Sept. 5, 1961 J. YAWORSKY 2,998,659

APPARATUS FOR MEASURING FABRIC FOR DRAPERIES

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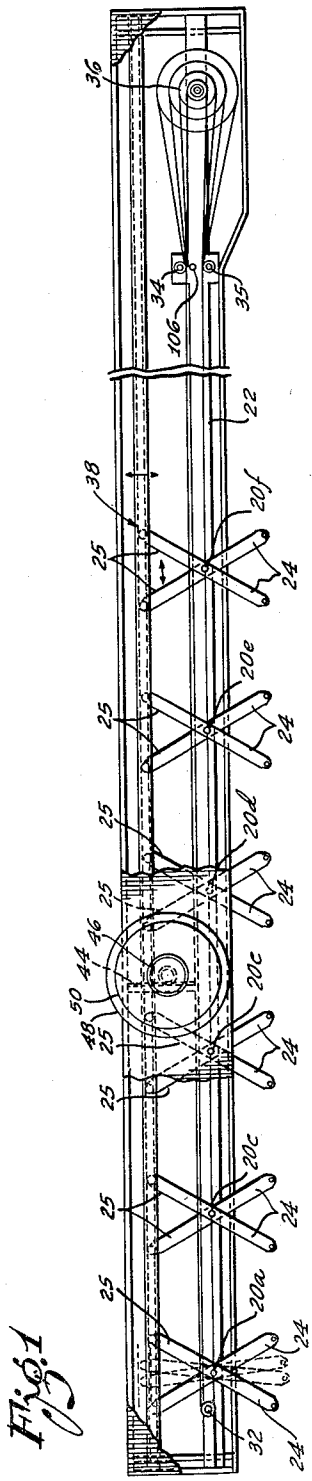


Fig. 1

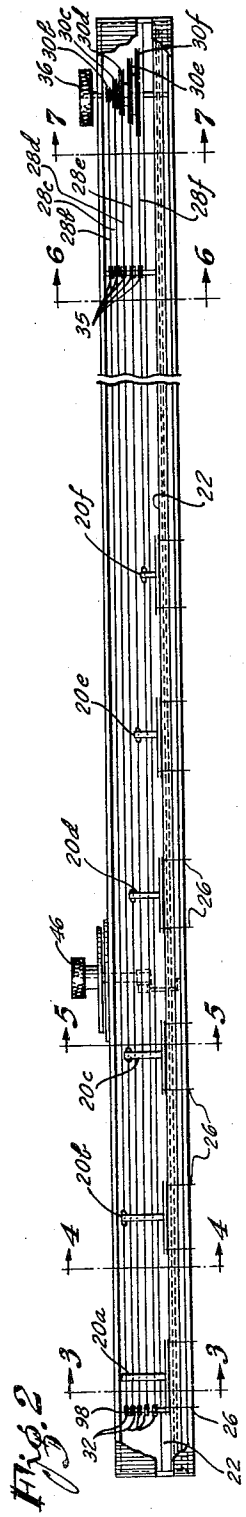


Fig. 2

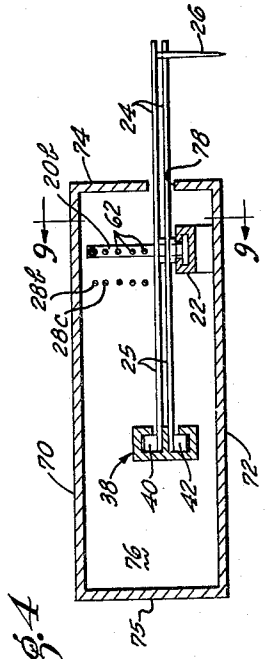


Fig. 4

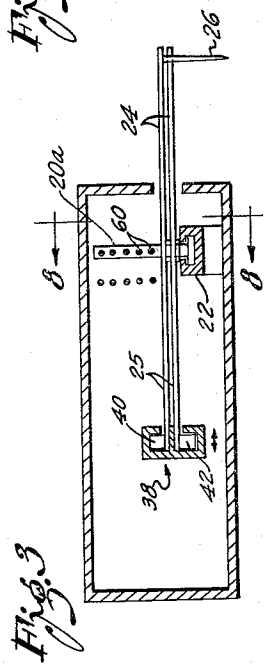


Fig. 3

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APPARATUS FOR MEASURING FABRIC FOR DRAPERIES

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Fig. 5

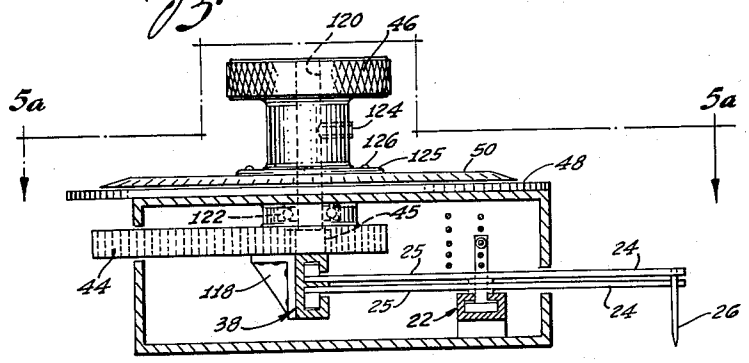
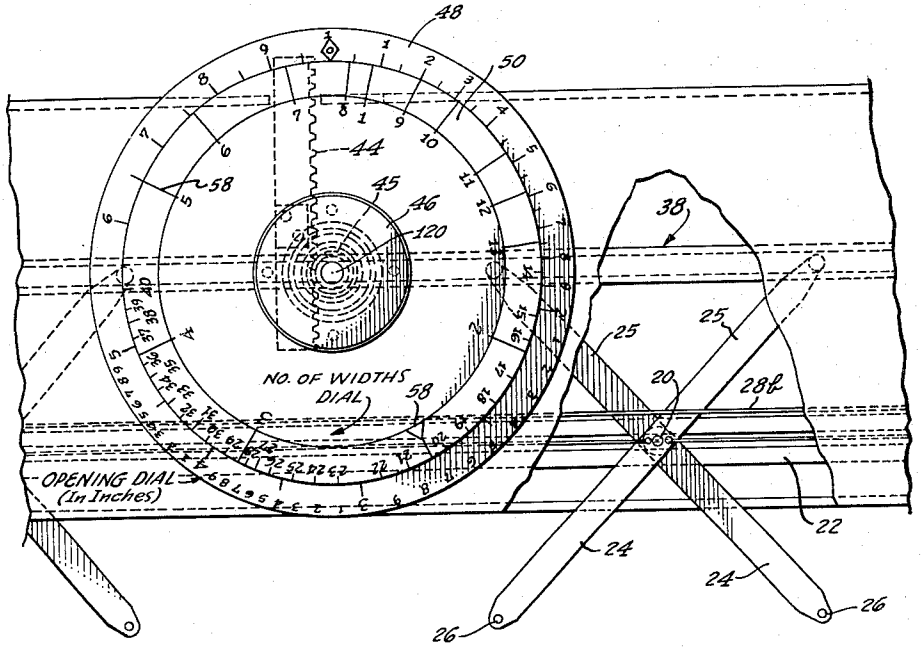


Fig. 5a



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APPARATUS FOR MEASURING FABRIC FOR DRAPERIES

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Fig. 6

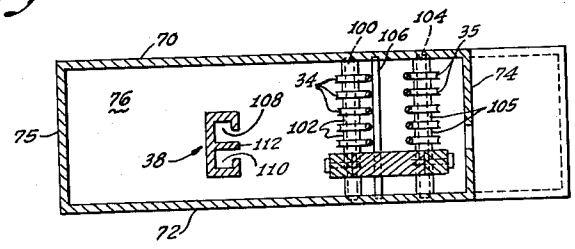


Fig. 7

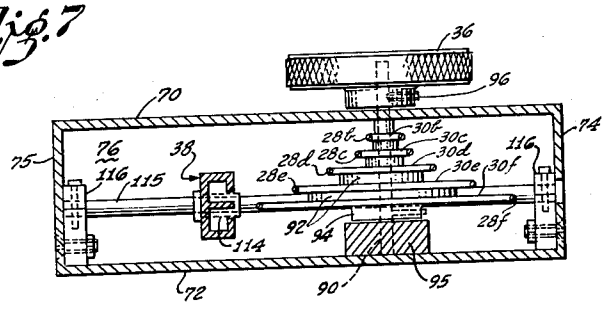


Fig. 8

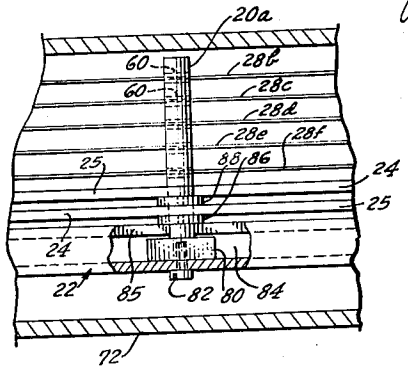


Fig. 9

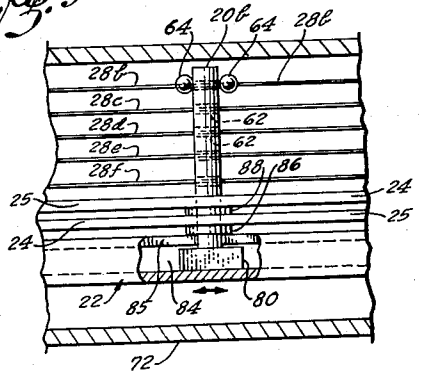


Fig. 10

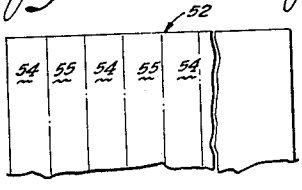
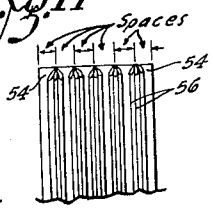


Fig. 11



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2,998,659

Patented Sept. 5, 1961

2,998,659

APPARATUS FOR MEASURING FABRIC FOR DRAPERIES

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Filed June 8, 1959, Ser. No. 818,737

16 Claims. (Cl. 33—180)

This invention relates to a measuring device for guidance in the fabrication of draperies and more particularly is directed to means for determining and laying out the spaced pleating zones on a stretch of fabric which is to be used to form a drapery to cover an area of a given width.

In preparation for fabricating a drapery to cover an area of a given width, strips or "widths" of fabric are sewn together edge to edge to form a sewn fabric sheet of much greater width than the given width of the area to be covered. Spaced zones of the sewn fabric sheet are then pleated to form the required drapery, the pleating reducing the width of the sewn fabric to the width of the area that is to be covered. Preferably all of the seams connecting the widths of fabric fall in the pleating zones to hide the seams and to give the finished drapery the appearance of being made from a single integral sheet of fabric.

The usual procedure for laying out the pleating zones in fabric requires skill and experience. At best, the usual procedure is time-consuming because it is largely a procedure of trial and error. A further disadvantage is that too often the seams joining the widths of fabric lie exposed between the pleating zones in the finished drapery. It is also a serious disadvantage that the usual procedure is far from foolproof and mistakes may be costly in wasting expensive materials.

The present invention removes all of the guesswork from this task by providing an exceeding accurate measuring device for determining the correct width of the pleating zones of the sewn fabric and the correct spacing of the successive pleating zones as required to pleat a sewn fabric of a given over-all width to make a drapery dimensioned to cover a wall area of a given width. The apparatus not only determines the dimensions and spacing of the pleating zones but also actually locates the boundary points of the pleating zones directly on the sewn fabric. An important feature of the invention is that the measuring device is applied to one width at a time in the series of sewn widths and inherently operates to locate all of the seams in the pleating zones.

The preferred embodiment of the invention requires no special skill and requires no mental calculations on the part of the operator. Since no special skill is required and since the apparatus accomplishes its purpose in a rapid manner, the cost of measuring and laying out the pleating zones of sewn fabric is reduced to the minimum. In addition, the invention avoids costly errors.

A special feature is the provision of scale means for guidance in setting the apparatus. Assuming that the sewn fabric is sufficiently wider than the area that is to be covered, for example three times wider, the only data required is the width of the area that the drapery is to cover and the number of widths of fabric that are sewn together. The operator merely sets a value representing the number of widths of fabric on one scale means at the value on an adjacent scale means representing the width of the area that is to be covered by the drapery. This simple scale setting procedure automatically adjusts the whole apparatus for correctly measuring and marking each of the widths of fabric.

In addition, the scale means when set in the manner described indicates the dimension of the spaces between the pleating zones to make this dimension available for reference or checking if desired. Thus if some given spacing between pleating zones is required, a check on the

spacing that may be achieved with a given stretch of sewn fabric may be provided at the start to avoid carrying out the measuring procedure in the event the width of the sewn fabric should be increased or decreased. It is further apparent that the same scale means may be manipulated in the first place to determine how many strips of fabric of a given width must be sewn together to cover an area of a given width by a fabric having pleating zones of given spacing.

The apparatus serves its purpose by providing a series of pairs of indicator elements that span equal distances and are interlocked for simultaneous adjustment to vary the spanned distances. The successive pairs of indicator elements are spaced apart by equal distances and the invention further provides means to vary the spacing between the successive pairs simultaneously. Thus the invention provides one series of equal but adjustable spaces spanned by the pairs of indicator elements and a second alternate series of equal but adjustable spaces between the successive pairs of elements. Either one of these series of spaces may represent the spaces between the successive pleating zones on a piece of fabric, the other series of spaces representing the pleating zones. In the present embodiment of the invention, the series of spaces spanned by the pairs of indicator elements represent the spaces between the pleating zones.

In the presently preferred embodiment of the invention, a series of crossed scissor members are mounted in a straight line on a corresponding series of pivot means. Each pair of crossed scissor members provides a pair of divergent measuring or indicating arms on one side of the pivot means and a corresponding pair of divergent control arms on the other side of the pivot means. Means is provided to expand or contract the pair of measuring arms simultaneously to expand or contract the spaces representing the spaces between pleating zones. In addition, means is provided to shift the pivot means relative to each other at different rates to keep the distances between the successive pivot means equal.

The invention solves the problem of providing both of these kinds of adjustments of the measuring arms, i.e., adjustment of the distances spanned by the pairs of measuring arms and adjustment of the distances between the successive pairs of measuring arms. This problem is solved by slidingly connecting the outer ends of the control arms to a control track that extends parallel to the line of pivots and by further providing means to vary the distance of the control track from the line of pivots. Shifting of the control track laterally towards the line of pivots causes the slidingly connected control arms to spread thereby causing the measuring arms to spread correspondingly. Since the connections of the control arms with the control track are slidable along the control track, the provision of the control track for adjustment of the measuring arms does not interfere with operation of the second adjustment means which shifts the pivot means along paths parallel with the control track.

The arrangement for shifting the pivot means consists of a series of rotary actuating members connected to corresponding pivot means and the diameters of these rotary members differ to transmit different rates of rotation of the pivot means. In the preferred practice of the invention, the rotary actuating members comprise a stack of sheaves or drums which are connected to the corresponding pivot means by cable-like members.

A feature of the present embodiment of the invention is the provision of scale means associated with the adjustment for the measuring arms, the arrangement being such that manipulation of a rotary circular scale relative to an adjacent fixed circular scale causes adjustment of all of the measuring arms simultaneously. This scale means is calibrated in terms of the number of widths of

fabric that are sewn together and the number of inches of width of the area that is to be covered by the finished drapery. Thus with these two values known, the operator sets the two scales accordingly and thereby adjusts the measuring arms to indicate the spacing between the successive pleating zones that is correct for the given number of widths to cover the wall area of the given number of inches in width. In the preferred practice of the invention, the scale means further indicates the exact measurement of the equal spaces between the successive pleating zones.

The features and advantages of the invention may be understood from the following detailed description considered with the accompanying drawings.

In the drawings, which are to be regarded as merely illustrative:

FIG. 1 is a plan view of the presently preferred embodiment of the invention with portions broken away to reveal concealed structure;

FIG. 2 is a front elevation of the same embodiment of the invention with parts broken away;

FIG. 3 is an enlarged transverse section taken as indicated by the line 3—3 of FIG. 2 and showing the first pivot means of the series in side elevation, this pivot means being fixed;

FIG. 4 is a similar section on the line 4—4 of FIG. 2 showing the second pivot means in side elevation, this second pivot means being movable along the track means in which it is mounted.

FIG. 5 is an enlarged transverse section taken along the line 5—5 of FIG. 2 showing the adjustment knob and associated mechanism for shifting the control track to vary the spaces spanned by the series of measuring arms;

FIG. 5*a* is a fragmentary plan view as seen along the line 5*a*—5*a* of FIG. 5, the view showing the pair of circular scales associated with the adjustment knob;

FIG. 6 is an enlarged transverse section taken as indicated by the line 6—6 of FIG. 2 showing how cable-like elements for adjustment of the pivot means are engaged by two sets of guide rollers;

FIG. 7 is an enlarged transverse section taken as indicated by the line 7—7 of FIG. 2 showing the stack of rotary means for controlling the pivot means, the rotary means having different diameters to transmit different rates of motion to the pivot means;

FIG. 8 is an enlarged section taken along the line 8—8 of FIG. 3 showing the first stationary pivot means in the series of pivot means;

FIG. 9 is an enlarged section along the line 9—9 of FIG. 4 showing the second pivot means which is movable relative to the first pivot means;

FIG. 10 is a fragmentary plan view of one of the widths of fabric in the sewn fabric for a drapery; and

FIG. 11 is a plan view of the same width of fabric after the pleats are formed therein.

General arrangement

The principal parts of the present embodiment of the invention shown in the drawings include: a series of pivot means **20***a*—**20***d* mounted on a guide track **22** with the first pivot means **20***a* fixed in position and the remaining pivot means slidable along the guide track; a corresponding series of crossed scissor members pivotally mounted on the pivot means **20***a*—**20***d* respectively, each pair of scissor members providing a forwardly extending pair of divergent indicating or measuring arms **24** and a corresponding pair of rearwardly extending control arms **25**; downwardly extending indicating pins **26** on the outer ends of the measuring arms **24**; a series of endless cables **28***b*—**28***f* connected to the corresponding movable pivot means **20***b*—**20***f* for control thereof; a stack of corresponding rotary actuating members in the form of sheaves or pulleys **30***b*—**30***f* engaging the ends of the loops of the corresponding cables **28***b*—**28***f*, the sheaves being of different diameters for moving the cables at different rates as required to maintain equal spacings between the successive pivot means; a vertical series of guide rollers **32** for the other ends of the loops formed by the endless cables **28***b*—**28***f*; two series of vertically arranged guide rollers **34***b*—**34***f* and **35***b*—**35***f* positioned near the stack of actuating sheaves **30** to make the runs of cables parallel; a control track, generally designated **38**, for controlling the distances spanned by the measuring arms **24**; a first control knob **36** for manual operation of the stack of actuating sheaves **30**; upwardly extending rollers **40** on some of the control arms **25** slidingly engaging the upper track portion of the control track **38** and downwardly extending rollers **42** on the remaining control arms in sliding engagement with the lower track portion of the control track **38**, the two sets of rollers **40** and **42** causing the control arms **25** to diverge in response to lateral movement of the control track towards the row of pivot means **20** and vice versa; a rack **44** (FIGS. 5 and 6) united with the control track **38**; a pinion **45** in mesh with the rack **44** to cause shift thereof; a second control knob **46** operatively connected to the pinion **45** for shifting the control track **38** to actuate the pairs of control arms **25**; a fixed circular scale **48** concentric to the second control knob **46**, this circular scale being calibrated in terms of widths in inches of wall area to be covered by finished draperies; and a rotary circular scale **50** concentric to the fixed scale and calibrated in terms of the number of widths of fabric that are sewn together to make a drapery.

Operation

FIG. 10 shows one width of fabric **52** which is one of a series of fabrics that are sewn together edge to edge to make a long run of fabric to cover a wall area of a given width. The purpose of the apparatus of the present invention is to measure off on this width of fabric a series of spaces **54** which are to be the spaces between the successive pleating zones and a series of alternate spaces **55** which are to be the zones of the fabric that are to form pleats. FIG. 11 shows how the pleating zones **54** form the pleats **56** of the finished drapery with the clusters of pleats separated by the spaces **54**.

The outer fixed circular scale **48**, as best shown in FIG. 5*a*, is a logarithmic scale calibrated in terms of inches of width of the wall area to be covered by the drapery. Since the logarithmic scale covers 720° there are two rows of figures. The inner logarithmic rotary scale **50** is calibrated in terms of the number of widths of fabric that are sewn together edge to edge to make the drapery.

When the control knob **46** is manipulated to cause the numeral representing the number of widths of fabric on the inner rotary scale **50** to be registered with the numeral on the outer scale **48** that indicates the inches in width of the wall space to be covered, the pinion **45** that rotates with the control knob shifts the rack **44** to cause corresponding shift of the control track **38**. If the control track **38** is shifted in the direction away from the guide track **22**, the control arms **25** of the pairs of scissor members are caused to swing towards each other by virtue of the fact that the rollers **40** and **42** of the control arms are slidingly engaged with the control track. This action causes corresponding narrowing of the equal distances spanned by the corresponding pairs of measuring arms **24**. On the other hand, actuation of the rack **44** to shift the control track **38** towards the guide track **22** causes the control arms **25** to diverge or swing away from each other with corresponding increase in the equal distances spanned by the pairs of measuring pins **26** on the pairs of measuring arms **24**.

For example, if nine widths of fabric are sewn together to cover a wall space covering one hundred and twenty inches, numeral 9 on the inner rotary scale **50** is positioned opposite the small numeral 2 on the fixed

scale 50, this setting of the inner rotary scale being shown in FIG. 5*a*. Each of the pairs of measuring pins 26 on the pairs of measuring arms 24 will measure off a distance of 2.72 inches which is the correct distance between the successive pleating zones.

It is not necessary for the operator to know the actual distance between the pleating zones to carry out this adjustment of the measuring arms. A feature of the invention, however, is that when the described setting is made on the scale 50 relative to the scale 48, an index 58 on the inner rotary scale 50 will indicate on the outer scale 48 the exact spacing measured by the indicating pins 26. Thus in FIG. 5*a* where the two scales are set for nine widths of fabric to cover a wall space of one hundred and twenty inches in width, the index 58 is at a position relative to the fixed scale 50 that indicates a spacing of 2.72 inches between the successive pleating zones 55. Thus the single set of numerals on the fixed scale 50 represents either the width of a wall area that is to be covered by drapery or the width of the spacing between pleating zones.

Having made this adjustment of the spacing between pleating zones, the operator then places the apparatus across the first width of fabric in the series of widths that are sewn together and expands the series of measuring arms until they extend exactly over the width of the fabric. In other words, the first indicating pin 26 on the first pair of measuring arms 20*a* is positioned at one edge of the fabric and the control knob 36 is manipulated to place the last indicating pin of the last pair of measuring arms 20*f* at the second edge of the width of the fabric. In effect, this procedure distributes across the width of the fabric the 2.72 inch spaces spanned by the pairs of indicating pins 26, it being contemplated that the remaining material between the successive pairs of indicating pins will form the pleats.

The operator marks off the fabric in accord with the positions of the indicating pins 26 and then shifts the apparatus to the next successive width of fabric. In laying out the zones on the next fabric, however, the operator starts with a pleating zone since the last measurement on the first width of fabric is the spacing between successive pleating zones. In this manner, the widths that are sewn together for the fabric are measured and marked successively for the zones that are to be pleated to make the finished fabric.

In the operation of expanding or contracting the series of pairs of measuring arms 24 that carry the indicating pins 26, the first pivot means 20*a* remains stationary. The successive pivot means 20*b*—20*f* move along the guide track 22 and do so at successively increased rates.

All of the cables 28*b*—28*f* extend through corresponding apertures 60 in the fixed pivot means 20*a*, as indicated in FIGS. 3 and 8. In the next pivot means 20*b*, the cables 28*c*—28*f* freely pass through corresponding apertures 62, as indicated in FIGS. 4 and 9. Cable 28*b*, however, is operatively connected to the pivot means 20*b*. As shown in FIG. 9, cable 28*b* may be operatively connected to the pivot means 20*b* simply by anchoring a pair of beads 64 to the cable on opposite sides of the pivot means.

In like manner, the third pivot means 20*c* is operatively connected to the cable 28*c* and has three apertures to clear the remaining three cables 28*d*—28*f*. The fourth pivot means 20*d* is operatively connected to the cable 28*d* and has two apertures to clear cables 28*e* and 28*f*. The fifth pivot means 20*d* is operatively connected to cable 28*d* and has a single aperture to clear cable 28*f*. Finally the last pivot means 20*f* is directly connected to the cable 28*f*.

As may be seen in FIG. 2 and as better shown in FIG. 7, the actuating sheave 30*c* which operates cable 28*c* is larger in diameter than the actuating sheave 30*b* and the sheaves 30*d*—30*f* are of successively larger diameters. Thus rotation of the stack of actuating sheaves 30 in unison by the control knob 36 causes the pivot means 20*b*—20*e* to move at precisely the required different rates for keeping the spaces between the successive pivot means equal thereby keeping equal the spacings between the successive pairs of measuring arms 24 that carry the pairs of indicating pins 26.

Since the rollers 40 and 42 at the ends of the control arms 25 are freely slidable along the control track 38, it is apparent that the adjustment for the spacing of the successive pairs of measuring arms 24 along the guide track 22 that is effected by manipulation of the control knob 36 is entirely independent of the adjustment of the distances spanned by the measuring arms that is effected by manipulation of the control knob 46. Thus, the second adjustment in which the pivot means 20*b*—20*f* shift along the guide track 22 does not effect the angular positions of the measuring arms 34.

It is further apparent that the described apparatus may also be used solely as a calculating device for a preliminary study of a drapery fabrication problem. Thus the control knob 46 may be manipulated in the manner heretofore described to ascertain the spacing between the successive pleating zones if a given number of widths of fabric are to be sewn together to cover a wall area of a given width with a given amount of fabric in each pleating zone. If such a spacing between the successive pleating zones is regarded as too much, i.e., if a "fuller" drapery is required, the control knob 46 may be manipulated to ascertain the effect of adding a width of cloth to increase the number of pleating zones. Thus if ten widths, instead of nine widths, are sewn together to make a fabric for a wall space one hundred and twenty inches wide, the index 58 will show that the spacing between the successive pleating zones will be decreased from 2.72 inches to 2.5 inches.

Structural details

In the construction shown in the drawings, the device has a housing of flat rectangular cross section comprising a top wall 70, a bottom wall 72, a front wall 74, a rear wall 75 and two opposite end walls 76. The front wall 74 is formed with a longitudinal slot 78 through which the measuring arms 24 extend as shown in FIGS. 3, 4 and 5. Such a housing should be relatively light and may be made of plastic material or plywood or a light weight metal. The housing is of a construction to make the interior accessible for fabrication and for repairs and maintenance. For this purpose, the housing may be made in separable sections or the top wall 70, for example, may be a hinged cover.

As shown in FIGS. 8 and 9, each of the pivot means 20*a*—20*f* comprises an upright post mounted on a rectangular base 80. The first pivot means 20*a* is fixedly anchored by a screw 82 in the guide track 22. The guide track 22 is supported by the bottom wall 72 and, as may be seen in FIGS. 3 and 4, forms a channel 84 in which the rectangular bases 80 of the pivot means 20*b*—20*f* freely slide. The channel has overhanging side walls which are spaced apart to form a longitudinal slot 85 and the pivot means extend upward through this slot.

The two scissor members that are mounted on each of the pivot means 20*a*—20*f* to provide the forwardly extending measuring arms 24 and the rearwardly extending control arms 25 are in the form of flat bars with circular apertures to receive the pivot means. As shown in FIGS. 8 and 9, the lower scissor members of each pair of scissor means may be spaced from the guide track 22 by a washer 86 and a second washer 88 may be interposed between the two scissor members.

The stack of actuating sheaves 30*b*—30*f* may be operatively connected to the control knob 36 in any suitable manner. As best shown in FIG. 7, the successive actuating sheaves 30*b*—30*f* are keyed to an upright actuating shaft 90 with the sheaves spaced apart by suitable spacers 92. The lower end of the actuating shaft 90 carries a spacing collar 94 and is journaled in a metal block 95,

The control knob **36** is fixedly connected to the upper end of the actuating shaft **90** by means of a set screw **96**.

As shown in FIG. 6, the series of guide rollers **34** may be mounted on a vertical spindle **100** with intervening spacers **102** and the adjacent guide rollers **35** may be mounted in similar manner on a second spindle **104** with intervening spacers **105**. Preferably a fixed vertical rod **106** is positioned adjacent the guide rollers **35** to serve as a cable guide with the function of holding the cables in engagement with the corresponding guide rollers.

As best shown in FIG. 6, the control track **38** may be of the general configuration of a capital letter E to form an upper channel **108** and a lower channel **110** separated by a flange **112**. The rollers **40** on the ends of the upper control arms **25** extend into the upper channel **108** and the rollers **42** on the lower control arms extend into the lower channel **110**.

At some adjustments of the apparatus where the control arms diverge relatively widely, the successive pairs of control arms overlap. Such overlapping of the control arms is made possible simply by arranging for the overlapping arms to engage different channels of the control track. Thus, in FIG. 1, the control arm **25** on the pivot means **20***e* that extends towards the pair of control arms on the pivot **20***f* engages the upper channel **108** of the control track and the adjacent control arm **25** on the pivot means **20***f* that extends towards the pair of control arms on the pivot means **20***e* engages the lower channel of the control track so that these two arms may extend past each other when the pairs of arms are opened wide.

It is contemplated that the control track **38** will remain parallel with the guide track **22** at all times and that the control track will be suitably mounted and controlled for this purpose. In the construction shown, for example, the opposite ends of the control track **38** are provided with corresponding guide sleeves **114** that have close sliding fits with corresponding guide rods **115**. The guide rods **115** are mounted in suitable supports **116** at their opposite ends and may be polished and lubricated for free movement of the guide sleeves **114**. By virtue of this arrangement, the control track **38** is maintained perpendicular to the two guide rods **115** and is thus maintained parallel to the guide track **22**.

As shown in FIG. 5, the control track **38** may be connected to the rack **44** by a suitable bracket **118**. The pinion **45** that meshes with the bracket **44** is keyed to the lower end of an upright shaft **120** that is journaled in a bearing **122** and extends through the top wall **70** of the housing. The control knob **46** is fixedly connected to the upright shaft **120** by a set screw **124**. In the construction shown, the control knob **46** is formed with a lower flange **125** and the rotary scale **50** is attached to this flange by suitable rivets **126**. The cooperating fixed circular scale **48** is fixedly mounted on the top wall **70** of the housing.

My description in specific detail of the selected embodiment of the invention will suggest various changes, substitutions and other departures from my disclosure within the spirit and scope of the appended claims.

I claim:

1. In a device to measure off pleating zones and intervening spacing zones on fabric in preparation for making drapery, the combination of: a series of pairs of indicator elements spaced apart with the distance spanned by the two elements of each pair the same throughout the series and with the distance between the successive pairs the same throughout the series, one of said distances representing the dimension of said pleating zones, the other of said distances representing the dimension of said intervening spacing zones; first means mechanically connected to all of said pairs of elements to vary the equal distances spanned by the pairs; and second means to cause relative movement among all of the pairs simultaneously at different rates to vary the equal distances between the successive pairs.

2. A combination as set forth in claim 1 in which said first means includes adjustment means extending along said series and movable laterally towards and away from the series, said pairs being responsive to lateral movement of said adjustment means to vary the equal distances spanned by the pairs.

3. A combination as set forth in claim 1 in which said second means includes a plurality of members extending along said series and connected to a corresponding plurality of said pairs of indicator elements; and which further includes actuating means connected to said plurality of members to shift the pairs of indicator elements at different rates.

4. In a device to measure off pleating zones and intervening spacing zones on fabric in preparation for making drapery, the combination of: a series of pivot means positioned along a line at equal spacing; a series of pairs of divergent arms mounted on said pivot means respectively with the distances spanned by said pairs of arms the same throughout the series and with the distance between the successive pairs of arms the same throughout the series, one of said distances representing the dimension of said pleating zones, the other of said distances representing the dimension of said spacing zones; a first adjustment means operatively connected to all of said pairs of arms to vary simultaneously the equal distances spanned by the arms; and a second adjustment means operatively connected to at least all but one of said pivot means for moving the pivot means along said line at different rates to vary the equal distances between the successive pairs of arms.

5. In a device to measure off pleating zones and intervening spacing zones on fabric in preparation for making drapery, the combination of: a series of pivot means positioned along a line at equal spacing; a series of pairs of divergent arms mounted on said pivot means respectively with the distances spanned by said pairs of arms the same throughout the series and with the distance between the successive pairs of arms the same throughout the series, one of said distances representing the dimension of said pleating zones, the other of said distances representing the dimension of said spacing zones; a first adjustment means operatively connected to all of said pairs of arms to vary simultaneously the equal distances spanned by the arms; and a second adjustment means to vary the equal distances between the successive pairs of arms, said second adjustment means including a series of rotary members of successively increased diameter rotatable in unison and connected respectively to all but one of said pivot means for shifting the pivot means along said line at different rates.

6. A combination as set forth in claim 5 in which said rotary members are operatively connected to the corresponding pivot means by corresponding cable-like members.

7. A combination as set forth in claim 6 in which individual pivot means are connected to corresponding cable-like members and have diametrical apertures to clear others of the cable-like members.

8. A combination as set forth in claim 4 in which said arms are substantially horizontal and in which vertical pins are carried by the outer ends of the arms to overhang the fabric and indicate measured points on the fabric.

9. A combination as set forth in claim 4 in which said first adjustment means is provided with a scale calibrated to indicate the distance spanned by said pairs of arms.

10. A combination as set forth in claim 4 which includes a pair of cooperating scale members, one of which is fixed and the other of which is operatively connected to said first adjustment means, one of said scale members having a first scale calibrated in terms of the number of widths of fabric to be sewn together to cover an area and the other of said scale members having a second scale

calibrated in terms of inches of width of the area to be covered.

11. A combination as set forth in claim 10 in which both of said scale members are circular, said first scale member having an index mark to indicate on said second scale the distance spanned by said pairs of arms.

12. In a device to measure off pleating zones and intervening spacing zones on fabric in preparation for making drapery, the combination of: a series of pivot means positioned in a line at equal spacing with at least all but one movable along the line to vary the equal spacing; a pair of crossed scissor members mounted on each of said pivot means, each of said pairs of scissor members providing a pair of measuring arms and a pair of control arms, the distance spanned by the measuring arms of the pairs of scissor members being the same for all pairs, and the distance between the successive pairs of measuring arms being the same throughout, one of said distances representing the dimension of said pleating zones, the other of said distances representing the dimension of said spacing zones; a first adjustment means operatively connected to said control arms to change the equal distances spanned by the pairs of measuring arms; and a second adjustment means operatively connected to at least all but one of said pivot means for moving the pivot means along said line at different rates to vary the equal distances between the successive pairs of measuring arms.

13. In a device to measure off pleating zones and intervening spacing zones on fabric in preparation for making drapery, the combination of: a series of pivot means positioned in a line at equal spacing with at least all but one movable along the line to vary the equal spacing; a pair of measuring arms pivotally mounted on each of said pivot means, the distance spanned by the measuring arms being the same for all pairs and the distance between the successive pairs of measuring arms being the same throughout, one of said distances representing the

dimension of said pleating zones, the other of said distances representing the dimension of said spacing zones; a first adjustment means including a control member spaced from said series of pivot means parallel thereto, said control member having a sliding connection with each measuring arm of the series of pairs of measuring arms with the distances spanned by the pairs of measuring arms responsive to changes in the spacing between the control member and the series of pivot means; and a second adjustment means operatively connected to at least all but one of said pivot means for moving the pivot means along said line at different rates to vary the equal distances between the successive pairs of measuring arms.

14. A combination as set forth in claim 13 in which said first adjustment means includes rotary means to shift said control member laterally.

15. A combination as set forth in claim 14 which includes a first circular scale member operatively connected to said rotary means and a second fixed circular scale member concentric to the first scale member, one of said scale members having a scale calibrated in terms of the number of widths of fabric to be sewn together to cover a space and the other of said scale members having a scale calibrated in terms of inches of width of the space to be covered.

16. A combination as set forth in claim 15 in which said first scale member has an index mark to indicate on said second scale member the distance spanned by said pairs of arms.

References Cited in the file of this patent

UNITED STATES PATENTS

871,333	Giambra	Nov. 19, 1907
1,019,139	Eberley	Mar. 5, 1912
1,331,476	Ackerman	Feb. 24, 1920
2,770,046	Wichmann	Nov. 13, 1956