E. B. STONE.

LOCK.

APPLICATION FILED NOV. 4, 1909.

964,331.

Patented July 12, 1910.

Fig. 2.

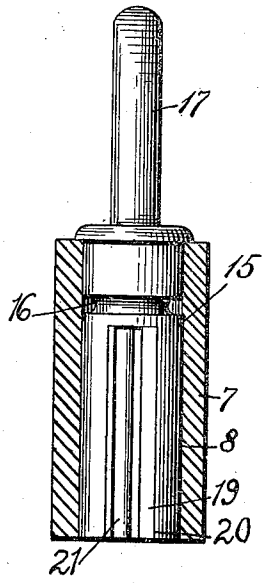


Fig. 1.

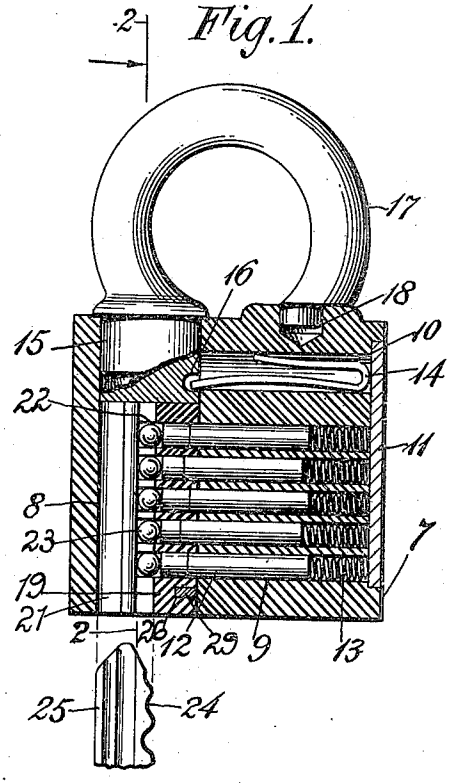


Fig. 3.

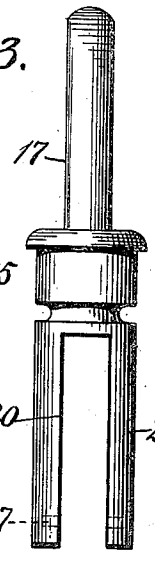


Fig. 5.

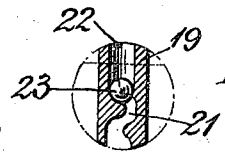


Fig. 6.

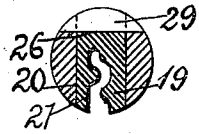
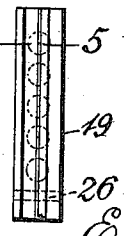


Fig. 4.



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LOCK.

964,331. Specification of Letters Patent. Patented July 12, 1910.

Application filed November 4, 1909. Serial No. 526,197.

To all whom it may concern:

Be it known that I, ELMER B. STONE, a citizen of the United States, and a resident of New Britain, in the county of Hartford and State of Connecticut, have invented a new and Improved Lock, of which the following is a specification.

My invention relates more especially to that class of locks known as padlocks, and the object of the invention is generally to provide a lock of this class having novel features of advantage and utility.

One form of lock embodying my invention and in the construction and use of which the objects sought may be attained is illustrated in the accompanying drawings, in which—

Figure 1 is a view in central longitudinal section from edge to edge through a lock embodying my invention, the upper part of the plug and the shackle being shown in full. Fig. 2 is a view in longitudinal section through the lock on plane denoted by line 2—2 of Fig. 1. Fig. 3 is a detail view showing the shackle and its attached plug. Fig. 4 is a detail edge view of the insert. Fig. 5 is a view in section through the same on plane denoted by line 5—5 of Fig. 4. Fig. 6 is a view in cross-section through the plug and insert showing the means for securing the latter in place.

A lock forming the subject-matter of my invention is one in which the plug rigidly secured to the shackle has a key slot of irregular shape to receive a key having lengthwise corrugations along its sides to fit said slot, and the construction herein illustrated and described embodies one in which this irregular key slot may be readily formed.

My invention may be embodied in locks of various kinds, that which I have selected for the purpose of illustration and description herein of my invention embodying a case 7 formed from a solid piece of metal and having a plug opening 8 extending lengthwise through the case near one edge. Driver openings 9 of any suitable number are formed extending edgewise into the case, and a spring recess 10 is also formed extending edgewise into the case, these openings and recess extending into the plug opening 8. The driver and spring openings are closed by a cap 11 nicely fitting into a recess made for its reception in the edge of the case. Drivers 12 backed up by springs 13 are located in the openings 9, and a spring 14 is located in the spring recess 10, one arm of the spring extending into a groove 16 in the side of a plug 15. A shackle 17 is rigidly secured to the plug, the tip of the shackle being disengaged from a locking socket 18 in the case by movement of the plug.

All of the parts above described are of old and well-known construction, and form, except in connection with other parts to be hereinafter described, no part of my present invention.

In prior constructions in which the plug and shackle are formed of a single integral piece it has been practically impossible to form an irregular key slot. In order to enable the formation of such a key slot in the plug I provide an insert 19, which is nicely fitted into an insert opening 20 in the plug, this opening being formed for the reception of the insert. It is important that the insert opening 20 shall terminate at a substantial distance from the point of connection between the plug and shackle, this distance being sufficient to provide an extremely strong connection between said shackle and plug, for if the opening extended well toward the point of connection between said parts the structure would be weakened and insufficient to withstand the strains liable to be placed upon it. This insert is of proper size to contain the irregular key slot 21 which extends from end to end of the insert. When this insert is in place in the plug the two are practically the same as the plug formed of a single piece heretofore employed.

In the formation of an irregular key slot by the ordinary means, a broach properly shaped is run through the piece in which the slot is to be formed from end to end, but in the construction of padlocks in which the shackle and plug are formed of a single piece this operation of forming a key slot has been impossible. By constructing a separately formed insert which is to constitute a part of the plug the key slot may be formed in the ordinary manner, extending from end to end of the insert, and when the latter is placed in the plug the two form a structure practically the same as that heretofore employed. In completing this struc-

ture pin tumbler recesses 22 are formed in the edge of the insert, opening into the key slot 21, and balls 23 may be placed in these pin recesses to facilitate the insertion of a key, these balls resting in the notches 24 of the key 25. The edges of the insert are rounded to nicely fit the walls of the plug opening 8, and if formed to quite tightly fit the insert opening 20 in the plug it will be found that it will be retained in place in the plug without further fastening. As a caution, however, I prefer to positively secure the insert in place, and to this end a slot 26 is formed across the edge of the insert, registering with slots 27 in the arms or branches 28 of the plug, which arms or branches are formed by the insert opening 20. A key 29 is nicely fitted in these slots, the edge of the key being curved to fit the inner wall of the plug opening 8.

The details of construction herein illustrated and described may be departed from to a greater or lesser extent without avoiding the invention, and I do not therefore limit myself to the exact form of construction herein illustrated and described but contemplate departures therefrom to a greater or lesser extent as within the spirit and intent of the invention.

I claim—

1. A shackle, a plug rigidly secured thereto and having an insert opening, and an insert removably located in said opening and containing a key slot and with tumbler recesses extending into said key slot.

2. A casing having a cylindrical plug opening, a shackle, a plug rigidly secured to said shackle and located in said opening, said plug having an insert opening extending from side to side thereof, an insert located in the insert opening and with its edges conforming to the shape of the plug opening, said insert having a key slot and tumbler recesses extending into said key slot, and mechanism located in the case and combined with said plug to complete the lock mechanism.

3. A plug forming part of a lock mechanism and having an opening extending from side to side, an insert located in said opening and formed to complete the shape of the plug and having a key slot, a groove formed in the outer surface of said plug and insert, and a key located in said groove to secure the parts together.

4. A plug forming part of a lock mechanism and having an opening therein, an insert located in said opening and having a key slot, a groove formed in the outer surface of said plug and insert, and a key located in said groove to secure the plug and insert together.

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