

MOBILE SPINDLE LOCK MECHANISM

The present invention concerns a lock mechanism for electrical appliance for protecting lines and people of the circuit breaker type comprising at least one
5 mobile contact designed to cooperate with one or several fixed contacts. A mechanism of this type is mobile between a locked position for closing and an unlocked position for opening the line(s) controlled by the electrical appliance.

This electrical appliance comprises an operating member which makes it possible to control a change of position of the lock mechanism and, if applicable,
10 corresponds to any unlocking thereof, for example due to the occurrence on at least one line of electrical conditions incompatible with the maintenance of the locked position. The operating member is traditionally linked to the lock mechanism using a link rod.

Traditionally, a lock mechanism comprises at least one mobile contact
15 supported by a contact holder pivoting along a first axis between two positions bearing on and away from a fixed contact, respectively. During locking of the mechanism, a stress coming from one end of the link rod, stemming from the operating member, is transmitted to the contact holder(s).

The lock mechanisms serve to mechanically amplify the energy provided
20 by measurement systems, and their amplification principle rests on a mechanical system fed by a spring, the unstable equilibrium of which is ensured

essentially through frictional stresses. These are implemented in particular at the aforementioned end of the link rod and the contact holder(s).

In case of a problem on the line, a mobile trigger passes on information to the mechanism which is provided by one of the measurement systems, usually
5 magnetic or thermal, in order to unlock it when it is in the closed position of the contacts. This trigger comprises a member allowing maintenance of the link rod bearing on the contact holder(s), in the locking phase and the locked position.

When the trigger moves and releases the end of the link rod, the frictional
10 stable mechanical relationship mentioned above is undone, allowing unlocking of the mechanism.

Means for returning the contact holder to the open position of each mobile contact, i.e. away from a fixed contact, are implemented once the link rod is released.

To ensure the stability of the lock mechanism in the closed position, it
15 must comprise a deformable structure. The possibility of deformation is, in known locks, ensured by elastic means which in general allow a relative movement between several pieces and implementation of a bearing pressure of each mobile contact on a fixed contact.

Other than the mechanical stability of the lock in the closed position,
20 these elastic means make it possible to ensure sufficient pressure to avoid electrical problems upon closing of the circuit, making the circuit breaker much more reliable and avoiding the progressive deterioration of the fixed and mobile contacts. These means also enable the absorption of wear of the contacts.

In certain known configurations, the means for returning the contact
25 holder to the open position, mobile contact away from the fixed contact, and the elastic means for implementation of a bearing pressure of one on the other, are ensured by two separate springs.

There are, however, also configurations in which a single spring
30 simultaneously performs both functions. This is the case for the system described in patent EP 0 506 503, in the applicant's name.

In both scenarios, the assembly of the lock unit, involving a particular positioning of the spring(s), is in general not easy to automate, and is therefore less economically favorable in terms of industrialization of the assembly of electrical appliances.

5 In the case where a spring is inserted between the mobile contact and the contact holder(s), the structure is more complex, in particular due to the number of pieces to be assembled according to mobile connections, and because the installation of the springs requires locking of their ends so that they perform their return function. This complexity has a direct impact on the production cost of the
10 product.

This assembly problem of the ends of the spring is also found in the solution described in document EP 0 506 503 for the single spring implemented.

One of the objectives of the present invention is to decrease the cost of the industrialization of appliances, and therefore to simplify the lock mechanism
15 itself as much as possible, as well as its assembly in appliances. An original configuration was designed to meet this objective.

One of the major advantages resulting from the new design is avoiding adjustments once the lock mechanism is mounted in the case.

To meet these objectives, and others which will become clear upon
20 reading the following description, the lock mechanism according to the invention is primarily characterized in that each mobile contact is rigidly linked to the contact holder(s), and in that the elastic means for implementing the bearing pressure of each mobile contact on a fixed contact are linked to the contact holder through a link ensuring the movement of the first pivot axis in relation to
25 the mobile contact / fixed contact bearing area(s) once said bearing takes place.

The rigidity of the mobile contact / contact holder link allows a considerable simplification of the technical solution, as well as the industrialization process which then only manages a rigid and compact assembly instead of several separate pieces constituting the lock mechanism as
30 in most of the solutions of the prior art.

To ensure the stability of the lock in the locked position, according to a completely original solution, it is the initial pivot axis itself of the contact holder which moves in relation to the mobile contact / fixed contact bearing area. In other words, instead of providing a first movement of the mechanism to bring the contacts against each other, then a deformation around the same axis to engage the bearing as in most of the solutions of the prior art, said deformation takes place in relation to the contact area. This solution allows a significant technological simplification of the lock mechanism.

10 This mechanism can then comprise means for guiding the movement of the first pivot axis.

According to a first variation, these elastic means are made up of a hairpin spring with a branch of rectilinear bearing whereof one end is fixed to the case of the electrical appliance, and whereof the other end is bent perpendicularly to said branch and provides the pivot for the rotation of the contact holder along the first axis through running fit of the bend portion in an orifice of the contact holder(s).

In this scenario, the guiding is provided by the spring itself, whereof the length of the branch is obviously invariable. There is therefore no need to add external guide elements.

20 Advantageously, this bent portion can also serve as a pivot for the trigger.

Moreover, the means for returning each mobile contact away from a fixed contact can be made up of a hairpin spring with one branch whereof one of the ends is fixed to the case of the electrical appliance, said branch bearing on the contact holder and exerting an action on it antagonistic to that of the link rod.

25 These return means are then formed in the same way as the elastic means authorizing the movement of the first pivot axis, from which they are, however, separate.

This analogy is also found in the end of said branch, which is bent substantially perpendicularly to the plane of movement of each mobile contact, the bent end portion this time being housed in a slide channel formed in the contact holder(s).

The interest of the slide channel resides in the possibility of reorienting the stresses in relation to the branch of the spring, so that the latter works over its entire length and not in compression, for which the stiffness is very high and unproductive.

- 5 Preferably, the hairpin springs respectively of the elastic means for implementing the bearing pressure and of the return means for each mobile contact on and away from a fixed contact, respectively, are a single piece, and are connected at the level of their fixing to the case.

10 There then remains only one location for fixing to the case, for a single component, which further simplifies the assembly.

 Also preferably, said springs can be connected by an additional branch. This can then have a rectilinear bearing, developing substantially in the direction of movement of the free end of each mobile contact.

15 In this scenario, fixing to the case is facilitated in particular because the spring, now in a single piece, can be clipped in an outgrowth of the case provided for this purpose.

20 The contact holder / mobile contact assembly is therefore no longer pivoting directly in relation to the case, but can be considered "floating" in relation to the latter, provided with the possibility of moving according to a complex movement not limited to simple pivoting.

25 According to another variation, the elastic means for implementation of an elastic bearing of each mobile contact on a fixed contact consist of a spring comprising a hairpin branch whereof one end is connected to the case of the electrical apparatus, said branch being positioned at rest so as to be deformed by the contact holder in movement during locking once a mobile contact / fixed contact bearing takes place, the contact holder being connected to the case by a contact link inserted in a housing or a groove authorizing its pivoting along the first axis and guiding its movement in relation to the mobile contact / fixed contact bearing area.

In this scenario, the branch of the hairpin spring is not used to guide the movements of the contact holder(s), which is provided by the contact link / housing or groove.

At this stage, there is no question of the elastic means allowing a mobile
5 contact / fixed contact bearing pressure.

The same branch can, however, be positioned at rest so as to be deformed by the contact holder during all of its movement, in order also to serve as means for returning each mobile contact away from a fixed contact.

As in the preceding configuration, the same spring is then used to realize
10 the means for returning each mobile contact away from a fixed contact on one hand, and the elastic bearing pressure means on the other hand.

According to one scenario, one of the ends of the hairpin branch is fixed to the case.

It is also possible for the hairpin branch to constitute one of the end
15 branches of a spiral spring whereof the spiral central portion surrounds a contact and the other end branch permanently bears against a relief exceeding the case. In this case, the mechanical link of the hairpin branch with the case is certainly more complicated but has, as will be clearer later, advantages during assembly.

20 According to one possibility, the contact holder comprises a journal inserted according to a running fit and sliding in a housing of the case.

This link makes it possible to provide the mechanical functions belonging to this link, namely a pivoting along a first axis and a later movement, the characteristics of said link having to be combined with the return means
25 described above for a return to the initial position in case of unlocking of the mechanism.

The housing or groove provides guiding of the journal, according to a movement which may be curvilinear and, if applicable, allow a friction of the mobile contact on the fixed contact.

30 This housing comprises, according to one possibility, walls erected in a U shape oriented such that the opening of the U opens in the direction of the

mobile contact. Said housing is therefore not completely closed, which can be seen as an additional advantage during assembly.

Also preferably, the spiral central portion of the spring surrounds the U-shaped housing.

5 In such a configuration, the location of the complex mechanical link described above is also used as one of the attachment points of the spiral spring.

According to one possibility, the hairpin branch is driven by a pin exceeding the contact holder(s).

10 The pivot of the trigger in relation to the contact holder can be freely arranged on the contact holder(s), on the condition that the function provided by the trigger is provided. In this case, preferably, the trigger pivots around a coaxial contact at the journal mobile in the housing of the case, said contact exceeding from the surface opposite the contact holder(s).

15 There is therefore a single axis for the different pivots involved in the links of the contact holder with the cases on one hand, and the triggers with the contact holder on the other hand.

The contact holder can traditionally comprise a ramp whereon one of the ends of the link rod bears, said ramp cooperating with a ratchet of the trigger to
20 maintain the end of the link rod bearing on the ramp in the locking phase and in the locked position.

It is through this ramp that the stress transmitted by the link rod during locking is transmitted to the lock mechanism. The existence of the ratchet makes it possible to maintain the end of the link rod in contact with this ramp,
25 and therefore to transmit the effort.

According to one possibility, the mobile contact(s) is/are a single piece with the contact holder(s). In other words, there are no longer really contact holders, but a mechanism reduced to one or several mobile contacts on which the stresses necessary for the realization of the mechanism's functions are
30 applied.

According to one possible configuration, a bimetallic strip can be rigidly made integral at the end of the mobile contact or one of the mobile contacts opposite its bearing area against a fixed contact.

Alternatively, the bimetallic strip can be a single piece with a mobile
5 contact, which also simplifies the mobile assembly by removing one of its components.

In this scenario, the bimetallic strip / mobile contact is made integral with the contact holder in the vicinity of the mobile contact / fixed contact bearing area, and comprises a bending section whereof the free end is arranged across
10 from an outgrowth of the trigger. The bending section develops, from the securing means to the contact holder(s), to opposite the contact area along a certain length allowing sufficient bending to actuate the trigger.

Preferably, the outgrowth of the trigger is then placed in the vicinity of the member or ratchet enabling maintenance of the link rod bearing against the
15 contact holder(s).

The lock mechanism, in its purest form comprising one or several mobile contacts, a bimetallic strip and a trigger, becomes extremely compact and easy to assemble, and is suitable from an assembly automation perspective. The mechanism, mounted floating thanks to the particular links which connect it to
20 the case, no longer requires any later specific adjustment.

Finally, the sharing of certain functions, such as the pivot axis, the return spring and the elastic means for pressure bearing in the first configuration, make it possible to obtain a lock mechanism which is extremely interesting economically.

25 The invention will now be described in more detail, in reference to the appended figures, in which:

- figure 1 shows, in perspective view, the lock mechanism according to the first version with an operating member for its control;
- figure 2 shows, in perspective view, the solution of figure 1 installed in
30 a circuit breaker-type electrical appliance;

- figures 3a and 3b show another configuration of the version of the preceding figures, installed in a circuit breaker in the closing and opening positions of the contacts, respectively;
- figure 4 is a flattened perspective view of a second variation based on a spiral spring;
- figures 5a and 5b illustrate two views of the mechanism from figure 4, front and rear, respectively, the contacts separated and with a magnetic motor;
- figures 6a and 6b correspond to the preceding figures, with the fixed and mobile contacts engaged in pressure bearing; and
- figures 7a to 7c show an alternative in which the mobile contact and the bimetallic strip are a single and same piece.

In reference to figure 1, the lock mechanism, designated by the general reference (1), is connected to an operating member (2) via a link rod (3). The mechanism (1) is primarily made up of a mobile contact (4), a trigger (5) and a spring (6). The latter is made up of three branches (6a, 6b, 6c) and ends with two bent portions (7a, 7b).

The portion (7b) serves as pivot axis for the mobile contact (4) and for the trigger (5). The bent portion (7a) cooperates with the mobile contact (4) via a slide channel (8) parallel to the contact (4).

The trigger (5) comprises, at one of its ends, a ratchet (9) intended to block the end (3a) of the link rod (3) bearing against a ramp (11) of the mobile contact (4). At its opposite end, the trigger comprises a shank (10) designed to cooperate with a thermal bimetallic strip.

The lock mechanism illustrated in figure 1 is intended to be mounted in the case of an electrical apparatus, for example by clipping, the fixing preferably being done at the level of the rounded part separating the portions (6b, 6c) from the spring (6).

The assembly of figure 1 appears, from the opposite side and installed in the case B of an electrical appliance, in figure 2. The operating member (2) is positioned such that the link rod (3) exerts an action, via its end (3a), against a

ramp (11) of the mobile contact (4) so as to cause it to pivot bearing against a fixed contact (12). This movement is done against the spring (6), and particularly its branch (6a), bearing via the bent portion (7a), in the slide channel (8), in the vicinity of the action area of the end (3a) of the link rod (3).

- 5 Once the mobile contact (4) is bearing against the fixed contact (12), the deformation of the system, necessary for the mechanical stability of the locking, is done through elastic movement of the branch (6b) of the spring (6), and as a result through movement of the bent end (7b).

10 All of the lock mechanism (1) moves inside the case (B) of the electrical appliance once the mobile contact (4) is made to bear on the fixed contact (12). This movement makes it possible on one hand to achieve correct contact pressure between the fixed and mobile contacts, and also, if necessary, to make up for wear of the electrical contacts.

15 As also appears in figures 3a and 3b, the trigger (5) is mounted free in rotation on the mobile contact (4) around the pivot (7b) to release the end (3a) of the link rod (3) through movement of the ratchet (9) in the event of an over-current or a short circuit on the line. In case of short circuit, for example, the striker (14) of a traditional magnetic motor (M) can cause it to pivot counterclockwise, causing the release of the link rod (3), then the separation of
20 the mobile (4) and fixed (12) contacts under the effect of the branch (6a) of the spring (6). The mobile contact (4) also comprises a thermal bimetallic strip (13) which is rigidly fixed to its end opposite that which can bear on the fixed contact (12).

25 When an over-current takes place in the circuit, the bimetallic strip (13) deforms and comes into contact against the shank (10), which it drives while also causing a rotation of the trigger (5) in the same direction as previously, and a release of the link rod (3), or the opening of the circuit.

30 The assembly of the lock mechanism (1) according to the invention, which makes it possible to ensure the pressure bearing of the mobile contact (4) on the fixed contact, is done using a protuberance (15) coming out from the case (B) and which is clearly shown in figure 3b. This protuberance (15), in

which the spring is clipped, for example, is located at the level of the rounded part separating the bent portions (6b, 6c) from the spring (6).

Another version of the device according to the invention appears in figures 4 to 6. The same references are kept when they concern the same components. In reference to figure 4, an operating member (2) is connected via
5 a link rod (3) to a contact holder (17) to which the mobile contact (4) is rigidly connected, a trigger (5) being mounted pivoting around a pivot (18) exceeding the contact holder (17).

In this version, the spring (16) is a spiral spring comprising two end
10 branches (16a) and (16b), respectively, the latter being locked bearing on a relief (19) exceeding the case B, the latter in this case being symbolized by a rectangular portion of the envelope.

The other end (16a) of the spiral spring (16) cooperates with a contact
15 (20) exceeding the contact holder (17) which stresses the spring (16) when the contact holder turns clockwise.

The central portion of the spiral spring (16) is wound around a housing
(21) in the shape of a reversed U serving to house a journal (22) exceeding the contact holder (17). This journal (22) is coaxial to the contact (18) around which the trigger (5) pivots.

20 Figures 5a and 5b show, according to two opposite effects, the operation of the lock mechanism, the mobile contact (4) here being away from the fixed contact (12).

In figure 5a, in particular, the case (B) portion as well as the U-shaped housing (21) are shown transparently for explanatory purposes. In this figure,
25 the lock mechanism is unlocked, and the mechanical link between the contact holder (17) and the case (B) is defined by the journal (22) / housing (21) system. An action on the control lever (2), in order to close the circuit, leads the end (3a) of the link rod (3) to exert an action against the ramp (11). The contact holder (17) / mobile contact (4) / trigger (5) assembly pivots clockwise, the journal (22)
30 being free in rotation in the housing (21).

In reference to figure 5b, as the angular movement increases from the above starting position, the end branch of the spring (16) bends. Given the bearing of the other end (16b) against the contact (19), the spring (16) then stores energy.

5 Once the mobile contact (4) arrives bearing against the fixed contact (12), as illustrated in figures 6a and 6b, and given that the operating lever (2) and, as a result, the link rod (3) continue their movement before definitive blocking in the locked position, the journal (22) moves in the housing (21) in the direction of the outlet of the U. The path is, however, limited and remains inside the U-shaped
10 wall. All of the mechanism then moves in the same way.

As in the version from figures 1 to 3, a bimetallic strip (13) is mounted rigid on the mobile contact (4). Its deformations allow, through contact with the shank (10), the pivoting of the trigger (5), and as a result the release of the end (3a) of the link rod (3). Said pivoting can also be triggered by the striker (14) of
15 the magnetic motor (M).

The energy stored in the spring (16) during the preceding rotation, for locking, is then released, and the device returns to its initial position as illustrated in figures 5a and 5b.

According to an alternative appearing in figures 7a to 7c, the bimetallic
20 strip (13) and the mobile contact (4) then only constitute a single piece (4') performing both fractions. In this case, for the bending of the strip to be able to take place under good conditions, the fixing (23) to the contact holders (17) must be done near the mobile contact (4') / fixed contact (12) bearing area.

The bending is done toward the operating lever (2), and the trigger (5)
25 now comprises not a shank (10), but a protuberance (10') located at the level of the shaft of this lever, near the link rod (3) / ramp (11) bearing area.

As for the preceding versions with a bimetallic strip (13) fixed to the mobile contact (4), this configuration makes it possible to free oneself from all adjustments of the position of the bimetallic strip after assembly of the product.

CLAIMS

1. A lock mechanism (1) for electrical appliance for protecting lines and people of the circuit breaker type comprising at least one mobile contact (4) designed to cooperate with one or more fixed contacts (12), said mechanism (1) being mobile between a locked position for closing and an unlocked position for opening the line(s) controlled by the electrical appliance, an operating member (2) of which enabling a change of position of the mechanism (1) to be controlled and corresponding to any unlocking caused by the occurrence on at least one line of electrical conditions incompatible with the maintenance of its closure, said operating member (2) being connected via a link rod (3) to said lock mechanism (1), which comprises:
- at least one mobile contact (4) supported by a contact holder (17) and pivoting along a first axis between two positions bearing on and away from a fixed contact (12), respectively, a stress coming from one end of the link rod (3) being transmitted on the contact holder (17) for locking of the mechanism (1);
 - a mobile trigger (5) passing on the information provided by a magnetic (M) or thermal (13) measurement system to the lock mechanism (1) in order to unlock it when it is in the closed position of the contacts (4, 12), said trigger (5) comprising a member (9) allowing maintenance of the link rod (3) bearing against the contact holder (17) in the locking phase and in the locked position;
 - means for returning the contact holder (17) to the open position of each mobile contact (4) away from a fixed contact (12) in case of release of the link rod (3) resulting in the unlocking of the mechanism (1); and
 - elastic means for implementation of pressure holding each mobile contact (4) on a fixed contact (12) allowing the absorption of wear of the contacts (4, 12)

- characterized in that each mobile contact (4) is rigidly linked to the contact holder (17), and the elastic means (6b, 16) for implementing the pressure holding each mobile contact (4) on a fixed contact (12) are connected to the contact holder (17) by a link (7b; 21, 22) ensuring the movement of the first pivot axis in relation to the mobile contact (4) / fixed contact (12) bearing area(s) once said bearing takes place.
2. The lock mechanism (1) according to the preceding claim, characterized in that it comprises means (7b; 21) for guiding the movement of the first pivot axis.
 3. The lock mechanism (1) according to one of the preceding claims, characterized in that said elastic means are made up of a hairpin spring with one branch (6b) of rectilinear bearing whereof one end is fixed to the case (B) of the electrical appliance, and whereof the other end (7b) is bent perpendicularly to said branch (6b) and provides the pivot for the rotation of the contact holder along the first axis through a running fit of the bent portion (7b) in an orifice of the contact holder.
 4. The lock mechanism (1) according to the preceding claim, characterized in that the bent portion (7b) serves as a pivot for the trigger (5).
 5. The lock mechanism (1) according to one of the preceding claims, characterized in that the means for returning each mobile contact (4) to a distance away from a fixed contact (12) are made up of a hairpin spring with one branch (6a) whereof one of the ends is fixed to the case (B) of the electrical appliance, said branch (6a) bearing on the contact holder and exerting an action on it antagonistic to that of the link rod (3).
 6. The lock mechanism (1) according to the preceding claim, characterized in that the free end (7a) of said branch (6a) is bent substantially perpendicularly to the plane of movement of each mobile contact (4), the bent end portion (7a) being housed in a slide channel (8) formed in the contact holder.
 7. The lock mechanism (1) according to claims 3 to 6, characterized in that the hairpin springs (6b, 6a) respectively of the elastic means for implementing the bearing pressure and of the return means for each mobile contact (4) on

and away from a fixed contact (12), respectively, are a single piece, and are connected at the point of their fixing to the case (B).

8. The lock mechanism (1) according to the preceding claim, characterized in that said springs (6b, 6a) are connected by an additional branch (6c).
- 5 9. The lock mechanism (1) according to the preceding claim, characterized in that the branch (6c) has a rectilinear bearing, developing substantially in the direction of movement of the free end of each mobile contact (4).
10. The lock mechanism (1) according to one of claims 1 and 2, characterized in that the elastic means for implementing an elastic bearing of each mobile
10 contact (4) on a fixed contact (12) consist of a spring (16) comprising a hairpin branch (16a) whereof one end is connected to the case (B) of the electrical appliance, said branch (16a) being positioned at rest so as to be deformed by the contact holder (17) in movement during locking when a mobile contact (4) / fixed contact (12) bearing takes place, the contact holder
15 (17) being connected to the case (B) by a contact link (22) inserted in a housing (21) or a groove authorizing its pivoting along the first axis and guiding its movement in relation to the mobile contact (4) / fixed contact (12) bearing area.
11. The lock mechanism (1) according to the preceding claim, characterized in
20 that said branch (16a) is positioned at rest so as to be deformed by the contact holder (17) during all of its movement, in order also to serve as means for returning each mobile contact (4) to a distance away from a fixed contact (12).
12. The lock mechanism (1) according to one of claims 10 and 11, characterized
25 in that one of the ends of the hairpin branch is fixed to the case (B).
13. The lock mechanism (1) according to one of claims 10 to 11, characterized in that the hairpin branch (16a) constitutes one of the end branches of a spiral spring (16) whereof the spiral central portion surrounds a contact (21) and the other end branch (16b) permanently bears against a relief (19) exceeding
30 the case (B).

14. The lock mechanism (1) according to any one of claims 10 to 13, characterized in that the contact holder (17) comprises a journal (22) inserted according to a running fit and sliding in a housing (21) of the case (B).
15. The lock mechanism (1) according to the preceding claim, characterized in
5 that said housing (21) comprises walls erected in a U-shape oriented such that the opening of the U opens in the direction of the mobile contact (4).
16. The lock mechanism (1) according to claims 13 to 15, characterized in that the spiral central portion of the spring (16) surrounds the U-shaped housing (21).
- 10 17. The lock mechanism (1) according to any one of claims 10 to 16, characterized in that the hairpin branch (16a) is driven by a pin (20) exceeding the contact holder (17).
18. The lock mechanism (1) according to one of claims 14 to 17, characterized in that the trigger (5) pivots around a contact (18) coaxial to the journal (22)
15 mobile in the housing (21) of the case (B), said contact (18) exceeding from the surface opposite the contact holder (17).
19. The lock mechanism according to any one of the preceding claims, characterized in that the contact holder (17) comprises a ramp (11) on which one of the ends (3a) of the link rod (3) bears, said ramp (11) cooperating with
20 a ratchet (9) of the trigger (5) to maintain the end (3a) of the link rod (3) bearing on the ramp (11) in the locking phase and in the locked position.
20. The lock mechanism (1) according to any one of the preceding claims, characterized in that the mobile contact(s) (4) is/are a single piece with the contact holder (17).
- 25 21. The lock mechanism (1) according to any one of the preceding claims, characterized in that a bimetallic strip (13) is made rigidly integral with the end of the only or one of the mobile contact(s) (4) opposite its bearing area against a fixed contact (12).
22. The lock mechanism (1) according to any one of claims 1 to 19,
30 characterized in that the bimetallic strip (13) is a single piece with a mobile contact (4).

23. The lock mechanism (1) according to the preceding claim, characterized in that the bimetallic strip (13) / mobile contact (4) is made integral with the contact holder (17) in the vicinity of the mobile contact (4) / fixed contact (12) bearing area, and comprises a bending section whereof the free end is
5 arranged across from an outgrowth (10') of the trigger (5).
24. The lock mechanism (1) according to the preceding claim, characterized in that the outgrowth (10') of the trigger is placed in the vicinity of the member (9) allowing maintenance of the link rod (3) bearing against the contact holder (17).