

[54] WATCH-REPAIRING SET-UP 1,654,225 12/1927 Tanner 220/4 E UX
 [75] Inventor: Rene Maurice Bargetzi, La 3,350,810 11/1967 Warner et al. 206/16 R UX
 Chaux-de-Fonds, Switzerland 3,647,105 3/1972 Keeslar 220/23.4

[73] Assignee: Reno S.A., La Chaux-de-Fonds, Switzerland
 [22] Filed: Oct. 20, 1972
 [21] Appl. No.: 299,267
 [44] Published under the Trial Voluntary Protest Program on January 28, 1975 as document no. B 299,267.
 Primary Examiner—Leonard Summer
 Attorney, Agent, or Firm—Stevens, Davis, Miller & Mosher

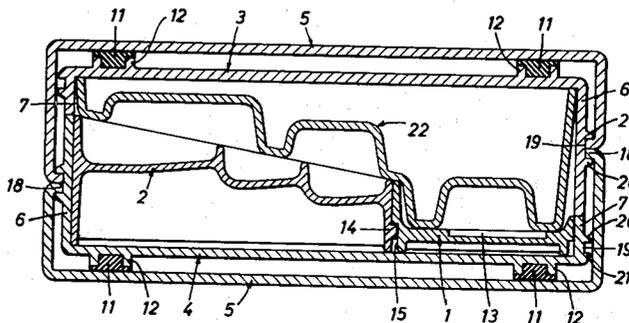
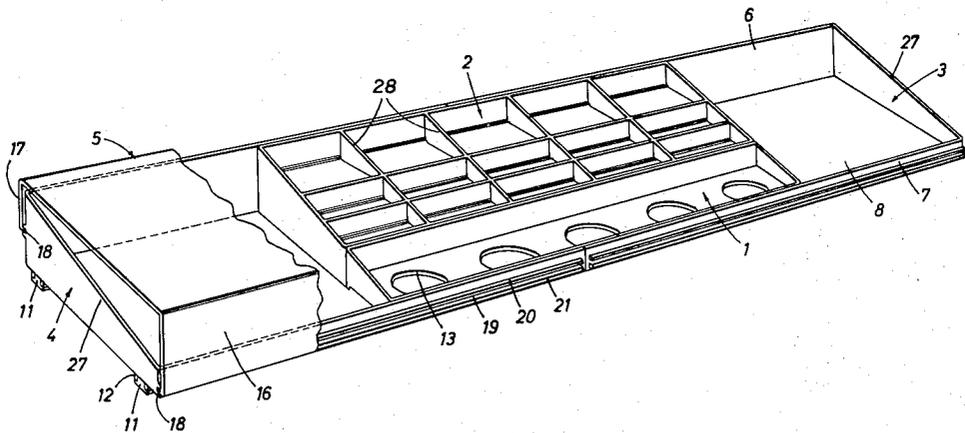
[30] Foreign Application Priority Data
 Oct. 20, 1971 Switzerland..... 15280/71

[52] U.S. Cl. 220/23.83; 206/72; 206/223; 220/23.4; 220/23.86
 [51] Int. Cl.²..... B65D 21/02; B65D 1/36
 [58] Field of Search..... 206/16 R, 1 R, 223; 220/23.4, 23.83, 23.86, 4 B, 4 E

[56] References Cited
 UNITED STATES PATENTS
 727,938 5/1903 Hall..... 206/1 R

[57] ABSTRACT
 A watch-repair set-up including a watch movement-holder strip, a repair-materials box which is connected to the strip, a slide in which the strip and box may move in unison and a cover which covers the slide. The materials box includes a series of rows of cups which hold watch parts and the strip includes a plurality of openings, each of which accepts a movement holder. Each row is aligned with an opening so as to ensure that, during repair of a watch movement, parts will be replaced in the proper movement. The watch-repair set-up including the above-mentioned components is also designed so that when not in use for watch repair, it may be assembled into a compact arrangement for easy storage or transportation.

7 Claims, 4 Drawing Figures



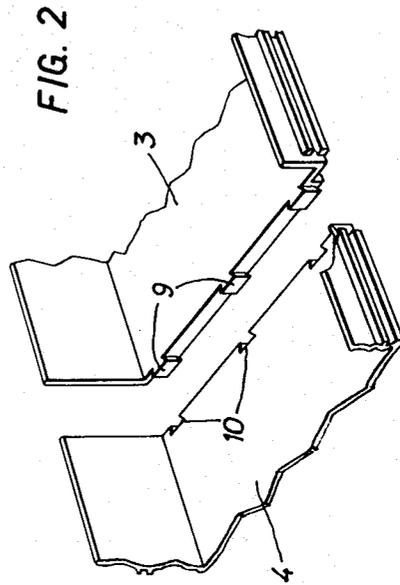
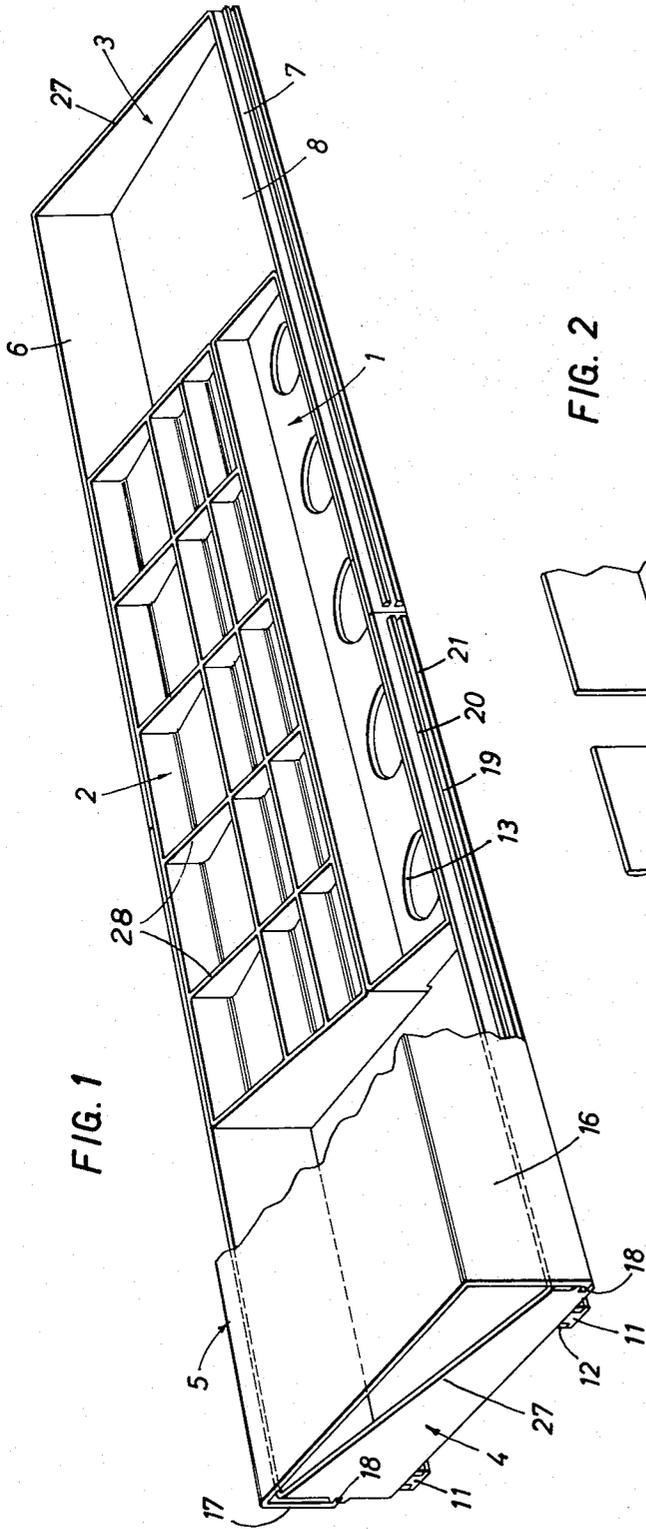


FIG. 3

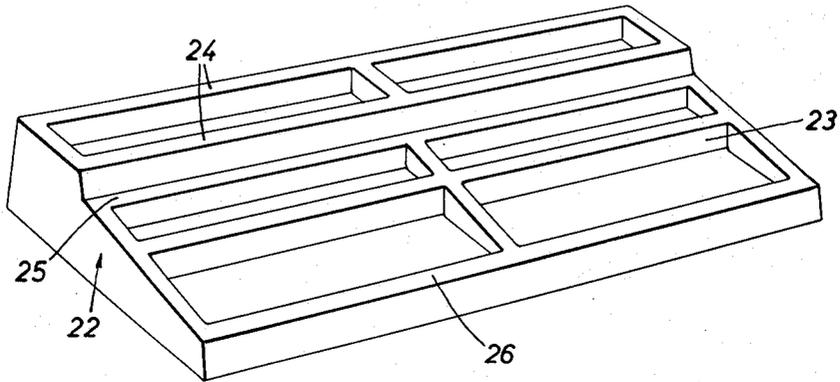
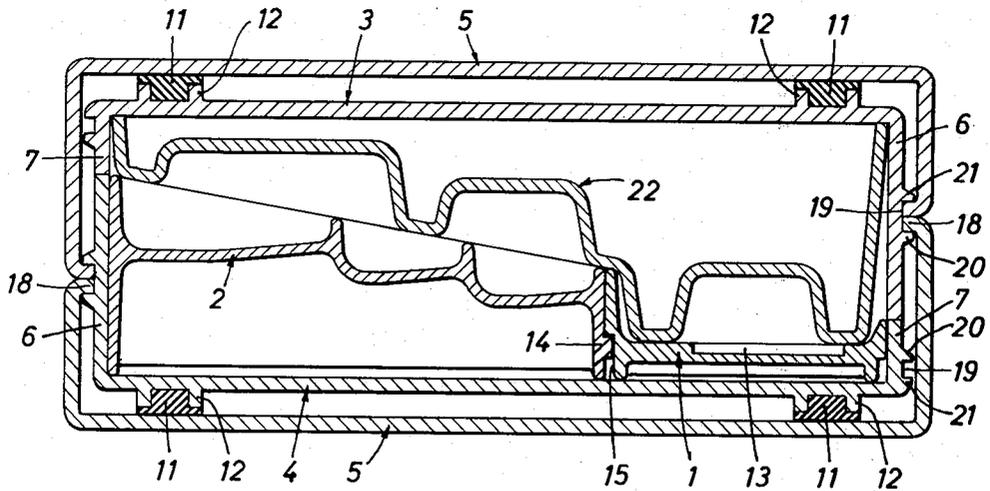


FIG. 4



WATCH-REPAIRING SET-UP

The object of the present invention is a watch-repair set-up comprising a movement-holder strip and a repair-materials box provided with means for connecting the strip and box side by side, and a guide along which both the strip and the repair-materials box may be displaced jointly.

Set-ups of this kind are already known. They allow repairs to proceed in a rational, engineering manner by notably facilitating the dismantling and re-assembly of movements. Thus, a series of five or ten movements are placed on the strip which then is moved along the slide together with the repair-materials box, so that all the movements are consecutively brought to a work station where the repairman undertakes their partial or complete dismantling and where he puts the disassembled parts into cups in the repair-materials box. These cups are arrayed in a series of rows, the number of rows being equal to the number of part-holders of the strip. The movements and disassembled parts then may be processed, for example they may be cleaned separately. Thereafter it will be necessary only to put the strip and repair-materials box together again in order that the parts belonging to each particular movement be again located opposite that movement into which they are to be assembled. Known set-ups of this kind generally correspond to a special work station comprising means for automatically displacing the strip and the repair-materials box along the slide. Such equipment ordinarily is fairly bulky and unsuited for those repair operations where work is so organized that some of the steps carried out, for instance, dismantling and re-assembly, are effected by personnel working at home.

Thus, the purpose of the present invention is to create a repair set-up of the kind mentioned above, which is of modest bulk and may be disassembled and which, in the disassembled state, may be stored while taking up a minimum of space so as to permit working at home.

To that end, the set-up according to the present invention is thus characterized in that the slide comprises two components of equal length, where this length is equal to that of the strip and of the repair-materials box, and that the two slide components are provided with hook-up elements allowing connection of them end to end. Further, these slide components are so made that they may be separated one from the other and may be placed in an upside down position one upon the other.

The drawings show illustratively an embodiment of the watch-repair set-up according to the present invention.

FIG. 1 shows a perspective view of part of the assembled set-up components which allow dismantling or re-assembly of the movements.

FIG. 2 is a perspective view in fragmentary form of two components of the set-up of FIG. 1, showing the hook-up organs.

FIG. 3 is a perspective view of a tool-box which is part of the set-up partly shown in FIG. 1.

FIG. 4 is a cross-section of the set-up when disassembled and stored in reduced volume.

FIG. 1 shows the main functional components of the set-up. These are a strip 1, a repair-materials box 2, two slide elements 3 and 4 and two cover elements of which one cover element 5 may be seen in part in FIG. 1. The

strip 1 and the repair-materials box 2 are of the same length, such length being the same as that of each of the two slide elements 3 and 4. When the strip and the repair-materials box are placed side by side, they take up a width equal to the space between the two unequally high vertical walls 6 and 7 of the respective slide elements 3 and 4. The repair-materials box 2 and the strip 1 are positioned on the flat bottom 8 of the slide elements 3 and 4, with the upper edge of the repair-materials box 2 extending precisely to the level of the upper edge of the higher wall 6 of the slide elements and the opposite edge of the strip 1 extending to the height of the upper edge of the lower wall 7 of the slide elements. Such an arrangement renders both the strip 1 and the repair-materials box 2 easily accessible by clearing the space above the slide elements 3 and 4. Each slide element comprises an end wall 27 with a trapezoidal cross-section enclosing it at one of its ends with each slide element open at the other end. Element 3 is provided with dovetail tenons 9 projecting from the bottom slab 8 whereas the element 4 is provided with recesses 10, also in the shape of a dovetail 10, thereby allowing the two elements to be hooked up end to end in the position shown in FIG. 1. Underneath the bottom 8 of each element 3,4, two longitudinal bands 11 of a synthetic material or rubber, which extend in parallel along the entire length of the element and allow the assembly to be placed on a bench, are mounted to that bottom 8. The slide elements 3,4, the repair-materials box 2 and the strip 1 may be made of a fairly rigid plastic material which in turn may be made by injection molding or pressure molding. The T-shaped bands 11, for instance, may be glued between the two longitudinal projections 12 which are formed when molding underneath bottom 8 of each slide element.

The repair-materials box 2 comprises a certain number of cups which are arrayed as rows of three cups each. There are five rows with the cups of each row being aligned one next to the other in the transverse direction as regards the slides 3,4. As seen in FIG. 1, these cups are located at different heights and are of different sizes. Strip 1 comprises five openings 13 for accepting respectively one movement-holder. Thus each movement-holder is opposite a row of cups.

As seen in FIG. 4, the repair-materials box 2 is provided with tenons 14 in its longitudinal side whereas the strip 1 is provided with corresponding hollows 15 that extend upwards from the base of its outer longitudinal side. Therefore, when the repair-materials box 2 and the strip 1 are placed in the slide, as shown in FIG. 1, any displacement of one causes the displacement of the other. The repairman located in front of the bench supporting the set-up may therefore consecutively bring before him all the movement-holders. The cups in the row immediately behind a movement-holder then will be within his reach.

In order to protect the movements from dust, use is made of two identical covers 5. Their cross-section is rectangular with the lateral front wall 16 being higher than the lateral back wall 17. The end edges of the lateral walls 16,17 are bent over inwards so as to form edges 18. The latter penetrate into grooves 19 which comprise two longitudinal ribs 20 and 21 molded into the outer sides of the slide elements. The pairs of ribs 20,21 of the higher wall 6 of the slides 3,4 are located at a greater height than the pairs of ribs of wall 7, which constitutes the front wall of slides 3,4. They are also

more separated from one another. With the lateral walls of the covers themselves being of different heights, it may be seen that each cover 5 may be made to slide by its edges 18 in the two grooves 19 of a slide element in such manner that the upper wall of the cover will be horizontal. Preferably, the covers will be made of a plastic transparent material such as plexiglass. The two covers will be kept slightly apart during work so as to provide access to the movements which are located at the work station.

A tool-holder or box 22, also made of a molded synthetic substance and shown in FIG. 3, completes the set-up. The length of this tool-holder 22 is equal to that of the strip 1 and the repair-materials box 2. The general shape of the box 22 is that of a trapezoidal prism, but it is obvious that the shapes and the arrangements of the different cups 23 in this box may vary. The tool-box 22 is meant to be put on the bench supporting the slide elements 3 and 4 in order to allow the repairman to deposit the tools when not needed.

Thus, the described set-up comprises the necessary components for dismantling and re-assembly work as regards watch movements under such conditions that the parts which are withdrawn from a movement or are to be placed into such movement will not be put back mistakenly into a wrong movement.

When executing the described components, one may provide for plastic parts, such as the repair-materials box 2 or the strip 1 that will be colored in order to prevent eye strain on the operator. Also, the cup bottoms of the repair-materials box 2 may be made of ceramics so as to completely eliminate static charge effects.

In lieu of assembling the two slide elements 3 and 4 by tenons and mortises of dovetail shape as shown in FIG. 2, the runners 11 may also be molded into a different shape, where their projecting parts will be used for effecting hook-up.

The described set-up further provides the advantage of allowing complete disassembly and storage in reduced volume of parallelepiped shape easily fitting into such packing as a cardboard box for instance. Thus, FIG. 4 shows a section of elements 3 and 4 so arranged as to be put into a box. The repair-materials box 2 and the strip 1 are placed in one of the slides, for instance slide 4, while the other slide 3 is turned upside down on the former one and covers same, thus defining together a space of rectangular cross-section. The repair-materials box 2 and the strip 1 occupy a trapezoidal volume in this space, which corresponds to less than half the volume available. The tool box 22, which is turned upside down on the repair-materials box 2 and strip 1, is located in the remainder of this volume.

FIG. 4 shows, on an enlarged scale with respect to that of FIG. 1, the arrangement of ribs 20 and 21 which form the grooves 19. It will also be noted that the groove 19 which is fashioned in the lateral wall 6, that is, in the higher wall of each slide element, is of a width about twice that of the other groove. When elements 1, 2, 3, 4, and 22 are thus placed one on the other, the two covers 5 may penetrate by their edges 18 into grooves 19 in such manner that each cover is bound to the two slide elements. In this fashion a compact assembly is achieved in which the components are tied to one another and may be handled as one piece. This assembly may therefore easily be slipped into a cardboard box or a wrapping bag, since it is in the shape of a right parallelepiped, as would be the case for shipping or

storing. With all the described components being made of fairly thin wall elements, the free volume inside the assembly is relatively large. Thus, part-holders may be housed inside the tool-box 22 which will be housed there when the set-up is in a servicing position in the recesses 13 of the parts-holders. When the set-up is in the assembled state, the bands 11 making up the slide runners will be compressed between the cover elements 5 and this ensures that the diverse assembled components will be kept in place. A piece of foam rubber or an alveolar plastic element may be placed in one of the cups of the tool-box, which would assume the role of a cushion and would allow emplanting certain tools such as a screw-driver or oil-pike.

In lieu of storing the set-up as shown in FIG. 4, one may also provide a piece of furniture with drawers in which the latter precisely would be constituted by slide elements 3 and 4.

Lastly, it is appropriate to observe that the described set-up may be arbitrarily enlarged. Indeed, two insertable slide elements, which are open at both ends, may be adjoined, thereby allowing extension of the slide and, consequently, the path that may be covered by the parts-holders and the repair-materials boxes. Therefore, parts-holders and repair-materials boxes may also be added, thus providing feasibility in systematically processing a series of more than five pieces.

Because of the storied arrangement of the cups, the repair-materials box is of a particularly practical kind. The number and the dimensions of the cups are sufficient to permit dismantling many pieces. Furthermore, since the storied arrangement is located immediately behind the movement being dismantled, particularly easy work is ensured.

As to dimensions, it may be observed that the tool-box 22 is so made that it not only accepts such tools as one may wish to deposit, but also keeps the repair-materials box 2 and strip 1 in place between the slide elements 3 and 4 when the set-up is being stored. The two lateral edges 24 of the higher part of box 22 will press against the bottom of strip 1. Simultaneously, the shoulder 25 separating the upper two cups from the lower four cups of tool-box 22 will press against the rear wall of parts-holder 1 and against the front wall of the repair-materials box 2. Lastly, shoulder 26, which runs along the front edge of the tool-box 22, presses against the higher edge 6 of the box 2 or at least against the transverse separations 28 fashioned between the rows of cups. With the lower edge of the lateral walls being so dimensioned as to adjust inside the slide element 3, it will keep this slide element immediately above the lower slide element 4. Further, the height of the tool-box 22 will be so selected that when the set-up is arranged as in FIG. 4; all pieces will be kept in place without any possibility of shifting them with respect to one another.

It is well understood that other arrangements are feasible which make use of covers that, during storage, will keep the slide elements together and enclose the strip, the repair-materials box and the tool-holder, as is done in a sealed valise that may be easily packed.

Lastly, it should be noted that the described set-up may also comprise supporting or resting elements adapted to the slide elements as accessory components.

What is claimed is:

1. A watch repairing set-up comprising a movement-holder-strip, a repair materials box and two slide ele-

5

6

ments housing said strip and materials box, said strip, said box and said elements having the same length, said strip and said box being provided with longitudinal sides, at least one tenon projecting from one of said longitudinal sides and at least one corresponding recess in the other longitudinal side for receiving said tenon and for assembling said strip and said box side by side, each of said slide elements having two longitudinal walls spaced apart a distance equal to the width of the assembled strip and box, and said slide elements being provided with corresponding hook up means for removably assembling said elements end to end.

2. A watch repairing set up according to claim 1, further comprising pairs of longitudinal ribs projecting outwardly from said longitudinal walls of said slide elements and defining grooves therebetween, and two covers having a length equal to the length of the slide elements and lateral walls with recessing edges, said recessing edges being adapted to engage said grooves.

3. A watch repairing set-up according to claim 1, further comprising a tool box having the same length as said slide elements and shaped to fit in said slide elements.

4. A watch repairing set-up comprising seven parts including a movement-holder strip, a repair materials box, two slide elements, two covers and a tool box, all of said parts having the same length, and each of them having two parallel longitudinal sides, said strip and said repair materials box being provided with assembling means for assembling the same side by side, said assembled repair materials box and strip being slidable in said slide elements, said assembled repair materials

box and strip having a cross-section of trapezoidal shape and said tool box having a cross-section of trapezoidal shape complementary to the shape of the assembled repair materials box and strip, said tool box and said assembled materials box and strip occupying a space of rectangular cross-section when said tool box is piled on said assembled materials box and strip, said two covers covering, respectively, the top and bottom of the piled tool box and assembled materials box and strip.

5. A set-up according to claim 4 wherein the slide elements comprise a bottom and two longitudinal walls of unequal heights.

6. A set-up according to claim 5 wherein said covers comprise an upper wall and two side walls of unequal heights, said longitudinal walls of the slide elements are provided with grooves at unequal heights and said side walls of the covers are provided with recessing edges for alternatively engaging grooves in both longitudinal walls on one of said slide elements or grooves in both longitudinal walls having the same height, each of which is provided with another one of the slide elements, said cover upper wall and said slide bottom being parallel to one another in both engaging positions.

7. A set-up according to claim 6 wherein the particular groove of each slide element which is fashioned in the higher wall of the slide element is of sufficient width to accept recessing edges associated with each of the two covers.

* * * * *

35

40

45

50

55

60

65