Jan. 9, 1940. J. W. ALBIN 2,186,747

LATCHING DEVICE

Filed June 9, 1939

Fig. 1.

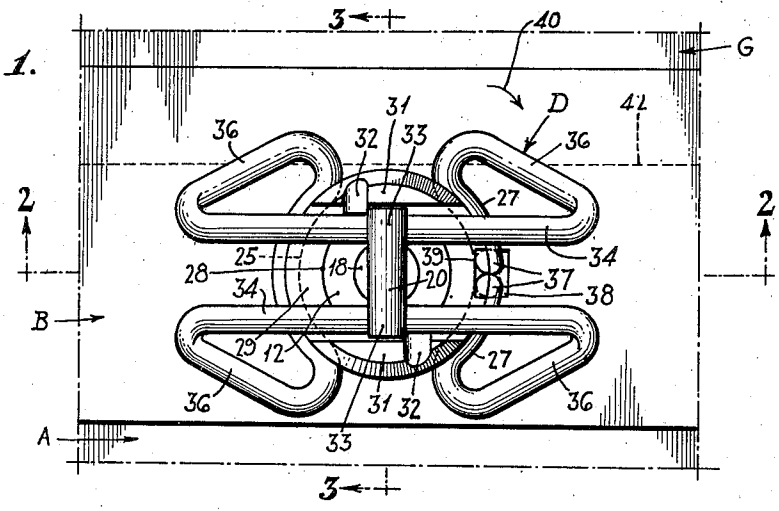


Fig. 2.

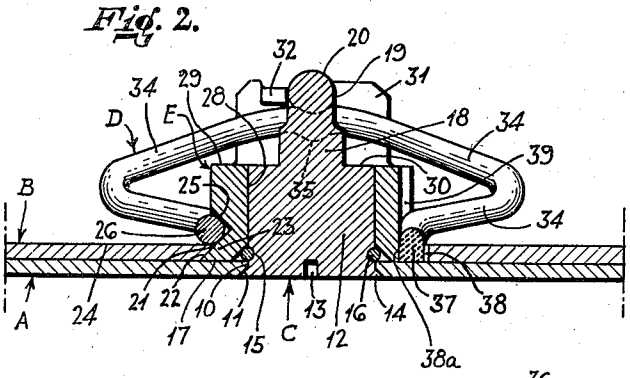


Fig. 4.

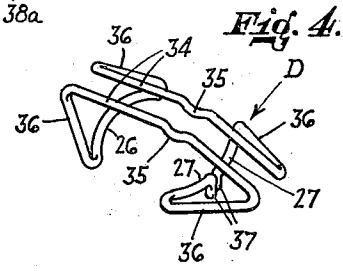


Fig. 3.

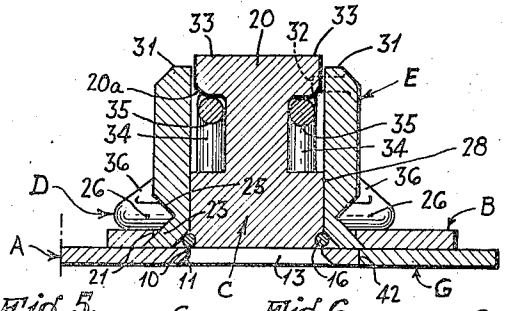


Fig. 5.

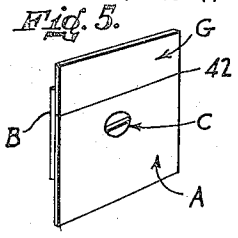
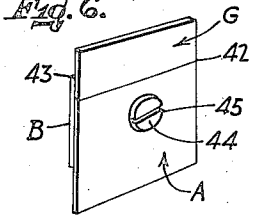


Fig. 6.



INVENTOR.
JEREMIAH W. ALBIN

BY

Richards & Geier
ATTORNEYS

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LATCHING DEVICE

Jeremiah W. Albin, Babylon, N. Y.

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11 Claims. (Cl. 24—221)

The present invention relates to a latching device and particularly relates to a latching device which may be generally applied in connection with the attachment of various sheet metal articles together and more particularly with the attachment of cowls, covers, hoods, and so forth to mounting structures.

Although not specifically restricted thereto, the present invention may be particularly described in connection with its application to hood or cover locking devices upon automobiles or airplanes in which a cover of metallic or other similar material is to be rigidly attached or locked to a mounting plate or latch structure.

It is among the objects of the present invention to provide a simple locking construction of the character described which will be of inexpensive construction, may be readily operated to make a rigid connection which will not permit of rattling and which may be utilized for long periods of time without damage and without breakage.

In accomplishing the above objects, it has been found most satisfactory to attach a spring member to one of the elements to be connected together and a key member to the other element and it is among the further objects of the present invention to provide an improved locking or latching construction of the character described, which may utilize relatively simple and inexpensive forms of spring holder devices, which may be devoid of coil spring constructions and which may also be attached to the plate members without the need of using rivets or otherwise piercing the metal at a plurality of points adjacent the point of connection.

Still further objects and advantages will appear from the more detailed description set forth below, it being understood, however, that this more detailed description is given by way of illustration since various changes therein may be made by those skilled in the art without departing from the scope and spirit of the invention.

In accomplishing the above objects, it has been found most satisfactory to form the latching device in such a way that one member of the two members to be connected together is provided with a double or parallel bowed spring construction while the other member is provided with a key member which may be actuated either by a fin or by a fillister slot, said key member being provided with a transverse bar or rod element to engage the bows and thereby to latch the two members together and press them closely together.

In the preferred form of device the bowed spring member is provided with inturned portions which engage a ring or sleeve which may be fitted into an opening in the plate member to be connected to the other plate member carrying the key.

By this construction, it is possible to attach both the key and the resilient spring member to the plates to be connected together without riveting and by merely piercing the two plates at the point of connection.

The key is held or fixedly pivoted upon one of the plates or elements to be locked together, while the other element is provided with a key opening to receive said key and with a resilient locking means therefor.

Preferably, said second member is provided with a resilient plate member or other spring means firmly to hold said resilient wing in position when the same has been inserted through the key slot and turned.

Referring to the drawing which illustrates several of the various possible embodiments of the present invention, but to which the present invention is by no means restricted since the drawing is merely by way of the illustration and not by way of limitation.

Figure 1 is a top plan view of the locking device of the present invention on a somewhat enlarged scale as compared to actual size showing the back of the device with the key in locked position.

Figure 2 is a transverse sectional view on the line 2—2 of Figure 1.

Figure 3 is a transverse sectional view at right angles to Figure 2 on the line 3—3 of Figure 1.

Figure 4 is a perspective view of the spring element removed from the construction upon a somewhat reduced scale as compared to Figures 1 to 3.

Figures 5 and 6 are side perspective views illustrating the positioning of the head of the device in connection with the plates to be attached to each other.

Referring to Figures 1 to 4, the two devices to be attached together may consist or comprise plate members A and B, the plate member A carrying the key member C and the plate member B carrying the wire spring device D which is held in position by the sleeve E.

The key C is fitted into an opening 10 in the front plate A, provided with a bevel at 11, said

key having a cylindrical body 12 and a fillister slot 13.

The outer portion of the key has an outturned bevelled portion 14 to contact with the bevel 11 in the plate A.

The cylindrical body 12 of the key C is provided with the recess 15 which receives the snap wire ring 16. The snap wire ring 16 rests against the back face 17 of the plate A. The end of the cylindrical body 12 is provided with an extension 18 of reduced diameter which has a flattened portion 19 carrying the transverse key member 20. The outer lower corners of the element 20 are bevelled to cooperate with the element D.

The inside plate B is also provided with an opening 21 having the bevelled recessed portion 22 which receives the sleeve member E. The sleeve member E is provided with a corresponding outwardly bevelled portion 23 to contact with the bevelled recessed portion 22. The sleeve E inside of the back face 24 of the plate B is provided with a groove 25 which receives the approximately quarter circular portions 26 and 27 of the spring member D.

The sleeve E closely fits the cylindrical body 12 of the key C at 28 and it is provided with a shoulder 29 which may be made to coincide with the shoulder 30 in the key member C. Beyond the shoulder the sleeve E has two projections 31 which at their outer ends have pressed down lugs 32 to stop the ends 33 of the transverse member 20 of the key C when in locked position.

The spring member D, as best shown in Figure 4 has two parallelly bowed members 34 having a central depressions or notches 35, and outturned horizontal legs 36 at the ends thereof, which are joined together by means of the quarter circular portions 27.

The ends of the quarter circular portions 27 have downturned elements 37 which fit into the opening or hole 38 and 39 in the ring E in the plate B adjacent the main opening 21. These two downturned legs 37 may be spot welded together at this point.

The spacing between the quarter circular portions 26 and 27 is such that the spring D may be snapped into the groove 25 on the sleeve E with assurance that such spring element D will be held firmly in position and in turn will lock the ring E in position.

If it were desired to eliminate the necessity of the stops 32 so that the transverse member 33 could be given a full turn, the ring E might be cut down to just provide the groove 25, thus eliminating the upstanding side members 31 which merely function as stops for the transverse member 20.

The members 31 are also of value in preventing spreading of the bowed elements 34 upon turning of the key into locked position.

To dismantle the structure, as shown in Figures 1 to 3, the transverse member may be turned 90° to the right as indicated by the arrow 40 in Figure 1 and in this position the two plates may be separated with the transverse member 30 moving out between the parallel members 34 and through the openings 10 and 21.

By removing the snap ring 15 and removing the quarter portions 26 and 27 from the groove 25, it is possible to support the key C and the sleeve or ring E from the plates A and B respectively.

The assembly may be most readily made in a reverse direction. The bevelled edge 20a will slide upon the wires 34 most readily.

In Figures 5 and 6 are shown in perspective how the attachment may actually be used, Figure 5 showing the flush construction of Figure 2 and Figure 6 showing a raised fillister type head on the key. In Figure 5 it will be noted that the back plate B carries a plate G which is flush and abuts the plate A at 42.

The short plate B which terminates at 43 may be soldered, spot welded, riveted or otherwise permanently connected to the main member G.

It will be noted that the head of the key C in Figure 5 is flush with the plate A because of the countersinking 11, as shown in Figure 2.

In Figure 6 this countersinking may be omitted and the key provided with a raised head 44 having a fillister slot 45.

The two heads of Figures 5 and 6 require application of a screw therefor or turning tool. If desired, a fin may be utilized to enable turning of the device by hand.

It is thus apparent that the applicant has provided a simple, inexpensive latching construction which may be readily manufactured, assembled and dismantled and will give assurance of a permanent lock when in position.

There are no rivets or coil springs and the double bar or wire structure 34—34 gives additional strength and permits use of smaller gauge material or wire.

It is apparent that the specific illustrations shown above have been given by way of illustration and not by way of limitation and that the structures above described are subject to wide variation and modification without departing from the scope or intent of the invention, all of which variations and modifications are to be included within the scope of the present invention.

What is claimed is:

1. A fastening device for two parts with openings comprising separate fastening elements, one of said elements consisting of a double bowed spring having parallel bowed wires on opposite sides of said openings having the inside ends of each bow mounted on one part on opposite sides of the opening therein, the second of said elements being a key having an elongated shank and a cross bar at the end thereof to engage the spring, said key being so formed as to project inside of said spring and said cross bar being formed for interlocking engagement with said spring by the turning movement of the key to detachably fasten said parts together.

2. A fastening device comprising separate coengaging fastening elements respectively associated with the parts to be fastened together, one of said elements consisting of a key and the other of said elements consisting of parallel spring wires, said spring and key being positioned on opposite sides of said parts, and openings in said parts to be fastened together to permit said key to be inserted between said wires and to be locked with said spring, the inner ends of said wires being mounted concentrically of said openings on one of said parts on opposite sides of said openings and the wires being integrally joined, said spring forming a recess in which said key is inserted and the wires of said spring forming double inclined planes with which said key cooperates to form the lock, the ends of said wires being inturned and connected together.

3. A fastening device for two parts with openings comprising separate fastening elements, one of said elements consisting of two parallel bowed spring wires having the inside ends mounted on

one part on opposite sides of the opening therein, the second of said elements being a key having an elongated shank and a cross bar at the end thereof to engage the spring, said key being so formed as to project inside of said spring and said cross bar being formed for interlocking engagement with said spring by the turning movement of the key to detachably fasten said parts together, said wires having an elongated recess in which said shank and cross bar are to be inserted and said spring wires forming double inclined planes for engagement with said cross bar and said spring being notched at the limit of movement of said cross bar.

4. A fastening device for two parts with openings comprising separate fastening elements, one of said elements consisting of parallel bowed spring wires having their inside ends entwined and joined mounted on one part at the opening therein, the second of said elements being a key having an elongated shank and a transverse element at the end thereof to engage the wires, said key projecting inside of said spring and said transverse element being formed for interlocking engagement with said outside ends by the turning movement of the key to detachably fasten said parts together, said spring forming a slot in which said shank and transverse element are to be inserted and the bowed portions of said spring forming inclined planes for engagement with said transverse element.

5. A fastening device for two parts having cooperating openings, said parts carrying a turning key and a fixed spring, the key having portions engaging and locking with the said spring, and an attaching ring, the part carrying the spring having said attaching ring in its opening holding the ends of said spring.

6. A fastening device for two parts having cooperating openings, said parts carrying a turning key and a fixed parallel bowed spring, the key having portions engaging and locking with the bows of said spring, and an attaching ring, the part carrying the spring having said ring with openings in the sides thereof holding the ends of said spring.

7. A fastening device for two parts having cooperating openings, said parts carrying a turning key and a double spring, a ring in one of said openings carrying said spring, the key having portions engaging and locking with the said spring.

8. A latching device for two plates comprising a key on one plate and a wire spring on the other plate, said spring including two parallel upwardly bowed portions, diverging portions extending toward each other from the ends of the bowed portions and quarter circular portions connecting the inside ends of the diverging portions and a ring to engage said quarter circular portions and hold said spring on the other plate.

9. The latching device of claim 8, said ring having an elongated sleeve having portions holding said upwardly bowed spring portions in position and also having stops to limit the movement of said key.

10. The latching device of claim 8, the middle portions of said upwardly bowed spring portions being notched to receive the locking portion of said key when said key is turned to latch the plates together.

11. A latching device comprising two plates to be latched together with matching openings, a key carried in one opening, an attachment ring in the other opening and a spring to engage said key carried by said ring.

JEREMIAH W. ALBIN.