Dec. 27, 1960 L. B. RATLIFF 2,966,129

PLEATING ATTACHMENT FOR SEWING MACHINES

Filed March 30, 1959 4 Sheets-Sheet 1

FIG. 1

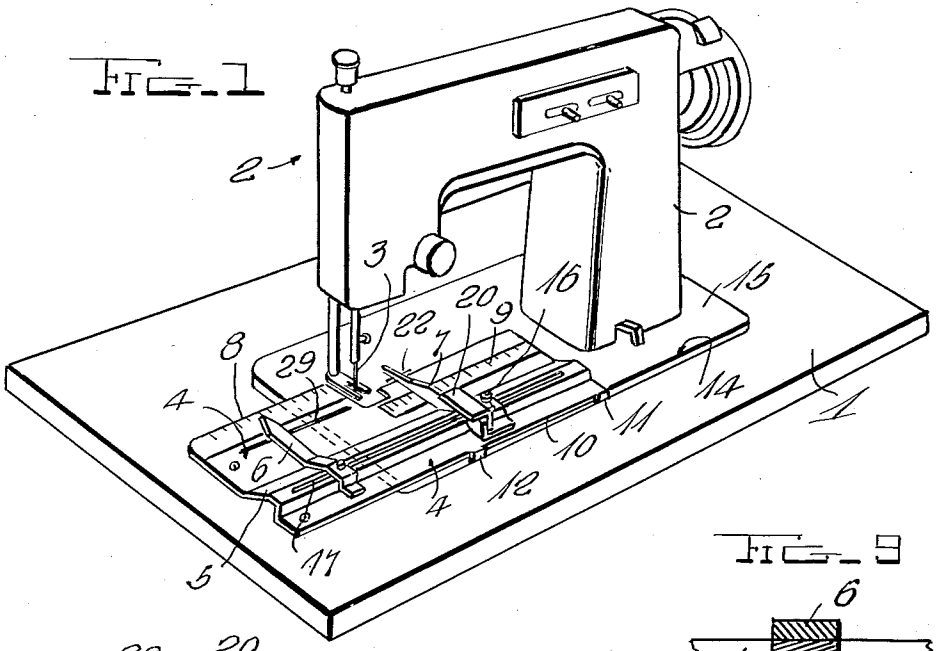


FIG. 9

FIG. 6

FIG. 7

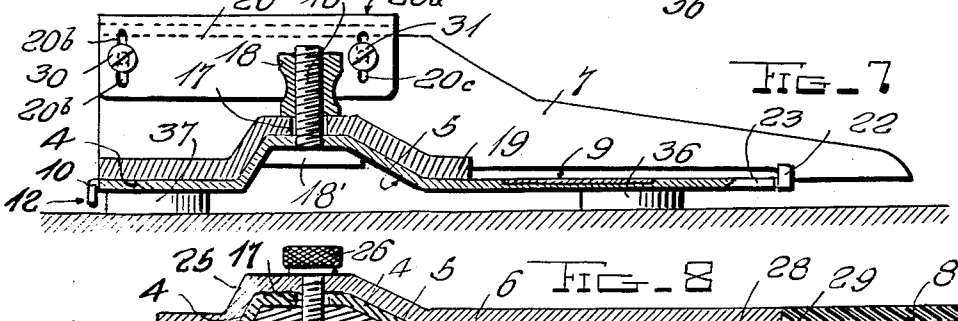


FIG. 8

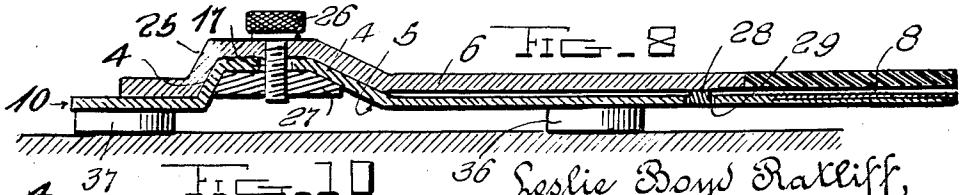


FIG. 10



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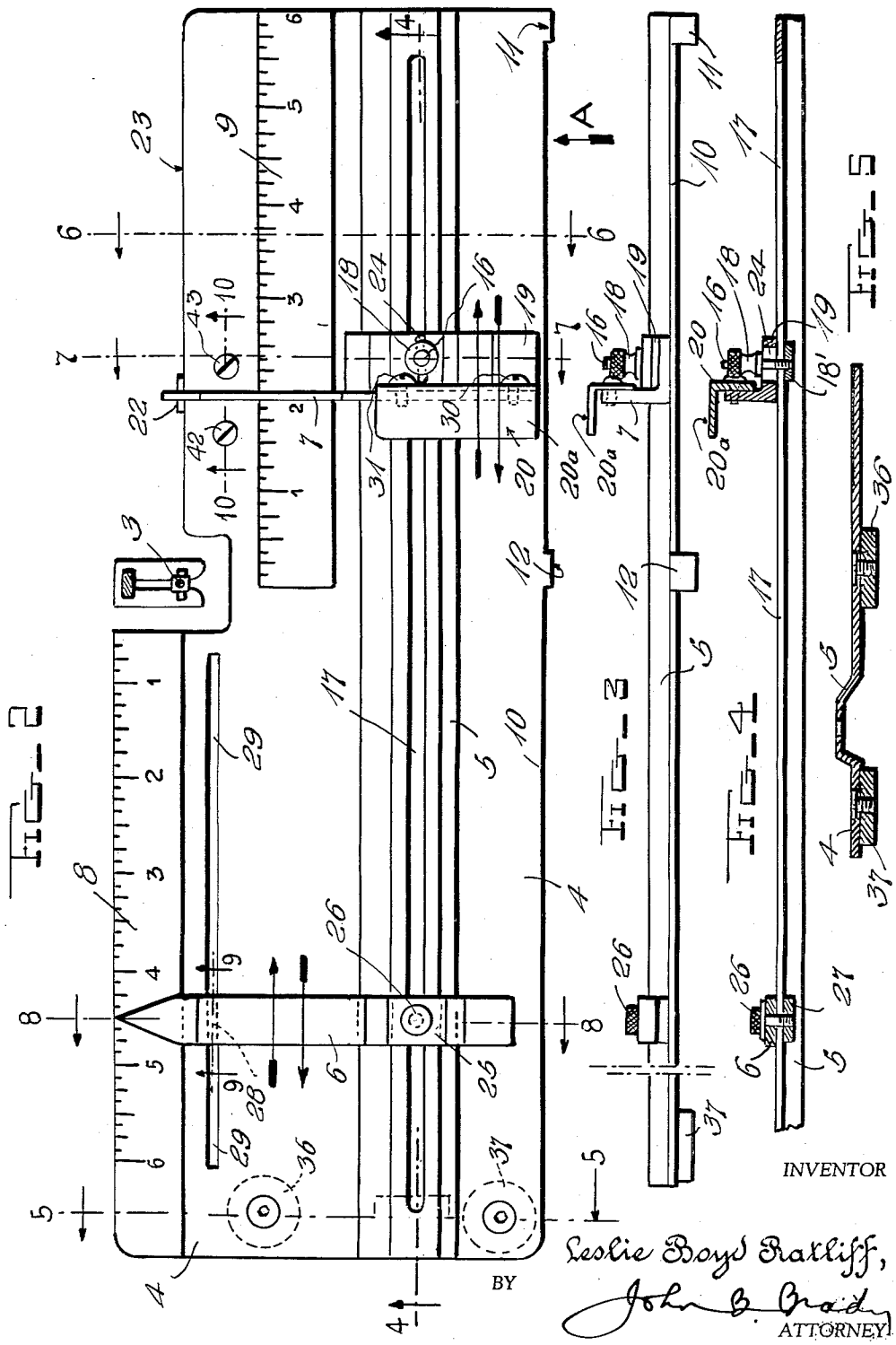
BY John B Brady

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Dec. 27, 1960 L. B. RATLIFF 2,966,129

PLEATING ATTACHMENT FOR SEWING MACHINES

Filed March 30, 1959 4 Sheets-Sheet 2



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PLEATING ATTACHMENT FOR SEWING MACHINES

Filed March 30, 1959 4 Sheets-Sheet 3

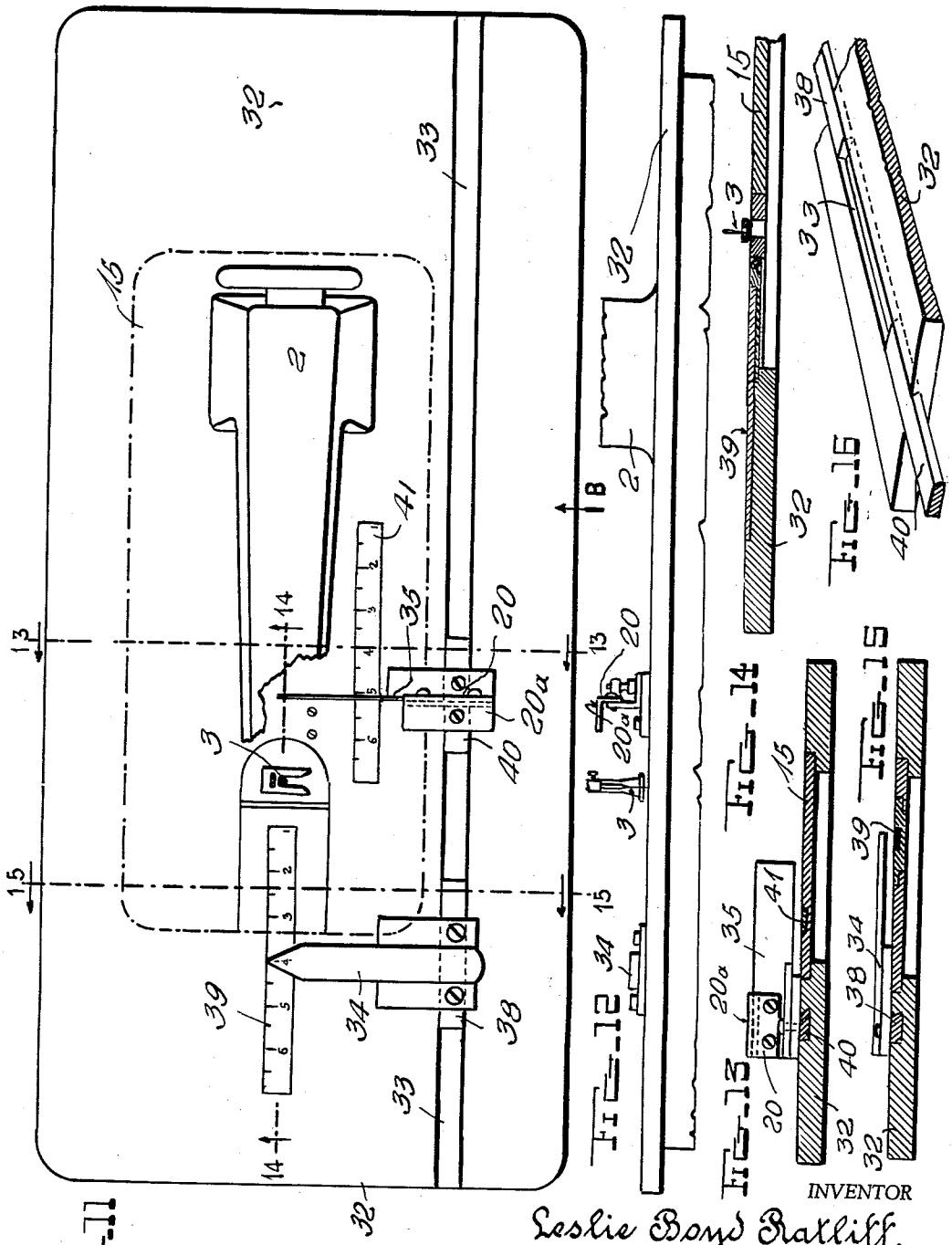


FIG-11

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BY

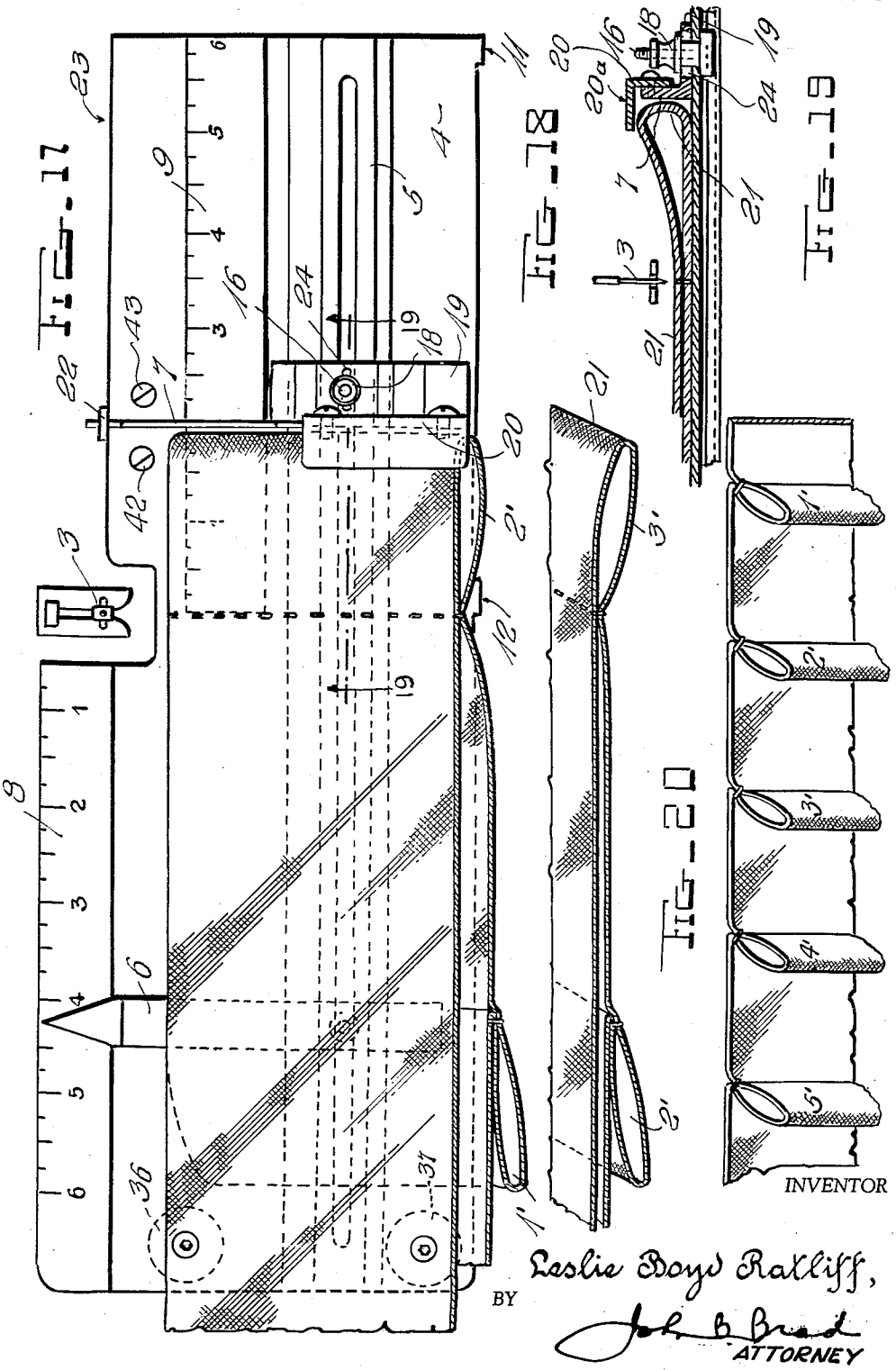
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Dec. 27, 1960 L. B. RATLIFF 2,966,129

PLEATING ATTACHMENT FOR SEWING MACHINES

Filed March 30, 1959 4 Sheets-Sheet 4



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United States Patent Office 2,966,129 Patented Dec. 27, 1960

2,966,129

PLEATING ATTACHMENT FOR SEWING MACHINES

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Filed Mar. 30, 1959, Ser. No. 802,887

1 Claim. (Cl. 112—146)

My invention relates broadly to sewing machines and more particularly to an attachment for sewing machines for facilitating the pleating of fabrics particularly intended for draperies.

One of the objects of my invention is to provide a construction of pleating attachment which may be readily applied to standard makes of sewing machines for enabling pleats of proper proportions to be included in the fabric in the forming of drapery material.

Another object of my invention is to provide a simplified attachment for sewing machines which is calibrated to include the proper amount of material in each pleat and the proper spacing of the pleats in the material for forming the most aesthetic and ornamental arrangement of pleats in the draperies for specified sizes of windows and doors for thus beautifying the drapery assembly.

Another object of my invention is to provide a construction of pleating attachment for sewing machines which is readily manufactured inexpensively from plastics or other material for predetermining the several variables existent in the forming of pleats in draperies for enabling a neat and rapid production of draperies to be effected, under control of predetermined calibrations precalculated for the sizes and spacing of pleats having regard to the dimensional area in which the draperies are to be installed.

Other and further objects of my invention reside in the arrangement of calibrations in a pleater attachment for sewing machines and the arrangement of indicators associated therewith relative to the operating needle of the sewing machine as set forth more fully in the specification hereinafter following by reference to the accompanying drawings in which:

Fig. 1 is a perspective view showing the attachment of my invention applied to a conventional sewing machine;

Fig. 2 is a top plan view of the attachment of my invention illustrating the relative position thereof with respect to the operating needle of the sewing machine;

Fig. 3 is a front elevational view of the attachment illustrated in Fig. 2, the view being foreshortened adjacent one end thereof;

Fig. 4 is a longitudinal sectional view taken on line **4—4** of Fig. 2 and showing the relationship of the adjustable indicators, the view being foreshortened at the left hand end thereof;

Fig. 5 is a transverse sectional view taken on line **5—5** of Fig. 2;

Fig. 6 is a transverse sectional view taken on line **6—6** of Fig. 2;

Fig. 7 is a transverse sectional view taken on line **7—7** of Fig. 2;

Fig. 8 is a transverse sectional view taken on line **8—8** of Fig. 2;

Fig. 9 is a fragmentary longitudinal sectional view on line **9—9** of Fig. 2 through one of the indicators;

Fig. 10 is a fragmentary transverse sectional view on line **10—10** of Fig. 2;

Fig. 11 is a top plan view of a conventional sewing machine showing the attachment of my invention mounted in position on the sewing machine in a modified manner;

Fig. 12 is a fragmentary elevational view of the form of my invention illustrated in Fig. 11;

Fig. 13 is a transverse sectional view taken on line **13—13** of Fig. 11;

Fig. 14 is a fragmentary longitudinal sectional view taken on line **14—14** of Fig. 11;

Fig. 15 is a transverse sectional view taken on line **15—15** of Fig. 11;

Fig. 16 is a fragmentary perspective view illustrating the manner of mounting the modified structure of my invention shown in Fig. 11 with respect to the sewing machine;

Fig. 17 is a view showing the attachment of my invention as set forth in Figs. 1–10 with the fabric from which the draperies are produced superimposed thereon to illustrate the coaction of the adjustable indicators with respect to the calibrations determining the size of the pleats and the spacing thereof;

Fig. 18 is a view showing the manner of manipulating the fabric for forming the successive pleats by use of the attachment illustrated in Figs. 1–10 and Fig. 17;

Fig. 19 is a fragmentary longitudinal sectional view taken on line **19—19** of Fig. 17 and illustrating particularly the position of the adjustable indicator for forming the pleat in the fabric spaced from the right of the seam formed by the sewing machine; and

Fig. 20 is a fragmentary perspective view of a drapery in which the pleats have been formed using the sewing machine attachment of my invention and illustrating particularly the uniformity in size of the pleats and the uniformity in the spacing of the pleats obtained by the use of the attachment of my invention.

My invention is directed to a construction of attachment which may be readily applied to the conventional sewing machine for the sewing of pleats into draperies. The attachment is calibrated commencing with the needle position in opposite directions providing graduations related to a pair of adjustable slides which are movable to positions selected for predetermining the size of the pleats and the spacing between the pleats on the drapery. The adjustable slide to the right of the needle position determines the size of each pleat in the drapery, while the adjustable slide to the left of the needle position determines the spacing between the pleats. The right-hand slide is so formed that the loop of the pleat may be moved to a position tangent to the side of the right-hand adjustable slide for seaming the material of the drapery to form the pleat. The left-hand adjustable slide is positioned with respect to the calibration to indicate the proper spacing between loops. The graduations on the scales over which the adjustable slides operate are in inches, and they extend to the left and to the right of the needle progressively. The graduations on the scales are measured from the center of the needle and to the left of the needle graduations the space size between pleats is directly readable, whereas, from the right of the needle, the graduations determine the pleat size. The adjustable slide to the right of the needle is set as the half-pleat size from the needle position, that is, one-half of the pleat is the effective amount of goods in the drapery to be maintained to the right of the needle doubled back to the needle, and, when sewn down, forms the whole pleat. In order to set the space indicator for determining the space between pleats, the left-hand adjustable slide is moved to a selected left-hand position with respect to the needle position, whereupon the pleats may be uni-

formly spaced for the distance between pleats. Because of the wide range of adjustment of the slides, draperies having various aesthetic properties to meet particular window or door conditions may be rapidly and uniformly produced. The graduations are all predetermined so that the size of the pleats and the spacing between the pleats are all selectable to meet the proportioned requirements of door and window sizes to insure the most ornamental effect. The attachment of my invention may be formed from plastic for reducing the cost of the device, or the structure may be stamped from sheet metal and the associated indicators formed from sheet metal. In certain forms of my invention, it is desirable to key the device with respect to the top of the sewing machine for insuring maintenance in position of the indicators with respect to the needle as the relatively heavy fabric of the draperies is moved along the top of the sewing machine.

Referring to the drawings in more detail, reference character **1** designates a conventional sewing machine base supporting the sewing machine represented at **2** having the vertically reciprocative sewing needle **3**. The attachment of my invention is positioned over the base of the sewing machine **1** around the needle **3** as shown at **4**, and extends both to the right and left of the needle position **3**. The attachment **4** is in the form of a plate body portion which may be molded from plastic or can be formed by a pressing operation from sheet metal. The attachment includes a longitudinally extending upstruck portion or boss **5**, which provides a guide for the two adjustable slides **6** and **7** shown in Figs. 1, 2 and 17. These adjustable slides are shown more clearly in cross-section in Figs. 6, 7, and 8, from which it will be noted that the slides both conform with the shape of the upstruck portion **5** and are maintained for precise slidable movement along the upstruck portion **5** without angular displacement for presenting the extremities of the indicators of the adjustable slides **6** and **7** to the calibrated scales shown at **8** and **9** arranged on opposite sides of the position of the needle **3**. To facilitate installation of the attachment on the sewing machine I provide the leading edge or front of the attachment shown at **10** with downwardly projecting lugs **11** and **12**, which are adapted to engage the front edge **14** of the supporting bed plate **15** of the sewing machine **2**. The left-hand projecting end of the attachment **4** is provided with supporting feet **36** and **37** which elevate the attachment **4** above the plane surface of the sewing machine **1** so that the attachment **4** lies flat on the supporting plate **15** of the sewing machine.

The fact that the longitudinally extending upstruck portion **5** is elevated above the plane of the attachment **4** enables fastening means to be extended through each of the conforming portions of the two adjustable slides **6** and **7** and to be selectively set in position with respect to the respective scales **8** and **9** by means of adjustable clamping screws. In Fig. 6 I have shown the adjustable slide **7** in side elevation with the adjustable clamping screw **16** extending through a slot **17** in the longitudinally extending upstruck portion **5** with the head **18'** adjustably engaging the lower surface of upstruck portion **5** and the adjustable set screw **18** adjustably engaging the upper surface of the horizontally extending portion **19** of the angle member which extends from the adjustable slide **7**. By loosening nut **18**, adjustable slide **7** may be moved to a selected position with respect to calibrated scale **9** and then tightened to set the adjustable slide **7** in the selected position. The adjustable slide **7** carries an angle member **20** at the upper edge thereof with the horizontally extending portion of the angle member directed toward the position of needle **3** for enveloping the loop of the fabric from which the drapery is fashioned as shown more clearly in Figs. 17 and 18. That is to say, when the loop is formed in the drapery material at **21**, the extreme tip of the loop **21** is tangent to one side of adjustable slide **7** and is confined by the overhanging ledge of the angle member **20** as shown more clearly in Fig. 19. The adjustable slide **7** is steadied by means of a lug **22** carried by the end of the adjustable slide **7** engaged over the trailing or rear edge **23** of the attachment **4** enabling the adjustable slide **7** to be precisely aligned with the calibrations **9** and maintained in position with respect thereto. I have found that it is essential that there be provision for vernier adjustment of slide **7** and, for this purpose, I provide a slot **24** in the horizontally extending portion of the angle member formed on slide **7** shown at **19** so that the screw **16** which extends through the horizontally extending portion **19**, when loosened, by turning nut **18**, enables the adjustable slide **7** to be shifted laterally of the attachment **4** within the limits of slot **24** for precisely setting the adjustable slide **7** to a position enabling the proper amount of material to be included in the loop **21** of the drapery being formed.

The adjustable slide **6** differs from the slide **7** inasmuch as the function of slide **6** is to selectively set the space between the pleats to be formed in the drapery material. The adjustable slide **6** conforms in contour with the projection **5** as represented at **25** as shown more particularly in Fig. 8. The set screw **26** carried by the conforming portion **25** of the adjustable slide **6** has a screw-threaded shank extending through the slot **17** and engaging the clamping nut **27** whereby the set screw may be tightened in a selected position for clamping adjustable slide **6** with respect to the scale **8**. In order to steady the indicator of the adjustable slide **6** a lug **28** extends from the adjustable slide **6** through the longitudinally extending slot **29** in the attachment **4** whereby the indicator is presented in precise alignment with the calibrations **8** as shown in Figs. 2 and 17.

The attachment **4** is maintained in position on the top of the sewing machine after it has been aligned by engagement of the lugs **11** and **12** with the leading edge **14** of the base of the sewing machine or supporting plate **15** by attaching screws **42** and **43** assisted by adhesion of the attachment **4** with the top of the sewing machine obtained by means of the supporting feet **36** and **37** which may be in the form of suction cups.

The angle member **20** heretofore explained as determining the limits of the formation of the loops in the drapery is provided with individual adjustment means with respect to height of the overhanging ledge **20*a*** by an arrangement of slots **20*b*** and **20*c*** in the angle member which are engaged by adjustment screws **30** and **31** shown more particularly in Figs. 6 and 7 enabling the loop of the drapery to be formed tangent to the undersurface of the overhanging ledge **20*a*** of the angle member **20** as illustrated in Fig. 19. Thus the fullness of each of the loops may be determined for the particular spacing set by the adjustable slide **7**.

In Figs. 11–16, I have shown a modified form of my invention in which a standard sewing machine may be equipped with the attachment of my invention as a permanent accessory where the cabinet top of the sewing machine shown at **32** is provided with a mortised longitudinally extending groove **33** into which the two adjustable slides represented at **34** and **35** corresponding to adjustable slides **6** and **7** shown in Figs. 1–10 and Figs. 17–19 may be adjustably fitted. This is accomplished by mounting adjustable slide **34** on an adjustable dovetail member **38** enabling the adjustable slide **34** to be moved over the calibrated scale **39** applied to the supporting plate **15** of the sewing machine and the top of the cabinet **32** to the left of the needle **3**.

Similarly, the adjustable slide **35** is mounted on a dovetail member **40** engaging the mortised longitudinally extending groove and is adapted to be moved over the calibrated scale **41** mounted in the top of the supporting plate **15** of the sewing machine to the right of the position of needle **3**. The adjustable slide **35** carries

the angle member **20** having an overhanging portion **20***a* similar to the arrangement illustrated in Figs. 3, 4, 6, and 7. The angle member **20** is adjustable in a vertical direction similar to the adjustment shown in the aforesaid Figs. 3, 4, 6, and 7. Thus the attachment plate indicated at **4** in Figs. 1–10 and Figs. 17–19 may be omitted and the independently adjustable slides directly applied to the top of the sewing machine shown at **32** and moved over the independent scales **39** and **41**. The pleater attachment is thus greatly simplified where there is opportunity at the factory to provide a method of mounting the adjustable slides. However, where the attachment is purchased for mounting on sewing machines already in use, the arrangement of Figs. 1–10 and 17–19 is provided.

In both forms of my invention the graduations for the size of the loops of the draperies and the spacing between the drapery loops are in inches with the graduations for spacing the pleats arranged to the left and the graduations for determining the size of the loops located to the right of the needle. These graduations have been determined after considerable research and development and are of such proportions as will improve the aesthetic appearance of the opening to which the drapery is applied. In the form of my invention shown in Figs. 1–10 and 17–19, these graduations are placed directly on the attachment **4** measured from the center of the needle to the right and to the left. In the form of my invention shown in Figs. 11–16, the graduations **39** and **41** are applied to tapes formed on scales having adhesive backings which enable the scales to be readily applied over the top of the sewing machine **32** and over the top of the supporting plate **15** measuring to the right and to the left from the needle **3** as a center.

The method of forming the loops of the pleats and the spacing between the pleats is the same in both forms of my invention. In each instance reference is made to a calibrated chart in which the size of the loops of the pleats and the corresponding spacing between the pleats for a particular width of goods is predetermined. For example, the space indicator **6** or **34** may be set for a space size of 4¼" space between pleats on scales **8** or **39** and the pleat loop indicator **7** or **35** is set for one-half pleat size of 2$\frac{1}{16}$". The sewing machine is now ready to pleat any number of pairs of drapes one width each panel to 24" each panel. With the body of the fabric to one's left and with the right side of the fabric facing up, place the right edge of the fabric on the 3½" graduation on scale **8** or **39** to the left of the needle **3** with the body of the goods doubled back past the needle to one's right; the front edge of the pleat will establish tangential contact with the left wall of the pleat indicator **7** or **35** and with the undersurface of the overhanging ledge **20***a* of the angle member **20** which is set for 2$\frac{1}{16}$" as in Fig. 17. The sewing machine is now ready to sew in pleat **1'** as indicated in Fig. 20 and there can be no mistake because the front edge of the pleat will contact tangentially to the proper fullness the undersurface **20***a* of member **20** and the left side of the pleat indicator **7** or **35**. Care must be taken to be sure that, where the goods overlaps to one's left at 3½", the overlap is even, as this will insure a straight seam. The spacing of the seams for the adjacent pleats is determined from the setting of the spacing indicator **6** or **34** enabling the goods to be marked and advanced to the right for forming the succeeding loop for pleat **2'** by doubling back the goods at the pleat indicator **7** or **35** into tangential contact with the undersurface of the overhanging portion **20***a* of angle member **20** and the left side of pleat indicator **7** or **35** and seaming at the medial line between the two limits governing the total width of the goods allowed for the pleat. In order to form the balance of the pleats in the panel, the drapery material is advanced through the properly spaced distances for thus forming pleats **3'**, **4'**, **5'**, etc. shown in Fig. 20. In Fig. 18 it will be understood that the goods is being moved to the right and returned toward the left. In Fig. 18 pleat No. **1'** has been completed and has moved underneath the goods toward the left; pleat No. **2'** has been completed and is being moved toward the left; pleat No. **3'** is in the process of being sewn, and pleats Nos. **4'** and **5'** have not as yet been formed into loops preparatory for sewing. In each instance, however, the space between needle **3** and the indicator **6** or **34** provides the operator with the information necessary to properly space the seams while the dimension between the needle **3** and the left side wall and the undersurface of the angle member attached to the indicator **7** or **35** provide the measurement necessary for doubling the goods to form the pleat. Once the graduations **8** and **9** have been interpreted for the proper size of the pleats and the spacing therebetween the operation may be conducted rapidly without loss of the operator's time. Having located the seams and completed the sewing operation, it becomes a simple matter to further ornament the draperies by additional sewing operation such as pinch-pleating for concealing the seams.

The initial work of preparing charts necessary for determing proper proportioning between seams and width of seams for certain size openings of window and door sizes has occupied my attention for many years and, after having tabulated this data, I have been enabled to reduce this information to a practical application in the instrumentality herein described. I realize, however, that my invention may be embodied in various modifications, and I desire that it be understood that no limitations upon my invention are intended other than may be imposed by the scope of the appended claim.

What I claim as new and desire to secure by Letters Patent of the United States is as follows:

A pleating attachment for a sewing machine having a flat bed plate and vertically reciprocating needle means, said attachment comprising a one-piece elongated plate body portion having a substantially flat bottom face adapted to rest directly upon said bed plate in superposed contacting relation therewith, means for detachably securing the plate body portion to said bed plate, said plate body portion having a forward longitudinal edge provided with a notch near the longitudinal center thereof adapted to receive said needle means, a raised boss upon the plate body portion near and inwardly of its rear longitudinal edge and extending longitudinally of the plate body portion for the major portion of the length of the same, said boss being generally channel-shaped in cross section and downwardly opening and having longitudinal edges projecting above the top face of the plate body portion, said boss including a top wall having an elongated slot formed therethrough and extending for the major portion of the length of the boss, a first indicator element extending transversely of the plate body portion and disposed bodily thereabove and slidably engaging the top face thereof, said first indicator element provided in its bottom and near its rear end with a transverse recess slidably receiving said boss, said boss holding the first indicator element against turning and maintaining the same substantially at right angles to the boss, the first indicator element extending forwardly and rearwardly of said boss and substantially across the plate body portion and having its forward end terminating near said forward edge, a visible pleat width measuring scale upon the top face of the plate body portion and extending longitudinally thereof from said notch toward one end of the plate body portion and underlying the first indicator element at right angles thereto, a second indicator element extending transversely of the plate body portion and disposed bodily thereabove and slidably contacting the top face thereof, said second indicator element provided in its bottom and near its rear end with a transverse recess slidably receiving said boss, said boss holding the second indicator element against turning and maintaining the same substan-

tially at right angles to said boss, the second indicator element extending forwardly and rearwardly of said boss and substantially across the plate body portion and having its forward end terminating near said forward edge, a visible pleat spacing scale upon the top face of the plate body portion adjacent the forward edge thereof and spaced forwardly of the pleat width measuring scale and extending from the notch toward the other end of the plate body portion and underlying the second indicator element at right angles thereto, said scales graduated in opposite directions from said notch, and adjustable fastener elements extending through said slot and connected with the indicator elements for releasably locking the same in selected adjusted positions along said

scales, the arrangement being such that the material to be pleated is placed on top of the attachment and manipulated entirely above the attachment with reference to said indicator elements.

References Cited in the file of this patent

UNITED STATES PATENTS

Re. 5,427	Bean	May 27, 1873
1,360,357	Bauer	Nov. 30, 1920
1,526,933	Rhyon	Feb. 17, 1925
2,148,987	Hinman et al.	Feb. 28, 1939
2,588,886	Schwartz	Mar. 11, 1952