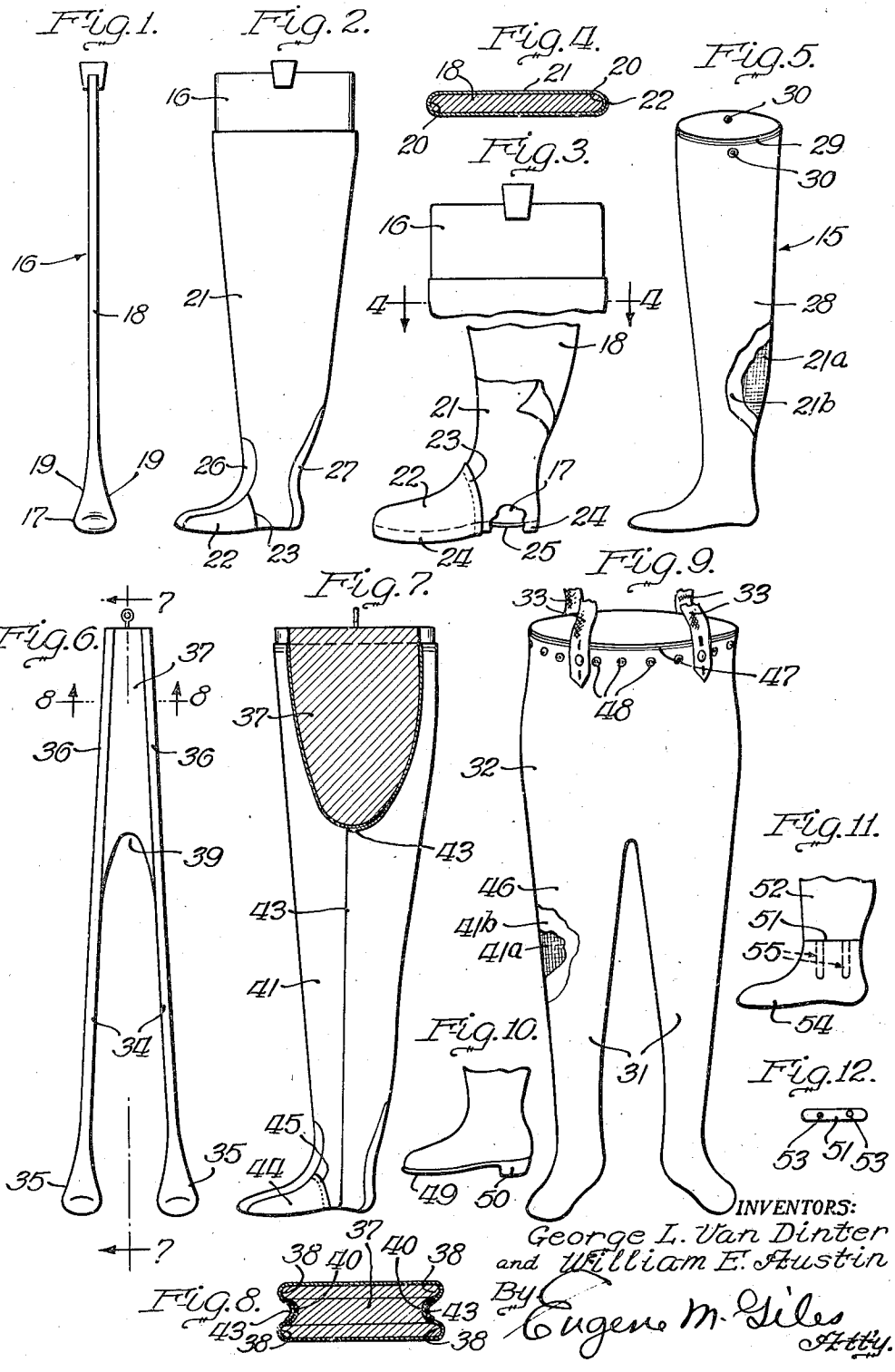
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BOOT FORM

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BOOT FORM

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Our invention relates to a form for making high top rubber boots or the like.

Rubber boots are made in various lengths, from knee length, or even shorter, to sporting types with long legs and wader types in which long legged boots are made integral with a trunk covering portion which extends up around the waist.

In making the knee length and shorter boots, it has been the prevailing practice to construct them on full shaped forms which have leg portions of the same general rounded shape as the legs on which they are intended to be worn, and with such forms the boots may be made either in the conventional manner with the outer rubber covering composed of suitable pieces of calendered rubber fitted and shaped thereon or they may be made by the more desirable dipping method, in which the outer rubber covering is provided by dipping the form with assembled lining thereon in a dispersion of rubber.

Full shaped forms, however, for the longer boots of sporting and wader types on which they could be made by the above mentioned dipping method, are expensive, heavy and cumbersome to handle and as large numbers thereof in many different sizes are required, it has been found impracticable to use full shaped forms therefor on which these longer boots could be made by the more desirable dipping method.

Therefore, it has been customary in making the longer boots of sporting and wading types, to assemble on full shaped forms, similar to those used for knee length boots, boots of somewhat less than knee length with outer rubber covering of either calendered rubber or dipped rubber, and to fabricate the rest of these longer boots separately—namely the upper leg portions of the sporting boots and the upper leg and trunk covering portions of the wader boots—usually by a sort of tailoring process in which properly cut pieces of rubber coated fabric are joined together in the proper upper leg covering or upper leg and trunk covering shapes, and then these separately fabricated portions are joined to the assembled short boots on the forms, after which the completely assembled sporting boots or wader boots are vulcanized, only the lower leg and foot portions, however, being mounted on a form at the time and the attached upper portion being merely loosely supported in some manner to avoid any contact and sticking together of the rubber surfaces at undesired places in the vulcanizing operation.

The principal objects of our invention are to provide an improved method of making rubber

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boots and the like; to permit long boots, such as sporting and wader types, to be made conveniently by the dipping method; to avoid the necessity of bulky cumbersome forms; to utilize forms with the leg and other upper portions thereof flattened; to permit foot portions of different sizes to be used with the flattened upper portions of the forms; and, in general, to facilitate the manufacture of rubber boots and minimize the cost thereof, especially the expense of the form; these and other objects being accomplished as pointed out hereinafter and as shown in the accompanying drawings, in which:

Fig. 1 is a front view of a boot from constructed in accordance with our invention and adapted for making individual boots of sporting type or similar length;

Fig. 2 is a side view of the boot form of Fig. 1 showing the boot lining assembled thereon;

Fig. 3 is an enlarged side view of the boot form of Figs. 1 and 2, with an intermediate portion omitted, and showing boot lining parts thereon;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3;

Fig. 5 is a perspective view of the completed boot, expanded in the form in which it is used and with portions broken away to show the layers of which the boot is composed;

Fig. 6 is a front view of a boot form constructed in accordance with our invention for making boots of the wader type in which the boot legs are integral with a body or waist covering portion which is designed to extend upwardly and cover a considerable portion of the trunk or body;

Fig. 7 is an enlarged section taken on the line 7—7 of Fig. 6 and showing the boot lining assembled thereon;

Fig. 8 is an enlarged section taken on the line 8—8 of Fig. 7, and showing the boot lining assembled thereon;

Fig. 9 is a perspective view of the wader boot as constructed on the form of Fig. 6 and expanded in the form in which worn;

Fig. 10 is a fragmentary view of a boot that may be constructed on these forms with ordinary sole and heel;

Fig. 11 is a fragmentary side view of the form with removable foot; and

Fig. 12 is an end view of the leg portion where it joins to the removable foot.

Referring to the drawings, the reference numeral 15 (Fig. 5) indicates a stocking foot boot of sporting length made in accordance with our invention, whereas Figs. 1, 2, 3 and 4 show the

form employed for making this stocking foot boot 15 and the manner of making same thereon.

This foot form, which is indicated at 16 and may be made of wood, metal or other appropriate material, has a foot portion 17 of foot shape like the conventional forms or lasts upon which boots and shoes are customarily made, but the leg portion 18, instead of being of full boot shape or of the general rounded form and shape of the leg on which the boot is to be used, as in the forms on which boots have previously been made, is flat and the foot portion 17 is sloped in, as indicated at 19, to merge into the flat sides of the flat leg portion 18 as clearly shown in the drawing.

The flat portion 18 is of suitable thickness to afford the required rigidity and also enough thickness to avoid excessively abrupt bends at the front and rear edges which are rounded as indicated at 20, a thickness of approximately three-quarters of an inch having been found quite satisfactory, and the width of the leg portion 18 from front to rear is sufficient throughout the length so that the boot built thereon will be of proper size, when opened up, to accommodate the leg of the intended wearer.

Boots may be made up in various ways on this form, that of the illustrated boot having a lining 21 of proper length for the boot, which said lining is wrapped around the form and has the edges overlapped and cemented together at the back as indicated at 22 in Fig. 4. This lining 21 is notched at the lower end to fit over the instep and a toe section 22 of the lining material is shaped over the instep and toe portion of the form and has the rear edges overlapped and cemented to the leg lining as indicated at 23.

The leg lining 21 is of knitted fabric 21A which has been previously calendered on the outer side with a skim coat 21B of rubber sufficient to render the lining impervious to the rubber dispersion which is subsequently applied on the assembled lining, and the toe section 22 is likewise of knitted fabric with skim coat of rubber. The leg lining 21 and toe section 22 have their lower edges 24 extended sufficiently below the bottom or sole portion of the form for lasting purposes.

After the lining 21 and toe section 22 have been assembled on the form, an insole 25 is placed on the bottom or sole portion of the form and the edges 25 are lasted thereover and cemented thereto.

This stocking foot boot is intended to be used with a shoe worn thereover, and to reinforce the boot at the places where strain and wear are likely to occur reinforcing strips 26 and 27 are applied on the assembled lining at the front and rear respectively and extend from the sole up the boot approximately eight inches so that they terminate above the top of the shoe that may be used on the boot. The shoes used with these boots are of tennis shoe type, and, in fact, tennis shoes may be worn therewith but special shoes are generally used which are made, like tennis shoes, with a canvas upper, but with a special sole more appropriate for the purpose.

After assembling the lining on the form as above, a rubber coating is applied all over the outside of the assembled lining and sole to provide the outer rubber covering 28, this being accomplished preferably by dipping the assembled lining on the form in a suitable dispersion of rubber after which the thus completed boot is vulcanized on the form.

Any desired finishing strips may be applied on the assembled boot as for example the top finishing strip 29 which is of rubber and applied before vulcanization of the boot, and grommets 30 or other fittings may be attached in the usual manner in which they are customarily attached to other rubber boots.

After completion of the boot on the form, the latter is removed therefrom and the boot is freely openable up to fit the leg as readily as any other boot.

Rubber boots of various lengths may be made in the same manner as the boot above described on flat leg forms and moreover these flat leg forms are adaptable to the making of wader type boots as shown in Figs. 6 to 9, inclusive, wherein the boot legs 31 (see Fig. 9) are integral extensions of a body covering portion 32 which may extend up under the armpits and have straps 33 for supporting the wader boot from the shoulders.

In making this wader type boot, two flat leg forms 34, each with an appropriate foot portion 35, like the foot portions 17 of Figs. 1 and 2, have corresponding waist portions 36 at their upper ends on which the body portion of the boot is to be made and these portions 36 are joined together through an intermediate flat spacer 37 which, together with the portions 36, provides sufficient peripheral length for the necessary body size or circumference of the body covering portion 32 of the boot. Preferably the side faces of the spacer 37 are at a slight inclination to one another so that the leg forms 34 diverge slightly from their upper to their lower ends as shown in Fig. 6.

The leg portions 34, like the leg portions 18 of the stocking foot boot form of Figs. 1 and 2, are approximately three-quarters of an inch in thickness and have their front and rear edges rounded as at 38 throughout their length and the spacer 37, which is of rounded crotch form at the bottom as indicated in Fig. 7, has the front, rear and bottom edges concavely curved as indicated at 39 in Fig. 6 and at 40 in Fig. 8 so that the crotch is transversely rounded to merge at opposite sides into the inner side faces of the leg portions 34 and the front and rear curved portions 40 merge into the reversely curved edges 38 of the portions 36, thereby avoiding any abrupt bends in the boot that is built on this form.

In building the boot on this two-legged form, two lining sections 41 of knitted fabric 41A calendar coated with a skim coat 41B of rubber on the outer sides, are prepared in the proper shape each to constitute a boot leg and one half of the body covering and one of these sections 41 is wrapped around one leg portion 34 of the form and the meeting edges overlapped and cemented together at the inside of the leg as indicated at 43. The other lining section 41 is likewise wrapped around the other leg portion 34 with the meeting edges overlapped and cemented together at the inside of the leg. Also edges of these sections are overlapped and cemented together around the crotch and up the front and back of the spacer 37 as indicated at 43 in Fig. 8.

At the lower ends of the legs each section 41 is notched to fit over the instep portion of the form as in the structure of Fig. 3 and a toe section 44 of the lining material is shaped over the respective instep and toe portion of the form and has the rear edges overlapping and cemented to the respective leg lining as indicated at 45. Thereafter an insole is applied to the bottom or sole portion of each foot portion 35 of the form and the lower edges of the respective lining sections 41 and 44 are lasted over and cemented to these insoles. Then after any desired reinforcing strips

have been applied such as the lining strips 26 and 27 of Fig. 2, a rubber coating is applied over the entire outer surface of the lining and insole assembly on the two-legged form, preferably by dipping to provide the outer rubber covering 46 after which the assembled structure is vulcanized on the form.

A finishing strip 47 of rubber may be applied around the top of this boot before vulcanization and after vulcanization and removal from the form, grommets 48 may be applied at intervals around the upper ends of the boot for a draw string, and suitable connections also provided for the shoulder straps 33.

This boot as thus constructed, like the sporting boot of Fig. 5, is of stocking foot type intended to be used with a tennis type shoe, but it will be understood that boots other than of the stocking foot type may also be made on these forms.

For example, these boots may be made with regulation sole 49 and heel 50 as shown in Fig. 10, by merely allowing the dipped boot to dry for a sufficient length of time, after which the soles 49 and heels 50 are cemented onto the boot while still on the form and before the vulcanization thereof which causes the heel and sole to become an integral part of the boot. It will also be understood that reinforcings other than the reinforcing strips 26 and 27 may be applied to the assembled lining wherever desired or required for the particular boot or type of boot that is being made in the form and that the invention is in no wise limited to the particular form or type of construction of boots which we have chosen to illustrate the invention.

Oftentimes, it is desirable to make boots with different foot sizes but having the same upper or leg size, and we contemplate making these forms with removable and interchangeable foot portions. To this end the foot portions may be separable from the leg portions of the forms as indicated at 51 in Fig. 12 and the leg portion 52 provided with dowel pins 53 and the foot portion 54 with dowel pin openings 55 fitting the dowel pins 53 sufficiently snugly to hold the foot portion securely in place at the lower end of the leg portion 52. Thus the foot portion 54 is removable and foot portions 54 of a number of different sizes may be provided with proper dowel pin openings to be optionally used with the leg portion 52 of the form, it being understood, of course, that these interchangeable foot portions are suitably formed so that when applied to the leg portion they will all provide a smooth flush connection therewith permitting the lining to be applied smoothly over the joint.

With the boot forms disclosed herein, rubber boots of sporting or wading lengths may be made conveniently by the dipping method as these forms are inexpensive, of relatively light weight and easy to handle and not only serve to support the lining in shape during the dipping and to support the completed boot in shape during vulcanization but, although flat, afford ample circumferential size and open up readily to the shape required for use.

Boots of any length may be made on these flat forms, even boots of knee length or lesser lengths, and these forms not only have the advantage of less expense and weight than full shaped forms, but economize space in the vulcanizer.

Moreover, boots may be made advantageously on these forms not only by the dipping method but also in the conventional manner with pieces

of calendered rubber or fabric with rubber calendered thereon cut to proper shapes and fitted and joined together on the form, and in the case of sporting and wader types of boots made up in this manner the entire boot is made up as a unit on the flat form and vulcanized thereon instead of the upper portions being made up separately by tailoring and subsequently attached to short boots on short boot forms as in the case of sporting and wading types of boots as they commonly have been made heretofore.

While we have shown and described our invention in a preferred form, we are aware that various changes and modifications may be made therein without departing from the spirit of the invention, the scope of which is to be determined by the appended claims. The term rubber employed herein is intended to include natural or artificial rubber or any other rubber-like material that is usable as and in place of natural rubber.

What is claimed is:

1. A boot making form comprising a foot portion and a leg portion and an ankle portion, the foot portion being fully foot shaped and of substantially greater width than the thickness of the leg portion, the leg portion being a relatively thin panel which extends upwardly from the foot portion and is of leg shaping only in the plane of the panel, said panel being located substantially midway between and inset from the opposite sides of the foot portion, and said ankle portion being between the foot and leg portions and shaped to merge at the bottom into the fully foot shaped foot portion and tapered upwardly at opposite sides to merge at the top into the flat panel.

2. A boot making form comprising a foot portion and a leg portion and an ankle portion, the foot portion being fully foot shaped and of substantially greater width than the thickness of the leg portion, the leg portion being a parallel sided relatively thin panel which extends upwardly from the foot portion and is of leg shaping only in the plane of the panel, said panel being located substantially midway between and inset from the opposite sides of the foot portion, and said ankle portion being between the foot and leg portions and shaped to merge at the bottom into the fully foot shaped foot portion and tapered upwardly at opposite sides to merge at the top into the flat panel.

3. A boot making form comprising a foot portion and a leg portion and an ankle portion, the foot portion being fully foot shaped and of substantially greater width than the thickness of the leg portion, the leg portion being a relatively thin panel, with rounded front and rear edges, which extends upwardly from the foot portion and is of leg shaping only in the plane of the panel, said panel being located substantially midway between and inset from the opposite sides of the foot portion, and said ankle portion being between the foot and leg portions and shaped to merge at the bottom into the fully foot shaped foot portion and tapered upwardly at opposite sides to merge at the top into the flat panel.

4. A boot making form comprising a foot portion and a leg portion and an ankle portion, the foot portion being fully foot shaped and of substantially greater width than the thickness of the leg portion, the leg portion being a relatively thin panel which extends upwardly from the foot portion and is of leg shaping only in the plane of the panel, said panel being located substantially midway between and inset from the opposite sides of the foot portion, and said ankle portion being be-

tween the foot and leg portions and shaped to merge at the bottom into the fully foot shaped foot portion and tapered upwardly at opposite sides to merge at the top into the flat panel, said foot and ankle portions being a composite unit detachably connected with the leg panel and separable therefrom at the place where the ankle portion merges into the flat panel.

5. A form for making a pair of boots attached to a single body encircling top, said form comprising a flat crotch member and a pair of matching elongated sections with flat hip portions at one end which are secured to the opposite sides respectively of the crotch member and conjointly therewith constitute the body encircling top forming part of the form, each section having a boot forming part projecting correspondingly from said body encircling top forming part and laterally spaced from the other boot forming part and composed of a leg portion, an ankle portion and a foot portion, each foot portion being of full foot shape and of substantially greater width than the thickness of the leg portion of the respective section, the leg and hip portions of each section being a relatively thin panel which extends upwardly from the respective foot portion and is of leg and hip shaping only in the plane of the panel, each leg and hip panel being located substantially midway between and inset from the opposite sides of the respective foot portion, and each ankle portion being between the foot and leg portion of the respective section and shaped to merge at the bottom into the foot shaped foot portion and tapered upwardly at opposite sides to merge at the top into the flat panel of the leg portion.

6. A form for making a pair of boots attached to a single body encircling top, said form comprising a flat wedge shaped crotch member and a pair of matching elongated sections with flat hip portions at one end which are secured to the opposite sides respectively of the flat wedge shaped crotch member and conjointly therewith constitute the body encircling top forming part of the form, each section having a boot forming part projecting correspondingly from said body encircling top forming part and laterally spaced divergently from the other boot forming part and composed of a leg portion, an ankle portion and a foot portion, each foot portion being of full foot shape and of substantially greater width than the thickness of the leg portion of the respective section, the leg and hip portions of each section being a relatively thin panel which extends upwardly from the respective foot portion and is of leg and hip shaping only in the plane of the panel, each leg and hip panel being located substantially midway between and inset from the opposite sides

of the respective foot portion, and each ankle portion being between the foot and leg portion of the respective section and shaped to merge at the bottom into the foot shaped foot portion and tapered upwardly at opposite sides to merge at the top into the flat panel of the leg portion.

7. A form for making a pair of boots attached to a single body encircling top, said form comprising a flat crotch member and a pair of matching elongated sections with flat hip portions at one end which are secured to the opposite sides respectively of the crotch member and conjointly therewith constitute the body encircling top forming part of the form, each section having a boot forming part projecting correspondingly from said body encircling top forming part and laterally spaced from the other boot forming part and composed of a leg portion, an ankle portion and a foot portion, each foot portion being of full foot shape and of substantially greater width than the thickness of the leg portion of the respective section, the leg and hip portions of each section being a relatively thin panel which extends upwardly from the respective foot portion and is of leg and hip shaping only in the plane of the panel, each leg and hip panel being located substantially midway between and inset from the opposite sides of the respective foot portion, and each ankle portion being between the foot and leg portion of the respective section and shaped to merge at the bottom into the foot shaped foot portion and tapered upwardly at opposite sides to merge at the top into the flat panel of the leg portion, said flat crotch member having grooves at the front and rear which extend downwardly between the attached hip portions of said sections and meet at the bottom of the crotch member.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,153,030	Claren	Sept. 7, 1915
1,325,608	Bastian	Dec. 23, 1919
1,458,185	Hemphill	June 12, 1923
1,499,758	Babcock	July 1, 1924
1,508,858	Sandborg et al.	Sept. 16, 1924
1,679,016	Ashton	July 31, 1928
2,015,648	Gammeter	Sept. 24, 1935
2,119,495	Spanel	May 31, 1938
2,130,682	Gruner	Sept. 20, 1938
2,158,153	Roberts et al.	May 16, 1939
2,323,014	De Laney	June 29, 1943