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2,849,786

INDUSTRIAL PROTECTIVE CLOTHING

Filed Sept. 28, 1953

3 Sheets-Sheet 1

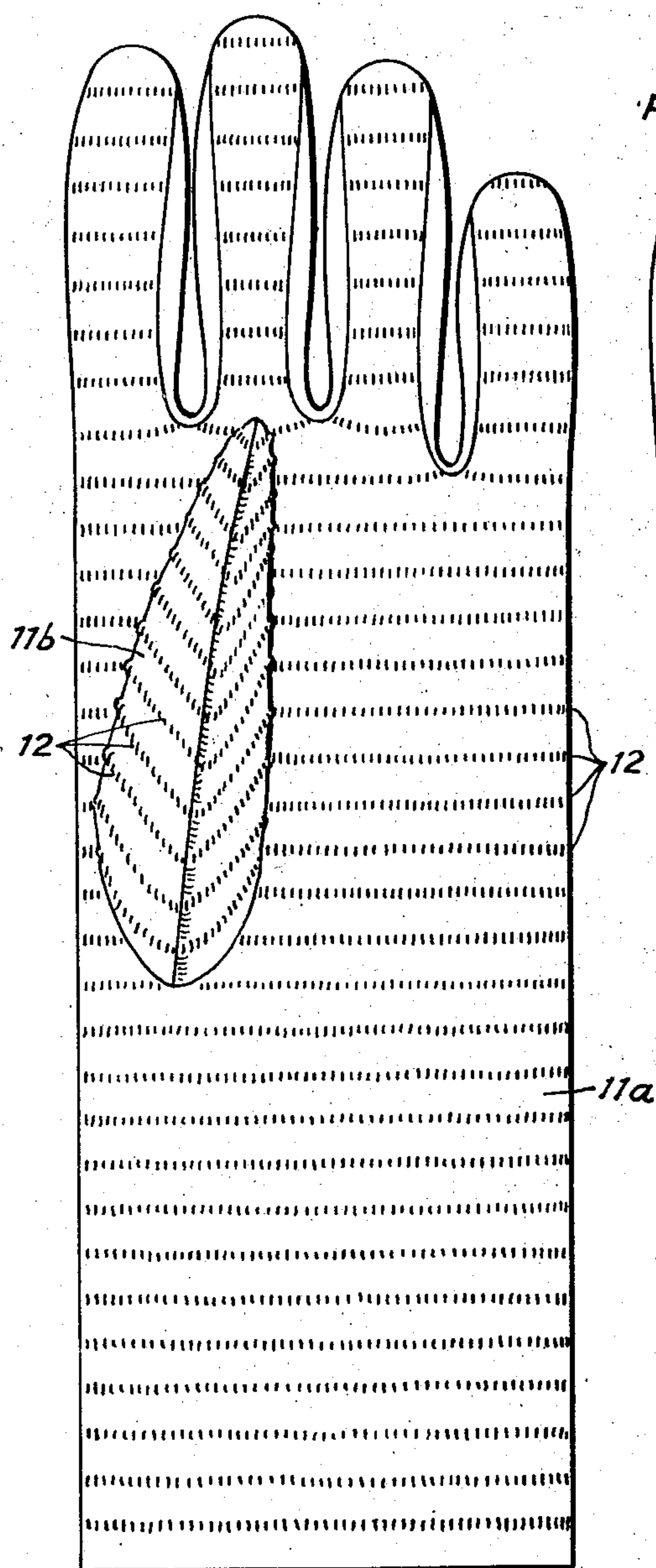


FIG. 1

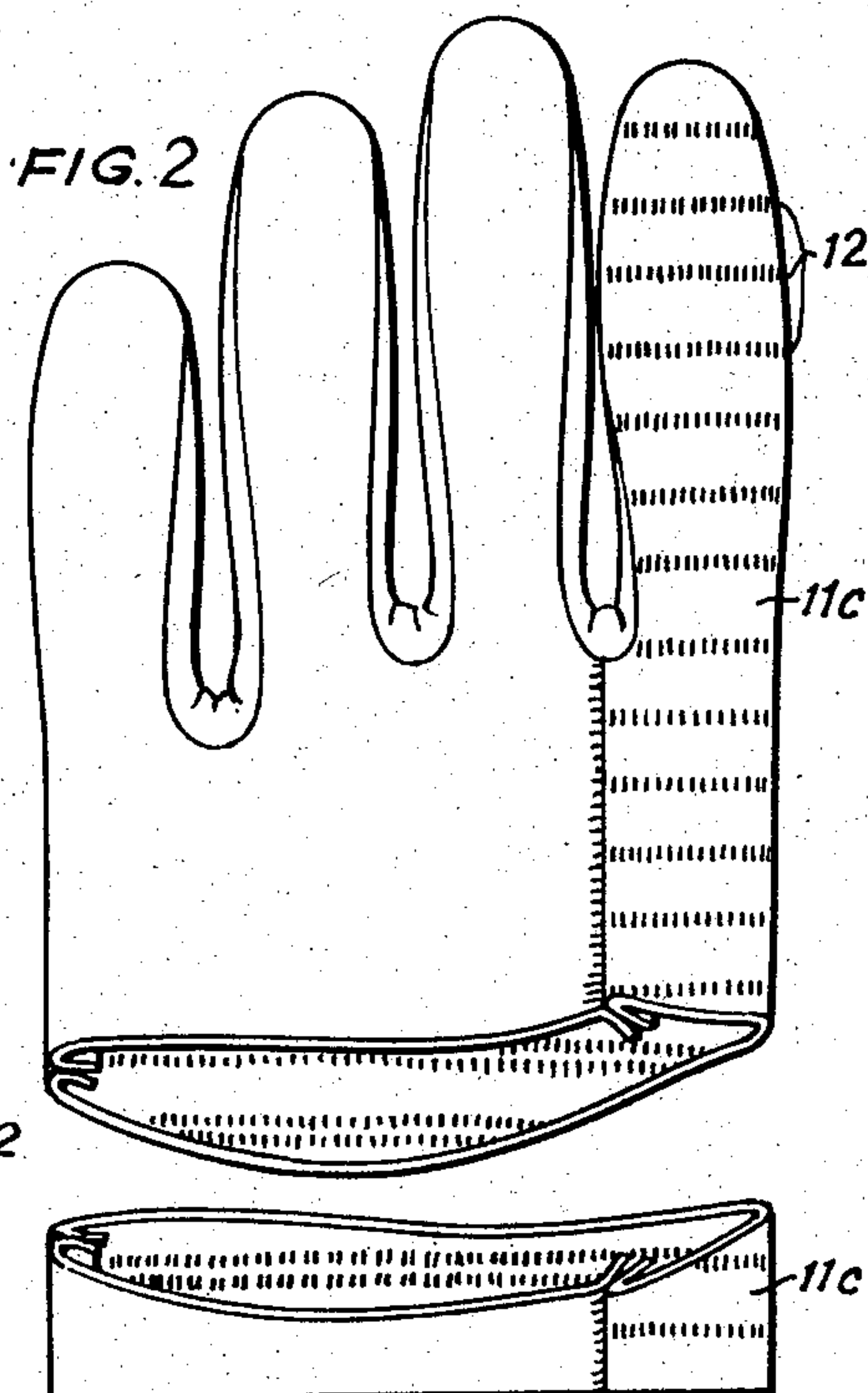


FIG. 2

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3 Sheets-Sheet 2

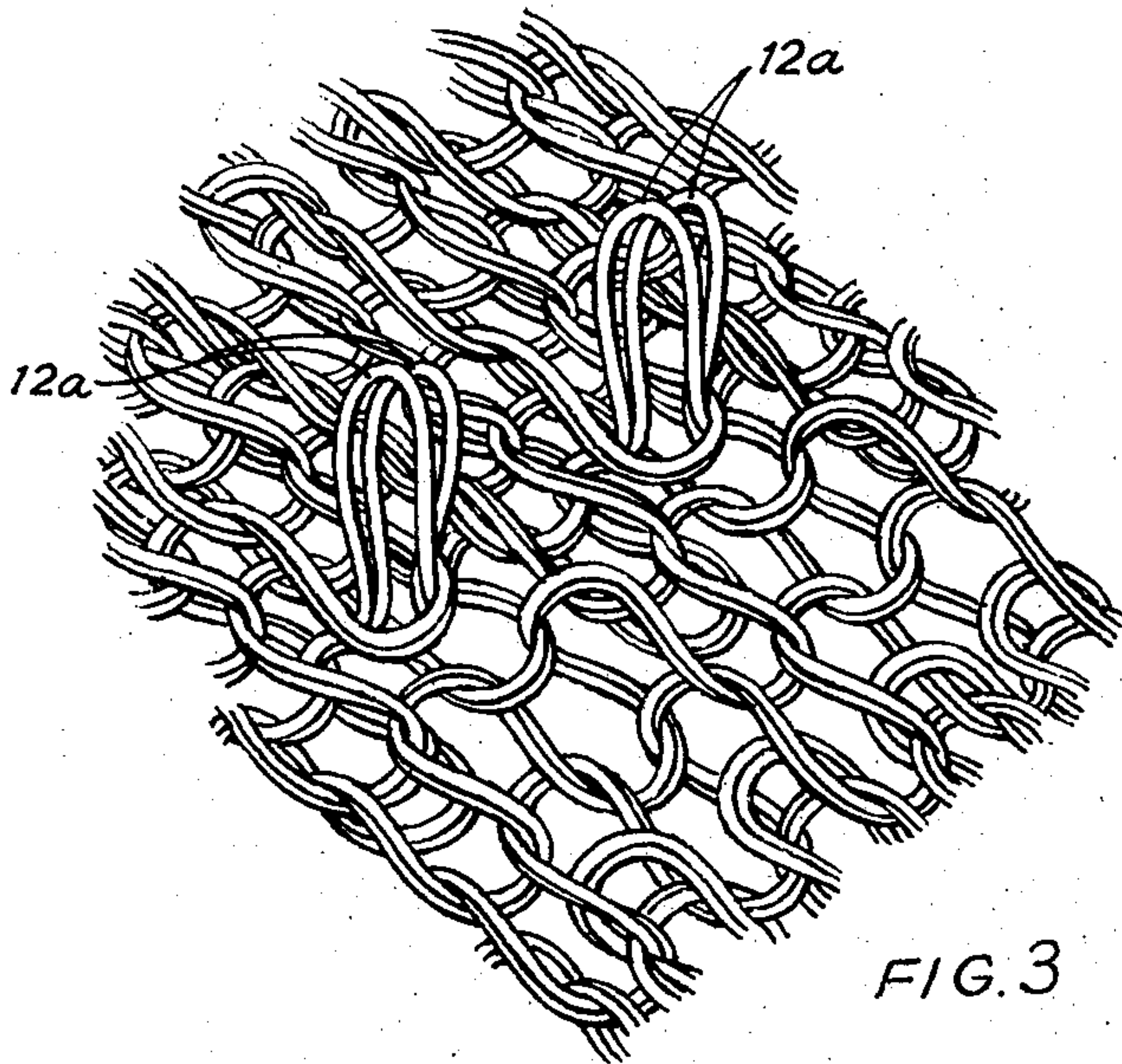


FIG. 3

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3 Sheets-Sheet 3

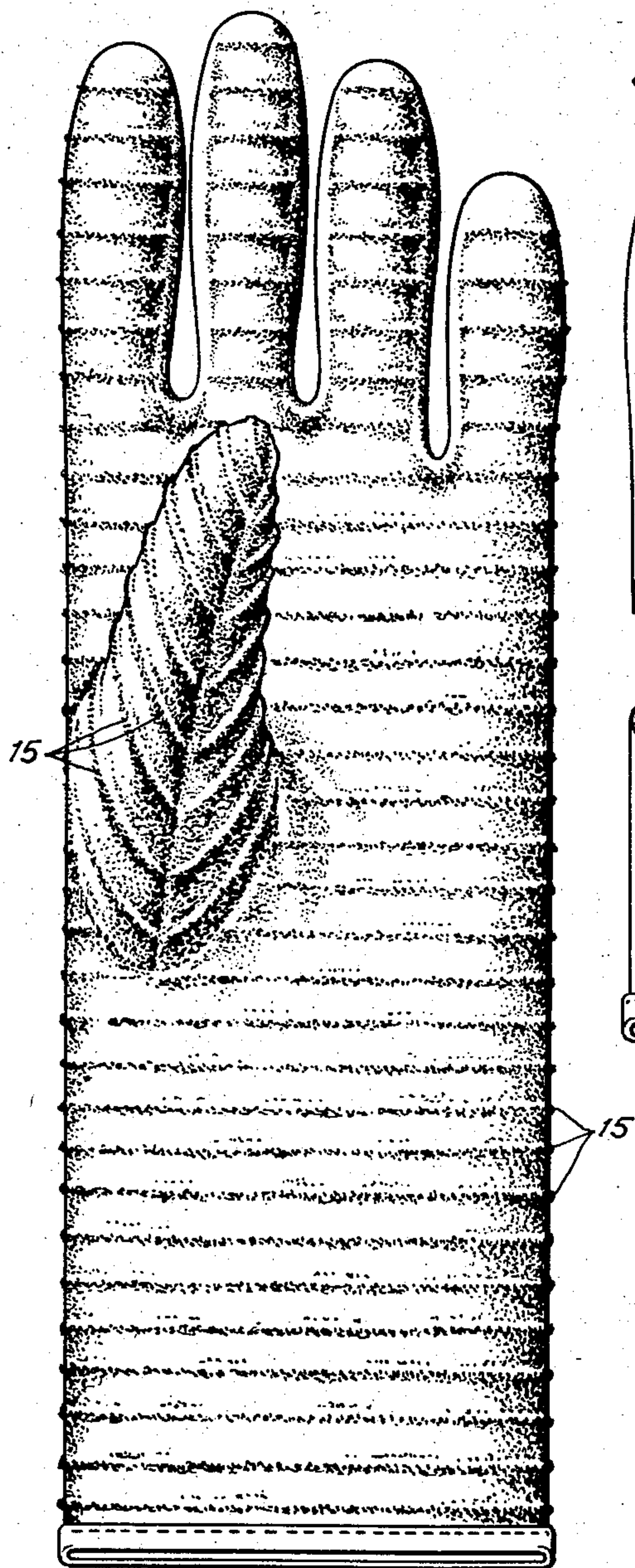


FIG. 4

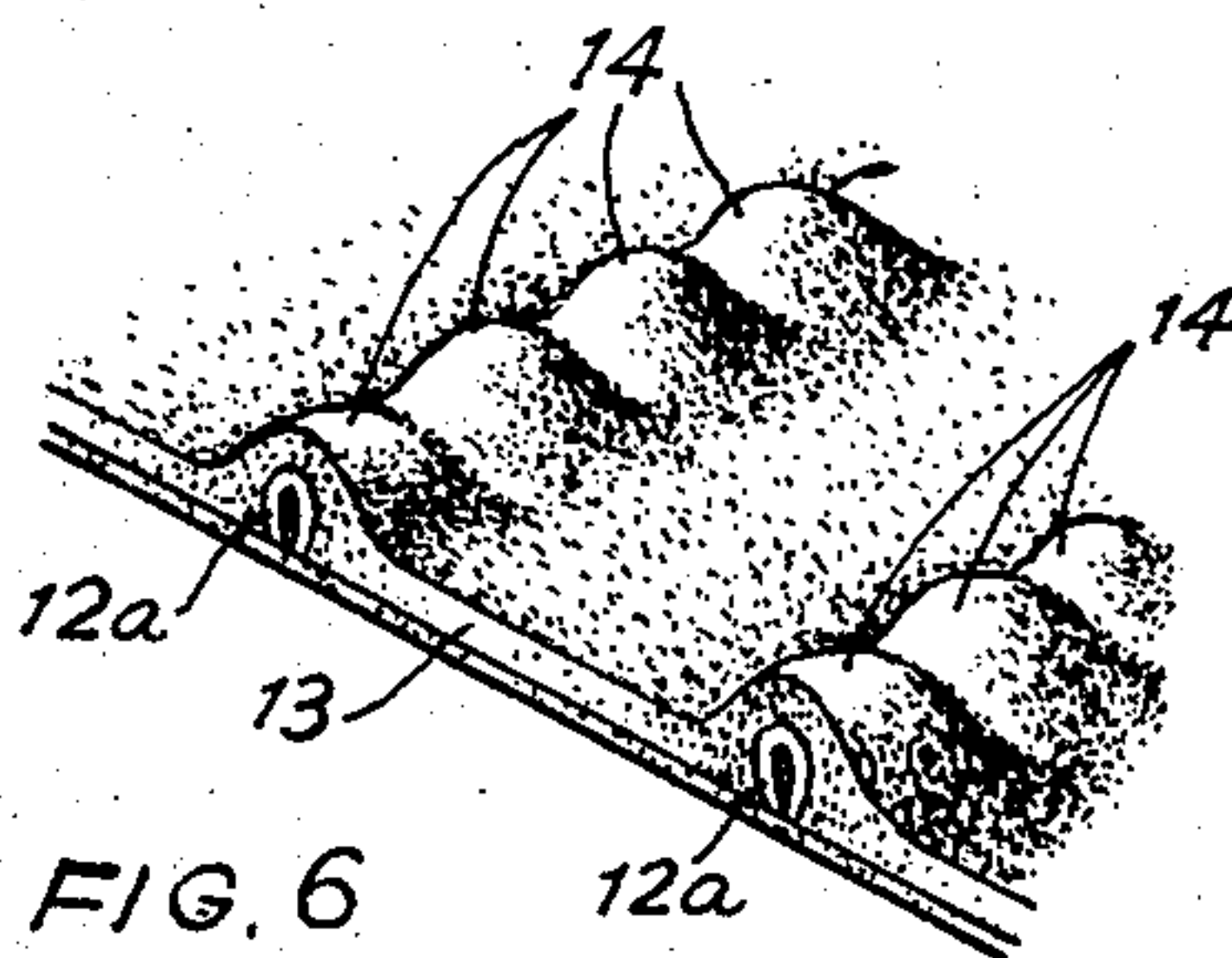
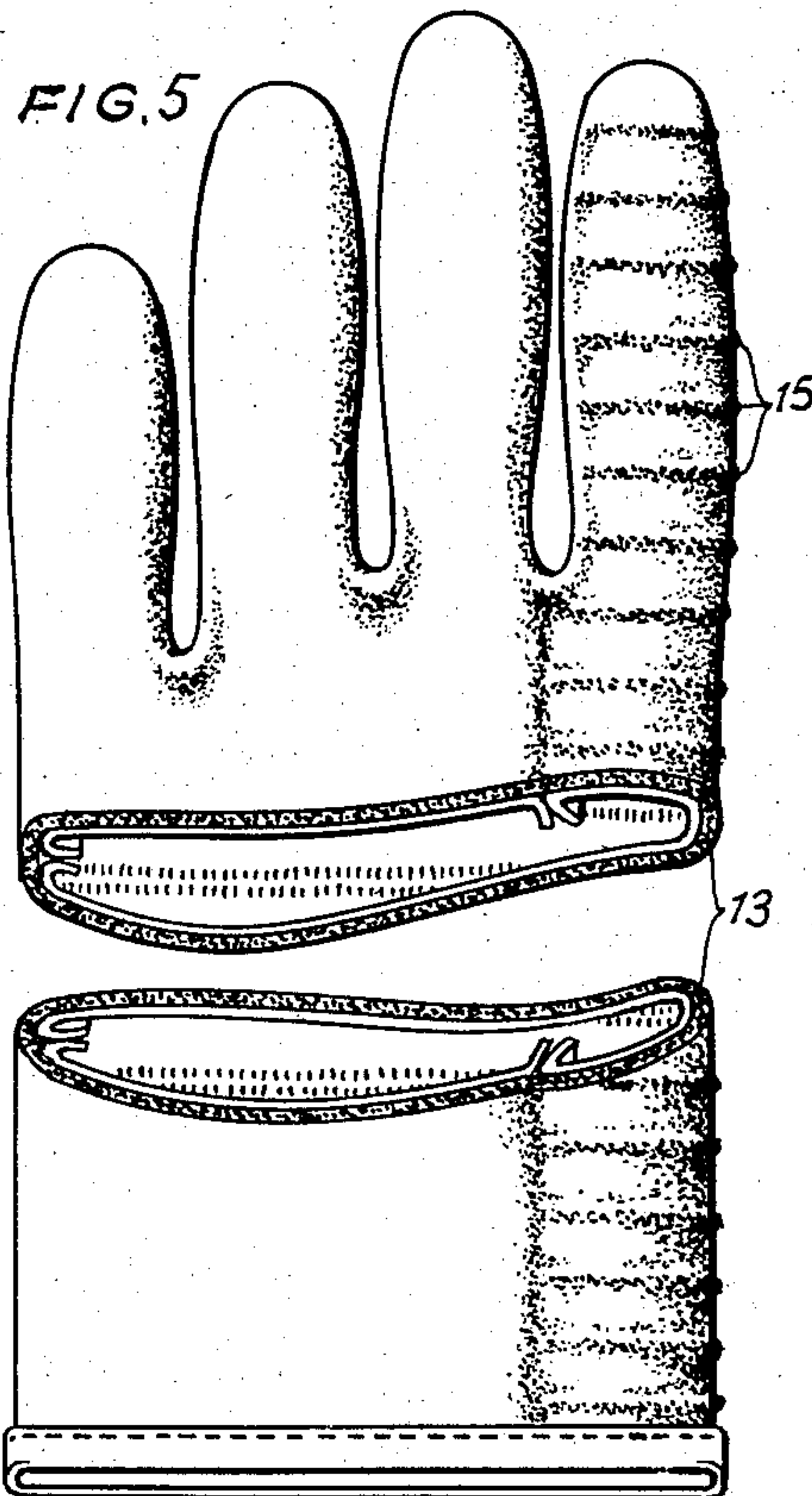


FIG. 6

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2,849,786

INDUSTRIAL PROTECTIVE CLOTHING

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4 Claims. (Cl. 28—80)

This invention relates to industrial protective clothing, of the kind (hereinafter described as "the kind referred to") consisting of a base of textile fabric coated with a plastic substance (such as polyvinyl chloride), whether natural or synthetic, and is particularly, though not exclusively, applicable to industrial gloves or mitts and boots or shoes.

It is known in the manufacture, by dip moulding, of rubber gloves, to reinforce those areas which are subject to the greatest wear, by providing a raised exterior pattern thereon from a grooved pattern on the former. Such pattern also helps to give extra grip or non-slip properties and additional strength, but this method of manufacture is not applicable to a glove having a base of textile fabric.

The object of the present invention is to provide protective clothing of the kind referred to having a raised pattern giving reinforcement and anti-slip properties.

The invention is based upon the discovery that a loop or other relatively isolated free and raised thread in the base fabric, causes extra plastic coating material to collect thereat, and in the appreciation that such effect can be used to provide reinforcement of the desired character.

According to the invention protective clothing of the kind referred to is characterised in that at least part of the base fabric has a plurality of loops or other relatively free and raised formations so spaced and arranged as to provide isolated collecting locations to hold extra coating material and thereby adapted to provide a raised pattern of reinforcement.

The expression "raised formations in defined isolated locations" is used herein to distinguish from the mere use of fabric having an overall looped surface, as in so-called terry towelling, or a fabric having a brushed or raised surface the raised fibres of which are known to produce a roughened surface.

The invention will be described further by way of example with reference to the accompanying drawings, in which,

Figure 1 is a front view of a fabric base for a glove made in accordance with the invention;

Figure 2 is a rear view of the palm portion of the fabric base illustrated in Figure 1;

Figure 3 is a detail view of part of the surface of the fabric base illustrated in Figures 1 and 2;

Figure 4 is a front view of a finished glove which includes the fabric base illustrated in Figures 1, 2 and 3;

Figure 5 is a rear view of the finished glove corresponding to Figure 2, and

Figure 6 is a detail view of the finished glove corresponding to Figure 4, but on a larger scale.

In the example illustrated in the drawings a glove according to the invention is made from a fabric base 11 of knitted cotton material with an outer layer of polyvinyl chloride applied thereto by a dipping, draining and curing process, such processes being known in the art. In one such process for instance the fabric base 11, which is pre-fashioned to glove shape, is supported on a metal

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former, and is dipped into a bath of polyvinyl chloride of controlled viscosity so that the polyvinyl chloride is keyed onto the fabric base by an only partial impregnation of the fabric base, so that, whilst the outer thickness of the fabric base serves to hold the polyvinyl chloride as a continuous film, the inner thickness of the fabric base is left free from impregnation so as to be capable of taking up moisture from the user's skin, the polyvinyl chloride eventually being cured by the sudden application of a high temperature to render it permanent.

Figures 1 to 3 of the drawings illustrate the fabric base 11 of the glove. That part of the fabric which forms the entire front surface 11a of the glove, the thumb 11b and the portion 11c of the base lying at the rear and in line with the index finger is made on a knitting machine in such a manner that parallel lines 12 of loops 12a are formed across the fabric at approximately $\frac{3}{8}$ " spacing. The loops 12a are produced so that they stand clear of the fabric surface by about $\frac{3}{32}$ " (see Figure 3) to provide a plurality of isolated collecting locations to hold extra polyvinyl chloride.

From this fabric is then cut a piece shaped to form the front and that portion of the fabric base lying at the rear and in line with the index finger, and a further piece for the thumb. These pieces are machined up in known manner with a complementary piece of normally knitted fabric to form the prefashioned fabric base 11 in the shape of a glove (Figures 1, 2 and 3).

This fabric base 11 is then mounted on a former (not shown) and by means of the known dipping and curing process hereinbefore referred to, the polyvinyl chloride outer layer 13 is obtained. During this process it is found that an extra amount 14 of polyvinyl chloride is held by the relatively free and outstanding loops 12 so as to form thickened raised isolated reinforcing ribs 15 in lines on the outer surface of the glove thus simulating the pattern of reinforcement previously obtainable only in a dip moulded article (see Figures 4 to 6).

Clearly the invention is not limited to the details of the example above described. The fabric base need not be of cotton nor need it be of knitted structure. Any type of fabric, provided it is capable of being so produced as to have the necessary relatively free and raised formations, and is suitable for the coating process, could be used. As in the example particularly described hereinbefore, only part of the fabric base need be provided with the reinforcement forming formations, although in some cases it may be desired that the whole of the article should be provided with reinforcements in which case the base would consist entirely of the special fabric. The pattern of reinforcements is not restricted to transverse lines and a variety of patterns could be devised, according to the use and purpose of the finished article. Further alternative plastic substances (natural or synthetic) could be used in the dipping process, although polyvinyl chloride has been found eminently suitable. The invention, of course, as previously implied, although particularly applicable to industrial gloves or mitts and boots or shoes may find other and equally useful applications in the field of industrial protective clothing.

What we claim is:

1. Protective clothing comprising a base fabric, some of the threads of said fabric being doubled in the form of loops extending out of said fabric transversely to the plane thereof, the height of said loops being substantially greater than the thickness of said fabric, said loops being closed at the surface of said fabric, a plurality of lines of loops each formed by a group of said loops being in alignment, said lines being spaced apart a distance substantially greater than the height of said loops, and a coating of a plastic substance on said fabric and said extending loops to form a continuous plastic surface on

said clothing, whereby said clothing is reinforced and has a raised pattern imparting anti-slip properties thereto.

2. Protective clothing according to claim 1 in which a plurality of said lines are spaced widely apart.

3. Protective clothing according to claim 1 in which said fabric forms a glove in which said lines are spaced transversely of said glove at about $\frac{3}{8}$ inch.

4. Protective clothing according to claim 1 in which said fabric forms a glove in which the palm, thumb, inner face of fingers and rear of index finger have said raised pattern.

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