June 20, 1961 E. AUER ET AL 2,989,188

CARRIAGE-LIKE RACK FOR USE IN THE MANUFACTURE OF SHOES

Filed July 23, 1957 2 Sheets-Sheet 1

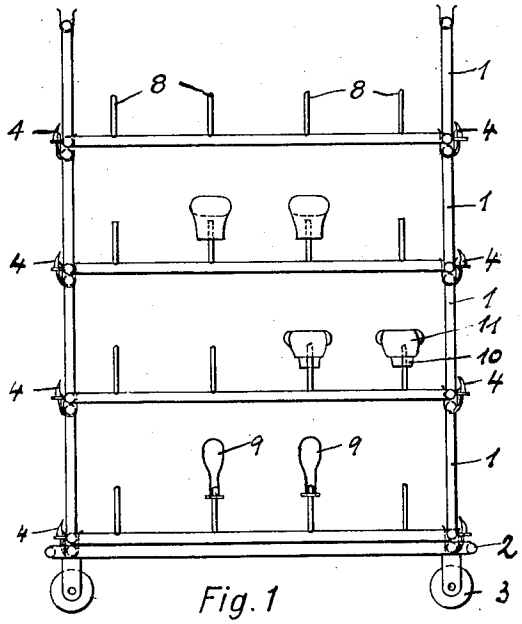


Fig. 1

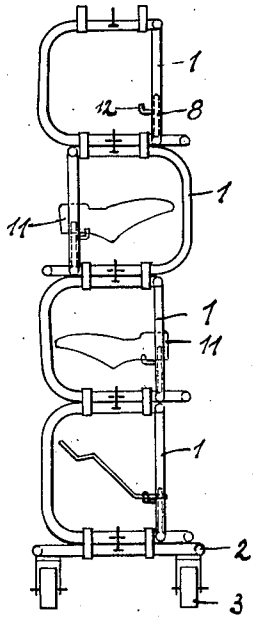


Fig. 2

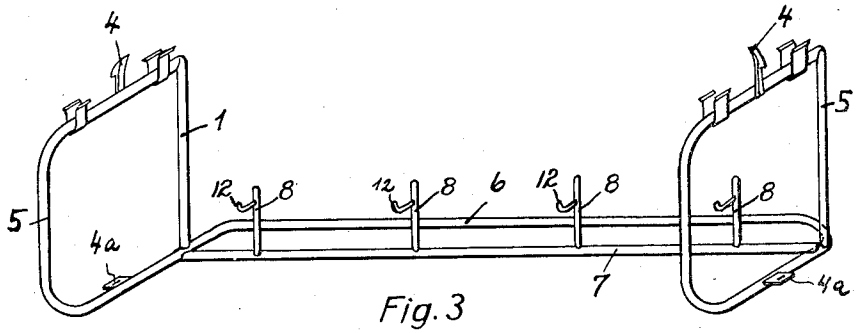


Fig. 3

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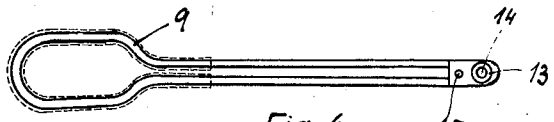


Fig. 4

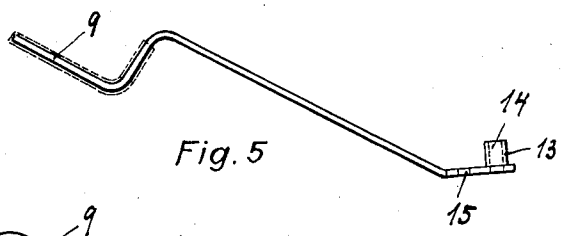


Fig. 5

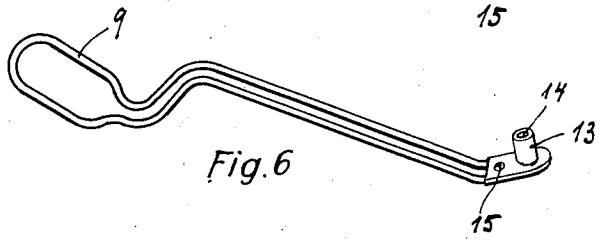


Fig. 6

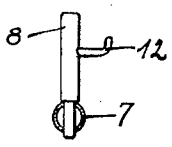


Fig. 7

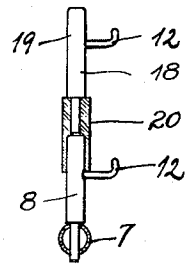


Fig. 8

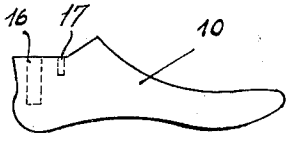


Fig. 9

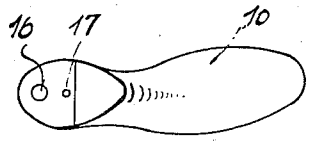


Fig. 10

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United States Patent Office 2,989,188 Patented June 20, 1961

2,989,188

CARRIAGE-LIKE RACK FOR USE IN THE MANUFACTURE OF SHOES

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Filed July 23, 1957, Ser. No. 673,715
4 Claims. (Cl. 211—34)

The invention relates to carriage-like racks used in the manufacture of shoes and more especially to racks having transversal supporting members, pegs on said supporting members, lasts and U-shaped shoe trees for immovably supporting shoes from which the lasts have been removed. In the finishing operations with shoes from which the lasts have been removed, it is of great consequence that the shoes, which are generally very delicate, be supported without likelihood of being damaged. In order to avoid this, the shoes can be supported in the known racks of the aforesaid kind on U-shaped shoe trees or the like so that the shoes cannot contact one another or other bodies during the transport.

Whereas with the known racks the U-shaped shoe trees are fixed arranged on the transverse supporting members, according to the present invention they can be interchangeably fitted on correspondingly shaped and arranged supporting means on the rack. To this purpose they may have, for example, on their lower end a collar or the like which fits on said pegs of said transverse supporting members, said latter members being provided with means for preventing the lasts or shoes to turn into a position from that one required. Since the shoe trees are arranged so as to be interchangeable, it is now possible to use shoe trees of different sizes and different shapes according to the size and type of the shoes to be supported. First of all, it is now also possible to support in the said rack, in lieu of the aforementioned trees, lasts with shoes thereon. The rack can therefore be used for transporting the shoes selectively either when supported on lasts or when removed from the lasts during finishing operations.

The range, within which the new rack can be used, may be yet widened according to a further feature of the invention by making the rack composed of a movable and transportable base and of a number of identical independent units which can be disengageably connected with one another and with said base. This new arrangement makes it possible to use only the several independent units composing the rack during the several operations performed, when this should be necessary. After the end of one stage of operation, the units may be again assembled and connected with one another and with the base in order to be used as a rack.

Conveniently, the means for preventing the lasts or shoes from turning into a position from that one required are so constructed as to engage only the inner part of the lasts. They may consist for example of a hook branching off from the respective peg. The means for supporting the shoes consisting, for example, of lasts or shoe trees have according to a further feature of the invention beside the bore into which engages the respective peg on the rack also an additional bore into which engages the hook on the peg. Due to the fact that the means for preventing the lasts or shoes from turning into a position from that one required are almost wholly received and surrounded by the lasts or shoe trees, the shoes now cannot be damaged any more when they are suspended.

With shoes with particularly long legs, the transverse ledges of the several independent units composing the rack may constitute an obstacle for the operator. In

order to avoid this, the pegs are provided with lengthening-pieces consisting conveniently of a peg and of a sleeve which can be fitted on the pegs. Conveniently, the lengthening-piece, too, has a hook which branches off from the peg.

In order to avoid the shoes contacting one another, the means for interconnecting the several independent units composing said rack may be so designed and arranged according to a further feature of the invention that said units can be set atop one another with the units each facing in a desired direction. The units in question occupy in this case such a position that the transversal ledges of one unit are situated on the one side whereas the ledges of the adjacent units are situated on the opposite side.

A further step for economizing as much space as possible consists, finally, according to a further feature of the invention in that each of the independent units composing the rack has only two transverse ledges which are arranged both close to the lower longitudinal edge of the respective unit.

With these and other objects in view which will appear as the description proceeds, the invention consists of certain novel features of construtcion as will be particularly pointed out in the appended claims.

The manner of carrying the invention into effect is hereinafter described by way of example, reference being had to the accompanying drawings in which:

FIG. 1 is a front view of a rack according to the invention,

FIG. 2 is a side view of the same rack,

FIG. 3 is a perspective view of one of the several independent units which constitute the rack,

FIG. 4 is a plan view of a shoe tree serving as means for supporting and suspending the shoes,

FIG. 5 is a side view of the shoe tree shown in FIG. 4,

FIG. 6 is a perspective view of the same shoe tree,

FIG. 7 is a partial side view of a peg on the rack serving to fasten the shoe tree,

FIG. 8 is a partial side view of the peg shown in FIG. 7 with a lengthening-piece fastened thereon,

FIG. 9 is a side view of a last to be used in connection with the new rack, and

FIG. 10 is a plan view of the last shown in FIG. 9.

In FIGS. 1 and 2 the rack is composed of four independent units **1** which are arranged one above the other and rest on the carriage-like base **2** with the casters **3**. The units **1** and the base **2** are disengageably interconnected. To this end, latches **4** arranged on each of these units and being acted upon by springs engage the countermember **4a** with correspondingly shaped holes on the adjacent unit (see FIG. 3). The units **1** can be connected with one another and with the base **2** also by means of pins and corresponding holes cooperating therewith. The lowest unit **1** presents a series of shoe trees **9** which are disengageably arranged on the pegs **8**. As shown in FIG. 2, the shoe trees **9** project approximately diagonally into the unit **1**.

The units **1** consist of two side frames **5** which are interconnected only by means of two transverse ledges **6** and **7** which constitute in some way one of the lower longitudinal edges of the unit **1**. Due to this fact, no obstacles are present within the interior of the unit **1**. Preferably, the frames **5** and the transverse ledges **6**, **7** are made of bent tubular material. On the transverse ledge **7** there are fixed pegs **8** which serve to receive the shoe trees **9** or the lasts **10** introduced into the shoes **11**.

As can be seen from FIGS. 1 and 2, it is possible, due to the symmetrical arrangement of the latching means **4** and **4a**, to face the units as desired so that the shoes **11** supported one above the other in the units **1** cannot eventually contact one another.

The shoe tree **9** shown in FIGS. 4 to 6 has a collar **13** in the form of a tube or the like which is welded to the tree and can be fixed on the pegs **8** of the units **1**. From the collar **13** there branch off two parallel arms arranged close to one another which at first run upwards, then turn downwards, always running parallely to one another and finally are bent to form a somewhat oval loop directed again upwardly. In the sector of the loop and in the part adjacent therewith, a hose of artificial material or the like (shown in dotted lines) is drawn over the tree so that the shoes cannot be damaged.

The pegs **8** for supporting the shoe trees **9** or the lasts **10** have a hook **12** (FIG. 7) which serves to prevent the latter from turning into a position from that one desired. Therefore, the trees **9** (FIGS. 4 to 6) have beside the collar **13** with the bore **14** in which the peg **8** is inserted when the tree **9** is put on, an additional smaller bore **15** in which the hook **12** engages. The lasts **10** also have beside the bore **16** for receiving the pegs **8** an additional smaller bore **17** into which the hook **12** penetrates when the lasts are put on (FIGS. 9 and 10).

In order to avoid obstruction of movement by the transverse ledges **6** or **7** when shoes with long legs are to be suspended, with the peg **8** there may be connected a lengthening-piece **18** which, too, has a hook **12** which serves to prevent the shoes from turning into a position from that one desired. The lengthening-piece **18** is composed of a peg **19** with the usual dimensions and of a sleeve **20** into which the peg **8** is inserted.

The foregoing description is directed solely towards the constructions illustrated, but we desire it to be understood that we reserve the privilege of resorting to all mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

Having thus described the invention, what we claim as new and desire to secure by Letters Patent is:

1. A device for supporting and transporting shoes during the manufacture thereof comprising, in combination, movable frame means; a plurality of supports for supporting shoes during the manufacture thereof; and connecting means cooperating with said movable frame means and cooperating with said supports for removably connecting said supports to said frame means and for preventing turning of said supports with respect to said frame means when said supports are connected therewith, said connecting means including a plurality of upwardly directed pins carried by said frame means and a plurality of upwardly directed hooks respectively carried by said pins, each of said supports having a pair of openings one of which receives a free end of a pin and the other of which receives a free end of a hook connected with said pin so that said supports may be lifted off from or lowered onto said pins and hooks and will be prevented from turning with respect to said pins, said supports being in the form of shoe trees each of which is composed of a wire forming a loop intermediate to its ends and

having a pair of substantially parallel coextensive portions extending from said loop, a plate connected to said coextensive portions of said wire distant from said loop and formed with an opening for receiving one of said hooks, said plate fixedly carrying a sleeve which receives an end of a pin connected with said hook.

2. A device as recited in claim 1 and wherein said wire extends upwardly from said plate when the latter is removably connected with a pin and hook.

3. A device for supporting and transporting shoes during the manufacture thereof comprising, in combination, movable frame means; a plurality of supports for supporting shoes during the manufacture thereof; and connecting means cooperating with said movable frame means and cooperating with said supports for removably connecting said supports to said frame means and for preventing turning of said supports with respect to said frame means when said supports are connected therewith, said connecting means including a plurality of upwardly directed pins carried by said frame means and a plurality of upwardly directed hooks respectively carried by said pins, some of said supports being in the form of a plurality of shoe lasts each of which is formed with a pair of openings one of which receives an upper end of a pin and the other of which receives the hook connected therewith so that when said lasts are carried by said pins and hooks said lasts cannot turn with respect to said pins.

4. A device as recited in claim 3 and wherein some of said supports are in the form of shoe trees each of which is composed of an elongated wire forming a loop at one end of the tree, and having a pair of coextensive substantially parallel portions extending away from said loop, a plate fixed to said coextensive portions distant from said loop and formed with an opening for receiving one of said hooks, and a sleeve fixed to said plate for receiving a free end of a pin connected with the latter hook, so that said shoe trees also cannot turn with respect to said pins when carried thereby, said lasts carrying shoes during one stage in the manufacture thereof and said trees carrying shoes after said lasts are removed therefrom during a subsequent stage in the manufacture of the shoes, so that the device is capable of being moved through a plurality of operating stations where operations on last-supported shoes and subsequent operations on tree-supported shoes are performed.

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