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(54) **A FINGER PINCH SAFETY DEVICE FOR HAND FINGERS APPLIED ON TABLES**

(57) A finger pinch safety device (10) for hand fingers applied on tables (12), especially on folding tables, comprising mechanical means (10', 10'') secured to table tops (13, 13') arranged with respect to a support frame (11) of said table (12) and elastic elements (17) co-operating with said mechanical means.

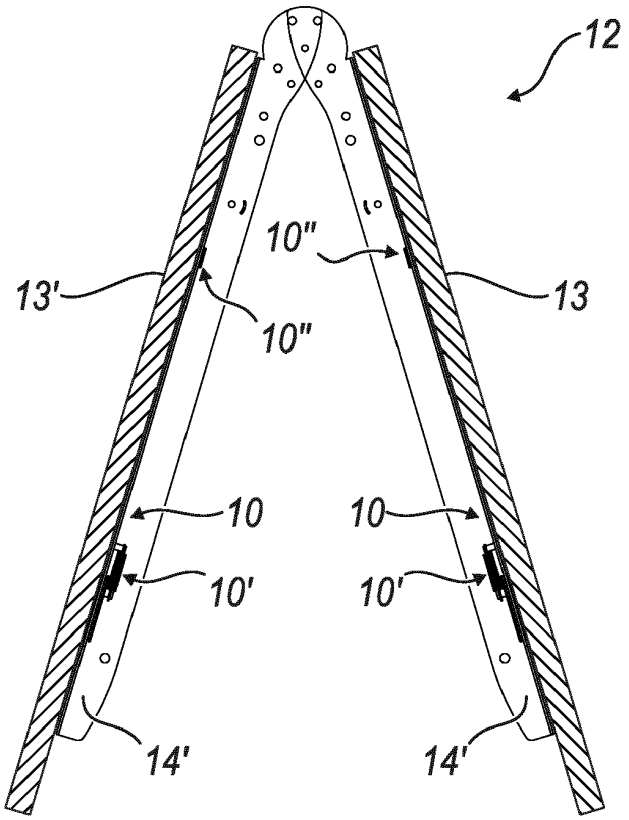

Fig. 1

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Description

[0001] The present invention refers to a finger pinch safety device for hand fingers applied on tables.

[0002] More specifically, the present invention refers to a safety device particularly suitable for being applied on tables, especially but not exclusively on folding tables, to prevent hand fingers from being accidentally pinched.

[0003] It is known that a table, be it a dining or a kitchen table, a coffee table or a study or a camping table or the like, comprises a table top made from wood, metal, plastic, glass, or another material suitable for this purpose, supported by two or more legs made from different materials.

[0004] Also, tables can be extendable (if there is the possibility of varying the dimension of the table top) or folding, the latter being used to save space or to make transportation easier.

[0005] In the particular, but not exclusive, case of folding tables, a major drawback consists in that, during the table opening operation performed to arrange the table top according to a horizontal plane and in the case that the table is folded, for instance, like a book and comprises two table tops suitable for being put side by side to each other in order to form one table top, the user's hand fingers might be accidentally pinched between component parts of such table and, more specifically, hand fingers might be pinched between the two table tops to be put side by side one with respect to the other.

[0006] Such drawback is as much felt considering that in folding tables the opening operations are performed in short times and often the table tops might even be heavy, for instance in the case that they are non-small-size tables with table tops made from solid wood or glass. Because of such unlucky pinching, a user might suffer injuries of different types which might include cuts, bruises, or loss/breakage of nails and the like.

[0007] Typical examples of folding tables are, for instance, those described in document US2013/0104781 which makes reference to a table comprising a modesty panel of a folding type and hinged to the table, said panel being slidingly coupled with the hinge to define two positions wherein said modesty panel is spaced away from the table top (position 1) and in contact with said table top (position 2) respectively and also comprises a spring used to push the modesty panel in contact with the table top.

[0008] A further solution is described in document US4446796 which makes reference to a table movable on wheels and comprising a table top and an extension leaf to be coupled with the table top and hinged thereto so as to define a position wherein the extensive leaf is coupled with the table top and a position wherein the extension leaf is decoupled from it.

[0009] Another known solution is described in document US3086657 which makes reference to a clothes hanger to be used both as a table and as a temporary vallet and formed of a panel hinged to a wall and provided with support means for said panel which comprise a first portion secured to the wall and a second portion hinged to the first portion and to the panel, said panel being capable of sliding with respect to the second portion of the support means.

[0010] However, such known solutions entail major drawbacks bound to their complex construction and, in particular, to the fact that they comprise modesty panel moving mechanisms and/or table opening/closing mechanisms specific developed for every specifically table and featuring a certain complexity in construction and in installation.

[0011] An object of the present invention is to obviate the above described drawbacks.

[0012] More specifically, an object of the present invention is to provide a finger pinch safety device to be applied on tables, especially on folding tables, suitable for preventing the hand fingers from being caught between component parts or table tops being put side by side, which might consequently cause injuries as described above, during the table opening operations.

[0013] A further object of the present invention is to provide a finger pinch safety device applicable to different types of tables, irrespective of the material used to construct the table top and, also, suitable for being also applied on already existing tables.

[0014] A further object of the present invention is to put at user's disposal a finger pinch safety device to be applied on tables suitable for providing a high strength and reliability over time and also such as to be manufactured in an easy and cost-effective manner.

[0015] These objects and others are achieved by the invention that features the characteristics according to claim 1.

[0016] According to the invention, a finger pinch safety device for hand fingers is provided to be applied on tables, especially on folding tables, comprising mechanical means secured to table tops arranged on a support frame of said table and elastic elements co-operating with said mechanical means.

[0017] Advantageous embodiments of the invention are apparent from the dependent claims.

[0018] The constructional and functional characteristics of the finger pinch safety device for tables according to the present invention can be better understood from the following description, wherein reference is made to the attached tables which illustrate a preferred, non-limitative embodiment thereof, and wherein:

figure 1 schematically shows a front view of a folding table provided with a finger pinch safety device in a book-like folded configuration;

figure 2 shows a schematic, axonometric, and exploded view of component parts of the device according to the invention;

figures 3 and 4 schematically show a front view of the table according to figure 1 in an open configuration and according two positions illustrating the op-

eration of the device according to the invention;
figures 5 and 5A schematically show two enlarged detailed views of two details of the device according to the invention shown in figure 4, identified by letter K and by letter J respectively;
figures 6 and 7 schematically show a bottom view of the table according to figure 1 in an open configuration and according to two positions illustrating the operation of the device according to the invention.

[0019] With reference to the mentioned figures, the finger pinch safety device according to the present invention, identified by the numeral reference 10 as a whole (described with reference to a folding table of a type comprising two table tops suitable for forming one table top whenever the table is open), suitable for being applied to a structure of a folding table 12 comprises a first block 10' comprising a first body 14 suitable for being coupled with a table top 13 and 13' of the table 12, for the function described below, a second body 16 suitable for being coupled with the structure of the table 12 and with the first body 14 as described below, an elastic element 17 consisting of a helical spring or a gas spring or another type of elastic means suitable for exerting a restoring action, as described below; said safety device also comprising a second block 10'' comprises a third body 18 and a fourth body 20 coupled with each other to co-operate together with the assembly consisting of the first body 14 and the second body 16 as described below.

[0020] The table 12, for instance a table folding like a book, comprises two table tops 13 and 13' coupled with a support frame 11, as better described below, by way of plate-like elements 11' as better described below.

[0021] The first body 14 comprises a plate-like element 15, from a front or base of which three external projecting appendages develop, consisting of a first appendage 30 and a second appendage 31 facing each other and arranged in correspondence with opposed portions of an end of the plate-like element 15 respectively, and a third appendage 32 arranged in a position intermediate with respect to said first and second appendages.

[0022] The second body 16 also consists of a plate-like element 19, whose dimensions substantially correspond to those of the plate-like element 15 of the first body 14, and comprises a first through-opening 23 and a pocket 24 provided with a hole in correspondence with its own base, said first opening 23 and pocket 24 facing each other and being formed in correspondence with the end portions of the plate-like element 19 of the second body 16; said plate-like element 19 also comprises a second through opening 25 formed in a position intermediate between said first opening 23 and said pocket 24.

[0023] The third body 18, as schematically shown in figure 2, preferably consists of a male washer which comprises a base 18', from a front of which a preferably internally hollow projecting portion 18" develops in the direction going away from said base.

[0024] The fourth body 20 consists of a disc-like element 20' centrally provided with a through hole 20''.

[0025] Said first body 14, second body 16 of the first block 10' and said third body 18 and fourth body 20 of the second block 10" can be made from a plastic material, for instance teflon or the like, metallic material or any other material that is known and is suitable for this purpose. The first body 14 and the second body 16, the third body 18 and the fourth body 20 are respectively coupled together to perform the functions described below.

[0026] More specifically, the first body 14 and the second body 16 are joined together and coupled with each other by way of the first appendage 30 and the third appendage (the intermediate appendage) 32 which insert in the first opening 23 and in the second opening 25 respectively of the second body 16 and, also, the third body 18 and the fourth body 20 are coupled with each other, the fourth body 20 being put on the third body 18 in correspondence with the projecting portion 18" of said third body 18. The coupling between the first body 14 and the second body 16 can be implemented by way of pins or screws or, alternatively, by way of quick locking/coupling systems of the snap-fit type or the like.

[0027] The finger pinch safety device described above is coupled with the support structure or frame 11 of the table 12 as described below.

[0028] With a specific reference to the detail in figure 5, the first body 14 is secured, by way of screws or pins or by gluing or other known retention means, to a lower front or base of a table top 13/13' of a table 12, the three appendages 30, 31 and 32 facing a direction opposed to the lower front or base of the table top 13/13' and projecting with respect to the plate-like element 11' of the frame 11, said appendages being inserted in a slotted opening or hollow element 21 formed on said plate-like elements 11' of the support frame.

[0029] The second body 16 is coupled with the first body 14 by way of the first opening 23, the blind hollow element or pocket 24, and the second opening 25 which engage the first appendage 30, the second appendage 31, and the third appendage 32 respectively.

[0030] In this way, the plate-like element 11' is arranged in a position intermediate between the first body 14 and the second body 16.

[0031] The elastic element 17 extends between the first appendage 30 and a fixed projecting pin 41 of the plate-like element 11'.

[0032] The fourth body 20 is secured to a lower front of the table top 13/13' and couples with the third body 18 arranged with respect to the plate-like element 11' and whose projecting portion 18", facing the lower front or base of the table top 13/13', couples with and inserts in the through hole 24 of said fourth body; for this purpose, the plate-like element 11' includes a further slotted opening or through hollow element 43 in which the mentioned projecting portion 18'' inserts.

[0033] In this case too, the plate-like element 11' is in a position intermediate between said third body 18 and fourth body 20.

[0034] The third body 18 and the fourth body 20 are coupled with each other by way of a pin or screw or further and known retention means of the quick locking type, such as a snap-fit or the like.

[0035] It results from the foregoing that the couplings taking place between the first body 14 and the second body 16 and between the third body 18 and the fourth body 20 define means for a coupling between the table top 13/13' and the structure of the support frame of the table.

[0036] The coupling thus defined is not a rigid coupling between the table top 13/13' and the plate-like element 11' of the support frame 11, but rather a movable coupling and, more specifically, a coupling that allows the table top 13/13' to translationally slide with respect to the plate-like element 11' of the support frame 11.

[0037] As a matter of fact, when passing from the closed configuration (schematically shown in figure 1) to the open configuration (according to figures 3 and 4 and 6 and 7) wherein the table tops 13 and 13' are arranged according to one and the same horizontal plane, lies in the table 12 an intermediate open position wherein the table tops 13 and 13' are arranged according to a horizontal plane, the opposed and parallel edges 40 and 40' respectively of a table top 13 and 13' being spaced away from each other (the distance "B" in figures 3 and 6), and shall pass to a final open position (figures 4 and 7) wherein the mentioned opposed edges 40 and 40' are in contact with each other. Such intermediate initial open position changes to the final open position by way of a sliding movement whereby the table tops 13 and 13' reciprocally get closer to each other, as indicated by the arrows "A" in figures 4 and 7, and such reciprocal sliding movement takes place thanks to an elastic restoring action exerted by the helical element 17 of the finger pinch safety device according to the invention.

[0038] More specifically, the first body 14 and the second body 16 coupled with each other and the third body 18 and the fourth body 20 coupled with each other slide with respect to the plate-like elements 11' of the support frame 11 to make it possible for the table tops 13 and 13' to relatively slide and reciprocally get closer to each other. The elastic restoring action exerted by the elastic element 17, while passing from the initial open position (table tops 13 and 13' separated by a quantity B from each other) to the final open position (table tops 13 and 13' located side by side), averts the risk that hand fingers are pinched between the two table tops (in the space comprised between the two edges 40 and 40' and identified by the letter "B"); if hand fingers remain accidentally in the space B comprised between the table tops during the sliding movement whereby the table tops 13 and 13' reciprocally get closer to each other, no pinching nor shearing action takes place because the elastic element 17 damps the sliding movement and the collision between the table tops and the hand fingers allows to remove the hand fingers from the mentioned space, with no consequences like bruises or injuries.

[0039] The advantages achievable by using the safety device according to the invention are apparent from the foregoing. The finger pinch safety device according to the present invention, applicable to tables, and specially to folding tables, advantageously makes it possible to prevent hand fingers from being caught between component parts or table tops getting closer to each other during the table opening operations, i.e. between the table tops reciprocally getting closer for a final side by side configuration once the table opening operation is completed; in this manner, this device makes up a safety element.

[0040] A further advantage consists in that the finger pinch safety device according to the invention can be easily and conveniently applicable to different types of tables, irrespective of the material that the table top(s) is/are made from and, in addition, it can also be applied to already existing tables.

[0041] Even though the invention has been described here above with a special reference to an embodiment thereof given for explanatory, non-limitative purposes only, numerous modifications and variants will be apparent to those skilled in the art in the light of the above description. Consequently, the present invention is construed to embrace any modifications and variants that fall within the scope of the following claims.

Claims

1. A finger pinch safety device (10) for hand fingers applied on tables (12), especially on folding tables, **characterized in that** it comprises a first block (10') and a second block (10'') secured to table tops (13, 13') and being slidable with respect to plate-like elements (11') of a support frame (11) of said table (12), and elastic elements (17) arranged between the first block (10') and the plate-like element (11') of the support frame (11) co-operating with said first block (10') and second block (10") for an elastic restoring action when passing from an initial open position, wherein the table tops (13, 13') are separated from each other, to a final open position wherein said table tops (13, 13') are put side by side to each other, said first block (10') comprising a first body (14) and a second body (16) provided with reciprocal coupling means, and said second block (10") comprising a third body (18) and a fourth body (20) provided with reciprocal coupling means.

2. The safety device according to claim 1, **characterized in that** the elastic elements (17) are arranged between the first block (10') and a fixed projecting pin (41) of the plate-like element (11') of the support frame (11).

3. The safety device according to the previous claims, **characterized in that** the elastic elements (17) com-

prise a helical spring.

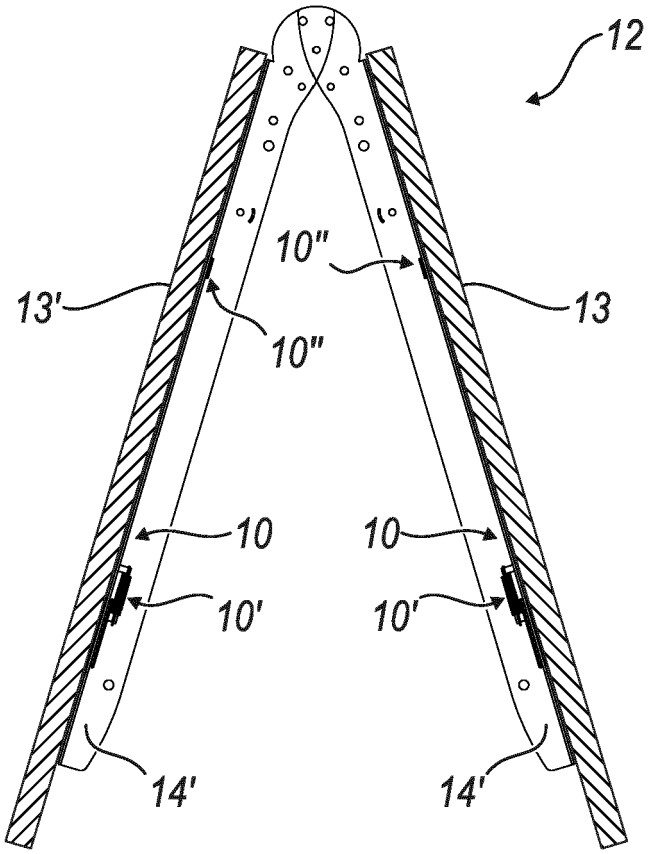
4. The safety device according to any of the previous claims, **characterized in that** the elastic elements (17) comprise a gas spring.

5. The safety device according to claim 1, **characterized in that** the first body (14) comprises a plate-like element (15), from a front or base of which three external projecting appendages develop, consisting of a first appendage (30), a second appendage (31), and a third appendage (32), the latter arranged in a position intermediate between said first and second appendages (30, 31) opposed to each other and arranged in correspondence with opposed end portions of the plate-like element (15), the second body (16) comprising a plate-like element (19) provided with a first through opening (23), a pocket (24), and a second through opening (25) formed in a position intermediate between said first opening (23) and said pocket (24) opposed to each other and arranged in correspondence with opposed end portions of the plate-like element (19), said first opening (23), pocket (24), and second opening (25) defining coupling seats with the first appendage (30), the second appendage (31), and the third appendage (32) respectively of the first body (14).

6. The safety device according to claim 1, **characterized in that** the third body (18) comprises a base (18') from a front of which a projecting portion (18'') develops, in a direction going away from said base, the fourth body (20) comprising a disc-like element (20') centrally provided with a through hole (20") suitable for receiving the projecting portion (18").

7. The safety device according to one or several of the previous claims, **characterized in that** the first block (10') is slidable with respect to a slotted opening or through hollow element (21) formed on the plate-like elements (11') of the support frame (11) and the second block (10") being slidable with respect to a further slotted opening or through hollow element (43) also formed on the plate-like elements (11') of the support frame (11).

8. The safety device according to one or several of the previous claims, **characterized in that** the first body (14) is secured to a lower front of the table top (13, 13') and is coupled with the second body (16), the projecting appendages (30, 31, 32) of said first body (14) engaging the opening or through hollow element (21) of the plate-like element (11'), the fourth body (20) being secured to a lower front of the table top (13, 13') and coupled with the third body (18), the through hole (20") of the fourth body (20) which receives the projecting portion (18") engaging the further opening or through hollow element (43) of the plate-like element (11'), said plate-like element (11') being in a position intermediate between said first body (14) and second body (16), and between said third body (18) and fourth body (20).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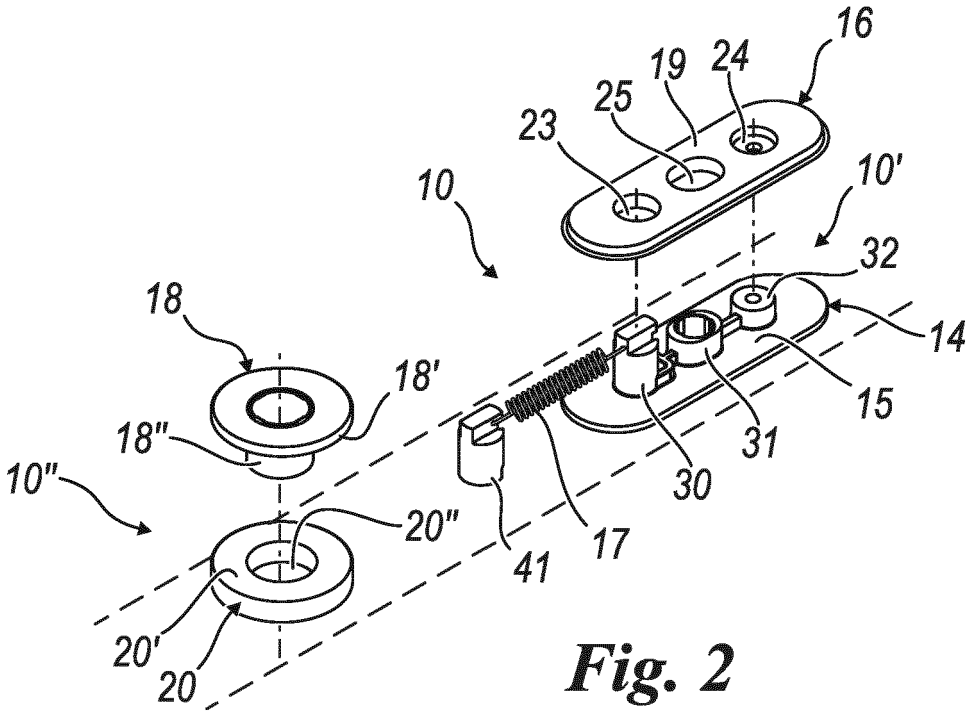
10"
13'
13
10"
10
10
10'
10'
14'
14'

Fig. 1


16
19
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25
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18'
15
18"
31
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20"
17
41
20'
20

Fig. 2

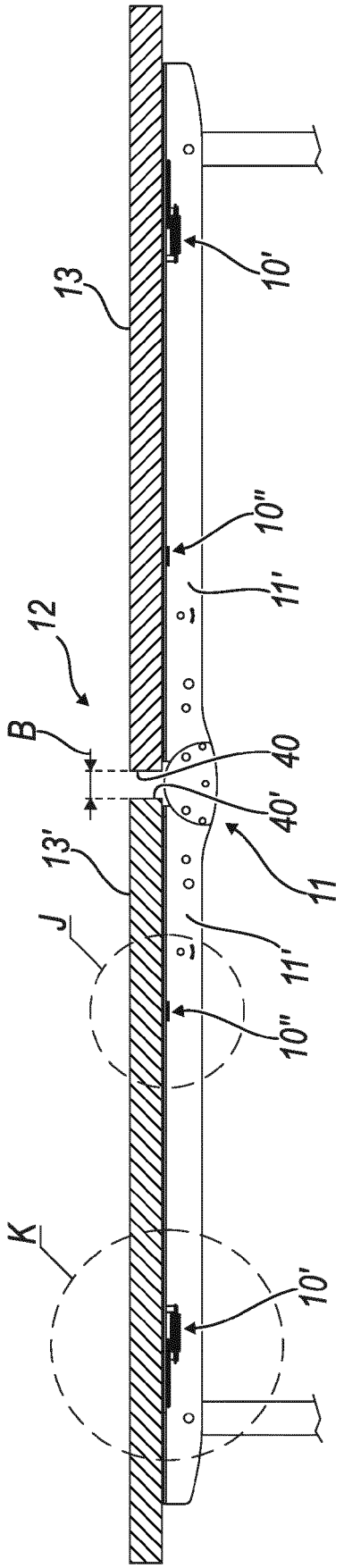


Fig. 3

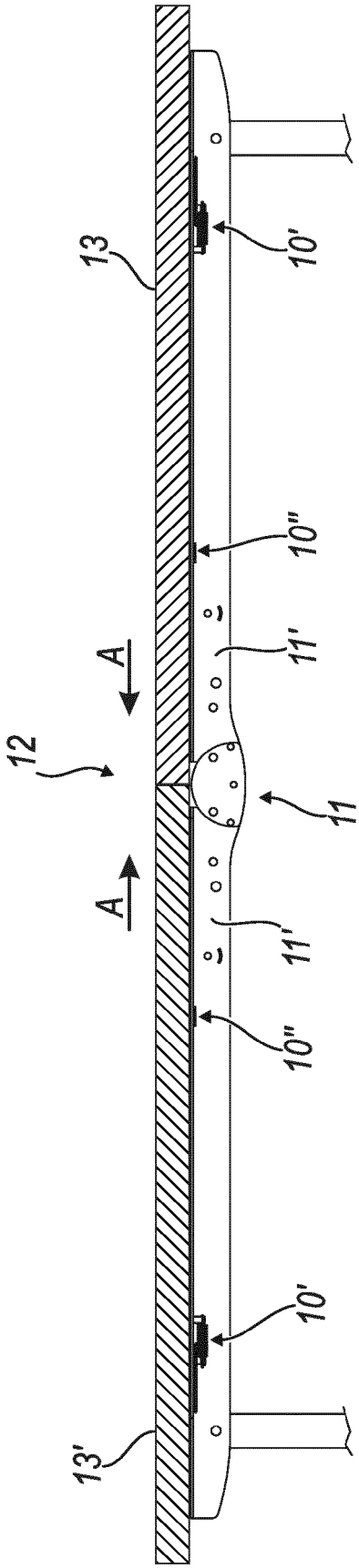


Fig. 4

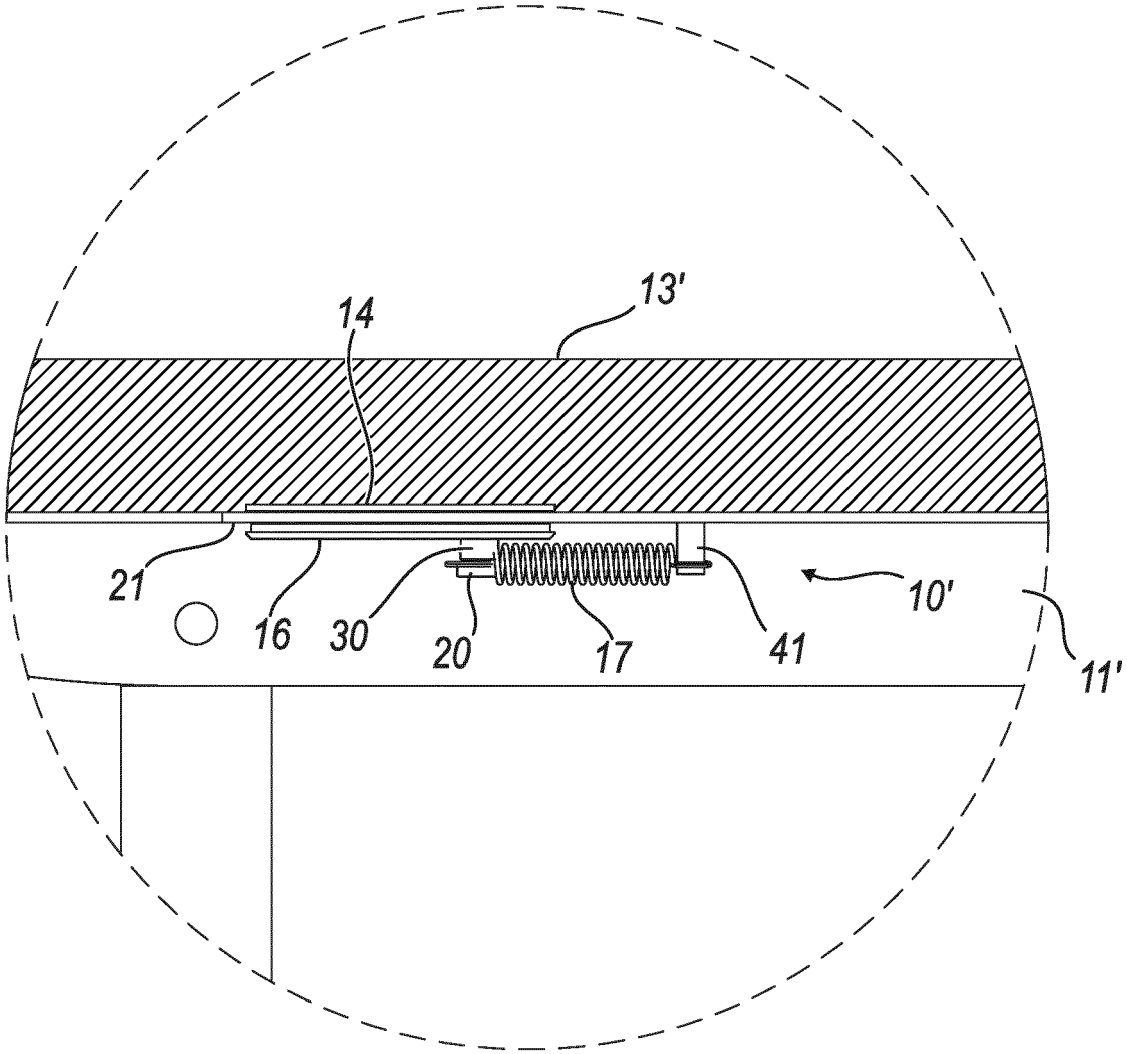


Fig. 5

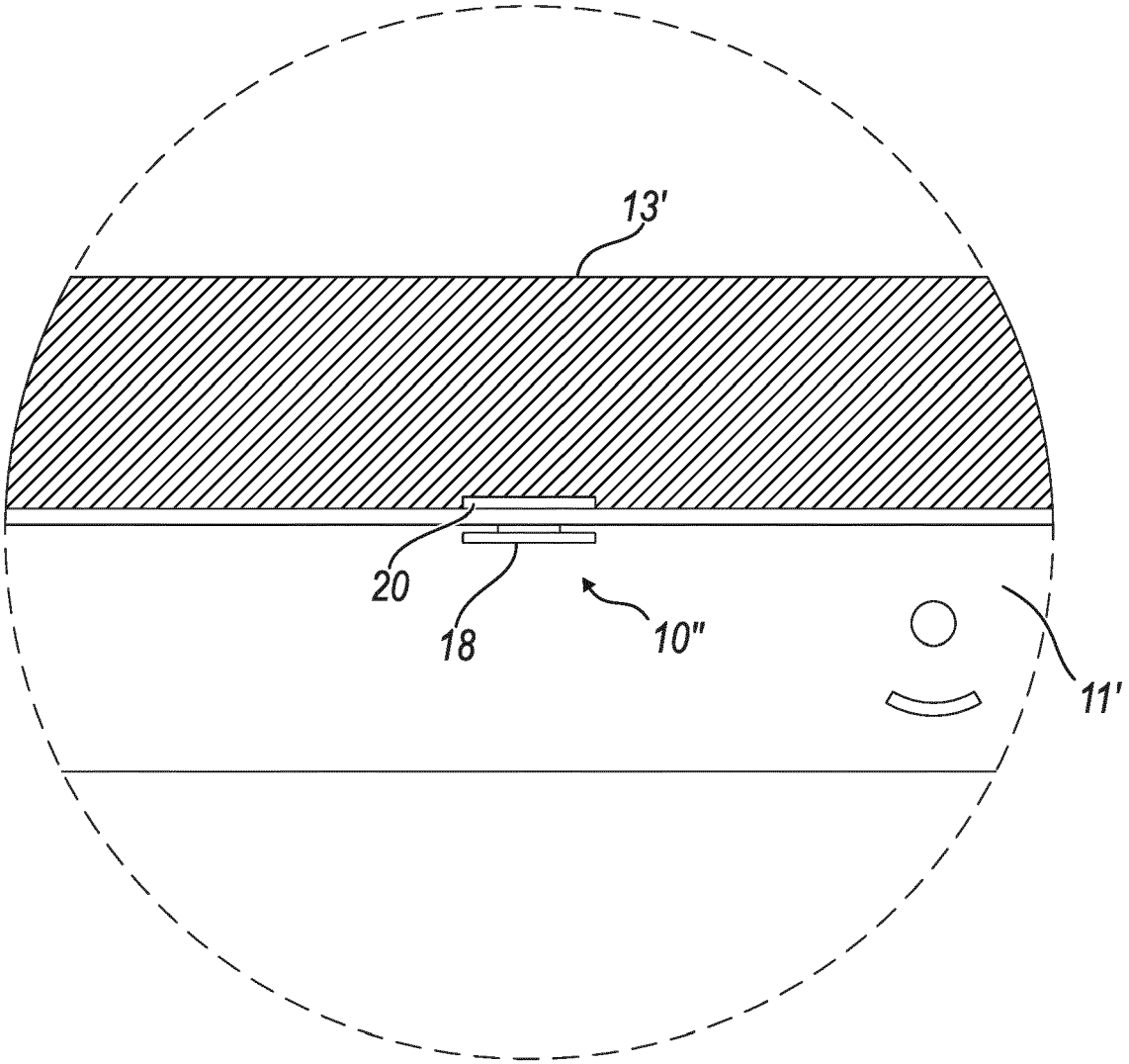
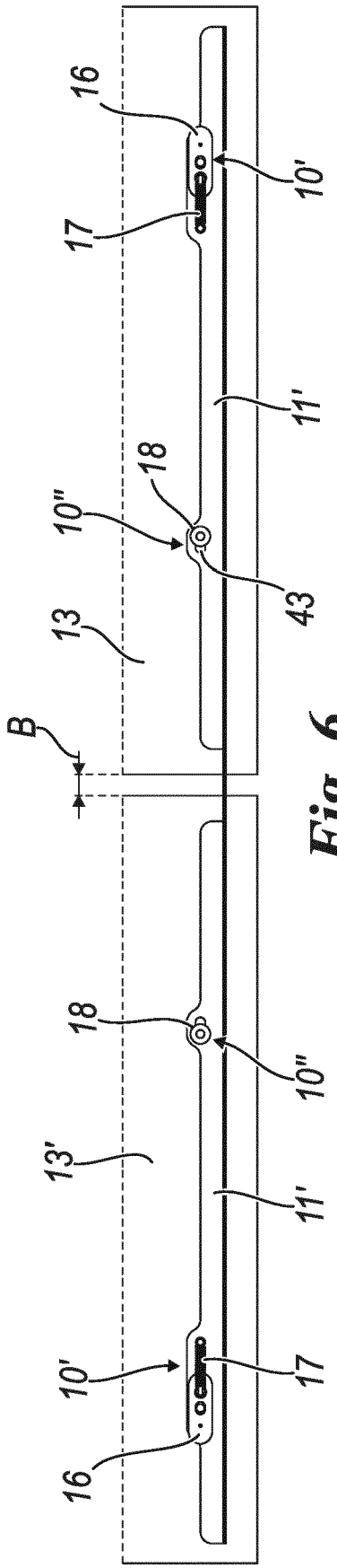


Fig. 5A


16
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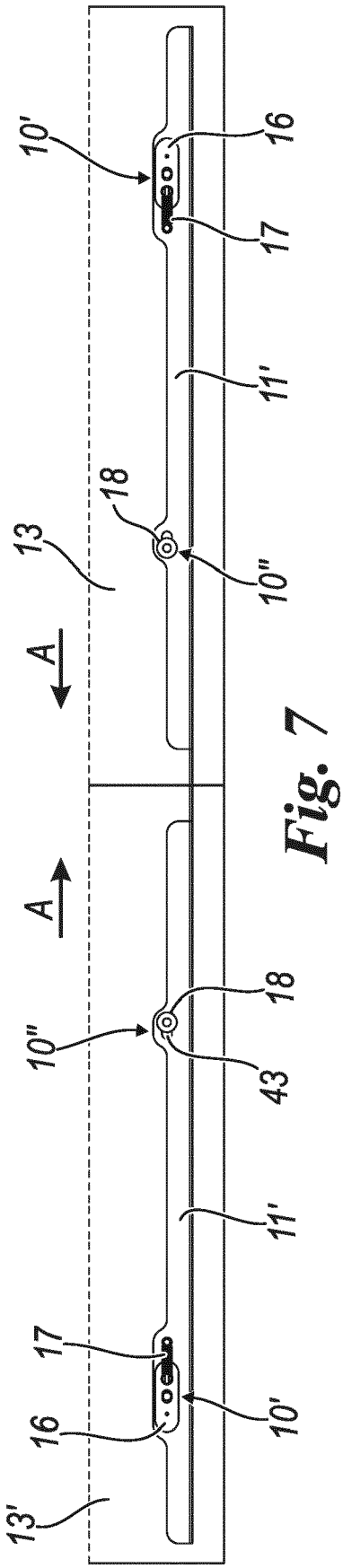
10"
43
13
B
18
10"
13'
11'
10'
17
16

Fig. 6


10'
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17
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18
13
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A
A
10"
18
43
11'
17
16
10'
13'

Fig. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 17 18 9445

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2013/104781 A1 (SMITH RICHARD D [US] ET AL) 2 May 2013 (2013-05-02) * figures 4-7 * -----	1-4,6,7	INV. A47B3/083 A47B13/08 A47B13/00
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TECHNICAL FIELDS SEARCHED (IPC)

A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	8 December 2017	Martinez Valero, J

CATEGORY OF CITED DOCUMENTS

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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- US 4446796 A **[0008]**
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