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A. HOPKINS

2,631,403

CARPET STRETCHING DEVICE

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Fig. 1

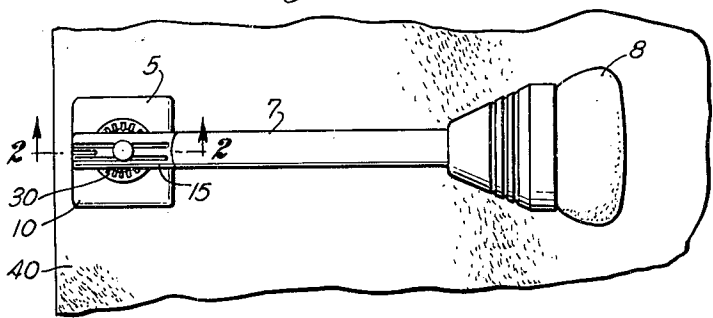


Fig. 2

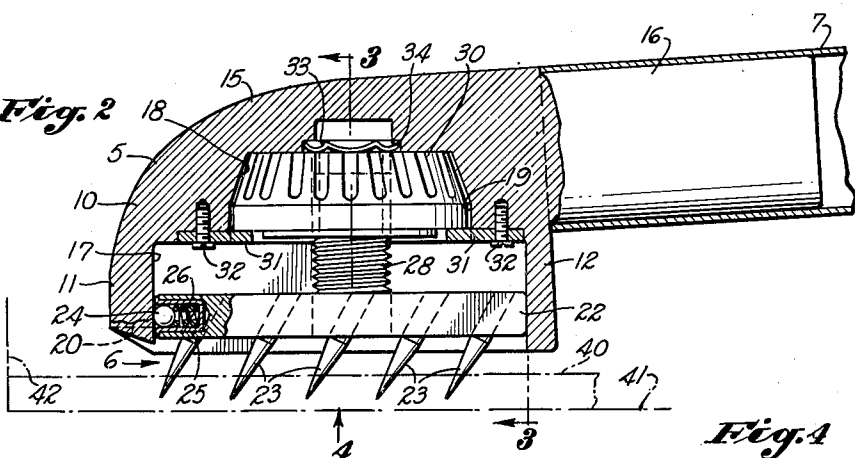


Fig. 3

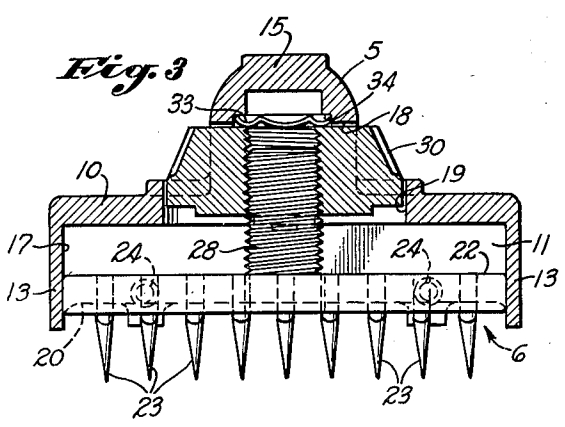
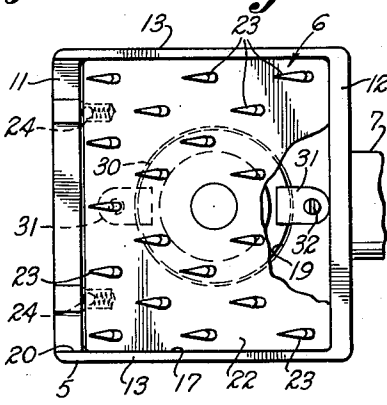


Fig. 4



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2,631,403

CARPET STRETCHING DEVICE

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7 Claims. (Cl. 45—89)

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My invention relates to carpet-stretcher devices and particularly to a stretcher of the type having a head provided with prongs engageable with a carpet and adapted to stretch the same when the device is moved relative to the floor or other surface to which the carpet is to be applied. Specifically, the present invention relates to improvements in carpet stretchers of the type disclosed in U. S. Patent No. 2,184,019, titled "Carpet Stretchers," granted December 19, 1939, to Jesse C. Owens and assigned to the assignee of this invention.

The patented carpet stretcher, referred to above, comprises a head having a chamber in its lower side in which a plate is disposed, said plate having a plurality of prongs adapted to engage in a carpet to stretch the same when the head is moved relative to the floor upon which the carpet is laid, a handle being connected to the head to facilitate such movement of the device. As is well known, carpets vary considerably in thickness and quality and for this reason it is important that the carpet-engaging prongs be adjustable vertically in order to vary their penetration into the carpets and thus insure proper engagement of the prongs therein without projecting completely through the same to catch in the floor or in the resilient cushion upon which the carpet is to be laid.

While the patented device has been quite successful in use and has had wide commercial use, it has been found that the adjusting means thereof, that is, the means for adjusting the carpet-engaging prongs vertically, is relatively complicated. For this reason, considerable time is required to effect the adjustment and the use of tools is necessary. Moreover, it is essential that the prong-carrying plate remain parallel to the bottom surface of the head so as to effect uniform engagement of the prongs in the carpet. In the Owens device, the plate is maintained properly leveled by means of set screws which must be individually adjusted so that the preparation of the stretcher for a particular job is further complicated.

It is an object of this invention to provide a carpet stretcher device which possesses all the attributes of the patented device referred to above and, in addition, has means by which the carpet-engaging means can be quickly and accurately adjusted in accordance with the thickness and type of carpet to be stretched.

Another object is to provide a device of the character referred to, in which the manually operable means for adjusting the carpet-engag-

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ing means is located at the top of the device, rather than at the lower surface thereof so that it is unnecessary to invert the device to carry out the adjusting operation and the carpet-gripping action can be readily determined by trial, that is, the adjustment may be made while the prongs are engaged in the carpet and while lateral force is applied to the device to test the stretching action.

Another object is to provide a stretcher device of the type indicated in which is incorporated means for automatically maintaining the prong plate parallel to the bottom of the head of the device so as to prevent tilting of the plate and thus insure uniform penetration of the prongs in the carpet.

A further object is to provide a stretcher device of the type specified having friction means for maintaining the plate-adjusting means in selected positions.

A still further object is to provide a carpet-stretcher device which is simple in construction, economical to manufacture, and highly efficient in performing its intended function.

Further objects will appear from the following specification and from the drawing, which is intended for the purpose of illustration only, and in which:

Fig. 1 is a plan view of my improved carpet-stretcher device;

Fig. 2 is an enlarged longitudinal sectional view through the head of the device, taken on line 2—2 of Fig. 1;

Fig. 3 is a cross-sectional view, taken on line 3—3 of Fig. 2; and

Fig. 4 is a bottom view of the head of the device.

The present improvements in carpet-stretcher constructions are herein illustrated as embodied in a stretcher of the type commonly referred to in the art as a "knee kicker" although the improvements are applicable to stretchers of the extension type. Such carpet stretchers have a head portion 5 which carries the carpet-engaging means 6 and from which a tubular handle 7 projects, a resilient pad 8 being provided at the outer end of the handle. Such a carpet stretcher is applied to use by causing penetration of the carpet-engaging means 6 of the head 5 in an edge portion of the carpet, with the pad end of the device spaced inwardly from said edge portion, after which the device is forced laterally outward by pressure applied against the pad 8 by a workman's knee. It will be apparent, however, that the improvements in the stretcher

head are applicable to carpet stretchers of the type disclosed in U. S. Patent No. 2,108,506, issued February 15, 1938, to Jesse C. Owens for Carpet Stretcher, this patent being owned by the assignee of the present invention. The patented carpet stretcher last referred to is of the relatively long, extensible type having a carpet-engaging head at one end of a series of telescopic tubes and a baseboard-engaging block at the other end of the tube assembly, manually operable means being provided for extending the telescopic tubes to elongate the device. The block is adapted to engage the baseboard at one side of the room while the prongs of the head engage the edge portion of the carpet at the opposite side of the room, extension of the device by the manually operable means causing the carpet to be stretched toward the opposite baseboard of the room.

The stretcher head 5 preferably, although not essentially, is made as a metal die-casting and is of substantially inverted box-like form, having a top wall 10, a front wall 11, a back wall 12 and side walls 13. At its top portion 10, the head 5 is provided with a longitudinally extending, upstanding web 15 which is provided with a rearward extension 16 for receiving the forward end of the tubular handle 7 which is secured thereto. The walls 10, 11, 12 and 13 of the head 5 define a rectangular chamber 17 in the bottom of the head. The web 15 is provided with a transverse opening 18 and a circular aperture 19 provided in the top wall 10 communicates between the opening 18 and the chamber 17 (Fig. 3). The front wall 11 may be cut away at its lower end as indicated at 20 in Figs. 2 and 3.

Disposed in and adapted to slide vertically in the chamber 17 is a rectangular plate 22 which carries a plurality of carpet-engaging prongs 23 in the form of pins, the pointed ends of the pins projecting downwardly and forwardly from the plate as best shown in Fig. 2. The plate 22 is so dimensioned that its side and rearward edges have a close sliding fit with the inner surfaces of the corresponding walls 13 and 12 of the head 5. Balls 24 pocketed in sleeves 25 set into recesses in the forward edge of the plate 22 are forced outwardly by compression springs 26 so as to engage the inner surface of the front wall 11 and thus force the plate rearwardly into engagement with the inner surface of the back wall 12, the result of this action being to maintain the plate 22 level to prevent tilting thereof.

The pronged plate 22 is provided with first cam means exemplified as threads on an upstanding, screw-threaded stem or shank 28 which extends upwardly into or through the aperture 19 in the top wall 10 of the head 5. A nut member 30 carried by the head 5 and having second cam means exemplified by internal threads engageable with the first cam means carried by the plate 22 is disposed in the transverse opening 18 and screwed onto the upper end of the shank 28, the lower end of the member being rotatable in the aperture 19. The nut member 30, which has a fluted periphery, is prevented from moving upwardly by the upper portion of the web 15 and is retained against downward movement by a pair of retainer elements 31 which are fastened to the underside of the top wall 10, within the chamber 17, by means of screws 32, the elements underlying the periphery of the nut member as shown in Fig. 2. An annular spring element 33 is disposed in a counterbore 34 in the upper portion of the web 15 and engages against the upper

end of the nut member 30 to force the latter downwardly into frictional engagement with the retainer elements 31 so as to frictionally retain the nut member in different positions of rotative adjustment.

To assemble the parts of the stretcher head, the spring element 33 is first inserted in the counterbore 34 and the nut member 30 then slid axially into the aperture 19 and the transverse opening 18. The retainer elements 31 are then mounted in the chamber 17 to retain the nut member 30 in place in the head 5. The pronged plate 22 is next inserted into the chamber 17, at which time the nut member 30 is rotated to cause it to be screwed onto the shank 28 of the plate. The device is then ready for operation and is applied to use in the manner to be next explained.

Assuming that it is desired to stretch a carpet 40 on a floor 41 and to secure the edge of the carpet to the floor adjacent the baseboard 42 at one side of a room, the stretcher device is first adjusted to cause the prongs or pins 23 to penetrate the nap or pile of the carpet and to engage the foundation or warp threads of the carpet when the device is applied to the carpet as shown in Figs. 1 and 2. To obtain the desired engagement of the pins 23 in the carpet, the plate 22 is adjusted vertically and such adjustment is readily obtained by merely rotating the nut member 30 in the appropriate direction to raise or lower the plate. As will be apparent, opposite peripheral portions of the nut member 30 which project laterally beyond the sides of the web 15 may be grasped between the thumb and forefinger to facilitate rotation of the nut member so that the adjustment can be conveniently obtained while the device is in operative position. Thus, it is unnecessary to invert the head 5 to effect such adjustment of the plate 22 and, by applying a slight force in a forward direction, the gripping action of the prongs 23 in the carpet can be readily ascertained during the adjusting operation. Consequently, the proper engagement of the prongs 23 in the carpet 40 can be quickly and accurately obtained.

After the device has been adjusted in accordance with the carpet being laid and the head 5 is positioned as indicated in Figs. 1 and 2, lateral force applied against the pad 8 by the knee of the workman is transmitted through the pins 23 to the carpet 40 so as to stretch the latter toward the baseboard 42, the opposite edge of the carpet having been previously secured to the floor adjacent the opposite wall of the room. The edge of the stretched carpet 40 is then secured to the floor by tacks or by any of various carpet-securing strips commonly employed for this purpose. The device having once been adjusted to the carpet being laid, the stretching operation may be repeated along the entire edge of the carpet.

During such repeated operation, the nut member 30 is held in frictional engagement with the retainer elements 31 by the spring element 33 so that the adjustment is maintained. Since the rearward vertical edge of the plate 22 is maintained in engagement with the inner vertical surface of the wall 12 by the spring-pressed balls 24, tilting of the plate is resisted. It is thus seen that the present carpet stretcher head constitutes an important improvement over similar devices heretofore employed for the same purpose. As an important feature of improvement, in the present device the prong plate is conveniently adjusted by the simple act of rotating a thumb nut

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which is disposed at the top of the stretcher head. By this arrangement, the adjustment can be carried out while the device is in place upon the carpet and it is unnecessary to invert the head as in prior stretcher devices. Moreover, by the present construction, the use of adjusting screws, springs, set-screws, etc., is avoided and the employment of tools for effecting the adjustment is unnecessary. The present device is especially simple in construction and its parts are adapted for economical mass production so that the device can be sold at a relatively low price. By making the head as a die-casting, the outer surfaces thereof may be ribbed, grooved, or otherwise provided with suitable ornamentation to enhance the appearance of the article.

As will be apparent to one skilled in the art, the construction of the carpet stretcher device is susceptible of various modifications which would fall within the spirit of the invention. Consequently, I do not wish to be limited in this respect, but desired to be afforded the full scope of the appended claims.

I claim as my invention:

1. A carpet stretcher, comprising: a head having a chamber in its lower side and an aperture disposed above and communicating with said chamber, said head having a handle projecting laterally therefrom; a plate disposed in said chamber and adapted to move vertically therein, said plate having carpet-engaging means on its underside and a screw-threaded shank projecting upwardly therefrom into said aperture; rotatable nut means disposed at the upper side of said head and engageable with said shank; and retaining means engageable with said nut means to prevent vertical movement thereof, said nut means being adapted upon rotation to move said plate vertically in said chamber.

2. A carpet stretcher, comprising: a head having a chamber in its lower side, an aperture disposed above said chamber and a web defining a transverse opening disposed above said aperture, said chamber, aperture and opening being vertically aligned; a plate disposed in said chamber and adapted to move vertically therein, said plate having carpet-engaging means on its underside and said plate carrying first cam means; and a member rotatable in said transverse opening and having a portion projecting laterally beyond said web so as to be manually engageable, said rotatable member carrying second cam means engageable with said first cam means, and adapted upon rotation to move said plate vertically in said chamber.

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3. A carpet stretcher as defined in claim 2 and including means carried by said head and engageable with said rotatable member to resist rotation of said rotatable member so as to retain the same in different positions of rotative adjustment.

4. A carpet stretcher as defined in claim 2 and including: friction means disposed within said head and engageable with said rotatable member to resist rotation thereof; and resilient means between said web and said rotatable member and operative to maintain said rotatable member in engagement with said friction means.

5. A carpet stretcher as defined in claim 2 and including: retainer clips carried by said head within said chamber and engageable with the lower end of said rotatable member to retain the same within said transverse opening; and resilient means disposed between said web and the upper end of said rotatable member and operative to maintain said rotatable member in frictional engagement with said clips.

6. A carpet stretcher as defined in claim 2 in which said rotatable member has its lower end disposed in said aperture so that lateral displacement of said rotatable member from said opening is prevented.

7. A carpet stretcher, comprising: a head having a chamber in its lower side and a handle projecting laterally therefrom; a plate disposed in said chamber and adapted to move vertically therein, said plate having carpet engaging means on its underside; manually operable means, disposed at the upper side of said head, for adjusting said plate vertically within said chamber, an edge of said plate being engageable and slidable along a first vertical side of said chamber; and resilient means on said plate engageable with a vertical side of said chamber opposite said first vertical side and operable to maintain said edge in engagement with said first side so as to prevent tilting of said plate in said chamber.

ALAN HOPKINS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
965,118	McBeth	July 19, 1910
2,184,019	Owens	Dec. 19, 1939
2,358,436	Bartlow	Sept. 19, 1944