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I. H. GREENE

2,377,339

KNEE PAD AND METHOD OF MAKING SAME

Filed June 28, 1941

Fig. 1.

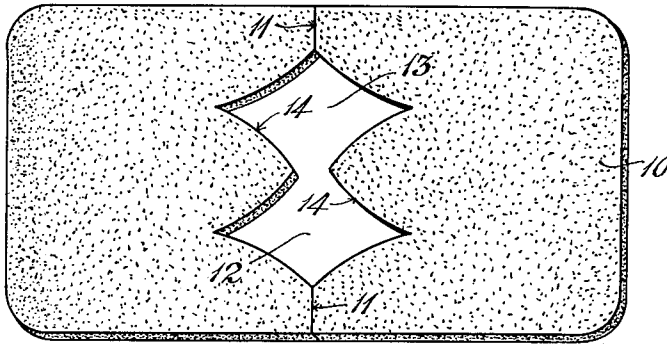


Fig. 2.

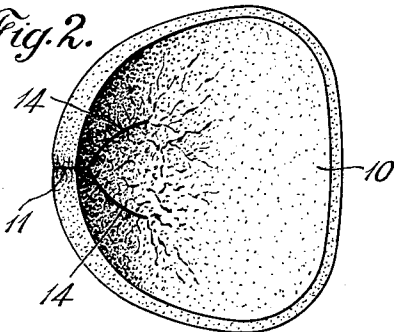


Fig. 3.

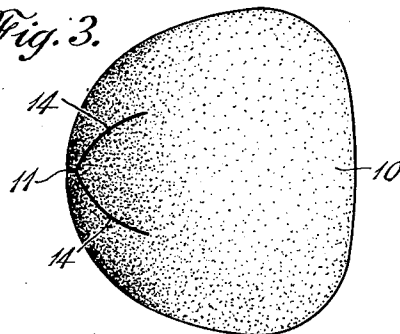


Fig. 4.

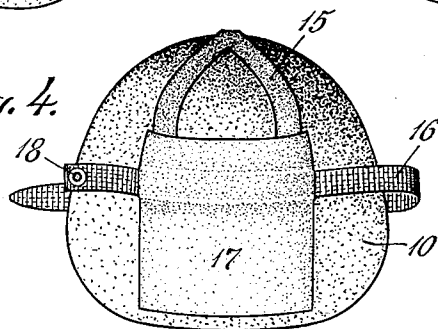


Fig. 5.

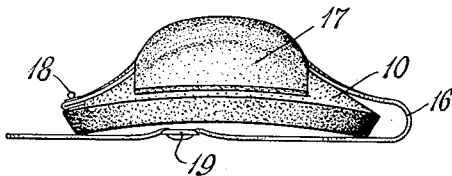


Fig. 6.

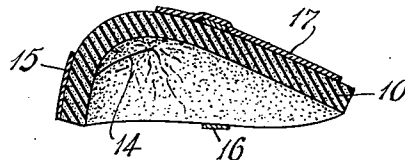
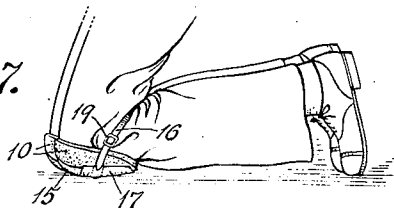


Fig. 7.



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KNEEPAD AND METHOD OF MAKING SAME

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4 Claims. (Cl. 2—24)

The invention relates to a knee pad or protective guard constituted of a sheet of sponge rubber of substantial thickness adapted to fit the knee and which will stay in place once it has been secured upon the knee. The article is adapted to be worn either over or under clothes and is so constructed as to make extremely simple its application to the knee to protect the same when the wearer is in kneeling position, for instance in gardening, housework, or any industrial occupation necessitating kneeling with the knees ordinarily in contact with hard, rough ground or floor.

Knee pads or guards of this general character have been heretofore constituted of a sheet of sponge rubber of comparative thickness, usually oblong in shape, which was applied to the knee of the wearer over work clothes by merely bending the same around the knee, and then secured by a strap or elastic string. Such knee pads or guards were unsatisfactory in that slippage thereof occurred, especially as the wearer moved about and since the pads themselves did not conform to the shape of the knees, they were also uncomfortable to the wearer.

In accordance with my invention, I provide a knee pad or protective guard which is constituted of a sheet of sponge rubber of substantial thickness which, however, in the course of its fabrication into a knee pad, is conformed or shaped to the general configuration of the knee with reinforcing strips of vulcanized rubber, and which has applied thereto a means of securement of the pad or guard to the knee which fixes it in position in such manner that slippage does not occur and which, nevertheless, is both comfortable to the wearer and may be easily applied and removed from the knee.

In accordance with my invention, I provide a blank or sheet of sponge rubber of substantially rectangular configuration of sufficient area or size to constitute, when fabricated in accordance with my novel method, into a knee pad, a pair of such knee pads or guards. Such blank or sheet of sponge rubber, of substantial thickness, is die-cut along its transverse median line, at the same time removing by the die-cutting operation, two substantially diamond-shaped pieces from the area immediately adjacent such transverse median line, so that the blank or sheet of sponge rubber from which the two knee pads are to be formed, is a rectangular strip with two substantially diamond-shaped cut-outs in its center. For best results, the die with which the cutting is accomplished is of such configuration

that the edges of the diamond-shaped cut-outs are slightly convex, as will be apparent more particularly from the drawing hereinafter to be described.

5 In accordance with my invention, the blank thus die-cut is separated into two parts, from each of which is to be formed a separate knee pad or guard, by shaping each piece on a suitable mold or supporting block in such a manner that 10 the edges of the cut-outs in each pad are brought together and secured by a suitable cementitious composition, whereby the blank is shaped into substantially cup-form, conforming to the general configuration of the knee of the human 15 body. In addition to the cementitious composition, thus adhesively holding together the edges of the cut-outs, there is superposed upon the outer surface of the knee pad thus produced, a substantially V-shaped patch of rubber which 20 may or may not be vulcanized, which constitutes an additional reinforcing means for maintaining the pad in cupped shape. On the surface of the pad which is to receive the most wearing contact, there is provided, in accordance with my 25 invention, an additional strip or sheet of rubber which, at the same time, maintains in position an elastic strap extending over the surface of the knee pad and by means of which the pad may be secured to the knee.

30 A particular embodiment of my invention is illustrated in the accompanying drawing, in which Fig. 1 is a plan view of a blank or sheet of sponge rubber from which a pair of knee pads in accordance with my invention are to be fabri- 35 cated; Fig. 2 is a plan view of the interior face of a knee pad shaped and molded in accordance with my invention from one of the two pieces of the blank of Fig. 1; Fig. 3 is a plan view of the exterior face of such pad;

40 Fig. 4 is a top plan view of the complete pad; Fig. 5 is an end view of the complete pad;

Fig. 6 is a vertical section through the pad; and Fig. 7 illustrates the knee pad or protective guard as applied to the knee of a wearer.

45 Referring more particularly to the drawing, in which similar reference characters identify similar parts in the several views, 10 is a blank or sheet of sponge rubber of substantial thickness, for instance, $\frac{5}{8}$ of an inch, and approximately 50 $7\frac{1}{2}$ inches in width and 13 inches in length, which has been die-cut along its transverse median line 11 with a die which at the same time is effective to remove two substantially diamond-shaped portions from the blank or sheet leaving 55 two cut-outs 12 and 13. The edges of such cut-

outs 12 and 13 are preferably, but not necessarily, of arcuate or convex configuration as shown at 14.

In producing a knee pad or guard from each piece of the blank 10 thus die-cut, the piece of sponge rubber is placed over a suitable mold or supporting block and the edges of the cut-out and the two edges comprising the median line 11 are brought together and secured by a suitable cement. At the same time, there is superposed upon the curved portion of the knee pad thus being produced, a V-shaped patch 15, which may be of ordinary rubber or vulcanized rubber, such as is used in patching an automobile tire tube. The two arms of the V-shaped patch overlie substantially the lines of juncture of the curved edges 14 of the cut-outs.

Across the body of the knee pad, immediately adjacent the cupped portion thereof, is laid an elastic strap 16 which may be permanently secured to the face of the pad by cement and also by a substantially rectangular shaped strip of rubber 17 which can extend throughout the entire surface of the pad which is to receive most wear and tear during its use. At one end of the elastic strap 16 is provided a male snap fastener 18, while on the other portion of the elastic strap is provided the cooperating female snap fastener element 19 which is adjustable in its position along the strap.

The knee pad or protective guard thus produced, comprises a pad of a single sheet of sponge rubber having an arcuate section extending from the medial portion of the body flanked by a pair of lateral extensions which are curved both laterally and longitudinally of such medial portion of the body. The edges of such arcuate section and pair of lateral extensions, are secured together, and the sheet of sponge rubber is thus shaped to cup form substantially of the configuration of the knee to which the pad is to be applied.

The knee pad or guard thus constituted may be readily applied to the knee with the cupped portion thereof directly over the knee and the flatter portion thereof extending along the leg below the knee, with the entire structure secured in position by means of the elastic strap extending beneath the knee and around the leg of the wearer.

While I have described a specific embodiment of my invention, utilizing a blank or sheet of sponge rubber which is die-cut to provide two deep cuts, it is obvious that various modifications in the particular configuration or even the number of such cuts may be made so long as such cuts make possible the molding or shaping upon a supporting block of the blank or sheet into substantially cup form.

My invention thus makes possible the fabrication of a knee pad or protective guard of conventional material, i. e., sponge rubber, which is easily shaped in accordance with my invention

to its ultimate form, snugly fitting the knee to which it is to be applied. The pad, once fixed in position upon the knee of the wearer, will not slip and will give the ultimate comfort and protection, while easily applied and removed.

I claim:

1. The method of making a pair of knee pads or protective guards from a single substantially rectangular sheet of sponge rubber, which comprises simultaneously severing the sheet along its transverse median line and die-cutting a pair of substantially diamond shaped cut-outs symmetrically to said line, drawing and cementing together the end edges of each resultant sheet formed by such severing and die-cutting operation, whereby a substantial cup shape is imparted to each such resultant sheet, conforming in configuration to the knee of a human body, and applying a substantially V-shaped covering patch of vulcanized rubber to each resultant sheet thus conformed in overlying relation to the meeting end edges.

2. A knee pad or protective guard comprising a generally rectangular sheet of sponge rubber of substantial thickness, said sheet having an intermediate and opposed side projections at one edge thereof, the intermediate projection having opposed convex edges merging into the free end of the projection, the side projections each having a convex edge opposed to one of the convex edges of the intermediate projection and merging into same at the bases of the projections and the side projections terminating in relatively short straight edges, the convex edges of the projections being secured together and the terminal straight edges of the side projections being secured together outwardly of and in line with the end of the intermediate projection, with a resulting cup shape in the sheet for accommodating the knee of a wearer.

3. A knee pad or protective guard according to claim 2 together with a substantially V-shaped covering pad overlying the secured convex edges, and a reinforcing pad overlying the main body portion of the sheet.

4. The method of making a knee pad or protective guard which comprises providing a pair of notches defined by opposed convex edges in one edge of a substantially rectangular sheet of sponge rubber, the notches being disposed inwardly of opposed sides of the sheet and defining opposite side projections having relatively short straight terminal edges and a central projection terminating in a point centrally of said opposed sides, and drawing and connecting said convex and straight edges together with the side projections enclosing the central projection and the terminal edges thereof extending outwardly from the point of said central projection whereby providing a cup-shaped portion in the sheet for receiving the knee of a wearer.

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