the shaft 78 supports a small sprocket 82 and a large sprocket 84 whereas the forward end of the shaft 78 supports a sleeve 86, a metallic washer 88 and a compressible washer 90 with the inner end of the sleeve 86 abutting the washer 90 to urge the washer 90 against the washer 88 and the washer 88 against the eye 76. A coil spring 92 surrounds the forward end portion of the shaft 78 and is biased between the forward end of the sleeve 86 and a nut 94 threaded on the shaft 78.

A tape holder 96 is held on the sleeve 86 by a section 98 that extends radially through the hub 100 of the holder 96. The peripheral wall of the holder 96 is formed with ribs 102 and an external flange so that a core 104 may be frictionally retained on the holder 96.

The rear end of shaft 80 carries a sprocket 106 and the forward end of the shaft 80 supports elements similar to those carried by the shaft 78 including a tape holder 108 similar to the holder 96 that is adjustable toward and away from the wall 12 in the same manner as holder 96. Core 110 is fitted at the rear end on the peripheral wall of the holder 108 to resist against the peripheral flange on the holder 108.

Means is provided for cutting or splitting tape extending between the rollers or sleeves 62 and 70. This means comprises a cutter holder and cutter including a horizontal pin 113 that is rotatably adjustably supported in an eye 114 formed with the wall 12 directly above the shaft 54. An arm 116 is held on the pin 113 by a set screw 118 and its outer end carries a horizontal rod 120 and a pair of horizontal bars 122.

A plurality of juxtapositioned separable plates 124 are slidably received on the bars 122 and the rod 120, and a cutter, such as a razor blade 126, is held between a pair of adjacent plates 124. A coil spring 128 is biased between the arm 116 and the innermost of the plates 124, whereas a nut 130 is threaded on the outer end of the rod 120 to permit adjustment of the cutter 126 toward or away from the wall 12.

A motor 132 is supported on the base 18 and its driving end carries a pulley 134 that is connected to the pulley 56 by an endless pulley belt 136. The sprocket 58 is connected to the sprocket 84 by an endless sprocket chain 138. Another endless sprocket chain 140 is trained about the sprockets 98, 82, and 106, and also extends about guides 142 and 144, supported on the rear face of wall 12.

In practical use of the present invention, a roll of tape R is fitted over the holder 26 to be frictionally retained about the holder by the ribs 28. The tape T is manually extended about the abrasive covering 44 and over the guide rollers 62, 70. The tape is split into two sections by the cutter 126 with one section S applied to the core 104 and with the other section S' applied to the core 118.

Due to the drive connections previously described, the cylinder 42 will be driven clockwise and the holders 96 and 108 will also rotate clockwise when viewing the apparatus from the front as shown in Figure 1. The guide roller 78 will be driven in a counter-clockwise direction to feed the strips toward the holders 98 and 108.

The holders 96 and 108 are offset relative to each other sufficiently to permit the sections S and S' to wind thereon and the collars or rings 66 and 74 are adjusted sufficiently to the width of the sections S and S'.
wise, said power means being further connected to both of said third pair of members for rotating both of said third pair of members clockwise, and a straight blade supported on the wall between the second pair of members.

3. A tape splitting machine comprising an elongated supporting wall, a first pair of rotary members rotatably supported on one end of the wall and disposed in side-by-side relation adjacent the first pair of rotary members, a third pair of rotary members rotatably supported on the wall beneath the second pair of members and disposed in side-by-side relation, a power means operatively connected to the driver forming member for rotating the same clockwise to pull tape from the other end of said first pair of members, said power means also being connected to the member of the second pair of members closest the first pair of members for rotating the same counter-clockwise to pull tape from the driving member, said power means being further connected to both of said third pair of members for rotating both of said third pair of members clockwise, a roll of tape supported on the holder forming member, a straight blade supported on the wall between the second pair of members and splitting the tape into two sections between the second pair of members, both sections of said tape extending under the member of said second pair remote from the first pair of rollers, one of said sections being attached to one of said third pair of members and the other of said sections being attached to the other of said third pair of members.

4. A tape splitting machine comprising a base including an elongated vertical wall, a first horizontal shaft supported on one end of the wall, a tape holder rotatably mounted on said shaft, a second horizontal shaft rotatably supported on the wall and paralleling the first shaft, a rotary member mounted on the second shaft, a pair of guide rollers supported for rotation on the wall in side-by-side relation adjacent the holder and the member, a pair of side-by-side horizontal shafts rotatably supported on the wall below the guide rollers, a tape holder on each of said pair of shafts, a straight blade supported on the wall between the rollers for dividing a tape extending between the rollers, said pair of shafts including rear ends projecting outwardly from the wall, a small and a large sprocket supported on the rear end of one of said pair of shafts, another sprocket on the rear end of the other of said pair of shafts, said second shaft having a rear end projecting beyond the wall, a sprocket on the rear end of said second shaft, one of said rollers including a supporting shaft having a rear end projecting outwardly from the wall, a sprocket and a pulley mounted on the end of said supporting shaft, an endless sprocket chain trained about the last-named sprocket and the large sprocket, a second endless sprocket chain trained about the small sprocket, the sprocket on the second shaft and the sprocket on the said other of said pair of shafts, an idler sprocket supported on the wall between the pair of shafts about which said second chain is engaged, and a motor supported on the base and connected to the pulley.

5. A tape splitting machine comprising a base including an elongated vertical wall, a first horizontal shaft supported on one end of the wall, a tape holder rotatably mounted on said shaft, a second horizontal shaft rotatably supported on the wall and paralleling the first shaft, a rotary member mounted on the second shaft, a pair of guide rollers supported for rotation on the wall in side-by-side relation adjacent the holder and the member, a pair of side-by-side horizontal shafts rotatably supported on the wall below the guide rollers, a tape holder on each of said pair of shafts, a straight blade supported on the wall between the rollers for dividing a tape extending between the rollers, and a power means mounted on the base and connected to the second shaft for rotating the first-named holder clockwise, said power means being connected to the holders on the pair of shafts for rotating the same clockwise, and one of said rollers being connected to the power means for rotation counter-clockwise to move a tape past the blade.

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