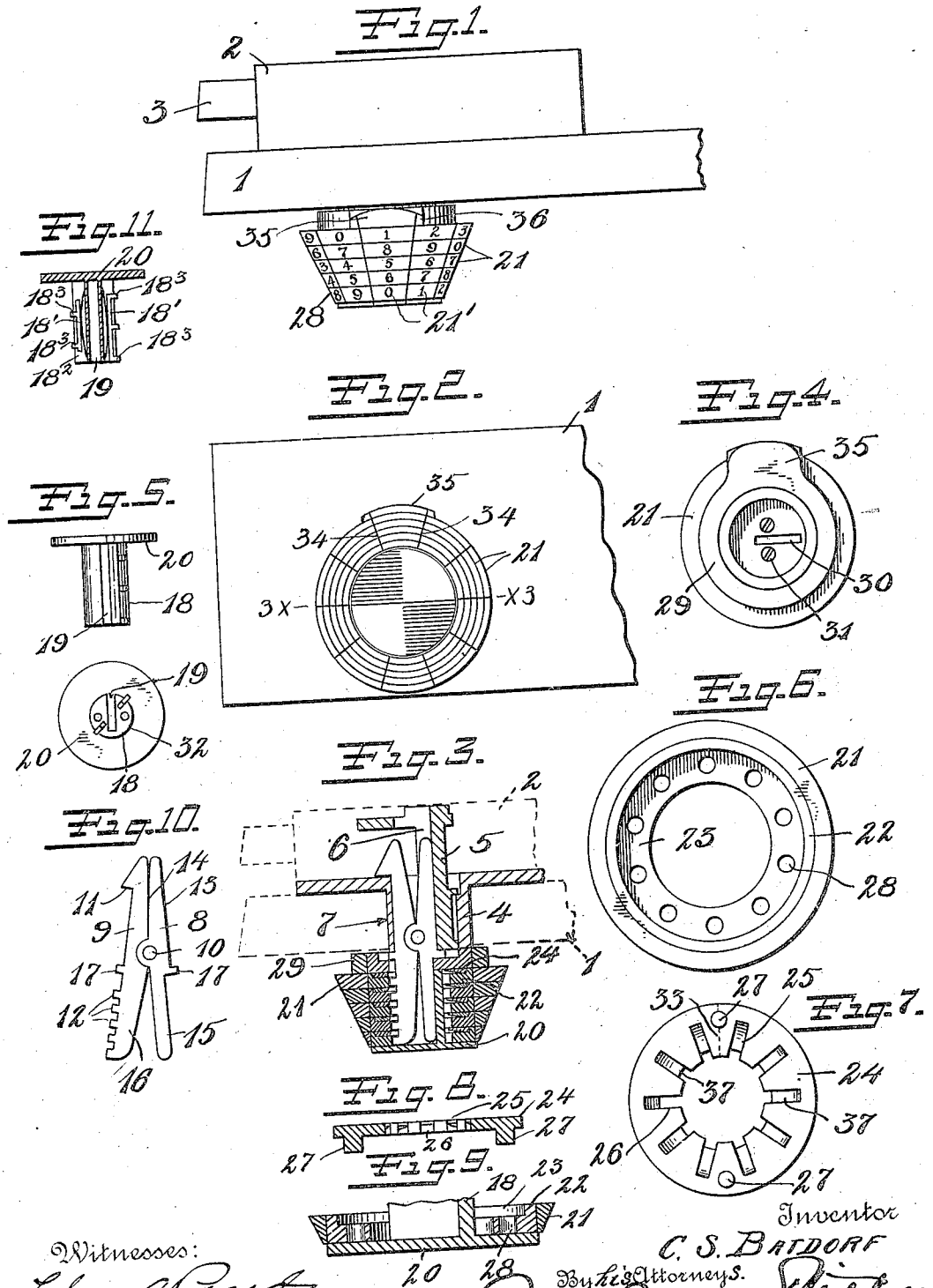


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KEYHOLE PLUG AND GUARD THEREFOR.
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KEYHOLE-PLUG AND GUARD THEREFOR.

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To all whom it may concern:

Be it known that I, CHARLES S. BATDORF, a citizen of the United States, residing at Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Keyhole-Plugs and Guards Therefor, of which the following is a full, clear, and exact description.

My invention relates to devices for preventing unauthorized tampering with a lock, such, for example, as a lock of a safe deposit box, although it will be evident that the invention may be applied generally to locks for any purpose.

The invention contemplates broadly the provision of a plug which may be inserted in the keyhole of the lock and a guard which may be so attached over said plug as to prevent unauthorized removal thereof from the keyhole. This guard requires broadly a plurality of elements constituting the parts of a "combination" mechanism which when properly adjusted by a party familiar with the combination may be readily slipped over that portion of the plug which projects outside of the keyhole and by "throwing" one or more of the combination elements the guard will be locked upon the plug and will at the same time so adjust the plug in the keyhole as to prevent its withdrawal therefrom.

The mechanism as a whole may be made of compact form, and, if desired, of a size convenient to carry in the pocket of the user.

With these and other objects in view, which will appear from the following description, the invention consists in the construction and arrangement of parts, a preferred embodiment of which is illustrated in the accompanying drawings, in which,

Figure 1 is an edge view of the door of a safe deposit box and lock therefor with my device secured thereto. Fig. 2 is a face view of the parts shown in Fig. 1. Fig. 3 is a part sectional view on the line 3-3 Fig. 2 of the door, its lock, and the device secured thereto. Fig. 4 is a rear view of the guard detached. Fig. 5 comprises an elevation and end view of the hub or central post of the guard. Fig. 6 is an enlarged detail view of one of the combination elements. Fig. 7 is a corresponding view of a cooperating part of one of said elements. Fig. 8 is a transverse sectional view of parts shown in Fig. 7. Fig. 9 is an enlarged sectional view of the

parts shown in Fig. 3, Fig. 10 is a view of the keyhole plug with which the guard is used, and Fig. 11 is a sectional view of the hub.

In the embodiment of the invention herein selected for illustration, 1 indicates the door, for example, of a safe deposit box; 2 the lock case attached to the inside thereof; 3 the locking bolt of said lock.

The particular form of lock with which the device is here illustrated is of the usual cylinder type comprising a cylindrical sleeve 4, within which the lock cylinder 5 is arranged to rotate, said cylinder being provided with the usual keyhole slot 6. The cylindrical sleeve 4, as here shown, is mounted in a suitable aperture 7 in the door 1 and projects slightly beyond the outer face of the door as indicated in Figs. 1 and 3.

The keyhole plug here selected for illustration consists of the blades 8 and 9 of a thickness adapted to snugly fit the width of the keyhole and are pivoted together at 10. One end of the plate 9 is provided with a shoulder 11 which is adapted when in position in the keyhole to engage the inner end of the cylindrical sleeve 4, as indicated in Fig. 3, and the opposite end of said blade is provided with a plurality of lugs 12 adapted to be engaged by the "combination" elements hereinafter to be described. The inner end of the blade 8 has a straight outer edge 13 and a somewhat inclined inner edge 14 to permit the inner ends of the blades 8 and 9 when brought together to present together a sufficiently contracted width to be easily inserted in the keyhole. The outer end of the blade 8 may consist simply of a straight projection 15, which operates with the lug portion 16 of the blade 9 to hold said lugs in engagement with the combination elements of the guard when the same is slipped over the outer ends of the keyhole plug. Each blade 8 and 9 also is provided with a lug or shoulder 17, adapted to engage the outer face of the lock cylinder and thereby determine the extent of insertion of the plug within the keyhole.

The combination guard in the form here shown comprises a central hub or post 18, Fig. 5, which is longitudinally slotted at 19 to receive the outer ends 15 and 16 of the keyhole plug, and is also provided at its outer end with a head or disk 20. The combination elements in the form here shown consist of a plurality of disks which are ro-

tatably mounted upon the hub 18, the outer of said disks abutting against the head 20 of the hub 18, as shown in Fig. 3. Each combination element comprises an outer ring 21 of suitable material such as steel having preferably brazed therein an inner case hardened steel ring 22, said inner ring having a counter sunk portion 23 surrounding its central aperture and forming a seat for an apertured disk 24. The inner edge of this disk is provided with a series of radial notches 25, Fig. 7, all but one of which extend only partially through the thickness of the disk for the greater portion of their lengths. Also radially arranged in the disk 24 is a notch 26 which extends for the greater portion of its length completely through said disk for the purpose hereinafter to be described. The disks 24 are removably mounted within the rings 22 and are provided with diametrically opposite pins 27, which, when the disk is in proper position, are arranged to engage suitable apertures 28, Fig. 9, within the ring 22. As will be seen from an inspection of Fig. 6, the apertures 28 are arranged in diametrically opposite pairs in said ring 22, whereby the disk 24 may be adjusted to any one of a number of positions on said ring corresponding to the number of pairs of apertures. The object of providing for the adjustment of the disks 24 within the rings 22 is to enable the user of the guard to change the combination thereof at will in the following manner. Each of the outer rings 21 is provided upon its perimeter with a series of numbers 21', Fig. 1, from 0 to 9 inclusive, whereby each combination element is capable of providing for ten permutations, and the number of permutations provided by the guard as a whole is determined by the number of disks constituting the same.

After the combination elements have been assembled upon the central hub 18, they may be secured in place by an outer plate 29, having at its center a slot 30 adapted to register with the slot 19 of the hub 18 and having also screw holes 31 adapted to register with corresponding holes 32 in the end of said hub 18, whereby the plate 29 may be secured to said hub with the combination elements or disks confined between it and the head 20 of the hub. From an inspection of Fig. 3, it will be seen that the disks 24, when the combination elements are assembled on the hub, are spaced apart by reason of the thickness of the rings 22, leaving clearance spaces for the reception of the lugs 12 upon the outer end of the blade 9 of the keyhole plug, when the outer ends of the blades of said plug are expanded within the guard member. To properly adjust the combination of the guard, each of the disks 24 is provided on its face opposite the notches 25 with an indicating mark 33, shown in dotted

line Fig. 7, which mark is located at a predetermined position with relation to the "through" slot 26 in said disk, and it is obvious that it may be in any relative position to said notch. This indicating mark, when the disk 24 is adjusted on the ring 22, is so arranged as to be brought opposite any given number on the perimeter of the outer ring 21, and will thereby indicate the proper adjustment of the combination element as a whole on the central hub 18 to bring the plug receiving slot 26 in alinement with the slot 19 in the central hub 18. In order to indicate to the user the "interlocking" position of one of these combination elements when the guard is assembled, the perimeter of each of the outside rings is also provided with indicating marks 34 and the inner or securing plate 29 of the guard is provided with a radial projection 35, also bearing indicating marks 36, with which the marks 34 upon the combination elements may be brought into register. Each of the series of numbers on the perimeter of the outer rings 21 is centrally located between successive indicating marks 34, so that when said marks on the respective rings 21 are brought into alinement with each other and with the indicating marks 36 on the projection 35 of the securing blade 29, a series of numbers will be presented transversely of the guard from front to rear, as indicated in Fig. 1, which series of numbers constitute the combination necessary to release the guard from the keyhole plug. The combination illustrated in Fig. 1 being 1—8—5—6—0. This combination is secured, for example, by so adjusting the notched disk 24 upon the inner ring 22 of one of the combination elements as to bring the indicating mark 33 on said disk 24 in alinement with the numeral, for example, 1, on the innermost combination element of the guard. The mark on the adjacent disk has been adjusted to 8, etc., so that when the numbers 1—8—5—6—0 on the perimeters of the combination elements are brought into alinement, as illustrated in Fig. 1, the notches 26 of each of the disks 24 will be brought into alinement with the slot 19 of the central hub 18, whereby the disks may be slipped over or released from the lugs 12 of the blade 16 of the keyhole plug.

To hold the combination elements from too free turning on the hub 18 and to facilitate adjustment, spring stop bars 18'—18', Fig. 11, are arranged in suitable slots 18², said bars having projections 18³ adapted to engage and ride in and out of the notches 25 in the disks 24, said projections 18³ being beveled if necessary to facilitate this action.

It will be noted from an inspection of Fig. 3 that the outer projections 15 and 16 of the blades of the keyhole plug must be brought together to enable them to enter the passage within the guard formed by the slot 19 in

the hub and the notches 26 in the successive combination elements, and consequently the inner ends of said blades 8 and 9 will be expanded until the shoulder 11 on the blade 9 engages behind the rear end of the sleeve 4 of the cylinder lock or any other convenient part presented by the particular construction of lock with which the device is used. As shown in Fig. 3, the spaces between the lugs 17 engaging the outer face of the lock and the shoulder 11 on the rear end of the blade 9 are such as to cause the plug to fit snugly over the ends of the sleeve 4 and thereby prevent undue rattling or movement of the guard or plug on the lock.

In order to prevent an unauthorized manipulator from "feeling" the lock by careful and minute rotation of the combination elements to bring the slots 26 into alinement with the lugs 12 of the plug, I provide the series of partial notches 25 corresponding in radial position to the notch 26, but by reason of the fact that they only extend partially through the disk 24, they will present stop surfaces 37, Fig. 7, to prevent the slipping of the disks 24 over the lugs 12 of the plug. By this arrangement, it is impossible to properly adjust the combination elements to secure the necessary combination by the mere "feel" of the disks 24 with their notches 25 upon said lugs 12, and this is more effectually prevented by the fact that the combination elements are so compactly assembled between the head 20 of the central hub 18 and the rear securing plate 29 as to permit of substantially no relative movement of said elements toward and from each other.

By varying the number of combination elements employed in the guard, the number of permutations possible may be varied to any desired extent. The construction here consisting of five elements bearing ten numbers each permits of one hundred thousand separate combinations.

In the practical use of the device, the holder of a safe deposit box may remove the guard and plug from the keyhole and after unfastening the securing plate 29 from the rear of the guard may readily remove the combination disks 24 of one or more of the combination elements and adjust the same to any desired new number, thereby changing the combination of the guard as a whole. This operation may be effected within a very few moments by reason of the extremely simple structure of the guard and the fact that the securing plate 29 may be readily removed simply by unscrewing the two screws 31 holding the same to the hub 18. By this device therefore the control of the lock is placed wholly within the holder of the box and the combination may be altered at convenient intervals to insure the impossibility of any unauthorized person from manipu-

lating the lock, should such person accidentally come into the possession of knowledge of the required combination.

While I have herein described a particular embodiment of my invention, it is to be understood the same may be varied in detail and relative arrangement of parts without departing from the spirit or scope thereof.

What I claim is:

1. A key hole guard, comprising a member adapted to be inserted in the key hole and a combination member adapted to be removably secured over a portion of said first member projecting from said key hole, said combination member having combination elements to engage said projecting portion to retain the first member within said key hole.

2. A key hole guard, comprising a member adapted to be inserted within the key hole, said member consisting of pivoted elements so arranged that upon expansion of the inserted ends of said elements the same will be retained within the key hole, and a combination member adapted to be slipped upon the projecting ends of said first member, said combination member having combination elements arranged to maintain said inserted members in expanded position and prevent the withdrawal thereof from said key hole.

3. A key hole guard, comprising a member adapted to be inserted within the key hole and to be expanded to retain the same therein, and a combination member adapted to be secured upon a projecting portion of said first member and to maintain the same expanded within said key hole, said combination member consisting of a plurality of combination elements capable of adjustment to retain the same upon said first member and to permit the same to be moved from said first member.

4. A key hole guard, comprising a member adapted to be inserted within the key hole and retained therein, a combination member adapted to receive a projecting portion of said first member and to cause engagement thereof with said key hole, said combination member comprising a plurality of rotatable disks having portions adapted to engage said first member to prevent separation of said members, said elements being capable of adjustment to permit removal of said combination member from said first member.

5. A keyhole guard comprising a member consisting of two parts pivoted together and adapted to be inserted within the keyhole and to be expanded to retain the same therein, a combination member adapted to be removably secured on a projecting portion of the first member and to maintain the same expanded within said keyhole, said combination member comprising a plurality of

combination elements capable of adjustment to retain the same upon said first member and to permit the same to be removed from said first member.

- 5 6. A keyhole guard comprising a member adapted to be inserted in the keyhole and a combination member adapted to be secured over the projecting portion of said first member, said combination member comprising
10 ing a hub slotted to receive said projecting portion and a plurality of combination elements consisting of disks rotatably mounted on said hub and having slots adapted to be brought into alinement with the slot in said
15 hub, said combination elements when so alined adapted to be slipped over said projecting portion of the first member and when out of alinement adapted to engage said projecting portion and prevent separation of
20 the members, whereby said first member will be secured within the keyhole.

7. A keyhole guard comprising a member adapted to be inserted within the keyhole and to be retained therein, a combination
25 member adapted to be secured upon a projecting portion of said first member, said second member comprising a plurality of combination elements arranged to rotate around said projecting portion of the first
30 member, having means when in certain relative adjustment to maintain the combination member on said projecting portion and when in another adjustment to permit separation of said combination member from
35 said first member.

8. A keyhole guard comprising a member adapted to be inserted in the keyhole and retained therein, a combination member adapted to receive a projecting portion of
40 said first member, said second member comprising a plurality of combination elements constructed and arranged to be moved relatively to each other and to said projecting portion, whereby said combination element
45 upon proper adjustment of said elements will be secured upon said projecting portion and retain said first member in the keyhole and upon other relative adjustment will permit free separation of said first and second
50 members and the withdrawal of said first member from said keyhole.

9. A keyhole guard comprising a member adapted to be inserted and retained within the keyhole and having a portion projecting
55 therefrom, and a combination member having means to receive said projecting portion and comprising a plurality of disks rotatable about said portion, said disks having notches which when alined permit free reception of
60 said projecting portion and when out of alinement will engage said projecting portion and prevent separation of said members and withdrawal of said first member from the keyhole.

- 65 10. A keyhole guard comprising a member

adapted to be inserted and retained in a keyhole and having a portion projecting therefrom, a combination member constructed to receive said projecting portion and comprising a central slotted hub, a plurality of disks
70 rotatably mounted on said hub, having notches adapted to aline with the slot in said hub, and means on said projecting portion whereby when said slot and notches are out of alinement, to engage said disks to
75 prevent separation of said combination member from said first member and when in alinement to permit free reception of said projecting portion within said combination member and free separation of said members.

11. A keyhole guard comprising a member adapted to be inserted and retained within the keyhole and having a portion projecting outside of the same, a combination member comprising a central slotted hub and a
85 plurality of combination elements adjustable relatively thereto, said elements having slots adapted to be brought into and out of alinement with the slot in said hub, and means on said first member arranged to cooperate with said combination elements, whereby
90 when all of said slots are brought into alinement, said combination member may be freely slipped over or removed from said first member, and when the slots of said members are out of alinement, said combination member will be retained in engagement with said first member, and serve to retain the same
95 locked within the keyhole.

12. A keyhole guard comprising a member adapted to be inserted and retained within the keyhole and having a portion projecting outside the same, a combination member comprising a central slotted hub, a plurality
105 of combination elements consisting of disks rotatably mounted on said hub, each of said disks having a series of radial notches adapted to be alined with a slot in said hub but one of said notches of said series in each
110 disk extending completely through the same, said combination elements being so arranged that when said through notches are alined with the slot in said hub, said combination member may be freely placed over or removed from said first member, and when
115 said notches and slot are out of alinement, said members will be secured against separation to retain said first member within the keyhole.

13. A keyhole guard comprising a member adapted to be inserted and retained within the keyhole and having a portion projecting outside the same, a combination member comprising a central slotted hub, a plurality
125 of combination elements consisting of disks rotatably mounted on said hub, each of said disks having a series of radial notches adapted to be alined with a slot in said hub but one of said notches of said series in each disk
130

extending completely through the same, said combination elements being so arranged that when said through notches are alined with the slot in said hub, said combination member may be freely placed over or removed from said first member, and when said notches and slot are out of alinement, said members will be secured against separation to retain said first member within the keyhole, the remaining notches of said series in each disk serving to prevent "feeling" of the combination.

14. A keyhole guard comprising a member adapted to be inserted and retained within the keyhole and having a portion projecting outside thereof, a combination member comprising a plurality of combination elements arranged to be rotatably mounted over said projecting portion, said elements having notches adapted to be alined to freely receive said projecting portion, having means whereby when said notches are out of alinement said combination member will be retained upon said first member, said combination elements also having means to prevent "feeling" of the combination.

15. A keyhole guard comprising a member adapted to be inserted and retained within the keyhole and having a portion projecting outside the same, a combination member adapted to receive said projecting portion and to be retained thereon to prevent the withdrawal of said first mentioned member from the keyhole, said combination member comprising a plurality of combination elements, said projecting portion having means adapted to cooperate with said elements to prevent separation of said members when the latter are in one adjustment and to permit free separation thereof when in another ad-

justment, indicating marks on said elements to indicate the proper adjustment thereof for separation of said members, and a fixed indicating mark adapted to cooperate with the marks on said elements to determine the proper adjustment of the latter.

16. A keyhole guard comprising a member adapted to be inserted and retained within the keyhole, a combination element constructed and arranged to engage the same within said keyhole, said combination member comprising a central slotted hub, a plurality of combination elements rotatably mounted thereon, each consisting of an annular ring having indicating marks adjacent the perimeter thereof and a central apertured disk adapted to be removably positioned within said ring, said disk having a series of radially arranged notches disposed about its aperture, one of said notches extending completely through the disk, the remaining notches extending only partially through the disk, said combination elements arranged to permit alinement of said radial notches with the slot in said hub, whereby when said "through" notches are alined with said slot, the combination member may be readily placed upon or removed from said first member and when said "through" notches are out of alinement, said combination member will be retained upon said first element, the remaining notches of the series on each disk being provided to prevent feeling of the combination in conjunction with said first member.

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