Title: CABLE LOCK AND SEAL DEVICE

Abstract: The invention relates to the means for locking-sealing of material objects. The power cable seal contains a body (1) with cover (2), under which it's placed an informational placard (3), a locking mechanism, placed under the cover into the body (1) cavity, wherein there are made a through channel (4) for placement therein of the cable (6) free end (5), and a blind channel (7), wherein there is rigidly fixed the other end (8) of the cable (6). The outlet (9) of the blind channel (7) and the inlet (10) of the through channel (4) are disposed onto one lateral face of the body. Novelty consists in that the locking mechanism, placed into the cavity of the body, is disposed into a channel (11) intersecting with the through channel (4) for placement of the cable free end at a right angle, the inlet (12) of which is placed onto the lateral face of the body, adjacent to the lateral face onto which are placed the outlet (9) of the blind channel (7) and the inlet (10) of the through channel.
Power cable seal

The invention relates to the means for locking-sealing of material objects transported mainly through customs, with the view of preventing the unauthorized access to them, in particular of refrigerators, vans, tanks, cars and containers of the railway, sea and air transport, of freights transported in railway cars and containers, trucks etc.

It is known a locking-sealing device containing a body with cover, a cable, one end of which is rigidly fixed into the body, and the other free end in the process of locking is passed through the cable fixation mechanism being fixed therein by means of spring-loaded clamping elements, made in the form of a pair of rolls [1].

The known locking-sealing device does not possess sufficient reliability. This is conditioned by the fact that at the application of a considerable force upon the formed cable loop it is possible pulling thereof about the clamping rolls.

The problem the proposed invention resolves consists in increasing the reliability of the seal, prevention of the unauthorized unsealing thereof.

The undertaken task is solved by the fact that the power cable seal contains a body, solidly closed with a transparent cover, under which it is placed an informational placard, a locking mechanism, placed under the cover into the body cavity, wherein there are made a through channel for placement therein of the cable free end, and a blind channel, wherein there is rigidly fixed the other end of the cable. The outlet of the blind channel and the inlet of the through channel are disposed onto one lateral face of the body. Novelty consists in that the locking mechanism, placed into the cavity of the body, is disposed into a channel intersecting with the through channel for placement of the cable free end at a right angle, the inlet of which is placed onto the lateral face of the body, adjacent to the lateral face onto which are placed the outlet of the blind channel and the inlet of the through channel. The locking mechanism is made in the form of a latch with ratchet teeth onto the lateral sides and a stopper head, provided with a pointed metallic tip, interacting with the cable, a nut, interacting with the latch, and a screw, equipped with a handle with weakened section, which is placed outside the body by the inlet of the channel of the locking mechanism. Into the lateral sides of the channel, wherein the locking mechanism is placed, there are made grooves corresponding to the form of the ratchet teeth of the latch, and into the base thereof are made grooves for placement of the stopper head. The blind channel, wherein it is fixed the cable end, is placed perpendicular to the through channel, wherein the free end of the cable is placed, with the formation of a loop at an angle of 90°.

The body of the seal may be made in the shape of trapezium of high-tensile plastic material. Into the body there are made grooves for fixation of the cover, wherein there are made prominences corresponding to the grooves into the body.

Into the informational placard there is made a peephole for visually controlling the position of the stopper head of the latch. The cover of the body is equipped with a readily breakable plate.
Execution of the latch with the stopper head, provided with pointed metallic tip, permits to reliably retain the cable due to the fact that the metallic tip at the cable pressure deforms it, making impossible the attempts of unauthorized extraction thereof from the landing place into the base of the channel of the locking mechanism.

Execution of the locking mechanism from the latch, the nut and the screw increases the reliability of locking and permits to endure considerable power loads.

The ratchet teeth of the latch permit the screw to rotate only in the necessary direction.

Fitting of the body cover with the readily breakable plate prevents the involuntary turning of the screw, as well as evidently demonstrates the inviolability of the seal.

Presence into the informational placard of the peephole permits to visually control the position of the stopper head of the latch and the correctness of cable installation.

The information, applied onto the informational placard, is protected by the transparent cover.

Into the cover there are made prominences corresponding to the grooves into the body, reliably fixing it and do not allow the extraction thereof from the body, without destroying it.

The cover, around the perimeter of connection with the body, may be fixed in several points by means of glue or by welding, which also increases the reliability of the seal.

The proposed power cable seal is explained by drawings, where:

Fig. 1 – power cable seal, general view;
fig. 2 – section A-A fig. 1;
fig. 3 – side view on fig. 1;
fig. 4 – power cable seal in assembly, general view.

The power cable seal contains a body 1, solidly closed with a transparent cover 2, under which it is placed an informational placard 3, a locking mechanism, placed under the cover into the cavity of the body 1, wherein there are made a through channel 4 for placement therein of the cable 6 free end 5, and a blind channel 7, wherein there is rigidly fixed the other end 8 of the cable 6. The outlet 9 of the blind channel 7 and the inlet 10 of the through channel 4 are disposed onto one lateral face of the body. Novelty consists in that the locking mechanism, placed into the cavity of the body 1, is disposed into a channel 11, intersecting with the through channel 4 at a right angle, the inlet 12 of which is placed onto the lateral face of the body 1, adjacent to the lateral face, onto which there are placed the outlet 9 of the blind channel 7 and the inlet 10 of the through channel 4. The locking mechanism is made in the form of a latch 13 with ratchet teeth 14 onto the lateral sides and a stopper head 15, provided with a pointed metallic tip 16, interacting with the cable 6, a nut 17, interacting with the latch 13, and a screw 18, equipped with a handle 19 with weakened section 20, which is placed outside the body 1 by the inlet 12 of the channel 11 of the locking mechanism. Into the lateral sides of the channel 11, wherein there is placed the locking mechanism, there are made grooves 21 corresponding to the form of the ratchet teeth 14 of the latch 13, and into the base 22 thereof there are made grooves 23 for placement of the stopper head 15. The blind
channel 7, wherein there is fixed the end 8 of the cable 6, is placed perpendicular to the through channel 4, wherein the free end 5 of the cable 6 is placed, with the formation of a loop at an angle of 90°. Into the body there are made grooves 24 for fixation of the cover, wherein there are made prominences, corresponding to the grooves into the body. Into the informational placard there is made a peephole 25 for visually controlling the position of the stopper head of the latch. The cover of the body is equipped with a readily breakable plate 26.

The proposed power cable seal is used in the following way.

When assembling the seal it is preliminarily introduced the cable into the outlet 9, passing it through the blind channel 7 and rigidly fixing therein the end 8 of the cable 6. Further the nut 17 is screwed onto the screw 18 and they are installed into the channel 11 for placement of the locking mechanism. Afterwards it is pressed the metallic tip 16 into the stopper head 15 of the latch 13, then the latch is also installed into the channel 11, checking the through channel 4 for placement therein of the free end 5 of the cable 6. Afterwards there is installed into the body the informational placard 3 with the applied necessary information. Then onto the transparent cover 2, round the perimeter of connection thereof with the body, it is applied in several points the glue and the cover is latched into the body 1. The assembled seal is maintained under pressure several minutes and is dried at least 12 hours.

When sealing the free end 5 of the cable is passed through the clamps of the sealed object and it is introduced into the inlet 10 of the through channel, passing it through the through channel 4, it is removed from the outlet of the through channel. Then it is broken in the weakened section of the plate 26. Further, at the rotation of the screw 18, by means of the handle 19, the nut 17 displaces along the channel 11, pushing the latch 13 with ratchet teeth 14 and metallic tip 16 as long as the ratchet teeth are latched into the grooves 21 of the channel 11, at the same time the stopper head of the latch, clamping the cable, will be seen in the special peephole 25, made into the informational placard. Afterwards the handle 19 of the screw is broken in the weakened section. The installation of the seal is finished.

When attempting to extract the cable the latch is wedged because of generation of considerable contact efforts in the place of cable contact with the metallic tip and of the ratchet teeth into the grooves.

Application of the identification number or other sealed information about the object onto the special informational placard, placed inside the body, under the cover, excludes the possibility of unauthorized unsealing and repeated use of the device.

The authorized unsealing of the device is realized by cutting through the cable section, at the same time the repeated locking thereof is excluded.

Thus, the proposed construction of the seal is characterized, compared with the known analogues, in the simplicity, high protective qualities and ease of exploitation.
Claims

1. Power cable seal containing a body, solidly-closed with a transparent cover, under which it is placed an informational placard, a locking mechanism, placed under the cover into the body cavity, wherein there are made a through channel for placement therein of the cable free end, and a blind channel, wherein there is rigidly fixed the other end of the cable, at the same time the outlet of the blind channel and the inlet of the through channel are disposed onto one lateral face of the body, characterized in that the locking mechanism, placed into the cavity of the body, is disposed into a channel intersecting with the through channel for placement of the cable free end at a right angle, the inlet of which is placed onto the lateral face of the body, adjacent to the lateral face onto which are placed the outlet of the blind channel and the inlet of the through channel, the locking mechanism is made in the form of a latch with ratchet teeth onto the lateral sides and a stopper head, provided with a pointed metallic tip, interacting with the cable, a nut, interacting with the latch, and a screw, equipped with a handle with weakened section, which is placed outside the body by the inlet of the channel of the locking mechanism; into the lateral sides of the channel, wherein the locking mechanism is placed, there are made grooves, corresponding to the form of the ratchet teeth of the latch, and into the base thereof are made grooves for placement of the stopper head, at the same time the blind channel, wherein there is fixed the cable end, is placed perpendicular to the through channel, wherein the free end of the cable is placed, with the formation of a loop at an angle of 90°.

2. Power cable seal, according to claim 1, characterized in that the body is made in the shape of trapezium.

3. Power cable seal, according to claims 1, 2, characterized in that the body is made of high-tensile plastic material.

4. Power cable seal, according to claims 1-3, characterized in that into the body there are made grooves for fixation of the cover.

5. Power cable seal, according to claim 1, characterized in that into the informational placard there is made a peephole for visually controlling the position of the stopper head of the latch.

6. Power cable seal, according to claim 1, characterized in that the cover of the body is equipped with a readily breakable plate.

7. Power cable seal, according to claims 1, 6, characterized in that into the cover there are made prominences, corresponding to the grooves into the body.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

INV. B65D/27/30 F16G11/04 E05B39/02

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)

B65D F16G E05B G09F

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 practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C.

See patent family annex.

Date of the actual completion of the International search

30 March 2006

Date of mailing of the International search report

13/04/2006

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<table>
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