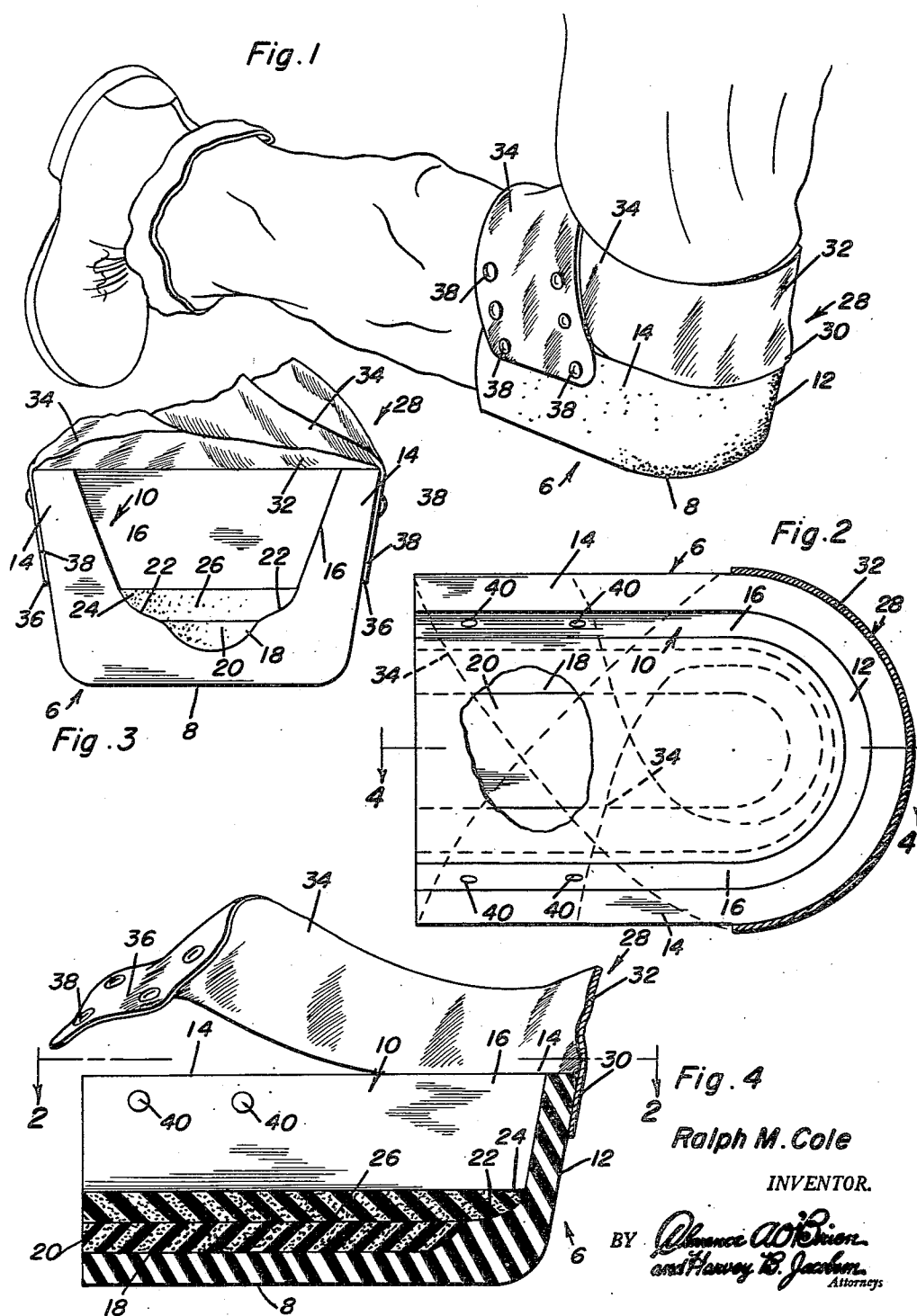


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KNEE PAD

Ralph M. Cole, Slab Fork, W. Va.

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The present invention relates to certain new and useful improvements in a knee pad construction, specifically one which is particularly, although not necessarily, designed and consequently appropriately adapted to be worn by coal miners.

It is a matter of common knowledge that many miners of coal in the pursuit of daily work activities are required to do considerable kneeling. This necessitates the use of knee pads. These are usually made of hard rubber and have a recess for reception of the knee and attaching and retaining straps of one type or another. The principal object of the present invention is to structurally, functionally, and otherwise improve upon similarly constructed and performing prior art knee pads and, in so doing, to provide a construction in which manufacturers, users, and others will find their respective requirements aptly and satisfactorily taken into account and met.

Another general objective is to improve upon and reduce the number of elements and parts entering into the over-all combination, thereby not only increasing the efficiency of the structure as a useful entity, but also rendering the same less costly to manufacture and to otherwise simplify factors of assembling, sale and repair.

More specifically stated, novelty is predicated on a knee pad, the principal or body portion of which is of appropriate rubber and has a flat sole-like bottom or tread and is provided with upstanding front and side walls providing a recess or walled space for reception of the over-all knee of a user, the upper surface of said bottom or walled space being molded or otherwise shaped up to provide a ledge and central relatively small counter-recess or cavity for the knee cap which recess is filled with a sponge rubber pad, said marginal ledge serving to accommodate the marginal edge portions of another cushion or pad which conformingly accommodates the portions of the knee supported thereby.

Then, too, novelty is predicated on an elastic web which has a portion intermediate its ends attached to the upper forward and side wall portions of the pad proper with portions extending above said wall to effectively embrace the knee, and free end portions which are crossed and fastened down to embrace the leg adjacent to the knee.

Other objects, features and advantages will become more readily apparent from the following description and the accompanying sheet of illustrative drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the same;

Figure 1 is a perspective view of a coal miner's knee pad constructed in accordance with the principles of the present invention;

Figure 2 is a horizontal section on the line 2—2 of Figure 4 looking in the direction of the arrows;

Figure 3 is an end elevation observing the structure of Figures 2 and 4 in a direction from left to right; and Figure 4 is a view in section and elevation taken on the general central longitudinal line 4—4 of Figure 2 looking in the direction of the arrows.

Referring now to the drawings, the "knee pad" is characterized as before stated, by a relatively hard rubber body which is generally denoted in the drawings by the numeral 6 and this has a firm flat bottom 8. It is usually molded or otherwise formed to provide what may be called a boot-like protector having primary recess or receiving space 10 to accommodate the wearer's knee, generally speaking. This body is open at the rear end (at the left in Figure 4) and embodies a front vertical wall 12 and side walls 14. These side walls have interior sloping surfaces 16—16 (see Fig. 3) and at the center of the bottom there is a relatively shallow concave counter or secondary recess 18 which, while elongated, has a transverse contour or cross-section which lends itself substantially conformable and adaptable to the knee cap (not shown). This particular knee cap cavity 18 is provided with a filler of sponge rubber 20. At the juncture of the walls of the recess 20 and the inclining walls 16 are appropriately slanted intervening shoulders 22 which define a ledge to accommodate the marginal edge portions 24 of a second layer of rubber which may be described as a primary pad or filler. The layers or plies are preferably integrated to provide a satisfactory cushion for the knee cap and the bone structure around and within the vicinity of the knee cap.

The broad web-like attaching strap is denoted by the numeral 28. It has its lower marginal portion 30 overlapping and glued or otherwise secured to the upper edge portions of the walls 12 and 14. A principal portion of the strap, however, extends above the top surfaces of these walls as at 32 and this being an elastic strap, it actually binds itself into close conforming association with the wearer's leg above the knee in the manner shown in Figure 1. That is to say, it gives a sort of a wrap-around result. To more satisfactorily enclose and retain the structure on the wearer's knee the end portions 34 of the strap are left free and the extremities 36 are provided with appropriate snap fasteners 38 which are selectively engageable with rigid cooperating snap fasteners 40—40 on the exterior sides of the upper portions of the side walls 14—14. The manner in which these strap ends overlap and are fastened down is brought out in considering the views in conjunction with each other, being not completely or fully shown in any one view.

The advantages in a construction of the type revealed are briefly as follows:

1. The sponge rubber cushion or padding will prevent small particles of coal and other matter from bruising the knee if one would place his knee on said particles. This happens quite frequently at the present time. By putting the layers or laminations inside of the knee pad proper, the outside is still made of hard rubber and this prevents it from sliding on slick surfaces.

2. With straps as shown on the knee pad, the pressure on the leg is evenly distributed over a large surface and this prevents the cutting of the leg and also prevents the cutting off of the blood circulation to the other parts of the leg below the straps.

3. By having the straps attached to the top of the knee pad instead of at the side as now is done, this prevents the coal and other particles from working their way in between the knee and cushioning pad therefor.

4. Another important thing about my unique knee pad is the fact that by having the cushioned cavity instead of a substantially flat knee pad on the inside as they are now constructed, the weight of the body is more evenly divided over a larger surface. The part of the knee and also the most sensitive part of the knee is the kneecap and not the sides of the knee. In order to be effective in all cases the miner's knee pad will have to be made according to different sizes and not one size for everyone as is now the case.

Also, quite important, the specially padded cavity and

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ledge arrangement takes the weight of the user's body directly from and wholly off of the kneecap with the result that painful "miner's knee" is reduced to a minimum. This will save employers money in that their compensation pay rates will be proportionately lessened. It will also save employees time and money in that they will work regularly and will not be handicapped with incapacitating swollen "miner's knee" difficulties.

It has been ascertained that the invention herein revealed provides a safe and reliable protector or appliance which resembles a special boot when applied to the knee of the wearer. Both interiorly and exteriorly it has been found to be anatomically correct and should go a long way in reducing the number of prepatellar bursitis cases among those who must work on their knees as is the situation of coal miners. Nevertheless, this particular pad is not to be restricted for use by coal miners since it will serve satisfactorily in other fields of endeavor.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A knee pad comprising a boot-like body formed from shape-sustaining material, generally U-shaped in plan, closed at its basal portion by way of an imperforate sole-like bottom, having opposed upstanding side walls connected by a front wall and open at its rear end, the

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junctional portions of said body between the interior surfaces of said walls and bottom having an inwardly extending ledge of substantial width defining a relatively small downwardly extending cavity, a cushion of padding material having a portion completely filling said cavity and a marginal edge portion overlying said ledge whereby the weight of the user when imposed on said cushion is supported by said marginal portion and the kneecap and shin bone are allowed to sink into the padded cavity, and strap means carried by and functioning to fasten said body on the user's knee.

2. The structure defined in claim 1 and wherein said strap means embodies a broad flexible frontal portion joined with and rising above the plane of said front wall and adjacent portions of said side walls and constituting a readily conformable protective shield and which, when the strap means is drawn up, tightened, and fastened around the knee of the wearer wraps the shield tightly around the parts and guards against coal particles entering and lodging themselves within the confines of said walls.

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