1. This invention relates to reeling devices, and more particularly, to a device which is adapted to be used for reeling, cutting and measuring lengths of belting or other material which is normally formed in a flat strip and transported and stored in a cylindrical roll.

The handling of elongated strips of relatively tough material, such as is used for conveyor belting, transmission belting, stair treads, rubber matting, and the like, presents numerous difficulties. Such material is fabricated in strips which may exceed five feet in width and which may be shipped from the manufacturing plant in rolls which weigh in excess of a ton.

The jobber who must stock many assortments of such material is faced with the problem of cutting relatively short lengths of such material from a large roll when such lengths are ordered by customers. Heretofore, in cutting such lengths the common practice has been to first remove the roll from the place where it is stored and roll the same to an aisle of the warehouse which is clear of obstructions. The roll is then raised on a mandrel which is placed through the core of the roll by placing a jack under each end of the mandrel and elevating the roll so that it clears the floor. The end of the strip is then grasped by one or several men and pulled away from the roll and carried down the aisle until the desired length has been removed from the roll. The aisle may be conveniently marked off in feet so that the desired length may be cut off when the strip is resting on the floor.

The obvious disadvantage of this procedure is that the aisle used for measuring the length of material to be cut must be kept clear at all times, thus resulting in a loss of available storage space.

Another disadvantage of the above described procedure is that when large rolls of material are to be cut the manpower required to rotate the roll is appreciable and is added to the effort required to carry or drag the free end of the strip.

In the case of rubber belting or rubber covered belting the strip tends to stick to the roll, especially in warm weather, and further manual effort is often required for this reason. It is not uncommon to find all the available manpower in a jobber's establishment pulling on a large roll of rubber belting when the above procedure is followed.

One of the objects of this invention is the provision of a reeling device which is economical to build and which may be employed to measure desired lengths of material with little manual effort.

2. Another object of the invention is the provision of a reeling device which is relatively small and which may be employed in a small space.

Still another object of the invention is the provision of a reeling device which permits the measuring of lengths of belting material without soiling the same to the extent heretofore necessary.

And yet another object of the invention is the provision of a reeling device for belting, and the like, which may be employed to cut such material longitudinally into strips with great accuracy when narrow strips are desired from a wide strip.

Another object of the invention is the provision of a device which is adapted to elevate a horizontal roll of belting from the floor on which it rests or to deposit such roll directly onto the floor and to support such roll for rotation while elevated.

Other objects and advantages will be apparent from the specification and drawings.

Fig. 1 is a side elevational view of the reeling device partly broken away showing the device in operating position.

Fig. 2 is a top plan view partly broken away and in section of the device shown in Fig. 1.

Fig. 3 is a transverse elevational view of a portion of the device as taken along lines 3--3 of Fig. 1.

Fig. 4 is a top plan view of the knife holder.

Fig. 5 is an elevational view of the knife holder shown in Fig. 4.

Fig. 6 is a cross-sectional view of a portion of the device taken along lines 5--6 of Fig. 2.

Fig. 7 is a cross-sectional view of the sliding blocks which support the mandrel with the driving unit omitted for clarity.

Fig. 8 is a cross-sectional view through the shaft adjacent one of the sliding blocks as taken along lines 8--8 of Fig. 7.

Fig. 9 is an elevational view partially broken away and in section showing a portion of the roll lifting mechanism as taken along lines 8--9 of Fig. 2.

As best seen in Figs. 1 and 2, the device is supported on a wheeled base having longitudinal support members 1, 2 and a cross member 3 integrally connected to said longitudinal members at one of their corresponding ends to form a U-shaped support (Fig. 2). At the ends of members 1, 2 which are remote from the cross member 3 are wheels 4 secured to the base by means of brackets 5 (Fig. 1). Rigidly connected to cross member 3 are spaced frame members...
6 equal distances from the center of said cross member which converge in a direction away from wheels 4 and are rigidly connected at their outer convergent ends by a transverse member 1. Inte-
gerally connected to member 7 is a wheel sup-
port 8 which carries a caster wheel 9 on the longitude both on either end of the U-shaped base (Figs. 1, 2). A conventional handle 10 is swing-
able secured to the axle of wheel 9 for pulling and guiding the device. (The end of the device
carrying the caster wheel 9 will hereinafter be referred to as the forward end of the device, and in referring to the “left” or “right” side of the device it will be assumed that the observer
is looking forward.)

A pair of spaced opposed guides 20, 21 are
rigidly secured perpendicularly to support mem-
ber 1 extending upwardly therefrom (Fig. 1), and
another pair 22, 23 are secured in like manner to
support member 2 in opposed relation to guides
20, 21. These guides are adapted to support slid-
ing blocks 24, 25 for vertical movement between
said guides, and said guides are preferably struc-
tural channels positioned so that their backs are
in line and opposed parallel relationship (Fig. 2).
A centering strip 19 is secured to the backs of
the channels of each pair longitudinally of the
same. A bolting plate 26 may be rigidly secured
to the upper end of each pair of guides 20, 21 and
22, 23 (Fig. 1). Removably secured to these bol-
ting plates 26 are cap plates 27 (Figs. 1, 2) which
may be secured to the bolting plates by means of
bolts 28. The cap plates each carry a pair of up-
standing spaced lugs 30 to which a horizontal frame 31 is pivotally connected by means of bolts
32. This frame 31 is generally U-shaped and
comprises two longitudinal members 33 rigidly
secured at their outer ends remote from lugs 30
to the ends of a transverse member 34 (Fig. 2).
As best seen in Fig. 1, this U-shaped frame may
be swivel in a vertical arc through 180 degrees
from the full line position shown to the dotted
line position 31 in which latter position it is
substantially over the wheeled base and reduces
the space required for storage of the device when
not in use.

A bearing block 37 is releasably secured by
bolts 38 (Fig. 3) to each end of longitudinal mem-
bers 33 adjacent the transverse member 34. A
pair of transverse rollers 39 (Fig. 3) extend be-
between bearing blocks 37 and are rotatably sup-
ported in holes 40 formed in said blocks. Trans-
verse rollers 41 similar to rollers 39 are posi-
tioned under the latter and are rotatably sup-
ported in holes 41 in bushings 42, which bushings,
in turn, are supported in the blocks 37 for rota-
tion in holes 40. The holes 40 are offset from the
center of bushings 42 so that by rotating both
bushings 42 in like manner, the rollers 41 may be
moved toward and away from rollers 39.
A set screw 45 (Figs. 2, 3) having a knurled
head, adapted to be actuated by the fingers is
provided in each block 37 for the purpose of
locking bushings 42 when the spacing between
rolls 39 and 41 is set.
A pair of horizontally spaced square rods 47
(Fig. 3) are removably secured at each of their
ends to bearing blocks 37 by means of set screws
48, and serve to support certain devices which
will later be described in detail.

A square mandrel, generally designated 50
(Fig. 7), extends between sliding blocks 24, 25
and is rotatably supported at its ends in these
blocks (Fig. 7). The major portion of mandrel
50 is hollow, and consists of a section of square
steel tubing 51, and said section is provided at
one of its ends with a journal 52 which is cylin-
drical except for a square portion 53 which is
adapted to be inserted in tubing 51 and rigidly
secured thereto, as by welding. The block 24
carries a bore 54 for rotatably supporting jour-

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The end of the mandrel supported by sliding
block 25 (Fig. 7) is provided with a solid cylin-
drical extension 55 which is rigidly secured to
the end of tubing 51, as by welding. This exten-
sion is provided with a dovetail pin 56 which is
rigidly secured through extension 55 so that each
end of the pin projects outwards from the ex-
tension 55.

The sliding block 25 is provided with a bore 57
in which is rotatably supported a sleeve 58. This
sleeve 58 is cylindrical in form and is provided
with a diametral slot 59 in its end facing to-
wards mandrel 50. This slot 59 receives the pro-
jections of pin 56. The sleeve is also provided
at the same end with a counterbore 61 which re-
ceives the end of extension 55. A square hole
62 is provided in the opposite end of sleeve 58 co-
axial with counterbore 61 for receiving a driving
shaft for rotating the sleeve 58 and mandrel 50,
as will be described later in detail. Secured to the
side of sliding block 25 which faces toward the
mandrel 50 is a plate 63 (Fig. 6), for the pur-
pose of preventing the longitudinal motion of the
mandrel 50 in sliding blocks 24, 25.

The plate 63 is pivoted at one of its ends to
sliding blocks 25 by means of pin 64 and is pro-
vided with an arcuate edge 65 which is adapted to
be received in a peripheral groove 66 in extension
55. When the edge 65 is received in groove 66 (Fig. 8) longitudinal mo-
tion of the mandrel 50 is effectively prevented.
When the plate 63 is swung upwardly out of
groove 66 the shaft may be removed by passing it
through bore 54 in sliding block 24. A weighted
portion 67 may be provided on plate 63 to urge
the edge 65 into the slot 66 at all times.

For the purpose of raising and lowering man-
drel 50, a parallelogram linkage, generally desig-
nated 70, is provided on each of the sliding blocks 24, 25 (Fig. 1). Each linkage com-
prises a relatively long, horizontal bar 71 which is
pivotally connected at one end to its associ-
ated sliding block by means of bolt 72. Each slid-
ing block may be provided with a slot 73 for re-
ceiving the bar 71 (Fig. 7).

The horizontal bar 71 is pivotally secured at
their ends opposite bolts 72 to the upper ends of a
pair of relatively short vertical links 74, a pair of
which are positioned on opposite sides of each
link 71 and secured thereto by means of pin 76.
Another pair of links 78 are pivotally secured to
each bar 71 intermediate its ends by means of
pin 77. The pairs of links 74, 76 extend down-
wardly from bar 71. A horizontal bar 78 parallel
to bar 71 connects the lower ends of links 74 and
76 at each side of the frame and is connected to
links 76 by means of pin 78. Both bar 78 and
links 74 are secured at their point of connection
to the ends of a transverse lifting shaft 80 (Fig.
2) which is positioned forwardly of mandrel 50
and over cross member 3. The bar 78 is provided
with a square hole which receives a square por-
tion of the shaft 80 (Fig. 9) and both links 74
are provided with round holes so that the ends of
the same are pivoted on shaft 80, while bar 78 is
secure to shaft 80 for rotation therewith (Fig. 9).

The shaft 80 is supported for rotation on bear-
ings 83 which, in turn, are rigidly secured to cross
member 3. A downwardly projecting link 84 is rigidly secured to shaft 80 centrally of the same and is connected with the piston rod 99 of a hydraulic jack 95 by means of clevis 86 and bolt 87. The jack 95 is of the conventional hydraulic type having a manually actuated handle 88.

Thus, it is seen that actuation of the jack so that the shaft 80, moved rearwardly of the base will cause the sliding blocks 24, 25 to move up while opposite motion of the jack will cause the blocks 24, 25 to move downwardly. Since the jack will be slightly inclined during such movements, it should be pivotally connected to the cross member 3, as by pin 90.

As best seen in Figs. 1, 2, the device is adapted to be used with a horizontal roll of material 93 supported for rotation on a mandrel 95 which, in turn, may be raised and lowered by means of conventional jacks 95 or which may be permanently held elevated on bearings.

In operation, the strip of material 99 on roll 93 is preferably and ordinarily removed from the bottom of roll 93 as shown in Fig. 1, and then passed between rollers 39 and 41. The rollers 41 may then be moved upwardly toward rollers 39 by means of the eccentric bushes 42 until rollers 41 contact the strip 99 with whatever degree of pressure is desired. The end of the strip is then started around a core 57 mounted on mandrel 95. This core is preferably cylindrical and equal in length to the width of the strip to be reeled and is provided with a square hole therethrough for receiving the square portion 93 of the mandrel 95.

For the purpose of rotating mandrel 95, an electric reversing motor 100 is provided (Fig. 2) which drives through a reducer 101. A simplified drive arrangement may be effected by employing the type of vertical motor which is mounted integrally with the housing of the reducer, as shown in Figs. 1, 2, and which reducer is provided with a horizontal driven shaft projecting from one of its sides, such as the shaft shown at 103 in Fig. 7. The drive unit comprising the motor 100 and reducer 101 may be secured to plate 104, which, in turn, may be bolted to block 25 by means of bolts 105. The bolt 12 which is employed as a pivot for one of the bars 71 may also be used to secure the plate 104 on block 25, as shown in Fig. 7.

Thus, it is seen by this arrangement that a direct drive may be used to transmit torque to mandrel 95 without the use of splined shafts and other devices which would necessarily be employed because of the vertical adjustment required to blocks 24, 25.

When the device is employed to measure off a desired length of belting, a conventional counter such as commonly known to the trade as a “Veedol-Rook” counter 110, may be employed having a wheel 111 which is placed in engagement with the surface of the belting to be measured, and which rotates as the belt moves forwardly between the rollers 39 and 41. The linear measurement (preferably in feet) is indicated on the dial 112 which is visible to the operator at all times.

The counter may be secured to one of rods 47 in any convenient manner, as by clamps 113 (Fig. 2). It should be noted in this connection that the wheel 111 of the counter 110 should be positioned between the rollers 41 so that no vertical movement is possible which might impair the accuracy of measurement.

For the purpose of preventing transverse motion of the belt 98, a pair of vertically disposed rollers 115 (Figs. 2, 3) are provided on each side of the belt 98. As best seen in Fig. 6, these rollers are rotatably mounted on pins 116 by means of bearing 117 (Fig. 7). The pins 116, in turn, are rigidly secured to a cross piece 118 which is notched as at 119, to receive the lower corner of the square rods 47. In a similar manner, a cross piece 120 is notched as at 121, to receive the upper edge of square rods 47. This cross piece 120 is centrally apertured to receive a bolt 122 which threadedly engages a threaded aperture 123 in cross piece 118. A knurled head 124 may be provided on bolt 122 so that the same may be tightened by hand.

The above described unit, generally designated 125, may be adjustably positioned on square rods 47 by means of bolt 122 to suit the particular width of belting to be cut, and when properly positioned, prevents any transverse motion of the belt while the same is being reeled. This becomes important when the belt is being cut longitudinally, in which case, uniformity in width of the cut strips is insured.

For the purpose of cutting the belting into longitudinal strips a unique cutting device, generally designated 128, is provided on the square bars 47 (Fig. 2). Although only one such device is illustrated in Fig. 1, it is obvious that any number may be employed, depending on the number of strips to be cut.

The cutting device (Figs. 4, 5) comprises in part, a pair of spaced support members 130 rigidly secured to a cross member 131 at one of their ends and to a cross member 132 at their other ends. The cross member 132 is notched, as at 133 (Fig. 5) to receive one of the horizontally directed edges of square rods 47. Between the two square rods 47 is a generally rectangular plate 134 having its opposite ends notched, as at 135, to receive the square rods 47. The notches 133 should be formed so that the plate 134 may slide easily along the rods 47 when the plate 134 is not clamped to said rods 47.

Depending from plate 134 and rigidly secured thereto, is a relatively large boss 135 having a central bore in which a cylindrical knife holder 137 is slidable received. This knife holder is diametrically slotted at its lower end to receive a relatively flat knife blade 138 which may be removable secured to the knife holder 137 by means of screws 139. To prevent the knife blade from rotating in the boss 135 a keyway 140 is formed longitudinally of the knife holder 137 for receiving a projection 141 on a stop element 142 rigidly secured to plate 134.

The depth of this keyway is gradually reduced adjacent the upper end of the knife holder 137 to form a cam surface 142 which engages with projection 141 to prevent downward movement of knife holder 137.

Diametrically opposite the cam surface 141 on knife holder 137 is a radially outwardly opening slot 143 which is adapted to receive the tapered end of an elongated keeper bar 144. This keeper bar is provided at its end opposite the tapered end with a block 145 to which said keeper bar is rigidly secured. The block 145 is notched on one side to receive one of the square rods 47 and is provided on its opposite side with a bore 145 to receive the reduced end of a clamping bolt 147. The cross member 134 is therewithly apertured to receive the bolt 147, and a knurled bead 148 on bolt 147 permits the keeper 144 to be readily removed from slot 143 and the block 145 moved out of engagement with square rod 47. A slot 150 may be provided in keeper bar 144 for receiving a bolt 151 which, in turn, is threaded
secured to plate 134 to hold the knife holder downwardly against the resistance of the belt.

Thus, it is seen that upon actuation of bolt 147 the keeper may be removed from the knife holder and the device unclamped from the square rods in one operation. Thus, the knife holder 137 is readily removable for blade replacement and the device is easily moved along the square rods as desired for cutting different widths of belt.

The simple means herein described permits rapid cutting of a large belt into two or more strips of any desired width with great accuracy and without requiring more than one operator. It is pertinent to note that belting is taken to the device and removed from the same in a form which is easily rolled and is never handled in unwieldy long strips.

After the desired length of belting has been reeled on the mandrel 50 and the free end of the strip is secured to the roll in any convenient manner, the roll is lowered so that it rests on the floor, thereby permitting withdrawal of mandrel 50 through the bore 54 in sliding block 24. There may be as many cores 87 on the mandrel 50 as there are strips to be cut. If merely a winding operation is performed, one core is all that is required.

The use of this invention permits the jobber to fill orders for any desired sizes of belting by stocking only the largest widths which may be cut to the smaller sizes. If an irregular width of belting is desired, it is a simple matter to cut the next larger size to suit.

The embodiment herein described is not to be construed as restrictive of the invention, but merely a preferred form thereof.

I claim:

1. In a belt reeling device including a portable base adapted to be supported on the floor for movement thereover, and a horizontal mandrel on which the belt is to be reeled from a roll; bearings supporting said mandrel for rotation, guides supporting said bearings for vertical movement, a hoist mechanism connected with said bearings for causing said movement, and belt guiding carried by said base at a level above that of said mandrel and horizontally offset to one side of the latter for guiding said belt from such roll onto said mandrel when the latter is rotated, and means connected with said mandrel for rotating the same at any degree of elevation thereof, said means for rotating said mandrel being a motor carried by one of said bearings for vertical movement therewith.

3. In a belt reeling device including a portable base adapted to be supported on the floor for movement thereover, and a horizontal mandrel on which the belt is to be reeled from a roll; bearings supporting said mandrel for rotation, guides supporting said bearings for vertical movement, a hoist mechanism connected with said bearings for causing said movement, and belt guiding carried by said base at a level above that of said mandrel and horizontally offset to one side of the latter for guiding said belt from such roll onto said mandrel when the latter is rotated, and means connected with said mandrel for rotating the same at any degree of elevation thereof, said means for rotating said mandrel being a motor carried by one of said bearings for vertical movement therewith.
revolvably supported horizontal mandrel carried by said base on which a belt is to be reeled from a roll thereof, a frame on said base, a pair of vertical rollers on said frame engageable with opposite longitudinal edges of the length of the belt that is adapted to extend between said mandrel and such roll during the reeling of said belt onto said mandrel, a horizontal roller on said frame adjacent said vertical rollers across which said belt is adapted to extend in engagement therewith, and means supporting said frame on said base for movement to different positions relative to the latter.

In a belt reeling and cutting device including a portable wheel supported base adapted to be supported for movement over a floor, and a revolvably supported horizontal mandrel carried by said base on which a belt is to be reeled from a roll thereof, a frame on said base, a pair of vertical rollers on said frame engageable with opposite longitudinal edges of the length of the belt that is adapted to extend between said mandrel and such roll during the reeling of said belt onto said mandrel, a horizontal roller on said frame adjacent said vertical rollers across which said belt is adapted to extend in engagement therewith, and means supporting said frame on said base extending upwardly therefrom, said frame being carried at the upper end of said guide members, and bearings for said mandrel supported on said guide members for vertical movement.

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