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(54) **Kit for assembling hinges in frames composed of at least two wings and related assembling method**

(57) Kit for assembling hinges (17, 17') in frames (30) composed of at least two wings (5a, 5b), said kit comprising: two spacers (19) for creating an interstice (22) between the two wings (5a, 5b) and for allowing the abutment on said spacers (19) of a respective hinge (17, 17') equipped with teeth (18) to be assembled between

said two wings (5a, 5b); two guides (15) that can be inserted from the top onto the spacers (19) and adapted to laterally retain the hinges (17, 17'); a punch for allowing to exert a force from the top onto the hinges (17, 17') so that the respective teeth (18) of the hinges (17, 17') penetrate into the upper faces (8a, 10a) of the two wings (5a, 5b).

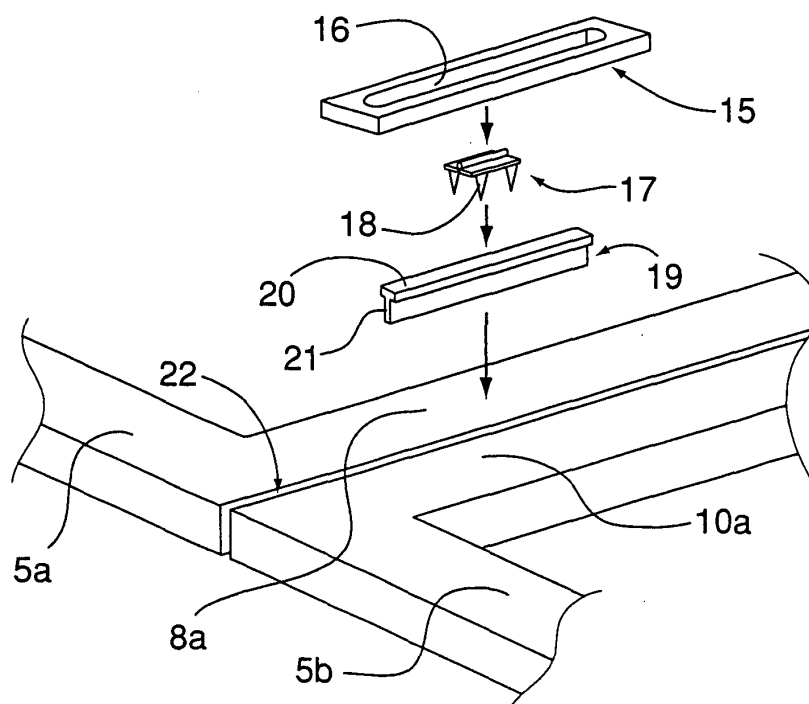


Fig. 2

## Description

**[0001]** The present invention refers to a kit for assembling hinges in frames composed of at least two wings and to its related assembling method.

**[0002]** More precisely, the present invention refers to an assembling kit comprising three types of elements that can be easily and economically realised that are used in a method adapted for assembling hinges in frames composed of at least two wings.

**[0003]** In order to insert the hinges in frames composed of at least two wings and mainly aimed for supporting photographs, paintings or texts, it is necessary to use rather costly machinery.

**[0004]** Since the companies that make such frames and other types of small objects are generally small family companies, the cost of a suitable machinery for assembling the hinges can be supported with difficulty by these companies.

**[0005]** Object of the present invention is therefore providing a kit for assembling hinges in frames composed of at least two separate wings, wherein said kit comprises elements that allow a quick, accurate and reliable assembling of hinges adapted to mutually hinge the at least two wings.

**[0006]** A further object of the present invention is providing a method for assembling such hinges using an assembling kit according to the present invention.

**[0007]** These and other objects are obtained with the kit for assembling hinges in frames composed of at least two wings and with its related assembling method as claimed in the attached claims.

**[0008]** Advantageously, the assembling kit according to the present invention comprises elements having an extremely reduced cost.

**[0009]** Moreover, the method for assembling hinges that uses the assembling kit according to the present invention does not need skilled operators being able to be carried out by anyone.

**[0010]** The invention will be now described in detail with particular reference to the enclosed drawings, provided as a non-limiting example, in which:

- Figures 1 to 4 show a top perspective view respectively of a first, a second, a third and a fourth step for assembling hinges in a frame equipped with two wings;
- Figure 5 shows a front perspective view of a frame with two wings when its assembling is completed.

**[0011]** With reference to Figure 1, a first step of the method for assembling hinges according to the invention is shown, in which a working plane 1 is depicted on which a first wing 5a and a second wing 5b are rested side by side, which can be used to make a frame.

**[0012]** The working plane 1 is equipped with a head area 3, lifted with respect to the working plane 1, on which a perimetral edge 7 of the first wing 5a abuts,

while the second wing 5b rests with a perimetral edge 9 thereof against two parallel abutment elements 11 arranged on the working plane 1.

**[0013]** The abutment elements 11 are adjustable by acting on a suitable pin 13 in order to allow the arrangement of wings 5a, 5b with various sizes on the working plane 1.

**[0014]** The adjustment of the abutment elements 11 will have to be carried out so that, between the further two perimetral edges 8 and 10 respectively opposite to the perimetral edges 7 and 9 of the wings 5a and 5b, an interstice 22 is created.

**[0015]** With reference to Figure 2, a second step is now shown of the method for assembling hinges between the wings 5a, 5b of a frame in which, for an easy illustration, the assembling of a first hinge 17 is depicted from two hinges 17, 17' that are used to mutually hinge the wings 5a, 5b.

**[0016]** It must however be kept in mind that the assembling operations shown in Figures 2 to 4 for assembling the first hinge 17 are carried out simultaneously for assembling the second hinge 17', that can be seen in Figure 5, in an asymmetric position with respect to the first hinge 17 and to a central horizontal axis of the wings 5a, 5b.

**[0017]** As can now be observed in Figure 2, between the perimetral edges 8, 10 of the two wings 5a, 5b two spacers 19 are inserted, which generate the interstice 22. Each one of the two spacers 19 comprises a head portion 20 and a vertical wall 21 so that this latter one is completely inserted into the interstice 22 and that the head portion 20 abuts with one of its lower surfaces on an upper face 8a, 10a of the wings 5a, 5b next to the perimetral edges 8, 10.

**[0018]** Afterwards, two respective hinges 17, 17' are inserted from the top on the head portions 20 of the spacers 19, such hinges 17, 17' being equipped with respective tips 18. Afterwards, above the spacers 19, two respective small rectangular plates 15 are placed, which comprise a respective slit 16 whose sizes are such as to be able to receive the head portion 20 of the spacer 19.

**[0019]** Due to the spacers 19 and the small plates 15, the hinges 17, 17' are kept laterally.

**[0020]** With reference to Figure 3, a third step is shown of the method for assembling hinges between the wings 5a, 5b of a frame in which the mutual position is depicted of the elements 15, 17 and 18 on the upper faces 8a, 10a of the wings 5a, 5b obtained at the end of the second assembling step.

**[0021]** The third step of the assembling method provides the use of a punch 23, shaped as a parallelepiped and made of steel or similar material, that is used by an operator placing a lower grooved part 25 of the punch 23 on the hinges 17, 17' and slightly beating with a hammer, not shown, an upper part of the punch 23 so that the teeth 18 of the hinges 17, 17' are driven at least partially into the upper faces 8a and 10a of the respective

wings 5a, 5b. The lower grooved part 25 guarantees that the force applied on the punch 23 is uniformly distributed on the whole hinge 17.

**[0022]** With reference to Figure 4, a fourth and last step is shown for assembling the hinge 17 in which, after having removed the small plates 15 and partially withdrawn the spacers 19 from the interstice 22, the hinges 17, 17' are further beaten with the help of the punch 23 so that the respective teeth 18 of the hinges 17, 17' completely penetrate into the upper faces 8, 10 of the wings 5a, 5b.

**[0023]** Afterwards, the spacers 19 are completely withdrawn to obtain, as shown in Figure 5, a frame 30 in which the two hinges 17, 17' allow an independent rotation movement of both wings 5a, 5b with respect to a common central vertical axis 29.

**[0024]** Should a further frame wing be provided, it can be hinged to one of the two pre-existing wings with the above-described method.

**[0025]** The two spacers 19, the set of hinges 17, 17' of various sizes, the two small plates 15 and the punch 23 are elements composing the assembling kit according to the present invention that can be marketed in a single package.

**[0026]** For such purpose, it can be observed that, for assembling hinges in which an absolute accuracy is not required, the working plane 1 is not mandatory.

**[0027]** It is evident that what has been described is provided as a non-limiting example and that variations and modifications are possible without departing from the scope of the invention.

**[0028]** For example, the invention has been described with particular reference to the assembly of frames with at least two wings but can also be applied to other small objects for which the use of hinges is provided.

## Claims

1. Kit for assembling hinges (17, 17') in frames (30) composed of at least two wings (5a, 5b), said kit comprising:
  - at least two spacers (19) for creating an interstice (22) between said at least two wings (5a, 5b) that are placed side by side along a respective first (8) and second (10) perimetral edge and for allowing the abutment on said spacer (19) of an hinge (17, 17') to be assembled between said two wings (5a, 5b), said hinge (17, 17') being equipped with teeth (18);
  - at least one guide (15) that can be inserted from the top onto said spacers (19) and adapted to laterally retain said hinge (17, 17'); and
  - a punch for allowing to exert a force from the top onto said hinge (17, 17') so that the teeth (18) of said hinge (17, 17') penetrate into the upper faces (8a, 10a) of said wings (5a, 5b)

next to said perimetral edges (8, 10).

2. Kit according to claim 1, wherein each one of said at least two spacers (19) comprises a head portion (20) onto which said hinge (17) is inserted and a vertical wall (21) that, being placed between said two perimetral edges (8, 10) of said two wings (5a, 5b) creates said interstice.
3. Kit according to claim 1 or 2, wherein said guide (15) is shaped as a rectangle and comprises a slit (16) whose sizes are such as to be able to accommodate said spacer (21).
4. Kit according to any one of the previous claims, wherein said punch (23), shaped as a parallelepiped and made of steel or similar material, has on its lower part a groove (25) adapted to receive said hinge (17, 17').
5. Method for assembling hinges in frames composed of at least two wings, comprising the steps of:
  - a) putting together a first wing (5a) and a second wing (5b) along their sides along a respective first perimetral edge (8) and second perimetral edge (10);
  - b) creating, between said first wing (5a) and said second wing (5b), an interstice (22) by interposing two spacers (21);
  - c) inserting from the top on each one of said two spacers (19) a respective hinge (17) equipped with teeth (18);
  - d) inserting from the top on each one of said two spacers (19) a respective guide (15) so that said hinge (17) is prevented from performing lateral movements;
  - e) beating said hinge (17) through a punch (23) so that the related teeth (18) of said hinge (17) are at least partially driven into said upper faces (8a, 10a) of said two wings (5a, 5b) next to said perimetral edges (8, 10);
  - f) partially withdrawing said spacers (19) from said interstice (21) and removing said guides (15);
  - g) beating again through said punch (23) said hinges (17, 17') so that the respective teeth (18) of said hinges (17, 17') are completely driven into said upper faces (8a, 10a) of said wings (5a, 5b) next to said perimetral edges (8, 10);
  - h) completely withdrawing said spacers (19) from said interstice (21).
6. Method according to claim 5, wherein before said step a), said first wing (5a) and said second wing (5b) are placed on a working plane (1) so that a further first perimetral edge (7) of said first wing (5a), opposite to said first perimetral edge (8), abuts

against a lifted surface (3) of said working plane (1) and that a further second perimetral edge (9) of said second wing (5b), opposite to said second perimetral edge (10), is placed against two parallel abutment elements (11) placed on said working plane (1), said abutment element (11) being adjustable to allow assembling hinges (17, 17') in frames (30) with different sizes.

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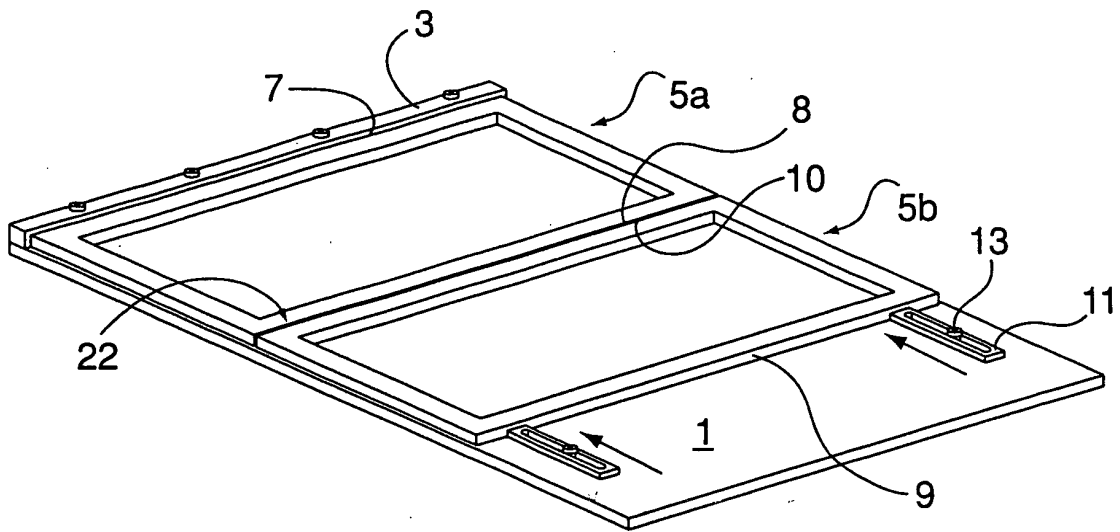


Fig. 1

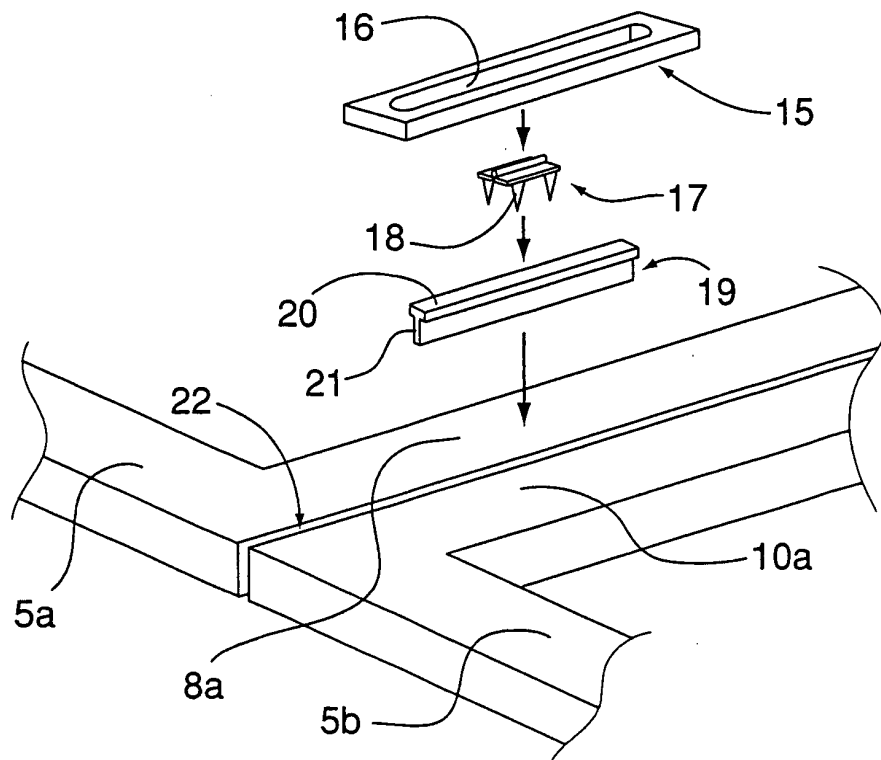
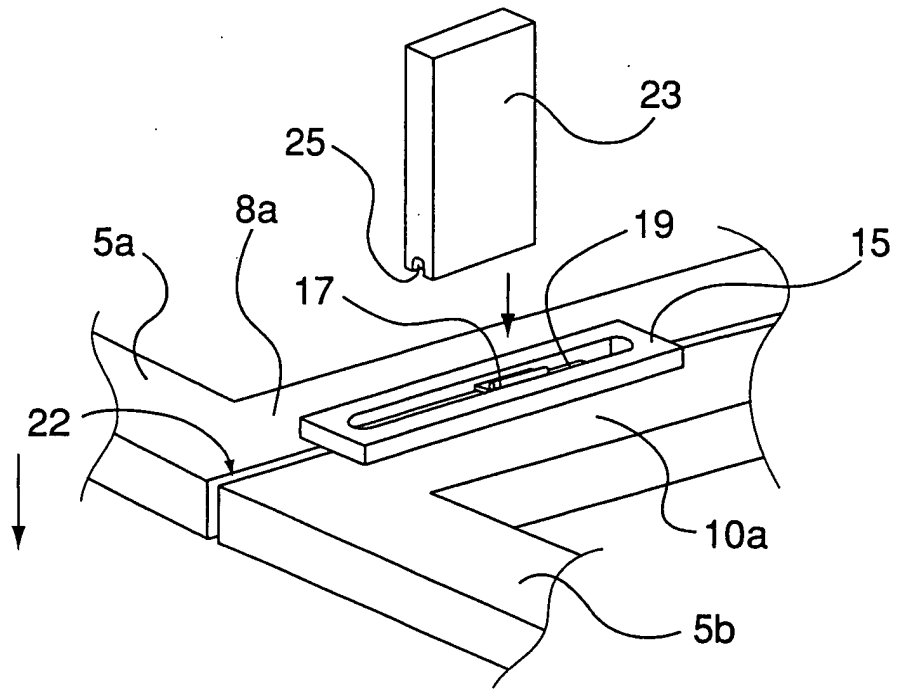


Fig. 2



**Fig. 3**

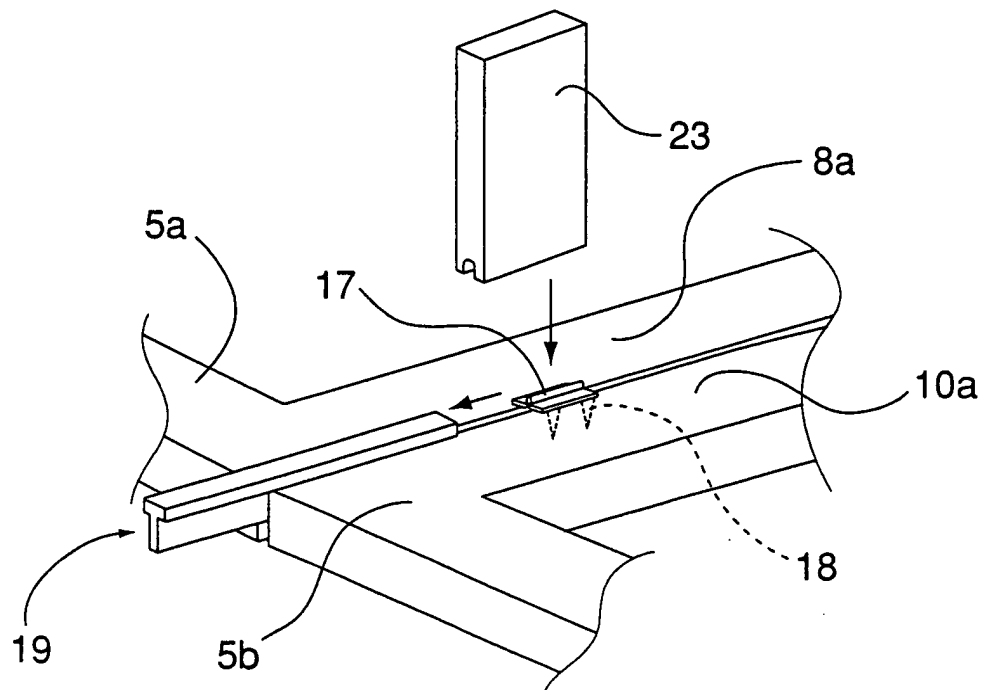


Fig. 4

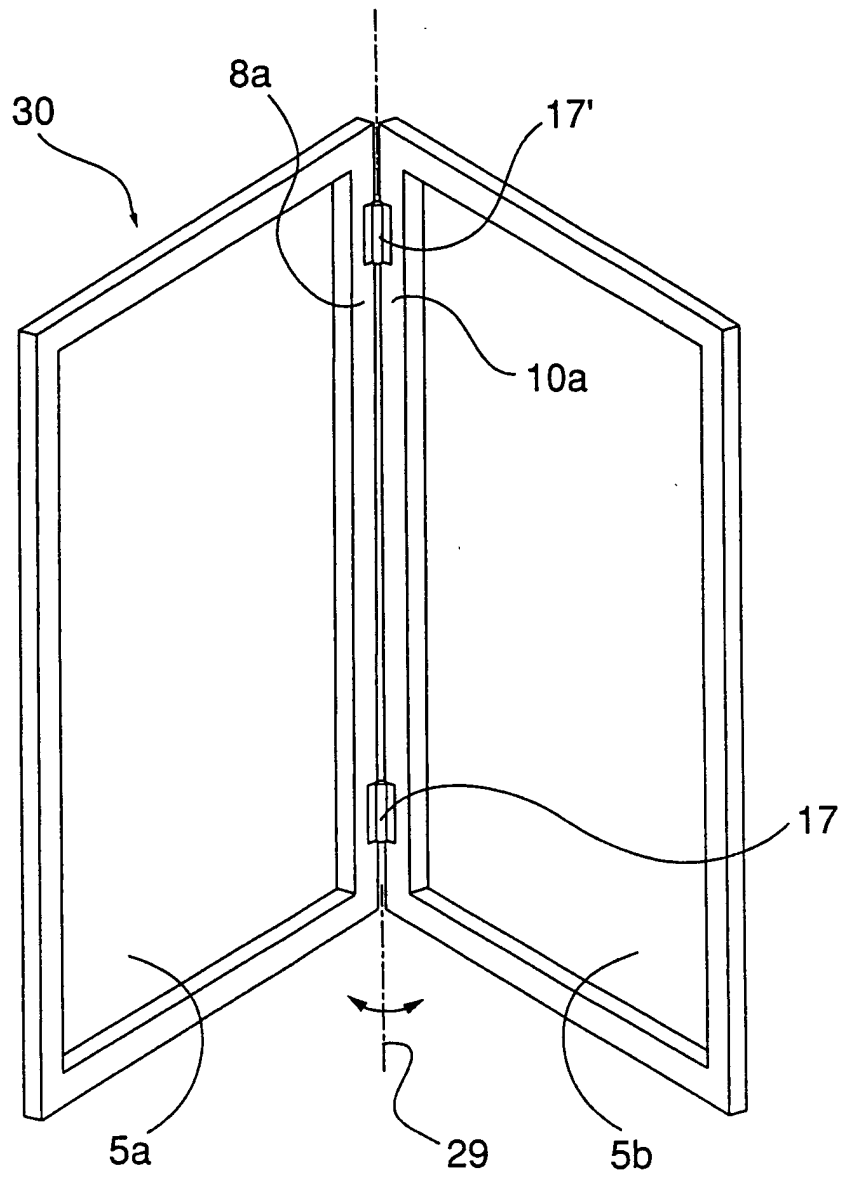


Fig. 5