

[54] **FABRIC MEASURING AND COST COMPUTING APPARATUS**

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[73] Assignee: **The Measuregraph Company, St. Louis, Mo.**

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[52] U.S. Cl. **33/133**

[51] Int. Cl. **G01b 5/04**

[58] Field of Search **33/129, 132, 133; 242/67.4**

[56] **References Cited**

UNITED STATES PATENTS

1,336,230	4/1920	Hosch	33/133
1,437,207	11/1922	Stocke	33/133
1,520,471	12/1924	Hosch et al.	33/133
1,628,091	5/1927	Wheeler et al.	33/133
1,369,663	2/1921	Hosch	33/133
1,738,546	12/1929	Wheeler	33/133
1,486,709	3/1924	Wheeler	33/129
1,421,863	7/1922	Turner	83/522

Primary Examiner—Louis R. Prince

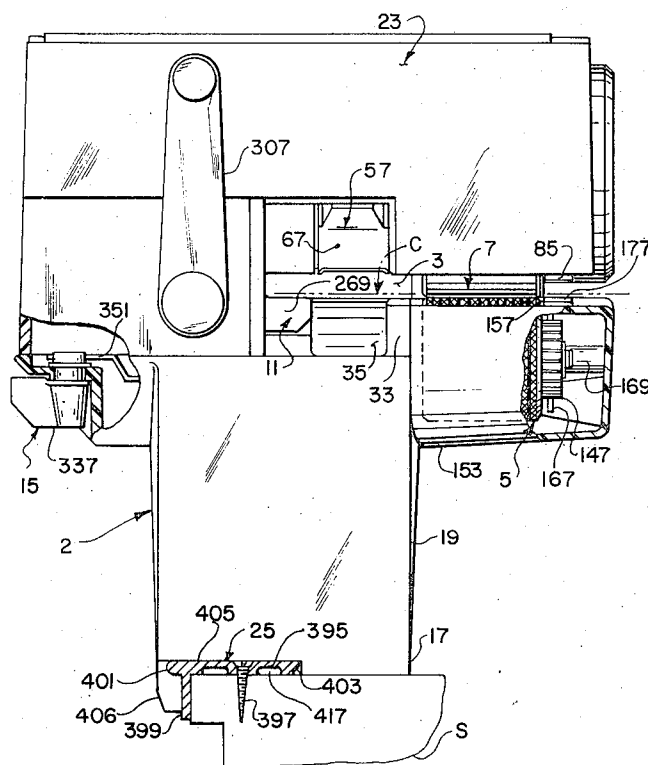
Assistant Examiner—Charles E. Phillips

Attorney, Agent, or Firm—Koenig, Senniger, Powers and Leavitt

[57] **ABSTRACT**

Apparatus for measuring out a length of fabric and for computing the cost of said length, having a measuring roller journaled for rotation on a horizontal shaft and a pressure roller resiliently contacting the measuring roller for gripping therebetween the fabric to be measured, the measuring roller rotating as the fabric is drawn between the rollers for driving indicating means which registers the length of the fabric measured out, and also for driving a cost computing double reel and web chart assembly for registering the cost of the fabric measured out. The apparatus has marking shears located in the vertical plane of the axis of the measuring roller permitting the true length of remnants to be directly registered by the indicating means. The cost computing chart assembly is removably carried by the apparatus for permitting quick removal of one chart assembly and replacement with another.

11 Claims, 23 Drawing Figures



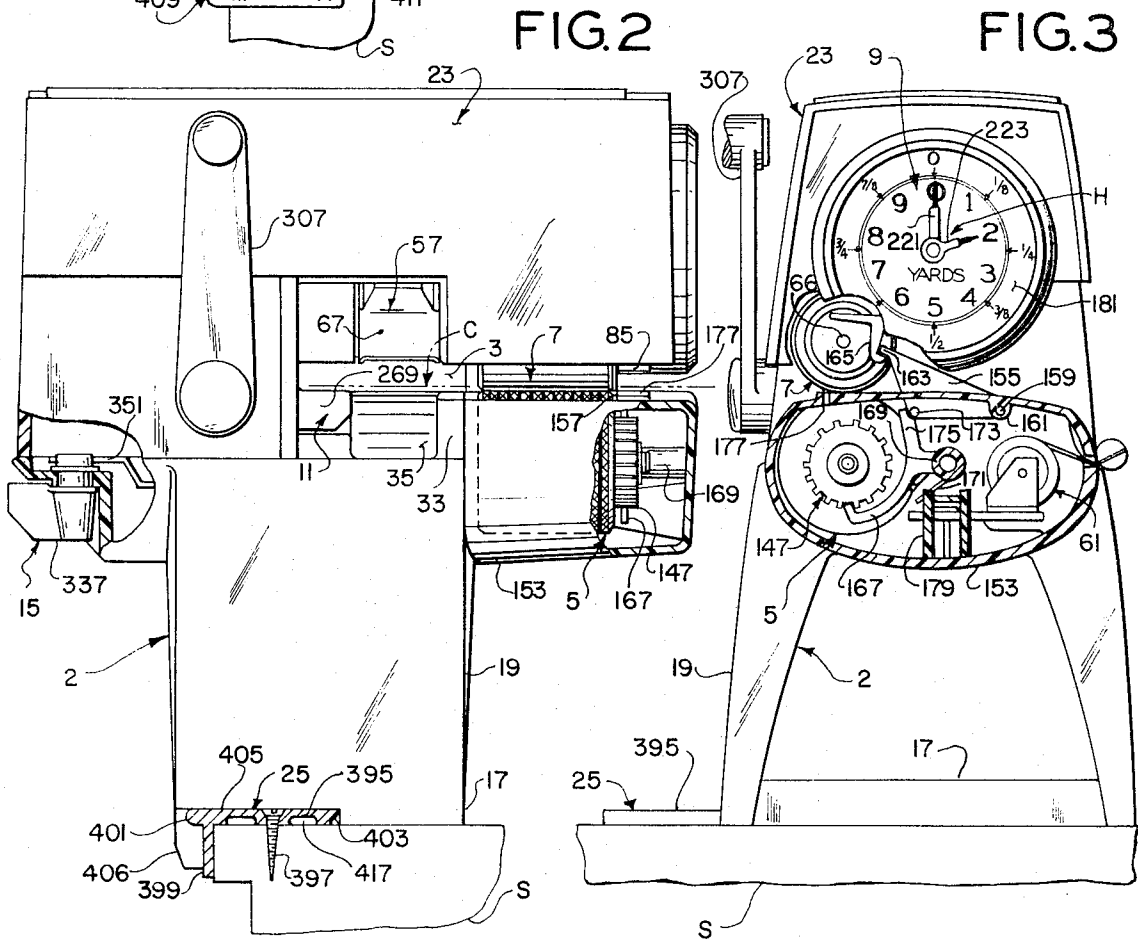
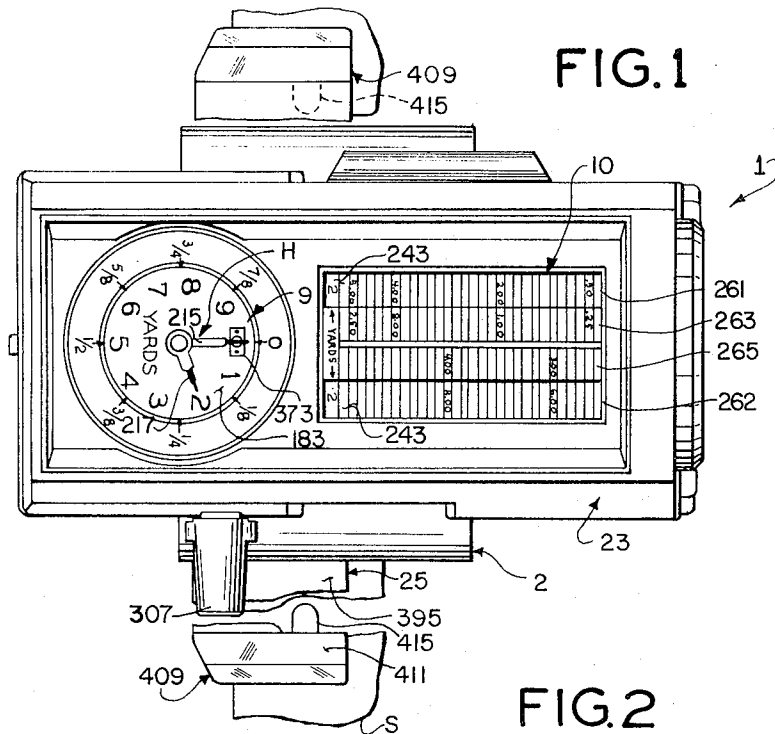


FIG. 5

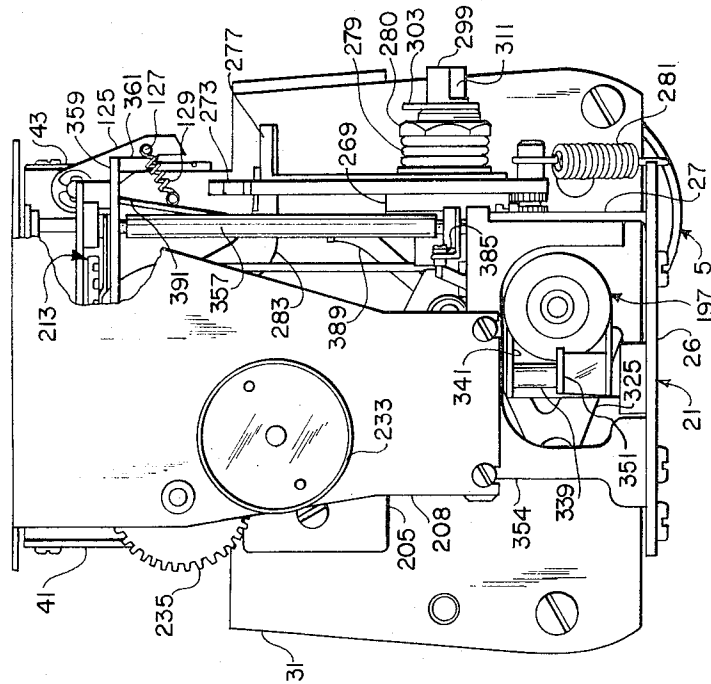


FIG. 4

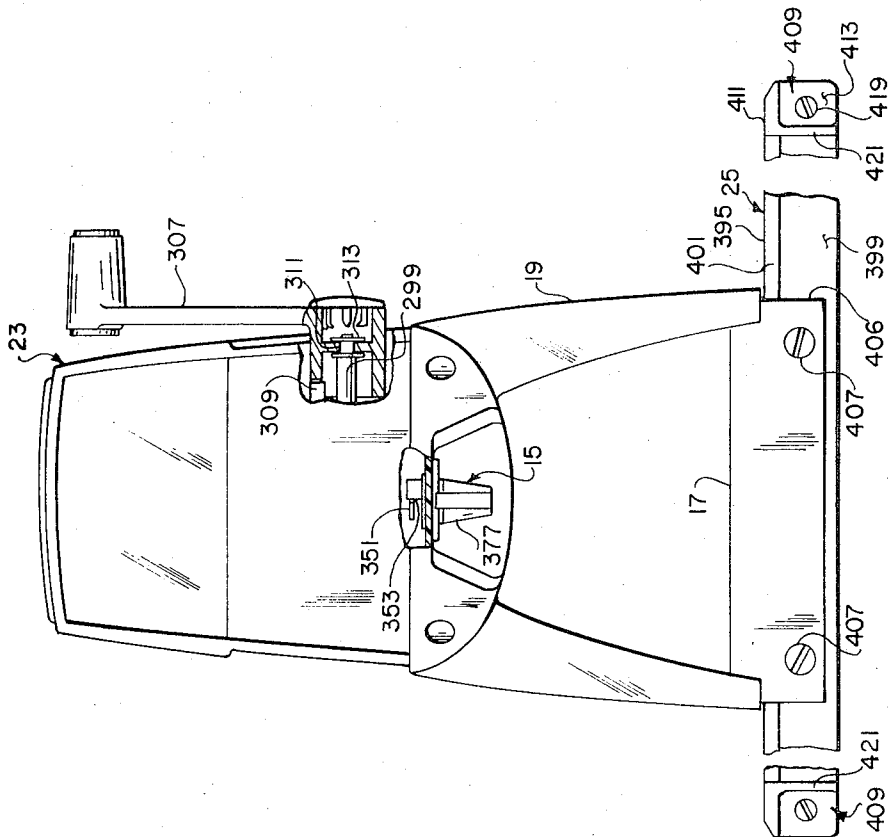


FIG. 6

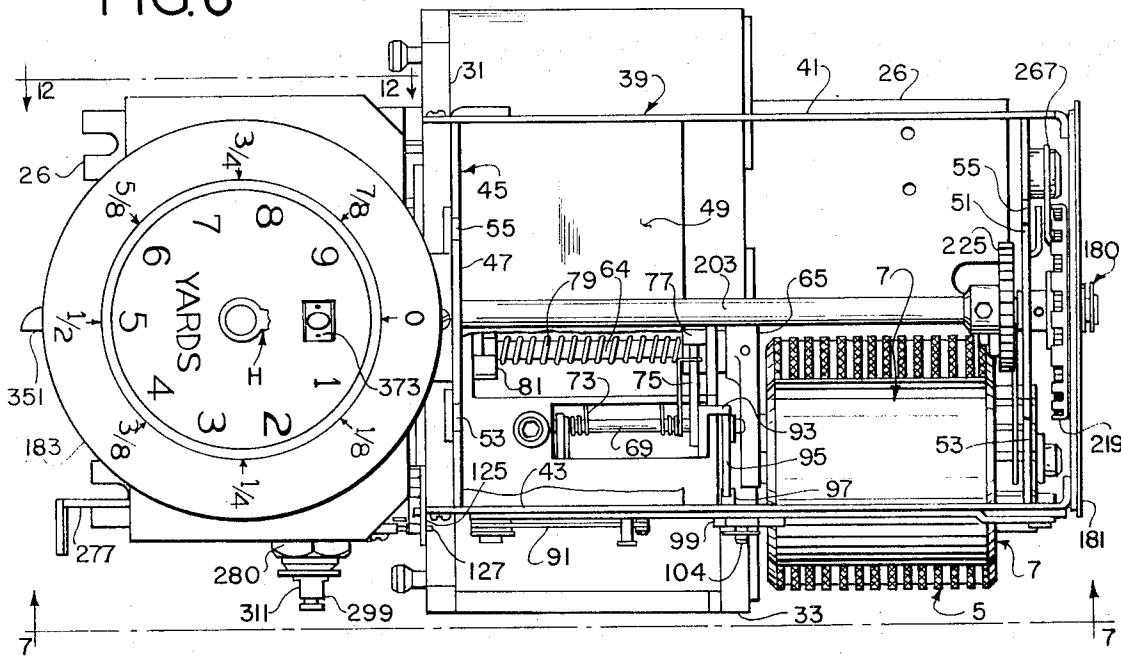
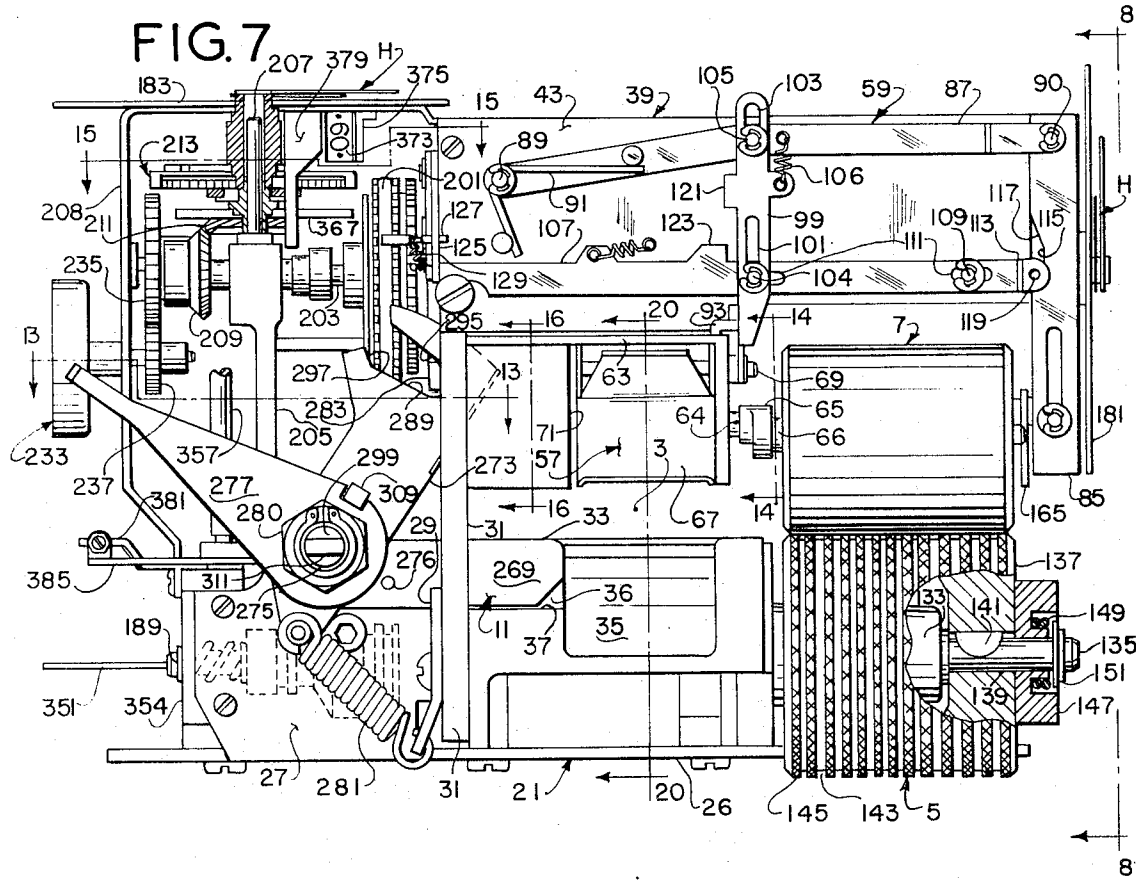
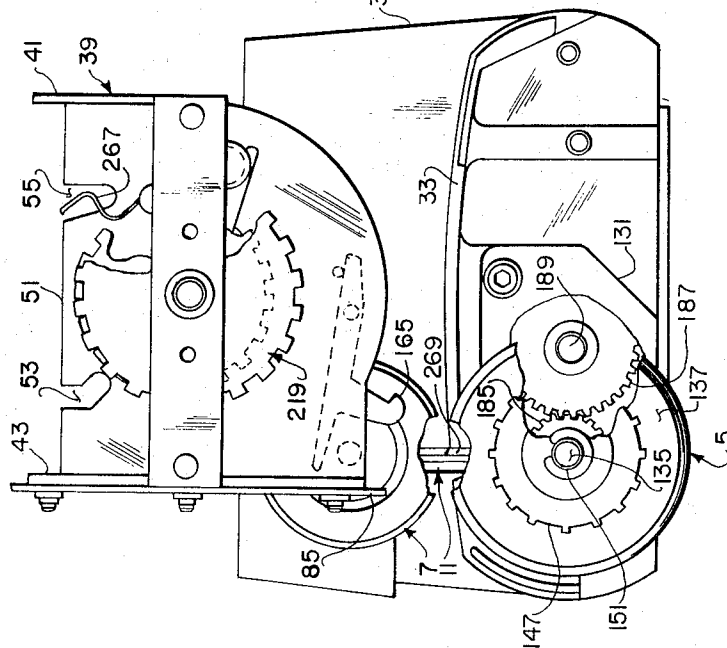


FIG. 7



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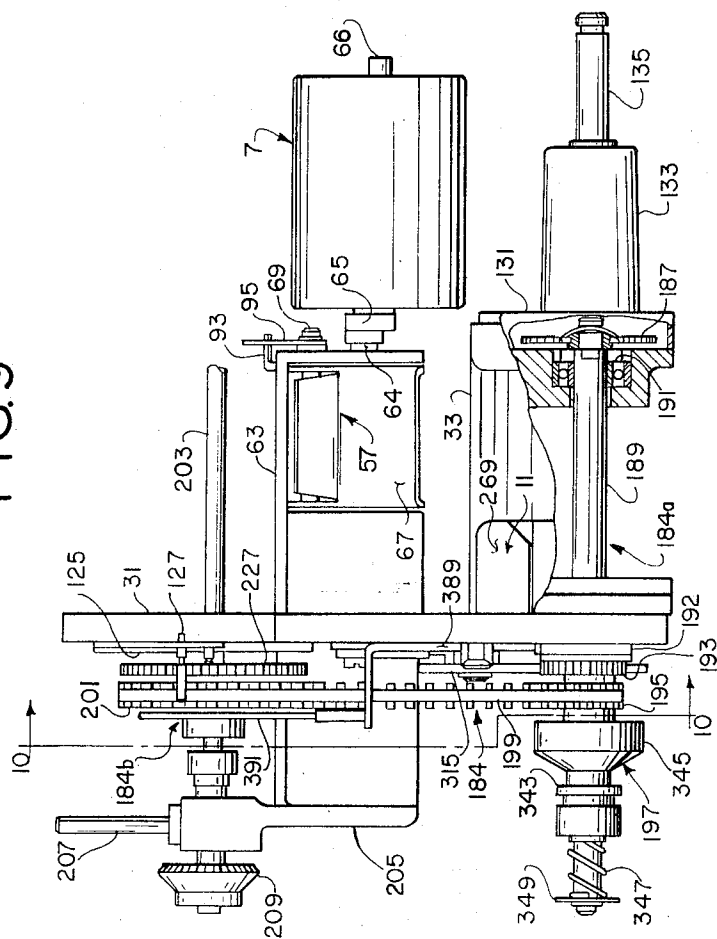


FIG. 11

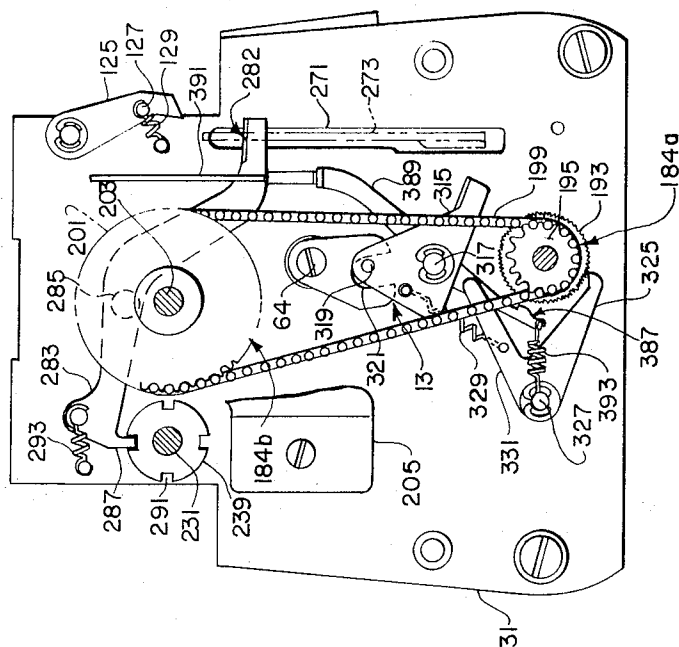


FIG 10

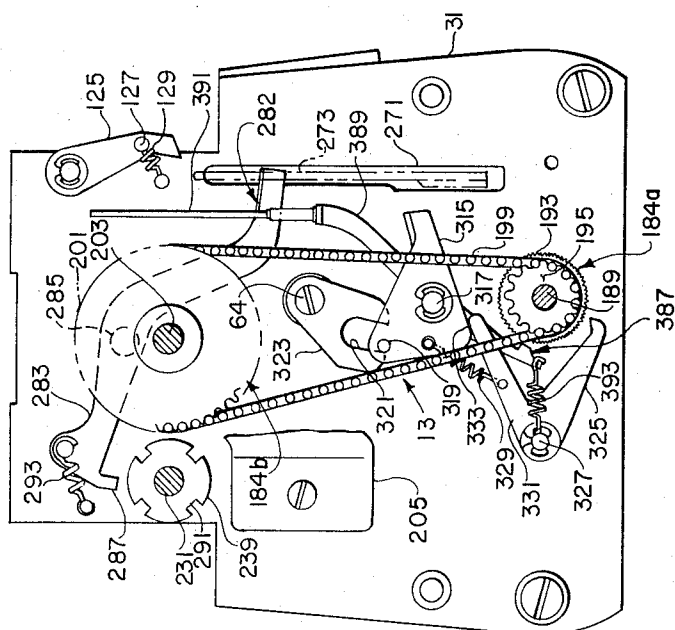


FIG. 12

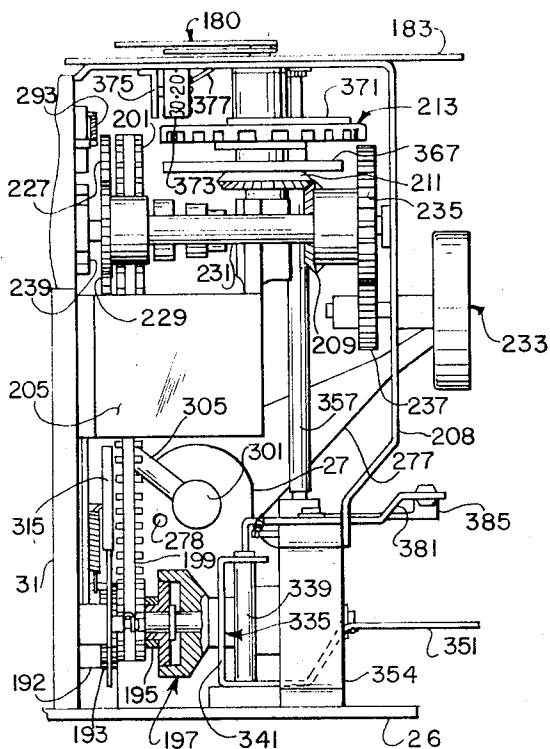


FIG. 13

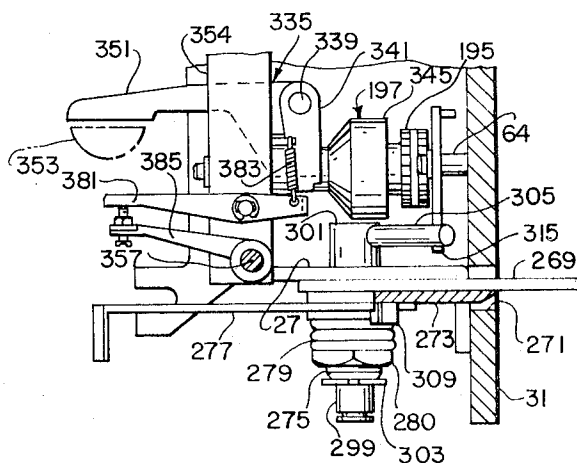


FIG. 14

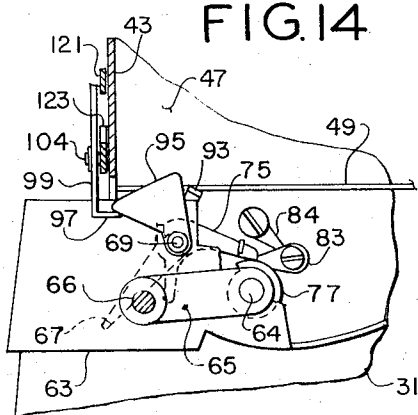


FIG. 15

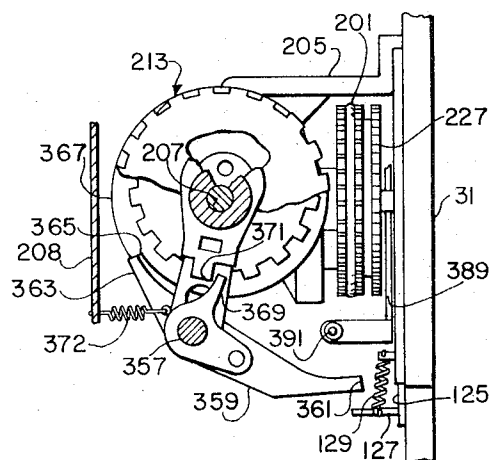


FIG. 16

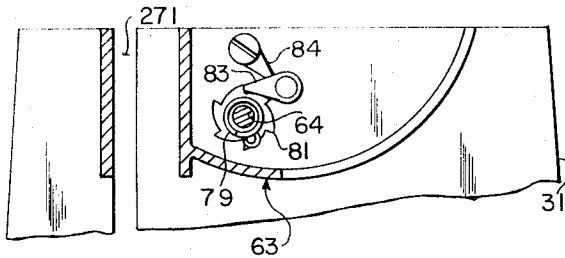


FIG. 17

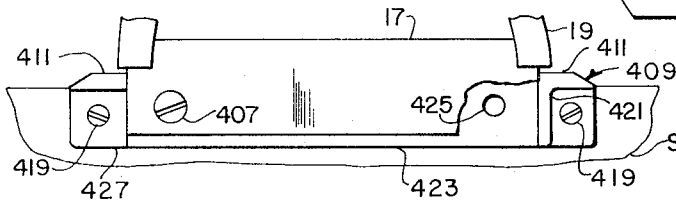


FIG. 18

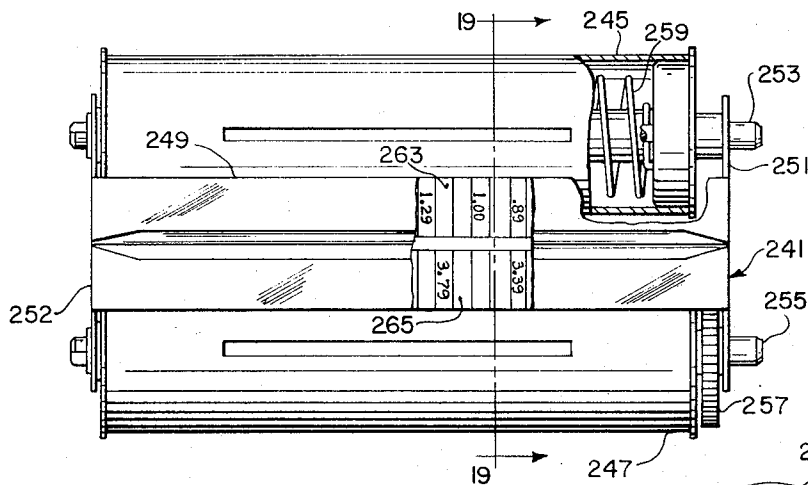


FIG. 19

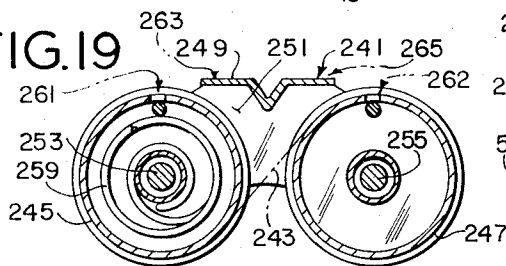


FIG. 20

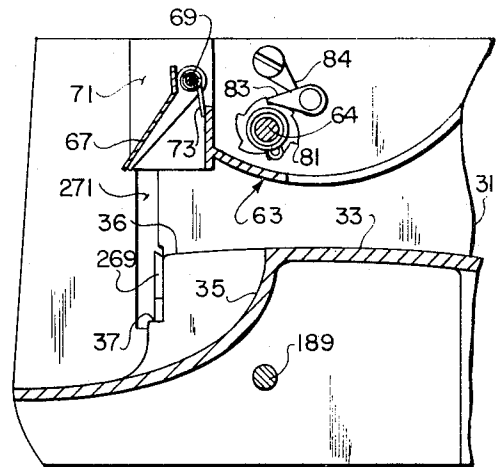


FIG. 21

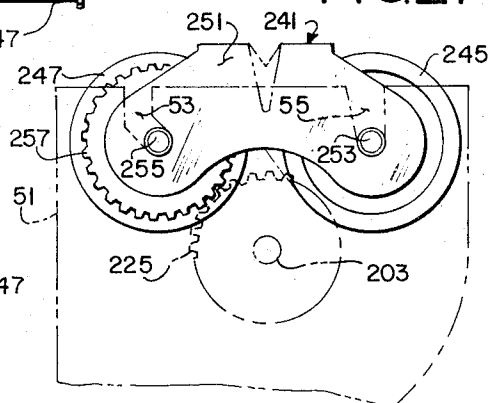


FIG.22

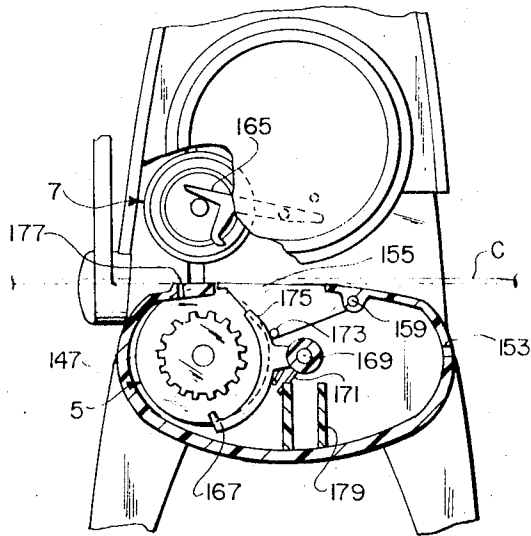
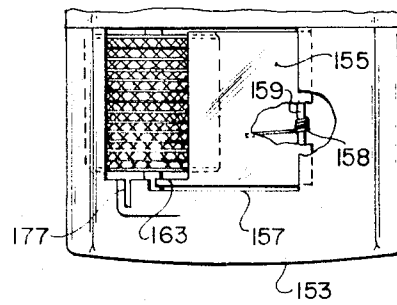


FIG.23



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FABRIC MEASURING AND COST COMPUTING APPARATUS

BACKGROUND OF THE INVENTION

This invention relates to apparatus for measuring out lengths of fabric and for computing the price of the length of fabric measured out.

More particularly, this invention is an improvement on the fabric measuring and cost computing machines which have long been produced by the assignor of this application and sold under the trademark MEASURE-GRAPH. Prior machines of this class are shown in such U.S. Pat. Nos. 1,390,323, 1,453,300, 1,458,606, 1,486,709, 1,421,863, 1,520,471 and 1,738,546.

Generally, the prior devices had a measuring roller and a pressure roller resiliently held against the measuring roller for gripping the fabric therebetween, the measuring roller rotating on drawing the cloth between the rollers. A gear train driven by the measuring roller drove an indicator which registered the length of the cloth drawn between the rollers and also drove a price computation chart for registering the price of the fabric measured out. Marking shears were provided to notch the margin of the fabric being measured to mark off the desired length. In measuring the length of a remnant with the prior devices, the length indicated by the machine was shorter than the actual length of the remnant, and it was necessary for the clerk to add an increment (e.g., 1 inch) to the length indicated by the machine to ascertain the true length of the remnant. Also, the price computation charts of the prior machines were not readily changeable on change in prices, and the prior machines were not well suited for the measurement of new types of fabrics, such as knit and double-knit fabrics, which are stretchable.

SUMMARY OF THE INVENTION

Among the several objects of this invention may be noted the provision of a fabric measuring and cost computing machine such as above described in which the length of a remnant registered by the machine is the true length of the remnant and there is no necessity for the clerk to add any increment to the registered length; the provision of such a measuring machine having a price chart assembly adapted to be readily removed as a unit from the machine and replaced by another; the provision of such a measuring machine in which dulled marking shear blades may be readily removed from the machine and replaced with sharp blades; the provision of such a measuring machine which has improved means for preventing spinning (overrun) of the measuring roller in the event the trailing edge of the fabric being measured is rapidly pulled past the measuring roller; the provision of such a measuring machine which has an improved throat guard for preventing a second piece of fabric from passing over the measuring roller without first resetting the indicating means to zero; the provision of such a measuring machine having a simplified mechanism for locking the marking shear out of action between one-eighth yard increments; and the provision of a simplified and improved track for such a measuring machine permitting the machine to be slidably moved along the track and secured in desired location.

Generally, apparatus of this invention for measuring out lengths of fabric comprises supporting means hav-

ing a horizontal throat for passage therethrough of a margin of the fabric to be measured, a measuring roller carried by the supporting means for rotation on a horizontal axis below the throat, and a pressure roller carried by the supporting means above the measuring roller and movable between a raised retracted position in which it is clear of the measuring roller and a lowered contacting position in which it is resiliently held against the measuring roller for gripping therebetween the fabric to be measured, whereby the rollers are caused to rotate without slippage as the fabric is drawn between the rollers. The apparatus further includes means operable in response to rotation of the measuring roller for indicating the length of fabric drawn between the rollers and for registering the price of the length of fabric which has been drawn between the rollers. Means is provided for marking the fabric after a desired length thereof has passed between the rollers to indicate the length measured out, this marking means comprising a fixed shear blade positioned in the throat in the vertical plane of the axis of the measuring roller, and a movable shear blade carried by the supporting means cooperable with the fixed shear blade for notching the margin of the cloth. The apparatus further includes means operable in response to actuation of the marking means for raising the pressure roller from its lowered contacting position to its raised retracted position for permitting removal of the fabric from the throat and means operable to reset the indicating means and computation means to zero.

Other features and objects of this invention will be in part apparent and in part pointed out hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a fabric measuring and cost computing apparatus of this invention showing the apparatus slidably mounted on a track secured to the edge of a sales counter;

FIG. 2 is a side elevation of the apparatus with parts broken away;

FIG. 3 is a front elevation of the apparatus with parts broken away;

FIG. 4 is a rear elevation of the apparatus with parts broken away;

FIG. 5 is an enlarged rear elevation of the upper portion of the apparatus with a case thereof removed;

FIG. 6 is an enlarged plan of the apparatus with the case and price chart assembly removed and with parts broken away;

FIG. 7 is a view on line 7—7 of FIG. 6;

FIG. 8 is a view on line 8—8 of FIG. 7;

FIG. 9 is a view similar to FIG. 7 with parts removed and broken away;

FIG. 9 is a view similar to FIG. 7 with parts removed and broken away;

FIG. 10 is a vertical section on line 10—10 of FIG. 9 showing means operable to raise the pressure roller from its lowered contacting position to its raised retracted position;

FIG. 11 is a view similar to FIG. 10 showing parts in position corresponding to the raised retracted position of the pressure roller;

FIG. 12 is a view on line 12—12 of FIG. 6;

FIG. 13 is a horizontal section on line 13—13 of FIG. 7;

FIG. 14 is a vertical section on line 14—14 of FIG. 7;

FIG. 15 is a horizontal section on line 15—15 of FIG. 7;

FIG. 16 is a vertical section on line 16—16 of FIG. 7;

FIG. 17 is a view showing the apparatus fixedly mounted on a modified mounting track;

FIG. 18 is a plan view of a price chart assembly removed from the apparatus;

FIG. 19 is a vertical section on line 19—19 of FIG. 18;

FIG. 20 is a vertical section on line 20—20 of FIG. 7;

FIG. 21 is a front elevation of the price chart assembly installed in the apparatus with parts of the apparatus shown in phantom;

FIG. 22 is a vertical section on line 22—22 of FIG. 23, showing a throat-blocking flap of the apparatus held down in its retracted position by a length of cloth; and

FIG. 23 is a view in elevation of the top of a shroud for a measuring roller of the apparatus, and showing the measuring roller and the flap of FIG. 22.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, reference numeral 1 generally indicates apparatus made in accordance with this invention for measuring and pricing lengths of fabric or cloth from bolts, and for measuring and pricing fabric or cloth remnants. Generally, the apparatus comprises supporting means 2 having a horizontal throat 3 for the passage therethrough of a margin of cloth to be measured, a measuring roller 5 carried by the supporting means for rotation on a horizontal axis below the throat, and a pressure roller 7 carried by the supporting means for rotation on a horizontal axis below the throat, and a pressure roller 7 carried by the supporting means above the measuring roller and movable between a raised retracted position in which it is clear of the measuring roller, and a lowered contacting position (see FIGS. 2 and 3) in which it is resiliently held against the measuring roller for gripping cloth C between the measuring roller and the pressure roller, whereby the rollers are caused to rotate without slippage as the cloth is drawn between them. The apparatus further includes means generally indicated at 9 operable in response to rotation of measuring roller 5 for indicating the length of cloth passing between the rollers. At 10 is generally indicated a price computation chart assembly operable in response to rotation of the measuring roller for registering the price of the cloth measured out. A marking shear 11, positioned within throat 3 in the vertical plane of the horizontal axis of measuring roller 5, is provided for notching the margin of the cloth being measured out to indicate a desired length, and to show where the cloth is to be cut for such length. At 13 (see FIG. 10 particularly) is indicated means operable in response to the actuation of marking shear 11 to raise the pressure roller 7 to its raised retracted position for permitting removal of the cloth from the throat and entry of another length of cloth in the throat, and at 15 (see FIG. 2 particularly) is indicated means operable to reset length indicator

means 9 and price computation chart assembly 10 to zero for measuring out another length of cloth.

More particularly, the apparatus or machine 1 comprises a base 17, a pedestal 19 extending up from the base, and a frame 21 (see FIG. 7) constituting the supporting means 2 having throat 3 therewithin. A cover 23 is provided on the pedestal housing the mechanism of the apparatus, and having windows for viewing the length indicating means 9 and price chart assembly 10.

The base, the pedestal, and the cover are preferably molded of plastic material. Base 17 engages a track 25 secured to the edge of a sales counter (or table) S to support the measuring machine at a convenient working position for use by a clerk to measure out cloth for a customer.

Referring to FIG. 7, the frame is shown to comprise a metal base plate 26 on which various components of the apparatus are carried, this plate being secured to the top of pedestal 19. A vertical mounting bracket 27 is bent up from the left rear corner of base plate 26 (left as viewed in FIG. 7) and bracket 27 has a flange 29 bent outwardly at its forward end for having a vertical support plate 31 secured thereto. A smooth-surfaced curved platform 33, over which the margin of cloth to be measured is to be drawn, is mounted on the base plate 26. This platform defines the lower rear surface of the throat 3. It has a recess 35 (see particularly FIG. 20) formed therein at one end constituting its exit end to enable the clerk, gripping the leading end of the cloth to be measured, to bring the leading end of the cloth back into the throat to position it for being pulled between measuring roller 5 and pressure roller 7. At the rear side of this recess is a formation 36 having a rabbet 37 for mounting a fixed blade of marking shear 11 in vertical position.

A chart support frame 39 is secured to the upper portion of support plate 31 and extends outwardly therefrom (in the direction away from the clerk who stands behind the sales counter on which the measuring machine is mounted) above measuring roller 5 for mounting the price computation chart assembly 10 and a front part of the indicating means 9. This frame 39 comprises a pair of side plates, the left side plate being indicated at 41 and the right side plate being indicated at 43 as viewed from the rear in FIG. 6, a rear angle member 45 having a vertical leg 47 adjacent the upper front portion of support plate 31 and a horizontal leg 49 extending forwardly from its vertical leg, and a front plate 51. Vertical leg 47 and front plate 51 have notches 53 and 55 provided in their upper edges for releasably mounting the price computation chart assembly 10 in a manner that will appear. A trigger means 57 for effecting lowering of pressure roller 7 from its raised retracted position to its lowered contacting position is carried by support plate 31 above the platform 33. A stop bar linkage generally indicated at 59 operable in response to actuation of the trigger of means 57 is carried by side plate 43 for preventing lowering of pressure roller 7 if the leading edge of cloth C extends substantially beyond the vertical plane of the axis of measuring roller 5, or if reset means 15 has not been operated to reset the indicating means 9 and the price computation chart assembly 10 to zero. A reference price chart assembly 61 (as shown in FIG. 3) is carried by base plate 25 for information as to the price of a known length of cloth without having to pass the cloth through the machine.

Trigger means 57 comprises a bracket 63 (FIG. 9) secured to support plate 31 and extending out therefrom as a cantilever over the platform 33. This bracket defines the top of the throat 3. A shaft 64 is journaled in this bracket on a horizontal axis parallel to the axes of rolls 5 and 7 in a vertical plane offset from the vertical axis of roller 5 in the direction toward the entry end of the platform 33 (see FIG. 6 particularly for this offset). This shaft has a crank arm 65 on its forward end (see particularly FIG. 14). The pressure roller 7 is journaled on a shaft 66 extending forward from the end of arm 65, parallel to and offset from the axis of shaft 64, the arrangement being such that on rotation of shaft 64 on its axis, the pressure roller swings up and down. At 67 (see particularly FIGS. 7, 9 and 20) is indicated the trigger of means 57, pivoted on a shaft 69 within an opening 71 in the bracket 63, and biased by a spring 73 toward the retracted position in which it appears in FIG. 20. As will appear, shaft 64 is rotatable in the direction for raising the pressure roller 7 to its retracted or open position in response to actuation of the marking shear 11 via means 13, and is rotatable in the opposite direction for lowering the pressure roller in response to actuation of the trigger 67.

A pawl 75 (FIG. 14) pivotally carried on shaft 69 engages a ratchet wheel 77 fixed on shaft 64 for maintaining the pressure roller in its raised retracted position after it has been raised thereto. This pawl is moved out of engagement with ratchet wheel 77 when trigger 67 is moved to its actuating position for permitting the pressure roller to move to its lowered contacting position. A torsion spring 79 (FIG. 6) surrounding shaft 64 biases the pressure roller 7 down towards its lowered contacting position and resiliently holds the pressure roller in contact with measuring roller 5 when the pressure roller is in its lowered contacting position for gripping cloth C therebetween. The force exerted on the pressure roller when it is in its lowered contacting position may be varied by varying the torsion of spring 79. As shown in FIG. 16, the right end of spring 79 is secured to a ratchet wheel 81 carried on shaft 64, the ratchet wheel being held in position relative to support plate 31 by a pawl arm 83. The torsion of spring 79 may be varied by rotating ratchet wheel 81 to a new position which in turn twists one end of spring 79 (its left end as viewed in FIG. 6) relative to its other end secured to ratchet wheel 77 to increase or decrease its torsion and thus increases or decreases the gripping force exerted on the pressure roller. Pawl arm 83 is held in engagement with ratchet wheel 81 by a pivoted lug 84.

Stop bar linkage 59 (see particularly FIG. 7) comprises a stop bar 85 carried by side plate 43 at the front thereof, this bar being vertically movable between a raised retracted position (as shown in FIG. 7) in which it is clear of throat 3 and a lowered extended position in which it extends down below the bottom of the throat. It is moved between its raised retracted position and its lowered extended position by a lever 87 pivoted on side plate 43 at 89. Bar 85 has its upper end pin-connected to the forward end of lever 87 as indicated at 90. A hairpin spring 91 biases lever 87 to swing upwardly to return and maintain stop bar 85 in its raised retracted position.

Lever 85 is swingable downward in response to movement of trigger 67 to its actuating position. As shown in FIG. 14, trigger 67 has a finger 93 adapted

to engage an idler link 95 pivoted on shaft 69. Idler link 95 is cooperable with a finger 97 formed on the lower end of a vertical slide bar 99 which is resiliently connected to lever 87 intermediate pivot 89 and stop bar 85 for effecting downward movement of the stop bar when trigger 67 is moved to its actuated position. Slide bar 99 has elongate vertical slots moved and 103, and a pin 104 secured to side plate 43 extends through slot 101 and a pin 105 secured to lever 87 extends through slot 103, whereby slide bar 99 is movable relative to side plate 43 and to lever 87. Slide bar 99 is resiliently connected to lever 87 by a spring 106 which has sufficient tension to move lever 87 and stop bar 85 downwardly as trigger 67 is moved to its actuating position, but permits relative motion (lost motion) between the slide bar and lever 87 in the event stop bar 85 is restrained from moving to its lowered extended position by cloth extending out beyond measuring roller 5.

Stop bar linkage 59 further includes a horizontal slide bar 107 slidably secured on side plate 43 by pin 104 and by a pin 109, these pins protruding through horizontal elongate slots 111 in the slide bar. An offset 113 is formed in the forward end of slide bar 107 (its right end viewed in FIG. 7) for clearance between slide bar 107 and stop bar 85. The rear edge of stop bar 85 is cut out as indicated at 115 to form an inclined cam surface 117 and the forward end of horizontal slide bar 107 carries a cam follower pin 119 engageable with the cam surface for moving the horizontal slide bar to the left from a locking position (as shown in FIG. 7) to an open position as stop bar 85 moves downwardly to its lowered extended position. Vertical slide bar 99 has an inwardly extending stop 121 formed on its rear edge and horizontal slide bar 107 has an upwardly extending lug 123 formed on its upper edge, the stop being engageable with the lug when slide bar 107 is in its locking position to prevent full downward movement of slide bar 99 with its finger 97 (see FIG. 14) which in turn prevents trigger 67 from fully moving to its actuating position for moving pawl 75 out of engagement with ratchet wheel 77 for releasing pressure roller 7 from its raised retracted position. When horizontal slide bar 107 is moved to its open position by cam surface 117, lug 123 is clear of stop 121, and vertical slide bar 99 is free to move downwardly to permit trigger 67 to fully move to its full actuating position to rotate pawl 77 thereby releasing pressure roller 7 from its raised retracted position and permitting it to move to its lowered contacting position. A pivoted stop 125 carried on the back face of support plate 31 is pivotally movable between a stop position in which its lower end is in position to block the movement of horizontal slide bar 107 from its locking position to its open position and a retracted position permitting movement of the horizontal slide bar to its open position. A pin 127 carried by stop 125 engages side plate 43 to prevent movement of stop beyond its stop position, and a spring 129 resiliently connects pin 127 to support plate 31 to bias stop 125 toward its stop position. Stop 125 is movable from its open retracted position to its stop position in response to movement of indicating means 9 from zero, and it is movable from its stop position to its open retracted position in response to resetting of the indicating means and the price computation chart assembly 10 to zero in a manner as will appear. Thus, the stop bar linkage 59 prevents lowering of the

pressure roller whenever stop bar 85 is prevented from moving to its lowered extended position by the cloth C or whenever indicating means 9 has not been reset to zero.

As shown in FIGS. 7-9, measuring roller 5 is supported in front of platform 33 with the top of the measuring roller at substantially the same elevation as the upper surface of the platform. A gear housing 131 having a boss 133 extending therefrom is secured to platform 33. A drive shaft 135 is carried by antifriction bearings (not shown) in the boss 133, this shaft extending out beyond the forward end of the boss. Measuring roller 5 is a cylindric roll made of aluminum, for example, the outer diameter of which is accurately machined to have a specified dimension. As shown in FIG. 7, measuring roller 5 is counterbored from the back to accommodate boss 133 and its front face 137 is machined to present a smooth surface. Drive shaft 135 extends through a hole 139 in front face 137 and the angular position of the measuring roller is fixed relative to the drive shaft by a Woodruff key 141. The outer surface of the measuring roller is provided with a plurality of annular grooves 143 into which thread strands which sometimes trail behind the trailing edge of a remnant may drop to avoid having these thread strands gripped between the pressure roller and the measuring roller to prevent indicator means 9 from registering a length longer than the actual length of the remnant. The outer cylindric surfaces of the roller between grooves 143 are knurled as indicated at 145 to facilitate positive gripping of cloth C between the measuring roller and pressure roller to prevent slippage of the cloth on the measuring roller as the cloth travels thereover.

An anti-spin or anti-overflow and anti-reverse ratchet wheel 147 is mounted on the outer end of drive shaft 135 with its back face in contact with the front face 137 of measuring roller 5. This ratchet wheel is resiliently held in frictional contact with the front face of the measuring roller by means of a compression coil spring 149. The coil spring, the ratchet wheel, and the measuring roller are secured on the drive shaft by means of a snap ring 151 at the outer end of the drive shaft. Ratchet wheel 147 is free to rotate on the drive shaft but normally rotates with the measuring roller.

As shown in FIGS. 1-3, measuring roller 5 is housed in shroud 153 which extends forward from the upper end portion of pedestal 19 and which enclosed all but the top of the measuring roller. The top of the shroud is an extension of the top of the platform 33 and their upper surfaces together constitute the lower throat surface. Shroud 153 is formed of plastic material, for example, and has an opening 157 in its top for the roller 7 and for a throat guard means constituted by a flap 155 movable between a lowered retracted position in which its upper surface is substantially tangent to the top of the shroud (and to the top of the measuring roller), and a raised throat-blocking position (shown in FIG. 3) in which it blocks throat 3 adjacent measuring roller 5 and pressure roller 7 to prevent the passage of a second piece of cloth through the throat until marking shear 11 has been actuated to raise pressure roller 7 to its raised retracted position. As previously noted, the pressure roller may not be lowered to its operative position until the indicating means 9 and the price computation chart assembly 10 have been reset to zero to permit horizontal slide bar 107 to move from its stop

position to permit movement of trigger 67 to its actuating position. Thus, flap 155, together with slide bar 107, prevents a second piece of cloth from being measured until the indicating and price computation means have been reset to zero and the pressure roller has been raised to its raised retracted position.

Flap 155 is pivoted on a pin 159 at the end of opening 157 toward the entry end of the top of the shroud (its right end as viewed in FIG. 3) and is biased toward its raised blocking position as by a torsion spring 158. It has a finger 163 at its free end for engagement with a pawl 165 for holding it in its raised blocking position whenever pressure roller 7 is in its lowered contacting position. Pawl 165 is pivotally carried on front plate 51 and is movable between a latching position (as shown in FIG. 3) in which it is in position to engage finger 163 and an unlatching position in which it is clear of the finger. The pawl is gravity biased to assume its latching position (i.e., to swing counterclockwise as viewed in FIG. 3) and is movable to its unlatching position in response to movement of pressure roller 7 from its lowered contacting position to its raised retracted position, as will appear.

As shown in FIG. 3, an anti-spin (or anti-overflow) and anti-reverse pawl 167 is pivoted at 169 within the shroud 153. This anti-spin and anti-reverse pawl is movable between an operative position (as shown in FIG. 3) in which it engages ratchet wheel 147 to hold the latter and hence measuring roller 5 from rotating in forward or rearward direction in the event the trailing edge of the cloth passes from between the rollers, and a retracted position in which it is clear of the ratchet wheel. Pawl 167 is biased toward its operative position by a spring 171, and is movable to its retracted position by the camming action of a pin 173 carried by flap 155 engaging a follower arm 175 of the pawl to pivot the pawl away from ratchet wheel 147 as the flap is swung down to its lowered retracted position. Thus, pawl 167 and flap 155 together constitute anti-spin or anti-overflow and anti-reverse means operable in response to the trailing edge of the cloth being measured passing through the coacting measuring roller 5 and pressure roller 7 for stopping ratchet wheel 147 from rotating forward (and thus preventing indicating means 9 from registering a greater length than was actually measured out) and also for holding it from rotating rearward (and thus preventing negation of the measurement).

A slot 177 is provided in the upper surface of shroud 153 adjacent the front left corner thereof (as viewed in FIG. 23) for receiving stop bar 85 when it is moved to its lowered extended position. A mounting bracket 179 is formed within shroud 153 to secure it to base plate 26.

As seen in FIGS. 1-3, the length indicating means 9 for registering the length of cloth drawn between measuring roller 5 and pressure roller 7 comprises a front facing dial indicated at 181 for viewing by the customer, and an upwardly facing dial indicated at 183 for viewing by the sales clerk. Each dial has indicating hands H driven in response to rotation of the measuring roller by means of a gear and belt drive train generally indicated at 184 (see FIGS. 9-11). More particularly, rotation of measuring roller 5 causes rotation of drive shaft 135 (FIGS. 7-9) and of a pinion 185 fixed on the back end of the drive shaft within gear housing 131. This pinion meshes with a gear 187 carried on a

countershaft 189 journaled in ball bearings at 191 an extending through support plate 31. Countershaft 189 carries a stop wheel 192, an anti-reverse ratchet wheel 193 and a drive pulley 195. This drive pulley is free to rotate on countershaft 189 and is releasably held for rotation therewith by a cone friction clutch assembly, generally indicated at 197, which rotates with the countershaft. Thus, when the clutch is in engagement with the drive pulley, the latter rotates with the countershaft.

A positive drive belt 199, a so-called "Pic" belt, for example, is trained around drive pulley 195 and an upper pulley 201, the latter being carried on an indicator drive shaft 203. This indicator drive shaft simultaneously drives indicator hands H for both dials 181 and 183 and is carried by a bracket 205 secured to support plate 31. Shaft 203 is journaled in support plate 31, and extends forward therefrom within chart support frame 39 for driving the front dial indicator hands. A vertical spindle 207 is carried by bracket 205 and by a support bracket 208 (see FIG. 12) for driving the upper dial indicator hands as will appear. A bevel gear 209 carried on the back end of indicator drive shaft 203 meshes with a crown gear 211 carried by spindle 207 for driving the spindle. An indicator hand driving mechanism, generally indicated at 213 in FIG. 12, is driven by spindle 207 for driving an inch indicating hand 215 for the upwardly facing dial one revolution in response to the passage of one yard of cloth between the measuring roller 5 and the pressure roller 7. Mechanism 213 also drives a yard indicating hand 217 one-tenth of a revolution as the inch hand rotates one revolution. An indicator hand driving mechanism 219, similar to mechanism 213, is provided for driving an inch indicator hand 221 and a yard indicator hand 223 for the front facing dial 181 to simultaneously register on front dial 181 the length of cloth measured out. Both indicator hand driving mechanisms 213 and 219 are well-known in the art and may be similar to the corresponding mechanisms disclosed in U.S. Pat. No. 1,458,606. A chart roll drive pinion 225 (FIG. 6) is carried by indicator drive shaft 203 adjacent the back face of front plate 51 of support frame 39 for driving the price computation chart assembly 10 in a manner as will appear.

The gears and pulleys provided on drive shaft 135 and on countershaft 189 constitute a lower gear train, generally indicated at 184a, driven by measuring roller 7, the gears and pulleys provided on shaft 203 constitute an upper gear train, generally indicated at 184b, for driving indicator hands H and price chart assembly 10, and belt 199 constitutes a belt drive from the lower gear train to the upper gear train.

As shown in FIG. 12, shaft 203 has a pinion 227 fixed for rotation thereon adjacent the back face of support plate 31, this pinion meshing with a spur gear 229 carried on a shaft 231 for driving a speed governor generally indicated at 233 (e.g. a centrifugal governor) which limits the speed of rotation of indicating means 9 and chart assembly 10 while they are being reset to zero by reset means 15. Shaft 231 is carried by support plate 31 and by support bracket 208 and has a gear 235 fixed on its back end meshing with a spur gear 237 carried by the speed governor for driving the governor at a speed substantially faster than the speed of the rotation of indicator drive shaft 203. Shaft 231 also carries

ries a notched index wheel 239 adjacent the back face of support plate 31.

As shown in FIG. 18, the price computation chart assembly 10 includes a chart frame 241, a pair of chart rolls or reels mounted in the chart frame, and a web wound on the rolls or reels constituting a price chart 243. The price chart web is wound on one of the chart rolls, this roll being indicated at 245 and constituting a storage roll, with its leading end portion wound around the other chart roll, this other roll being indicated at 247 and constituting a take-up roll. Chart frame 241 is formed of sheet metal or the like, and comprises a central plate 249 with front and rear flanges 251 and 252, respectively, bent down from the plate at its ends. Chart roll 245 is carried on shaft 253 and chart roll 247 is carried on a shaft 255, these shafts being journaled in the flanges and extending out beyond the flanges for removably mounting price chart assembly 10 in the chart support frame 39. A gear 257 is carried on shaft 255; this gear meshes (see FIG. 21) with chart roll drive pinion 225 carried on indicator drive shaft 203 for driving take-up roll 247 to wind the price chart thereon as measuring roller 5 is rotated. Storage roll 245 has a torsion rewind spring 259 there-within for rewinding chart 243 back onto the storage roll and for resetting both sets of indicating hands 215, 217 and 221, 223 to zero when reset means 15 is actuated.

On price chart 243, columns of computed numbers are provided as indicated at 261 and 262 which are, respectively, in alignment with the numbers on two stationary scales 263 and 265 carried by central plate 249 of the chart frame. The numbers comprising the scales indicate different price rates per yard and the computed columns of numbers 261 and 262 indicate the charge to be made at the different price rates shown on scales 263 and 265 for the length of cloth measured out and indicated by the indicator hands H for the dials 181 and 183. Columns 261 are printed on one face of chart 243 and columns 262 are printed on the other face of the chart and the latter is wound around roll 245 so that it passes from the bottom of roll 245 to the top of roll 247. Thus, when a column 261 corresponding to the yardage shown by indicating hands H is visible from above on roll 245, a corresponding column 262 is visible from above on roll 247 whereby the price of the cloth measured out may be readily determined by finding the correct price rate per yard on either scale 263 or 265 and looking at the adjacent column 261 or 262.

The ends of chart roll shaft 253 are received in notches 55 (FIGS. 7 and 8) in vertical leg 47 and in front plate 51, and the ends of chart roll shaft 255 are received in notches 53 in the vertical leg and in the front plate in a manner such that the price chart assembly 10 is removably mounted in support frame 39 in such manner as to facilitate quick removal and replacement of price chart assemblies. As shown in FIG. 8, notches 53 are angled downwardly and inwardly toward indicator drive shaft 203 for holding shaft 255 in proper relation to the indicator drive shaft 203 with gear 257 meshing down from above with pinion 225 (see FIG. 21). A detent spring 267 is secured to the front face of front plate 51 adjacent slot 55 therein for holding shaft 253 in position within the frame. The price chart assembly is installed within support frame 39 simply by placing the ends of shaft 255 in notches

53 (insuring that gear 257 meshes with pinion 225) and rotating the assembly about the axis of shaft 255 until the ends of shaft 253 are received within notches 55 and detent spring 267 snaps over the forward end of shaft 253. The price chart assembly 10 may be readily removed by pushing up on chart roll 245 from below to rotate the assembly about shaft 255 and then lifting the price chart assembly clear of support frame 39. Pinion 225 and gear 257 constitute a quick-disengageable drive means for the chart assembly permitting the chart assembly to be readily removed from or installed in chart support frame 39.

The fixed blade of marking shear 11, designated 269, extends forward through an opening 271 in support plate 31, being received in rabbet 37 in platform 33 with the cutting edge of the fixed blade (its upper generally horizontal edge) at substantially the same elevation as the upper surface of the platform. A movable shear blade 273 cooperates with the fixed blade, this movable blade being movable between a raised retracted position (as shown in FIG. 7) in which the movable blade is clear of throat 3 permitting cloth C to pass therethrough and a lowered cutting position in which the movable blade cooperates shearwise with the fixed blade to notch the margin of the cloth being measured out to mark off a desired length. Both the fixed blade and the movable blade are pivotally mounted on a hollow shaft 275 supported by mounting bracket 27. The fixed blade 269 bears against the outer face of bracket 27 and the movable blade 273 is pivotally mounted on shaft 275 outwardly of the fixed blade and bears against the outer face of the fixed blade. A pin 276 (see FIG. 7) extends from the back of blade 269 into a hole 278 in bracket 27 to hold blade 269 against rotation. An operating arm 277 is carried on the shaft 275 adjacent the movable blade. These last-mentioned members (269, 273 and 277) are resiliently held in contact with one another on shaft 275 by means of a compression coil spring 279 (see FIG. 5) and a nut 280 threaded on shaft 275. This spring biases the movable blade axially inwardly on the shaft and maintains face-to-face engagement between the shear blades and permits pivoting of the movable shear blade. A tension coil spring 281 connected between flange 29 and a pin on the back end of movable blade 273 biases the movable blade to its raised retracted position. By backing off nut 280 and removing spring 279 dull shear blades may be readily removed from shaft 275 and replaced with sharp ones. Blade 269 is removed by sliding it toward the outer end of shaft 275 to disengage pin 276 from hole 278, then swinging blade 269 up through slot 271, and then sliding it off shaft 275.

Marking shear 11 is prevented from being actuated except when the indicator hands 215 and 221 of indicating means 9 register one-eighth yard increments by latching or lockout means, generally indicated at 282, thus preventing odd-length pieces of cloth from being measured out. As shown in FIGS. 10 and 11, this lockout means includes a lockout lever 283 pivoted on the back face of support plate 31 at 285 having a catch 287 at one end (its left end as shown in FIGS. 10 and 11) engageable with index wheel 239. The other end of lever 283 is received in a slot 289 (see FIG. 7) in movable blade 273. Lever 283 is movable between a latching or lockout position (FIG. 10) in which catch 287 is on or above the periphery of index wheel 239

and a retracted position (FIG. 11) in which catch 287 is received in a notch 291 in the index wheel permitting the lever to rotate about pivot 285 for movement of the lever clear of slot 289 in blade 273. A spring 293 biases lever 283 toward its retracted position.

As shown in FIG. 7, slot 289 slopes downwardly and forwardly in movable blade 273. The upper surface of this slot indicated at 295 is formed to rotate lever 283 against the bias of spring 293 to its locking position when the movable blade is raised from its cutting position to its retracted position. The substantially vertical rear surface 297 of the slot is engageable with lever 283 when catch 287 is not in position to be received by a notch 291 in the index wheel. Thus, as movable blade 273 is rotated down toward its cutting position, lever 283 is permitted to rotate under the bias of spring 293 toward its retracted position by surface 295. If a notch 291 in index wheel 239 is not in position to receive catch 287, the catch will engage the periphery of the index wheel and prevent the lever from fully rotating to its retracted position such that slot surface 297 engages lever 283 thus preventing further movement of the movable blade toward its cutting position. Index wheel 239 is provided with four notches 291 in its periphery and the index wheel is rotated two revolutions for each yard of cloth measured so that one of the notches is in position to receive catch 287 each time an additional one-eighth yard increment of cloth passes through the rollers 5 and 7. Thus, the marking shear 11 can be operated only to notch cloth at one-eighth yard intervals.

As heretofore mentioned, apparatus of this invention includes means 13 operable in response to operation of marking shear 11 to raise the pressure roller 7 from its lowered contacting position to its raised retracted position. More particularly, this means includes a headed pin 299 rotatable in hollow shaft 275. As shown in FIG. 13, pin 299 extends through bracket 27 and is held within the hollow shaft by its head 301 on the inner side of the bracket and by a snap ring 303 adjacent its outer end. Head 301 has a finger 305 for actuating a linkage for raising the pressure roller.

Movable shear blade 273 and pin 299 are simultaneously rotated against the bias of spring 281 by movement of a crank handle 307 carried by pin 299. The movable blade has a lug 309 secured thereto and the outer end of the pin is machined flat as indicated at 311 with the crank handle positively engaging lug 309 and flats 311 as shown in FIG. 4. The crank handle is secured to pin 299 by a snap ring 313. Finger 305 cooperates with an idler lever 315 for counterclockwise rotation of the lever (as viewed in FIGS. 10 and 11) as crank handle 307 is swung forward to actuate marking shear 11. Lever 315 is pivoted at 317 on the back face of support plate 31 and carries a pin 319 at its upper end. Pin 319 is received in a slot 321 in a bifurcated crank 323 which is affixed to the back end of shaft 64. Thus, as finger 305 is rotated by crank handle 307, idler lever 315 rotates crank 323 and shaft 64 counterclockwise (as viewed in FIG. 10) to raise pressure roller 7 from its lowered contacting position to its raised retracted position.

Support plate 31 also pivotally carries an anti-reverse pawl 325 which is engageable with anti-reverse ratchet wheel 193 carried on countershaft 189 to prevent reverse rotation of measuring roller 5 when pressure roller 7 is in its raised retracted position. Pawl 325 is piv-

oted at 327 on support plate 31 and is movable between a retracted position (as shown in FIG. 10) in which countershaft 189 is free to rotate in reverse direction and an operative position (as shown in FIG. 11) in which the pawl engages ratchet wheel 193. Pawl 325 is resiliently connected to idler lever 315 by a spring 329 and has an upper arm 331 which is adapted to engage the lower corner of the idler lever as indicated at 333. Thus, as the idler lever is rotated clockwise on raising the pressure roller, spring 329 biases pawl 325 to its operative position and as the idler lever is rotated counterclockwise as upon lowering of the pressure roller, the lower corner 333 of the idler lever contacts arm 331 and forces pawl 325 to its retracted position clear of the ratchet against the bias of spring 329.

Reset means 15 comprises a bell crank lever 335 operable by a rotary knob 337 to disengage clutch assembly 197 and in turn disconnect countershaft 189 and measuring roller 5 from the gear and belt train 184, thereby permitting the torsion spring 259 in chart roll 245 to drive the indicating hand mechanisms 213 and 219 and chart rolls 245 and 247 in reverse to reset indicating hands H and price chart assembly 10 to zero. Bell crank 335 is pivoted on a vertical pin 339 extending up from base plate 26 and has a clutch shifting fork 341 which engages a flange 343 on clutch cone 345. This clutch cone is rotatable with countershaft 189 but is axially slidable therealong between an engaged position in which drive pulley 195 is gripped by the cone (as shown in FIG. 12) causing the pulley to rotate with the counter-shaft and a disengaged position in which the clutch cone is clear of the drive pulley permitting the drive pulley to freely rotate on the countershaft. As shown in FIG. 9, clutch cone 345 is biased toward its engaged position by a compression spring 347 which surrounds the rear portion of countershaft 189 and which is held thereon by a washer 349. Bell crank 335 has an arm 351 which extends rearwardly from pin 339 to cooperate with knob 337. This knob is rotatably mounted in pedestal 19 and has a flat camming surface 353 at its upper end for engaging arm 351 whereby rotation of knob 337 in either direction causes the bell crank to rotate on pin 339 to move clutch cone 345 rearwardly to disengage drive pulley 195 from countershaft 189.

At 354 (see FIG. 5) is indicated a member of generally inverted U-shape secured to the lower end of bracket 208 and base plate 26 and flange 27. At 357 is indicated a vertical shaft which is rotatable between a zero position and an advanced or measuring position. It is reset to its zero position in response to resetting of the indicator hands H to zero; it is movable from its zero to its advanced position in response to operation of the indicating mechanism 213 and 219. This shaft is carried between the bracket 208 and member 354. As shown in FIG. 15, it carries an arm 359 adjacent its upper end. The forward end of this arm has a finger 361 formed thereon engageable with pin 127 on stop 125 to move the stop from its stop position to its retracted position for permitting movement of horizontal slide bar 107 from its locking position when shaft 357 is in its zero position and being clear of pin 127 (and thus permitting the stop to assume its stop position) when shaft 357 is in its measuring position. The rear end of arm 359 constitutes a zero return stop pawl, as indicated at 363, which is engageable with a notch 365 in a stop wheel 367 on spindle 207 when shaft 357 is in

its zero position for preventing reverse rotation of the indicating drive mechanisms 213 and 219 beyond their zero indicating positions.

Shaft 357 is rotated between its zero position and its advanced measuring position by means of a finger 369 carried by the shaft engageable by a lug 371 carried by indicator driving mechanism 213. Lug 371 rotates at the speed of yard indicating hand 217 (i.e., one-tenth revolution per yard of cloth measured out) and is positioned to engage finger 369 when indicating hands H indicate zero. Immediately upon movement of the indicating hands H from their zero position, lug 371 moves out of engagement with finger 369 and shaft 357 and arm 359 are caused to rotate from their zero positions to their measuring positions by a spring 372 for permitting stop 125 to move to its stop position and for moving stop pawl 363 clear of notch 365. Upon actuating reset means 15, lug 371 contacts finger 369 as the indicating hands approach their zero position to rotate shaft 357 and arm 359 from their measuring positions to their zero positions whereby stop 125 is moved to its open position and stop pawl 363 engages notch 365 in stop wheel 367 to prevent reverse rotation of the indicating hand and price charts 245 and 247 beyond their zero positions.

As shown in FIG. 12, a rotary dial 373 (i.e., a totalizer dial) is provided in the upper dial face 183 for indicating multiples of ten when the apparatus of this invention is used to measure out lengths of cloth greater than ten yards. Dial 373 is carried by a bracket 375 secured to bracket 208 and is incrementally moved to indicate an additional 10-yard increment of measure by a finger 377 (FIG. 12) carried by indicator driving mechanism 213, this finger being rotated at the speed of hand 217 (i.e., one revolution per 10 yards of cloth measured out) and being positioned to engage the totalizer dial to move it one increment as the small hand indicates ten yards. Totalizer dial 373 is spring biased to return to zero and is held in position when it has been incrementally moved by a pawl indicated at 379 in FIG. 7 carried by bracket 208. Pawl 379 is moved clear of the totalizer dial to permit the dial to return to zero upon rotation of crank handle 307 to operate marking shear 11. Rotation of the crank handle causes arm 277 to rotate and to contact pawl 379 to permit the indicating dial to escape from the pawl. Thus, indicating dial 373 is reset to zero only upon operation of the marking shear.

A clutch disengage pawl 381 (FIG. 13) pivotally mounted on member 355 is biased by spring 383 to engage shifting fork 341 when bell crank 335 is rotated to disengage clutch cone 345 from drive pulley 195 to prevent the clutch cone from returning to its engaging position until the indicating hands and price chart assembly 10 have been returned to their zero positions. This enables the indicating hands and price chart assembly to be returned to zero (which may take from one or two seconds) without having to manually hold reset knob 337 while the hands and chart are returning to their zero positions. Disengage pawl 381 is moved out of engagement with shifting fork 341 by an arm 385 carried by shaft 357 as the shaft is rotated to its zero position as heretofore described.

In the event the length of cloth to be measured out exceeds ten yards, the indicating hands and price chart must be reset to zero. In this regard, a stop generally indicated at 387 (see FIGS. 10 and 11) is provided to

prevent rotation of measuring roller 5 until the indicating hands and price chart have been reset to zero. Stop 387 includes a pawl 389 pivoted on pin 317, this pawl being movable in response to the indicating hands H registering ten yards (or a few inches more than 10 yards) to engage stop wheel 192 (FIG. 9) to prevent further forward rotation of the measuring roller. Pawl 389 has an elongate resilient rod 391 secured to its upper end, this rod being positioned to engage arm 359 as lug 371 rotating with indicating means 213 engages finger 369 and rotates shaft 357 counterclockwise (as viewed in FIG. 15) as indicating hands H register 10 yards thereby rotating pawl 389 to engage stop wheel 192 preventing further forward rotation on the measuring roller. Upon initiating the resetting of the indicating hands H and price chart assembly 10 to zero, lug 371 moves out of engagement with finger 369 permitting shaft 357 and arm 359 to be returned to their measuring position thus permitting pawl 389 to be moved clear of stop wheel 192 by a spring 393.

As shown in FIGS. 1-4, base 17 bears on track member 25, which is shown to be an angle-shaped member having a horizontally disposed leg 395 secured to the upper surface of sales counter S or the like by screws 397, and a vertical leg 399 extending down from the horizontal leg along the vertical edge of the sales counter. The rear edge (the left edge as shown in FIG. 2) of the horizontal leg overhangs vertical leg 399 and is radiused as indicated at 401, and the front edge of the horizontal leg is beveled as indicated at 403. Base 17 has a recess 405 formed therein for a sliding fit on the track and is formed as shown in FIG. 2 to fit under the bevel 403 at the inner side of this recess. Base 17 has a downwardly extending lip 406 at its rear disposed on the outside of vertical leg 399. Adjusting screws 407 (of nylon or the like) are threaded in tapped holes in this lip with their inner ends engageable with vertical leg 399. The force required to slide the base along the track may be varied by adjusting these screws to exert more or less friction on the track. End caps 409 are provided at the ends of the track to prevent the base from sliding off the track.

End caps 409 each have a horizontal portion indicated at 411 which abuts and cooperates with horizontal track leg 395, a vertical portion 413 which abuts and cooperates with vertical leg 399, and a tab 415 (as shown in FIG. 1) which is received in a groove 417 (as shown in FIG. 2) formed in the bottom of horizontal track leg 395. These end caps are held in abutting relation with the ends of track member 25 by screws 419 and tabs 415. Each end cap has a gusset 421 engageable by lip 406 to prevent the base from sliding endwise off the track.

As shown in FIG. 17, a shorter piece of track, as indicated at 423 may be provided, this shorter track member being substantially similar to track member 25 as heretofore described. Track member 423 is substantially the length of base 17 and two holes 425 are provided in its vertical leg 399 for receiving screws 407 to positively hold base 17 on track member. An end cap 409 is provided at one end of track member 423 (its right end as shown in FIG. 17) and a modified end cap 427 is substantially similar to end cap 409 except that gusset 421 is omitted to permit base 17 to slide endwise off and on the track member.

In operation, a length of cloth C may be conveniently measured out by first turning knob 337 to reset the in-

dicating hands H and the price chart assembly 10 to zero and by operating crank handle 307 to insure that pressure roller 7 is in its raised retracted position. The measuring apparatus is then ready to receive the cloth to be measured. Preferably, the clerk stands behind the apparatus with the cloth to be measured supported on the sales counter in front of the apparatus. She grasps the cloth with a margin of the cloth substantially adjacent the measuring apparatus and with the leading edge of the cloth grasped by her right hand at the corner thereof. With flap 155 held down in its lowered retracted position, the margin of the cloth toward the clerk is placed in throat 3, and the cloth is pulled back toward the edge of the counter until the margin of the cloth is in contact with the back of the throat (i.e., support plate 31). The clerk then moves the cloth to her left until her right thumb contacts trigger 67, and actuates it to lower pressure roller 7 to its contacting position. It will be observed that the trigger is positioned relative to the fixed shear blade 269 and the rollers 5 and 7 for engagement by the user's thumb as the user, grasping a corner of the cloth at its leading end between thumb and forefinger, inserts the cloth between the rollers and moves it in rearward direction relative to the direction in which the cloth moves through the apparatus when being measured, with the trigger being operable to effect the lowering of the pressure roller 7 when the user's thumb moves rearward of the vertical plane through the axis of the measuring roller 5 to grip the leading end of the cloth in the nip of the rollers substantially in said vertical plane. In this regard, "rearward" is to the right as viewed in FIGS. 3 and 20. With the pressure roller lowered, the clerk draws the desired length of cloth through the rollers 5 and 7, the indicator hands H for the top dial face 183 and on the front dial face 181 registering the length measured out. When the desired length has been measured out, the clerk pushes forward and down on crank handle 307 to operate marking shear 11 to notch the margin of the fabric within throat 3 and to raise the pressure roller to its raised retracted position to permit removal of the cloth from the throat. The price (in dollars and cents) of the length of cloth measured out is shown on the price chart 243 opposite the price per yard scales 263 or 265 on chart frame plate 249.

As described above, lockout means 282 prevents operation of marking shear 11 except when the indicating hands 215 and 221 indicate one-eighth yard increments to prevent odd-length measurements. If, however, one wishes to make an odd-length measurement (two and one-third yards, for example), the apparatus of this invention may still be used to measure out the desired length, to compute the price of the fabric, and to notch the fabric to indicate the desired length by slightly varying the operating procedure. The cloth is placed in the apparatus and the desired length is measured out as described above, except that after the desired length has been measured out, the clerk notes the price as registered on price chart 243 and then turns knob 337 to reset the indicating hands H and the price chart to zero. The crank handle 307 may then be swung to notch the cloth at the desired location and to permit removal of the fabric from throat 3.

In accordance with this invention, a remnant (i.e., a piece of cloth having a trailing edge which will pass between measuring roller 5 and pressure roller 7) may be directly measured by the apparatus of this invention

without having to add or subtract from the yardage registered by the indicating hands 180. Since marking shear 11 is located in the vertical plane of the axis of measuring roller 7 (as shown in FIG. 8), the length indicated by the indicating hands H is the same length as will be marked by the shears thus eliminating the requirement for adding an increment to the length registered by the indicating hands.

The use of anti-friction bearings for journalling shafts 135 and 185 and the use of belt 199 substantially reduces the force required to rotate measuring roller 7. Thus, new types of stretch fabrics (i.e., knits and double knits) may be measured by this apparatus in the manner above-described without such stretching of the fabric as it is drawn through the rollers as would vitiate accurate length measurement. Despite this free-running characteristic of the measuring roller, it is effectively precluded from overrunning in the measurement of length of a remnant by the anti-override means 147.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. Apparatus for measuring out lengths of cloth or the like comprising:

supporting means having a horizontal throat for passage therethrough of a margin of the cloth or the like to be measured out;

a measuring roller carried by said supporting means for rotation on a horizontal axis below the throat;

a pressure roller carried by said supporting means above said measuring roller and movable between a raised retracted position in which it is clear of said measuring roller for insertion and removal of cloth and a lowered contacting position in which it is resiliently held against said measuring roller for gripping the cloth to be measured therebetween, whereby said rollers are caused to rotate without slippage as said cloth passes between the rollers;

means operable in response to rotation of said measuring roller for indicating the length of cloth passing between said rollers;

price computation means operable in response to rotation of said measuring roller for registering the price of the length of cloth which has passed between said rollers;

means operable for marking said cloth after a desired length thereof has passed between said rollers to indicate the length of cloth measured out, said marking means comprising a fixed shear blade positioned in the throat in the vertical plane of the axis of the measuring roller, and a movable shear blade carried by the supporting means for movement generally in a vertical plane through the axis of the measuring roller, said movable blade being cooperable with said fixed shear blade for notching the margin of the cloth;

means for effecting lowering of the pressure roller from its raised retracted position to grip the leading end of the cloth between the pressure roller and the

measuring roller including a trigger positioned relative to the fixed shear blade and the rollers for engagement by the user's thumb as the user, grasping a corner of the cloth at its leading end between thumb and forefinger, inserts the cloth between the rollers and moves it in rearward direction relative to the direction in which the cloth moves through the apparatus when being measured with the trigger being operable to effect the lowering of the pressure roller when the user's thumb moves rearward of said vertical plane through the axis of the measuring roller to grip the leading end of the cloth in the nip of the rollers substantially in said vertical plane;

means operable in response to actuation of said marking means for raising said pressure roller from its lowered contacting position to its raised retracted position; and

means operable to reset said indicating means and said computation means.

2. Apparatus as set forth in claim 1 wherein said supporting means has upper and lower portions defining said throat, the lower portion carrying said measuring roller and the upper portion carrying said pressure roller, said fixed blade being positioned within said throat inwardly of said measuring roller with the upper edge of said fixed blade, constituting its cutting edge, substantially level with the upper surface of said lower portion, said fixed blade and said movable blade being removably mounted on said supporting means for ready removal thereof and replacement with sharp blades.

3. Apparatus as set forth in claim 2 wherein said movable blade is pivotally mounted outwardly of the fixed blade on a shaft carried by said supporting means, said blade being movable between a raised retracted position in which it is clear of said throat for passage of cloth and a lowered cutting position in which it cooperates shearwise with said fixed blade for notching the cloth, and having means biasing said movable blade toward its raised retracted position, and means biasing said movable blade axially inwardly on said shaft into face-to-face engagement with said fixed blade.

4. Apparatus as set forth in claim 1 further comprising throat guard means movable upwardly in said throat from a lowered retracted position in which the upper surface of the guard means is generally tangent to the top of said measuring roller, to a raised blocking position in which said guard means blocks the throat, and means for holding said guard means in its blocking position when said pressure roller is in its lower contacting position for preventing a second piece of cloth from being entered between said rollers until said pressure roller has been lifted to its raised retracted position, said guard means comprising a flap pivotally carried by said supporting means for swinging movement on an axis generally parallel to the axis of the measuring roller and in a plane rearward of the vertical plane of the axis of the measuring roller in respect to the direction in which the cloth moves through the apparatus when being measured, said flap being swingable on its said axis between its lowered retracted position and its raised blocking position, said flap being resiliently biased to swing to its blocking position.

5. Apparatus as set forth in claim 4 wherein said guard means further comprises a pawl carried by said supporting means, said pawl being movable between a latching position engageable with said flap for holding

the flap in its raised blocking position and an unlatching position in which said flap may be moved to its lowered retracted position, said pawl being movable to its latching position in response to movement of said pressure roller to its lowered contacting position and being movable to its unlatching position in response to movement of said pressure roller to its raised retracted position.

6. Apparatus as set forth in claim 4 having means for preventing overrun and reverse rotation of said measuring roller when the trailing edge of a piece of cloth being measured exits from between the rollers, and permitting said measuring roller freely to rotate when said cloth is gripped between said rollers for being measured, said preventing means comprising a ratchet on the outer end of said measuring roller, and a pawl engageable with the ratchet to restrain the measuring roller from rotation in response to movement of the flap to its throat-blocking position.

7. Apparatus as set forth in claim 1 wherein said price computation means comprises:

roller chart means;

means for removably mounting said chart means in said supporting means for removal of the chart means from the support means as a unit;

means for driving said roller chart means from said measuring roller including a quick-disengageable drive connection to said chart means whereby said chart means may be readily removed from said supporting means and readily replaced by another;

said roller chart means comprising a frame carrying a storage roll and a take-up roll for a chart, said rolls being disposed in side-by-side relation, said frame with said chart rolls thereon constituting a unitary roller chart assembly which may be readily removed from or installed in said supporting means.

8. Apparatus for measuring out lengths of cloth or the like comprising:

supporting means having a horizontal throat for passage therethrough of a margin of the cloth or the like to be measured out;

a measuring roller carried by said supporting means for rotation on a horizontal axis below the throat;

a pressure roller carried by said supporting means above said measuring roller and movable between a raised retracted position in which it is clear of said measuring roller for insertion and removal of cloth and a lowered contacting position in which it is resiliently held against said measuring roller for gripping the cloth to be measured therebetween, whereby said rollers are caused to rotate without slippage as said cloth passes between the rollers;

means operable in response to rotation of said measuring roller for indicating the length of cloth passing between said rollers;

price computation means operable in response to rotation of said measuring roller for registering the price of the length of cloth which has passed between said rollers; means operable for marking said cloth after a desired length thereof has passed between said rollers to indicate the length of cloth measured out, said marking means comprising a fixed shear blade positioned in the throat in the vertical plane of the axis of the measuring roller, and a movable shear blade carried by the support-

ing means cooperable with said fixed shear blade for notching the margin of the cloth;

means operable in response to actuation of said marking means for raising said pressure roller from its lowered contacting position to its raised retracted position;

means operable to reset said indicating means and said computation means;

latching means for permitting operation of said marking means to mark the cloth being measured only at predetermined intervals of length comprising a lever pivoted for movement between a latching position in which it is engageable by said movable shear blade to prevent movement of the latter for notching said cloth and a retracted position permitting movement of said movable blade for notching said cloth, said lever being biased to assume its retracted position; and

a peripherally notched wheel rotatable in response to rotation of said measuring roller, said lever having a catch adapted to engage against the periphery of said wheel to hold said lever in its latching position and to be received in a notch in the wheel as said wheel rotates relative to said catch permitting said lever to pivot to its retracted position, one of said notches being in position to receive said catch each time one of said predetermined intervals of cloth passes between said rollers.

9. Apparatus for measuring out lengths of cloth or the like comprising:

supporting means having a horizontal throat for passage therethrough of a margin of the cloth or the like to be measured out;

a measuring roller carried by said supporting means for rotation on a horizontal axis below the throat, said measuring roller having a plurality of annular grooves in its outer surface spaced at intervals along its length for receiving loose threads at the trailing end of cloth being measured;

a pressure roller carried by said supporting means above said measuring roller and movable between a raised retracted position in which it is clear of said measuring roller for insertion and removal of cloth and a lowered contacting position in which it is resiliently held against said measuring roller for gripping the cloth to be measured therebetween, whereby said rollers are caused to rotate without slippage as said cloth passes between the rollers;

means operable in response to rotation of said measuring roller for indicating the length of cloth passing between said rollers; price computation means operable in response to rotation of said measuring roller for registering the price of the length of cloth which has passed between said rollers;

means operable for marking said cloth after a desired length thereof has passed between said rollers to indicate the length of cloth measured out;

means operable in response to actuation of said marking means for raising said pressure roller from its lowered contacting position to its raised retracted position; and

means operable to reset said indicating means and said computation means.

10. Apparatus as set forth in claim 9 wherein the outer surface of said measuring roller between said grooves is knurled to facilitate gripping of the cloth be-

tween the measuring roller and the pressure roller when the latter is in its lowered retracted position.

11. Apparatus for measuring out lengths of cloth or the like comprising:

- supporting means having a horizontal throat for pas- 5
sage therethrough of a margin of the cloth or the like to be measured out;
- a measuring roller carried by said supporting means for rotation on a horizontal axis below the throat;
- a pressure roller carried by said supporting means 10
above said measuring roller and movable between a raised retracted position in which it is clear of said measuring roller for insertion and removal of cloth and a lowered contacting position in which it is resiliently held against said measuring roller for 15
gripping the cloth to be measured therebetween, whereby said rollers are caused to rotate without slippage as said cloth passes between the rollers;
- means operable in response to rotation of said measuring roller for indicating the length of cloth pass- 20
ing between said rollers;
- price computation means operable in response to rotation of said measuring roller for registering the price of the length of cloth which has passed between said rollers; means operable for marking said 25
cloth after a desired length thereof has passed between said rollers to indicate the length of cloth measured out;

means operable in response to actuation of said marking means for raising said pressure roller from its lowered contacting position to its raised retracted position;

means operable to reset said indicating means and said computation means; and

throat guard means movable upwardly in said throat from a lowered retracted position in which the upper surface of the guard means is generally tangent to the top of said measuring roller, to a raised blocking position in which said guard means blocks the throat, and means for holding said guard means in its blocking position when said pressure roller is in its lowered contacting position for preventing a second piece of cloth from being entered between said rollers until said pressure roller has been lifted to its raised retracted position, said guard means comprising a flap pivotally carried by said supporting means for swinging movement on an axis generally parallel to the axis of the measuring roller and in a plane rearward of the vertical plane of the axis of the measuring roller in respect to the direction in which the cloth moves through the machine when being measured, said flap being swingable on its said axis between its lowered retracted position and its raised blocking position, said flap being resiliently biased to swing to its blocking position.

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