March 17, 1953 H. H. LAUCKS 2,631,750

COVER CAP FASTENING MEANS

Original Filed May 5, 1944 2 SHEETS—SHEET 1

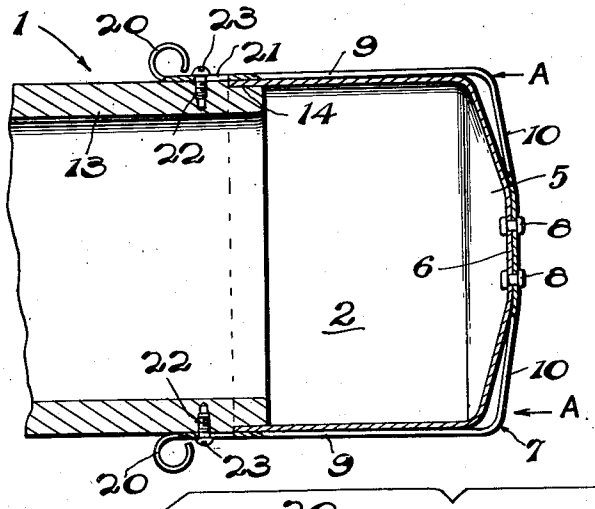
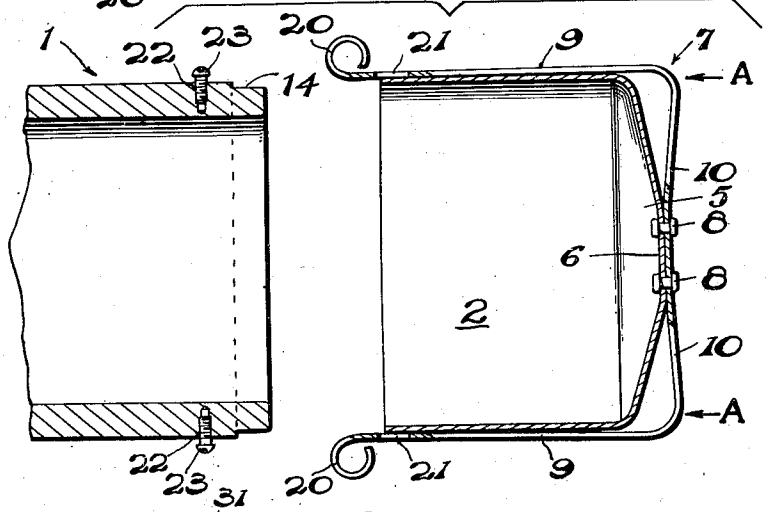


Fig. 1.

Fig. 2.



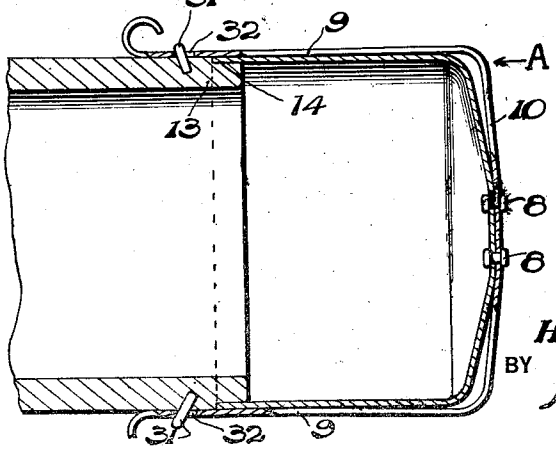


Fig. 3.

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COVER CAP FASTENING MEANS

Original Filed May 5, 1944 2 SHEETS—SHEET 2

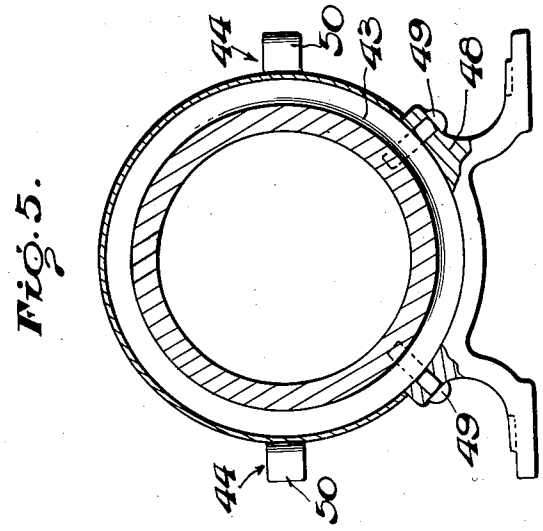


Fig. 5.

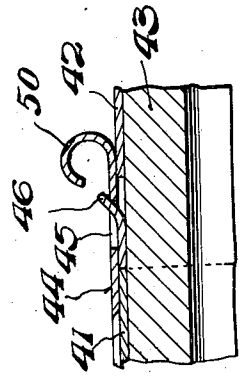


Fig. 6.

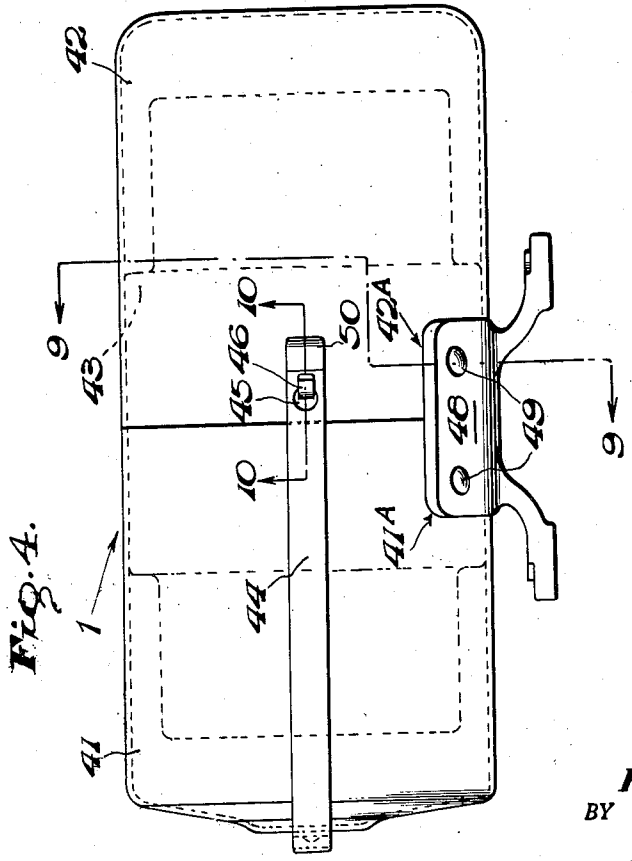


Fig. 4.

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UNITED STATES PATENT OFFICE

2,631,750

COVER CAP FASTENING MEANS

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Original application May 5, 1944, Serial No. 534,357, now Patent No. 2,501,526, dated March 21, 1950. Divided and this application August 5, 1949, Serial No. 108,790

3 Claims. (Cl. 220—5)

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The present application is a division of application Serial No. 534,357, filed May 5, 1944, by Howard H. Laucks and now U. S. Patent No. 2,501,526, granted March 21, 1950, and assigned to Bendix Aviation Corporation. The application relates to a novel arrangement and means for fastening cover caps on an instrument or mechanism such as an alternator or generator particularly as applied to aircraft devices.

This invention comprehends certain new and useful improvements in instrument or mechanism covers and fastening means for the same and has for its primary object to provide a cover which will be of such construction and secured in position in such a manner that the contents of the device may be thoroughly protected.

Another object of my present invention is to provide novel means whereby such a cover cap may be fastened in place and removed for service purposes by convenient single hand operation without use of tools.

Another object of my invention is to provide a novel housing having oppositely disposed cover caps and novel means whereby such caps may be simultaneously manually removed without opposite hands.

Another object of my invention is to provide novel means, whereby cover caps on aircraft instruments or devices may be conveniently attached and removed for service purposes.

Another object of my invention is to provide a compact cover cap which may be efficiently attached and removed and of such simplicity in construction as to adapt it for manufacture and installation at low cost.

The above and further objects and novel features of this invention will more fully appear from the following detailed description and the accompanying drawings wherein like reference characters refer to like parts in the several views. It is to be expressly understood, however, that the drawings are for the purposes of illustration only and are not designed as a definition of the limits of the invention, reference being had for this purpose to the appended claims.

In the drawings:

Figure 1 is a fragmentary sectional view of the cover cap showing the cap and fastening means in locked position.

Figure 2 is a fragmentary sectional view of the cover cap of Figure 1 with the cap in a detached position.

Figure 3 is a fragmentary sectional view of a further form of cover cap showing the cap and fastening means in a locked position.

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Figure 4 is a side elevational view of a second form of my invention.

Figure 5 is a sectional view of Figure 4 taken along the lines 9—9.

Figure 6 is an enlarged fragmentary sectional view of Figure 4 taken along the lines 10—10 and illustrating the fastening means.

Referring to Figure 4, the novel cover cap arrangement is shown as applied to the housing of a device such as an alternator or generator indicated generally by numeral 1 of a type particularly adapted for aircraft use. The housing 1 has provided cover caps or cup-shaped closures mounted at opposite ends and enclosing suitable adjustable parts of the mechanism not shown.

The cover cap in the form of the invention shown in Figures 1 and 2 and indicated by the numeral 2 has provided with the end thereof a circular depression 5 which defines a projection 6. Mounted at the outer side of the projection 6 is a spring clamp 7 which is secured to the projection 6 at a point intermediate the opposite ends thereof by rivets, bolts or other suitable fastening means indicated by numerals 8.

The spring clamp 7 comprises a U-shaped construction, including substantially parallel spaced legs 9 and a connecting element 10 between these two legs 9.

The device 1 may have provided a mating part 13 having an annular shoulder 14 cooperating with the cover cap 2 which fits thereon, as shown in Figure 1.

The spring legs 9 have provided at the ends thereof the outwardly projecting rolled members 20. Formed in each of the spring clamps 9 is a suitable slot 21 adapted to engage a projecting member or screw 22 fixedly mounted in the mating part 13. The screw 22 has a head portion 23 adapted to engage the end of the slot 21 so as to securely fasten the cover cap in position.

In the operation of the cover cap the same may be conveniently locked in position by sliding the spring clamps 7 over the head portions 23 and depressing the spring legs 9 at A so that the slots 21 are snapped over the head portions 23. Upon releasing the spring clamp 9 the head portion 23 will lock within the slot 21 so as to secure the spring leg 9 in position.

In order to remove the cap the spring legs 9 may in turn be released by depressing the same at A, as in Figure 1, by use of the palm of the hand so as to disengage the head portion 23 within the slot 21 from the spring leg 9 and then by grasping the loop 20 with the fingers the spring leg 9 may be pulled out of engagement

with the screw 22. Upon releasing the spring clamp 9 the same will be biased under spring tension to the position shown in Figure 2. The cover cap may then be readily removed from the mating part 13.

A further form of my novel cap fastening means is shown in Figure 3 in which projecting pegs 31 are positioned in the mating part 13 at an acute angle to the surface of the mating part so as to securely engage in a slot 32 formed in the spring leg 9. In operation the latter form of my invention is substantially the same, as the form previously described.

A second form of cover cap arrangement from that shown in Figure 1 is illustrated in Figures 4 through 6. In the latter form of the invention there is provided a pair of cover caps 41 and 42 which are positioned at opposite ends of the enclosed mechanism body or mating member indicated by numeral 43. The opposite edges of the caps 41 and 42 are held in engaging relation under tension of spring clamping legs 44 which are of similar construction and operation to that of the legs 9, previously described in reference to the Figures 1–3.

The clamp spring legs 44 are preferably provided only on the cap 41 and have at the opposite ends thereof suitable slots or openings 45 which may be punched or otherwise formed therein.

The openings 45 are adapted to engage therein a part 46 projecting from the cover 42 at an acute angle to the spring leg 44, as best shown in Figure 6. Thus the cover caps 41 and 42 are securely locked in place.

Supporting the mating member or body 43 of the operating mechanism is a bracket 48 which is fastened to the body of the enclosed mechanism 43 by suitable bolts 49. The bracket 48 projects from the side of the body 43 as shown in Figure 5. The cover caps 41 and 42 are suitably indented at 41A and 42A, respectively, so as to fit adjacent the projecting portions of the bracket 48. Thus there is prevented either rectilinear or rotary movement of the caps 41 and 42 in relation to the enclosed body 43 upon the caps 41 and 42 being locked together by the spring legs 44, as described.

Loops 50 are provided at the free ends of the spring legs 44 so as to permit the same to be disengaged from the projecting parts 46 by compressing the spring legs 44 and exerting an outward force on loops 50, as previously described in reference to Figures 1–3.

From the foregoing it will be readily seen that I have provided convenient fastening means for a cover cap for a mechanism such as a generator, alternator or other similar device.

Moreover, by utilizing, as previously described, the palm of the hand for depressing the spring legs and the fingers of the same hand for pulling the looped members so as to disengage the spring clamp from the fastening means on the mating member it will be readily seen that the cover cap may be easily and conveniently removed.

Moreover, by placing the cover caps in opposite relation as indicated in Figure 4 the same may be easily and conveniently removed in the manner described by the simultaneous use of opposite hands.

Although several embodiments of the invention have been illustrated and described, various changes in the form and relative arrangement of the parts, which will now appear to those skilled in the art, may be made without departing from the scope of the invention. Reference is, therefore, to be had to the appended claims for a definition of the limits of the invention.

What is claimed is:

1. A device of the character described comprising a housing, a pair of cup-shaped closures mounted at opposite ends of said housing, one of said cup-shaped closures including a skirt portion and having an open end and a closed end, said closed end having a projecting portion, a U-shaped depressible spring locking member affixed to the closed end of said one closure for securing the closure to said housing, and means for securing said locking member to said closure at said projecting portion, said locking member comprising a first intermediate portion affixed to said projecting portion by said securing means, second portions of said U-shaped locking member resiliently upstanding from the closed end of said closure and being depressible toward said closed end, leg portions of said U-shaped locking member extending along the skirt portion of said closure and slidably contacting said skirt portion in such a manner that said closure may be positioned on said housing, free of said spring locking member, each of said leg portions having a slot provided in a free end thereof, the other of said closures including a skirt portion and having an open end and a closed end, projecting members carried by the skirt portion of said other closure and arranged to be engaged in the slots provided in the leg portions of said locking member to releasably retain said leg portions upon depression of said second portions toward the closed end of the closure, whereby said closures may be secured to said housing at the opposite ends thereof.

2. A device of the character described comprising a housing, a pair of cup-shaped closures mounted at opposite ends of said housing, one of said cup-shaped closures including a skirt portion and having an open end and a closed end, said closed end having a projecting portion, a U-shaped depressible spring locking member affixed to the closed end of said one closure for securing the closure to said housing, and means for securing said locking member to said closure at said projecting portion, said locking member comprising a first intermediate portion affixed to said projecting portion by said securing means, second portions of said U-shaped locking member resiliently upstanding from the closed end of said closure and being depressible toward said closed end, leg portions of said U-shaped locking member extending along the skirt portion of said closure and slidably contacting said skirt portion in such a manner that said closure may be positioned on said housing, free of said spring locking member, each of said leg portions having a slot provided in a free end thereof, the other of said closures including a skirt portion and having an open end and a closed end, projecting members carried by the skirt portion of said other closure and arranged to be engaged in the slots provided in the leg portions of said locking member to releasably retain said leg portions upon depression of said second portions toward the closed end of the closure, whereby said closures may be secured to said housing at the opposite ends thereof, a bracket member for supporting the housing, the bracket member affixed to said housing and having a portion thereof projecting from said housing intermediate the opposite ends thereof, the skirt portion of each said cup-shaped closures having an indenture therein, the pro-

jecting portion of said bracket engaging in the indenture of the skirt portion of each of said cup-shaped closures so as to prevent inward and rotary movement of said closures relative to said housing.

3. In a device of the character described, the combination comprising a mating member, caps mounted at opposite ends of said member, spring locking means carried by one of said caps, engaging means carried by the other of said caps arranged to cooperate with said spring locking means so as to fasten said caps at opposite ends of said member, a bracket member affixed to said mating member and projecting from said mating member intermediate the opposite ends thereof so as to support said mating member, each of said caps including a skirt portion having an indenture therein, a projecting portion of said bracket member engaging in the indenture of the skirt portion of each of said caps so as to prevent inward and rotary movement of said caps in relation to said mating member.

HOWARD H. LAUCKS.

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