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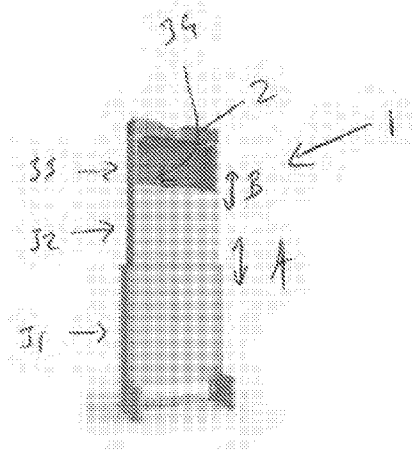
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(54) Title: METHOD AND DEVICE FOR SEALING A WRISTBAND



(57) Abstract: The present invention relates to a method for sealing a wristband or providing a closure for a wristband directly around the wrist, wherein the method comprises steps for: placing a band part with a free end around the wrist, the band part forming an end part of a band supply, adjusting a size of the wristband to the wrist, sealing the band part by means of a connecting operation, separating the band part from the band supply, and relates to a wristband sealing device for sealing a wristband or providing a closure for a wristband directly around the wrist, wherein the device comprises: means for supplying a band part, the band part forming an end part of a band supply, means for placing a wrist thereon, means for creating a seal by means of a connecting operation.

METHOD AND DEVICE FOR SEALING A WRISTBAND

The present invention relates to a method for sealing a wristband or providing a closure for a wristband directly around the wrist. The present invention also relates to a device for sealing a wristband or providing a closure for a wristband directly around the wrist.

Much use is made of wristbands at events and locations for gatherings to monitor or regulate access and to provide systems for purchase of refreshments. It is important here to prevent fraud, while it is also important to provide a comfortable attachment of the wristbands around the wrist. Seals are for instance applied here wherein a seal of aluminium is squeezed round the wrist, this manner of sealing not being perceived as comfortable or fitting by the target group. Also known is a plastic self-closer, wherein a similar seal of plastic material is in fact arranged round the wristband. The seal is perceived in both cases as being at least irksome.

In order to obviate such drawbacks the present invention provides a method for sealing a wristband or providing a closure for a wristband directly around the wrist, wherein the method comprises steps for:

- placing a band part with a free end around the wrist, the band part forming an end part of a band supply,
- adjusting a size of the wristband to the wrist,
- sealing the band part by means of a connecting operation,
- separating the band part from the band supply.

An advantage of applying such a method according to the present invention is that a properly or comfortably fitting wristband can easily be realized which is also ar-

ranged in easy manner and which also has a great wearer comfort.

A method according to a first preferred embodiment comprises steps for temporarily pre-fixing the band part
5 before placing the band part around the wrist. This achieves that, before fixing of the seal, the user of the wristband can assent to an optimum between a comfortable fit and a placing which is secure for the purpose of the wristband, i.e. tamper-proof. The pre-fixing is more pref-
10 erably performed by means of a clip, such as a retaining clip, such as an enclosing space for placing of the band therein.

In an alternative embodiment the steps for pre-fixing are performed by means of pre-closing a seal stamp
15 under light pressure. This achieves in advantageous manner that, by means of a moving component in a device, the seal stamp, the method can be performed in effective manner. The reliability of the embodiment, and the reliability of the device, is hereby greatly improved in advantageous
20 manner.

In a further preferred embodiment of the method the steps for sealing comprise steps for forming an ultrasonic weld, preferably making use of a stamp and a sonotrode.

25 For the purpose of simple operation and simple construction of a device for performing the method, the stamp is more preferably actuated in a linear movement, preferably by means of a solenoid. Hereby achieved in advantageous manner is that arrangement of the wristband
30 around the wrist and the separation of the wristband from the band part can be realized by means of a single mechanical drive, with the further advantage that this mechanical drive is linear, and therefore relatively simple.

According to a further preferred embodiment, the separation of the band part from the band supply is performed by means of a cutting operation applying a heat source, such as a heated wire. It is a further advantage here that, for the purpose of realizing the separation, no further mechanical components are required in the case the heat source is arranged at the position of the band part during the sealing operation.

The separation of the band part from the band supply is more preferably performed simultaneously with sealing of the band part by means of the connecting operation. The separation of the band part from the band supply is alternatively performed by means of a shearing operation. The separation of the band part from the feed part is alternatively performed as distinct operation following the sealing.

According to a further preferred embodiment, the sealing is performed during melting of a part of the fibres forming the band. An advantage of such a method is that the reliable seal is realized and a simple device with few moving parts can also be applied in suitable manner.

The fibres are more preferably fused together here in a straight line parallel to the direction of the fibres. A suitable ridge pattern is preferably applied for this purpose on another stamp for the purpose of the weld.

A further aspect according to the present invention relates to a wristband sealing device for sealing a wristband or providing a closure for a wristband directly around the wrist, wherein the device comprises:

- means for supplying a band part, the band part forming an end part of a band supply,
- means for placing a wrist thereon,

- means for creating a seal by means of a connecting operation.

By means of this preferred embodiment according to this aspect similar advantages are achieved as described above with reference to the previous aspect.

According to a further preferred embodiment, the wristband sealing device comprises means for pre-fixing the band part before placing the band part around the wrist, preferably by means of a clip, such as comprising an enclosing space for placing of the band therein.

The wristband sealing device more preferably comprises means for sealing by means of an ultrasonic weld, preferably making use of a stamp and a sonotrode. The wristband sealing device more preferably comprises actuation means for activating the stamp in a linear movement, preferably in a direct linear movement, preferably comprising a solenoid. The wristband sealing device more preferably comprises severing means, such as comprising a hot wire, for severing the wristband by means of a heat treatment.

For further aspects and preferred embodiments reference is made to the sub-claims.

Further advantages, features and details of the present invention will be described in greater detail hereinbelow on the basis of one or more preferred embodiments with reference to the accompanying figures. Similar, though not necessarily identical components of different preferred embodiments are designated with the same reference numerals.

Fig. 1 is a perspective view of a device according to the present invention.

Fig. 2 is a perspective view of a part of a preferred embodiment comprising a sealing unit.

Fig. 3 is a further perspective view of the part of the preferred embodiment according to Fig. 2 comprising the sealing unit.

Fig. 4 and 5 show further details of the preferred
5 embodiment according to Fig. 2.

A first preferred embodiment (Fig. 1) according to the present invention relates to a wristband sealing device 1. This comprises three sub-housings 31, 32, 33 which are slidable into each other in the direction of arrows A
10 and B by means of a guide. In the shown extended position a workstation is hereby provided and in a retracted position a compact displaceable device is provided with sufficient space for components in cavity 34. Such components comprise for instance a supply reel for a band supply for
15 wristbands, space for batteries, cables and the like.

The sealing unit 2 shown on the upper side comprises components as shown in figures 2-4 as according to a preferred embodiment.

The sealing unit according to figures 2-4 will now
20 be described. Arranged on the left-hand side on a base plate 4 is a solenoid 9 for imparting a reciprocating movement to stamp 7 in the direction of arrow C by means of a drive rod 8. In addition, a cooling unit 22 is arranged for the purpose of discharging heat. The stamp is
25 guided by means of a stamp guide 19, preferably taking a linear form. Situated on the opposite side of the stamp is a rotation arm 18 which is held under bias by a spring 40. A return actuation of the stamp is hereby activated.

A sonotrode 5 is arranged situated opposite the
30 stamp. Sonotrode 5 is mounted on the base plate in stationary manner for the purpose of providing energy for welding of the band. The intensity of the weld is determined by the ultrasonic energy from sonotrode 5 in combi-

nation with the drive force of stamp 7. A greater pressing force provides a more rapid energy transfer, whereby less time is required for performing the weld.

The profile of the stamp prevents fibres being
5 connected in a straight line perpendicularly of the direction of the fibres by means of the weld. This is important because fibres which break on such a line leave traces which are difficult to detect. The weld is therefore performed along a straight line parallel to the direction of
10 the fibres, and not all fibres are welded. The whole network the fibres is hereby disturbed before the connected fibres break, this giving a clear optical indication that the wristband has been tampered with. This provides a high degree of tamper-proof indication.

15 Arranged under the transition between the stamp and the sonotrode is a cutting wire 12 which realizes severing of the band while the sealing is being performed. A clean cut is realized by severing the band by means of heat, wherein the ends of the fibres are fused together,
20 whereby the ends of the bands are usable for a long period. Fraying of ends of the band is hereby prevented to a great extent, substantially wholly prevented or wholly prevented.

Further arranged at this location is a band clip
25 24. This band clip is suitable for holding the band by simply arranging the band against it or in it. It hereby becomes possible to position the band temporarily while waiting for a following wrist. An advantage of this clip is that no moving parts are necessary to enable functioning thereof, this in contrast to a further embodiment
30 wherein such a pre-positioning is carried out by means of pre-closing the stamp under light pressure. Using this

clip the operator of the device can simply "pull" the band into the clip.

An advantage of a preferred embodiment such as this is the only one movement actuator, solenoid 9, is
5 necessary, and therefore also only one control, which control can take a simple form since there is only one pressing operation per seal.

The present invention has been described in the foregoing on the basis of several preferred embodiments.
10 Different aspects of different embodiments are deemed described in combination with each other, wherein all combinations which can be deemed by a skilled person in the field as falling within the scope of the invention on the basis of reading of this document are included. These preferred
15 embodiments are not limitative for the scope of protection of this document. The rights sought are defined in the appended claims.

CLAIMS

1. Method for sealing a wristband or providing a closure for a wristband directly around the wrist, wherein
5 the method comprises steps for:
- placing a band part with a free end around the wrist, the band part forming an end part of a band supply,
 - adjusting a size of the wristband to the wrist,
 - sealing the band part by means of a connecting
10 operation,
 - separating the band part from the band supply.
2. Method as claimed in claim 1, comprising steps for temporarily pre-fixing the band part before placing
15 the band part around the wrist.
3. Method as claimed in claim 2, wherein the pre-fixing is performed by means of a clip, such as a retaining clip, such as an enclosing space for placing of the
20 band therein.
4. Method as claimed in claim 1 or 2, wherein the steps for pre-fixing are performed by means of pre-closing a seal stamp under light pressure.
25
5. Method as claimed in one or more of the foregoing claims, wherein the steps for sealing comprise steps for forming an ultrasonic weld, preferably making use of a stamp and a sonotrode.
30
6. Method as claimed in one or more of the foregoing claims, wherein the stamp is actuated in a linear movement, preferably by means of a solenoid.

7. Method as claimed in one or more of the foregoing claims, wherein separation of the band part from the band supply is performed by means of a cutting operation
5 applying a heat source, such as a heated wire.

8. Method as claimed in one or more of the foregoing claims, wherein separation of the band part from the band supply is performed simultaneously with sealing of
10 the band part by means of the connecting operation.

9. Method as claimed in one or more of the foregoing claims, wherein separation of the band part from the band supply is performed by means of a shearing operation.
15

10. Method as claimed in one or more of the foregoing claims 1-7, wherein separation of the band part from the band supply is performed as distinct operation following the sealing.
20

11. Method as claimed in one or more of the foregoing claims, wherein the sealing is performed during melting of a part of the fibres forming the band.

25 12. Method as claimed in one or more of the foregoing claims, wherein the fibres are fused together in a straight line parallel to the direction of the fibres.

30 13. Wristband sealing device for sealing a wristband or providing a closure for a wristband directly around the wrist, wherein the device comprises:

- means for supplying a band part, the band part forming an end part of a band supply,

- means for placing a wrist thereon,
- means for creating a seal by means of a connecting operation.

5 14. Wristband sealing device as claimed in claim 13, comprising means for pre-fixing the band part before placing the band part around the wrist, preferably by means of a clip, such as comprising an enclosing space for placing of the band therein.

10

 15. Wristband sealing device as claimed in claim 13 or 14, comprising means for sealing by means of an ultrasonic weld, preferably making use of a stamp and a sonotrode.

15

 16. Wristband sealing device as claimed in one or more of the claims 13-15, comprising actuation means for activating the stamp in a linear movement, preferably in a direct linear movement, preferably comprising a solenoid.

20

 17. Wristband sealing device as claimed in one or more of the claims 13-16, comprising severing means, such as comprising a hot wire, for severing the wristband by means of a heat treatment.

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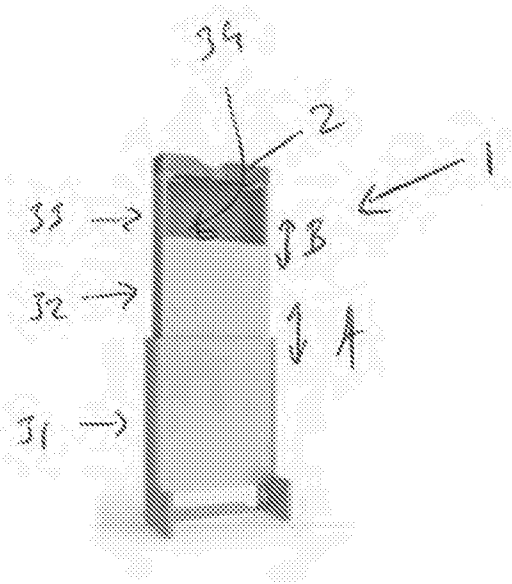


Fig 1

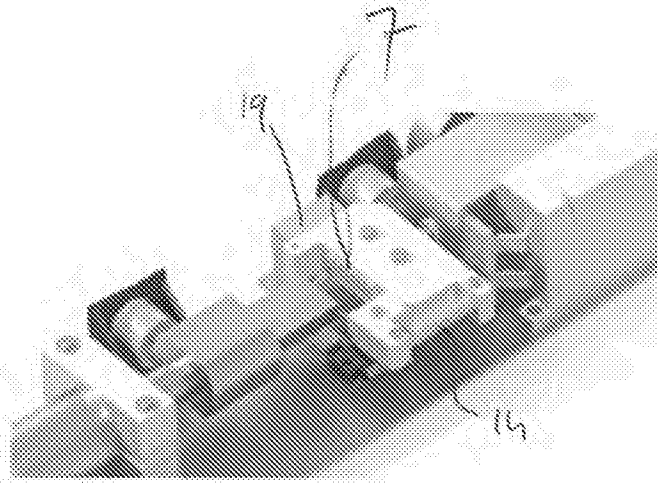


FIG 2

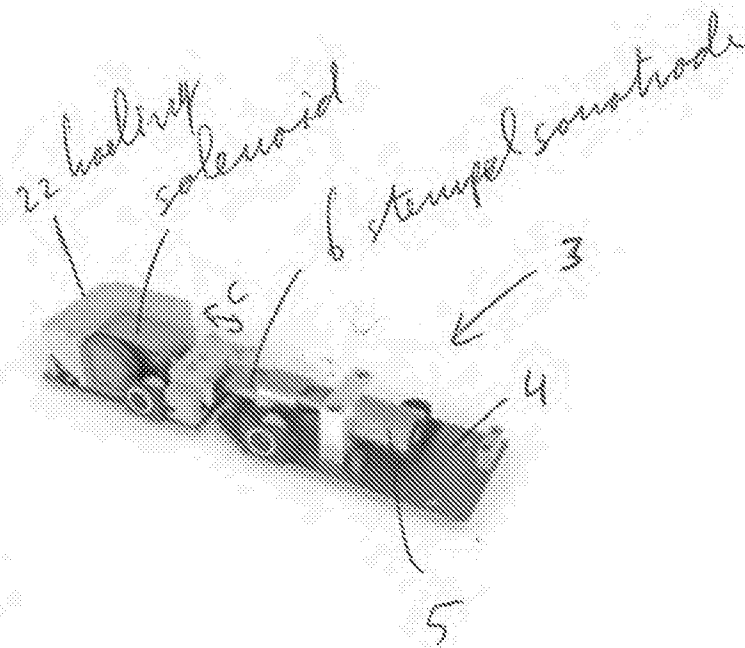


FIG 3

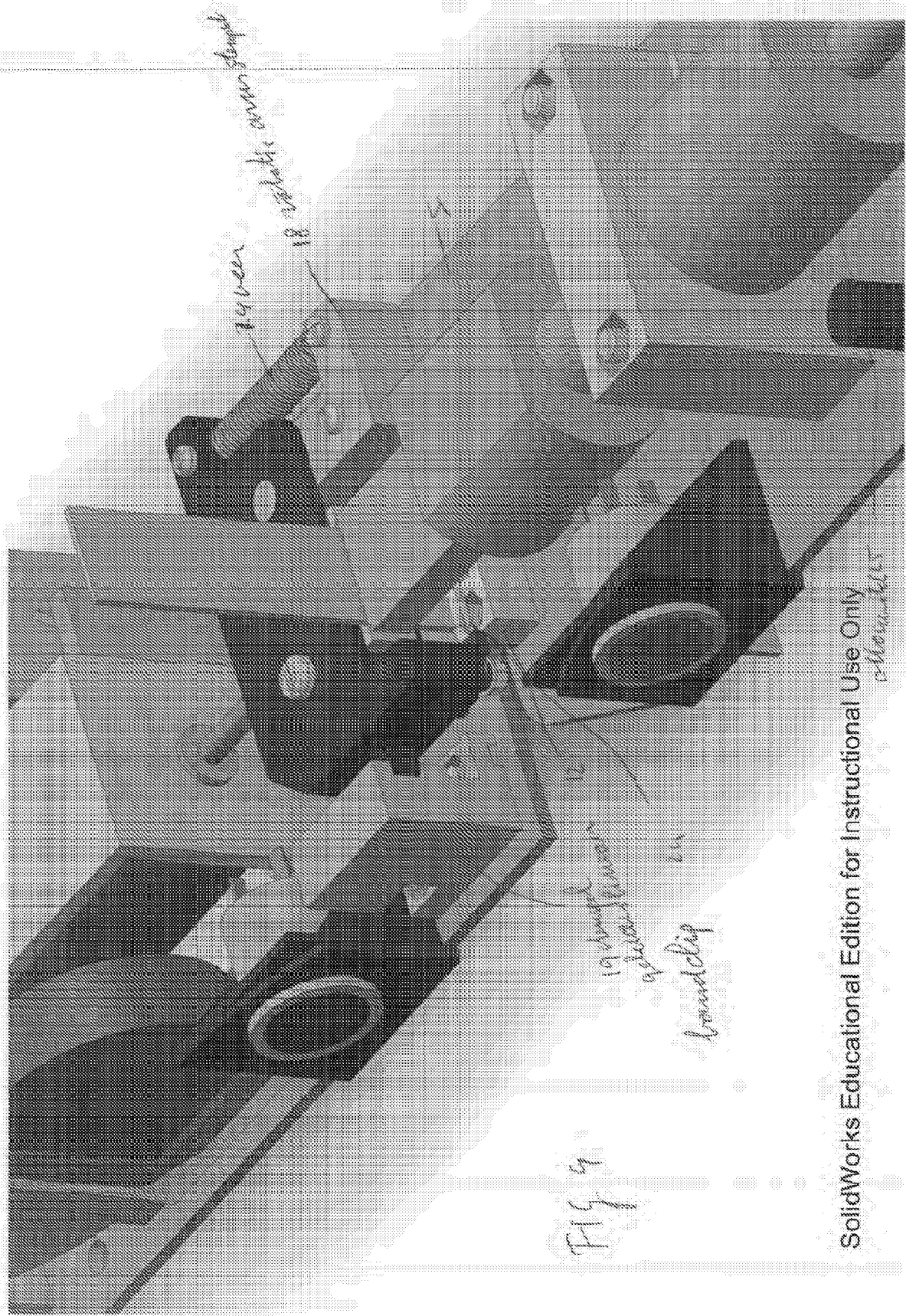
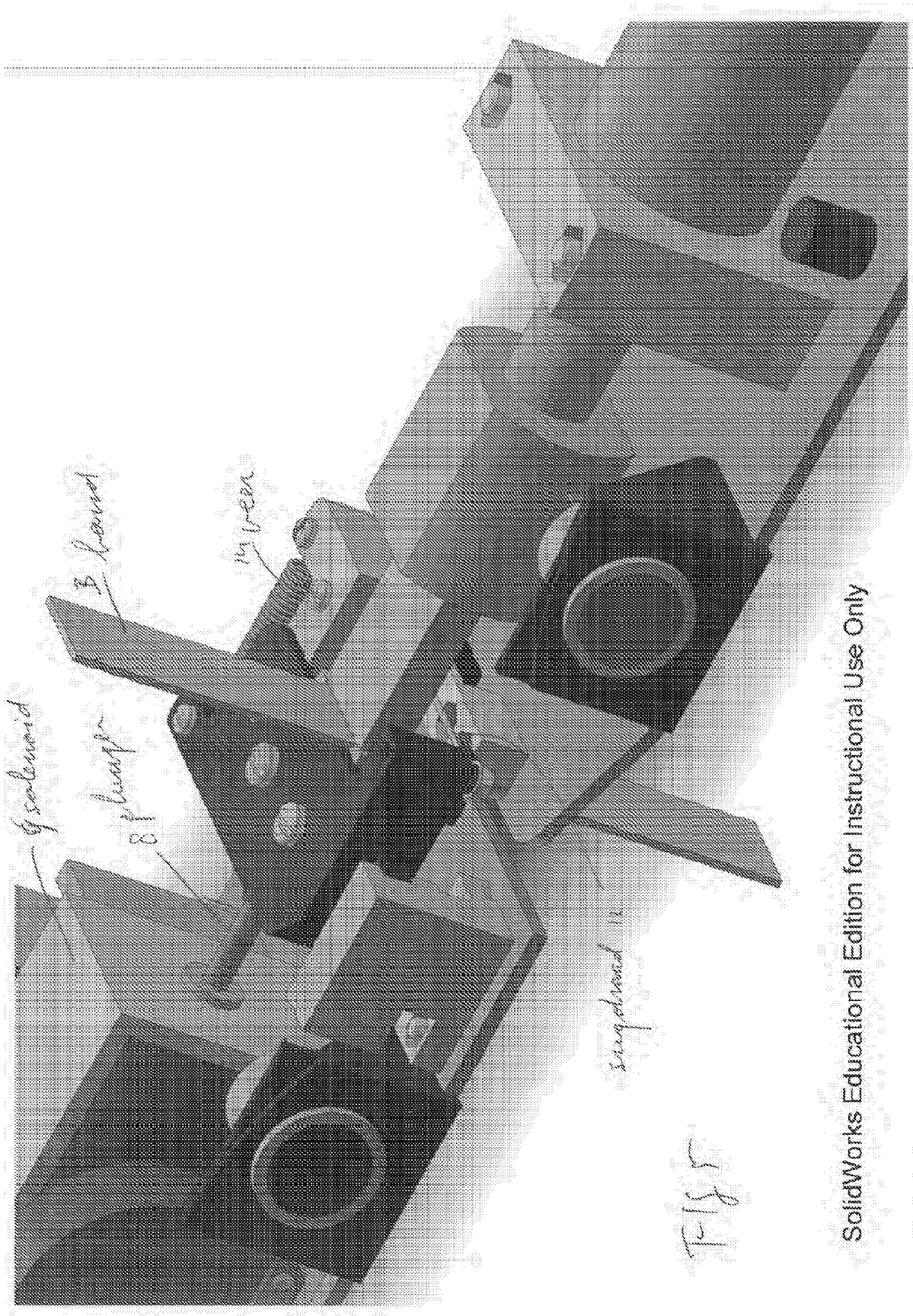


FIG 9

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INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2014/050087

A. CLASSIFICATION OF SUBJECT MATTER
INV. G09F3/00 B29C65/08 B65C9/18
ADD.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
G09F B65C B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

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INTERNATIONAL SEARCH REPORT

International application No
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Information on patent family members

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