March 10, 1959 S. G. YOUNG 2,876,583

KNEE KICKER

Filed March 30, 1956 3 Sheets-Sheet 1

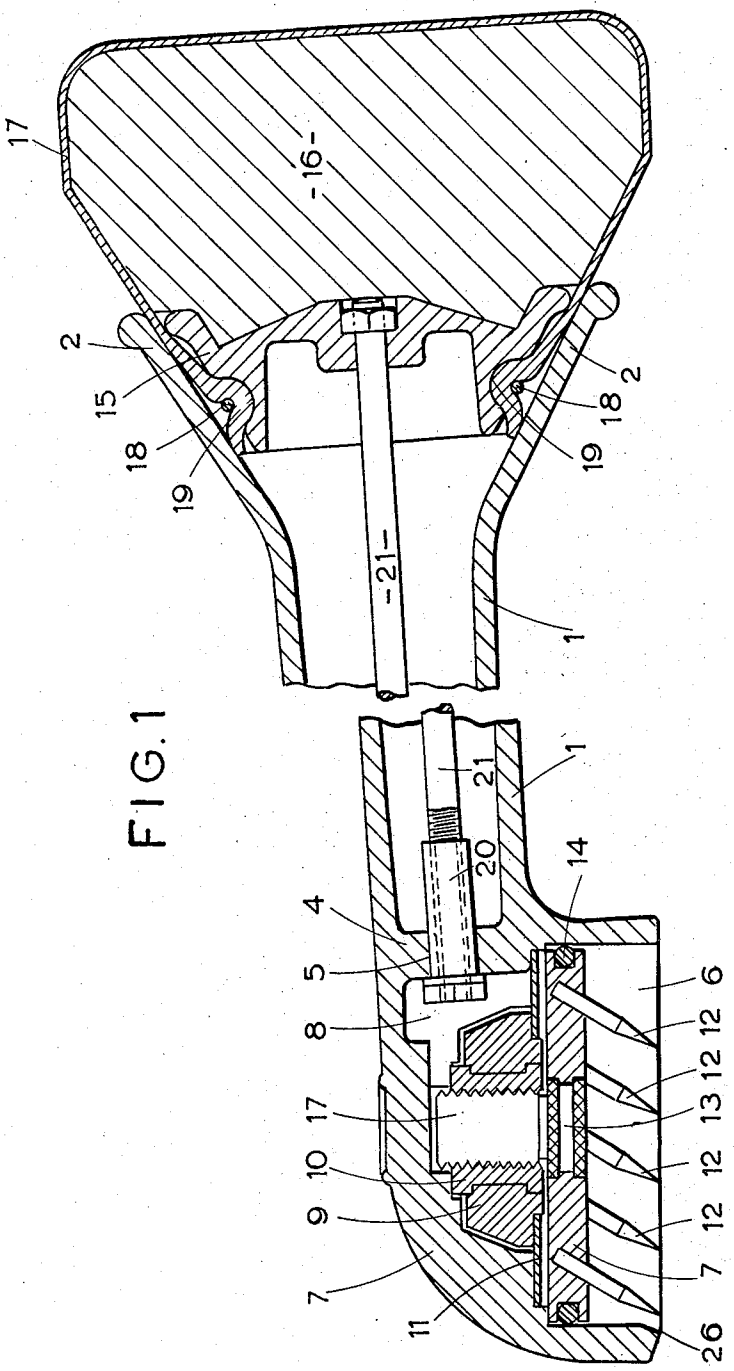


FIG. 1

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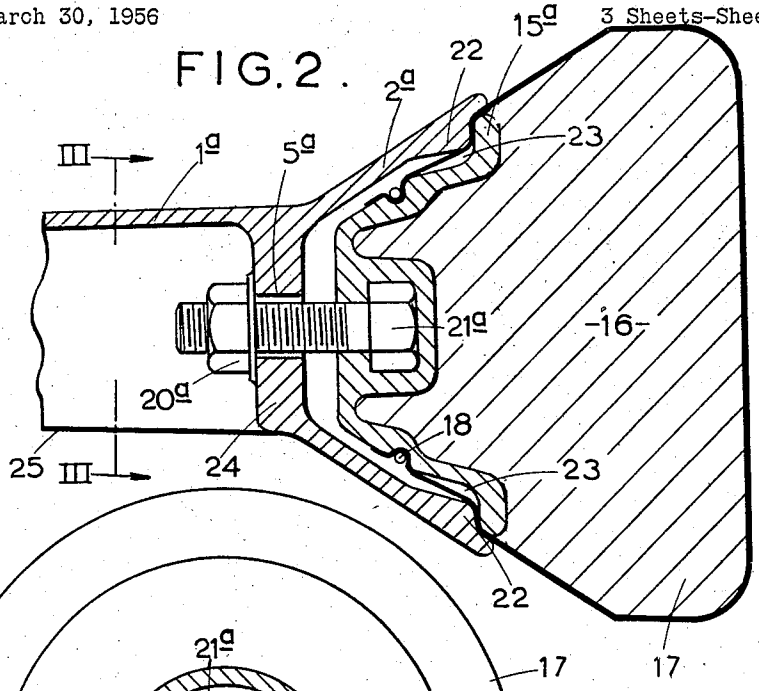
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March 10, 1959 S. G. YOUNG 2,876,583

KNEE KICKER

Filed March 30, 1956 3 Sheets-Sheet 2

FIG. 2.



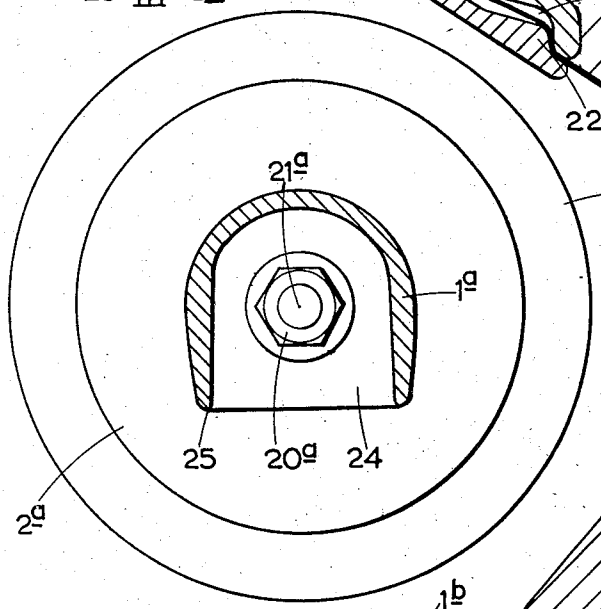


FIG. 3.

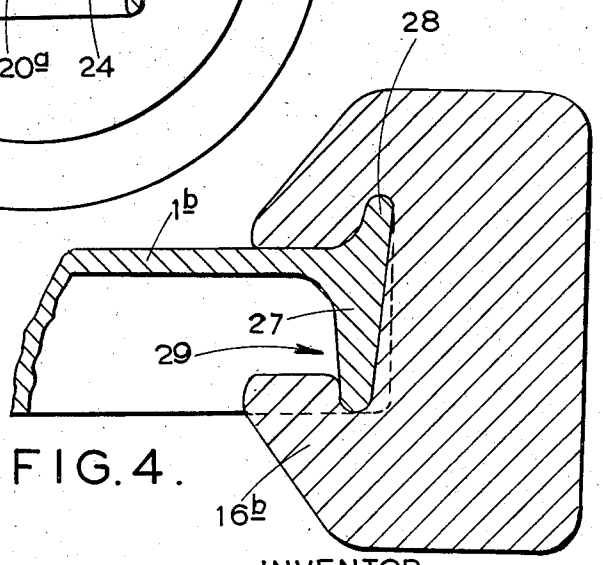


FIG. 4.

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March 10, 1959 S. G. YOUNG 2,876,583

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Filed March 30, 1956 3 Sheets-Sheet 3

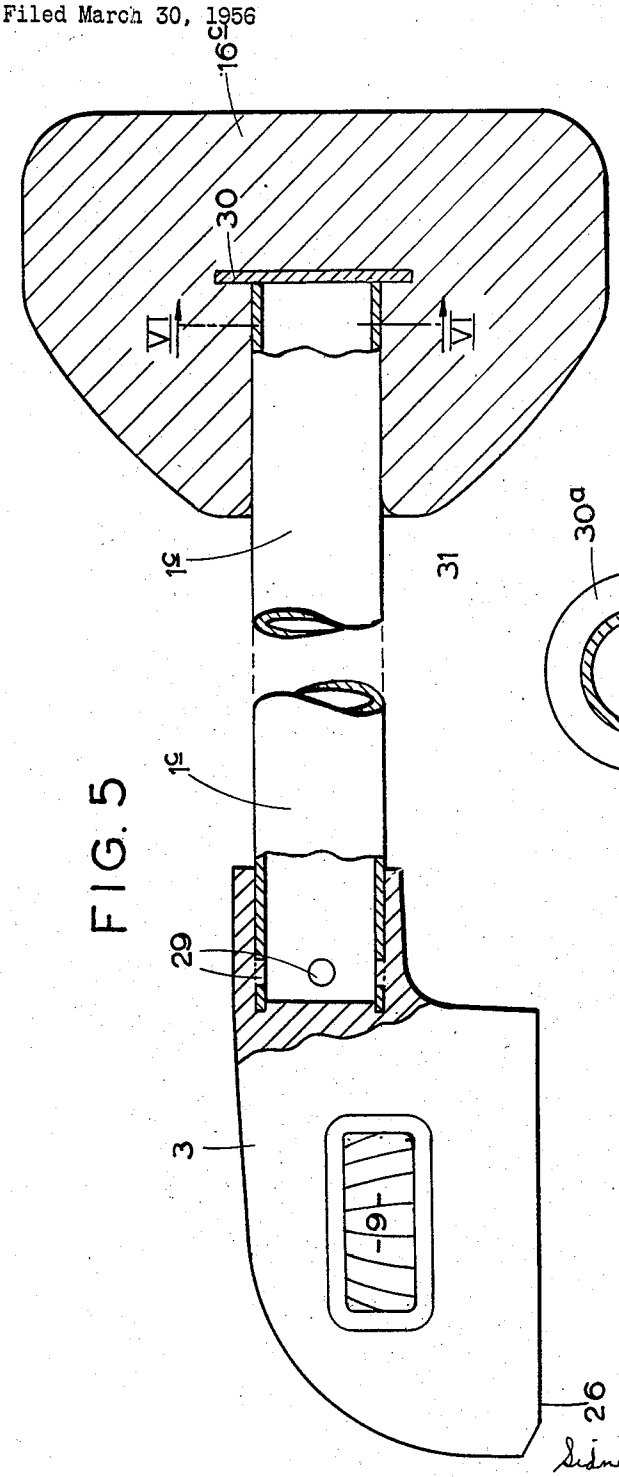


FIG. 5

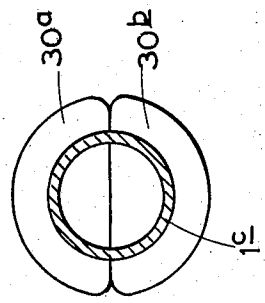


FIG. 6.

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KNEE KICKER

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Claims priority, application Great Britain November 22, 1955

3 Claims. (Cl. 45—89)

This invention relates to a tool for laying carpets and like purposes, such as that known as a knee kicker which is used to stretch and hold the edge of a carpet while it is being secured to the floor.

Such tools have previously been constructed from a relatively large number of separate constituent parts, including a head member, a spiked gripper plate mounted in such head member, a cushioned pad or anvil, and a central body portion secured separately to the head member and to the anvil member.

It is a primary object of the invention to provide a construction of knee-kicker having a minimum number of component parts which are simply and easily assembled, each individual part being such as to lend itself to modern economical methods of production.

Another object of the invention is to provide a robust light-weight and easily manipulated tool which will stand up to the hard knocks and usage such tools are usually subjected to, e. g. being trodden on, dropped onto or kicked about a floor.

A few exemplary embodiments of the invention will now be described with reference to the accompanying drawings, in which:

Fig. 1 is a longitudinal section of one constructional form of knee-kicker;

Fig. 2 is a partial view of a modification in section of the knee-kicker shown in Fig. 1.

Fig. 3 is a section on III—III of Fig. 2.

Fig. 4 is a partial view of a further modification in section of the knee-kicker shown in Fig. 1.

Fig. 5 is a view partly in section of yet a further modification of the knee-kicker shown in Fig. 1, and

Fig. 6 is a partial section on VI—VI of Fig. 5 showing an alternative arrangement.

Referring now to Fig. 1 of the drawings, the improved tool comprises a cast aluminium alloy body consisting of a round tubular portion **1**, a round bell-mouth or socket **2** at one end, a cup-shaped portion **3** at the other end, and a dividing wall **4** having a cored hole **5**. The interior of the cup-shaped portion **3** is divided into two parts, an outer rectangular shaped recess **6** to receive the gripper and an inner recess **8** to receive a heavily ribbed cast aluminium adjusting nut **9** having a threaded steel insert **10**. The nut **9** is retained in recess **8** by a retaining plate **11** secured by screws passing into the cup-shaped portion **3**. The gripper consists of a flat rectangular die-cast alloy plate **7** into which are cast the knurled ends of spikes **12** and the knurled end of a threaded steel stud **13**. A resilient sealing ring **14** is fitted in a peripheral groove in the gripper plate **7**. The lateral walls of the cup-shaped portion **3** adjacent the recess **8** are apertured sufficiently (see Fig. 5) to allow the nut **9** to be turned by the fingers in order to adjust the amount by which the ends of the spikes project beyond the recess.

The anvil portion of the tool comprises a cast aluminium alloy base clamping member **15**, padding **16**, and a flexible leather or plastic cover **17** which is secured to

the base clamping member **15** by a spring steel circular clip **18**. The padding may be of any suitable material such as, for example, horse hair or moulded sponge rubber, it being preferred to provide a moulded form of padding which retains its shape for a longer period of use. The cover **17** is preferably shaped before attachment to the base clamping member **15** by the clip **18** drawing the edges of the cover into a groove **19** in the base clamping member. The base clamping member carrying the padding and cover is drawn into the socket **2** by means of a nut **20** passing through hole **5** in the wall **4** and threadably engaged with a tie bolt or stud **21**.

The knee-kicker is assembled in the following order: firstly the anvil is assembled, the cover being stretched over the padding and clipped to the base clamping member by the clip; secondly the anvil is fitted and pulled up into the socket by the nut **20** thereby positively securing the edges of the cover, access to the head of the nut being through the empty cup-shaped portion **3**. Thirdly, the nut **9** is placed in recess **8** and the retaining plate secured in place. Fourthly, the gripper plate is offered to recess **6** and the nut **9** is turned to draw the plate **7** into said recess. For this last operation it is convenient to have a pair of slightly spaced rubber rollers occupying the same horizontal plane and being arranged to rotate in the same direction. The cup-shaped portion in an inverted position is pressed between the two rollers which rotate the nut while the gripper is being inserted into the recess **6**.

This construction of the gripper member presents considerable advantages over the prior known tools, in which holes are normally drilled in a preformed plate to relatively exact limits as to diameter and angle of inclination, a spike being driven into each such hole as an interference fit therein until the end of the spike reaches a predetermined distance from the plate. In this prior method of construction, difficulties were encountered in ensuring that the points of all the spikes were initially in a common plane, and in ensuring that loosening or movement of one or more spikes in the holes drilled in the plate did not take place, resulting in misalignment of their points and damage to the carpet gripped thereby. These difficulties are obviated by the improved tool of this invention.

Referring now to Figs. 2 and 3 which show a modification of the anvil and the body, the centre portion of the body **1***a* is trough-shaped instead of being tubular as shown in Fig. 1. Stiffening webs (not shown) are provided across the trough-shaped portion **1***a* at regular intervals. An inwardly projecting rib or corrugation **22** is provided on the interior surface of the socket end **2***a* which co-operates with a peripheral recess **23** on the base clamping member **15***a*, the effect of which is further to stretch the cover **17** over the padding **16** as the wedge is pulled into the socket.

In this modification a wall **24** having a cored hole **5***a* is provided at the end of the socket so that only a short tie bolt **21***a* is required and which is conveniently cast into the base clamping member **15***a* as shown.

As will be readily understood the body of this modified knee-kicker is simply moulded, the parting line of the two moulds coinciding with the edge **25** of the trough-shaped portion and the edge **26** of the cup-shaped portion, a very short and simple core being required for moulding the interior of the socket **2***a*.

Referring now to Fig. 4 which shows a further modification of the anvil and body, the central portion **1***b* of the body is trough-shaped and similar to that described with reference to Figs. 2 and 3. The body terminates however in an end wall **27** having a radial extension **28**. The anvil consists solely of a moulded rubber pad **16***b* having a central recess **29** into which the end of the body

is pressed, the wall 27 and extension 28 fitting into a suitable recess in the pad 16*b*.

The moulding of the body is thus further simplified, requiring no loose core members. The anvil is also in its simplest possible form, it being preferred however to mould it in two layers e. g. an inner essentially cushioning portion, and an outer stronger and coloured portion, thus providing an integrally moulded cover and padding.

Referring now to Figs. 5 and 6 which show a further modification of the knee-kicker shown in Fig. 1 and a modified detail thereof respectively, the body comprises a round tubular steel portion 1*c* about one end of which is cast the cup-shaped portion 3. Radial holes 29 into which the metal of portion 3 flows during casting, firmly lock the steel tube 1*c* to the cup-shaped end portion 3. The anvil is a moulded rubber pad 16*c* having a disc-shaped strengthening plate 30 moulded therein and a hole 31 which is such as to tightly grip the sides of the tubular portion 1*c*.

When it is desired to provide the strengthening plate in the anvil 16*c* as a separate part, it is preferably divided into two halves 30*a* and 30*b* (see Fig. 6) so that they may be inserted into the pad 16*c* after moulding.

A core rod is inserted into the tube 1*c* which is then placed into a recess provided in the mould, the metal being cast around the end of the tube 1*c* but being prevented from flowing down the tube by the core rod. It is thereby possible to reduce greatly the size of the mould which if for use in a die-casting machine, greatly reduces the cost of the mould and also requires a very much smaller machine than would be required if the body of the other forms of knee-kicker described were to be die-cast.

The improved construction of knee-kicker according to the invention thus provides a tool having the minimum number of constituent parts of a design such as to facilitate ready mass production thereof by conventional methods, and simple assembly of the constituent parts to form an economical and efficient tool.

I claim:

1. A knee kicker comprising an elongated and integrally cast hollow metal body having a socket at one end which is coaxial with the longitudinal axis of said body; a padded anvil secured in said socket and including a base clamping member, a body of padding and a flexible cover overlying said base clamping member and extending over the body of padding, said cover being gripped around its periphery between opposed surfaces of said socket and said base clamping member; and a clip extending over the cover and around the inner portion of the base clamping member to additionally secure the cover to the base clamping member.

2. A knee kicker according to claim 1, wherein said clip is located in a peripheral groove in said base clamping member.

3. A knee kicker comprising an elongated and integrally cast hollow metal body having a socket at one end which is coaxial with the longitudinal axis of said body; a padded anvil secured in said socket and including a base clamping member, a body of padding and a flexible cover overlying said base clamping member and extending over the body of padding, said cover being gripped around its periphery between opposed surfaces of said socket and said base clamping member; and a clip extending over the cover and around the inner portion of the base clamping member to additionally secure the cover to the base clamping member, said socket being provided with an internally projecting rib which forces a portion of the cover into a peripheral recess on said base clamping member whereby the cover is caused to stretch when the base clamping member is secured in the socket.

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