RESETTABLE COMBINATION PADLOCK
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ABSTRACT OF THE DISCLOSURE

A combination padlock employing resettable insignia wheels having means frictionally retaining the wheels at numerous set combinations and wherein a manually operable and frictionally controlled slide is employed in changing or resetting the combination of the insignia wheels of the padlock.

Background of the invention

(1) The invention deals with an economical form of padlock, wherein the primary components, namely casing parts, insignia wheels, slide and hasp, are formed as moldings which can be readily assembled in production of the resulting padlock. Further, the invention deals with a padlock structure, wherein means is employed for retaining the insignia wheels in a combination adjusted position, as well as in providing split rings for frictional support of the wheels at all times.

(2) While padlocks of the type and kind under consideration are generally known, to applicant's knowledge, padlocks of this type and kind incorporating the background disclosure of the invention and incorporating a manually operated slide for resetting of the insignia wheel in change of the combination define a new structural combination distinctly new in this art.

Summary of the invention

With padlocks of the type and kind under consideration, difficulties have been experienced in retention of the insignia wheels in a padlock in setting a predetermined combination, preparatory to opening the padlock, as well as in providing a definite control on the insignia wheels in the operation of changing the combination, which two problems have been cared for in the structural combination defined. Further, in padlocks of the kind under consideration, the provision of a manually operated slide easily accessible on the padlock and having a frictional control adds to the practicability and utility of the resulting padlock structure.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

FIG. 1 is a partial sectional view on the parting line of the padlock casing, with parts of the construction broken away and indicating in dotted and dot-dash lines two positions of the hasp of the padlock.

FIG. 2 is a section generally on the line 2—2 of FIG. 1, with parts of the casing of the padlock broken away.

FIG. 3 is a sectional detail view showing the full extension of the hasp of the padlock, preparatory to resetting the insignia wheels in changing the combination.

FIG. 4 is a rear face view of one of the insignia wheels including its friction ring, with part of the construction broken away and in section to illustrate clearly the split of the ring; and

FIG. 5 is a perspective view of one of the split rings employed in frictional support of the insignia wheels.

In illustrating one adaptation of the invention, the padlock comprises two generally similar casing parts 10, 10', a face view of the part 10 being shown in FIG. 1 of the drawing. These parts differ primarily in that the part 10 includes two integrally projecting rivet pin portions 11 having reduced rivet ends, as seen at 12, FIG. 2, fixed in socket portions 13 of the casing part 10. The casing part 10 further includes two integral alignment key pins 14, which operatively engage sockets of the casing part 10', as will be apparent.

The assembled casing parts are fashioned to form a bore 15, in which the shank 16 of a hasp 17 operates. The bore 15 has an enlarged side 18, in which the spring retaining washer 19 operates, a spring 20 being employed to normally support the hasp 17 in locked position, with the lock end 21 of the hasp in the receiving socket 22 formed between the casing parts. The washer 19 is fixed to the shank 16 by a screw, as seen at 23.

With the construction shown, the padlock employs three similar insignia wheels 24. However, with different padlock structures, the number of wheels employed can be varied. These wheels operate in a corresponding number of recesses or apertures 25 opening through the top of the casing. Considering FIG. 4 of the drawing, these wheels have ten insignia sections 26, upon which the insignia are integrally molded, for example, the numbers ZERO to NINE, inclusive, part of such numerals being shown at 27 in FIG. 2 of the drawing. Each wheel has, at one side thereof, a bore 28, in which a split friction ring 29 of fibrous or plastic material is mounted, as clearly seen in FIG. 1 of the drawing. At the other side of each wheel, in alignment with the sections 26, are formed ten key recesses 30 adapted to be engaged by projecting tails or key elements 31 formed integrally with the shank 16 in the operation of the padlock by movement of the hasp into open position by setting the proper key recesses 30 in alignment with the elements 31.

The casing parts are further recessed, as seen at 32, to receive springs 33 operatively engaging the surface of the wheels 24 to frictionally retain the wheels in a set combination position, preparatory to movement of the hasp into open position.

The casings collectively form a vertical recess 34, as well as a horizontal recess, 35, note FIG. 2, in which a slide 36 operates. The recess 34 opens into part of the bore 15 in which the shank 16 of the hasp operates and also into the socket 22, in which the lock end 21 of the hasp operates. The slide 36 has an upward reduced extension 37 which, in the locked position of the slide, abuts the shank 16. The lower end 38 of the slide 36 extends beyond the lock end 21 of the hasp and the end 38 has an outward projection 39 operating in a recess 40 formed in the casing, as seen in FIG. 1 of the drawing. The slide 36 has laterally projecting fingertips 41, having roughened surfaces where these fingertips protrude through sides of the casing, as clearly seen in FIG. 2 of the drawing.

Considering FIG. 1 of the drawing, it will appear that the casing parts collectively form a recess 42 for reception of a friction disc 43 and a compression spring 44 for frictional support of the slide 36 in normal retention of the slide in the locked position of FIGS. 1 and 2, as well as in the open position of the slide 36, as seen, in part in FIG. 3 of the drawing.

In the normal operation of the padlock, it will be understood that the split 29' of each of the friction rings 29 is at all times positioned in alignment with the key elements 31 when the wheels 24 are properly set for the opening of the hasp 17 or, in other words, movement of the hasp into the dot-dash position of FIG. 1. In this position, the end 21 is free to swing on the shank 16 of the hasp. This opening movement of the hasp is checked by the end 37 of the slide and, at that time, the elements 31 are all in alignment with the wheels 24 and these wheels will be rotated in the swinging movement of the hasp.
In the operation of changing the combination by re-setting of the wheels 24, the slide 36 or the fingerpieces 41 thereof are engaged by two fingers of the hand and moved downwardly, with the hasp in the dot-dash position shown in FIG. 1, thus, in this position, note FIG. 3, the hasp can be advanced further into the dotted position of FIG. 1, bringing the outermost key element 31 over the end 37 of the slide and beyond the key recesses 30 of all of the wheels, one wheel only being shown in FIG. 3 by way of illustration. With the assemblage in this position, it will be apparent that each of the wheels 24 can be manually rotated against the frictional engagement of the rings 29 on the wheels, until a new combination setting has been determined; whereupon, the hasp will then be moved inwardly to the full line position of FIG. 1 and, during this operation, the slide 36 will be manually moved into the normal raised or locked position, permitting movement of the lock end 21 of the hasp into the socket 22. It must be kept in mind that, at all times, the combination of the lock must be known in order to reset the combination of the lock.

It will be apparent that the spring rings 29, which are preferably formed of nylon or Delrin, employed in the wheels 24 fit freely upon the shank 16 in providing free movement of the shank in operating the hasp 17 from the locked position to the open position and vice versa, the bore 15 providing the primary support and guide for the shank 16.

It will be apparent that the spacing of the wheels in the casing form spaces which normally receive the key elements 31 when the shank or spindle 16 is in the position shown in FIG. 1. For purposes of description, the shank 16 of the hasp can be said to define a spindle controlling the lock in its cooperation with the insignia wheels 24.

It will be apparent that, in the assembly of the lock, the various parts or components of the lock will be assembled in the casing part 10; whereupon, the casing part 10 is riveted into position, as diagrammatically shown. The various parts of the lock can be formed of casings or moldings of metallic or plastic materials, with structures of this type and kind, extremely small locks can be produced, thus adapting the lock structure to numerous uses.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A combination lock comprising a casing having two generally similar casing parts, means securing said parts together, a lock control spindle slidably mounted in said casing, the spindle including a lock end engaging a socket in the casing, a plurality of insignia wheels rotatably mounted on the spindle through the medium of split rings, parts of the wheels projecting through the casing, said rings frictionally engaging said wheels, said wheels having circumferentially spaced key recesses, one only of which is in alinement with the split in the rings of said wheels in defining the combination of the lock, longitudinally spaced key means on the spindle engaging all of the wheels when set in proper combination to release the lock end of the spindle in opening the lock, and a manually operated slide is mounted in the casing and exposed through the casing, said slide having means at one end normally checking movement of said spindle in opening the lock, and means for moving said slide into a position removing said checking means in movement of the spindle to a position engaging the rings and freeing the wheels for rotation on the spindle in changing the lock combination.

2. A lock as defined in claim 1, wherein frictional means is tensionally supported in engagement with said slide in retaining the slide in different positions.

3. A lock as defined in claim 1, wherein the exposed part of the slide defines fingerpieces projecting through both casing parts.

4. A combination lock comprising a casing having two generally similar casing parts, means securing said parts together, a lock control spindle slidably mounted in said casing, the spindle including a lock end engaging a socket in the casing, a plurality of insignia wheels rotatably mounted on the spindle through the medium of split rings, parts of the wheels projecting through the casing, said rings frictionally engaging said wheels, said wheels having in alinement with the split in the rings of said wheels in defining the combination of the lock, longitudinally spaced key means on the spindle engaging all of the wheels when set in proper combination to release the lock end of the spindle in opening the lock, and a manually operated slide is mounted in the casing and exposed through the casing, said slide having means at one end normally checking movement of said spindle in opening the lock, and means for moving said slide into a position removing said checking means in movement of the spindle to a position engaging the rings and freeing the wheels for rotation on the spindle in changing the lock combination.

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