

April 29, 1969

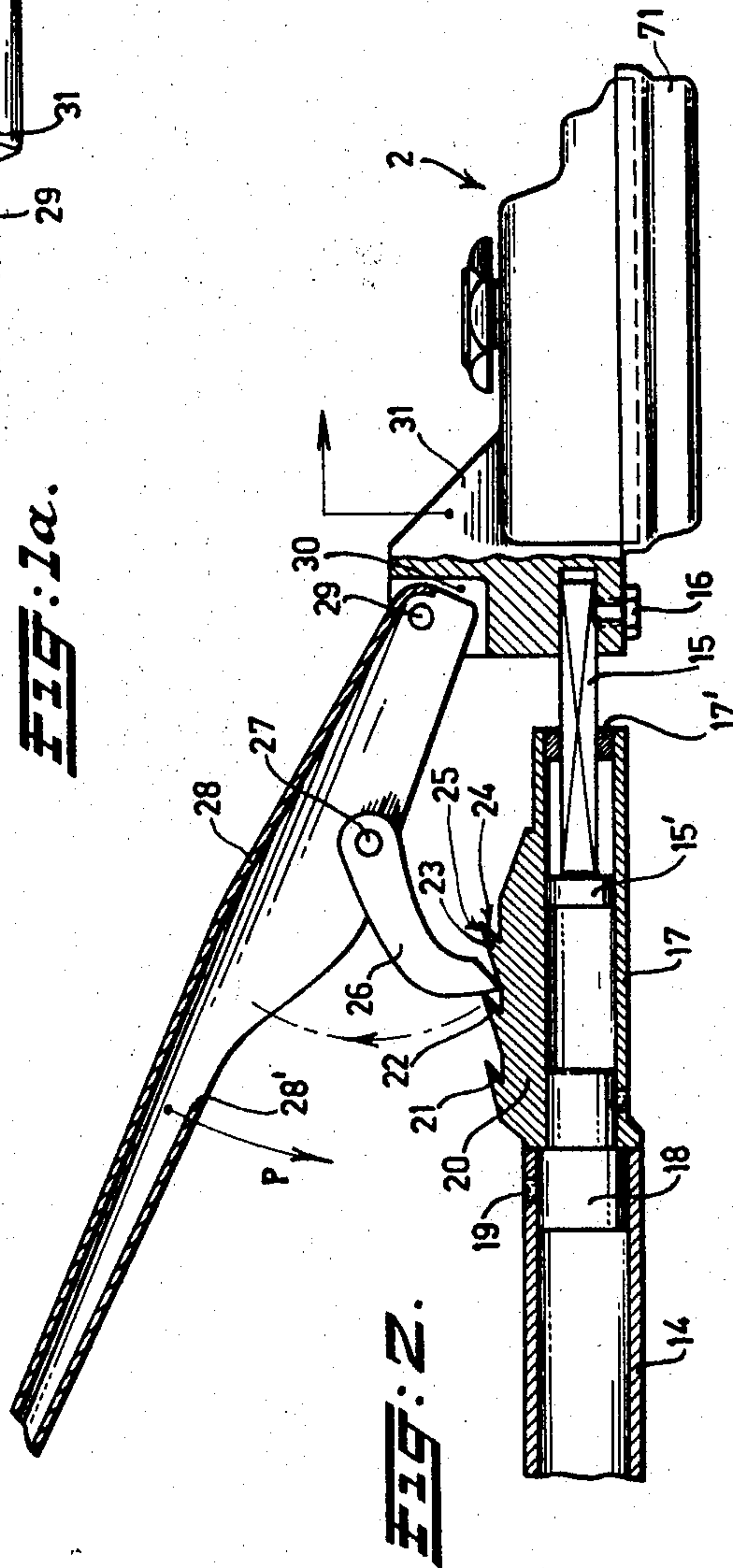
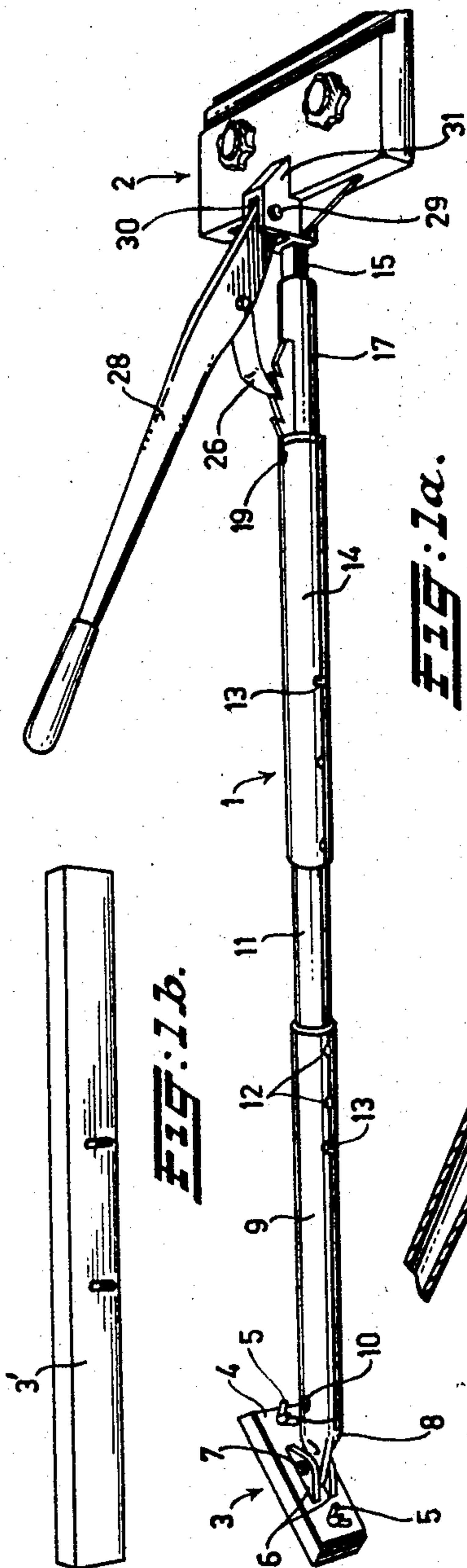
L. A. KOPPELMANS

3,441,252

CARPET STRETCHER

Filed Dec. 8, 1966

Sheet 1 of 3



April 29, 1969

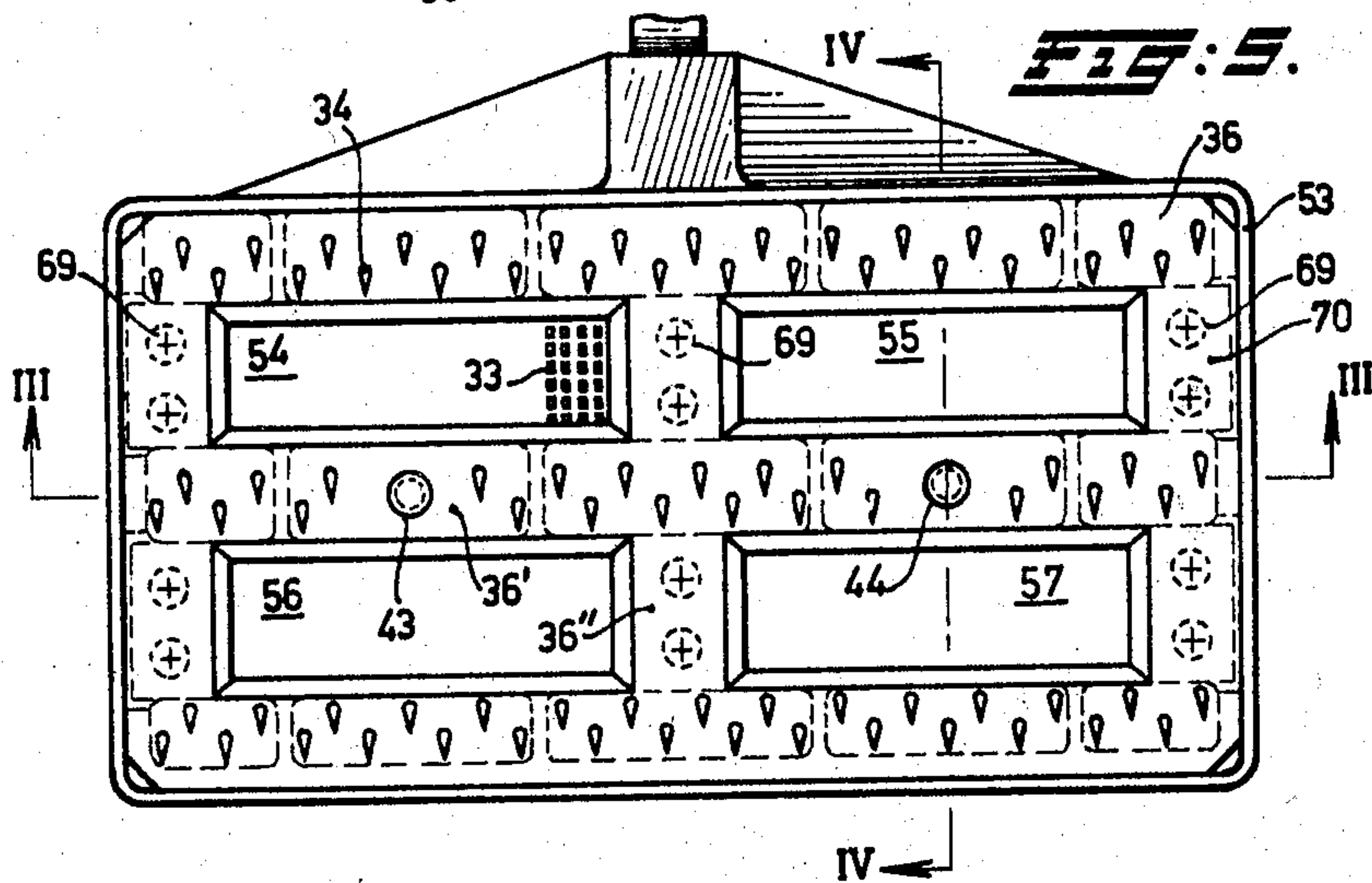
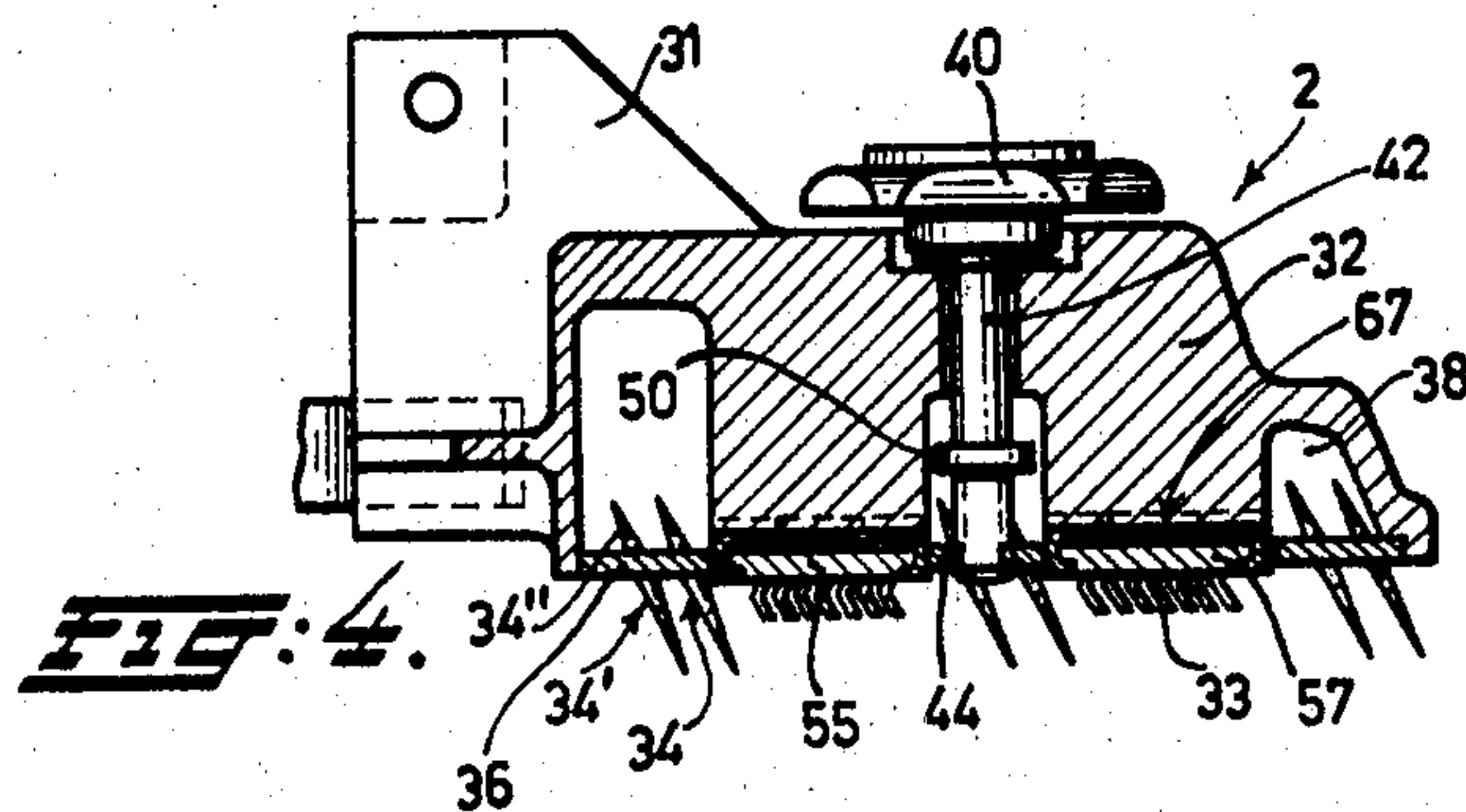
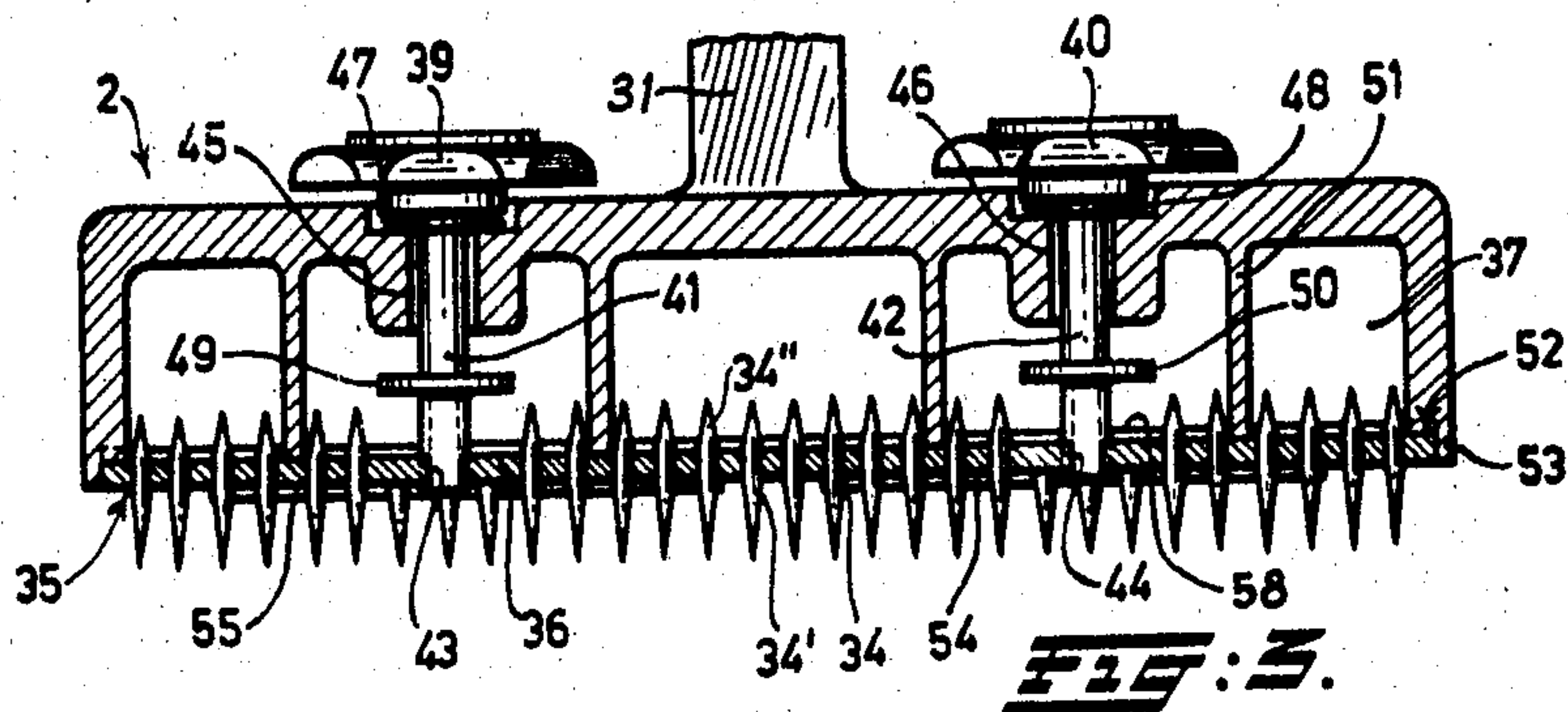
L. A. KOPPELMANS

3,441,252

CARPET STRETCHER

Filed Dec. 8, 1966

Sheet 2 of 3



April 29, 1969

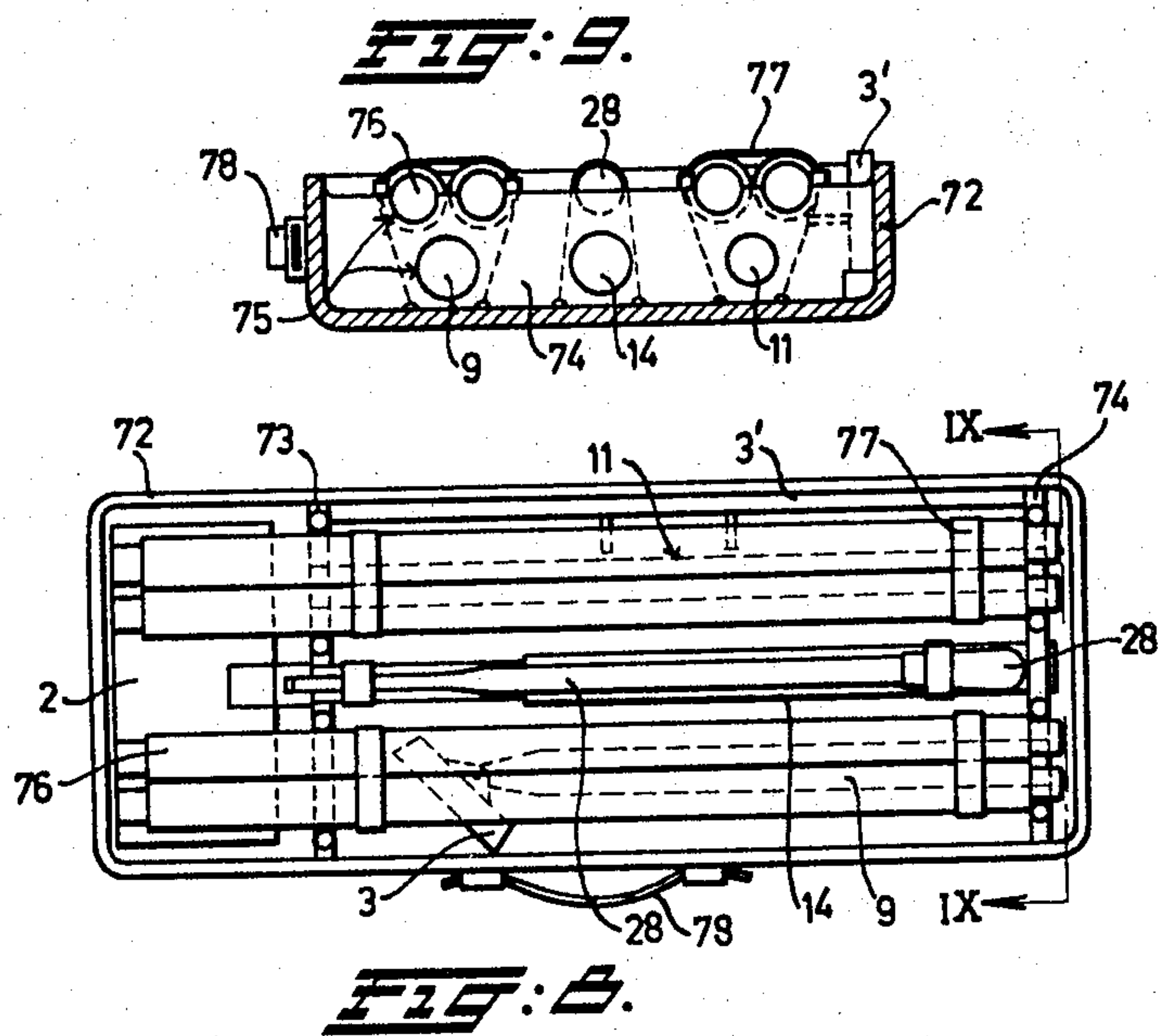
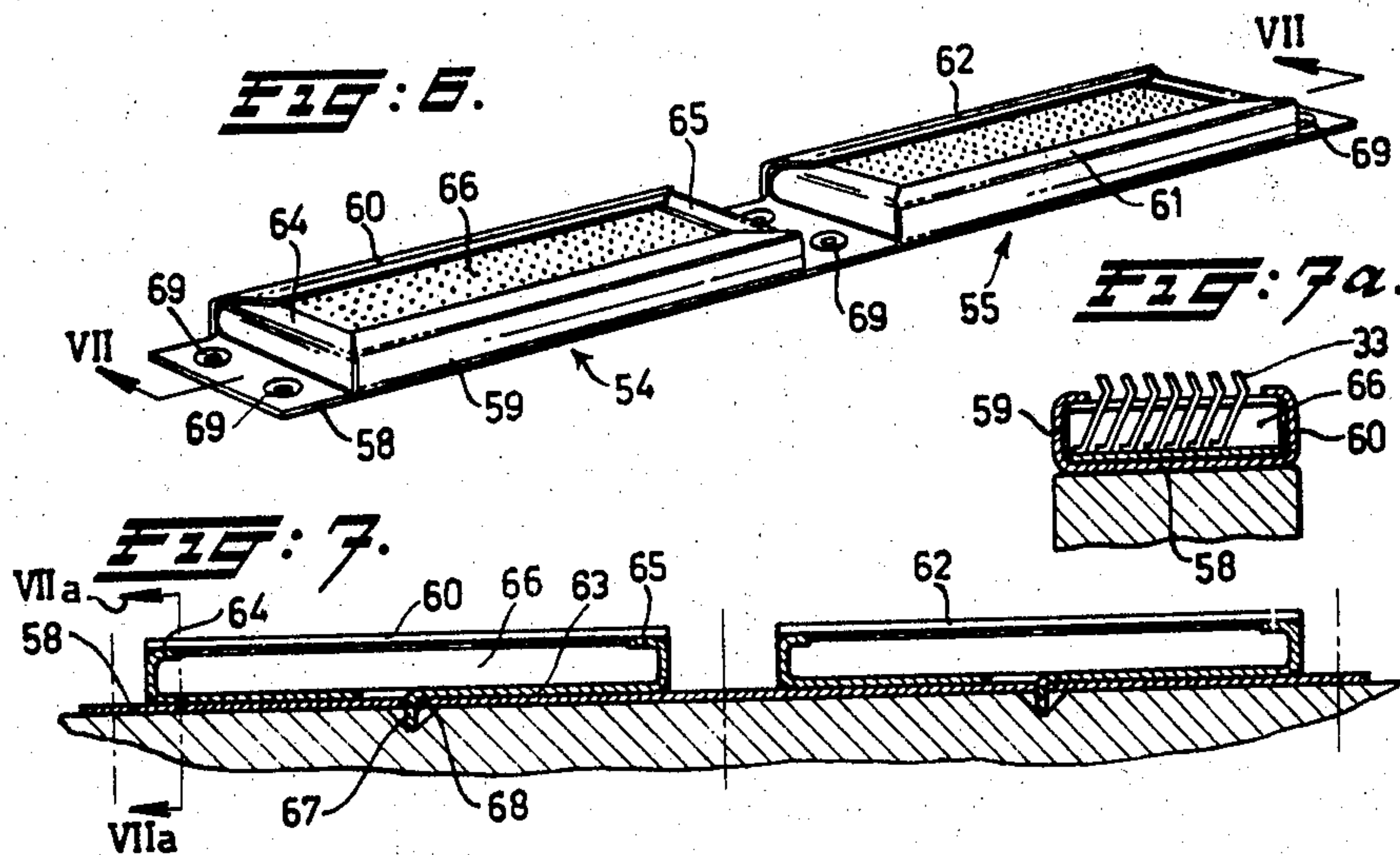
L. A. KOPPELMANS

3,441,252

CARPET STRETCHER

Filed Dec. 8, 1966

Sheet 3 of 3



1

3,441,252

CARPET STRETCHER

Leonardus Aloisius Koppelmans, Berkenlaan 3,
Bergeijk, Netherlands

Filed Dec. 8, 1966, Ser. No. 600,174

Claims priority, application Netherlands, Dec. 10, 1965,
6516135

Int. Cl. A47g 27/04

U.S. Cl. 254—61

6 Claims

ABSTRACT OF THE DISCLOSURE

Carpet stretcher of the kicker type or of the power stretcher type, having a head with carpet engaging short pins and long pins. The long pins are, for use with normal or with heavy carpets, arranged in two different lengths on either side of a flat grate-shaped frame, which is reversibly connected to the head. A power type stretcher, having as usually a plurality of telescoping tubes between the head and the wall abutting face at the opposite end, is provided with a series of teeth against which a pawl, hanging below a lever on the head, is placed for stretching and straining the carpet in successive steps by extension of the head, without having to take the pinned head off the carpet.

The invention relates to carpet stretchers and particularly to carpet stretchers comprising a tube shaped, elongated body or pole, at one end of said body an abutment forming face, at the other end of said body a head, provided at its under surface with a plurality of carpet engaging short pins and a plurality of longer carpet engaging pins, being interspersed among the short pins and projecting slantingly downwardly below the bottom of the head.

Carpet stretchers of this general type are known having a plate which bears said longer pins, and which is vertically adjustable in said head to vary the projection length of said long pins. Such carpet stretchers are objectionable as in consequence of the great forces exerted upon said plate while stretching carpets, the adjustment device of the pin bearing plate in the head is subject to substantial wear, which results in the necessity of regular replacement of parts of said adjustment device.

It is an object of the invention to provide a carpet stretcher having a flat member which is reversibly connected to the stretcher head, both sides of said flat member being provided with relatively long carpet engaging pins, the pins at one side being different from the pins at the other side.

Another object of the invention is to provide said flat member with pins different in length on either side and adapted in the most effective way to the requirements, based on the practical experiences.

In this way the adjustment of the correct pin length will become independent on the degree of experience of the person using the stretcher. Although with the known stretcher type, experienced workmen could find the correct adjustment, complaints were met from less experienced men.

A further object of the invention is to fix said flat member detachably against ribs in said head by means of screws in a construction having great durability and solidity, the operation of the stretching being very simple.

2

The carpet stretchers of the general type mentioned can be distinguished in two specific types, one being called a "kicker," having a relatively short, fixed pole length, the abutment at the end opposite the head being a knee pad, the other specific type being called a "power stretcher," with a pole of considerable length which can moreover be varied by means of pairs of telescoping tubes.

It is also an object of this invention to provide a power stretcher having lever means interposed between the head and the pole or body, for displacing the head relative to the abutment face in the direction of stretching.

Yet another object of the invention is to provide such a power stretcher with lever means, which can be operated very simply, suitable for use by unexperienced workmen.

Hitherto lever means in power stretchers are known, which provide for one stretching movement. To make a second stretching movement, in case of insufficient strain in the carpet, with the known lever means it is necessary to detach the pins from the carpet and to start the stretching operation again with the pins in the carpet in an other position, corresponding with the desired greater strain in the carpet.

Another object of the invention is, thus, to provide lever means adapted to restretch the carpet one or more times to obtain a greater strain, without removing the carpet engaging pins from the carpet.

The invention possesses other objects appearing from the following detailed description of a preferred embodiment of my invention, which description is to be read in connection with the accompanying drawings.

In the drawings:

FIG. 1a is a perspective view of a preferred embodiment of a carpet stretcher according to the invention, FIG. 1b is an elevation view of exchangeable portion thereof;

FIG. 2 is a longitudinal section of a portion of the stretcher;

FIG. 3 is a central, vertical lateral section of the head, taken along lines III—III in FIG. 5;

FIG. 4 is a vertical sectional view of the head, in the longitudinal direction of the pole, as taken along lines IV—IV in FIG. 5;

FIG. 5 is a view of the underside of the pin bearing head;

FIG. 6 is a perspective view of a unit comprising groups of the short carpet engaging pins;

FIG. 7 is a sectional view taken on lines VII—VII of FIG. 6;

FIG. 7a is a sectional view taken on lines VIIa—VIIa of FIG. 7;

FIG. 8 is a top view of a case in which a carpet stretcher is packed; and

FIG. 9 is a sectional view taken on lines IX—IX of FIG. 8.

The carpet stretcher as shown in FIGS. 1 to 9 includes a pole member 1, at one end provided with a head 2 and at the other end with an abutment block 3.

As will be described in detail below, the abutment block is to be placed against a wall or similar fixed point and a carpet is to be stretched by action of the head, the pole member being extensible.

FIG. 1a shows said block 3 fixed to a plate member 4 by means of a pair of threaded pins and butterfly nuts, as indicated at 5. The plate 4 is provided with two upstanding lugs 6 and is pivotally mounted by means of a

pivot pin 7 through a pair of holes in the lugs 6, to the end piece 8 which may be inserted into the end of the tube piece 9, constituting part of the pole 1, and fixed thereto e.g. by means of a small screw 10.

FIG. 1b shows another block 3', having a considerably greater length than the block 3; the small block 3 may be exchanged with the longer one 3', when the stretcher device is to abut at the location of a door, a fireplace or other interruption of the wall, or at weaker locations in the wall.

The pole 1 of the carpet stretcher comprises a second tube piece 11, one end of which is telescopically engaged in the tube 9 to which the abutment block is connected. The tube 11 has a series of holes 12, through which a pin 13 projects, mounted resiliently on the tube 11, to constitute a locking means for the pole construction with variable length as is already known in the art.

The other end of the tube 11 is, in similar manner, telescopically arranged in the tube piece 14 which supports the head 2. The overall length of the pole 1 may be increased, as is also known, by introducing more telescoping tubes between the tube 11 and either of the tubes 9 and 14.

The head 2 is movable in a longitudinal direction with respect to the pole 1 by moving a bar 15, rectangular in section, and fixed by a screw 16 to the body of the head 2 (see FIG. 2). The bar 15 fits within, and is slidable with respect to, the innerly rectangular intermediate piece 17' in the end of the hollow adjustment member 17, which, at the other end, has an extension 18 which is inserted into the tube 14 and fixed therein by means of a screw 19. A broadened guide member 15' is provided at the end of the bar 15 inside the adjustment member 17, which prevents the bar 15 from being removed from the member 17.

FIGS. 1 and 2 show a ridge shaped body 20 on top of the adjustment member 17, having three teeth 21, 22, 23, each having a re-entrant face 24 and a sloping back side 25. The re-entrant faces or front sides 24 of the teeth are adapted to engage a pawl 26 pivotally mounted by a pin 27 in a lever 28, which for this purpose has a reversed U-shaped cross section. The length of the lever portion having such reversed U-shaped cross section is such that in the depressed position of the lever 28, the length of the pawl 26 and the ridge shaped body 20 are enclosed in the cavity formed by the cross section of the lever 28.

The U-shaped portion of the lever 28 therefor extends at least up to the point indicated in FIG. 2 at 28'; therebeyond to the free end, the lever may be tube shaped. In the manner described, it has been made possible that the pivot 27 of the pawl 26 will at least reach, or even surpass the imaginary straight line between the pivot axis 29 of the lever 28 and the point of contact between the free end of the pawl 26 and the teeth 21, 22 or 23 concerned, with the result that the lever 28 is prevented from moving again upwardly under the influence of the carpet strain.

When, initially, the pawl 26 rests against the first tooth 21, the pressing down of the direction lever 28 in the arrow P will cause a forward movement of the head 2 with respect to the pole, and hence a further extension thereof. By this movement the carpet is stretched. When the strain in the carpet is insufficient, the lever is raised again, allowing the pawl 26 to slide over the back face of the next tooth 22 to subsequently rest against the front face of the tooth 22. In this position of the pawl, the pressing down of the lever 28 will produce a further stretching of the carpet. In similar manner one may eventually use the third tooth 23. Also when less skilled operators are working with the device—who are not able to estimate the correct initial position of the carpet stretcher head in order to need no more than a small relative displacement of the head for straining the carpet—a sufficient strain will be obtained in this manner.

FIGS. 3-5 show the details of the head 2. The head comprises a housing 32, which is provided at its underside with a plurality of relatively short carpet engaging pins indicated at 33 (FIG. 4) and a plurality of longer carpet engaging pins, indicated at 34. For the sake of clarity the small pins have been omitted in FIG. 3; FIG. 4 clearly shows their profile.

The long pins 34 are fitted in borings 35 in a substantially flat bearing member 36. The bearing member 36 is in form of a flat rectangular grate-like frame. It consists of four strips along the circumference of the rectangle interconnected by two intermediate strips 36', 36'', enabling the possibility of intersperse the longer pins 34 among the smaller pins 33. The small pins are thus divided, in the embodiment represented, into four groups as is visible from FIG. 5.

FIG. 3 shows that the long pins 34 extend through the flat frame 36, to project on both sides thereof. The upwardly projecting pin ends will be accommodated in cavities 37 or 38 in the housing 32.

The pin bearing plate 36 is fixed to the casing 32 of the head 2 by knobs 39, 40 on top of the head and externally operable. These knobs operate respective screws 41, 42, the threaded ends of which are received by a pair of threaded borings 43, 44 in the transverse intermediate strip portion 36' of the pin bearing frame 36. The screws 41, 42 extend through a pair of bore holes 45, 46, spring means 47, 48, being interposed between the knobs 39, 40 and the casing 32. Abutment rings 49, 50 are fixed to the screw body bodies 41, 42 and prevent the screws from being removed. By turning the knobs 39, 40, the plate 36 can be drawn and fixed against the casing 32, resting against a plurality of ribs 51 between the various cavities in the head, and resting against a recessed edge portion 52 at the circumference of the lower edge 53 of the casing 32.

It will be clear that the pin bearing plate or grate 36, after turning the screw with the knobs 39, 40, can be taken off and reversed. For this purpose the plate 36 is entirely symmetrical.

From FIGS. 3 and 4 it is visible that the long pins 34 are of different shape on either side of the plate 36. In the position represented, the pin halves 34' directed downwardly and projecting beyond the lower normal surface of the head, are somewhat longer than the upper pin halves 34'', which are directed upwardly into the cavities 37 and 38 of the head. In the position represented, the stretcher can be used for stretching thick carpets; the pin portions 34' are then long enough to penetrate through the carpet to engage the fibres comprising the base of the carpet, while the short pins 33 are engaging the top surface or nap of the carpet. For use with less thick or normal carpets, the pin bearing plate 36 may be reversed, whereby the short pin portions 34'' now project downwardly to obtain the correct grip on the carpet again in the cooperation with the short pins 33. In a practical embodiment the length of the pin portion 34' amounts to 16 mm., the length of the pin portion 34'' being 9 mm.

From FIG. 4 there is seen the slanting position of the short pins 33 as well as the longer pins 34. The portions of the pins projecting downwardly from the head are directed forwardly from the head as is common in the art.

The units 54, 55, 56 and 57 comprising the four groups of small pins (FIG. 5) are represented in detail in FIGS. 6, 7 and 7a. FIG. 6 shows that a pair of such units lying beside each other, e.g. the units 54 and 55, may be assembled as a single exchangeable portion. A sheet of metal 58 is provided along its longer sides with a pair of twice bent edges 59, 60 and 61, 62 respectively. Into the space formed between such pair of bent edges 59, 60 is arranged another metal sheet 63 with twice bent edges 64, 65, said edges 64, 65 closing the ends on either side of the edges 59, 60 (see FIG. 6). Before introducing the latter metal

5

sheet 63, a pad 66 of material comprising the smaller pins in the groups is placed between the edges 64 and 65. After completion each of the pads 66 (comprising the small pins 33 which have, for the sake of clarity, not been represented in FIG. 7 but only in the cross section of FIG. 7a) are enclosed between the four edges 59, 60, 64, 65 forming a surrounding frame.

For security, small portions, such as 67, of the sheet 63 are bent out to form lips projecting through slots such as 68 in the sheet 58.

The pads 66 are preferably made of the so called card cloth, which is readily available and which is normally used in the textile industry. It was found that this material is particularly suitable for the purpose for which the small pins are present in a carpet stretcher. This effect is surprising, as card cloth normally takes away a part of the fibres in raw wool, leaving other fibres behind. Its favorable operation in a carpet stretcher is probably due to the fact that each of the pins has a certain degree of resiliency in the basic material, resulting in an effective grip of all the pins on the carpet surface which is to be stretched.

Both ends of the metal sheet 58, and the sheet portion between the two units of pins 54 and 55 are provided with holes 69 (FIG. 6), which enable attachment of the units, with screws or similar means, to the casing 32 of the carpet stretcher head. The locations such as 70 of FIG. 5, where the plate 58 is to be fixed to the casing, must be countersunk by an amount equal to the thickness of the sheet of metal 58 with respect to the level of the plate 36, which bears the longer pins. Attention is therefore directed to FIG. 3, where the basic or unfolded portion of the sheet 58 is visible immediately above the upper surface of the plate 36.

Again with reference to FIG. 2, the head of the carpet stretcher is provided with a tray shaped protection member or cap 71 which fits around the circumferential edge of the head. The cap 71 may be made of plastic material, to clamp it simply over the edge. It constitutes a protection when the stretcher is not used, against damage or injury by the carpet engaging pins. Such protection cap may eventually be used, when the stretcher is in use and the cap is therefore temporarily superfluous, as a containing means for the nails which are required for fixing the carpet to the floor.

By way of example, the invention was heretofore described with respect to an embodiment as a so called power stretcher, which is relatively big and heavy. It will be clear, however, that the essential elements in the construction of the head, except for the lever means, so essentially the pin bearing plate 36, the manner in which it is constructed and in which it is fixed to the head, may be applied with equal advantage to carpet stretchers of the so called kicker type. The latter type comprises a pole member of relatively short, fixed length, having a pinned head at one end, and a kind of knee pad at the other end, which type is used for operating on smaller carpets.

According to the invention the power stretcher is packed in an efficient manner in a case, of which FIG. 8 shows a top view, with the cover removed. The case 72 is provided with a vertical partition 73, at a distance from an end wall, such that the head 2 of the stretcher fits precisely between this end wall and the partition 73. The tube piece 14 and the lever 28 extend in a longitudinally direction of the case. As is visible from FIG. 9, which is a cross sectional view of the case, the partition 73 and a second partition 74 arranged against the right hand end wall of the case, are provided with a plurality of holes and deep- enings, adapted to form supports for the various parts. FIG. 9 shows the lever 28 and the telescopic tube piece 14 in the central plane of the case near the bottom of the case are disposed, on the one hand, the tube piece 9, which bears the abutment block 3 and on the other hand the intermediate tube piece 11; mounted thereabove are four sets of telescopic tubes such as 76, a pair on each side of the central plane. Against a longitudinal wall the long

6

abutment block 3' is fitted. Finally a number of belts or strings such as 77, fastened to the bottom of the case, may be provided for securing the various parts in place.

The manner described and shown for packing the various parts into the case has the advantage of a balanced arrangement when the case is closed and held by means of the grip 78.

Having now described my invention with reference to one embodiment, it will be clear that this invention can be executed in other ways, and therefore I do not wish to be limited further than I am limited by the scope of the following claims.

What is claimed is:

1. A carpet stretcher comprising a body member having spaced ends, an abutment means at one end of said body member, a head at the other end of said body member, a plurality of short carpet engaging pins projecting downwardly from said head, and a member adapted for being connected reversibly to the head and including on opposite sides thereof a plurality of different carpet engaging pins, longer than the first said pins, to project downwardly from said head beyond said short pins.

2. A carpet stretcher as claimed in claim 1, in which the second said carpet engaging pins are different in length on the opposite sides of the reversible bearing member.

3. A carpet stretcher comprising a body member having spaced ends, abutment means at one end of said body member, and a head at the other end of said body member, a plurality of short carpet engaging pins projecting downwardly from said head, a substantially flat, frame-shaped bearing member adapted for being connected reversibly to the head, and including, on opposite sides, a plurality of slanted carpet engaging pins fixed therein and projecting on one side a greater distance than on the other side, the slanted pins projecting downwardly from said head further than said short pins.

4. A carpet stretcher comprising a body member having spaced ends, abutment means at one end of said body member and a head at the other end, a plurality of short carpet engaging pins projecting downwardly from said head, a substantially flat, frame-shaped bearing member including and through which extend slantingly a plurality of carpet engaging pins fixed therein and projecting on one side a greater distance than on the other side, knob means externally of said head for fixing said bearing member selectively to the head in either one of the reversed positions, the pins fixed in the bearing member being in both positions interspered among the short carpet engaging pins and projecting downward from said head further than said short pins.

5. A carpet stretcher comprising a body member having spaced ends, abutment means at one end of said body member and a head at the other end, support units including and supporting short carpet engaging pins projecting downwardly from said head, a substantially flat, frame-shaped bearing member including and through which extend slantingly a plurality of long carpet engaging pins fixed therein, said long pins being of different length on either side of the bearing member and projecting downwardly from said head further than said short pins, said frame-shaped bearing member being reversibly connected to the head and including and resting against a plurality of ribs between which cavities are formed which accommodate the inwardly projecting long pins, said ribs further constituting support for the units which support the short carpet engaging pins.

6. A carpet stretcher comprising a telescopically extensible body member, abutment means at one end and a head at the other end and slidably mounted for movement longitudinally with respect to said body member in further extension thereof, a row of teeth on said body member, a fixed pivot pin on said head, a lever means pivotally mounted on said pin, a pawl including a free end and an end pivoted to said lever means, said row of teeth cooperating with the free end of said pawl for causing extension of said head upon operation of

7

the lever means with the free pawl end resting against successive teeth, said lever means having a reverse U-shaped cross-section, the inner width of which is greater than the width of the row of teeth on the body member and of the pivoting pawl, said U-shaped cross-section being provided over such a length that, when the lever means is pressed down, the pawl and the row of teeth are enclosed in the open space of the lever means in order that the pivot axis of the pawl will at least reach a straight line between the pivot axis of the lever means and the point of contact between the free pawl end and the teeth.

5

10

8

References Cited

UNITED STATES PATENTS

392,097	10/1888	Boice	254—60
436,088	9/1890	Plowman	254—62
2,358,436	9/1944	Bartlow	254—62
2,882,642	4/1959	Hill	294—8.6

MILTON S. MEHR, *Primary Examiner.*

U.S. Cl. X.R.

294—8.6