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(71) Applicant: Phillips, Donald W.
Chateau Perigord 1 (45 D) 6 Lacets Saint Leon
Monte Carlo(MC)

(72) Inventor: Phillips, Donald W.
Chateau Perigord 1 (45 D) 6 Lacets Saint Leon
Monte Carlo(MC)

(74) Representative: Giambrocono, Alfonso, Dr. ing. et al,
Ing. A. Giambrocono & C. s.r.l. Via Rosolino Pilo, 19/b
I-20129 Milano(IT)

(54) An equipment for the easy manual removal of soles and sub-heels from footwear in general.

(57) The equipment is of the type comprising pliers means (1), fulcrum means (2) for said pliers means and clamping means (3) for retaining in position the footwear during the removal the refrom of the sole and/or the sub-heel (43). The pliers means (2) has two jaws (4) and is provided with a first and second handle (11, 11'), a metal plate (5) at the top of each jaw (4) having each a first rectangular contour (6) and a second blade contour (7) intended for face to face coupling. To the first handle (11) a rod (18) provided with a sliding striking mass (19) is associable. The fulcrum means (2) comprises a plurality of step sections (29) and the clamping means (3) comprises two rollers (31, 32) of which the first roller (31) is fixed and the second roller (32) is adjustable relative to the first roller and has a substantially elipsoidal cross-section.

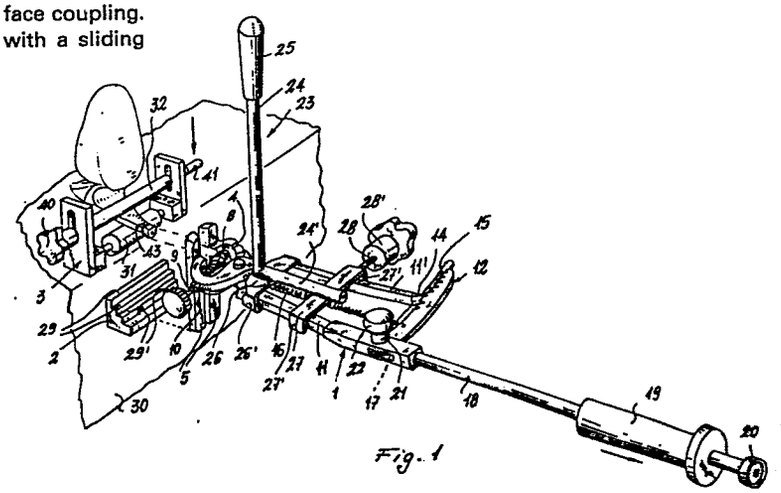

Fig. 1

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An equipment for the easy manual removal of soles and sub-heels from footwears in general

The invention relates to an equipment for the easy manual removal of soles and sub-heels from footwears in general.

At present, no specific equipments are commercially available for allowing a rapid and systematic manual removal of soles and sub-heels from footwears in general.

The invention as claimed is intended to provide such an equipment which may be associated to or combined with apparatuses for applying new soles and/or sub-heels to footwears.

The advantages of the invention will become apparent to those skilled in the art from the reading of the following description and claims.

The equipment, according to ghe invention, is of the type comprising pliers means, fulcrum means for said pliers means and clamping means for retaining in position the footwear during the removal therefrom of the sole and/or sub-heel and is substantially characterised in that said pliers means has two jaws and is provided with a first and a second handle, a metal plate at the top of each jaw intended for face to face coupling along a first rectangular contour and a second blade contour, a rack locking device associated to said handles, a preloaded spring interposed between said jaws, said first handle being associated with a rod provided with a sliding striking mass.

The invention is described in detail below with reference to drawings which illustrate two specific embodiments. In the drawings:

- Fig. 1 is a perspective view showing the equipment during the extraction step of the sub-heel;

- Fig. 2 is a top view of the pliers;

- Fig. 3 is a side view of the pliers;

- Fig. 4 is a front view of the pliers;

- Fig. 5 is a perspective view of the clamping device; and

- Fig. 6 is similar to Fig. 1 but shows of a further embo-

diment of the pliers.

The figures 1-5 show an equipment for the easy manual removal of soles and sub-heels comprising pliers means generally designated at 1, fulcrum means generally designated at 2 and clamping means generally designated at 3.

The pliers means 1 is formed of conventional jaw 4 each having a metal plate 5 welded to the top thereof. In the closing position said plates 5 are face to face coupled along a rectantular contour 6 and a blade contour 7 of minor extension. A spring 8 for automatic opening of the pliers is housed between the jaws 4. The spring 8 can be preloaded by a screw 9, the latter being manually operable and blockable by a suitable look nut 10.

Near the end portions of the pliers handles 11 and 11', a rack locking device generally designated at 12 is mounted and intergages said two handles 11 and 11'.

A groove 13 is provided in the handle 11', the function of which groove will be apparent in the following.

The locking device 12 is rotatably pivoted at the end of handle 11, while the other handle 11' has the end thereof 14 for engagement with the rack of the looking device 12. The rack teeth 15 are made for an easy automatic closing of the pliers 1, while preventing the reopening thereof. On pliers operation the rack is retained in place by a spring 16.

The handle 11 is provided with a femal threated portion 17 for receiving a rod 18 along which a cylindrical striking mass 19 is freely slidable and stopped at the free end of said rod 18 by a stop member 20.

At the pivot location 21 for the rack, an idle knob 22 is mounted for promoting the sole tearing operation. Generally, when such a tearing operation is difficult because of high adhesion of the sole, a lever generally designated at 23 can be resorted to. Said lever 23 comprises a first section 24 and a 90° disposed second section 24', a suitable gripping handle 25 being provided at the free end of the first section 24. In the joining point of the two sections 24 and 24' a first plate 26 is provided, said plate 26 having flaps 26' embracing the handles 11 and 11'. The second section 24' is provided with a second plate 27 also having flaps 27' embracing the handles 11 and 11', one of said flaps 27' receiving a screw 28 operable by a knob 28'.

The fulcrum means 2 has several step sections 29 on which the metal plates 5 of pliers 1 will rest during operation. The fulcrum means 2 is intended for mounting on a workbench 30 by common screws engaging holes 29'.

The clamping means 3, also to be mounted on the workbench 30, comprises two rollers 31 and 32, of which the first roller 31 is stationary and the second roller 32 is adjustable relative to the first roller and of substantially elipsoidal cross-section.

The first roller 31 is idly housed on a shaft 33 having the ends locked within two small blocks 34 and 34' provided with holes 35. At the bottom of each of said small blocks 34 and 34' a groove 36 is provided, within which the ridges 37 and 37' for the shoulders 38 and 38' of said clamping means 3 engage. The shoulders 38 and 38' have grooves 39 and 39' by means of which the position of the second roller 32 can be adjusted. The locking in position of the roller 32 is provided by screwing of a suitable knob 40 and counter-knob 41.

The rollers 31 and 32 are both made of or covered with soft material to avoid any damage to the footwear retained thereon.

The Fig. 6 shows a further embodiment of the pliers means 1 which differs from the pliers means of Figs. 1 - 4 in that the second portion 25' of lever 23 is extended beyond the locking device 12 and is provided with a gripping handle 42. The threated portion 17 of handle 11 is not present.

For the removal of an old sole from a footwear the operator has to proceed as it follows.

The rod 18 and the lever 23 are removed from the pliers 1 and the footwear is positioned between the rollers 31 and 32 with the sole facing the operator and thereat clamped by tightening the knob 40. By the blade contours 7 of the pliers 1 an edge of the old sole is raised from the sub-sole to allow the subsequent gripping of said raised edge by the rectangular contours 6 of the same pliers. The firm clamping of the pliers is assured by the engagement of the end 14 with one of the rack teeth 15. Acting on the knob 22 the pliers 1 is rotated thus providing the sole winding up onto the metal plates 5 during the separation thereof from the sub-sole. Of course the same operation sequence is followed also for removing wide section sub-heels.

For removing the sub-heels from women's shoes, commonly known

as "stiletto heels", the following procedure has to be followed since said sub-heels are mounted on the stiletto heel by interposition of a metal core which tightly connect the sub-heel to said stiletto heel.

Due to the considerable strain required for removing the sub-heel, the rod 18 is connected to the pliers 1 and the lever 23 is joint coupled by positioning the flaps 26' and 27' to embrace the handles 11 and 11', as shown in figure 1. The footwear is clamped by the clamping means 3, the sub-heel 43 is pinched by the blade contours 7 of the pliers and the knob 28' is rotated to engage with its screw 28 the groove 13 of the handle 11'. Thus operating, the clamping of the blade contours 7 of the pliers provide a partial withdrawal of the sub-heel 43 from the stiletto heel. The complete withdrawal of the same sub-heel 43 and of the related metal core is carried out by acting on the striking mass 19 which is repeatedly caused to slide along the rod 18, violently striking the stop member 20 so as to generate the impact energy as required for the withdrawal of the sub-heel 43 and the associated metal core from the stiletto heel.

In the alternative embodiment shown in Fig. 6, the withdrawal of the sub-heel 43 is carried out by firstly pinching said sub-heel by the blade contours 7, as above described, then the extremities of the metal plates 5 are positioned onto one of the step sections 29 of the fulcrum means 2. By acting on the gripping handles 25 and 42 the lever is rotated in the direction of arrow H of Fig. 6 thus causing the complete withdrawal of the sub-heel 43 and associated metal core from the stiletto heel.

Claims:

1. An equipment for the easy manual removal of soles and sub-heels from footwears in general of the type comprising pliers means (1), fulcrum means (2) for said pliers means and clamping means (3) for retaining in position the footwear during the removal therefrom of the sole and/or sub-heel, characterised in that said pliers means (1) has two jaws (4) and is provided with a first and a second handle (11, 11'), a metal plate (5) at the top of each jaw intended for face to face coupling along a first rectangular contour (6) and a second blade contour (7), a rack locking device (12) associated to said handles, a preloaded spring (8) interposed between said jaws, said first handle (11) being associable to a rod (18) provided with a sliding striking mass (19).

2. An equipment as claimed in claim 1, wherein said striking mass (19) is slidable along said rod (18) between the joining point (17) of said rod (18) to said first handle (11) and a stop member (20) provided on said rod (18) at the end thereof opposite said joining point (17).

3. An equipment as claimed in claim 1, wherein said fulcrum means (2) comprises a plurality of step sestins (29).

4. An equipment as claimed in claim 1, wherein said clamping means (3) comprises two rollers (31, 32) of which a first roller (31) is fixed and a second roller (32) is adjustable relative to said first roller and has a substantially elipsoidal cross-section.

5. An equipment as claimed in claim 1, wherein said pliers means (1) is provided with a lever (23) comprising a first section (24) and a second section (24'), said second section having connecting means (26, 27, 26', 27') for connecting said lever (23) to said pliers means (1).

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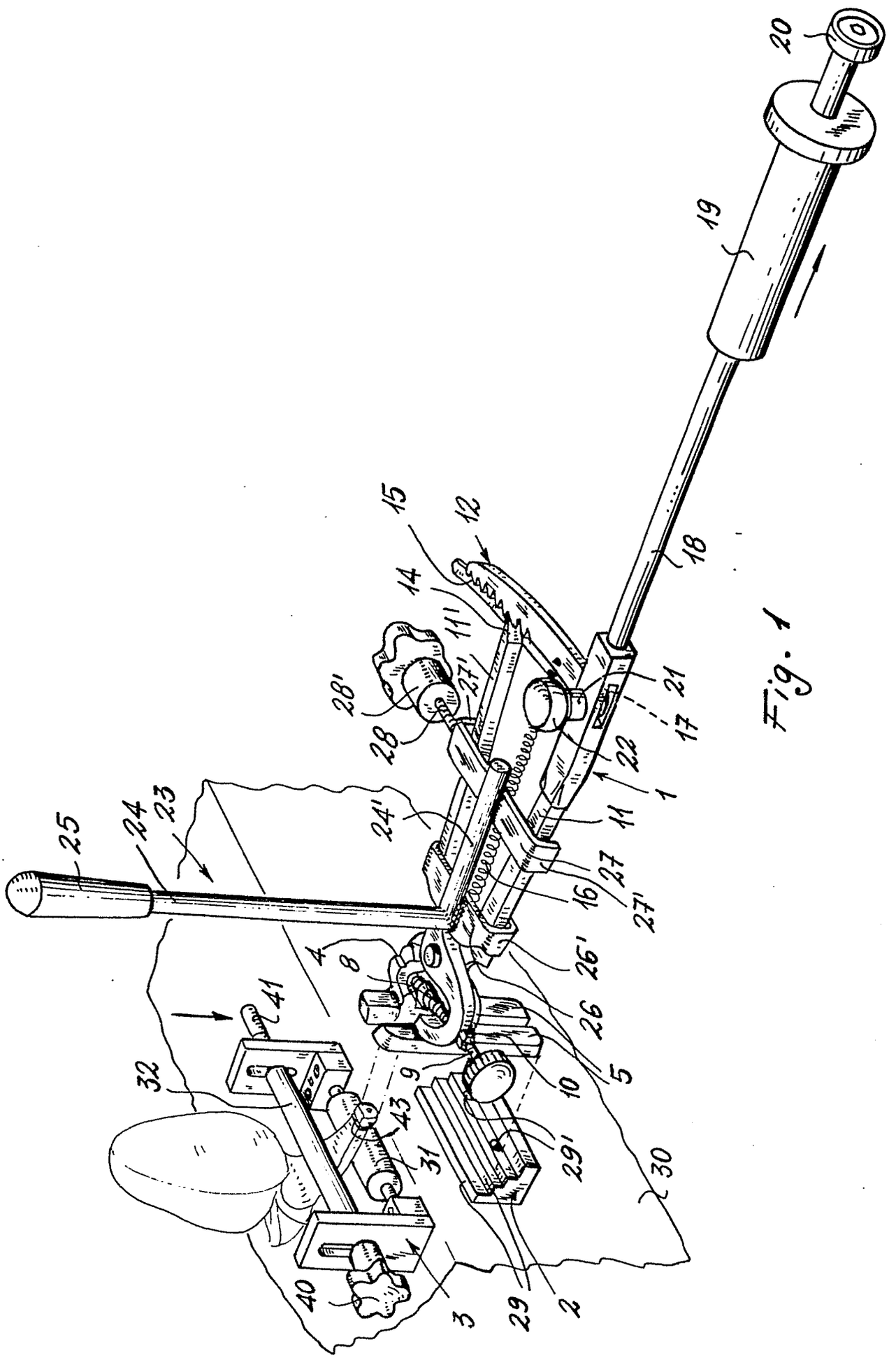

Fig. 1

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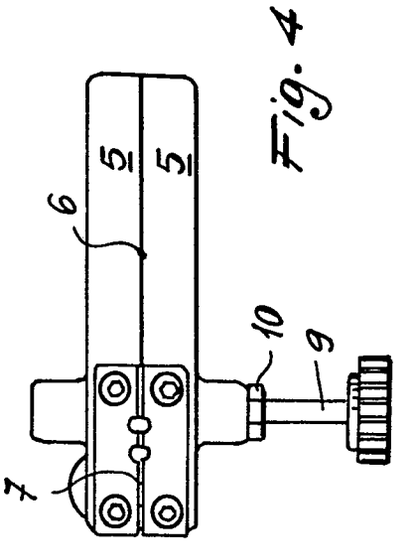

Fig. 4

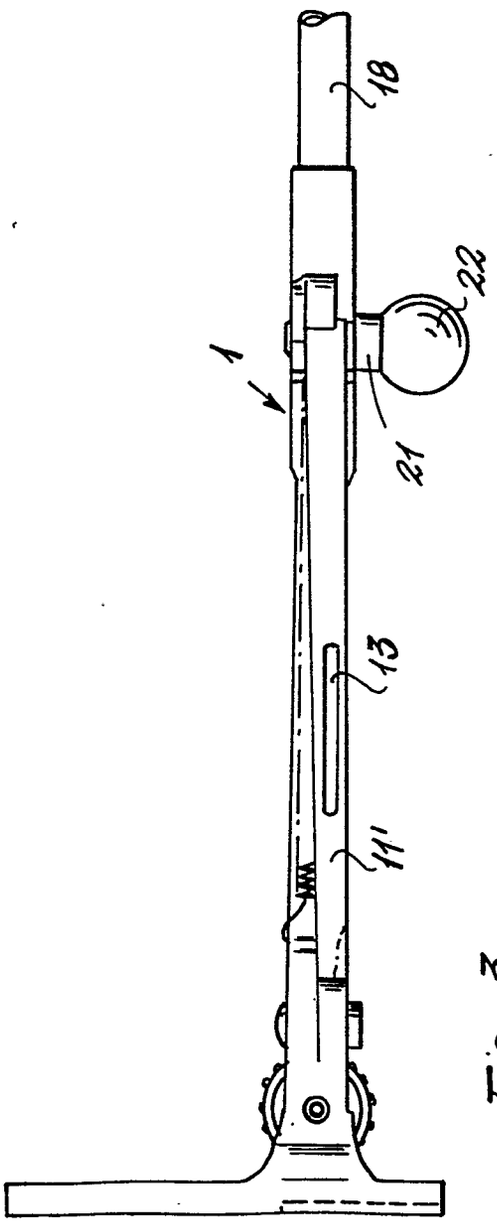

Fig. 3

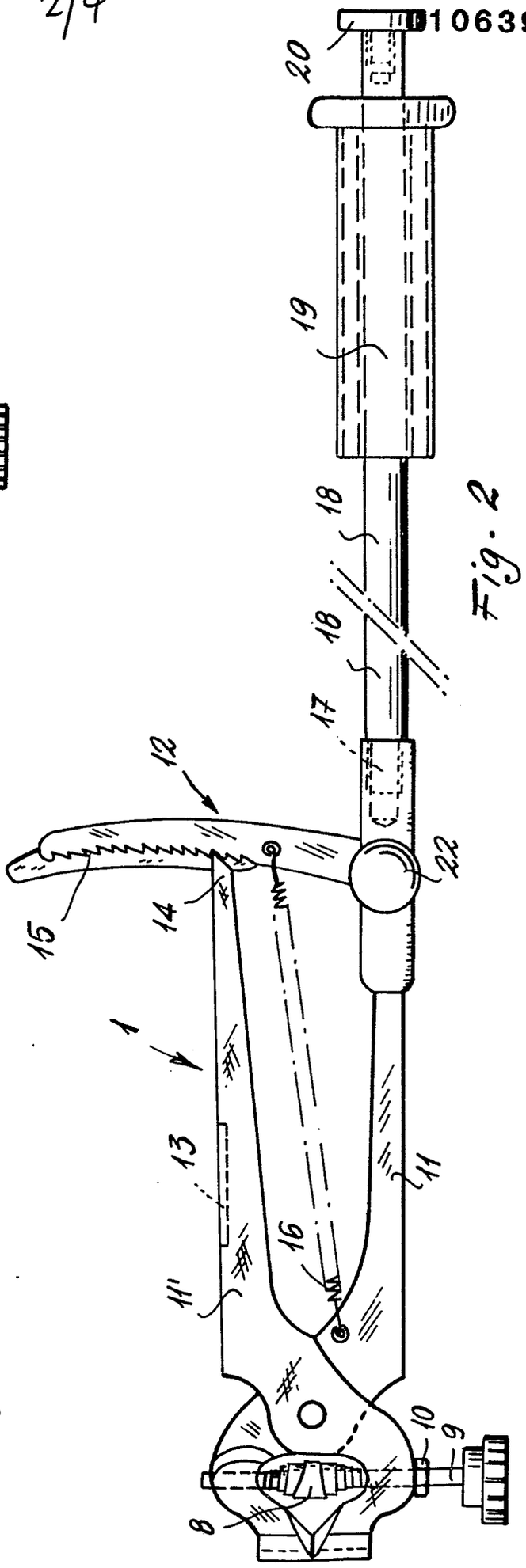

Fig. 2

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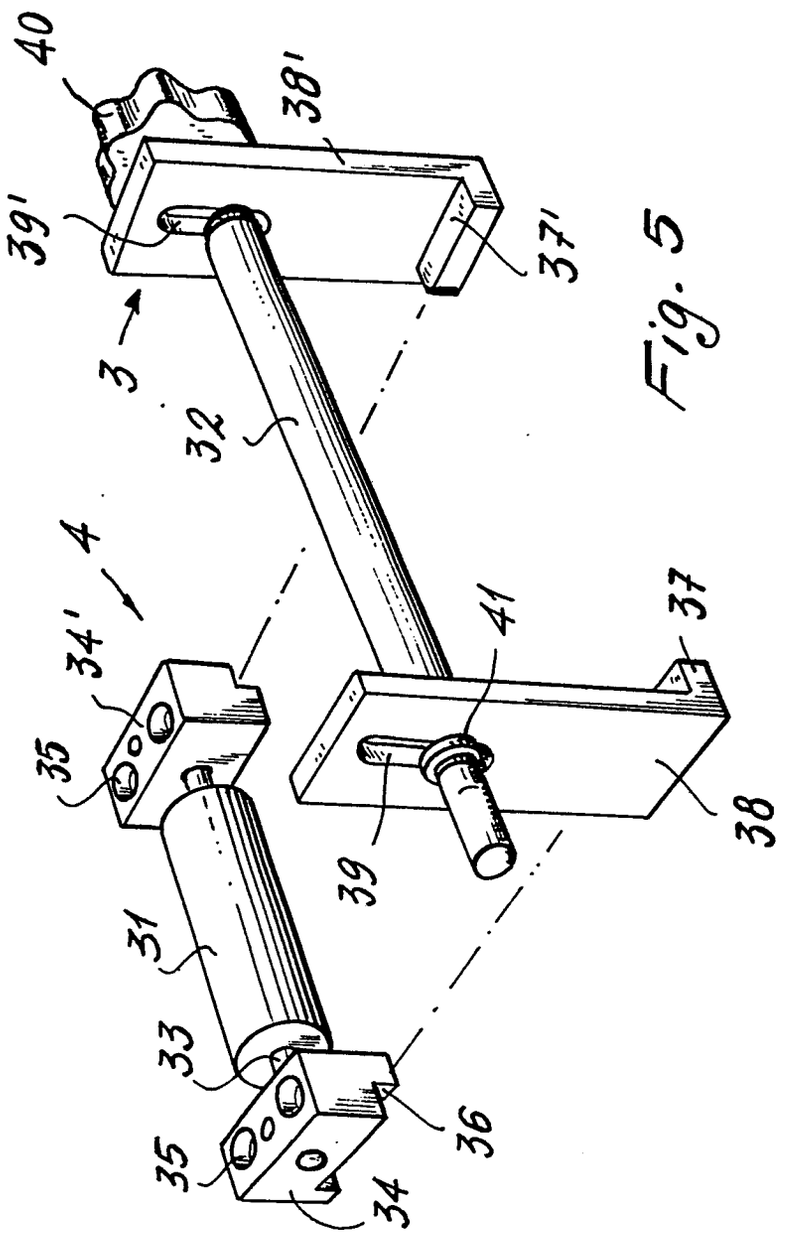

Fig. 5

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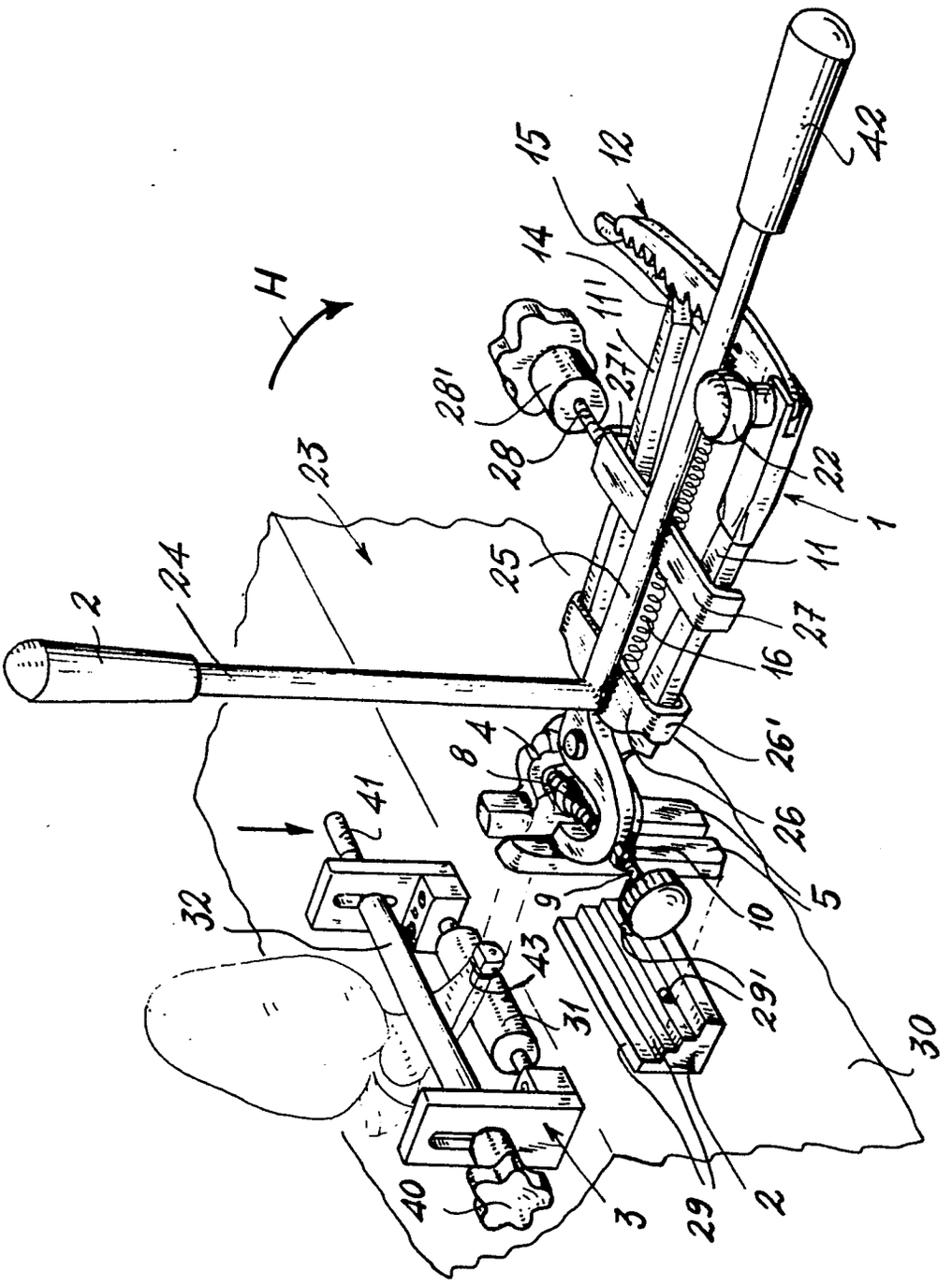

Fig. 6

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European Patent Office

Application number

EUROPEAN SEARCH REPORT

EP 83201381.7

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
A	US - A - 3 069 707 (HARPER) * Totality * --	1	A 43 D 5/00
A	US - A - 3 171 147 (FRIDAY) * Totality * ----	1	

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

A 43 D 5/00
B 25 B 7/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	12-12-1983	LEBZELTERN

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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