United States Patent

[11] 3,633,800

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[21] Appl. No. **58,122**
[22] Filed **July 24, 1970**
[45] Patented **Jan. 11, 1972**

[54] **PLEAT COMPUTING AND FORMING APPARATUS**
18 Claims, 11 Drawing Figs.

[52] **U.S. Cl.** **223/28,** 156/585, 33/180
[51] **Int. Cl.** **A41h 43/00,** D06j 1/00
[50] **Field of Search** 33/192, 180, 88, 112; 223/28-35; 26/21; 93/60; 112/25-27, 132-134, 144-146; 156/585-588, 590, 591, 594

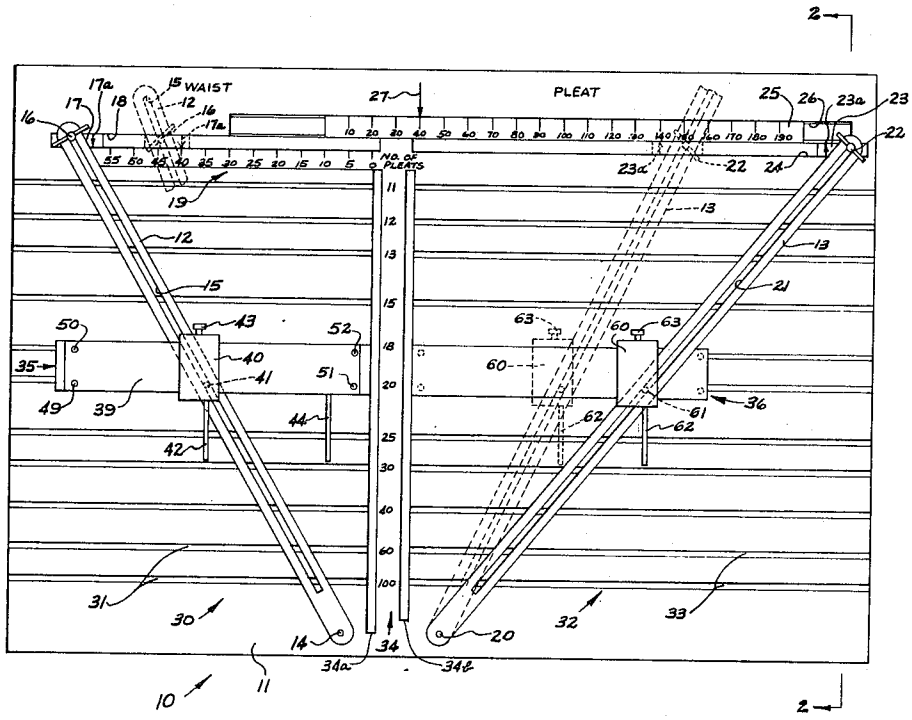
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Assistant Examiner—Geo. V. Larkin
Attorney—Carlos A. Torres

ABSTRACT: An analog computer for simultaneously solving for unknown pleat dimensions and positioning movable forming mechanisms in a location representative of said dimensions. The computer includes left and right arms which are pivoted along the lower end of a mounting board and are secured at their free ends to longitudinally movable indicators disposed in left and right longitudinal slots formed along the upper portion of the board. The left slot is associated with a fixed scale formed on the board and the right slot is associated with a movable scale which is adjustable longitudinally through the board. A pin and slot connection between the arms and indicators moves the indicators through their respective slots as the arms are rotated. A fixed, center scale extends laterally between the top and bottom of the board and carries markings identifying individual grooves which form left and right sets of grooves extending longitudinally to the right and left of the center scale. Left and right forming components are removably positioned in each set of grooves astride respective arms and each component includes a longitudinally movable forming slide which movably engages the associated pivoted arm through the pin and slot connection. By placing guides in the forming components in selected grooves, adjusting the right horizontal scale, and rotating the arms to move the left and right indicators to positions corresponding to known input values, the forming slides are automatically positioned to provide unknown pleat dimensions. The forming components are then removed from the board and coupled together with the rods extending from the components providing physical structures for holding and marking the material to be pleated.



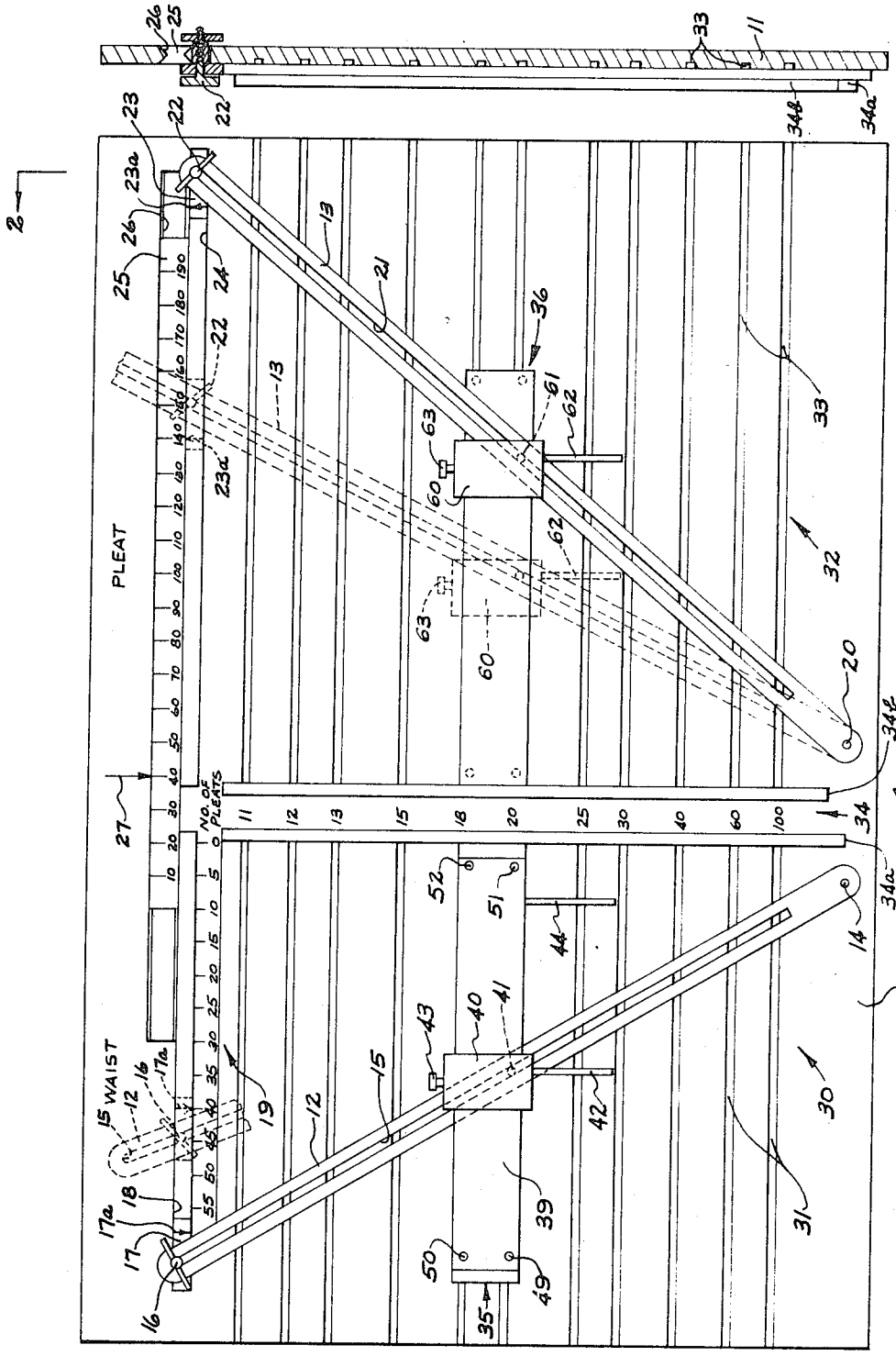


Fig. 2

Fig. 1

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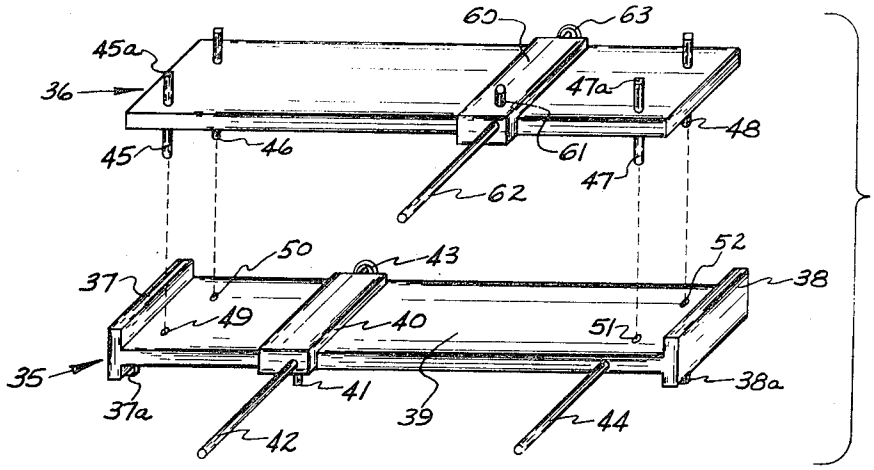


Fig. 3

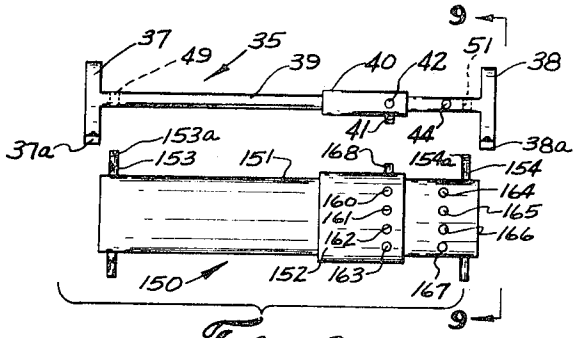


Fig. 8

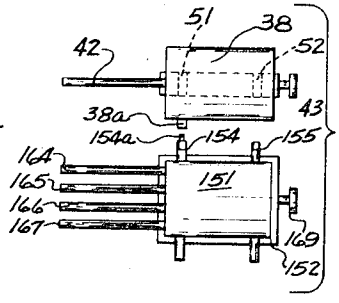


Fig. 9

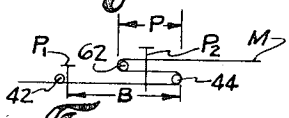


Fig. 4

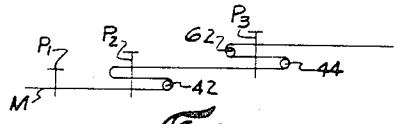


Fig. 5

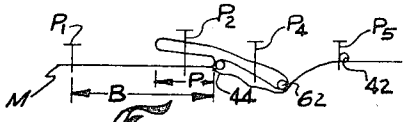


Fig. 6

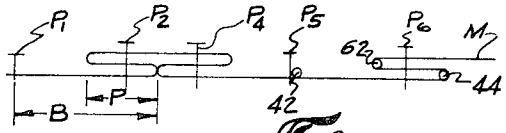


Fig. 7

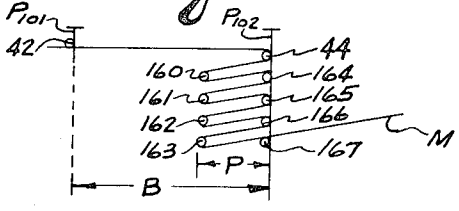


Fig. 10

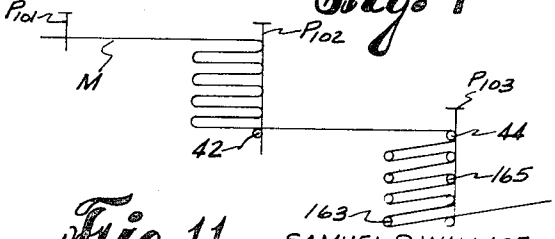


Fig. 11

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PLEAT COMPUTING AND FORMING APPARATUS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to computing devices. More specifically, the present invention relates to a new and improved means for determining and forming the base length dimension and pleat length dimension in a series of pleats having been given the material length available for pleating, the number of pleats desired in the completed article and the effective length desired in the material after it has been pleated.

2. Brief Description of the Prior Art

A variety of devices have been suggested in the prior art for the purpose of determining unknown quantities and dimensions given certain known quantities or values. The conventional slide rule is a typical example. These devices basically fall into the general category of computers and include a large variety of physical constructions.

Specific devices have been suggested for use in forming pleats in a length of material which is to be partially or completely pleated. Generally, these devices have included a means for marking a length of material to produce pleat dimensions corresponding to predetermined values to which the marking devices have been set. Before pleating a length of material, the final, pleated length of the material must be determined and the pleat dimensions for a series of uniform pleats must be calculated. If the pleats are too large or too small, the finished length of the pleated material will be too small or too large respectively. It is also necessary to calculate pleat dimensions for the total number of pleats to be included in the completed product. If a relatively large number of pleats are desired, the pleat dimensions must be reduced to produce the required effective length while still maintaining the desired total number of pleats. Conversely, if a relatively small number of pleats is desired, the pleat dimensions must be increased to prevent exceeding the necessary final length of the pleated material. In certain cases, it is desirable to form a predetermined number of pleats of a specific type in a predetermined length of material. Before this may be done, it is necessary to calculate the base and pleat length for the pleats so that all of the material is employed and the desired end length is obtained. In the past, all of the foregoing calculations have customarily been done by hand with the information in the resulting solutions applied to the material being pleated with the aid of a ruler or marker.

SUMMARY OF THE INVENTION

The apparatus of the present invention provides an analog computer for determining pleat dimensions given certain input information and further provides a physical measuring and forming means which may be employed to form the material being pleated into pleats having the desired dimensions.

The computer of the present invention includes input means with which it may be set for any given length of material to be pleated, the total number of pleats to be formed in the material and the resulting final length of the material after pleating. Setting of the computer to these known quantities and dimensions automatically operates an output mechanism to provide indicia representative of the base length and pleat length required for pleats satisfying the input conditions. In the preferred form of the invention, the base and pleat dimensions are provided by the computer's output mechanism in the form of indicia having the actual spacing required for the pleats thus permitting the output mechanism to be employed directly as a marker. In addition, the output indicia of the output mechanism are in the form of material handling structures over which the material may be positioned to form pleats having the desired base and pleat dimensions.

The ratio and proportion relationship between similar triangles is employed in the apparatus of the present invention to solve for the unknown base and pleat dimensions. The output

mechanism of the computer includes movable slides carried on pleat forming components which in turn are adjustably mounted on a baseboard. The slides are positioned on the forming components in accordance with the angle of rotation of pivoted arms which are also mounted on the baseboard. The angular position of the arms and the linear spacing between the forming components and the pivotal points of the arms are employed as inputs to the computer. The output is represented by the resulting position of the slides which form an output mechanism. The forming components and included slides carry material holding rods and the components are designed to be removed from the board and attached to each other. The material to be pleated may be positioned over the rods in the output assembly formed by the attached forming components to permit simultaneous measurement and formation of pleats.

In a modified form of the invention, a third forming component is employed for forming drapery pleats.

The foregoing and other objects and advantages of the present invention will become more apparent from the following specification and related drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of the pleat computing and forming apparatus of the present invention;

FIG. 2 is a cross section taken along the line 2—2 of FIG. 1 with the forming components omitted for purposes of clarity;

FIG. 3 is a perspective view of the two forming components included with the apparatus of FIG. 1;

FIGS. 4, 5, 6 and 7 are schematic representations illustrating the formation of pleats with the apparatus of the present invention;

FIG. 8 is a perspective view of forming components employed for forming pleats in drapery;

FIG. 9 is a side view taken along the line 9—9 of FIG. 8; and

FIGS. 10 and 11 are schematic representations illustrating the formation of pleats with the modified forming components illustrated in FIGS. 8 and 9 of the drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 illustrates one form of the pleat computing and forming apparatus of the present invention indicated generally at 10 which may be employed for forming pleats in wearing apparel such as women's skirts. The apparatus 10 includes a computing baseboard 11 to which are pivoted left and right computing arms 12 and 13 respectively. The arm 12 is secured to the board 11 by any suitable means such as a pin 14 which permits the arm to be rotated freely about the pivot connection. A slot 15 tends along the length of the arm 12 for a purpose to be hereinafter explained in detail. A manually releasable wing bolt 16 extends through the arm slot 15 and is secured to a movable left indicator 17. Movement of the indicator 17 is confined within a longitudinally developed slot 18 which is associated with a fixed, longitudinal scale 19. Where employed for garment pleating, the indicia on the scale 19 designate waist size (effective length) for the pleated garment.

The indicator 17 carries a pointer 17*a* which is adapted to move with the indicator 17 through the slot 18 as the arm 12 is pivoted about the pin 14. The position of the arm 12 following rotation about the pin 14 is illustrated in dotted line in FIG. 1. It will be understood that the arm 12 may be locked in position by appropriately tightening the wing bolt 16 to provide a frictional lock with the baseboard 11.

The arm 13 at the right-hand side of the baseboard 11 is pinned to the board by means of a pin 20 similar to the pin 14. Referring jointly to the FIGS. 1 and 2 it may be seen that the arm 13 includes a slot 21 through which a second manually releasable wing bolt 22 extends and attaches to a second indicator 23. The indicator 23 is confined to move within a longitudinal slot 24 formed in the board 11. An adjustable scale 25 is slidably positioned within a scale slot 26 that the relative

position of the scale may be adjusted with respect to a fixed pointer 27 formed adjacent the center portion of the baseboard. As will be more fully explained hereinafter, the indicia on the scale 25 represent both effective length and total length of material to be pleated.

The indicator 23 also includes a pointer 23*a* which is movable with the indicator through the slot 24 upon rotation of the arm 13 to bring the marker into registry with the indicia appearing on the scale 25. As with the arm 12, the arm 13 may be locked in rotated position by appropriately tightening the wing bolt 22.

The left-hand portion of the board 11 includes a first set 30 of grooves 31. A similar set 32 of grooves 33 is formed on right-hand portions of the board 11. A central, laterally extending scale 34 is provided between the two sets of grooves 30 and 32 and includes markings identifying the individual grooves 31 and 33 formed within the two groove sets. The indicia on the scale 34 represent the total number of pleats to be included in the material being pleated. A base-forming component 35 is removably positioned over the left groove set 30 and a pleat-forming component 36 is removably positioned over the right groove set 32. Raised component stops 34*a* and 34*b* are secured to the baseboard 11 on either side of the scale 34 to form positioning stops for the forming components 35 and 36 respectively.

The configuration of the forming components 35 and 36 may be best understood by joint reference to FIGS. 1 and 3. Parallel side members 37 and 38 formed on the base-forming component 35 include two downwardly extending positioning projections 37*a* and 38*a*, respectively, which are adapted to be received within the grooves 31 in the groove set 30. A body portion 39 extends between the two side members 37 and 38 and is employed as a support over which an adjustable slide 40 is adapted to be moved. The slide 40 is provided with a downwardly projecting pin 41 which is designed to be received in the arm slot when the forming component 35 is disposed above the arm 12 in the manner illustrated in FIG. 1. A material handling rod 42 extends from the bottom of the slide 40 and a releasable clamping bolt 43 extends from the top of the slide. A second, fixed forming rod 44 extends from the front of the forming component 34.

As best illustrated in FIG. 3, mating members 45, 46, 47 and 48 project above and below the forming component 36 and are adapted to be received in bores 49, 50, 51 and 52, respectively, formed in the component 35 to secure the two components together. The projections 45 and 47 also include groove positioning portions 45*a* and 47*a*, respectively, adapted to be received in the grooves 33 in the right-hand groove set 32. A movable slide 60 mounted on the body of the pleat-forming component 36 is provided with an upwardly extending projection 61 designed to engage the arm slot 21 when the component 36 is positioned above the arm 13 as illustrated in FIG. 1. A forming rod 62 and a locking bolt 63 extend from the front and rear of the slide respectively.

OPERATION OF THE INVENTION

Where an article such as a woman's skirt is to be pleated, the following input information is established in the apparatus and is employed for operating the computer to obtain base and pleat dimensions:

1. The total length of material to be pleated excluding seam allowances;
2. The total number of pleats desired in the completed article; and
3. The waist measurement of the garment (effective length after pleating).

The lock bolt 16 is then loosened and the arm 12 is pivoted about the pin 14 until the pointer 17*a* on the indicator 17 is aligned with the number on scale 19 indicating the desired waist measurement to establish input 3 above. The dotted-line position of the arm 12 illustrated in FIG. 1 shows the setting for a waist measurement of 40 inches. The clamping bolt 43 on slide 40 is loosened so that the slide may be moved laterally along the body 39 of the former 35. The former 35 is then placed astride arm 12 with the side member 38 against the stop 34*a*; positioning projections 37*a* and 38*a* within the appropriate groove 31; and slide pin 41 within the arm slot 15. The clamping bolt 43 is then tightened to hold slide 40 in position on the former 35 following the foregoing procedure.

The movable scale 25 is then adjusted through the scale slot 26 until the fixed pointer 27 is aligned with the desired waist measurement (input number 3 above) which, in case of FIG. 1, is 40 inches. Preferably, the scale 25 is held in adjusted position by means of its frictional engagement with the slot 26; however, it will be understood that other suitable means may be employed for holding the scale 25 in adjusted position. Following adjustment of the scale 25, the lock bolt 22 is loosened and the arm 13 is rotated about the pin 20 until the pointer 23*a* on the indicator 23 is aligned with the number on the scale 25 representing the total length of material to be pleated to establish input number 1 above. In the illustration of FIG. 1, the pointer 23*a* has been aligned with the indicia for 140 inches as represented by the dotted-line position of the indicator 23. The clamping bolt 63 on former 36 is loosened so that slide 60 may be moved laterally over the body of the forming component 36. The former 36 is then placed astride arm 13 with the left end of the former body against stop 34*b*, guides 45*a* and 47*a* in an appropriate groove 33, and slide pin 61 in arm groove 21. The clamping bolt 63 is then tightened to lock slide 60 in position on the former 36.

From the foregoing, it will be appreciated that the described operation of the computer 10 locates or positions the slides 40 and 60 on the forming components 35 and 36, respectively and the locking nuts 43 and 63 maintain the slides in this adjusted position. After having been thus set, the forming components 35 and 36 are removed from the computer board 11 and are positioned relative to each other in the manner illustrated in FIG. 3. It will be understood that if the pleating direction is desired for the opposite lay of the material, former 36 may be placed on the opposite side of former 35 yielding mirror image pleats. In the latter position, the upper portions of the mating projections 45, 46, 47 and 48 are received in the bores 49, 50, 51 and 52, respectively. With the two forming components in the position illustrated in FIG. 3, they are brought together causing the lower portions of mating projections 45, 46, 47 and 48 to seat in the receiving bores 49, 50, 51 and 52 forming a composite structure capable of forming pleats having the desired dimensions.

The material handling rods 42, 44 and 62 function to provide a means both for holding the material to be pleated and for forming a physical measurement means which automatically provides the desired pleat dimensions. In this adjusted position, the spacing between the rods 42 and 44 on the pleat forming component 35 provides the base dimension (B) for the pleats and the spacing between the rods 62 and 44 in the assembled structure represents the pleat dimension (P) for each pleat. The dimensions B and P have been indicated in FIG. 4.

FIG. 4 also illustrates the use of the apparatus of the present invention in forming a first pleat portion in a length of material M. The pleat is formed by placing the rod 42 adjacent a starting point indicated by a pin P_1. The material is then looped around the second rod 44, doubled back upon itself, looped around the rod 62 and pinned in position with a pin P_2. The material to the left of pin P_1 is for one seam allowance. Referring to FIG. 5, the next pleat is formed by positioning the rod 42 in the material loop previously occupied by the pin 44 with the material M then being looped around the pin 44, doubled back upon itself and looped around the pin 62. The resulting pleat is then pinned with a pin P_3. This process is repeated to completely pleat the material M. Depending on the relative position of the rods 42, 44 and 62, the pleats formed in the material M by the described process will be either oversize, regular or undersize pleats.

Where box pleats are desired, the initial pleat is formed as illustrated in FIG. 4 and the forming means **35** and **36** are reversed with the pin **44** placed adjacent the position previously occupied by the pin **42**. The material M is then looped around the central rod **62**, doubled back upon itself, looped around the rod **44** and pinned in position with a pin P_4. The position of pin **42** is then marked with a pin P_5. The forming components **35** and **36** are then again reversed, the rod **42** is positioned against the pin P_5, the material M is looped around the rod **44** and back around the rod **62** and the resulting partial pleat is pinned with a pin P_6 as shown in FIG. 7. Again, this process is repeated until the entire length of the material M has been provided with the desired box pleats. Depending upon the relative positioning of the rods **42**, **44** and **62**, the resulting box pleat formed by the described process will be either regular or undersize.

In operation, the apparatus of the present invention functions according to the following equations or theoretical relationships:

(1) $E=NB$

(2) $B=E/N$

(3) $L=NB+2NP$

(4) $P=(L-NB)/2N$

(5) $L=N(B+2P)$

In equations (1) through (5) appearing above, L equals the length of material to be pleated, E is the effective length of the material after it has been pleated, B and P are the base and pleat length, respectively, of the pleats formed in the material and N is the total number of pleats to be included in the material. The apparatus of the present invention solves for B and P in the foregoing equations by employing the relationships that triangles maintaining the same interior angles are proportional to each other and that proportional triangles may be constructed by forming sets of three lines, each of which parallels the corresponding lines in a triangle to which it is to be proportional.

In FIG. **1**, it may be seen that a right triangle is formed from the point of pivot pin **20**, and along the lines of slot **24** and arm **13**. The right angle of the right triangle is formed at the intersection of a line lying along slot **24** and a theoretical line perpendicular to the slot **24** passing through the pivot pin **20**. The angular position of the arm **13** forms a variable length hypotenuse and side opposite (slot **24**), for the right triangle with the lengths being dependent upon the positioning of the pointer **23***a*. Groove set **32** comprised of groove **33** are parallel to slot **24** thereby forming similar triangles for any position of arm **13** and/or pointer **23***a*. The angular position of the arm **13** is determined by the setting of the pointer **23***a* which in turn is affected by the positioning of the movable scale **25**. The final variable is the horizontal spacing between the pin **20** and the pin **61** which is controlled by selection of the slot **33** for placement of the forming component **36**. Operation of the base-forming portion of the computer is similar to that described for the pleat-forming portion.

FIGS. **8** and **9** illustrate a modified forming component **150** especially suited for use in forming pleats in curtains or drapery. The forming component **35** illustrated in FIGS. **8** and **9** is the same as the corresponding component illustrated in FIG. **3**.

Referring jointly to FIGS. **8** and **9**, the drapery-forming component **150** includes a body **151** over which a sleevelike slide **152** is adapted to be moved laterally. Mating projections, such as projections **153**, **154**, and **155** extend from above and below the body **151** and are designed to be received in the bores **49**, **51** and **52**, respectively, of the base-forming component **35** when the two components are assembled together. The projections **153** and **154** are provided with groove mating guides **153***a* and **154***a*, respectively, adapted to seat within appropriate grooves **33** in the board **11**.

Material handling rods **160–163** extend from the slide **152** and rods **164–167** extend from the body **151** of the former **150**. A slide pin **168** extends from the top of the slide **152** and is adapted to be received within the arm slot **21** for adjusting of the slide position. A set screw **169** is employed to secure the slide **152** in its adjusted position.

USE OF THE DRAPERY PLEATER FORMING COMPONENTS

The arm **12** is rotated until the pointer **17***a* is aligned with the indicia in scale **19** representing the effective or final length of the drapery after it has been pleated. In the illustration of FIG. **1**, the dotted-line position of the arm **12** would indicate a drapery length of 40 inches. The groove mating projections **37***a* and **38***a* are then set in the specific groove **31** corresponding to the number of sets of pleats to be included in the completed drapery and the slide pin **41** is positioned in the arm slot **13**. In the manner previously described with respect to the pleater-forming components of FIGS. **1** and **3**, the angular position of the arm **12** is employed to position the slide **40** so that the spacing between the rods **42** and **44** provides the desired, unknown base length for the drapery pleat. In the way of illustration, the projections **37***a* and **38***a* would be positioned in the grooves **31** identified by the number "20" on the scale **34** to form a drapery panel having 20 sets of pleats.

The scale **25** is then adjusted through the slot **26** until the pointer **27** coincides with the indicia on the scale indicating the length of the pleated drapery. Again, in continuation of the example, the scale **25** would be moved until the marker **27** is opposite the number "40." The indicator **23** is then moved through the slot **24** by rotating the arm **13** until the pointer **23***a* coincides with the indicia on the scale **25** representing the total length of unpleated material (excluding seam allowances) to be employed in the drapery. The guides **153***a* and **154***a* of the pleat-forming component **150** are then set in the groove **33** corresponding to the number of pleats to be included in each pleat set times the number of sets to be included in the drapery. Thus, for example, if three pleats are to be employed in each pleat set, the pleat former **150** is positioned in the groove **33** identified by the number "60" on the scale **34** since 3×20=60. The slide pin **168** is then placed in the arm slot **21** to position the slide **152** with the result that the spacing between the forming rods **160–163** and **164–167** represents the pleat dimension P in the drapery.

The positions of the slide **152** is locked by approximately tightening the locking bolts **169** and the component **150** is then removed from the board **11** and positioned relative to component **35** as illustrated in FIG. **8** of the drawings.

Formation of curtain or drapery pleats employing the forming components of FIG. **8** is illustrated schematically in FIG. **10** of the drawings. The rod **42** is first placed adjacent a starting pin P_{101} in a length of material M, and the material is then looped around the rod **44**, doubled back upon itself and looped back and forth from the rod **160** to the rod **164** to the rod **161** to the rod **165** to the rod **162** to the rod **166** to the rod **163** and to the rod **167**. A pin P_{102} is then positioned through each of the loops in the material in the manner illustrated in FIG. **10** and the forming components rods are withdrawn from the material. Referring to FIG. **11**, the second step in the drapery pleating sequence is completed by positioning the pin **42** in the location previously occupied by the pin **167** and repeating the previously described material looping steps. A pin P_{103} is then employed to hold the second loop set and the process is completed until all of pleats in the drapery have been formed.

As employed herein, the terms base and pleat length are intended to include the dimensions B and P illustrated for the regular pleat in FIG. **4**, the box pleat in FIG. **6** and the drapery pleat in FIG. **10**. It should also be noted that while the computing apparatus of the present invention has been illustrated and described with reference to rotatable arms, grooves, rods, slides, clamps and other specific structures, equivalent structure or structures may be employed for performing substantially the same functions as the specific structures described herein and such equivalent structures are intended to be included within the scope of the present invention. Thus, by way

of example rather than limitation, the arm slots **15** and **21** may be replaced by grooves to achieve the same result.

The foregoing disclosure and description of the invention is illustrative and explanatory thereof, and various changes in the size, shape and materials as well as in the details of the illustrated construction may be made within the scope of the appended claims without departing from the spirit of the invention.

What is claimed is:

1. Pleating apparatus for providing base and pleat dimensions comprising:

a. first input means having physically locatable positioning means for establishing length of material to be pleated to form a first input quantity in said apparatus;

b. second input means having physically locatable positioning means for establishing a total number of pleats to be formed in the material length established by the first input means to form a second input quantity in said apparatus;

c. third input means having physically locatable positioning means for establishing the length of pleated material desired after the length of material established in said first input means has been pleated with the total number of pleats established in said second input means to form a third input quantity in said apparatus; and

d. output means operably connected with said first, second and third input means and responsive to the physical location of said input means for providing the base and pleat length of each pleat to be formed in said material.

2. A pleating apparatus as defined in claim **1** further including scale means operably connected with said first, second and third input means and carrying indicia for representing said first, second and third input quantities.

3. A pleating apparatus as defined in claim **2** wherein said input means include movable marking means physically locatable with respect to said scale means whereby said marking means may be adjusted with respect to said indicia on said scale means for establishing said input quantities in said apparatus.

4. A pleating apparatus as defined in claim **3** further including:

a. arm means rotatable about fixed pivot point means;

b. first scale means having incremental markings of distance from said fixed pivot point means for representing said second input quantity; and

c. incremental indicia included with said scale means for representing angular position of said arm means about said pivot point means for representing said third input quantity.

5. A pleating apparatus as defined in claim **4** wherein:

a. said arm means includes first and second arm means pivoted about first and second fixed pivot points respectively;

b. said scale means includes second scale means fixed with respect to said first pivot point and associated with said first arm means for representing said third input quantity; and

c. said scale means includes third scale means movable with respect to said second pivot means for representing said third input quantity and associated with said second arm means for representing said first input quantity.

6. A pleating apparatus as defined in claim **5** wherein said output means further includes:

a. marking means for designating base and pleat length;

b. first and second forming component means;

c. first and second slide means connected with said first and second component means respectively;

d. engaging means included with said first and second slide means respectively, for removably engaging said first and second arm means, respectively, whereby the angular position of said arm means about said pivot means establishes the position of said slide means over said component means;

e. first and second positioning means included with said first and second component means, respectively, for removably and adjustably positioning said component forming means with respect to said arm means and said scale means;

f. means for securing said first and second forming means to each other; and

g. rod means extending from said slide means and from at least one of said forming component means for shaping the material to be pleated into a pleat.

7. A pleating apparatus as defined in claim **1** wherein said output means includes marking means for designating the base and pleat length of each pleat to be formed in said material.

8. A pleating apparatus as defined in claim **7** wherein said output means further includes material handling means for shaping the material to be pleated into a pleat.

9. A pleating apparatus as defined in claim **8** wherein said output means further include:

a. first and second forming component means;

b. first and second slide means connected with said first and second component means respectively;

c. engaging means included with said first and second slide means, respectively, for removably engaging said first and second arm means, respectively, whereby the angular position of said arm means about said pivot means establishes the location of said slide means over said component means;

d. first and second positioning means included with said first and second component means, respectively, for removably and adjustably positioning said forming component means with respect to said arm means and said scale means; and

e. means for assembling said first and second forming means to each other.

10. A pleating apparatus as defined in claim **9** wherein said material handling means further includes rod means extending from said slide means and from at least one of said forming component means.

11. A pleat computing and forming apparatus comprising:

a. computer baseboard means;

b. arm means pivoted to said board means;

c. scale means carried on said board means;

d. indicator means carried on said arm means and with rotation of said arm means to be positioned at points on said scale means representative of input quantities to be established in said apparatus; and

e. output means operably associated with said arm means and having output indicating means positioned in response to the angular position of said arm means for representing dimensions in a pleat.

12. A pleat computing and forming apparatus as defined in claim **11** wherein:

a. said arm means includes first and second arm means secured to said board means by first and second pivot means respectively;

b. said scale means includes first and second scale means associated with said first and second arm means, respectively and third scale means associated with both said first and second arm means;

c. said indicator means includes first and second indicator means movable with rotation of said first and second arm means respectively; and

d. said output means includes first and second forming component means operably associated with said first and second arm means respectively.

13. A pleat computing and forming apparatus as defined in claim **12** wherein:

a. said first scale means includes indicia representative of the desired effective length of material after it has been pleated;

b. said second scale means includes indicia representative of both total length of material to be pleated and desired effective length of material after it has been pleated; and

c. said third scale means includes indicia representative of total number of pleats desired and/or number of pleat sets to be included in the material.

14. A pleat computing and forming apparatus as defined in claim 13 wherein each of said forming component means include:

a. slide means movably carried on a forming component body;

b. engaging means included with said slide means for engaging said arm means; and

c. placement means for removably placing said forming component means on said board means at different indicia locations with respect to said third scale means.

15. A pleat forming and computing apparatus as defined in claim 14 wherein said forming component means further include:

a. material handling rod means extending from said slide means and from the body of at least one of said forming components; and

b. mating means for attaching said first and second forming components to each other.

16. A pleat forming and computing apparatus as defined in claim 15 further including locking means for locking said first and second arm means and said first and second slide means in adjusted position.

17. A pleat forming and computing apparatus as defined in claim 16 wherein:

a. said second scale means is movable with respect to said second pivot means for adjustment with respect to a fixed pointer carried on said board means to represent effective material length after pleating; and

b. said third scale means includes grooves formed in said board means adapted to receive said placement means included with said forming component means.

18. A pleat forming and computing apparatus as defined in claim 15 further including drapery pleating means comprising:

a. third forming component means for providing pleat length in drapery and curtains;

b. third slide means movable over a third body means in said third component means;

c. a plurality of material handling rod means extending from said third slide means and from said third body means; and

d. mating means for attaching said third forming component means to said first forming component means.

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