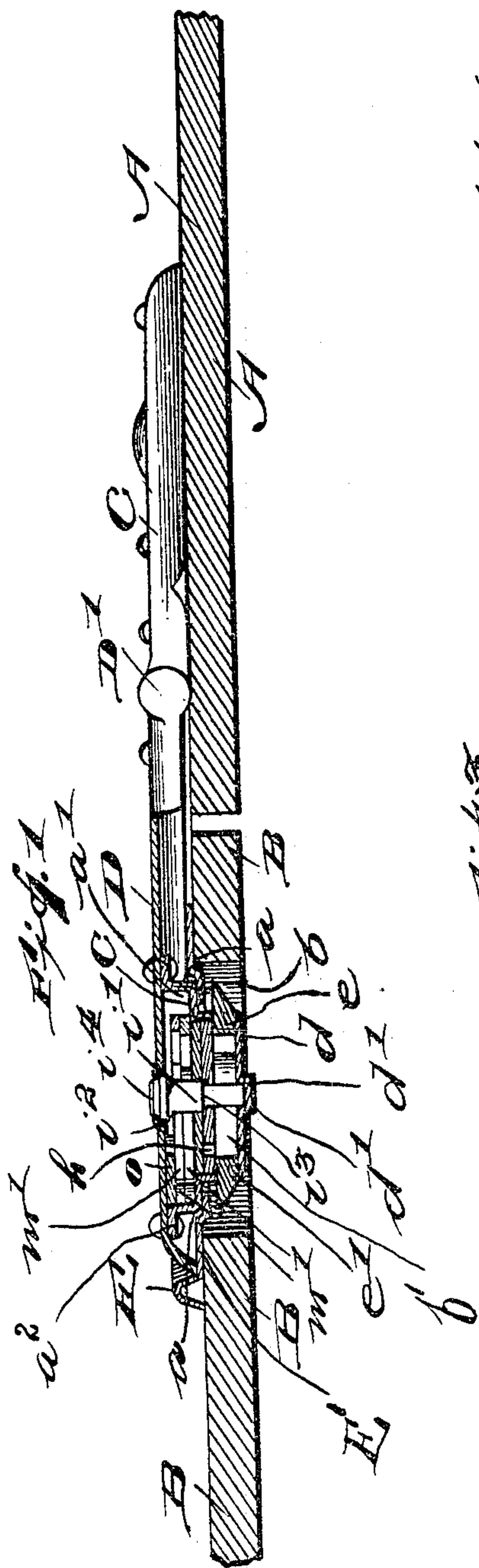


No. 799,289.

PATENTED SEPT. 12, 1905.

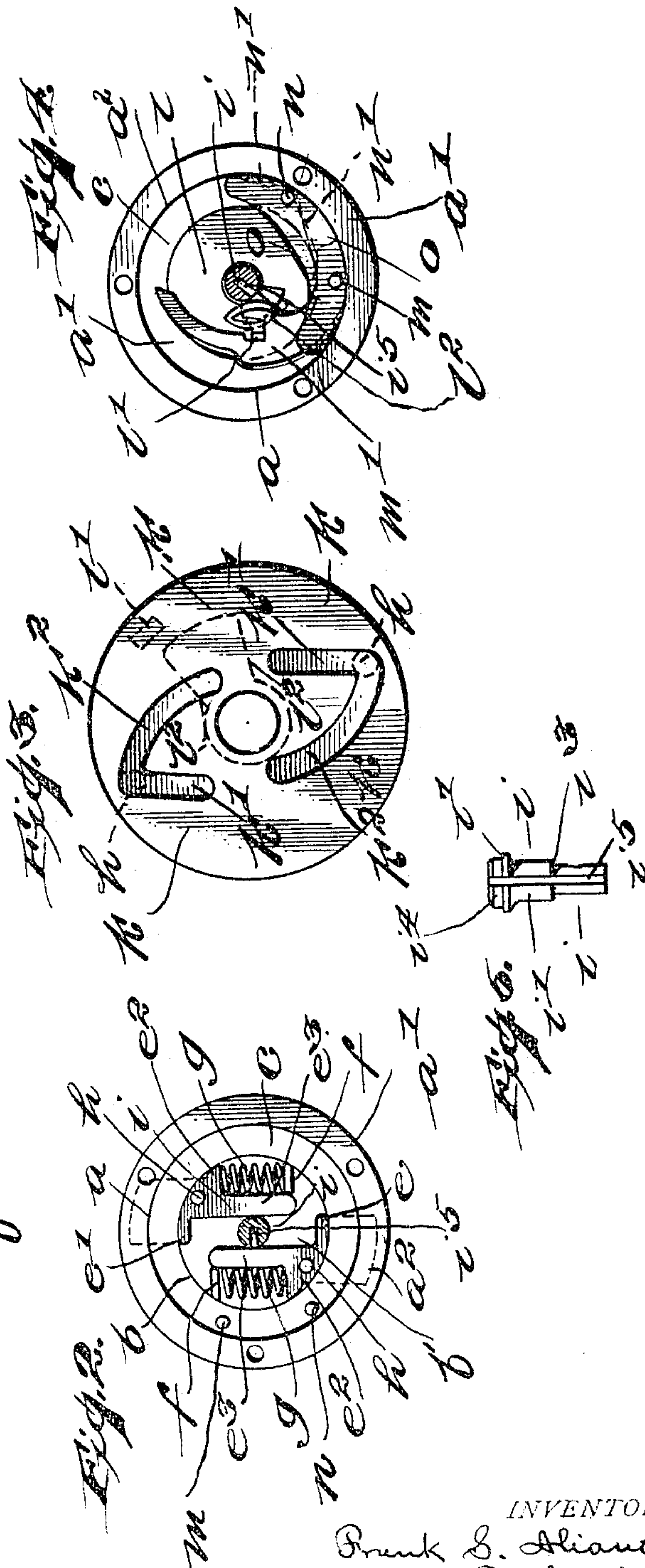
F. S. ALIANO.
LOCK.

APPLIOATION FILED NOV. 1. 1904.



WITNESSES:

W. J. Wentworth



INVENTOR.

Frank S. Aliano,
BY N. L. Frothingham
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UNITED STATES PATENT OFFICE.

FRANK S. ALIANO, OF NEW YORK, N. Y.

LOCK.

No. 799,289.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Application filed November 1, 1904. Serial No. 230,891.

To all whom it may concern:

Be it known that I, FRANK S. ALIANO, a citizen of the United States, residing at the borough of Brooklyn, in the city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Locks, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

My invention relates to improvements in locks, and more particularly to a class of spring or snap locks wherein the bolt or bolts are adapted to automatically enter its or their sockets when the lock is closed.

The object of my invention is to provide a lock of this character embodying all the main characteristics of the lock patented to me in and by Letters Patent of the United States, No. 760,599, under date of May 24, 1904, and also certain details of construction simplifying the manufacture thereof.

A further object is to provide a lock of that character wherein the bolts carry pins or studs, which are seated in ways in the controlling plate or disk and are both permitted to move therein, and actuated thereby, respectively, when the bolts act automatically or under the control of the key and said plate.

A further object is to so adapt a lock of the aforesaid character as to permit the use therewith of the ordinary and well-known type of key-barrel.

A still further object is to provide means retaining the tumblers and their springs in their chamber and avoid that disarrangement thereof which might result through the chamfered effect of the top edge of the cup due to the stamping of said cup from sheet metal, and a still further object is to provide a controlling plate or disk, which will be so constructed as to insure stability of the parts carried thereon and supported thereby and simplify the production thereof.

The invention consists in the novel features of construction and arrangement of parts hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawings, Figure 1 is a longitudinal section of a lock embodying my invention. Fig. 2 is a plan view of the bolt-chamber with the controlling plate or disk and the tumbler mechanism removed from the lock-cup. Fig. 3 is an enlarged view of the bottom of the controlling plate or disk,

indicating in dotted lines the portions cut from the top disk or plate and the tumbler-pin carried thereby. Fig. 4 is a plan view of the cup, showing the tumbler mechanism and its guard-plate, and Fig. 5 is a detail view of the key-barrel.

Like letters refer to like parts throughout the several views.

In the drawings the two adjoining parts to be locked relative to each other, which ordinarily comprise a trunk-body and its top, are indicated by the letters A and B. To one of these, as A, is permanently fixed a plate C, to which is hinged a hasp D, having over-turned side flaps D', confining the pivot of the hinge. This construction is well known in this art, and I lay no claim of invention thereto.

Secured to the other part, as B, is a socket-plate E, having a narrow seat E' for the lock-cup, to be hereinafter described, when the lock is closed, and a central circular opening, as described in my aforesaid Letters Patent.

Permanently attached to the hasp D is a lock casing or cup, preferably stamped or formed up of a single piece of sheet metal. This cup, as described in my aforesaid Letters Patent, comprises two superposed cylindrical portions *a* and *b*, forming an upper or tumbler chamber *a'* and a lower or bolt chamber *b'*, the upper of which is of greater diameter than the lower, being connected therewith by an offset portion *c*, presenting upwardly within the chamber *a'* a seat and bearing for the tumblers and a support for the pivot-pin of the tumblers and the tensioning-pin for the tumbler-springs and downwardly above the face of the bolts a contact-face adapted to engage the seat E' of the socket-plate E. The casing or cup has a bottom *d*, centrally of which is formed a cup or pintle bearing *d'* for the lower end of the key-barrel, and a top flange *a''*, by means of which it is riveted to the hasp D.

Substantially oppositely disposed bolt-holes are cut in the wall *b*, and seated in the bolt-chamber *b'* and protruding through these openings are sliding bolts *e e'*. These bolts each comprise the locking portion having the usual plane face substantially parallel with the lower face of the offset *c* and with the lower face of the socket-plate seat E' and the beveled under surface adapted by engagement with the said socket-seat to retract the bolt to insure an automatic engagement of the bolts therewith. Each bolt is provided with a stop-shoulder *e''* within the chamber *b'*,

the opposite sides of which conform to the wall b and form a spring-seat. Each bolt is further provided with a rearwardly-projected guide-shank e^3 , which passes to one side of
5 and closely adjoining the bearing d' .

Within the chamber b' I provide a metallic partition f parallel with the seat formed on the stop e^2 , which may either consist of a separate part riveted to the bottom d or be formed
10 up from the metal of the wall b . This partition serves as an opposed seat for the spring g and also by contact with the shank e^3 as a further guide for the bolt. These two spring-seats, the said shank, and the wall b form a
15 spring-chamber which prevents displacement of said spring, the controlling-plate serving to close this chamber. Each bolt carries adjacent to the stop e^2 and alined with the shank e^3 a stud h , driven thereinto or otherwise
20 firmly attached thereto. The rotary key-barrel i passes between the two bolts and serves as a guide therefor.

Resting upon the bolts e e' and closing the chamber b' is a rotary controlling plate or
25 disk. In order to simplify and cheapen the construction of the said disk, I make it of two separate plates k l , which are separately finished and secured together, as by rivets, to form a single composite disk. The lower of
30 these plates has cut therethrough channels k' k^2 , meeting at a point coincident with the position of the stud h when the bolts are projected from their chamber, which stud normally is seated in the continuous channel so
35 formed at that point. One of these channels, k' , is a straight way parallel with the shank e^3 , and the other, k^2 , is curved in toward the center of said disk to form a double-acting cam the throw of which is substantially that
40 required to retract its bolt and permit it to project to the desired extent. The other or upper disk l carries the tumbler-stud l' , which is riveted thereto before the two disks are united. This disk also has punched there-
45 through the key-seat opening l^2 , the sides of which are respectively engaged by the key in rotating the plate in opposite directions and the central seat-opening for the key-barrel.

The tumbler-pivot pin m is driven through
50 or riveted to the offset c , and mounted thereon in the usual manner are tumblers m' of the usual construction. Adjacent to the pivot-pin m and secured to the offset c in the same manner is the spring-tensioning pin n , and se-
55 cured in place thereby are the tumbler-springs n' , each acting on a short arm of its tumbler.

The slight curve to the top edge of the wall a necessitates the tumblers and their springs being disposed slightly below the plane of the
60 flange a' , and to compensate for the space between these parts and the hasp or other support for the lock-cup and possible looseness of these parts I inclose the same with a top guard-plate o , fitted upon the pins m and n , and
65 extended so as to engage the tumblers near

their pivot m , the entire spring n' , and the said hasp or other support, and thus avoid movement of the said tumblers and springs except as desired.

The key-barrel i is in most respects the or- 70
dinary part of this character now in general use, the application thereof to this invention requiring an elongation of the lower end thereof to adapt it to its functions as a fixed guide for the bolt-shanks e^3 . It comprises a body por- 75
tion i' , presenting oppositely-disposed shoulders i^2 i^3 , adapted, respectively, to abut against the disk k after passing through the central opening in the plate l provided therefor, and thus firmly hold said disk in place. As stated, 80
below this shoulder i^3 the stem of said barrel is extended to pass through the chamber b' and enter the cup or pintle bearing d' , serving within said chamber as a guide for the sliding bolts e e' . The upper end i^4 of this bar- 85
rel is finished and projects through the hasp D in the usual and well-known manner. I mill a slot i^5 longitudinally of said barrel, which slot is adapted to aline with the key-seat opening l^2 , and also with a cut in the said 90
hasp, to facilitate the entrance of the key in the barrel properly positioned relative to the plate or disk controlling the bolts.

The various corners of the bolts and their shanks within the chamber b' are rounded or 95
chamfered so that any collision of these parts will result in their being readily forced to place and avoid blocking of the bolts and material inconvenience in unlocking the lock.

It will readily be observed that the various 100
parts when once assembled cannot become displaced in use, and that by reason of the socket-plate having a true or substantially true circle the lock may be readily affixed to the trunk or other article by merely placing 105
them together locked, and that when once so placed there can be no possibility of their being so improperly adjusted as to prevent the bolts entering the socket-opening.

The herein-described lock has all the ad- 110
vantages of a greater number of safety combinations of the tumblers through the large diameter of the tumbler-chamber a' , described in my Letters Patent aforesaid, as well as those afforded by the relative offset c and its 115
several pins.

In opening the lock an ordinary flat key is inserted in the slot i^5 , the fingers thereof passing through the opening in the hasp D until it enters the key-seat opening l^2 , whereupon 120
it, with the barrel i , is turned, swinging the tumblers upon their pivot m and tensioning their springs n' until the stud l' is released, thus permitting the key to engage the other side of the said key-seat. Thereafter said 125
disk is rotated with said barrel and its key. As said disk turns the outer cam-surface of each channel k^2 , through the stud h , draws the bolts within the chamber b' sufficiently to permit their passage through the socket-plate 130

E, both bolts acting simultaneously against the tension of the respective springs g , their shanks sliding between the barrel i and the partition f . The hasp may then be raised and the key withdrawn by rotating the barrel i and disk in the opposite direction, thus restoring both bolts to their former positions, the inner cam-surfaces of the way k^2 and the springs g both contributing to this action.

The tumblers during the above operation will act in their usual and well-known manner.

It will be observed that when the bolts are in their normal position, with the way k' alined with the shank e^3 , said stud h is free to move in said way, so that the bolts may be forced within the chamber b' without the necessity of rotating the said disk, thus permitting the bolts to be automatically shot by simply bringing the hasp down upon the plate E and exerting sufficient pressure thereon to overcome the tension of the springs g .

The controlling-disk is made of two plates k / in order to admit of their being stamped up out of sheet metal, castings, machine-finished, not being sufficiently accurate and inexpensive.

It is apparent that the improvements herein described are applicable to the various types of locks described in my aforesaid Letters Patent, and I do not, therefore, wish to be understood as limiting the scope of this invention to the specific details shown beyond those limitations imposed by the claims hereto appended.

Having described my invention, what I claim as new, and desire to have protected by Letters Patent, is—

1. In a lock, the combination with a lock-cup, a support therefor, a sliding bolt having a stud thereon seated within said cup, a spring whereby said bolt is normally projected through a bolt-opening in said cup, a rotary plate or disk having a continuous channel therein presenting a straight way and a cam-surface whereby said stud may move in said way independently of movement of said plate, and be actuated by said cam to permit the bolt to be forced within said cup by said cam-surface, and means controlling said disk or plate, of a socket-plate.

2. In a lock, the combination with a lock-cup, comprising two superposed cylindrical portions connected by an offset portion, forming respectively a bolt and a tumbler chamber, said bolt-chamber having a bolt-opening through its side wall, a support therefor, a sliding bolt having a stud on the upper face thereof seated in said bolt-chamber; means guiding said bolt, a spring whereby said bolt is normally projected beyond said bolt-chamber, a rotary plate or disk closing said bolt-chamber having therein a continuous channel presenting a straight way and a cam-surface whereby said stud may move in said way independently of movement of said disk or plate,

and be actuated by said cam to permit said bolt to be forced within said bolt-chamber, and a key-socket and tumbler mechanism within said tumbler-chamber, of a socket-plate.

3. In a lock, the combination with a lock-cup, comprising two superposed cylindrical portions connected by an offset portion, forming respectively a bolt and a tumbler chamber, said bolt-chamber having a bolt-opening through its side wall and a cup or pintle bearing depressed in its bottom, a support therefor, a sliding bolt having a stud on the upper face thereof seated in said bolt-chamber, a spring whereby said bolt is normally projected beyond said bolt-chamber, a rotary plate or disk closing said bolt-chamber having therein a continuous channel presenting a straight way and a cam-surface whereby said stud may move in said way independently of movement of said plate or disk, and be actuated by said cam to permit said bolt to be drawn or forced within said bolt-chamber, a key-barrel having shoulders thereon engaging said disk and said support and an elongated shank passing through said bolt-chamber, guiding said bolt and entering said cup or pintle bearing, and a tumbler mechanism within said tumbler-chamber, of a socket-plate.

4. In a lock, the combination with a lock-cup, comprising two superposed cylindrical portions connected by an offset portion, forming respectively a bolt and a tumbler chamber and having oppositely-disposed bolt-openings in the side walls of said bolt-chamber, a support therefor, a plurality of sliding bolts each having a stud on its upper face and a reduced shank, seated in said bolt-chamber, means guiding said shanks, springs whereby each bolt is normally projected beyond said bolt-chamber, a rotary plate or disk closing said bolt-chamber, having therein a plurality of continuous channels, each presenting a straight way alined with the shank of a bolt and a cam-surface, whereby each stud may move independently of movement of said plate in its straight way, and be actuated by its cam to permit said bolt to be drawn or forced within said bolt-chamber, and a key-socket and tumbler mechanism within said tumbler-chamber, of a socket-plate.

5. In a lock, the combination with a lock-cup comprising two superposed cylindrical portions connected by an offset portion, forming respectively a bolt-chamber and a tumbler-chamber, said bolt-chamber having oppositely-disposed bolt-openings in its side walls and a cup or pintle bearing depressed in its bottom, a support therefor, a plurality of sliding bolts each having a stud on its upper face and a reduced shank, seated in said bolt-chamber, springs whereby each bolt is normally projected beyond said bolt-chamber, a rotary plate or disk closing said bolt-chamber having therein a plurality of continuous channels

each presenting a straight way and a cam-surface whereby each stud may move in its straight way independently of movement of said plate or disk, and be actuated by its cam
 5 to permit said bolts to be drawn or forced within said bolt-chamber, a key-barrel having shoulders thereon engaging said disk and said support and a shank passing through said bolt-chamber, between said shanks and enter-
 10 ing said cup or pintle bearing, and a tumbler mechanism within said tumbler-chamber, of a socket-plate.

6. In a lock, the combination with a lock-cup, comprising two superposed cylindrical
 15 portions connected by an offset portion, forming respectively a bolt-chamber having oppositely-disposed bolt-openings therein and a tumbler-chamber, said bolt-chamber having a cup or pintle bearing depressed in its bot-
 20 tom, a support therefor, a plurality of sliding bolts each having a stud on its upper face, a shoulder near its protruding end forming a spring-seat, and a reduced shank, seated in
 25 with one of said shoulders and contacting with the said shank on each bolt, springs acting against said shoulders and said partitions respectively whereby said bolts are normally projected beyond said bolt-chamber, a rotary
 30 plate closing said bolt-chamber having therein a plurality of continuous channels each presenting a straight way alined with a shank of one of said bolts and a cam-surface where-
 35 by each stud may move in its way independ- ently of movement of said plate or disk, and be actuated by its cam to permit said bolts to be drawn or forced within said bolt-chamber, a key-barrel having shoulders thereon en-
 40 gaging said disk and said support and a shank passing through said bolt-chamber between said shanks and entering said cup or pintle bearing, and a tumbler mechanism within said tumbler-chamber, of a socket-plate.

7. In a lock, the combination with a lock-
 45 cup, comprising two superposed cylindrical portions connected by an offset portion, form-

ing respectively a bolt and a tumbler cham-ber, said bolt-chamber having a bolt-opening through its side wall, a support therefor, a
 50 sliding bolt having a stud on the upper face thereof seated in said bolt-chamber, means guiding said bolt, a spring whereby said bolt is normally projected beyond said bolt-cham-
 55 ber, a rotary plate or disk closing said bolt-chamber, having therein a continuous chan- nel presenting a straight way and a cam-sur-
 face whereby said stud may move in said way independently of movement of said disk or plate, and be actuated by said cam to per-
 60 mit said bolt to be forced within said bolt-chamber, a pivot-pin and a spring-tensioning pin mounted on said offset portion in said tumbler-chamber, a plurality of tumblers and
 65 tumbler-springs mounted respectively on said pins, a guard-plate inclosing said tumblers and said springs mounted on said pins, a key-socket on said disk and means whereby said disk may be turned, of a socket-plate.

8. In a lock, a controlling-plate comprising two united plates, one of which has a straight
 70 way and a cam-slot cut therefrom, and the other of which carries a tumbler-locking pin riveted thereto, a key-socket opening cut therefrom and both of said plates having a central key-stud opening cut therethrough.
 75

9. In a lock, a controlling-plate comprising two united plates, one of which has a straight
 way and a cam-slot cut therefrom, and the other of which carries a tumbler-locking pin
 80 riveted thereto and a key-socket opening cut therefrom and both of said plates having a central key-barrel opening cut therethrough, the opening in the upper of said plates being larger than in the lower.

In witness whereof I have hereunto affixed
 85 my signature, this 29th day of October, 1904, in the presence of two witnesses.

FRANK S. ALIANO.

Witnesses:

FRANK T. WENTWORTH,
 WM. H. BLAIN.