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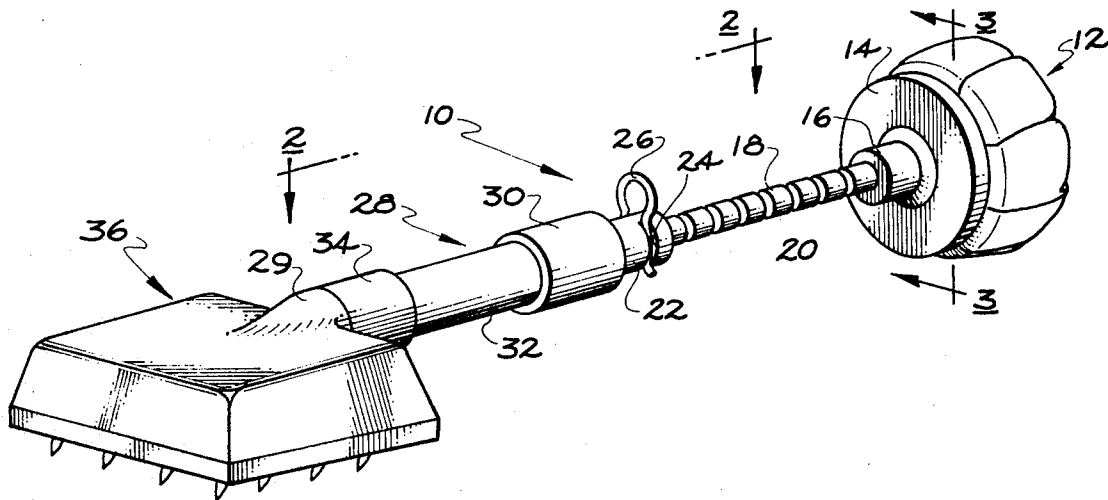
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[54] **PNEUMATIC CARPET KICKER**
 2 Claims, 8 Drawing Figs.

[52] U.S. Cl..... 294/8.6,
 254/57
 [51] Int. Cl..... A47g 27/04,
 B26f 1/32, F04f 21/20
 [50] Field of Search..... 294/8.6, 19;
 254/57; 306/20

ABSTRACT: A shock absorbing carpet kicker comprising a cylindrical housing, a head for engaging a carpet affixed to said housing, means within said housing for absorbing shock, an adjustable shaft connected to said means within said housing for absorbing shock, and, a protective pad affixed to said shaft for absorbing the initial shock which is transmitted to said shock absorbing means within said housing.



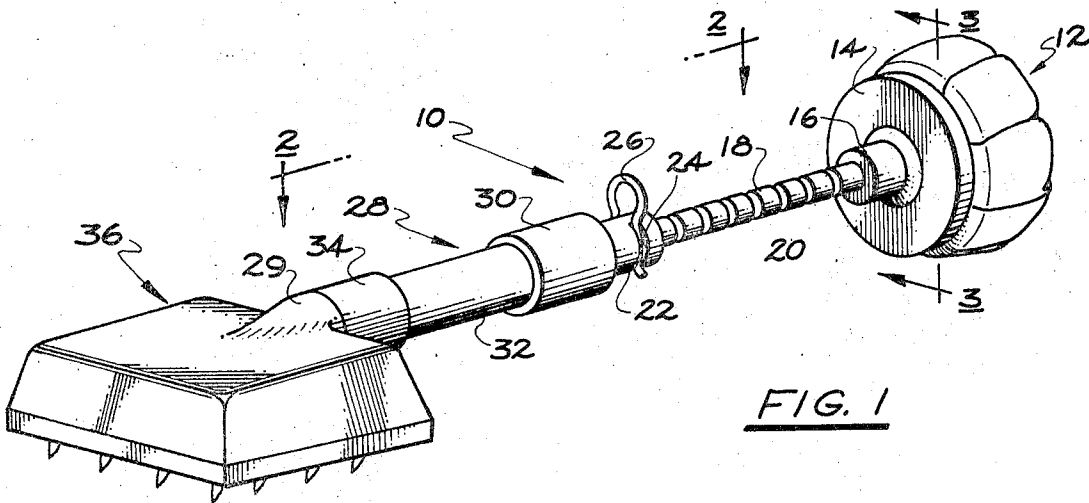


FIG. 1

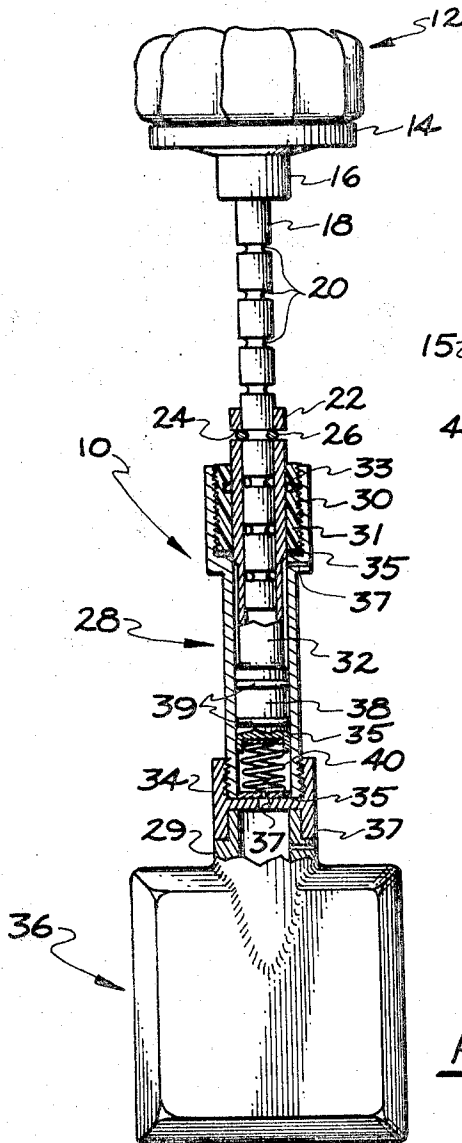


FIG. 2

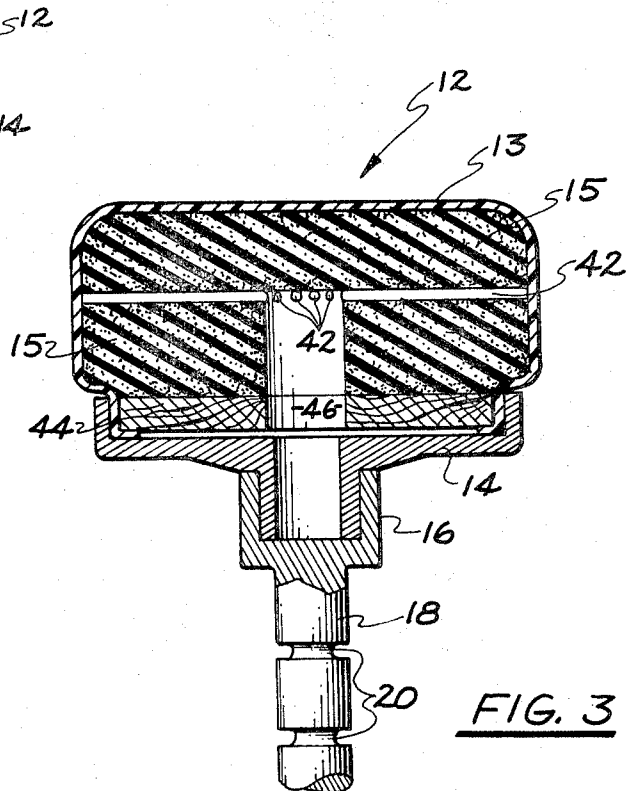


FIG. 3

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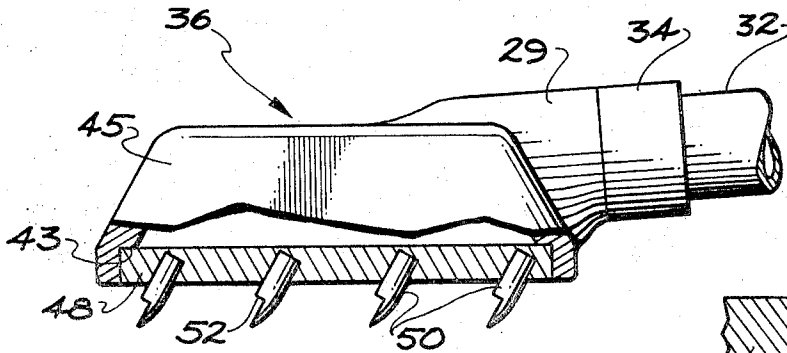


FIG. 4

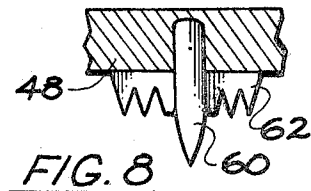


FIG. 8

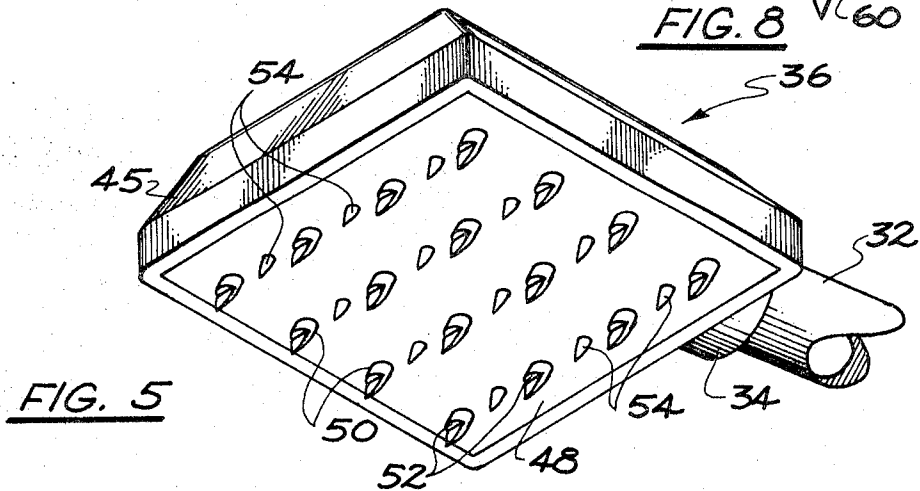


FIG. 5

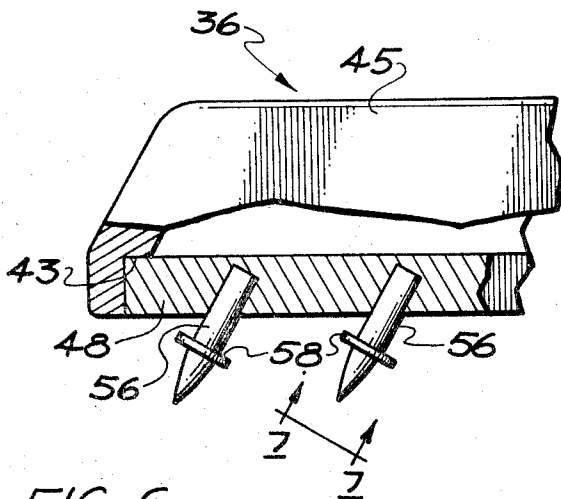


FIG. 6

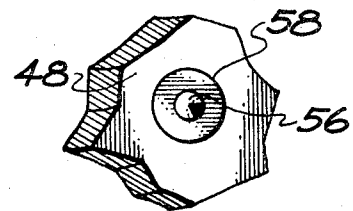


FIG. 7

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PNEUMATIC CARPET KICKER

BACKGROUND OF THE INVENTION

This invention relates to a carpet kicker utilized by carpet layers to stretch carpets prior to attaching the carpet to the floor. More particularly, the instant invention relates to a carpet kicker having shock absorbing means contained therein.

Conventional carpet kickers consist of a tool comprising at one end a head containing a plurality of pins for engaging the carpet, a shaft or shank and a knee plate to which a thick pad is attached. To operate the carpet kicker, it is first engaged by the pins to a carpet. The carpet is stretched by a sharp blow delivered by the knee of the operator. The conventional carpet kickers are essentially one piece or several pieces rigidly connected. Therefore, the operator has only the pad to prevent injury to his knee. Experience has shown that prolonged use of conventional carpet kickers, hereinabove described, results in painful bruises or injuries to professional carpet layers.

In addition, the engaging mechanism, common with conventional carpet kickers has often proven inadequate. For example, the sawtooth type of carpet engagement mechanism affixed to the head of the tool has a tendency to slip resulting in damage to the warp of the carpet and to adjacent walls while the spike pin type often engages too deeply, which causes the tool to penetrate completely through the warp and base of the carpet down into the floor which, if course, prevents the carpet from moving.

Furthermore, conventional carpet kickers, while they are padded for protection of the knee, do not absorb shock as the pad is usually solid foam rubber with a plastic or leather cover. This type of pad has limited resiliency, thus it provides limited shock absorbing capabilities.

An advantage over state-of-the-art carpet kickers is realized by the present invention in that it absorbs shock within the cylindrical housing over and above the shock absorbed in the knee pad.

A further advantage of the present invention over conventional carpet kickers is the improved carpet-engaging mechanism in the baseplate which is attached to the head in that the engaging pins penetrate far enough to firmly embed themselves into the base of the carpet, yet do not penetrate clear through the carpet.

Another advantage of the invention is the ability to shorten or lengthen the shaft of the tool, thereby accommodating any person regardless of their physical size.

A still further advantage is realized over conventional kickers in that the knee pad is so designed to provide greater shock absorbing qualities than that exhibited by solid foam rubber padding.

SUMMARY OF THE INVENTION

The present invention is a carpet kicker consisting of a housing or head with a baseplate attached to its bottom surface, which bottom surface contains a plurality of pins for engaging the warp or weave of a carpet. Affixed to the head is a support collar which receives a cylindrical shock absorbing mechanism. Extending rearwardly from the cylindrical mechanism is an adjustable shaft which has at its end an annular baseplate for supporting a knee pad which in itself has a special shock absorbing characteristic.

Other advantages of the invention will become apparent from the following description taken in connection with the accompanying drawings in which:

FIG. 1 is a perspective view of the carpet kicker of this invention;

FIG. 2 is a partial section taken along lines 2-2 of FIG. 1;

FIG. 3 is a detailed partially cutaway section of the knee pad taken along lines 3-3 of FIG. 1;

FIG. 4 is a partially cutaway view of the head of the carpet kicker illustrating the primary carpet-engaging pins,

FIG. 5 is a perspective view of the head shown in FIG. 4 which illustrates secondary carpet-engaging pins between the primary engaging pins,

FIG. 6 is a partial section of an alternate primary engaging pin than that which is shown in FIGS. 4 and 5;

FIG. 7 is a view taken along lines 7-7 of FIG. 6; and

FIG. 8 is a partial view in cross section of another embodiment of the novel pin arrangement of this invention.

Referring now to FIG. 1, the carpet kicker of the instant invention generally designated as 10 comprises a shock absorbing knee pad 12, adjustable shaft 18, snap locking 26, cylindrical shock absorbing housing 28 and carpet-engaging head 36.

To utilize the carpet kicker, an operator first adjusts the tool to a desired length by removing snapping 26 and sliding shaft 18 inwardly or outwardly until one of a plurality of annular grooves 20 line up with slot 24 of sleeve 22 and then reinserts the locking snapping 26.

The operator then engages the bottom of head 36 with the carpet to be stretched, and, while holding the kicker 10 in one hand, strikes pad 12 with his knee thereby moving the carpet in the desired direction. This operation is usually followed by tacking or otherwise attaching the carpet to a floor while the carpet is in a taut condition. Thus, it can be seen that the knee of the operator is a prime mover and subject to much physical abuse.

Referring now to FIG. 2, a detail section of shock absorbing cylindrical housing 28 of kicker 10 is shown which eliminates much of the physical abuse to the knee of the operator.

A cylindrical housing, generally designated as 28, has an outer sleeve 32 threadably engaged at one end with an intermediate support collar 34 which is affixed to head 36 via collar 29. At the opposite end of the sleeve 32 is an enlarged annular housing 30 which retains a bearing sleeve 31. The bearing 31 is nonmetallic and can be, for example, Teflon, which is screwed into housing 30 and seats against felt washer 35. An annular inwardly facing groove 33 houses an O-ring which seals against sliding hollow rod or shaft 22. At one end of rod 22 is a piston 38. The piston, as shown, has a pair of outwardly facing annular grooves 39 which contain O-rings in intimate contact with the inner surface of housing 32. Placed between the bottom of piston 38 and intermediate collar 34 is a spring 40 which is cushioned with a pair of resilient washers 35 positioned at its opposite ends. These washers 35 may be of felt, or any other suitable material.

As can be seen from FIG. 2, the adjustable shaft 18 fits within rod 22 and is locked into place with the locking pin 26.

The O-rings in the plastic sleeve 31 and piston 38 provide a sliding seal thereby allowing the assembly consisting of the knee pad 12, shaft 18 and piston rod combination to move independent of cylindrical housing 32 thus taking most of the shock within housing 28. The shock, traversing from the knee pad down the shaft is ultimately restrained or controlled by spring 40.

Vent air bleed orifices 37 are provided both above and below the piston to equalize pressures within cylinders 32 created when the rod piston assembly traverses within housing 28.

The tight sliding fit between the Teflon sleeve 31 with its attendant O-ring at one end and the piston O-ring combination at the opposite end of rod 22 provided an easy transition into the spring, thus preventing any lashback from spring 40.

Referring now to FIG. 3, the pad generally designated as 12 consists of baseplate 14, pad cover 13, for example, plastic, although any type of material could be used, foam rubber pad 15 and wooden base and cover retainer 44. The foam rubber pad 15 has a series of radial holes 42 which communicate with air compression chamber 46 which extends through the foam, wooden base and cover retainer 44 and metal base plate 14 terminating at the face of collar 14 affixed to shaft 18. It should be noted that there are no vent relief holes which communicate with chamber 46. When the pad is struck by a knee the trapped air is compressed towards chamber 46 via radial holes 42 in foam 15 thus providing additional "give" to the foam rubber taking away some of the shock imparted both to the tool and to the operator's knee.

Turning now to FIGS. 4 and 5, the carpet kicker head 36 is illustrated emphasizing the primary and secondary engaging

pins 50—54 in baseplate 48. The head 36 consists of housing 45 wherein baseplate 48 is affixed seated on shoulder 43. Attached to baseplate 48 is a plurality of primary and secondary carpet-engaging pins 50 and 54. The primary engaging pin 50 is partly cut away leaving a ledge 52 which serves to prevent the pin from penetrating all the way through the base of a carpet. The ledge 52 will stop short of complete penetration but will allow secondary pins 54 to engage the carpet to aid in gaining a firm hold thereto. The secondary pins are intermediate the primary pins in FIG. 5.

FIGS. 6 and 7 illustrate a different embodiment of the primary engagement pin 52 as shown in FIGS. 4 and 5. Primary pin 56 comprises an annular disc 58 intermediate the tip and the shank of pin 56. This type of primary engaging pin lends itself to a more easily penetratable carpet wherein more area of support is needed to prevent complete penetration.

FIG. 8 represents an alternate embodiment of the improved pin combination of this invention. The primary pin 60 projects from the baseplate 48 just as in the manner shown for the pin 50 in FIG. 4. However, instead of having the flat portion 52 on collar 58, the pin 60 is set in the center of a tooth-bearing bar 62 which not only prevents too deep a penetration into the carpet, but helps to grip the carpet.

The above specification has described basically a carpet kicker for manually stretching a carpet in place on a flat surface such as a floor or wall, the carpet kicker comprising a carpet gripping head, a shaft projecting from the head and a blow-receiving base in which is contained a shock absorbing means positioned within the shaft. Simply stated, the shaft may comprise a cylindrical housing which is affixed to the head and a second shaft moveable within the housing. As pointed out, a spring positioned within the housing restrains the movement of the interior shaft. The moveable shaft itself may comprise an outer sleeve and an interior extension shaft which is moveable and fixable in a variety of positions to adjust the length of the shaft.

In a second aspect of the invention, the head of the device has carpet-gripping projections depending from the head and

is equipped with means associated with the carpet-gripping projections to limit the movement of the projections into a carpet so that the projections do not force their way into the carpet material to an extent sufficient to damage the carpet or carpet base. Thus, the novel carpet-gripping head of this invention includes means to limit the movement of the carpet-gripping projections into the carpet to less than the length of the projections below the carpet-gripping base.

And still another aspect of the invention, there has been described an improved blow-receiving face for a carpet kicker which includes providing shock absorbing means in the base itself. As described, the shock absorbing means comprises an air compression chamber in the base which, as illustrated, consists of the combination of a metal base plate, a wooden cover therefore having a central opening, a resilient pad having radial holes therein communicating with the opening in the wooden base through a central opening in the resilient pad which is coaxial with the opening in the wooden base; and an appropriate cover over the resilient pad which is restrained by the baseplate.

Although the invention has been described in detail, it is to be clearly understood that the same is by way of illustration and example only and is not to be taken by way of limitation, the spirit and scope of this invention being limited only by the terms of the appended claims.

I claim:

1. In a carpet kicker for manually stretching a carpet in place on a surface, comprising a carpet-gripping head, a first shaft projecting from said head and a blow-receiving base; the improvement which comprises shock absorbing means positioned within said shaft, and wherein said first shaft comprises a cylindrical housing affixed to said head and a second shaft moveable within said housing further characterized in that the moving of said second shaft within said housing is restrained by a spring within said housing.

2. The device of claim 1 wherein said second shaft is moveable and fixable in a variety of positions to adjust the length of said first shaft.