Oct. 3, 1939. E. LIPINER 2,174,890

DOOR LOCK

Filed Aug. 3, 1938 2 Sheets-Sheet 1

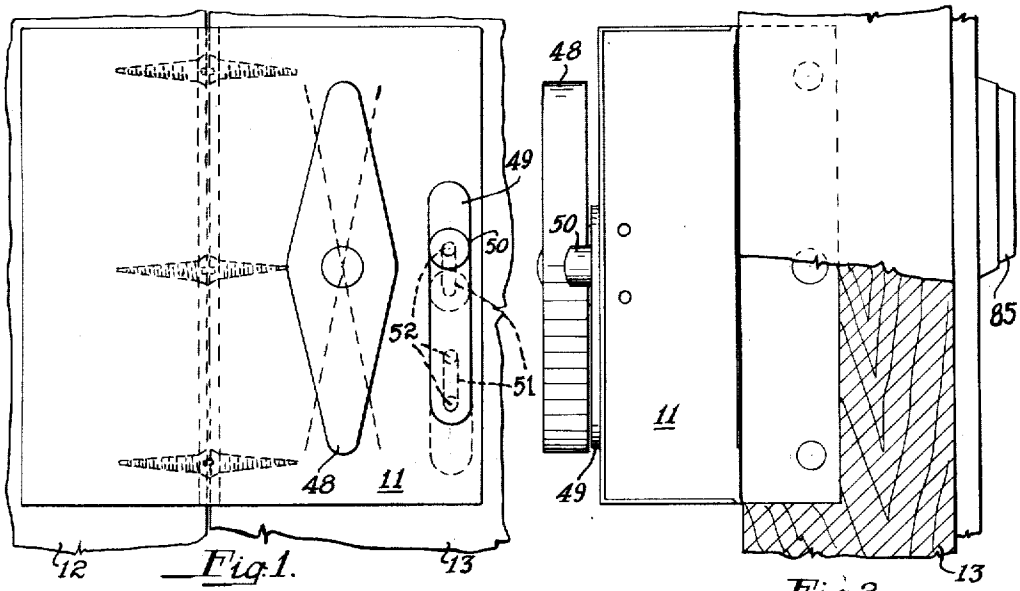


Fig. 1.

Fig. 2.

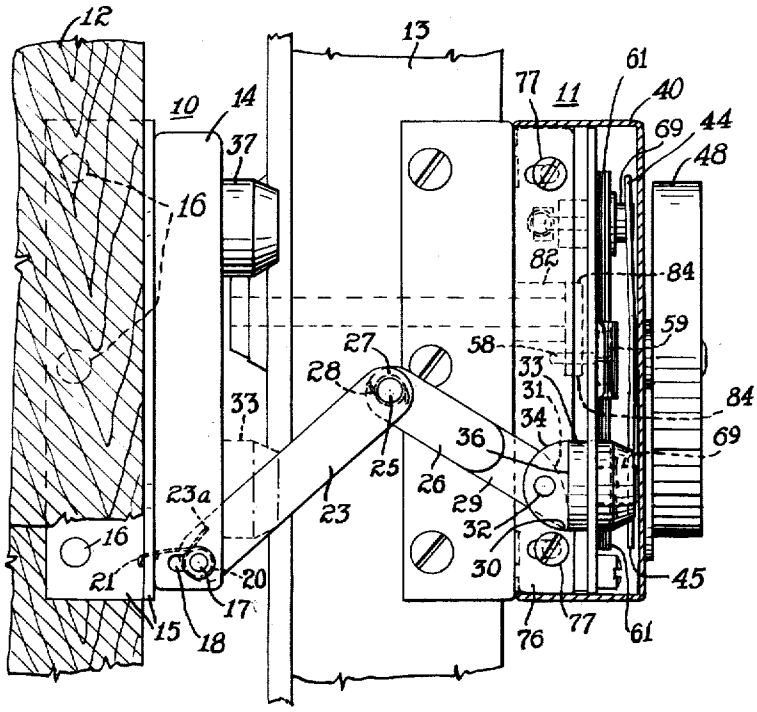


Fig. 3.

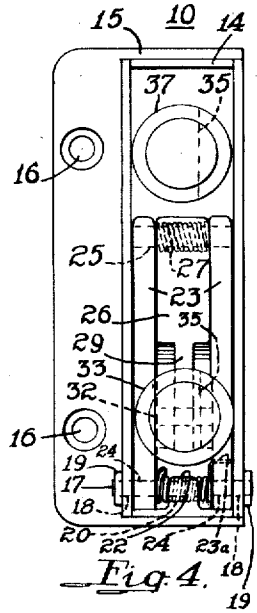


Fig. 4.

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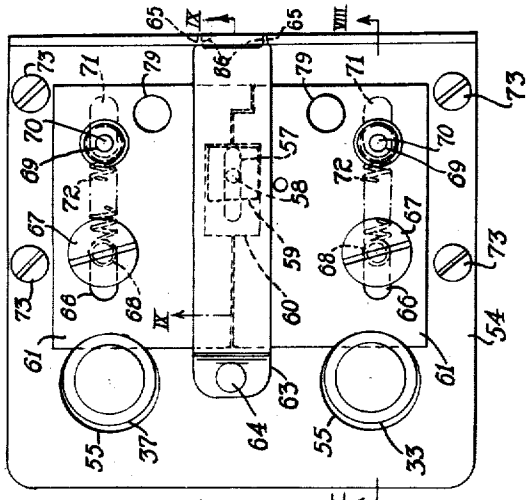


Fig. 6.

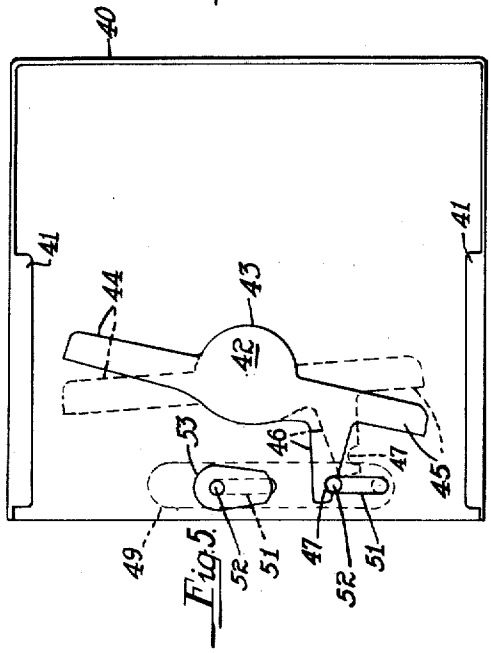


Fig. 5.

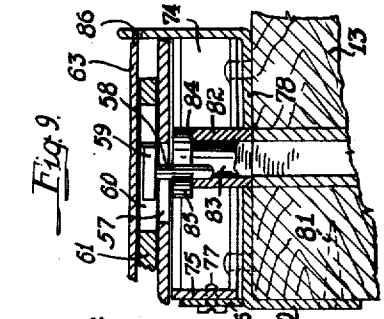


Fig. 9.

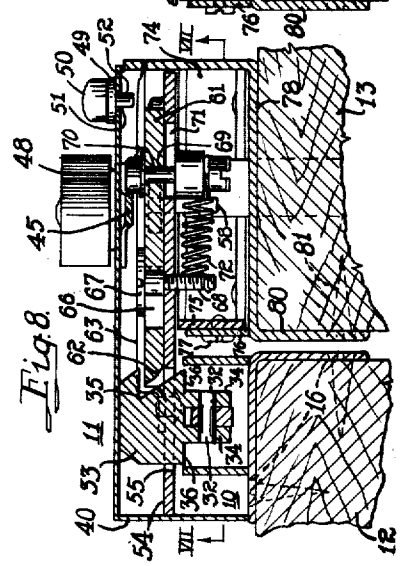


Fig. 8.

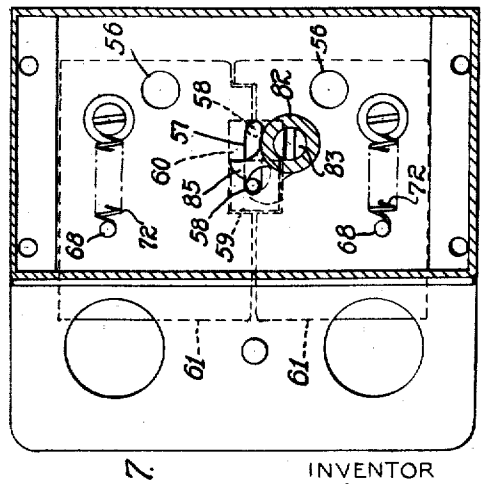


Fig. 7.

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2,174,890

UNITED STATES PATENT OFFICE

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DOOR LOCK

Edmund Lipiner, Chorzow, Poland

Application August 3, 1938, Serial No. 222,830

7 Claims. (Cl. 70—93)

My present invention relates to the lock art and is particularly concerned with a door lock having new and useful features of construction.

In their common form, door locks are made so that a door can only be locked in closed position or the lock unlocked to fully release the door.

Such locks have the inherent disadvantage that the door can not be partially opened without fully releasing the lock, and under such conditions it is easily possible for an intruder to force entrance.

Chains have been used under such conditions which have the advantage of enabling the door to be partially opened while still offering some protection against intruders, but such chains are too easily removed or destroyed from the outside. To open the door fully, the door must first be closed to release the chain and this arrangement is, therefore, disadvantageous and objectionable.

Some proposals have been made to produce a door lock which is provided with one or more so-called barring devices as a part of the lock to enable the door to be partially opened without fully unlocking the door. Such structures as have been proposed in prior patents are themselves subject to disadvantages in that they are easily broken, easily become maladjusted, and depend upon the use of springs which have a short effective life. There are other recognized disadvantages such as relative high cost and difficulty of repairing or replacing parts.

It is, accordingly, one of the objects of my present invention to provide a door-lock which is not only novel and useful in its features of construction but which makes possible functions and advantages not shared by prior locks.

Another object of the invention resides in a door lock so constructed that a door can be fully locked, partially released and fully released, and which is provided with means for preventing either a partial or a full release of the lock, such means being rendered operative or inoperative at will from the room side of the door.

An additional object of the invention resides in a door lock composed of two units, one of which is adapted to be attached to a door and the other of which is adapted to be attached to a door jamb or frame, the construction being such that the units cooperate to provide the functions and advantages already set forth.

A further object of the invention comprises a door lock of substantial but relatively simple construction which can be produced at moderate cost, will give long trouble-free service and which gives a maximum of protection.

A still further object of the invention resides in a door lock which has a plurality of locking means or elements of such nature and construction that one or all of said locking means can be rendered operative or inoperative at will.

Other and further objects and advantages reside in the combinations, sub-combinations, and details of construction hereinafter set forth and in such other and further matters as will be understood by those skilled in this art.

In the accompanying drawings wherein I have illustrated a preferred embodiment of the invention:

Figure 1 is an elevational view of the two units comprising the lock in the position they assume when the door is closed;

Fig. 2 is an elevational end view of the lock looking from right to left in Fig. 1;

Fig. 3 is an elevational view, partly in vertical section, of the present door lock when the same is in partially released condition;

Fig. 4 is an elevational view of that unit of the lock which is attached to the door jamb looking from right to left in Fig. 3 but with the parts in the positions they assume when the lock is fully released;

Fig. 5 is an elevational view of the inside of the housing forming a part of that unit which is adapted to be attached to a door;

Fig. 6 is an elevational view of the rear of that portion of the lock which is received within the housing of Fig. 5;

Fig. 7 is a sectional view taken on line VII—VII of Fig. 8;

Fig. 8 is a sectional view taken on line VIII—VIII of Fig. 6; and

Fig. 9 is a sectional view taken on line IX—IX of Fig. 6.

Like numerals designate corresponding parts throughout the various views of the drawings.

The door lock comprising my present invention is made up of two units, 10 and 11, one of which (10) is adapted to be attached to a door jamb 12 and the other of which (11) is adapted to be attached to a door 13. Referring to the former first, the unit 10 has a box-like member 14 attached to an angle iron 15 which is provided with suitable holes 16 whereby the same may be attached to a corner of the door jamb indicated at 12. The box-like member 14 is provided at one end with a short shaft 17 which traverses the interior of the box-like member and projects slightly through the slots 18 formed in the sides of the

box, washers 19 surrounding the shaft ends. This shaft 17 has a strong spring 20 coiled around the central portion thereof and one end 21 of this spring 20 is anchored by passing it through a small hole in the bottom of the box 14 and the angle iron 15 and by bending it over to hold it in this position. The central portion of the spring is protected by an ear 22 which extends inwardly from the central portion of the adjacent box end.

The other end of the spring 20 is anchored in a hole 23a in one of the spaced parallel arms 23. The shaft 17 passes through these arms 23, apertures 24 being provided for such purpose. At their distal ends the arms 23 have a pin 25 passing therethrough and between these arms is secured one end of a link 26 through which pin 25 also passes. The link end is cut away internally so as to provide a space for a spring 27, this spring being coiled around the pin 25 and having one end anchored in a slot 28 in the link end. The previously mentioned spring 20 is so mounted as to urge arms 23 within the box 14 whereas the latter spring 27 is so constructed and positioned as to urge the link 26 into a position between and flush with said arms 23.

The other end of the link 26 is cut away to produce a reduced end 29 and this end 29 is so configured as to have a beveled point 30 and an intermediate rounded portion 31 through which passes a rivet or the like 32 on which is pivoted the interlocking bolt 33 which has a bifurcated portion 34 in which the link end operates. The interlocking bolt is otherwise somewhat mushroom shape except that on one side it has an undercut groove 35. When the unit is collapsed (as in Fig. 4) the shoulders 36 of the bolt 33 rest against the upper edges of the arms 23. The beveled point 30 of the end of link 26 is adapted to abut against the under surface of the interlocking bolt between the bifurcated portions 34 thereof to limit relative movement of the link and head. Near the other end of the box 14 a stationary interlocking bolt 37 is mounted and this has an undercut groove 35 in its side similar to that already described in connection with the first interlocking bolt 33. The slots 35 are in vertical alignment and are adapted to effect proper cooperation with the locking elements to be described hereinafter in connection with the unit 11.

The unit (11) which is adapted to be attached to a door 13 is provided with a housing 40 which is box-like in nature except that it has one open side and a pair of opposed inturned flanges 41 and covers the unit 10 when the door is closed. Mounted interiorly of the housing 40 is a locking device 42 which comprises a central rounded disk-like portion 43, a lever arm 44, and an oppositely extending lever 45, the latter lever arm having a lateral extension 46 in which a semi-circular cut-out portion 47 is formed. This locking device 42 is connected suitably to and is operated by a handle 48 on the outer side of the housing 40 and this handle is adapted to assume the dotted line positions shown in Fig. 1, the significance of which will be pointed out hereinafter. Adjacent handle 48 is a locking slide 49 provided with a protuberance 50 by means of which it may be slid up and down. The housing 40 beneath the slide 49 is provided with two spaced vertical slots 51 through each of which a pin 52 extends, said pins being secured to the rear side of the locking slide. One such pin 52 has a shield plate 53 secured thereto which covers the upper slot 51 when the slide 49 is in its uppermost position. The lower pin 52 is adapted to be received in the semi-circular recess 47 in the lateral extension 46 of the lever arm 45, and such will be clearly understood by reference to Fig. 5. In such position the door can not be operated as will more clearly appear hereafter.

Fig. 6 particularly illustrates the portion of this unit of the lock which fits into the housing 40 and cooperates with the locking device lever arms 44 and 45 and the locking slide 49 described in connection with Fig. 5. The plate 54 extends the full area of the casing 40, that is, from one side to the other and is located just below the slide plate 61 and is provided with two large apertures 55 of sufficient size to receive the locking bolts 33, 37 hitherto described. The plate 54 is also provided with two smaller apertures 56, the purpose of which will be hereinafter understood. The plate 54 is further provided with a slot 57 through which projects the pin 58 which has a square head 59. This head 59 is designed to move within the slot or space 60 formed by cutting away portions of the locking sliding plate elements 61, these locking elements being in the form of separate but contiguous plates having one end 62 of each rounded and beveled.

Secured to one side of the plate 54 is a metal strap 63 secured at one end to said plate by a rivet or the like 64 and the other end of which is provided with two spaced leg-like projections 65. Each locking element 61 is provided with a slot 66, and a screw having an enlarged head 67 has its shank 68 passing through such slot and through said plate 54. The locking elements are also each provided with a hole 69 through which passes a short rod or pin 70, the said plate 54 being provided with the slots 71 in which said pins operate. On the opposite side of plate 54 a pair of springs 72 are mounted, each of which has one end secured to the shank 68 of a screw 67 and the other end attached to an enlarged end of a pin 70. The plate 54 is also provided with four screw holes through which pass the screws 73 which extend into the U-shaped ends 74 between which extends at one end thereof the connecting bar 75. A bar lock 76 is mounted as shown upon said bar 75 and screws 77 pass through holes provided in both members 75 and 76 in such manner that member 76 has a limited movement laterally of member 75 to make accessible or inaccessible the channel between the U-shaped member and the central portion of Z-plate 78 to prevent the possible insertion of a lock-picking blade. A Z-shaped plate 78 is provided as shown and this plate has two holes which register with the holes 56 and 79 in the plate 54 and locking elements 61, respectively. One angular extension 80 of the Z-plate is provided with apertures by means of which the same can be secured to or within a door by screws or the like 81, it being understood that preferably the door is cut away to receive an entire unit. The central portion of the Z-plate 78 has a cylindrical projection 82 which is adapted to receive the bifurcated portion of the element 83 which has a circular upper portion 84 with a somewhat radial projection 85 shaped as shown adapted to cooperate with pin 58. The other angular portion of Z-plate 78 is provided with two small apertures 86 adapted to receive the leg-like projections 65 on the bar 63. It will be noted that when pin 58 is actuated by the projection 85 just described in opposition to the springs 72, both members 61 release their bolts 33 and 37; the projection 85 is actuated by a key which is adapted to enter the slot in the bi-

furcated portion 83 which may form a part of a Yale or other standard lock which is mounted around the said slot in any suitable manner.

In operating my new door lock, assuming that the door is closed, a small clockwise movement of the operating handle releases the stationary bolt but not the bolt on the extensible linkage. This occurs because the upper lever arm 44 in the housing moves the adjacent locking plate element 61 only. When the door is opened it can open only so far as permitted by the extensible linkage. From this position the door can be fully opened by a counterclockwise movement of the operating handle as this releases the other bolt. From closed position also the door can be fully opened by a counterclockwise movement of the operating handle because the lower slide 61 retracts the upper slide.

In either closed or partially open position the lock can be prevented from being released further or at all by engaging the lower pin on the locking slide in the recess in the lateral extension of the lower locking lever. This is accomplished by a simple manipulation as will be understood. In either closed or partially open position the lock can be released by the right key from the outside. The key unlocks the regulation Yale or other lock and at the same time releases the present lock fully due to the action of the radial projection 85 on the square-headed pin shank 58.

It will be noted that the adjoining edges of elements 61 are so configured (see Figs. 6 and 7) that the upper (Fig. 6) element 61 may move alone but that movement of the other element 61 causes movement of both elements. Actuation of pin 58 by a key or the like therefore moves both elements 61 since the square head 59 acts upon adjacent portions of both elements, thus withdrawing ends 62 from engagement with grooves 35 of the interlocking bolts. When locking slide 49 is in operative (locking) position the relationship between pin 58 and projection 85 is that shown in full lines in Fig. 7, the dotted line positions being the unlocked condition of the parts. Lever arm 44, when it is moved by the handle 48, engages the plate moving means 69 when the handle is turned in one direction and when it is turned in the opposite direction it engages corresponding plate moving means 69 in the other plate and if the last mentioned plate is operated by the handle first then the cooperation between the two plates moves the other plate simultaneously.

Strap 63 is positioned in such a manner on the plate 54 that it covers the meeting edges of the plate 61 and also serves as a guide for the operating means 59 secured to the pin 58.

Handle 48 is connected with the lever 43 which in turn operates the plates according to the direction in which the handle is turned and the plates are operated as above stated by extended arms 44 and 45 engaging over the plate engaging means 69 attached to the plates.

The foregoing is intended as illustrative only and I may make various changes and modifications without departing from the spirit and principles hereof. Rather the invention is to be defined by the appended claims.

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

1. A door lock comprising a unit adapted to be attached to a door jamb, a unit adapted to be attached to a door, a normally collapsed extensible linkage having spring hinge joints to throw the links to retracted position secured to the first unit at one end and normally releasably interlocked with the second unit at the other end, means for partially separating the units by extending the extensible linkage but without releasing it and means for completely separating the units in which case said extensible linkage is released from the second unit.

2. In a door lock of the character described, a unit adapted to be attached to a door jamb, said unit comprising a box-like member secured to an angle iron, a stationary interlocking bolt disposed in one end of said box-like member, an extensible linkage pivotally mounted in the other end of said box-like member and terminating in an interlocking bolt, said extensible linkage being normally spring urged within said box-like member and each interlocking bolt being provided with a vertically aligned undercut lateral groove adapted to receive the locking elements of an associated cooperating unit.

3. Structure as set forth in claim 2 wherein the extensible linkage is composed of a pair of spaced parallel arms mounted upon a pin extending through said box-like member, a link member pivotally connected between the distal ends of said spaced arms and having a reduced opposite extremity terminating in a beveled point and a pair of opposed slots in said box-like member in which said pin is adapted to slide.

4. In a door lock unit adapted to be attached to a door, a Z-plate, a pair of U-shaped members disposed on the central portion of said Z-plate and having a connecting bar extending therebetween at one end thereof, a bar lock disposed upon said connecting bar and provided with short transverse slots, a screw passing through each such slot and into said connecting bar whereby said bar lock is capable of limited transverse movement, a housing in which said members are adapted to be positioned, a pair of opposed inturned flanges on said housing and a channel between said U-shaped members and the central portion of said Z-plate which is adapted to be rendered inaccessible when said bar lock is in one position and which is rendered accessible when said bar lock is in its other position.

5. In a door lock of the character described, a unit which is adapted to be attached to a door comprising a housing, a locking element assembly disposed in said housing and bodily removable therefrom, a pair of complementarily edged locking plates forming a part of said locking assembly and laterally movable with respect thereto, said locking plates being normally spring urged into locking position, and means permanently mounted within said housing and operated from the exterior thereof to retract one or both of said locking plates from normal position thereof, a second means in said housing and operated from the exterior to retract both of said locking plates from their normal position, said plates being provided with opposed cut away portions which together form a chamber adapted for the slidable reception of said second means.

6. In a door lock of the character described, a unit which is adapted to be attached to a door comprising a housing, a locking element assembly disposed in said housing and bodily removable therefrom, a pair of complementarily edged locking plates forming a part of said locking assembly and laterally movable with respect thereto, said locking plates being normally spring urged into locking position, and means permanently mounted within said housing and oper-

ated from the exterior thereof to retract one or both of said locking plates from normal position thereof, a bar secured at one end to the locking assembly and having an offset portion extending over the contiguous complementarily shaped locking plate edges for guiding said locking plates and means for removably attaching the end of said bar to an adjoining portion of the assembly.

7. In a door lock of the character described, a unit which is adapted to be attached to a door comprising a housing, a locking element assembly disposed in said housing and bodily removable therefrom, a pair of complementarily edged locking plates forming a part of said locking assembly and laterally movable with respect thereto, said locking plates being normally spring urged into locking position and means permanently mounted within said housing and operated from the exterior thereof to actuate one or both of said locking plates in opposition to the normal position thereof, said means comprising a central disk-like portion with a pair of diametrically oppositely extending locking lever arms one of which is provided with a lateral extension having a semi-circular recess near its lateral extremity, a pin adapted to enter said recess, a locking slide on the exterior of the housing, said pin being disposed upon said locking slide and extending through a slot provided in said housing, and means for relatively moving said pin and said recess to engaging and non-engaging positions.

EDMUND LIPINER.

CERTIFICATE OF CORRECTION.

Patent No. 2,174,890. October 3, 1939.

EDMUND LIPINER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 59, for "lever 45" read lever arm 45; page 3, second column, line 45, claim 4, for the word "inaccessible; read accessible; line 46, same claim, for "accessible" read inaccessible; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 14th day of November, A. D. 1939.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.

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