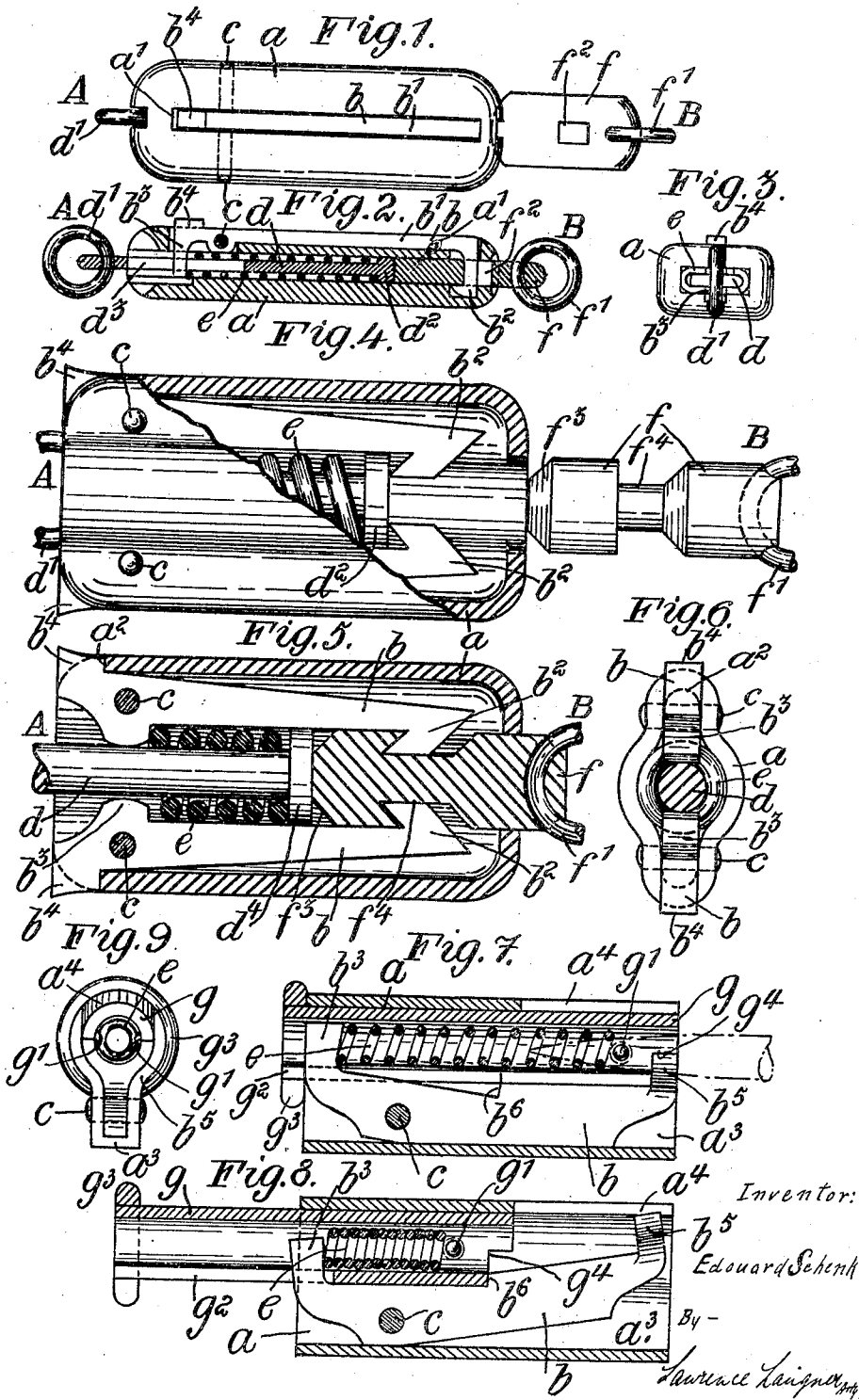


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MANUALLY OPERATED SAFETY COUPLING DEVICE.
APPLICATION FILED MAY 23, 1921.

1,397,237.

Patented Nov. 15, 1921.



UNITED STATES PATENT OFFICE.

EDOUARD SCHENK, OF GENEVA, SWITZERLAND.

MANUALLY-OPERATED SAFETY COUPLING DEVICE.

1,397,237.

Specification of Letters Patent.

Patented Nov. 15, 1921.

Application filed May 23, 1921. Serial No. 471,766.

To all whom it may concern:

Be it known that I, EDOUARD SCHENK, a citizen of Switzerland, residing at Geneva, Canton of Geneva, in the Confederation of Switzerland, have invented certain new and useful Improvements in Manually-Operated Safety Coupling Devices, of which the following is a specification.

This invention relates to improvements in manually operated coupling devices, serving to connect both ends of the same object or two ends of different objects in a most safe manner, and in such a way that the connected parts can at any moment readily be separated by hand. Although the new coupling device may be used in all cases where a safe and quick connection and disconnection of two parts or members is desired, the device appears to be particularly adapted to be used as an improved safety clasp for jewelry.

In my patent application Serial No. 411,423 of September 20th, 1920, I had proposed a new design for a safety catch for pins. Among the working forms shown in the drawings attached to said patent specification there was one providing a catch for maintaining a spring bolt in its stressed position corresponding to the open pin, the point of the pin, when arriving in its closed position, bearing against said catch and thereby disengaging the stressed bolt. Experience has however shown that certain difficulties arise in the manufacture on account of the extremely small dimensions of the plate spring and I tried to overcome this difficulty by substituting a pivoting lever to said plate spring and by using the spring of the bolt as a back-motion spring. Such an arrangement having proved extremely satisfactory for pins, I strived to make use of it to other lockets for jewelry and particularly also to necklaces and the like.

It has been previously proposed to employ two pivoting lever clasps one opposed to the other and to make a plate spring connecting member of the necklace enter between the two levers. But owing to the fact that the connecting member is a plate spring, its manufacture is very difficult in view of the small dimensions to be observed, the plate spring will become lame and as the connecting member must be made to enter between the pivoted lever clasps at a given plane, its manipulation is difficult and when in use it

proves both unreliable and most unhandy, since in the case of a necklace the wearer looses much time for making the connecting member enter the sheath or box of the locket at the right angle.

One form of the locket or clasp for necklaces according to the present invention, which also comprises two pivoted lever clasps, and which I developed in departing from my former construction as proposed for safety pins, does away with these important drawbacks of the former designs.

The accompanying drawing represents by way of example, three constructional embodiments of the invention, in connection with articles of jewelry.

Figure 1 is a plan view in its open position of the first form adapted for use with necklaces or bracelets.

Fig. 2 is a vertical axial section of the same in the closed position.

Fig. 3 is an end view taken from the left of Fig. 1.

Fig. 4 is a fragmentary plan view showing, in an open position, a second form of the clasp according to the invention, adaptable to necklaces.

Fig. 5 is an axial horizontal section corresponding to Fig. 4 but showing the clasp in the closed position.

Fig. 6 is an end view analogous to Fig. 3.

Fig. 7 is an axial vertical section showing, in a closed position, a third form of the clasp, adaptable to brooches opposite their pin point.

Fig. 8 is a similar section showing the clasp in its open position, and

Fig. 9 is an end view taken to the right of Fig. 7.

In the first form adaptable to a necklace (Figs. 1 to 3) the clasp, according to the invention, consists of a box *a*, open at both ends, in which the two ends A and B of the necklace can fit, and of a lever *b* pivoting on a pin *c* fixed in the box *a*. This lever *b* is displaced in a longitudinal groove *a'* made in the box *a* and consists of a long arm *b'* the end of which bent at a right angle *b''* ends in a clasping part or hook, a short arm *b'''* bent at a right angle, and a projection *b''''* prolonging the arm *b'''* and passing outside the box *a*. The end A of the necklace is constituted by a metal part *d* furnished at one end with the ring *d'* to which is fixed one end of the necklace string and at the oppo-

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site end with a flange or head d^2 against which bears a spring e which is wound on the part d , of which it takes the form and rests at the other end upon the short arm b^3 of the lever b . A slide d^3 is made in the piece d to allow passage of this arm b^3 and determine the length of the axial displacement of the piece d inside the box a .

In the same way the end B of the necklace is made of a piece of metal f , furnished at one end with a ring f' to which the other end of the necklace string is fixed. At the other end the piece f is rounded so as to be able to easily penetrate into the corresponding open extremity of the box a . An opening f^2 is made in this piece f which, with the lever b , form a clasp of which b^2 is the hook and f^2 the loop.

The piece d is introduced into the box a before adjusting the lever b in position. As soon as the latter is fixed on the pin c , the point d of the necklace is caught fast in the box a and the clasp is then ready to act.

To unclasp just for clasping the necklace, the box a and the end B of the necklace are held in each hand respectively, the projection or button b^4 being pressed, so as to raise the hook b^2 and pressing the piece f simultaneously to run it as far as it will go in the box a .

In this position, according as, in the first place pressure is removed from the button b^4 or from the piece f the spring e acts respectively on the lever b to clasp the necklace or on piece f to open it.

In the second form adaptable to a necklace (Figs. 4 to 6) the box a has a suitable form to contain two diametrically opposite levers b and to allow the two ends A and B of the necklace,—which are constituted in this case, by cylindric pieces d and f —to glide like pistons in its cylindric part.

The grooves a^2 only allow the projections or buttons b^4 to pass outside the box a . The cylindric part d forming the end A of the necklace terminates inside the box a with a disk d^4 , which moves in the cylindric part of the box a like a piston of which d would be the rod. The spring e which separates this disk d^4 from the short arms b^3 of the levers b is a spiral spring wound on the part d .

The end B of the necklace is constituted by a cylindric part f the end f^2 of which is beveled so as to be able to easily penetrate into the corresponding open part of the box a and make it possible to separate the oblique edges of the opposite hooks b^2 of the levers b . This part f has also an annular recess or gorge f^4 to coöperate with the hooks b^2 .

In this form the necklace is automatically clasped under the action of a part of the power stored in the spring e , driving the

part f into the box a , when the groove f^4 comes opposite the two hooks b^2 constituting a clasp button.

The residual power stored in the spring e after clasping has taken place as also the weight of the beads and all accidental tension exerted on the clasped necklace, tends to keep the parts b^2 and f^4 clasped.

Opening is obtained by a simple and strong pressure upon the two diametrically opposite buttons b^4 .

Besides its great safety due to the action of the spring e and the disproportion between the lever arms b^2 and b^3 , this clasping has the great advantage of giving a slight extensibility to the clasping of the necklace, thanks to which the risks of rupture in case of sudden tightening are decreased.

The necklace clasp could be of other shape than that represented. For example there might be three levers b placed radially at 120° or four at 90° , oscillating on a circular pin in the form of a ring inside a cylindric box, or in the form of a star with three or four arms. To simultaneously raise these three or four levers a ring would then be employed sliding on the box a , capable of lowering the three or four projections which would be on an incline acclivity—when it is displaced axially on the said projections.

To unclasp the necklace by separating or spreading the ends b^2 of the levers b , instead of the projections b^4 , one could employ the last bead on the end A of the necklace which could then slip on the part d . By means of this part one would then press with one hand on the arms b^3 of the levers b and with the other hand push the end B of the necklace in the opposite direction.

The two ends A and B of the string of the necklace instead of being fixed in the rings d' and f' could also be threaded in the hollow parts d and f and knotted at the ends in a widened part of the hollows in the parts d and f . The necklace would then be strung as follows: The end A of the string would be threaded in the hollow part d and its end knotted. Then the beads would be threaded and the end B being then knotted in the hollow part, f .

The box a may have any ornamental form which can be adapted to any style of jewel or receive any kind of applique for jewelry.

The hooks b^2 of the levers b may be of any suitable form to work with a corresponding clasp arranged in the piece f . The lever arm or arms b^3 may end in a half-ring adapting itself to the form of the rod d , though able to oscillate on it.

Instead of being pivoted at c the lever b could oscillate in an opening made in the box a , by means of an extension forming ball and socket joint.

In the form represented in Figs. 7 to 9, the invention is applied to a detached broach

clasp adaptable by soldering or other method of fixation to the back of any broach or "barett" opposite the pin point of the latter.

5 The box *a* comprises a cylindric part in which the tube *g* slides, and a wing *a*³, in which a lever *b* is pivotally housed at *c* as in the preceding forms. The long arm of this lever *b* has at its free end a half-
10 ring *b*⁵ and on its upper edge an unhooking part *b*⁶ serving as a clasping tooth. The spiral spring *e* is lodged inside the tube *g* which is open at both ends and which is threaded from the left into the box *a* before
15 the lever *b* is mounted on its pin. This spring *e* bears at one end, on two interior studs *g*¹ formed with the embossed material of the tube *g* and at its other end—when the lever is in place—on the arm *b*³
20 of the latter, the said arm being introduced at the back into a longitudinal groove *g*² formed in the tube for about three quarters of its length. The end of the tube *g* projecting out of the box *a* is provided with a
25 ring *g*³ open opposite the groove *g*², and formed by beating it out integrally with the tube *g*, or soldered on it. This ring serves to more easily grasp the tube *g*, between the thumb and fore-finger, when the latter is to
30 be drawn backward to free the point of the broach pin, viz. open the broach. The extremity of this tube *g* is grooved at *g*⁴ on the lower half of its circumference, the half-ring or guide *b*⁵ of the lever *b* fitting exactly into this groove *g*⁴ in the closed position
35 of the device so as to guide or center the point of the pin (Fig. 7). There is an opening *a*⁴ on the box *a*, through which the point of the broach pin can be run. The operation of this form of the device is as
40 follows: Assuming that the box *a* has been soldered on the broach—care having been taken to withdraw in one piece all the interior mechanism after removing the pin *c* in order not to slacken the spring *e*—and
45 that the pin *c* has been riveted in place, then to open the broach the ring *g*³ is drawn until the point of the broach pin is disengaged from the tube *g*. At this instant the
50 groove *g*⁴ comes opposite the unhooking part *b*⁶ of the lever and the latter under the action of the power stored in the spring *e*, turns at a certain angle and engages with the tube *g* thus keeping the clasp in the
55 open position.

Clasping takes place automatically when the pin is moved to fasten it at the instant when the pin point enters the box *a*. At this moment in fact, it rests on the fork *b*⁵
60 and thus makes the lever *b* turn until the tooth *b*⁶ releases the tube *g* which then, under the action of the spring *g*, bolts the point of the pin.

The fact that in the attached drawings
65 and the above description the manually op-

erated safety coupling device is shown only as used for articles of jewelry does by no means signify that the new device is intended only for such a use. In fact it may also be employed and constructed for supporting
70 heavy strains of any sort and may be used with great advantage in any place when an effectively secure and quick connection or coupling and disconnection is to take place.

Claims.

1. A manually operated safety coupling device, comprising a sheath, a member slidable therein provided with an abutment, an oscillating clasping member comprising a short arm serving to retain the sliding part
75 in the sheath, a long arm carrying the clasp proper and a part which can be operated by hand from the exterior of the sheath, and a coil spring or springs bearing at one end on the aforesaid short arm and at the other
80 end on the said abutment of the slidable member.

2. A manually operated extensible safety coupling device, comprising a sheath, a member slidable therein provided with an abut-
85 ment, a clasping member comprising a plurality of levers pivoted to said sheath, each lever comprising a short arm serving to retain the sliding part in the sheath, a long arm carrying the clasp proper and a part
90 which can be operated by hand from the exterior of the sheath, and a coil spring or springs bearing at one end on the aforesaid short arms and at the other end on the abut-
95 ment of the slidable member.

3. A manually operated extensible safety coupling device for articles of jewelry such as necklaces, comprising a sheath, a member constituted by one end of the article and
100 slidable in said sheath, a member constituted by the other end of the article and adapted for insertion in said sheath, pivoted means inside the sheath for clasping engagement with the inserted member, a coil spring or
105 springs thrusting the pivoted means toward their engaging position, and means for manually oscillating the pivoted means for the exterior of the sheath.

4. A manually operated extensible safety coupling device for articles of jewelry, com-
110 prising a sheath, a member on one end of the article and mounted slidably in the sheath, means pivoted in the sheath and rockable from the exterior thereof and having a clasping terminal portion, a mem-
115 ber on the other end of the article and insertible in the sheath and having a recess to receive the aforesaid clasping terminal portion, and a coil spring or springs bearing against the aforesaid slidable member
120 and the pivoted means and serving to urge the clasping terminal portion of the pivoted means into engagement with the recess in the insertible member.

5. A manually operated extensible safety 130

coupling device for articles of jewelry such as a necklace, comprising a sheath, a member on one end of the article and mounted slidably in the sheath, a plurality of two-armed
5 levers pivoting radially with respect to this sliding part, a coil spring or springs surrounding said slidable member and thrusting its free end toward hook-shaped ends on the longer arms of the levers, whose short
10 arms serve as abutment to the spring, an insertible member on the other end of the

article having a reduced portion to receive the hook-shaped ends of the levers, and projections on said levers accessible from outside the sheath to rock said levers. 15

In testimony whereof I have affixed my signature in presence of two witnesses.

EDOUARD SCHENK.

Witnesses:

ROBT. B. MACATEE,
P. PLANTIN.