(No Model.) 4 Sheets—Sheet 1.

M. S. SCHAFER.

MULTIPLEX DRESS CHART.

No. 457,591. Patented Aug. 11, 1891.

Fig. 1

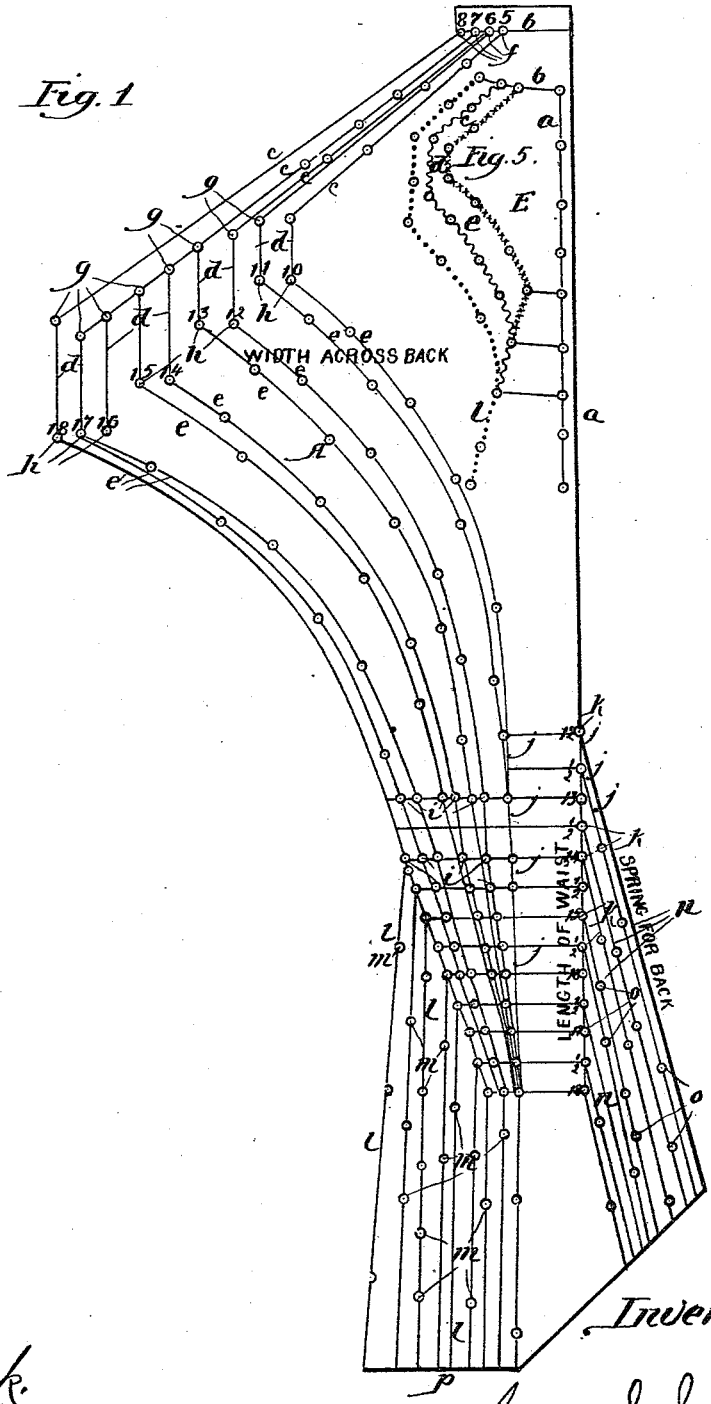

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Fig. 2.

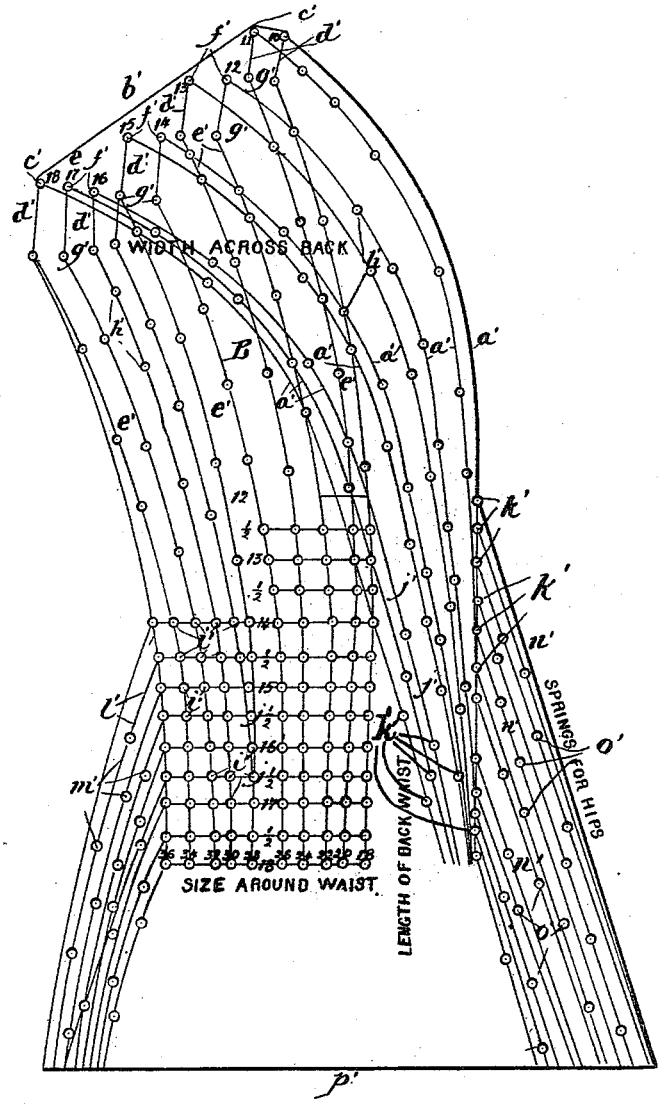

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Fig. 3.

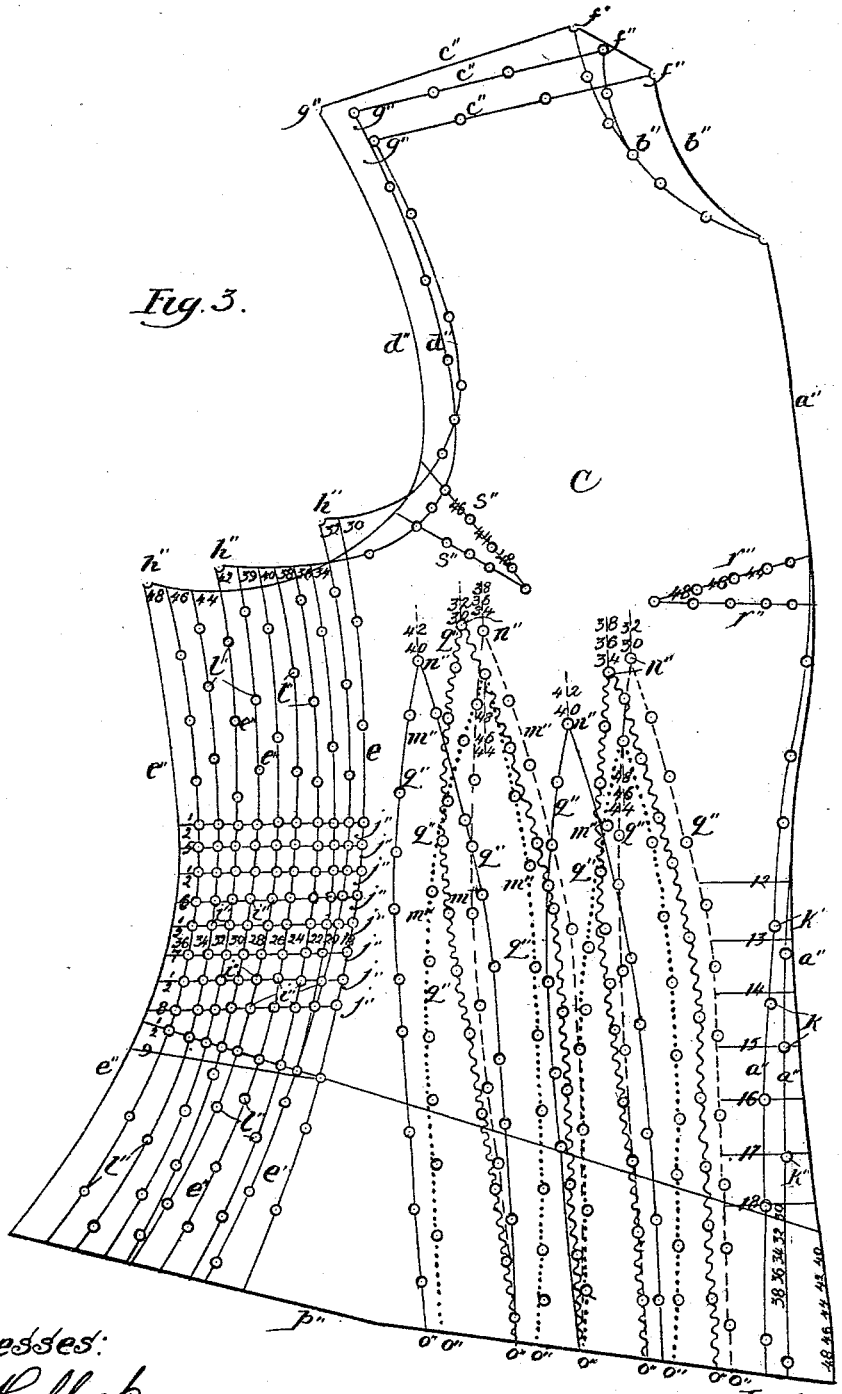

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Fig. 8.

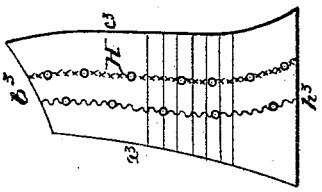


Fig. 6.

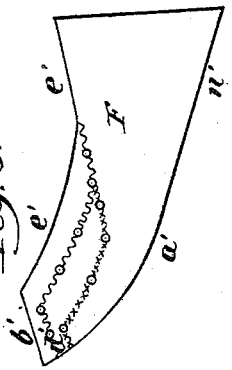


Fig. 7.

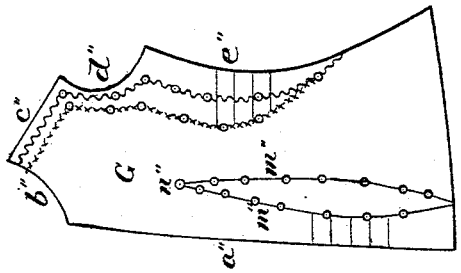
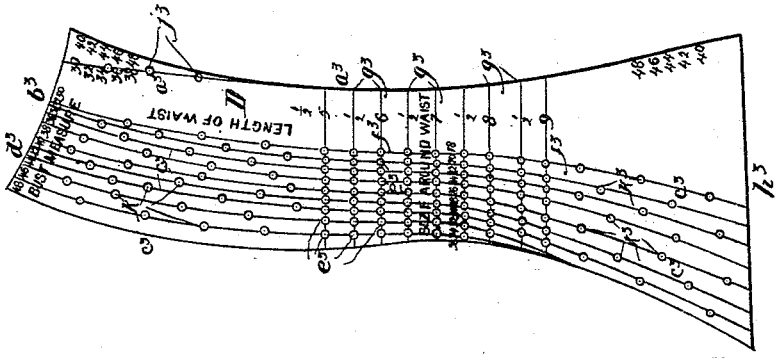


Fig. 4.



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UNITED STATES PATENT OFFICE.

MAY S. SCHAFER, OF CHICAGO, ILLINOIS.

MULTIPLEX DRESS-CHART.

SPECIFICATION forming part of Letters Patent No. 457,591, dated August 11, 1891.

Application filed August 24, 1888. Serial No. 283,658. (No model.)

To all whom it may concern:

Be it known that I, MAY S. SCHAFER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Multiplex Dress-Patterns; and I do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, forming a part hereof, in which—

Figure 1 shows the pattern for the back of a dress. Fig. 2 shows the pattern for the side body of the back of a dress. Fig. 3 shows the pattern for the front of the waist of a dress. Fig. 4 shows the pattern for the front side body of the dress. Figs. 5, 6, 7, and 8 show, respectively, the patterns for the back, side body of back, front, and side body of front, for producing patterns for doll and other small dresses, Fig. 5 being shown in connection with Fig. 1.

The object of this invention is to produce a dress-waist pattern based on actual measurements and conditions of the form, and from which a dress-waist can be cut which will be accurate and correct in every particular as regards the fit, and to enable any desired size of dress-waist pattern, large or small, to be correctly produced from a single plate or sheet containing a multiplicity of patterns and have each section or division of the desired pattern separate and distinct and based on the measurements of the form, with a unity of relation between the sections or divisions to make a perfect and correct-fitting waist based on actual measurements and the requirements and conditions of the form to be fitted, and not supposed measurements and conditions derived from a single measurement of some one part, as the bust, on which one measurement the entire measurements are computed in a regular progression; and, to this end, the invention consists in a dress-waist pattern, section, or division having one defining-edge and a series of defining-lines for other edges, which edges progress in an irregular ratio from the smallest to the largest size for a regular progressive measurement, and having other defining-edges and defining-lines in series for other edges, and combined and arranged in relation to each other on the section to form a number of patterns for the section or division, each pattern having the actual measurements taken for the particular portion of the waist embraced in the pattern, and in a multiple dress-waist pattern consisting of sections or divisions of the waist, each section or division having a defining-edge and defining-lines in series for defining edges of other patterns, which edges have a regular progressive measurement, with a differential ratio for the progression, and having other defining-edges and defining-lines indicating lines and marks for measurements, combined and arranged to produce a complete pattern of a given dimension or size, on actual measurements for the back, side-body back, front, and side body front, as hereinafter more particularly described and pointed out in the claims.

In the drawings, A represents a section or division of the pattern, embracing therein a nest or multiplicity of patterns for the back of a dress-waist.

B is a section or division of the pattern, embracing therein a nest or multiplicity of patterns for the side body of the back of a dress-waist.

C is a section or division of the pattern, embracing therein a nest or multiplicity of patterns for the front of the waist.

D is a section or division of the pattern embracing therein a nest or multiplicity of patterns for the front side body of the dress-waist.

E is a section or division of a pattern for small measures, embracing a nest or multiplicity of patterns for the back of a dress-waist for a child or doll.

F is a section or division of a pattern corresponding to E, and embracing a nest or multiplicity of patterns for the side body of the back of a dress-waist for a child or a doll.

G is a section or division of a pattern corresponding to E, and embracing a nest or multiplicity of patterns for the front of the waist of a dress for a child or doll.

H is a section or division of a pattern corresponding to E, and embracing a nest or multiplicity of patterns for the front side body of a dress-waist for a child or doll.

The patterns E F G H are continuations, re-

spectively, of the patterns A B C D, and are designed for producing patterns for small dress-waists, and these patterns can be arranged on the larger patterns, as shown by the pattern E on the pattern A, Fig. 1, or these patterns E F G H can be made separate and distinct from the larger patterns, as shown by the pattern F, Fig. 6.

The small patterns are on the same principle as the large ones, and a description of the construction and operation of the large patterns will cover and embrace the construction and operation of the smaller ones.

The sections A B C D and E F G H (shown in Figs. 1, 2, 3, 4, 5, 6, 7, and 8, respectively) of the pattern are formed of a sheet of paper, card-board, or other similar material, or of a piece of cloth, metal, or wood, as desired.

The section or division A of the pattern is formed of a straight edge *a*, a straight edge *b*, standing at right angles to the edge *a*, a diagonal edge *c*, a straight edge *d*, and a curved edge *e*, and these edges *a b c d e* produce, respectively, the seam-line for center of back, neck of back, shoulder, armhole, and side of back for the largest waist intended to be made from the pattern. The same edges *a* and *b* produce the edges for the center of back and neck of back of smaller patterns, a series of diagonal lines starting from the neck-line and running adjacent to the edges *c* and diverging from each other and the edge *c*, and a series of straight lines running parallel with the edge *d* and starting from the diagonal shoulder-lines, and decreasing in length as they proceed, and a series of curved lines adjacent to the edge *e*, starting from the armhole-lines and converging as they extend downward, produce edges *c*, *d*, and *e* for smaller patterns. The lines for the curved edges *e* do not progress in a regular ratio—that is, the spacing or distance between them is not an equal one line to line—but the spacing or distance between them, while producing a regular progressive measurement, is variable, involving an increase in ratio at times and a decrease at other times. The juncture of each edge *c* with the edge *b* has a mark *f*, with a numeral for neck measure, and each edge *d* has a numeral for width across back measure. At the juncture of each edge *c* and *d* is a perforation or mark *g*. At the juncture of each edge *d* and *e* is a perforation or mark *h*, and each line adjacent to the edge *e* has a series of perforations *i*. A series of straight lines *j* extend from the edge *a* to the edge *e*, across the pattern, and at the juncture of each line *j* with the edge *a* is a mark or perforation *k*, with a numeral for length of waist measure, and at the crossing-point of each line *j* with each curved line of the edge *e* is a perforation *i*. A projected straight edge *l* extends from one of the upper lines *j* on the edge *e* to the bottom line or edge *p*, and a projected straight edge *n* extends from the top line *j* on the edge *a* to the bottom line or edge *p*, and adjacent to each edge *l* and *n* from each line *j* are projected lines forming other edges *l* and *n*. Each line for an edge *l* has a series of perforations *m*, and each line for an edge *n* has a series of perforations *o*. The edge *l* gives the spring for the side of the back, and the edges *n* give the spring for the center of back for a waist of the largest measure, and the lines adjacent to these edges give the spring for smaller measures.

The section or division B of the pattern is formed of a curved edge *a'*, a slanting straight edge *b'*, a straight edge *d'*, and a curved edge *e'*, and these edges *a'*, *b'*, *d'*, and *e'* produce, respectively, the seam for the side, back, shoulder, armhole, and side body under the arm for the largest waist intended to be made from the pattern. A series of curved lines corresponding in curvature to the edge *a'* extend from the edge *a'* partly across the pattern, and a series of straight lines extend across the pattern parallel with the edge *d'*, and a series of curved lines corresponding in curvature to the edge *e'* extend from the edge *e'* partly across the pattern, and these several lines produce edges *a'*, *d'*, and *e'* for smaller-sized patterns. The straight lines for the edges *d'* join the curved lines for the edges *a'*, and at the juncture of the curved and straight lines, or on the straight lines, are marks or perforations *f'*, having numerals for width across back measure, and these straight lines for the edges *d'* also join the curved lines for the edges *e'*, and at the junction of these lines are perforations or marks *g'*, and these perforations *f'* and *g'* run in zigzag lines by reason of the difference in length of the curved lines. The curved lines for the edges *a'* and the curved lines for the edges *e'* do not run parallel with each other in relation to their respective outer edges *a'* and *e'*, but gradually converge from the top to the bottom, and each of these curved lines has a series of perforations or marks *h'* part way of its length. The curved lines *a'*, while having a regular progression of measurement do not have an equal spacing or distance from one line to another, but the spacing or distance from line to line is a variable one, having an increase at one time and a decrease at another time, and this same rule applies to the spacing or distances between the curved lines *e'*. A series of straight lines *j'* extend from the edge *a'* to the edge *e'* across the pattern, and at each crossing-point of these lines *j'* with the curved lines of the edges *e'* is a mark or perforation *i'*, and at the junction of each line *j'* with a curved line for an edge *a'*, is a mark or perforation *k'*, with a numeral for length of back waist measure. A projected and slightly curved edge *l'* extends from the top line *j'* on the edge *e'* to the bottom line or edge *p'*, and a projected straight edge *n'* extends from the edge *a'* above the top line *j'* to the bottom line or edge *p'*; and adjacent to each edge *l'* and *n'* are lines forming other edges *l'* and *n'*, such lines

being projected one from each line j' on both sides of the pattern. Each line for the edge l' has a series of perforations m', and each line for the edge n' has a series of perforations o'. The edge l' gives the spring for the hips under the arm, and the edge n' gives the spring for the back side body for a waist of the largest measure, and the lines adjacent to these edges give the corresponding spring for smaller measures.

The section or division C of the pattern is formed of a double curved edge a'', a curved edge b'', a straight diagonal edge c'', a curved edge d'', and a curved edge e''; and these edges a'' b'' c'' d'' e'' produce, respectively, the seam-line for center of front, front of neck, shoulder, armhole, and side of front, for the largest waist intended to be made from the pattern. A series of curved lines adjacent to the edge a'' and a series of curved lines adjacent to the edge b'' and a series of curved lines adjacent to the edge d'' and a series of curved lines adjacent to the edge e'' produce edges a'' b'' c'' d'' e'' for smaller-sized patterns. The lines for the edges e'', while having a regular progressive measurement, do not have an equal spacing or distance between them, but the spacing or distance is variable, being an increase at one time and a decrease at another, producing an irregular ratio for the progression. The edges b'' and d'' vary in their height and at the juncture of an edge b'' and an edge c'', and at each juncture of the lines adjacent to the edges b'' and c'' is a mark or perforation f'', and the juncture of the edge c'' with an edge d'' and the juncture of the lines adjacent to the edges c'' and d'' is a mark or perforation g'', and on the lines adjacent to the edges b'' c'' d'' are perforations. The edge d'' and the lines adjacent terminate at different points in relation to the side edge e'' and in different planes one to the other, and form corners h'', which divide the edges produced by the curved lines adjacent to the edge e'' into series, and on the corners h'' are numerals indicating bust measure corresponding to the bust measure indicated by numerals on the edge a'' and the line adjacent thereto at the lower end. A series of straight lines j'' extend from the edge e'' across the lines adjacent to such edge, and a mark or perforation i'' is made at the crossing-point of each curved and straight line, and the perforations i'' on one of the lines j'' have numerals for around the waist measure. A series of straight lines k'' with perforations or marks at the crossing-points of the lines adjacent to the edges a'' extend inward from such edge, and these lines k'' each have a numeral for length of waist measure, and the lines adjacent to the edge e'' on both sides of the cross-lines j'' each have perforations or marks l''. A series of lines m'' start from different points and run to the bottom line or edge p'' to produce the dart-lines of the several patterns. The companion darts are pointed out by making the lines m'' therefor continuous, square-dotted, round-dotted, and wavy, and the starting-point for each dart has a perforation or mark n'' with numerals for the bust measure corresponding to those on the edge a'', and each point on the edge p'' for the darts has a mark or perforation o'', and each dart-line m'' has a series of perforations or marks q''. The edge a'' above the dart-line has inwardly-extending-diagonal lines r'', forming a V, and similar lines s'', forming a V, extend inwardly from the edge d'', and these V-shaped points indicate the amount of take-up for bust measures of forty-four, forty-six, and forty-eight inches, and have numerals for these bust measures.

The section or division D of the pattern is formed of a curved edge a^3, a slightly-curved edge b^3, and a double-curved edge c^3, and these edges a^3 b^3 c^3 respectively produce the seam-line for under the arm of the front side body, armhole, and side of body front. The lower portion of the edge a^3 has an outward projection for the spring of the front of hips, and the lower portion of the edge c^3 has an outward projection for the spring of the back of the hips. A line adjacent to the top of the edge a^3 produces an edge for smaller-sized patterns, and a series of curved lines adjacent to the edge c^3 and extending to the bottom line or edge b^3 produces edges c^3 for smaller-sized patterns. The edge a^3 and line adjacent thereto each has a series of numerals for bust measurement, and the line has marks or perforations j^3. The lines adjacent to the edge b^3 each has a mark or perforation d^3 and a series of perforations k^3 on both sides of the cross-lines. The lines for the edges c^3 while having a regular progressive measure, do not have an equal spacing or distance between the lines; but the spacing or distance between such lines is variable, having an increase at times and a decrease at other times, producing an irregular ratio for the progression. A series of straight lines f^3 extend from the edge a^3 to the edge c^3, and at the crossing-points of each line f^3 with a curved line of the edge c^3 is a mark or perforation e^3, and a mark or perforation g^3 is made at the juncture of each line c^3 with the edge a^3. Each cross-line f^3 has a numeral for length of waist measure, and each curved line of the edge c^3 has a numeral for around the waist measure.

The corresponding edges, lines, and perforations or marks of the sections or divisions E F G H and A B C D are lettered the same and are for the same purpose in producing patterns, and these edges, lines, and perforations or marks are fully described for the sections or divisions A B C D and need not therefore be repeated for the sections or divisions E F G H.

The sections or divisions are used as follows: The measure of the person for whom the waist is intended is taken in the usual manner for an easy bust measure, a snug waist measure, the length of front measure,

length of back waist measure, across the back measure, the neck measure, under-the-arm measure, and so on, and a record of the several measures is made, and by these actual measurements the pattern is produced by the use of the sections or divisions A B C D or E F G H, as the case may be. The pattern for the back is produced by laying the section or division therefor, either A or E; on the pattern-paper, and making a dot or prick with a pencil or other instrument for the corner of the edges *a* and *b*. A dot or prick is made at the perforation or mark *k* of the edge *a* for the line *j*, having the numeral corresponding to the length of waist measure taken. A dot or prick is made at the edge *b* for the mark or perforation *f*, having the numeral for the neck measure taken. A dot or prick is made at the perforation or mark *g* of the edges *c* and *d* for the neck and width across back measure taken. A dot or prick is made at the perforation or mark *h* of the selected line *a* and its edge *e*, and dots or pricks are made by the perforations or marks on the selected edge *e*. A dot or prick is made at the perforation or mark *i* for the crossing of the line *j*, having the numeral for length of waist taken, and the selected edge *e*, and dots or pricks are made at the perforations or marks *m* and *o* for the edges *l* and *n*, which meet the selected waist-line *j*. The dots or pricks thus made form an outline, from which the edges *a*, *b*, *c*, *d*, *e*, *l*, and *n* of the pattern desired can be produced by joining the dots or pricks with a tracing-wheel or otherwise, and this pattern will be correct at all points for the back of the waist, as it is based on actual measurements for the several edges. The pattern for a side body back is produced by laying the section therefor, either B or F, on the pattern-paper and making a dot or prick at the perforation or mark *f'* for the juncture of the edge *a'* and the edge *d*, having the numeral corresponding to the width of back measure taken. The selected edge *a'* is followed down and a dot or prick is made for the perforation or mark *k'* at the crossing-point of this edge *a'* and the waist-line *j'*, having the numeral for waist measure taken. A dot or prick is made at the perforation or mark *b'* for the selected edge *d'* and its edge *e'*. A dot or prick is made at the perforation or mark *i'* of this edge *e'* and the waist-line *j'* taken. Dots or pricks are made at the perforations or marks *h'* on the selected edges *a'* and *e'*. Dots or pricks are made at the marks or perforations *m'* and *o'* of the edges *l'* and *n'*, which meet the selected waist-line *j'*, and the edge *e'* determines also the size of waist from the measure taken on the line *j'*. The marks or pricks thus made form an outline by which the edges *a'*, *d'*, *e'*, *l'*, and *n'* of the desired pattern can be produced by joining the dots or pricks with a tracing-wheel or otherwise, making a pattern on the basis of actual measurements taken which will be correct for the side body back. The pattern for the front of the waist is produced by laying the section or division therefor, either C or G, on the pattern-paper, making dots or pricks for the edge *a''* of the bust measure taken. Dots or pricks are made for the edge *b''* of the neck measure taken. Dots or pricks are made for the edge *c''*, running from the selected edge *b''*. Dots or pricks are made for the edge *e''* from the mark or perforation *g''* of the selected edge *c''* to the end *h''* of the edge *d''*. The mark or perforation on the end *h''*, having the numeral for the bust measure, selects the edge *e''*, and at the perforations or marks *l''* on this edge *e''* dots or pricks are made both sides of the lines *j''*. A dot or prick is made for the perforation or mark *i''* at the crossing-point of the edge *e''*, and the waist-line *j''*, having thereon the numeral for length of waist measure taken, which mark or prick also indicates the size around the waist for the measure taken. The length of dart is selected by the numeral of the bust measure taken, and dots or pricks made on the lines *m''* of the selected darts at the perforations or marks *q''*. Dots or pricks are made at the marks or perforations *n''* and *o''* for the top and bottom of the darts, and for large busts dots or pricks are made on the lines *r''* and *s''* for the V-pieces. The dots or pricks thus made form an outline from which the edges *a''*, *b''*, *c''*, *d''*, *e''*, and *m''*, by which a pattern of the desired size can be produced by joining the dots or pricks with a tracing-wheel or otherwise, making a pattern on the basis of actual measurements taken, which will be correct for the front of the waist. The pattern for the front side body of a waist is produced by laying the section or division therefor, either D or G, on the pattern-paper and making dots or pricks for the edge a^3, having the numeral of the bust-measure taken. Dots or pricks are made for the edge b^3, and from the perforation or mark on the edge b^3, having the numeral of the bust-measure, the edge c^3 is selected, and on this edge c^3, at the perforations or marks k^3 on both sides of the waist-lines f^3, dots or pricks are made for such edge c^3. A dot or prick is made at the perforation or mark e^3 of the crossing-points of the edge c^3 and the line f^3, having the numeral for length of waist and size around the waist-measure. The dots or pricks thus made form an outline by which a pattern of the desired size can be produced by joining the dots or pricks with a tracing-wheel or otherwise, making a pattern on the basis of actual measurements taken, which will be correct for the front side body.

The pattern-paper, if thin, can be laid over the several sections or divisions of the pattern and the dots or pricks made thereon or therein for the edges, lines, and perforations or marks for the size of pattern desired, and a tracing-wheel or other means can be used to develop the selected lines and produce the pattern.

The scales or series of numerals on the sev-

eral sections or divisions indicating length of front, length of back, length under arm, width of back, size of bust, size around waist, size of neck, &c., can be divided into fractions of inches, if so desired, and the various lines for the measures be made accordingly.

The several sections or divisions can have their outer defining-edges used as guides for connecting the dots or pricks for corresponding edges to form the lines on the pattern-paper for the desired pattern.

Each line of the series of lines on the several sections or divisions, except the waist-line, is, in effect, an edge, so that each section or division is made up of a series of edges producing a multiple of patterns, and the perforations or marks on the lines or edges are not absolutely necessary, but assist in making the dots or pricks; but such dots or pricks on the pattern-paper can be made by the guiding-lines of the sections or divisions without such lines having perforations or marks.

Each section or division by its series of edges will produce the various lines for a multiple of patterns, thereby enabling a multiplicity of patterns to be readily produced, and each pattern produced must be correct, as it will be based on the actual measurements taken. The series of lines on each section or division are clear and distinct one from the other and do not intermingle so as to confuse, and by the use of the several divisions or sections a complete and perfect pattern of any desired size is produced, each division or section producing the pattern for which it is especially designed on the basis of actual measurements—that is to say, a forty-eight-inch bust, a sixteen-inch across the back, a seventeen-inch length of waist, a thirty-two-inch waist, and other actual measurements can be had by selecting the edges and lines for such measurements—the result being a pattern of the actual measurements taken and not a pattern having a discrepancy in some of its measurements, as is the case in using a bust or other single measure for computing all the other measurements.

It will be noticed that each section or division of the pattern forms an essential part in producing the complete pattern, and at the same time each section or division produces its own particular portion of the pattern on the actual measurements of the part of the waist for which the section or division is intended, thus establishing a unity of relation between the several sections or divisions of the pattern without in any manner affecting the use of each section or division for its special purpose.

The female body is so formed that among normally-shaped individuals the increase in the bust-measure is not attended by an increase in the same ratio around the waist, but the ratio of increase for the latter is less—that is to say, the contrast between the girth of bust and the girth of the waist becomes sharper as the bust increases—and a similar rule obtains for the relative increase of width of back and length around waist.

It will be observed that the spacing between the lines *e*, Fig. 1, *e'*, Fig. 2, *e''*, Fig. 3, and e^3, Fig. 4, while increasing in progressing outward from the innermost line, do not space in an equal ratio, but have an increased and decreased variance, and this variance corresponds to the conditions, requirements, and measurements for large and small busts.

The swell of the bust becomes more abrupt for the larger busts, and to provide for this condition the arrangement of the darts *n''* *o''* is had, as shown in Fig. 3, where, it will be seen by reference to the bust measures, that an increase in height is had as the bust measure diminishes.

The progression of the spaces or distances between certain lines on the charts, as before stated, while having a regular progression of measurement, do not have a regular ratio, but a variable one, as is clearly shown in the drawings, and this progression involves an increase in ratio or space at times, and a decrease at other times. Thus, for example, in the section for the back of the waist, Fig. 1, the curved lines *e*, corresponding to a series of measurements increasing in the uniform ratio of one inch for each succeeding measurement, as indicated on the scale at the terminals of these lines, are not at equal distances apart; but these distances are conspicuously irregular. The distance from 11 to 12 is greater than from 10 to 11; from 12 to 13 less than from 11 to 12, and from 13 to 14 there is again an increase, and so on, the ratio of progression being altogether irregular. This irregular progression in the distances of the lines and terminals corresponding to a regular progression in the actual measurements applies to at least one series of lines or edges of all the sections of my patterns, and is one of the features of my invention which distinguishes it from all the patterns heretofore made, which are all based upon a regular progression in the distances apart of the lines corresponding to a regular progression in the actual measurements of the person to be fitted. This irregular progression in the distance and scales has been found in actual practice to be necessary and indispensable in order to provide for the taking up of the material, both in length and breadth, arising by the differential ratio of increase found to exist for various busts, and the increase in large busts is more pronounced than in small, while the decrease in small busts is more pronounced than in large, and the pronounced increase in large busts is not only across the bust, but also below the bust, and extends under the arms, requiring a consequent increase of actual measurement for all sections or divisions of the pattern, and the same is true of the decrease. The increase of actual measurements is caused by the sur-

plus flesh, which uses the extra measure over the measure taken, and the decrease arises from the want of surplus flesh.

What I claim as new, and desire to secure by Letters Patent, is—

1. A multiplex waist-pattern consisting of sections, each section having defining-lines for progressive measurements from the smallest to the largest size pattern, said defining-lines varying by a differential ratio, substantially as described.

2. In a multiplex waist-pattern, a section of such pattern having defining-lines for progressive measurements from the smallest to the largest size pattern, said defining-lines varying in a differential ratio, substantially as described.

3. In a multiplex pattern for dress-waists, a section or division for the back, a section or division for the side body back, a section or division for the front, and a section or division for the side body front, each section or division having a defining-edge and a series of defining-lines for other edges, and having a varying ratio of progression for regular measurements, whereby a multiplicity of patterns can be had on actual measurements taken, substantially as specified.

MAY S. SCHAFER.

Witnesses:
O. W. BOND,
H. B. HALLOCK.