

May 10, 1927.

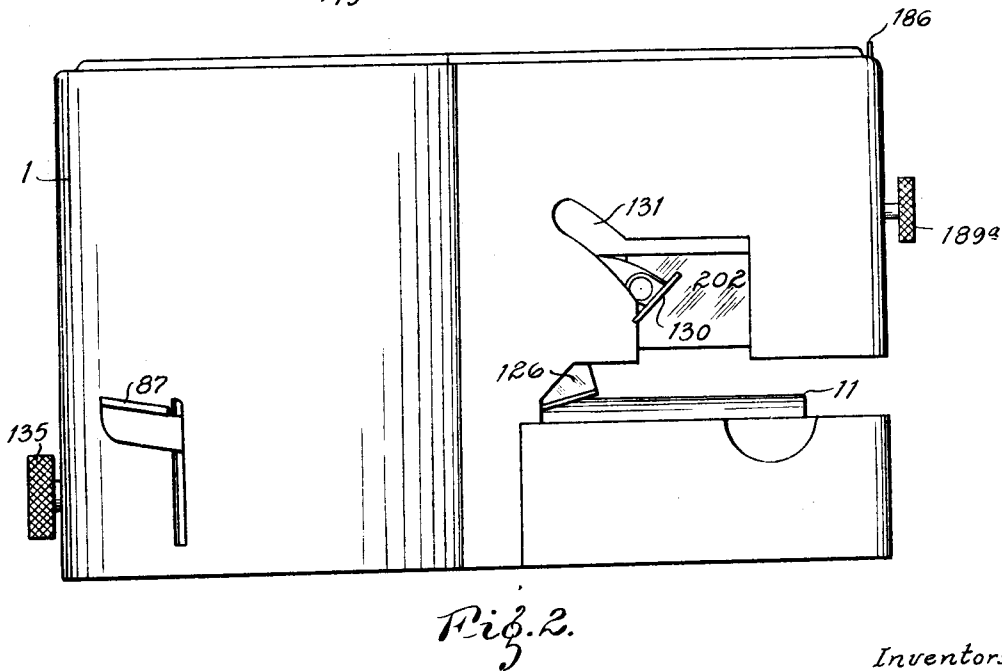
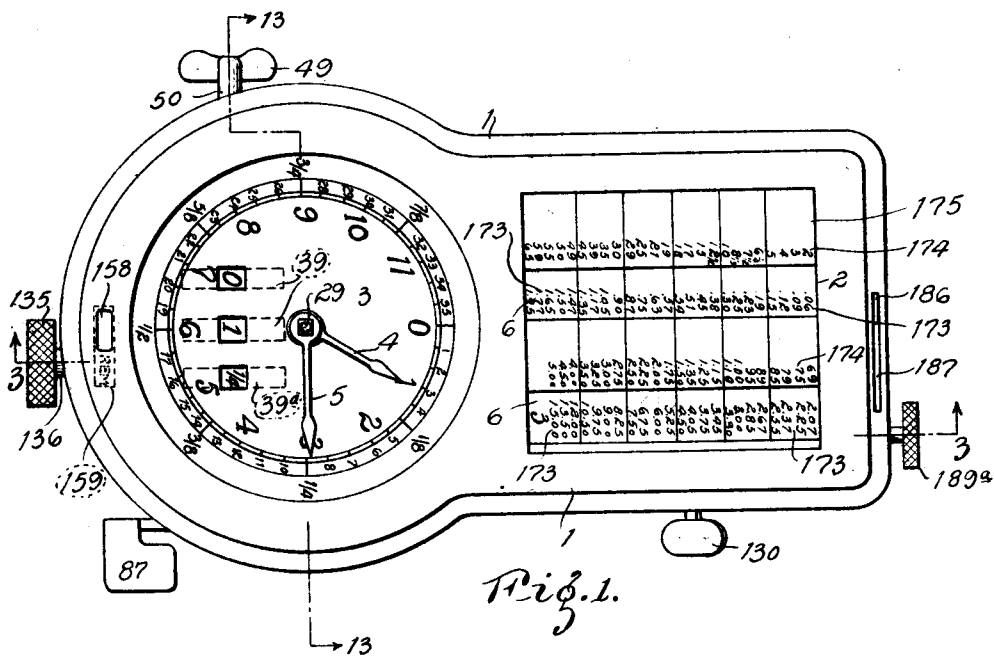
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1,628,091

RETAIL AND WHOLESALE FABRIC MEASURING MACHINE

Filed Dec. 19, 1921

6 Sheets-Sheet 1



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RETAIL AND WHOLESALE FABRIC MEASURING MACHINE

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6 Sheets-Sheet 2

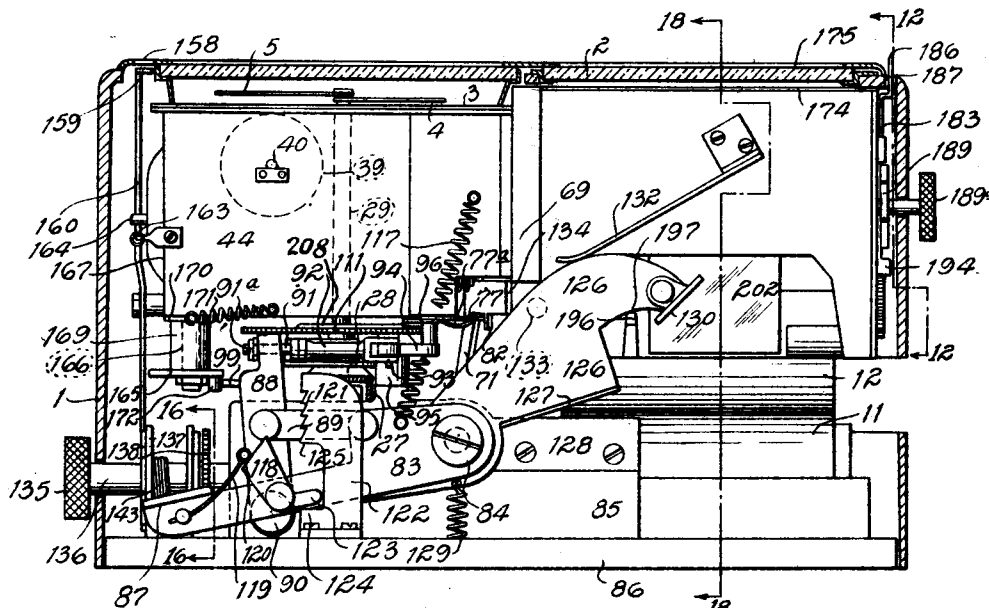


Fig. 3.

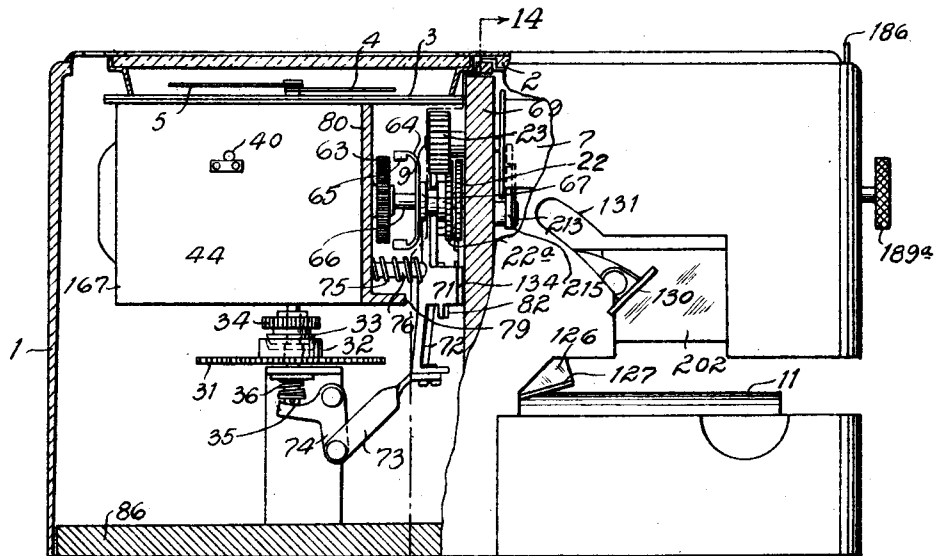


Fig. 4.

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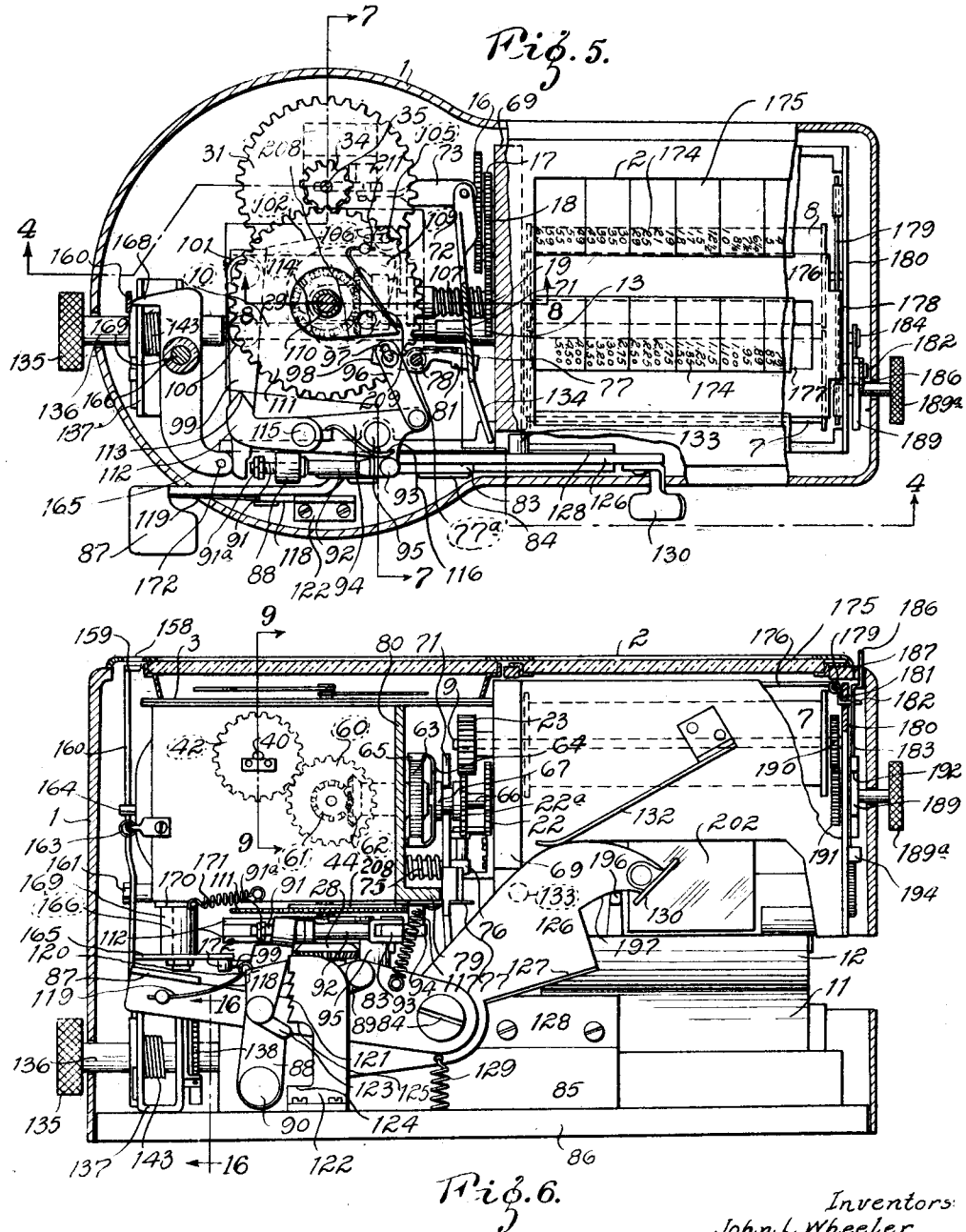
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RETAIL AND WHOLESALE FABRIC MEASURING MACHINE

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6 Sheets-Sheet 3



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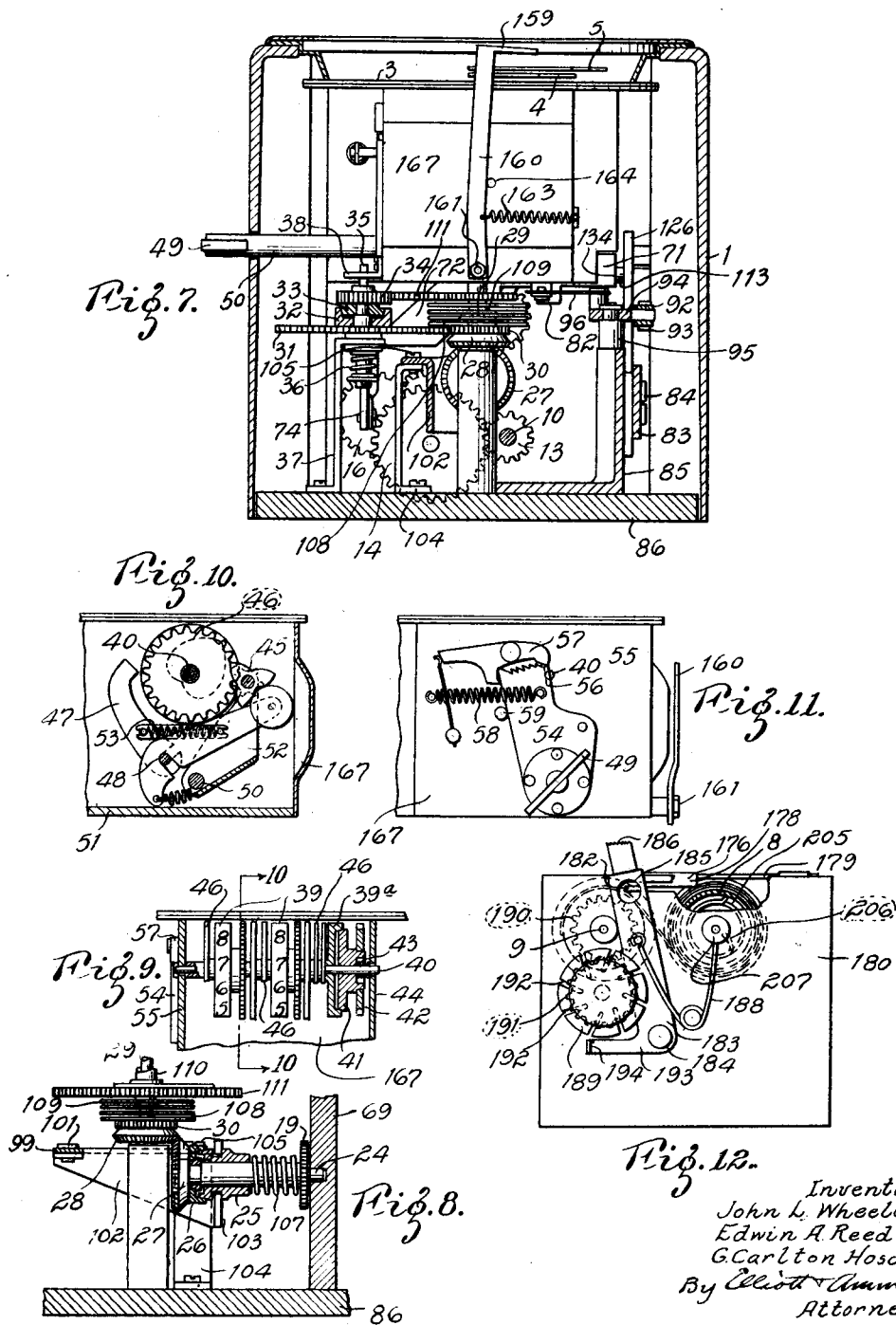
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RETAIL AND WHOLESALE FABRIC MEASURING MACHINE

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6 Sheets-Sheet 4



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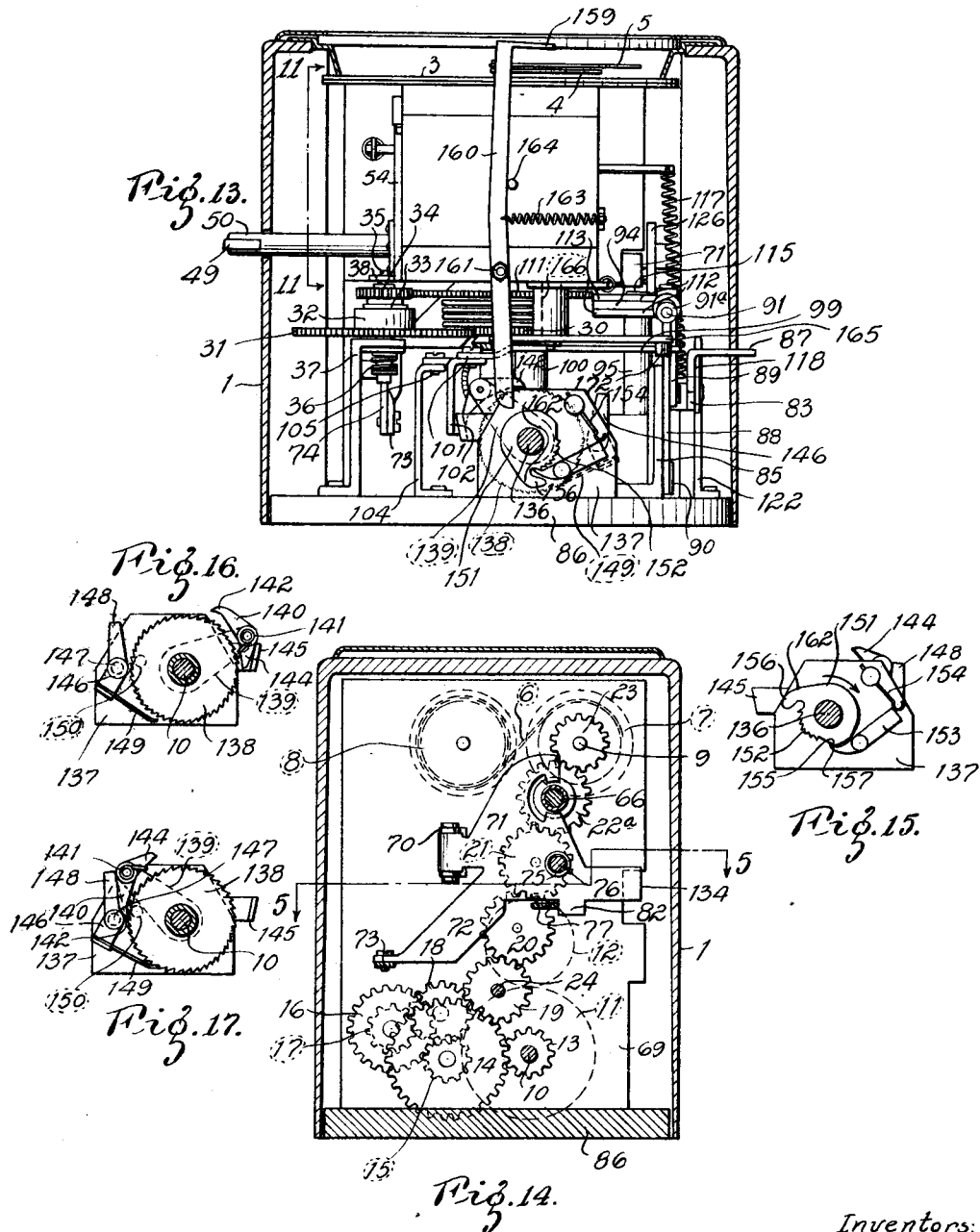
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RETAIL AND WHOLESALE FABRIC MEASURING MACHINE

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6 Sheets-Sheet 5



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RETAIL AND WHOLESALE FABRIC MEASURING MACHINE

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6 Sheets-Sheet 6

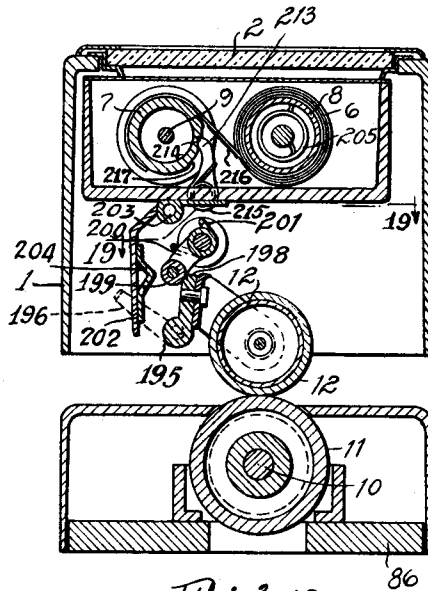


Fig. 18.

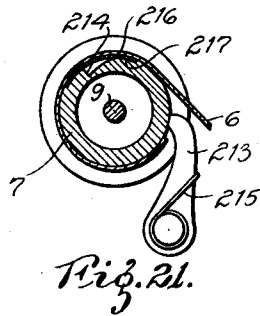


Fig. 21.

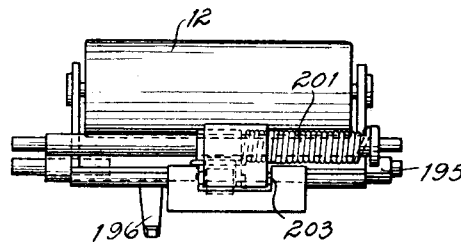


Fig. 19.

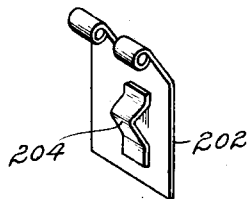


Fig. 20.

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UNITED STATES PATENT OFFICE.

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RETAIL AND WHOLESALE FABRIC-MEASURING MACHINE.

Application filed December 19, 1921. Serial No. 523,364.

This invention relates to fabric measuring and cost computing machines, although many features of the invention are applicable to indicating and measuring machines of other types.

The general object of the invention is to produce a machine of this kind which can be used for measuring a length, and computing the selling price of relatively short lengths of fabric to be sold at retail, but which is so constructed that it can be readily adapted at the will of the operator for measuring relatively long lengths of fabric; this enables the machine to be used when necessary in selling relatively large quantities of goods or for taking stock of material in bolts or rolls. One of the objects of the invention is to provide simple means for adapting the machine for correctly measuring a remnant and to provide automatically controlled means for indicating when the machine is set to measure a remnant; the invention contemplates the use of a totalizer mechanism together with a short-length measuring and computing mechanism having simple means for controlling the connecting or disconnecting of the computing mechanism and the totalizer.

Another object of the invention is to provide a shutter to prevent reading the cost indicating mechanism except when the length indicating mechanism indicates certain predetermined lengths.

Further objects of the invention will appear hereinafter.

The invention consists in the novel features, and in the general combination of parts to be particularly described hereinafter, all of which contribute to produce a simple and efficient retail and wholesale fabric measuring machine. A preferred embodiment of our invention will be particularly described in the following specification, while the broad scope of our invention will be pointed out in the appended claims.

In the drawing:

Figure 1 is a plan of a fabric measuring and cost computing machine embodying my invention;

Figure 2 is a side elevation of the machine;

Figure 3 is a longitudinal vertical section through the casing of the machine taken about on the line 3—3 of Figure 1;

Figure 4 is a side elevation and partial section taken through the machine; the section being taken substantially along the line 4—4 of Figure 5;

Figure 5 shows the machine partially in plan but broken away so as to show the casing and other parts in section, taken about on the line 5—5 of Figure 14;

Figure 6 is a view very similar to Figure 3 but showing the resetting lever in its normal position instead of depressed as in Figure 3;

Figure 7 is a vertical section through the casing of the machine taken about on the line 7—7 of Figure 5. This view particularly illustrates the back gearing for driving the slow-moving pointer from the spindle of the fast-moving pointer, and also shows the clutch associated with this mechanism;

Figure 8 is a vertical section taken about on the line 8—8 of Figure 5 and particularly illustrating the clutch through which the fast-moving point is actuated;

Figure 9 is a vertical section in partial elevation taken on the line 9—9 of Figure 6 and passing through the totalizer mechanism.

Figure 10 is a cross section through the totalizer taken about on the line 10—10 of Figure 9;

Figure 11 is a side elevation of the totalizer casing and particularly illustrating the means for resetting the counter-wheels of the totalizer mechanism to zero. This view is taken along the line 11—11 of Figure 13; it shows the left end of the mechanism shown in Fig. 9;

Figure 12 is a right hand end elevation of the mechanism illustrated in Fig. 5 partially broken away and particularly illustrating a shutter and automatic means for preventing the opening of the shutter except when the computing mechanism is in certain predetermined positions;

Figure 13 is a section through the casing taken about on the line 13—13 of Figure 1 but showing the mechanism generally in elevation;

Figure 14 is a vertical section through the machine taken about on the line 14—14 of Figure 4; this view particularly illustrates the switch opening lever or clutch plate;

Figure 15 is an elevation looking in the same direction as Figure 13 and showing

parts of the remnant device in the relation which they assume when the remnant button has been given its full forward movement;

5 Figure 16 is a vertical section looking in the opposite direction from Fig. 15, taken on the line 16—16 of Figure 6 and looking in the direction of the arrow. This view particularly illustrates details of the remnant device, and also shows the remnant mechanism in its normal position;

Figure 17 is a view similar to Figure 16 but showing the remnant mechanism at the end of its forward stroke or movement;

15 Figure 18 is a vertical section through the machine taken about on the line 18—18 of Figure 3;

Figure 19 is a plan of the presser roller and its associated mechanism taken about on the line 19—19 of Figure 18;

Figure 20 is a perspective of a releasing plate, the operation of which permits the presser roller to come against the measuring roller; and

25 Figure 21 is a vertical section through a zero-stop device for the indicating chart of the machine.

The machine comprises a casing 1 having a window 2 in its upper side toward one end and is provided at the other end with length indicating means or mechanism including a dial 3 and pointers 4 and 5 which move around the dial. The dial is provided with large numbers from 1 to 11 with which the slow-moving pointer 4 co-operates to indicate units of measure, for example, yards. The fast-moving pointer 5 co-operates with fraction numbers around the dial which indicate fractions of a yard, for example $\frac{1}{8}$ of a yard, $\frac{1}{4}$ of a yard, etc. Under the window 2, two rolls are provided which carry a computing chart 6 (see Figures 14 and 18). One of these rollers is indicated by the numeral 7 and is a take-up roller which, when rotated, takes up the chart which unwinds from the other roller 8 which normally carries the chart wrapped upon it. The shaft 9 of the take-up roller 7 is driven through a gear train illustrated in Figure 14. This gear train is driven from the shaft 10 of the measuring roller 11 which is rotated by the fabric as it is pulled between the measuring roller and its co-operating presser roller 12.

55 The shaft 10 carries a pinion 13 (Fig. 14.) which meshes with a large gear 14 carrying a rigid pinion 15 and this pinion 15 drives a large gear 16 carrying a rigid pinion 17 which meshes with an idler 18 which drives a gear 19. Through the gears 20, 21, 22, 22^a the gear 19 drives a gear 23 carried by the shaft 9 of the take-up roll 7. This gear train constitutes driving mechanism for driving the take-up roller 7 at a reduced angular velocity from the measuring roller.

We also provide means for driving the pointers 4 and 5. This is accomplished through the medium of a horizontal shaft 24 (see Figures 14 and 8) which carries rigidly the aforesaid gear wheel 19. Through a clutch composed of a movable clutch member 25 and a relatively fixed clutch member 26 this shaft 24 drives bevel-gears 27, and 28 (see Figure 8), the latter of which is rigidly attached to a central spindle 29 which carries the fast moving pointer 5. Adjacent to the bevel pinion 28 the spindle 29 carries a rigid pinion 30 which meshes with a large gear wheel 31 (see Figure 7) which carries a clutch including a clutch member 32 fixed to it and a movable clutch member 33 which carries a pinion 34, the said pinion and clutch member 33 being mounted upon a vertically movable clutch stem 35. When this clutch stem is moved up the clutch is opened, but the clutch is normally held closed by a coil spring 36 disposed around the lower end of the stem. The stem, of course, slides freely through the clutch member 32 and the large gear 31. It is supported in suitable guide brackets 37 and 38. This clutch and the clutch 25—26 are opened automatically by the operation of the resetting button which effects the resetting of the computing mechanism and length indicating mechanism to zero. The resetting button or lever and the mechanism now referred to will be described hereinafter.

We shall now describe the totalizer mechanism and the means for driving it including its clutch. The totalizer mechanism includes a plurality of number wheels 39, 39^a which are mounted loosely on the central shaft 40 (see Figures 3 and 9). One of these wheels indicated specifically by the numeral 39^a is a fraction wheel, and indicates fractions of a yard or other unit of measure and this number wheel operates as a clutch member to co-operate with a movable clutch member 41 which is loosely mounted on the shaft 40 but rigidly carries a pinion 42 (Fig. 6). The hub of this clutch member 41 is provided with a spring 43 which thrusts against a frame plate 44 which supports the adjacent end of the shaft 40 and thereby normally holds the clutch closed. The totalizer mechanism may be of any suitable construction, operating in such a way that carrying mechanism 45 (Fig. 10) operates to carry from each wheel of lower denomination to the wheel of next higher denomination. The number wheels may be reset to the zero position by means of heart-shaped cams 46 carried, respectively, by the number wheels which are engaged by resetting arms 47, respectively; these arms 47 are mounted to rock on a fixed shaft 48 (see Figure 10). On the exterior of the casing a resetting thumb head 49 for the totalizer

is provided (see Fig. 1) the shaft 50 of which (Fig. 7) extends into the interior of the totalizer casing 51 (see Fig. 10). On the shaft 50, arms 52 are provided which are connected by a spring 53 with the resetting arms 47 so that when the shaft 50 is turned to the right the arms 47 will come against the cams 46 and rotate the number wheels to the zero position, Fig. 10. This independent rotation of the number wheels is permitted by reason of the fact that the carrying mechanism 45 is mounted on the arms 52 and, therefore, moves out of engagement with the number wheels when the shaft 50 is rotated. Furthermore, the rotation of the shaft 50 operates to open a clutch through the medium of a cam plate 54 which is mounted on a vertical frame plate 55 which supports one end of the shaft 40 (see Figures 9 and 11). This cam plate 54 has a beveled edge or cam 56 which engages the end of the shaft 40 which projects through the plate 55. The cam plate 54 is provided with a full-stroke device 57 which co-operates with it to insure a complete forward movement of the resetting thumb head 49, and the cam plate is returned to its normal position by a coil spring 58 which normally holds the rear edge of the cam plate against a stop 59. The gear wheel 42 of the totalizer shaft is driven by another gear wheel 60 (see Fig. 6) which is driven through bevel gears 61 and 62, the latter of which is rigid with a clutch member 63 and the clutch member 63 and the gear 22 are rigidly connected by a shaft 66 which will be hereinafter referred to. This clutch member 63 co-operates with a movable or sliding clutch member 64 which is in the form of a yoke having shoes 65 which engage the serrated edge of the clutch member 63 when the two clutch members are in engagement, that is to say, when the clutch is closed, as in Figure 6, but the shoes move out of engagement with the clutch member 63 when the clutch is open as shown in Figure 4. This clutch member 64 is mounted to slide freely on a clutch shaft 66 and is carried upon a collar 67. This collar carries rigidly gear wheel 22^a which is constantly in mesh with the aforesaid pinion 23 which is rigidly mounted on the shaft 9 of the take-up roller 7. This pinion 22^a and the collar 67 are loose on the shaft 66 which carries the gear wheel 22, and when the clutch 63—64 is open the gear wheel 22^a and clutch member 64 can rotate freely on the shaft 66. The gear 22 drives the shaft 66 and clutch member 63 and the gear 22^a is adapted to be connected with the clutch member 63 by the clutch member 65 with which it is rigidly connected.

Supported by lugs on the main frame plate 69 of the frame which supports the aforesaid driving mechanism there is a vertical pivot 70 that operates as a pivot for

(see Fig. 14) a clutch plate 71, the upper portion of which engages the clutch collar 67 and this clutch plate has a downwardly extending arm 72, the lower end of which is attached to a link 73 (see Figures 4, 5 and 14). This link is attached to a small rock plate 74 (see Figure 4) which engages the lower end of the clutch stem 35 (see Fig. 7). Hence, when the clutch plate 71 is moved in the proper direction it will rock the rock plate 74 (Figure 4) in a clockwise direction and open the pointer clutch composed of the clutch members 32 and 33. This clutch plate 71 is normally pressed by a coil spring 75 (see Figures 4 and 6) in a direction which would open the totalizer clutch 63—64 and the pointer clutch 32—33. This spring 75 is a coil spring disposed about a fixed stud 76 which projects through an opening in the clutch plate. The clutch plate 71 is normally held in a position to hold the spring 75 under compression with both these clutches (see Fig. 4) closed by suitable detent means in the form of a detent or trigger 77 which (Figs. 5 and 14) is mounted to move in a horizontal plane being carried on a vertical pin 78 (Fig. 5) fastened in a flange 79 (Fig. 4) formed at the lower end of a frame plate 80 which forms a part of the casing for the totalizer mechanism (see Fig. 6). The detent or trigger 77 is formed with a shoulder 81 (Fig. 5) and is pressed by spring 77^a, Fig. 3, against the edge of a tongue 82 which projects down from the lower edge of the clutch plate arm 72 (see Figure 14).

We shall now describe the resetting button 87 or lever 83, the actuation of which moves the detent or detent trigger 77 (Fig. 5) to release the clutch plate 71 and permit the clutches 32—33 and 63—64 to be opened by the spring 75, Fig. 4. We provide a resetting lever 83 (see Fig. 3) which is pivotally mounted on a pivot screw 84 secured in a bracket 85 fixed to the base plate 86 of the frame. This lever extends to the exterior of the casing (see Fig. 5) where it is provided with a thumb-plate 87. When this thumb-plate 87 is depressed the lever 83 actuates a vertical lever 88 (Fig. 3) to which it is connected by a link 89, the lower end of the said lever being pivoted at 90 in the bracket 85. The upper end of this lever 88 receives the threaded shank 91 (Fig. 6) of a link 92 which extends in a horizontal direction and is pivotally attached at 93 to a rock plate 94 (Fig. 5). Nuts 91^a on the shank 91 impart the movement from the lever 88. This rock plate is pivotally mounted on a vertical stud 95 set in the aforesaid bracket 85 (see Figures 5 and 7). One end of this rock plate 94 is connected by a link 96 through a pin and slot connection 97 with the tail-arm 98 of the detent 77. Hence, it will be evident that when the rock plate 94 is moved in a clockwise direction

it will pull upon the link 96 and move the detent 77 in a direction to release the clutch plate 71.

The movement of the lever 83 also operates to open the clutch 25—26 which drives the spindle of the fast-moving pointer (see Fig. 8). In order to accomplish this I provide a lever 99 (see Fig. 5) which is pivotally mounted on a post 100 which projects up from the base plate 86, the inner arm of the lever being pivotally attached at 101 to a clutch shifter plate 102 (Fig. 8). This plate extends over toward the collar 25 and is formed with a yoke 103 (see Fig. 8) to engage the collar and it is also supported on the upper end of a bracket 104 to which it is attached by means of a pin 105 and a guide slot 106. The slot 106 (Fig. 5) extends substantially parallel with the axis of rotation of the clutch 25—26 and hence when the lever 99 is rocked in a clockwise direction, the yoke 103 will operate to open the clutch against the force of its return spring 107 which normally holds the clutch closed (see Fig. 8). The outer end of the lever 99 is engaged by the lever 88 when it is moved by the link 89 (see Fig. 3). Hence, it is evident that whenever the lever 83 is actuated all of the clutches described except the clutch of the totalizer mechanism will be simultaneously opened. While this clutch 25—26 is open the pointers 4 and 5 will be automatically returned to their zero position through the operation of heart-shaped cams 108 and 109, the former of which are rigid with the spindle 29 and the latter of which are rigid with a sleeve or tubular shaft 110 which carries a large gear wheel 111 meshing with the aforesaid pinion 34 and driven thereby. These heart-shaped cams are engaged by corresponding return arms 112 (see Fig. 5) which have V-shaped points 113 which strike the edge of the cam in whatever positions they may be and rotate the cam until the point 113 brings the notch 114 of the cam around to the position in which it is indicated in Fig. 5. The return arms 112 are pivoted at 115 on the rock plate or lever 94 and are held yieldingly by springs 116 which enable the points of the return arms to exert a yielding pressure against the cams. It will be noted that when the arms 112 are returning the pointers 4 and 5 to their zero position which corresponds to the cam position indicated in dotted lines in Figure 5, the clutch 32—33 will also be open and hence the back-gearing composed of the gears 30 and 31 and the pinion 34 and gear wheel 111 will not interfere with the rotation of the slow-moving pointer.

A coil spring 117 returns the lever 83 to its normal elevated position after it has been depressed (see Fig. 3). We provide the lever 83 with a full-stroke device to insure

that when it is actuated it will be moved to its utmost limit. For this purpose we provide the lever with a detent pawl 118 (see Figs. 3 and 6) and this pawl has a co-operating spring 119, the bearing end of which engages the back of the pawl at an angle 120 so that the spring will operate to hold the pawl in engagement with a small rack 121 formed on a fixed bracket 122 as the downward movement progresses. The pawl 118 has a tail or finger 123 which at the limit of the downward movement strikes against a shoulder 124 on the bracket 122 and throws the pawl 118 back into a position such as that shown in Figure 3. This moves the bearing point of the spring 119 around the angle 120 and this will operate to hold the pawl away from the rack 121 while the lever 83 is moving upwardly. As soon as the lever arrives at its normal elevated position the tail 123 will strike a shoulder 125 on the bracket 122 and rotate the pawl back into its normal position in which it is shown in Figure 6.

In order to enable the fabric measured to be marked to indicate the point where it is to be cut off we provide marking means in the form of a hand-operated knife lever 126 having a cutting edge or blade 127 which co-operates with a fixed blade 128 attached to the aforesaid bracket 85. A coil spring 129 is attached at its upper end to the lower edge of the lever about in line with the pivot screw 84 on which the knife lever 126 is mounted, but at a point considerably below the plane of said pivot screw so that when the lever is depressed, the upper end of the spring will be moved in an arc of a circle to place the spring under tension, the lower end of this spring being attached to the base plate 86. This spring operates to hold the lever 126 in its normal position in which it is shown in Figure 6. When the goods have been measured this knife lever 126 is operated by pressing upon a thumb-plate 130 the shank of which moves in a slot 131 in the casing (see Fig. 2), the thumb-plate being accessible from the exterior of the casing.

Acting on the back edge of the knife lever 126 we provide a yielding stop or leaf spring 132. We provide hand-actuated means for moving the clutch plate 71 at the will of the operator, in a direction, to reclose the totalizer clutch 63—64 and the pointer clutch 25—26. For this purpose we prefer to employ the hand lever 126 and in order to enable it to perform this function we provide its inner face with a pin 133 (see Figures 3 and 5) and we provide the adjacent end of the clutch plate 71 with a tongue 134 which projects into the path of this pin. With this construction it will be evident that if the lever 126 is moved rearwardly or raised from its normal position the pin 133 will engage the tongue 134 and the spring associ-

ated with the detent 77 will cause the shoulder 81 to engage the clutch plate tongue 82 and lock or hold the clutch plate in its closed position, that is its position which corresponds to a closed position of the clutches 63—64, and 25—26.

We shall now describe the remnant device and the indicator which is controlled automatically by the mechanism of the instrument to indicate when the mechanism is set to measure a remnant. In this connection it should be understood that in machines of this type it is necessary to provide some means for indicating a slightly increased measurement so as to adapt the machine to measure a remnant correctly. This is necessary because the knife is beyond the measuring roller, as the fabric is pulled through the machine. This may be accomplished in any manner which will increase the reading of the instrument by the desired amount. In the present instance this is effected by means of a hand-actuated remnant button or remnant head the rotation of which effects an advance of the length indicating and cost computing mechanism through the desired amount, for example, one inch. For this purpose, the shaft 10 of the measuring roller is extended toward the left of the machine as illustrated in Figure 5 so that it is in substantial alignment with a remnant button or milled thumb-head 135 which is located on the exterior of the casing. Between this thumb-head and the shaft 10 we provide a one-way driving connection which operates to impart an advancing movement to the shaft 10 and the indicating mechanism of the instrument. We also provide means for preventing the return movement of the thumb-head from producing a retrogressive movement in the indicating mechanism. In other words, we provide for holding the instrument at the reading to which it has been advanced by the remnant device.

We shall now describe the details of this mechanism. The shaft 136 of the thumb-head 135 is rotatably mounted in a small U-shaped bracket 137 (Figs. 3 and 6) so that its inner end is disposed adjacent to a ratchet wheel 138 which we provide on the adjacent end of the extended measuring roller shaft 10. The shaft 136 is provided with a pawl carrier in the form of an arm 139 (see Figure 16). A pawl 140 is pressed by a spring 141 so that the tip 142 of the pawl tends naturally to engage the teeth of the ratchet wheel 138. A coil spring 143 is provided on the shaft 136 (see Figure 6) which tends to hold the pawl carrier arm 139 in the position shown in Figure 16. In this position a tail 144 on the pawl comes against a fixed cam plate 145 mounted on the bracket 137 and this cam plate holds the pawl 140 out of engagement with the ratchet teeth; however, as soon as the thumb-head 135 is ro-

tated in the forward or clockwise direction the arm 139 moves the pawl 140 away from the cam plate 145 and the spring 141 then immediately brings the point of the pawl into engagement with the ratchet teeth. The movement of the arm in the direction of the arrow indicated in Figure 15 will then produce a forward rotation of the indicating mechanism through the desired amount.

In order to prevent any retrogressive movement of the ratchet wheel 138 when the pawl carrier 139 is moving back, that is to say, when it is being returned by its spring 143 (Fig. 6), we provide a detent pawl 146 which is pivotally mounted on the U-shaped bracket adjacent to the ratchet wheel. This pawl is mounted in such a way that it is inert, that is to say, it will hold itself in any position in which it is left. For this purpose, we simply mount the pawl friction-tight on its pivot 147. This pawl has a tail arm 148 which lies in the path of the pawl 140. As the pawl arm 139 completes its forward movement the pawl 140 strikes the tail-arm 148 and rocks the pawl 146 in an anti-clockwise direction and in such a way that a blade or tip 149 which forms part of the pawl will engage with the teeth of the ratchet wheel (see Fig. 17). The forward movement of the pawl arm is arrested by means of a fixed stop pin 150 carried on the bracket 137. With this construction it will be evident that the actuation of the remnant button 135 will effect an advance of the indicating mechanism and this advance will be held automatically by the pawl tip 149. As soon, however, as the measuring movement starts, the slightest forward rotation of the ratchet wheel 138 will operate to throw the pawl tip 149 out of the path of the teeth of the ratchet wheel, after which the measuring roller and the indicating mechanism can be moved freely in either direction. The remnant device is provided with a full-stroke device of any suitable construction, such as that shown in Figure 15, that is to say, the shaft 136 may be provided with a collar 151, a portion of which is provided with teeth so as to form a segment 152. With the teeth of this segment a pawl 153 co-operates, the same being provided with a specially constructed spring 154 which will hold the pawl either in or out of the path of the teeth of the segment. In the forward movement of the thumb-head 135 the rotation of the collar 151 will be in the direction of the arrow shown in Figure 15, and as the movement ceases a cam edge 155 formed on the collar will engage the tip of the pawl 153 and swing it outwardly, thereby bringing the pawl into the position shown in Figure 15. The spring 154 now engages the butt end of the pawl and will hold it in this position. This will permit the remnant device to be returned by its spring 143. As

the remnant device arrives at the limit of its return movement a projecting cam edge 156 on the collar will engage the outer edge 157 of the tip of the pawl and swing the pawl back into engagement with the teeth of the segment 152. With this construction it will be evident that the remnant button will have to be moved to the limit of its forward movement or it will not be returned by its spring.

The movement of the remnant button in this way operates an indicator to show the operator that the remnant button has been operated. For this purpose, we provide the upper side of the casing above the location of the remnant button 135 with a small window 158 (see Fig. 1) and below this window we provide an indicator shield 159 formed at the upper end of a vertically disposed lever 160 (Fig. 13) mounted to rock on a pivot 161, so that the lower end of the lever projects into the path of the cam edge 162 formed on the collar 151. The shield bears an indicating character, for example, the abbreviation "REM." The lever 160 is normally held so that this shield 159 is not displayed at the window, that is to say, it holds the remnant indicator in an inactive position. For this purpose, we provide a coil spring 163 (see Fig. 13) that normally holds the upper arm of the lever against a stop pin 164. When the lever 160 is actuated by the collar 151 to move it into its active, or indicating position, it is locked in this position automatically and will maintain its active or signalling position until the indicating mechanism of the instrument has been reset to the zero position.

In order to accomplish this we provide a detent lever 165 which is pivoted on a post 166 (see Figures 5, 6 and 13) which extends down from the under side of the totalizer casing 167. This detent lever has a point 168 which lies normally against the inner face of the lower arm of the lever 160. Now when the lower arm of the lever 160 is moved toward the right as viewed in Figure 13 this point 168 will snap in behind the lower arm of the lever and prevent it from being returned by its spring 163. In order to accomplish this the lever 160 is made of springy material and tends to move in an inward direction toward the point 168 of the detent lever. The detent lever 165 (Figs. 5 and 6) is rigidly attached to a sleeve 169 which is rotatably mounted on the post or stud 166, and the upper end of the post carries an arm 170 to which a spring 171 is attached. This spring operates to return the detent lever 165 and normally holds it up against the aforesaid lever 99. The contact between the lever 165 and the edge of the lever 99 is effected by means of a downwardly

projecting pin 172 formed on the off-set end of the lever 165 (see Figures 5 and 6).

The chart 6 is provided on its upper and lower faces with computed figures 173 which are disposed in rows to align with price rates carried on the scales 174. The scale and the computed figures on the charts may be seen through a glass plate 175 which covers the charts and rollers (see Fig. 1).

We provide means for normally covering the reading points of these charts which is in the form of a sliding shutter 176 (Fig. 5). This shutter is merely a plate with a central opening 177 of rectangular form, each end of the plate being formed into a guide sleeve 178 mounted to slide on a small guide bar 179 fixed in the frame of the machine (see Fig. 5). In the position of the shutter shown in Figure 5, the reading points are covered. In order to enable this shutter to be actuated at will by the operator, we provide the outer end plate 180 of the casing with a slot 181 (see Fig. 6) and we provide the shutter with a tongue 182 which projects through this slot (see Figure 6). On the frame plate 180 we pivot an actuating lever 183 on a pivot pin 184 and this lever has a slot or opening 185 (Fig. 12) which engages the aforesaid tongue 182. This lever 183 has a knurled upper end 186 which is exposed on the exterior of the machine by reason of the fact, that the upper end of the lever projects through a slot 187 (see Fig. 6) in the upper side of the casing. This enables the lever to be moved at the will of the operator by applying the finger or thumb to the knurled edge 186. A wish-bone spring 188 (Fig. 12) is mounted on the outer side of the plate 180 and returns the lever and the shutter after it has been operated.

We provide means co-operating with the lever 183 which will prevent the sliding movement or opening of the shutter to expose the reading points of the charts unless the pointers are indicating some measurement commensurable in fractions of a yard, for example, eighths or quarters. For this purpose, we provide a wheel 189 (Fig. 12) which is driven continuously by means of gears 190 and 191 from the shaft 9 of the take-up roller. The edge of this wheel or disk 189 has recesses or slots 192 which are disposed equidistant from each other, and the lever 183 has an arm 193 with a tongue 194 which may enter these slots; however, a slot will be disposed opposite to the tongue 194 only when the computed figure corresponding to the yards and fractions thereof indicated by the pointers 4 and 5, is at the reading point. At any other time the tongue 194 will snaply engage the edge of the disk or wheel 189, and the shutter cannot be opened.

The downward movement of the knife lever 126 operates to raise the presser roller 12. This is accomplished by reason of the fact that the presser roller is mounted on a rocking frame 195 (see Figure 18) and this rocking frame is provided with an arm 196 which projects into the path of an edge 197 of the lever. As the rocking frame 195 is rocked in a clockwise direction as viewed in Figure 18, a recess 198 in the upper part of the frame comes into engagement with the lower side of a roller 199 carried on an arm 200 pressed by a spring 201. (see Fig. 19) this holds the presser roller raised, away from the measuring roller. By pushing in upon a swinging plate 202 pivotally supported at 203 a cam shoulder 204 on the inner side of the plate will engage the roller 199 and raise the arm 200 with roller 199 so as to permit the presser roller to fall by gravity onto the measuring roller. When the presser roller is down (as illustrated in Figure 18) the spring 201 presses against the rocker frame 195 and provides the necessary pressure of the presser roller against the contact roller or against the fabric passing between the rollers. This presser roller mounting and controlling device have been disclosed and claimed in Patent No. 1,394,554, issued October 25, 1921, to G. C. Hosch.

In order to return the chart 6 to zero when the clutch 63, 64 is opened, the roller 8 is provided with a coil spring 205 (see Figure 12), one end of which is attached to the roller and the other end of which is fixed at the point 206 adjacent to the shaft 207 of this roller.

Automatic means is provided for disconnecting the drive to indicating charts; this is accomplished by means operating to release the clutch plate 71 at the limit of the computing capacity of the indicating mechanism. This is advisable in order to prevent any possibility of injuring the chart where the machine is being used for continuous measuring. In order to accomplish this we provide the tubular shaft 110 with a cam 208 (see Figure 5). This cam is not rigidly secured to the tubular shaft 110 but is concentrically mounted on the upper face of the large gear wheel 111 that is rigid with the yard pointer 4 and which, therefore, makes one complete revolution during the fullest possible movement of the chart 6. The upper face of the gear wheel 111 is provided with a pin 209 (Fig. 5) which is received in an opening 210, and the side of the cam is constantly pressed by a spring 211. As the yard pointer 4 rotates, this cam rotates with it and just after the completion of the twelve yard movement, the point of this cam strikes the tail arm 98 of the trigger 77 rotating in a clockwise direction and this will move the trigger 77 so as to release the

clutch plate 71, thereby permitting the same to move under the action of the spring 75 and open the clutch 63, 64. The spring 211 is, of course, mounted on the face of the gear wheel 111. The pin 209 and the large opening 210 operate as a lost motion device and co-operate with the spring 211 to enable the pressure of the cam upon the trigger 77 to be exerted as a yielding pressure.

The chart 6 bears numbers near one edge which indicate the length measured, to which the computed figures correspond (see Fig. 1).

The stop means for stopping the short-length indicating mechanism including the chart, comprises detent means in the form of a detent pawl 213 (see Figs. 18 and 21). This detent pawl co-operates with means on the face of the take-up roller 7 in such a way that the chart 6 will permit co-operation of the pawl with the face of the roller to stop the chart in the zero position, but during the operation of the machine, as soon as a wrap of the chart has been laid on the face of the take up roller the chart renders the detent pawl ineffective, that is to say, it inhibits the detent pawl from interfering with the free rotation of the take-up roller in either direction.

For this purpose the face of the take-up roller is provided with a detent recess or notch 214. In the zero position of the chart the abrupt face of the shoulder of this notch engages the end of the pawl and holds the take-up roller and the chart in the zero position. This relation is shown in Fig. 18. Figure 21 illustrates the manner in which the chart will cover the detent recess 214 so as to prevent the pawl from engaging it. In the present embodiment, the pawl 213 is pivotally supported on the face of the frame plate 69 (see Fig. 4) and is pressed by a spring 215 which holds its nose against the face of the roller or against the chart lying on the roller. In order to prevent any possibility of the pressure of the end of the pawl breaking through or injuring the chart as the recess 214 passes under the nose of the pawl, we prefer to provide the chart at the proper point with a reinforcing splint 216 of light metal or other material which is strong and flexible; and we also provide a small recess 217 on the face of the roller into which this splint fits as the chart wraps onto the roller face. This prevents bulging of the chart at this point.

I place the totalizing mechanism directly beneath the dial 3 and so that the numbers on the totalizer wheels 39 can be seen through openings in the dial, for example, in Figure 1, the numbers 0, 1 and 1½ show through the openings in the dial.

We shall now describe the general mode of operation of the entire machine: When the fabric to be measured is pulled between

the measuring roller and presser roller, the rotation of the measuring roller shaft 10 is imparted through pinion 13 and the train of gears illustrated in Figure 14 to the gear wheel 23 which is carried on the shaft 9 of the take-up roller. This produces a rotation of the take-up roller 7 in a direction to wind the chart 6 upon it and draw the same off of the opposite roller 8. The measuring movement is imparted from the gear 22 through the clutch 63—64 and the bevel gears 61 and 62 (see Figure 6) to the gear 60 which drives the gear 42 which is secured to clutch member 41 (see Fig. 9) and this clutch member drives a fraction number wheel 39^a, and through the carrying mechanism its movement is imparted to the units wheel and the tens wheel. The gear wheel 19 which is in the driving train shown in Fig. 14, through its shaft 24 and through the clutch 25—26 (Fig. 8) drives the spindle 29 of the fast-moving pointer. This drive is effected through the bevel gears 27 and 28. The spindle 29 carries the fast-moving pointer 5. Through the pinion 30 and gear wheel 31 (Fig. 7) and clutch 32—33 the pinion 34 is driven which operates to drive the large gear 111 which is rigid with the sleeve or tubular shaft 110 (Fig. 8) which carries the slow-moving pointer 4.

In this way the measuring roller operates to drive the pointers, the computing chart and the totalizer. When the desired length of fabric has been measured the operator actuates the hand lever 126 to mark the edge of the fabric at the point where it is to be cut off. The actuation of this knife lever operates to depress the arm 196 (Fig. 19) of the presser roller frame 195 and this raises the presser roller and enables the locking arm 200 (Fig. 18) to hold the presser roller raised. The measured piece of fabric can then be removed from the machine. By pressing down on the thumb-plate 87 of the resetting lever 83 the clutch 63—64 which actuates the totalizer will be opened also and likewise the clutches 25—26 and 32—33 through which the pointers are driven. This is accomplished through the medium of the link 89 (see Fig. 3) which rocks the lever 88 in an anti-clockwise direction. The movement of this lever operates through the link 92 to rock the lever or rock-plate 94 (see Fig. 5) on its pivot and exerts a pull in link 96. This releases the detent 77 and permits spring 75 (see Fig. 6) to move clutch plate 71 toward the right as viewed in Fig. 5. That is to say, it rotates the clutch plate 71 on its vertical pivot 70 (see Fig. 14). This clutch plate operating upon the slide collar 67 (Fig. 6) disengages clutch member 64 from clutch member 63 thereby opening the driving connection to the charts. The swinging of the lever 88

toward the left as viewed in Figure 3 also effects a movement of the lever 99 (see Fig. 5) on its pivot 100 thereby swinging the lever in a clockwise direction. This produces a movement of clutch shifter plate 102 (Fig. 8) toward the right as viewed in Figure 5, the right hand end of the clutch shifter plate being guided by its slot 106 on pin 105 on top of bracket 104 (see Fig. 8). The yoke 103 (see Figs. 5 and 8) then pushes the sliding clutch member 25 toward the right and disengages it from the clutch member 26 thereby opening the driving connection to pointer 5.

The depression of lever 83 also effects the opening of the back-gearing clutch 32—33 (see Fig. 7) through which the slow-moving pointer 4 is driven. This is accomplished through the medium of the arm 72 of clutch plate 71 (see Fig. 14) and link 73 which actuates the rocker 74 (see Fig. 4) to shove the clutch stem 35 upwardly (see Fig. 7). By opening the clutch 32—33 it is evident that the pointers 4 and 5 will be independently movable. While the clutches are opening in this way the pointers 4 and 5 will be returned to the zero position through the operation of the V-shaped points 113 on the returning arms 112. These points will engage with the heart-shaped cams 108, which will be rotated by the arms until the notch 114 of the cam is brought around into contact with the V-shaped point 113 (see Fig. 5). It will be noted in Figure 7 that there are two of these cams 108 corresponding to the inner spindle 29 and corresponding to the tubular shaft 110 (see Figure 8). We provide two heart-shaped cams and two co-operating resetting arms corresponding to each pointer. We also place the points of each pair of cams slightly out of line with each other, though we leave the corresponding arms in alignment. This is an advantageous arrangement as compared with a single cam and arm, because it prevents any possibility of the cam and arm coming together exactly on their points in which case the arm would not rotate the cam.

It should be understood that the gear wheel 22 and the clutch member 63 (Figs. 4 and 6) are both rigid on the shaft 66 while the sliding collar 67 which carries clutch member 64 is loose on this shaft. Now, when the clutch plate 71 slides the collar 67 toward the right as viewed in Figure 6, the gear wheel 22^a can rotate freely. Hence when clutch 63—64 is opened the spring 205 (Fig. 12) of the roller 8 operates to rotate the roller and rewind the chart upon it. As the gear wheel 22^a is constantly in mesh with the gear 23 this, of course, produces a rotation of the collar 67 and clutch member 64.

In this way the length indicating mech-

anism and the cost computing mechanism will return automatically to zero when the lever 83 is depressed.

It should be understood, however, that the clutches will remain open until they are closed by moving the clutch plate 71 toward the left as viewed in Figure 5. This movement can be accomplished through the agency of the knife lever 126 and its pin 133 (see Figure 3); that is to say, by raising the knife lever 126 from its normal position in which it is shown in Figure 3, the pin will strike the tongue 134 and swing the clutch plate 71 toward the left as viewed in Figure 5 until the tongue 82 on the lower edge of the clutch plate (see Fig. 14) passes beyond the notch in the shoulder 81 (Fig. 5) in the detent 77. The spring 77^a of the detent will then cause the detent to engage the tongue 82 and hold the clutch plate in its extreme left hand position as viewed in Figure 5. When the clutch plate is in this position all of the clutches will be held closed except, of course, the totalizer resetting clutch 39—41 (Fig. 9) which is not controlled in any way by this mechanism.

The computed figures on the chart 6 cannot be seen until the shutter 176 (Fig. 5) is operated. In order to enable them to be seen the operator operates the lever 183, the upper end of which slides the shutter toward the right as viewed in Figure 12, that is to say, they will accomplish this movement if one of the slots 192 of the wheel 189 is in alignment with the tongue 194 on the arm 193 of this lever. If one of these slots is so positioned then the computed figure on the chart will be in the reading position. In other words, the wheel 189 will permit the opening of the shutter if the computed figure on the chart is in the reading position, otherwise it will not permit it. This feature enables the instrument to be set to measure lengths of fabric that are commensurable in $\frac{1}{8}$ fractions without displaying a computed figure which apparently would correspond with the length indicated. The machine, therefore, can be set to measure any length of fabric in inches.

The thumb-head 189^a which is carried on the shaft of the wheel 189 on the exterior of the casing enables the chart to be used as a computing device when the totalizer clutch 63—64 is open.

When the operator desires to measure a remnant he rotates the thumbhead 135 in a clockwise direction and this rotates its shaft 136 in the direction indicated by the arrow in Figure 15. This moves the pawl arm 139 away from the cam plate and rest plate 145 which then permits the spring 141 and pawl 140 to bring the pawl into engagement with the ratchet wheel 138 which is carried on the extended shaft 10 of the measuring roller. The rotation of the thumb-head 135

will then be imparted to the ratchet wheel 138 and to its shaft 10. This will advance the indicating mechanism through a predetermined amount. As the arm 139 arrives at the stop pin 150 (see Fig. 17) the pawl arm engages the tail arm 148, detent pawl 146 and rocks the point 149 of this pawl into engagement with the teeth of the ratchet wheel 138 and this pawl maintains this position and holds the ratchet wheel against rotation while the arm 139 is being returned by the coil spring 143 to its normal position. As the arm 139 arrives at its normal position the cam plate or rest plate 145 engages the tail 144 of pawl 140 and throws the point 142 of this pawl out of engagement with the ratchet wheel.

The pawl 146 maintains its position and prevents the rotation of the ratchet wheel 138 until the measuring movement begins, whereupon the teeth of the ratchet will throw the pawl out of engagement with the ratchet wheel. As the pawl is inert and friction-tight on its bracket 137 it will remain out of engagement with the ratchet wheel.

The full-stroke device illustrated in Figure 15 insures that the thumb-head 135 will be rotated to the limit of its forward movement because the operator will note that it is not being returned by its spring.

When the thumb-head 135 is rotated in the forward direction the cam edge 162 on the collar 151 (see Fig. 15) actuates the lever 160 (see Fig. 13) to swing it in a counter-clockwise direction, and will bring the shield 159 bearing the character "REM" into view at the window 158. The detent point or tooth 168 on the detent lever 165 (see Fig. 5) will hold the indicating lever 160 in this indicating position and with its spring 163 (Fig. 13) extended. When the lever 83 is depressed the movement of the lever 99 (see Fig. 5) is imparted to the detent lever 165 and this will disengage the indicating lever 160 from the point 168 and permit the spring 163 to return the lever 160 to its normal position.

If the operator does not stop the operation of the machine before it reaches the indicating capacity of the chart, the drive to the chart will be automatically disconnected by the cam 208 when it strikes the tail arm 98 of the trigger 77 (see Fig. 5). This will permit the spring 205 of the spring roller 8 (see Fig. 18) to return the chart to zero.

As soon as the chart arrives at the zero position the detent pawl 213 (Fig. 18) will stop it.

It is understood that the embodiment of the invention described herein is only one of the many embodiments our invention may take, and we do not wish to be limited in the practice of our invention nor in our

claims, to the particular embodiment set forth.

What we claim is:

1. In a measuring and cost computing machine, the combination of a measuring roller, length indicating mechanism for indicating a quantity measured, cost indicating mechanism for indicating the cost of the quantity indicated by the indicating mechanism, totalizing mechanism to indicate the total of all quantities measured, driving mechanism actuated by said measuring roller for driving the length indicator, the cost indicating mechanism and the totalizing mechanism simultaneously, means for disconnecting the cost indicating mechanism from the driving mechanism, means for resetting the length indicating means and the cost indicating mechanism to zero, hand-actuated marking means for marking the point where the measured article is to be cut off, and means actuated by the upward movement of said hand-operated marking means for effecting the reconnection of the cost indicating mechanism with said driving mechanism after the resetting to zero.

2. In a fabric measuring and cost computing machine, the combination of a measuring roller, length indicating mechanism for indicating a quantity measured, cost indicating mechanism for indicating the cost of the quantity indicated, totalizing mechanism, driving mechanism actuated by said measuring roller for driving the length indicator and the cost indicating mechanism including a clutch connecting the cost indicating mechanism with the totalizing mechanism, means operated at will to effect the opening of the said clutch and to effect the resetting of the length indicating mechanism to zero, and means for resetting the cost indicating mechanism when the clutch is open.

3. In a fabric measuring and cost computing machine, the combination of a measuring roller, length indicating mechanism for indicating a quantity measured, cost indicating mechanism for indicating the cost of the quantity indicated, totalizing mechanism, driving mechanism actuated by said measuring roller for driving the length indicator and the cost indicating mechanism including a clutch connecting the cost indicating mechanism with the totalizing mechanism, means operated at will to effect the opening of said clutch and to effect the resetting of the length indicating mechanism to zero, means for resetting the cost indicating mechanism when the clutch is open, a hand-actuated marking device for indicating the point where the fabric is to be cut off, and means actuated thereby for closing the clutch.

4. In a fabric measuring and cost computing machine, the combination of a measuring roller, length indicating mechanism for indicating a quantity measured, cost indicat-

ing mechanism for indicating the cost of the quantity indicated, totalizing mechanism, driving mechanism actuated by said measuring roller for driving the length indicator and the cost indicating mechanism including a clutch connecting the cost indicating mechanism with the totalizing mechanism, a spring tending to open the clutch, detent means cooperating with a member of the clutch for preventing the opening of the clutch by the spring, a hand-operated member for releasing the detent to permit the spring to open the clutch, means also actuated by the hand-operated member to effect the resetting of the length-indicating mechanism to zero, and another hand operated member for closing the clutch.

5. In a fabric measuring and cost computing machine, the combination of a measuring roller, a length indicating dial and movable pointers co-operating therewith for indicating a length measured, cost indicating mechanism for indicating the cost of the quantity indicated by the pointers, totalizing mechanism, driving mechanism actuated by said measuring roller for driving the pointers, the totalizing mechanism and the cost indicating mechanism with a clutch for driving the cost indicating mechanism, a hand-actuated member, means actuated thereby to effect the opening of the clutch, means also actuated thereby to effect the resetting of the pointers to the zero position and means for resetting the cost indicating mechanism to zero when the clutch is open.

6. In a fabric measuring and cost computing machine, the combination of a measuring roller, a length indicating dial, a fast moving pointer co-operating therewith for indicating fractions of the unit of measure, a slow moving pointer co-operating with the dial for indicating multiples of the measuring unit, cost indicating mechanism for indicating the cost of the quantity indicated by the pointers, driving mechanism for driving the cost indicating mechanism and the fast-moving pointer from the measuring roller, back-gearing for driving the slow moving pointer from the fast moving pointer and including a clutch, a hand-operated member, means actuated thereby for opening said clutch and for effecting the resetting of the pointers to the zero position, and means also actuated by the hand-operated member for effecting the resetting of the cost indicating mechanism to the zero position.

7. In a fabric measuring and cost computing machine, the combination of a measuring roller, a length indicating dial, a fast moving pointer co-operating therewith for indicating fractions of the unit of measure, a slow moving pointer co-operating with the dial for indicating multiples of the measuring unit, cost indicating mechanism for indicating the cost of the quantity indicated

by the pointers, driving mechanism actuated by said measuring roller for driving the cost indicating mechanism and the fast moving pointer, back-gearing for driving the slow moving pointer from the fast moving pointer and including a clutch, a totalizing mechanism operated from said driving mechanism, a clutch for driving the cost-indicating mechanism, a hand-operated member, means actuated thereby to effect the opening of both of said clutches, means also actuated by the hand operated member for resetting the pointers to their zero position, and means for resetting the cost indicating mechanism to its zero position.

8. In a fabric measuring and cost computing machine, the combination of a measuring roller, a length indicating dial, a fast moving pointer co-operating therewith for indicating fractions of the unit of measure, a slow moving pointer co-operating with the dial for indicating multiples of the measuring unit, cost indicating mechanism for indicating the cost of the quantity indicated by the pointers, driving mechanism actuated by said measuring roller for driving the cost indicating mechanism and the fast moving pointer, back-gearing for driving the slow moving pointer from the fast moving pointer and including a clutch, a totalizing mechanism operated from said driving mechanism, a clutch for driving the cost computing mechanism, a hand-operated member, means actuated thereby to effect the opening of both of said clutches, means also actuated by the hand operated member for resetting the pointers to their zero position, means for resetting the cost indicating mechanism to its zero position, a hand-operated marking lever for marking the fabric at the point where it is to be cut off, said marking lever having means for effecting the closing of the last named clutch.

9. In a fabric measuring and cost computing machine, the combination of a measuring roller, a length indicating dial, a fast moving pointer co-operating therewith for indicating fractions of the unit of measure, a slow moving pointer co-operating with the dial for indicating multiples of the measuring unit, cost indicating mechanism for showing the cost of the quantity indicated by the pointers, means for driving the cost indicating mechanism and the fast moving pointer from the measuring roller, back-gearing and a clutch for driving the slow moving pointer from the fast-moving pointer, totalizing mechanism operated from said driving means, a clutch for driving the cost indicating mechanism, a hand-operated member to effect the opening of both of the clutches, and means independent thereof for closing the last named clutch.

10. In a fabric measuring and cost computing machine, the combination of a meas-

uring roller, a length indicating dial, a fast moving pointer co-operating therewith for indicating fractions of the unit of measure, a slow moving pointer co-operating with the dial for indicating multiples of the measuring unit, cost indicating mechanism for showing the cost of the quantity indicated by the pointers, means for driving the cost indicating mechanism and the fast moving pointer, back-gearing and a clutch for driving the slow moving pointer, totalizing mechanism operated from said driving means, a clutch for driving the cost indicating mechanism, a spring for opening the last named clutch, detent means cooperating with and operating to hold the last named clutch closed against the action of the spring, a hand-operated member, means operated thereby to effect the opening of both of the clutches, a marking lever having means for marking the fabric at the point where it is to be cut off, and means actuated thereby for closing the last named clutch.

11. In a fabric measuring and cost computing machine, the combination of a measuring roller, length indicating mechanism for indicating the quantity measured, cost indicating mechanism for showing the cost of the quantity measured, means for driving the same from the measuring roller, a hand-actuated remnant device having means for advancing the length indicating mechanism and the cost computing mechanism when a remnant is to be measured, a remnant indicator moved thereby into its active position to show that the machine is set for measuring a remnant, hand-actuated means to effect the resetting of the length indicating mechanism and the cost indicating mechanism to their zero positions, and means actuated automatically thereby for restoring the remnant indicator to its normal inactive position.

12. In a fabric measuring and cost computing machine, the combination of a measuring roller, length indicating mechanism for indicating the quantity measured, cost indicating mechanism for showing the cost of the quantity measured, means for drawing the same from the measuring roller, a hand-actuated remnant device, means actuated thereby for changing the reading of the cost indicating mechanism to adapt the same to the measuring of a remnant, a remnant indicator moved by the remnant device into an indicating position to show that the machine is set for measuring a remnant, hand-actuated means to effect the resetting of the length indicating mechanism and the cost indicating mechanism to their zero positions, and means actuated automatically thereby for restoring the remnant indicator to its normal position.

13. In a machine of the kind described, the combination of a measuring roller, in-

indicating mechanism, means for driving the indicating mechanism from the measuring roller, a hand-actuated remnant button, a one-way drive connection between the remnant button and the indicating mechanism for effecting the advance of the indicating mechanism a predetermined amount when the remnant button is actuated, means for returning the remnant button to its normal position after the same has been actuated, and detent means for preventing a retrogressive movement of the indicating mechanism during the return movement of the remnant button.

14. In a machine of the kind described, the combination of a measuring roller, indicating mechanism, means for driving the indicating mechanism from the measuring roller, a hand-actuated remnant button, a ratchet and pawl connection between the remnant button and the indicating mechanism for effecting the advance of the indicating mechanism a predetermined amount when the remnant button is actuated, means for returning the remnant button to its normal position after the same has been actuated, and detent means for preventing a retrogressive movement of the indicating mechanism during the return movement of the remnant button.

15. In a machine of the kind described, the combination of a measuring roller, indicating mechanism, means for driving the indicating mechanism from the measuring roller, a hand-actuated remnant button, a full-stroke device associated therewith to prevent the return of the remnant button until the same has been actuated to the limit of its forward movement, a ratchet and pawl connection between the remnant button and the indicating mechanism for advancing the indicating mechanism a predetermined amount by the forward movement of the remnant button, means for returning the remnant button after the same has been actuated, detent means for preventing a retrogressive movement of the indicating mechanism during the returning movement of the remnant button, said detent means co-operating with the ratchet to permit free movement of the indicating mechanism in either direction after the indicating mechanism has been moved in a forward direction.

16. In a machine of the kind described, the combination of a measuring roller, indicating mechanism, means for driving the indicating mechanism from the measuring roller, a hand-actuated remnant button, a ratchet and pawl connection between the remnant button and the indicating mechanism for advancing the indicating mechanism a predetermined amount when a remnant is to be measured, a friction-held detent pawl, means actuated by the remnant button in its forward movement to move

the detent pawl into engagement with the ratchet to prevent a retrogressive movement of the indicating mechanism during the return movement of the remnant button, means for returning the remnant button to its normal position, said ratchet operating during the measuring movement to move the friction-held detent pawl out of the path of its teeth so as to permit free movement of the indicating mechanism in either direction thereafter.

17. In a machine of the kind described, the combination of a measuring roller, indicating mechanism, means for driving the indicating mechanism from the measuring roller, a hand-actuated remnant button, a ratchet and pawl connection between the remnant button and the indicating mechanism for advancing the indicating mechanism a predetermined amount when a remnant is to be measured, a friction-held detent pawl, an arm actuated by the remnant button in its forward movement and operating to move the detent pawl into engagement with the ratchet to prevent a retrogressive movement of the indicating mechanism during the return movement of the remnant button, and means for returning the remnant button to its normal position after the same has been actuated.

18. In a machine of the kind described, the combination of a measuring roller, indicating mechanism, means for driving the indicating mechanism from the measuring roller, a hand-actuated remnant button, a ratchet and pawl connection between the remnant button and the indicating mechanism for advancing the indicating mechanism a predetermined amount when a remnant is to be measured, a friction-held detent pawl, an arm actuated by the remnant button in its forward movement and operating to engage the detent pawl at the end of the forward movement of the remnant button so as to move the detent pawl into engagement with the ratchet and thereby prevent a retrogressive movement of the indicating mechanism during the return movement of the remnant button, means for returning the remnant button to its normal position, said ratchet operating during the measuring movement to move the friction-held detent pawl out of the path of its teeth so as to permit free movement of the indicating mechanism in either direction thereafter.

19. In a machine of the kind described, the combination of a measuring roller, indicating mechanism, means for driving the indicating mechanism from the measuring roller, a hand-actuated remnant button, a ratchet and pawl connection between the remnant button and the indicating mechanism for advancing the indicating mechanism a predetermined amount when a rem-

nant is to be measured, a friction-held detent pawl, a full-stroke device associated with the remnant button, an arm actuated by the remnant button in its forward movement to engage the detent pawl and move the same into engagement with the ratchet to prevent a retrogressive movement of the indicating mechanism during the return movement of the remnant button, and means for returning the remnant button to its normal position.

20. In a machine of the kind described, the combination of a measuring roller, indicating mechanism, means for driving the indicating mechanism from the measuring roller, a hand-actuated remnant button, a ratchet and pawl between the remnant button and the indicating mechanism for advancing the indicating mechanism a predetermined amount when a remnant is to be measured, a second pawl, means actuated by the remnant button in its forward movement and operating to move the detent pawl into engagement with the ratchet to prevent a retrogressive movement of the indicating mechanism during the return movement of the remnant button, a collar rigid with the remnant button so as to rotate therewith, said collar having teeth operating as a segment, a pawl co-operating with the segment to prevent a retrogressive movement of the collar until the remnant button has been given its full forward movement, means co-operating with the last-named pawl to disengage the same from the ratchet teeth when the remnant button has completed its full forward movement, and means for returning the remnant button to its normal position after it has completed its full forward movement.

21. In a machine of the kind described, the combination of a measuring roller, indicating mechanism, means for driving the indicating mechanism from the measuring roller, a hand-actuated remnant button, a ratchet connected with the indicating mechanism, a pawl carrier actuated by the remnant button, a pawl carried thereby co-operating with the ratchet to advance the indicating mechanism a predetermined amount when a remnant is to be measured, means for preventing a retrogressive movement of the indicating mechanism after it has been advanced by the ratchet and pawl, means for returning the remnant button to its normal position after the same has been actuated, and means for engaging the pawl when the remnant button is in its normal position to hold the pawl normally out of engagement with the ratchet.

22. In a fabric measuring and cost computing machine, the combination of a measuring roller, a presser roller co-operating therewith, and mounted so as to move

against or away from the measuring roller, length indicating mechanism, cost computing mechanism, driving mechanism for driving the length indicating mechanism and the cost computing mechanism from the measuring roller and including a clutch for driving the length indicating mechanism, a resetting lever, means actuated thereby for opening the clutch, means actuated thereby for returning the length indicating mechanism to zero, independent means for returning the cost computing mechanism to zero, a marking lever, means actuated thereby for moving the presser roller away from the measuring roller actuated by a forward movement of the marking lever, means for holding the clutch open while the cost computing mechanism is returning to the zero position, and means actuated by a rearward movement of the marking lever to effect the reclosing of the clutch.

23. In a fabric measuring and cost computing machine, the combination of a measuring roller, a presser roller co-operating therewith, and mounted so as to move against or away from the measuring roller, indicating mechanism including means for indicating the length measured, totalizer mechanism for indicating totals of the lengths measured, driving mechanism actuated by said measuring roller for driving the indicating mechanism and a clutch for connecting or disconnecting the driving mechanism to the indicating mechanism, a resetting lever, means controlled thereby for opening the clutch, a marking lever, means actuated thereby for moving the presser roller away from the measuring roller actuated by a forward movement of the marking lever, means for returning the indicating mechanism to zero, means for holding the clutch open while the indicating mechanism is returning to zero, and means actuated by a rearward movement of the marking lever to effect the reclosing of the clutch.

24. In a fabric measuring and cost computing machine, the combination of a measuring roller, a presser roller co-operating therewith, and mounted so as to move against or away from the measuring roller, indicating mechanism including means for indicating the length measured, totalizer mechanism for indicating totals of the lengths measured, driving mechanism for driving the indicating mechanism and a clutch for connecting or disconnecting the driving mechanism to the indicating mechanism, a resetting lever, means controlled thereby for opening the clutch, means for moving the presser roller away from the measuring roller, means for returning the indicating mechanism to zero while the clutch is open, detent means cooperating with the clutch for holding the clutch open while the indicating

mechanism is returning to zero, and means for actuating the detent means to permit the clutch to close.

25. In a machine of the kind described,
 5 the combination of a frame having a base plate and a main frame plate, a measuring roller, a gear-train supported on the main frame plate and actuated by the measuring roller, an indicating chart having computed
 10 figures corresponding to the lengths measured at different prices per unit, a spring-actuated roller carrying the portion of the chart wound thereupon, a take-up roller carrying the other portion of the chart and
 15 actuated by the gear train, said take-up roller having a shaft passing through the frame plate, an outer frame plate supporting said shaft, a wheel mounted adjacent the outer frame plate, means for driving the
 20 same in unison with the take-up roller, a shutter, a spring normally holding the shutter in a position to cover the reading points on the chart, hand-operated means to move the shutter to open the same, said wheel and
 25 said shutter having co-operating means to permit the shutter to be opened only when the said computed figures lie at the reading points of the charts.

26. In a machine of the kind described,
 30 the combination of a frame having a base plate and a main frame plate, a measuring

roller, a gear-train supported on the main frame plate and actuated by the measuring roller, an indicating chart having computed
 35 figures corresponding to the lengths measured at different prices per unit, a spring-actuated roller carrying a portion of the chart wound thereupon, a take-up roller carrying the other end of the chart, and
 40 actuated by the gear train, said take-up roller having a shaft passing through the frame plate, an outer frame plate supporting said shaft, a wheel mounted adjacent to the outer frame plate and having a plurality
 45 of equidistant recesses on the periphery thereof, means for driving the wheel in unison with the take-up roller from the said shaft, a shutter, a spring normally holding the
 50 shutter in a position to cover the reading points on the charts, a hand-operated lever engaging the shutter to move the same, said lever having means co-operating with said
 55 recesses when the computed figures of the chart are at the reading points, to permit the shutter to be opened, the periphery of the wheel normally operating to prevent a movement of the lever to open the shutter.
 In testimony whereof, we have hereunto set our hands.

JOHN L. WHEELER.
 EDWIN A. REED.
 GREENE CARLTON HOSCH.