(No Model.) 2 Sheets—Sheet 1.

A. McDOWELL.

ADJUSTABLE PATTERN FOR DRAFTING TROUSERS.

No. 459,856. Patented Sept. 22, 1891.

Fig: 1.

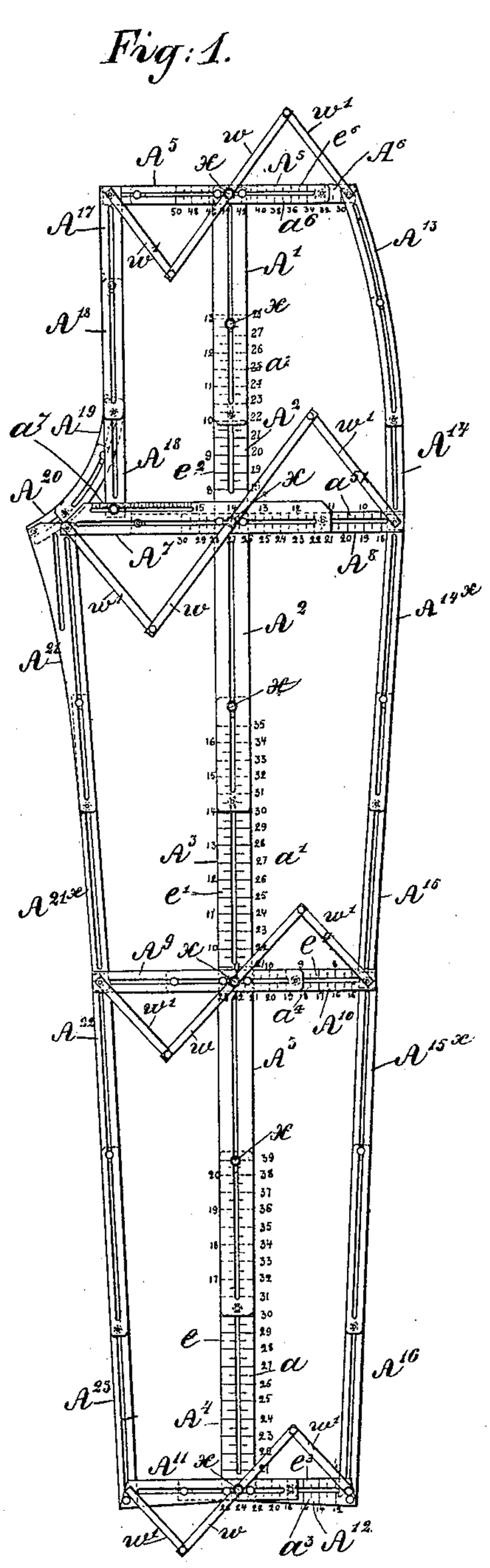
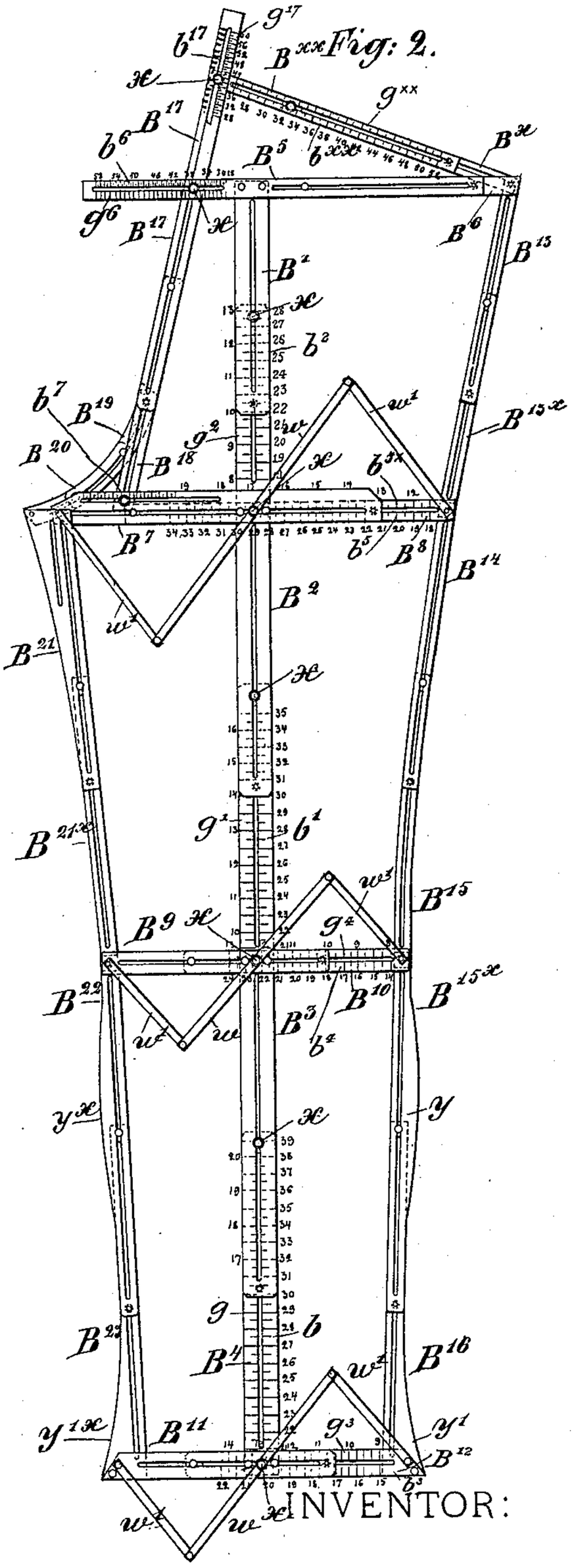


Fig: 2.



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By Henry Connett

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(No Model.) 2 Sheets—Sheet 2.

A. McDOWELL.

ADJUSTABLE PATTERN FOR DRAFTING TROUSERS.

No. 459,856. Patented Sept. 22, 1891.

Fig: 3.

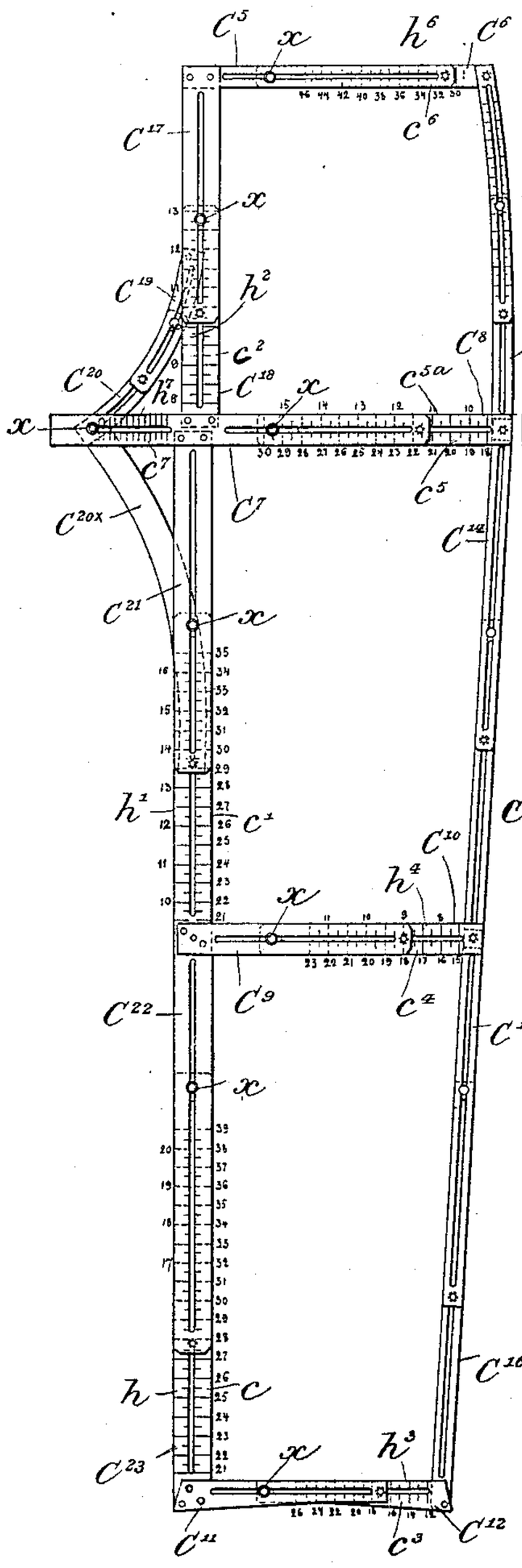
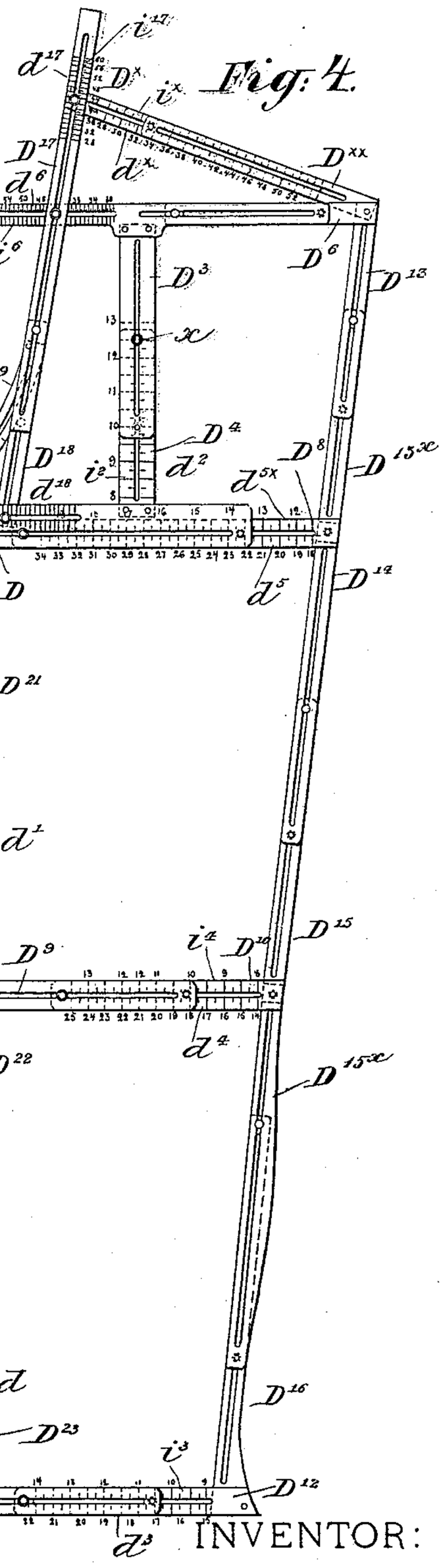


Fig: 4.



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ALBERT McDOWELL, OF NEW YORK, N. Y.

ADJUSTABLE PATTERN FOR DRAFTING TROUSERS.

SPECIFICATION forming part of Letters Patent No. 459,856, dated September 22, 1891.

Application filed May 6, 1891. Serial No. 391,844. (No model.)

To all whom it may concern:

Be it known that I, ALBERT McDOWELL, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain Improvements in Adjustable Patterns for Drafting Garments, of which the following is a specification.

My invention relates to that class of patterns, usually of metal, which are made of parts adjustably connected together, whereby the pattern may be set or adjusted to the measures taken and the parts then clamped together. When so set, the cloth or material or paper patterns may be outlined or marked by following the outlines of the adjustable pattern. Such patterns are usually provided with scales whereby the parts may be adjusted.

The object of my present invention is to provide a pattern of the above character for cutting out trousers from the usual measures taken by the tailor. A pair of trousers is made up in the main of two like or substantially like halves or divisions, each of which consists of a front and back part, which are united at their edges by seams to form the leg portion, seat portion, and waist portion, and I provide an adjustable pattern for the said front part and another for the back part two patterns only being required. After the measures have been taken in the usual way these patterns are set thereto and the parts clamped fast. It is only necessary then for the tailor or cutter to lay the patterns on the goods and mark the outline of the same on the latter. The goods may then be cut along the line marked.

In the accompanying drawings, which serve to illustrate two embodiments of my invention, Figure 1 is the part pattern for the front portion of the trousers, and Fig. 2 the part pattern for the back portion thereof. These views show an embodiment of the invention where the lateral expansion and contraction is on both sides of a central base-line. Figs. 3 and 4 are respectively similar views illustrating an embodiment of the invention where the lateral expansion and contraction is nearly all at one side of a base-line.

My pattern will usually be made of sheet-metal, but other materials may be used in its construction. The plates forming the outline where seams are required may be of the proper width to allow for the seam. The outer margin, generally speaking, marks the cutting-line.

The several parts or plates of the pattern are connected together in three ways—namely, by rivets or integrally, which for convenience I will characterize by the phrase "rigidly connected;" by a hinge, rivet, or stud to form a joint or articulation, which I will characterize as "hinged," and by slots and rivets or screws, so that the plates are at liberty to slide on each other for purposes of adjustment, which I will characterize simply as "connected."

Referring to Fig. 1, which represents the part pattern for the front portion of the trousers, plates A', A^2, A^3, and A^4 form the longitudinal base-bar of the pattern, and plates A^5, A^6, A^7, A^8, A^9, A^{10}, A^{11}, and A^{12} the transverse bars thereof. Plate A^2 is connected at its upper end to plate A' and at its lower end to plate A^3. Plate A^3 is connected at its lower end to plate A^4. These connected plates form a rigid base-bar, adjustable longitudinally at three points, and these adjustments are independent of each other and of the lateral or transverse adjustments, to be hereinafter described. Plates A^5 and A^6 are connected together and to the plate A' and form the transverse waist-bar. Plates A^7 and A^8 are connected together and to plate A^2 to form the transverse crotch or seat bar. Plates A^9 and A^{10} are connected together and to plate A^3 to form the transverse knee-bar, and plates A^{11} and A^{12} are connected together and to the plate A^4 to form the transverse bottom bar. The above-described connected plates form the skeleton or frame of the pattern, said bars being all extensible lengthwise and provided with scales for setting to measure and clamp-screws for securing them when properly set. The adjustment of each transverse bar may be effected independently of that of the others and of the adjustments of the base-bar. The waist-bar and bottom bar also form parts of the outline of the pattern. On the right-hand side of the pattern, as seen in Fig. 1, the plates A^{13}, A^{14}, $A^{14\times}$, A^{15}, $A^{15\times}$ and A^{16} form

the outline at the outside seam. Plate A^{13} is hinged to plate A^6 at its upper end and connected to plate A^{14} at its lower end. Plate A^{14} and plate $A^{14\times}$ are hinged to plate A^8, and plate $A^{14\times}$ is connected at its lower end to plate A^{15}. Plate A^{15} and plate $A^{15\times}$ are hinged to plate A^{10}, and plate $A^{15\times}$ is connected at its lower end to plate A^{16}, and this latter plate is hinged at its lower end to plate A^{12}. On the left-hand side of Fig. 1 the plates A^{17}, A^{18}, A^{19}, and A^{20} form the outline at the fly on the front, and the plates A^{21}, $A^{21\times}$, A^{22}, and A^{23} form the outline of the inside seam of the leg. The plate A^{17} is hinged at its upper end to the plate A^5, and at its lower end it is connected to the plate A^{18}. The latter is connected at its lower end to the transverse plate A^7 through the medium of a longitudinally-extending slot in the latter. The plates A^{19} and A^{20} are curved and connected together, the former being hinged at its upper end to plate A^{18}, and the plate A^{20} being hinged at its lower end to an outwardly-projecting angle at the upper end of plate A^{21}. This latter plate, which is broad at its upper part, is hinged at its inner angle to the outer end of the plate A^7. The outer edge of plate A^{21} is curved, and it is connected at its lower end to the plate $A^{21\times}$, This latter plate and plate A^{22} are hinged to the transverse plate A^9, and plate A^{22} is connected at its lower end to plate A^{23}. The plate A^{23} is hinged at its lower end to the transverse plate A^{11}. This construction permits the pattern to be expanded and contracted both laterally and longitudinally.

The pattern may be set to the measures as follows: The connected plates A^3 and A^4 are adjusted to the measure from the knee to the bottom of the leg by the graduated scale a on plate A^4 and the plates are clamped together. The plates A^2 and A^3 are adjusted to the measure from knee to crotch by the scale a' on plate A^3 and the plates clamped fast. The plates A′ and A^2 are adjusted to the measure from crotch to waist by the scale a^2 on plate A^2 and these plates clamped fast. These measures give the length. The width at the bottom of the leg is obtained by adjusting plates A^{11} and A^{12} to the scale a^3 on plate A^{12} and the plates clamped fast. The plates A^9 and A^{10} are adjusted to the measure at the knee by the scale a^4 on plate A^{10} and the plates clamped fast. The plates A^7 and A^8 are adjusted to the measure about the hips or seat by the scale a^5 and the plates clamped fast, and the plates A^5 and A^6 are adjusted to the waist-measure by the scale a^6 on plate A^6 and these plates clamped fast. The plates at the sides of the pattern will adjust themselves automatically. The pattern thus adjusted is ready for use.

In order to effect the required adjustment at both sides of the central longitudinal base-bar formed of the plates A′ to A^4, I provide the pattern with four sets of links or spreading devices—one at the waist-bar, one at the crotch-bar, one at the knee-bar, and one at the bottom bar. These devices consist each of a link or lever w, pivoted or hinged at its middle on the central longitudinal bar, and two links w', coupled to the respective ends of the link w at one end and to the respective ends of the transverse bar at their other ends. These sets of links are so clearly illustrated in Fig. 1 that they will require no further description.

The clamping of the sliding plates together may be effected by any suitable clamping devices. I prefer to employ clamping-screws x, one at each point of adjustment. The numerals of the several scales will of course be marked on the plates forming the pattern; but owing to the small scale of the drawings these numerals have been herein represented as at the sides of the several graduated plates.

Fig. 2 illustrates the part pattern for the back or rear portion of the trousers. This pattern will be constructed on substantially the same principles as that described. It will have a longitudinal base-bar composed of plates B′, B^2, B^3, and B^4, and a crotch-bar, knee-bar, and bottom bar composed, respectively, of connected plates B^7, B^8, B^9, B^{10}, B^{11}, and B^{12}. The plates B^2, B^3, and B^4 will be provided, respectively, with scales b^2, b', and b, and the plates B^8, B^{10}, and B^{12} will be provided, respectively, with scales b^5, b^4, and b^3. The crotch-bar, knee-bar, and bottom bar will each be provided with a spreading device consisting of a lever w and links w', like the corresponding devices shown in Fig. 1 and hereinbefore described. The plates at the right-hand side of Fig. 2 and which correspond to the outside seam of the leg—namely, B^{13}, $B^{13\times}$, B^{14}, B^{15}, $B^{15\times}$, and B^{16}—will be joined or coupled in the same manner as the corresponding plates in Fig. 1. Plate $B^{15\times}$ may have a convex contour at y just below the knee, and plate B^{16} will have a salient contour at the bottom y'. The plates at the left-hand side of Fig. 2 from the crotch down and corresponding to the inside seam of the leg—namely, B^{21}, $B^{21\times}$, B^{22}, and B^{23}—will be joined or coupled in the same manner as the corresponding parts in Fig. 1. Plate B^{22} may have a convex contour at $y^\times$ just below the knee, and plate B^{23} will have a salient contour at the bottom $y'^\times$. The widening of the pattern at the bottom is to impart the "spring" to the bottom of the leg of the trousers. Above the crotch-bar this pattern differs somewhat in construction from that seen in Fig. 1. The plate B^5 is rigidly connected to the plate B′ and is arranged at right angles thereto. The plate B^6 is connected to the plate B^5 and hinged to the upper end of the plate B^{13}. There is no scale on plate B^6. The plate B^{17} is connected to the prolonged extremity of plate B^5, which it crosses, the plate B^5 being slotted at the connecting-point and provided with a scale b^6. The plate B^{18} is connected to the lower end of plate B^{17}, and at its lower end it is connected to plate B^7 in the same manner that plate A^{18}, Fig. 1, is connected to plate A^7. The curved plates B^{19} and B^{20}

are arranged in the same way as the corresponding plates A^{19} and A^{20} in Fig. 1. Above the plate B^5 is an inclined waist-bar composed of plates $B^\times$ and $B^{\times\times}$. The plate $B^\times$ is hinged to the plate B^{13} at the same point at which the plate B^6 is hinged thereto. The plate $B^{\times\times}$ is connected to the plate $B^\times$, and at its other end it is connected to the upper part of the plate B^{17} above the plate B^5. The plate B^{17} has in it a longitudinal slot, and a clamp-screw on the plate $B^{\times\times}$ plays in this slot.

In setting this pattern to the measures the longitudinal bar is set to the measures for length from waist to crotch, crotch to knee, and knee to bottom, as before described with reference to Fig. 1, and transverse crotch-bar, knee-bar, and bottom-bar are also set to the respective measures, as set forth in the description of Fig. 1. The pattern is set to the waist-measure by the scale $b^{\times\times}$ on the plate $B^{\times\times}$, and the slope of the inclined bar is attained through the medium of the scale b^{17} on plate B^{17}.

It will be seen that my pattern is composed of two separate but interdependent parts, each provided with scales, whereby the pattern may be set to the measures taken by the tailor, and that each part is divided longitudinally from the crotch down into two extensible sections, whereby the pattern may be set or adjusted to the measure from crotch to knee and from knee to bottom. It is also laterally extensible, so that it may be set or adjusted at the three points—namely, the crotch, knee, and bottom—to the measures taken at these points. At the crotch a scale is provided for what is called the "body-depth." In Fig. 1 this scale a^7 is seen on plate A^7, the lower end of plate A^{18} being set to this scale, and in Fig. 2 this scale b^7 is seen on plate B^7.

It is desirable to provide the pattern with two sets of scales, one adapted for use with the ordinary or actual measures taken by the tailor, as already described, and the other being proportional scales for cutting out ready-made trousers to be kept in stock. For example, if the seat-measure be taken as the standard for proportion, and this measure in a particular case be thirty-six inches, then all the proportional scales on the pattern will be set at the numeral 36, in order to cut a garment having the desired proportion. In Fig. 1 these proportional scales are indicated, respectively, by the letters e, e', e^2, e^3, e^4, and e^6, and in Fig. 2 they are indicated, respectively, by the letters g, g', g^2, g^3, g^4, g^6, $g^{\times\times}$, and g^{17}. There will be two scales on the crotch-bar by preference, one for the seat or hip measure, marked a^5 in Fig. 1 and b^5 in Fig. 2, and the other for the hip-measure, marked $a^{5\times}$ in Fig. 1 and $b^{5\times}$ in Fig. 2. This will enable the tailor to set his pattern by either of these measures, as he may desire.

The construction of the pattern, as illustrated in Figs. 3 and 4, differs from that already described in having the longitudinal base-bar arranged at one side or edge instead of in the middle and in having the lateral adjustments nearly all at one side of said bar. Then the equalizing devices seen in Figs. 1 and 2 are dispensed with.

Fig. 3 is a part pattern for the front portion of the trousers and corresponds to the pattern seen in Fig. 1. At the left-hand side is a marginal base-bar corresponding to the fly and the inside seam of the leg and comprising the plates C^{17}, C^{18}, C^{19}, C^{20}, $C^{20\times}$, C^{21}, C^{22}, and C^{23}. The transverse bars are formed of the following-named plates: The waist-bar of plates C^5 and C^6, the seat-bar of plates C^7 and C^8, the knee-bar of plates C^9 and C^{10}, and the bottom bar of plates C^{11} and C^{12}. The plate C^{17} is rigidly secured to the plate C^5 at its upper end, and is connected at its other end to the plate C^{18}. This latter plate is rigidly secured to the plate C^7 at its lower end. The plate C^{21} is rigidly secured at its upper end to the plate C^7, and is connected at its lower end to the plate C^{22}. The plate C^{22} is rigidly secured to the plate C^9, and is connected at its lower end to plate C^{23}, which latter plate is rigidly secured to the plate C^{11} of the bottom bar. The curved plates C^{19} and C^{20} are connected together, and the plate C^{19} is hinged to the plate C^{18} at its upper end. At its lower end the plate C^{20} is connected to a slotted prolongation on the plate C^7. The plate $C^{20\times}$ is also curved. It is connected to the plate C^7 at the same point with plate C^{20}, and is connected through the medium of a slot in its lower end with the plate C^{21}. Of the transverse bars the two plates of which each bar is composed are connected together. The contour of the pattern at the right-hand side in Fig. 3, which corresponds to the outside seam of the trousers, consists of the connected plates C^{13}, $C^{13\times}$, C^{14}, $C^{14\times}$, C^{15}, and C^{16}. Plate C^{13} is hinged to plate C^6, plates $C^{13\times}$ and C^{14} are hinged to plate C^8, plates $C^{14\times}$ and C^{15} are hinged to plate C^{10}, and plate C^{16} is hinged to plate C^{12}. The ordinary or actual measures of length are set on the scales c, c', and c^2 on the respective plates C^{23}, C^{22}, and C^{18}, and the transverse measures are set on the scales c^3, c^4, c^5, and c^6 on the respective plates C^{12}, C^{10}, C^8, and C^6. The measure of body-depth at the crotch is set on the scale c^7 on plate C^7, along which the clamp-screw x, which connects the plates C^{20} and $C^{20\times}$ thereto, may be moved. On this pattern h, h', h^2, h^3, h^4, h^6, and h^7 are the proportional scales before referred to in describing the patterns illustrated in Figs. 1 and 2.

Fig. 4 is the part pattern of the back portion of the trousers, said pattern corresponding to the pattern illustrated in Fig. 2, except that as in Fig. 3 the lateral expansion and contraction is nearly all at one side and not equally on opposite sides of a central longitudinal base-bar. Above the crotch-bar the construction is practically the same as in Fig. 2, and below the said bar it is substantially the same as the lower portion of the pattern in Fig. 3. Consequently only a brief description will

be needed. The longitudinal measurements are set on the base-bar, comprising the plates D^3 and D^4 above the crotch-bar and the plates D^{21}, D^{22}, and D^{23} below said bar. These plates constitute the longitudinal base-bar. The transverse bars are composed of the plates $D^{\times}$, $D^{\times\times}$, D^5, D^6, D^7, D^8, D^9, D^{10}, D^{11}, and D^{12}. Plate D^3 is rigidly connected to plate D^5 and connected to the plate D^4, and this latter plate is rigidly connected at its lower end to plate D^7. Plate D^{21} is rigidly connected to plate D^7 and connected to plate D^{22}. Plate D^{22} is rigidly connected to plate D^9 and connected at its lower end to plate D^{23}. This latter plate is rigidly connected to plate D^{11}. The waist-bar comprises the connected plates D^5 and D^6, the crotch-bar of the connected plates D^7 and D^8, the knee-bar of the connected plates D^9 and D^{10}, and the bottom bar of the connected plates D^{11} and D^{12}. The inclined bar above the waist-bar is composed of the connected plates $D^{\times}$ and $D^{\times\times}$. Plates $D^{\times\times}$, D^6, D^8, D^{10}, and D^{12} are hinged to the respective connected plates D^{13}, $D^{13\times}$, D^{14}, D^{15}, $D^{15\times}$, and D^{16}, which form the outline at the outside seam of the trousers. The actual or ordinary measures are set on the scale d, d', d^2, d^3, d^4, d^5, d^6, d^7, d^{17}, and $d^{\times}$, and the proportional measures may be set on the scale i, i', i^2, i^3, i^4, i^6, i^7, i^{17}, and $i^{\times}$. The thigh-measure may be set on the scale $d^{5\times}$ on the crotch-bar plate D^8. The connected plates D^{17} and D^{18} are arranged the same as the corresponding plates in Fig. 2, and the curved plates D^{19}, D^{20}, and $D^{20\times}$ are arranged the same as the corresponding plates in Fig. 3.

The pairs of curved plates A^{19} A^{20} in Fig. 1, B^{19} B^{20} in Fig. 2, C^{19} C^{20} in Fig. 3, and D^{19} D^{20} in Fig. 4 perform the same function in all of these part patterns, and this function is to regulate the depth of the body. Consequently the pair of plates is made adjustable at one end or the other toward and from the longitudinal base-bar or the axis of the part pattern. In Figs. 1 and 2, for example, the pair of curved plates is adjustable at its upper end by the shifting of the plates A^{18} and B^{18}, while in Fig. 3 it is adjustable at its lower end along the slot in the transverse plate C^7, the curved plate $C^{20\times}$ being shifted simultaneously therewith.

By reason of the improvements herein described a pattern is provided which will hold its form or maintain its general contour when unclamped and will at the same time allow of the necessary expansion or contraction in every direction and to the extent required for ordinary use. When set and clamped it will be rigid and afford a complete outline pattern, about which the tailor or fitter may run his chalk with perfect ease and with assurance of its correctness.

I do not wish to limit myself to the precise construction herein shown, as this may be varied to some extent without departing materially from my invention.

The plates of which the pattern is composed may be of convenient width and of any suitable material.

The adjustable pattern is designed especially for use in drafting trousers and garments of a similar character, such as drawers, overalls, &c., and in drafting paper patterns for such garments.

Having thus described my invention, I claim—

1. A part pattern for drafting trousers and similar garments, composed of connected plates which slide on each other at the points of adjustment, and consisting of a centrally-arranged, longitudinally-extensible, and rigid base-bar having three independently-extensible points of adjustment and scales at these points, transverse independently-extensible bars at the waist, crotch, knee, and bottom crossing and connected with said base-bar and each having a scale for setting it to measure, the outline or marginal plates and spreaders, one at each of said transverse bars, each spreader consisting of a lever pivotally attached at its middle to the base-bar, and links which couple the respective ends of said lever with the ends of the base-bar, as set forth.

2. The part pattern for drafting the front of the trousers, composed of connected plates which slide upon each other at the several points of adjustment, and consisting of the longitudinally-extensible base-bar, the extensible transverse bars which cross the base-bar and are connected therewith, the series of plates A^{21}, $A^{21\times}$, A^{22}, and A^{23}, forming the outline for the inside seam, said series of plates being connected to the transverse bars, and the plates A^{17}, A^{18}, A^{19}, and A^{20}, forming the outline of the fly, said plates A^{17} and A^{18} being connected together, the former hinged to the waist-bar and the latter having a sliding connection with the crotch-bar, and the curved plates A^{19} and A^{20} being connected together, the former hinged to the plate A^{18} and the latter to the outline plate A^{21}, as set forth.

3. In an adjustable part pattern for drafting the front of the trousers, the combination of the several plates connected together and arranged in the manner following, namely: the plates A', A^2, A^3, and A^4, which form the base-bar and slide on each other at the points of adjustment, the plates A^5 and A^6, which form the transverse waist-bar and slide on each other, the plates A^7 and A^8, which form the transverse crotch-bar and slide on each other, the plates A^9 and A^{10}, which form the transverse knee-bar and slide on each other, the plates A^{11} and A^{12}, which form the transverse bottom bar and slide on each other, the plates A^{13}, A^{14}, $A^{14\times}$, A^{15}, $A^{15\times}$, and A^{16}, forming the outline at the outside seam, said plates sliding on each other where connected, and the series of plates hinged to the ends of the transverse bars, the plates A^{17} and A^{18}, connected together and sliding on each other,

the plate A^{17} being hinged to the plate A^5 and the plate A^{18} connected to the plate A^7, the curved plates A^{19} and A^{20}, connected and sliding on each other, the plate A^{19} being hinged to the plate A^{18} and the plate A^{20} hinged to the plate A^{21}, and the plates A^{21}, $A^{21\times}$, A^{22}, and A^{23}, which form the outline at the inside seam, connected and sliding on each other, said series of plates being hinged to the transverse bars, substantially as set forth.

4. In an adjustable part pattern for the front of the trousers, the combination, with the transverse slotted plate A^7, provided with a scale a^7, the exteriorly-curved plate A^{21}, the transverse plate A^5, and the plates A^{17} and A^{18}, connected together, the former hinged to plate A^5 and the latter connected to plate A^7 at the said scale, of the connected curved plates A^{19} and A^{20}, hinged at one end to plate A^{18} and at the other end to plate A^{21}, said plates sliding upon each other where connected, substantially as set forth.

5. In an adjustable part pattern for the back of the trousers, the combination of the connected plates $B^\times$ and $B^{\times\times}$, forming the inclined bar above the waist and sliding on each other, and the plates B^{17} and B^{18}, forming the outline for the back seam and also sliding on each other, the inclined bar having a slotted connection with said plate B^{17}, substantially as set forth.

6. In an adjustable part pattern for the back of the trousers, the combination of the connected plates B^7 and B^8, forming the extensible transverse crotch-bar, the connected plates B^5 and B^6, forming the extensible transverse waist-bar, the connected plates B' and B^2, which unite the said waist-bar and the crotch-bar and form an extensible base-bar provided with a scale b^2, the connected outline-plates B^{13} and $B^{13\times}$, of which the former is hinged to the waist-bar and the latter to the crotch-bar, the connected outline-plates B^{17} and B^{18}, of which the former has a slotted connection with the plate B^5 and the latter a like connection with the plate B^7, the connected plates $B^\times$ and $B^{\times\times}$, of which the former is hinged to the plate B^{13} and the latter has a slotted connection with the plate B^{17}, the connected curved plates B^{19} and B^{20}, of which the former is hinged to the plate B^{18} and the latter to plate B^{21}, and said plate B^{21}, the adjustments being independent and the plates sliding upon each other where connected.

7. An adjustable part pattern for drafting trousers, composed of connected plates, which slide upon each other at the several points of adjustment and having a pair of curved plates connected and sliding upon each other, which plates form the outline at the crotch, said pair of connected plates being adjustable toward and from the longitudinal axis of the pattern at one extremity independently of the other adjustments of the pattern, for the purpose of varying the depth of the body, as set forth.

8. In an adjustable part pattern for drafting the back of the trousers, the combination of the several plates connected together and arranged in the manner following, namely: the plates B', B^2, B^3, and B^4, which form the base-bar and slide on each other at the points of adjustment, the plates B^5 and B^6, which form the transverse waist-bar and slide on each other, the plates B^7 and B^8, which form the transverse crotch-bar and slide on each other, the plates B^9 and B^{10}, which form the transverse knee-bar and slide on each other, the plates B^{11} and B^{12}, which form the transverse bottom bar and slide on each other, the plates B^{13}, $B^{13\times}$, B^{14}, B^{15}, $B^{15\times}$, and B^{16}, forming the outline at the outside seam, said plates sliding on each other where connected and the series of plates hinged to the ends of the transverse bars, the plates B^{17} and B^{18}, connected and sliding on each other, the plate B^{17} having a slotted connection with plate B^5 and the plate B^{18} having a slotted connection with plate B^7, the plates $B^\times$ and $B^{\times\times}$, connected and sliding on each other, the former hinged to plate B^6 and the latter having a slotted connection with plate B^{17}, the curved plates B^{19} and B^{20}, connected and sliding on each other, the former hinged to plate B^{18} and the latter hinged to plate B^{21}, and the plates B^{21}, $B^{21\times}$, B^{22}, and B^{23}, forming the outline at the inside seam, said plates being connected and sliding on each other where connected, and the series of plates being hinged to the transverse bars, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ALBERT McDOWELL.

Witnesses:
HENRY CONNETT,
CHAS. A. WALSH.