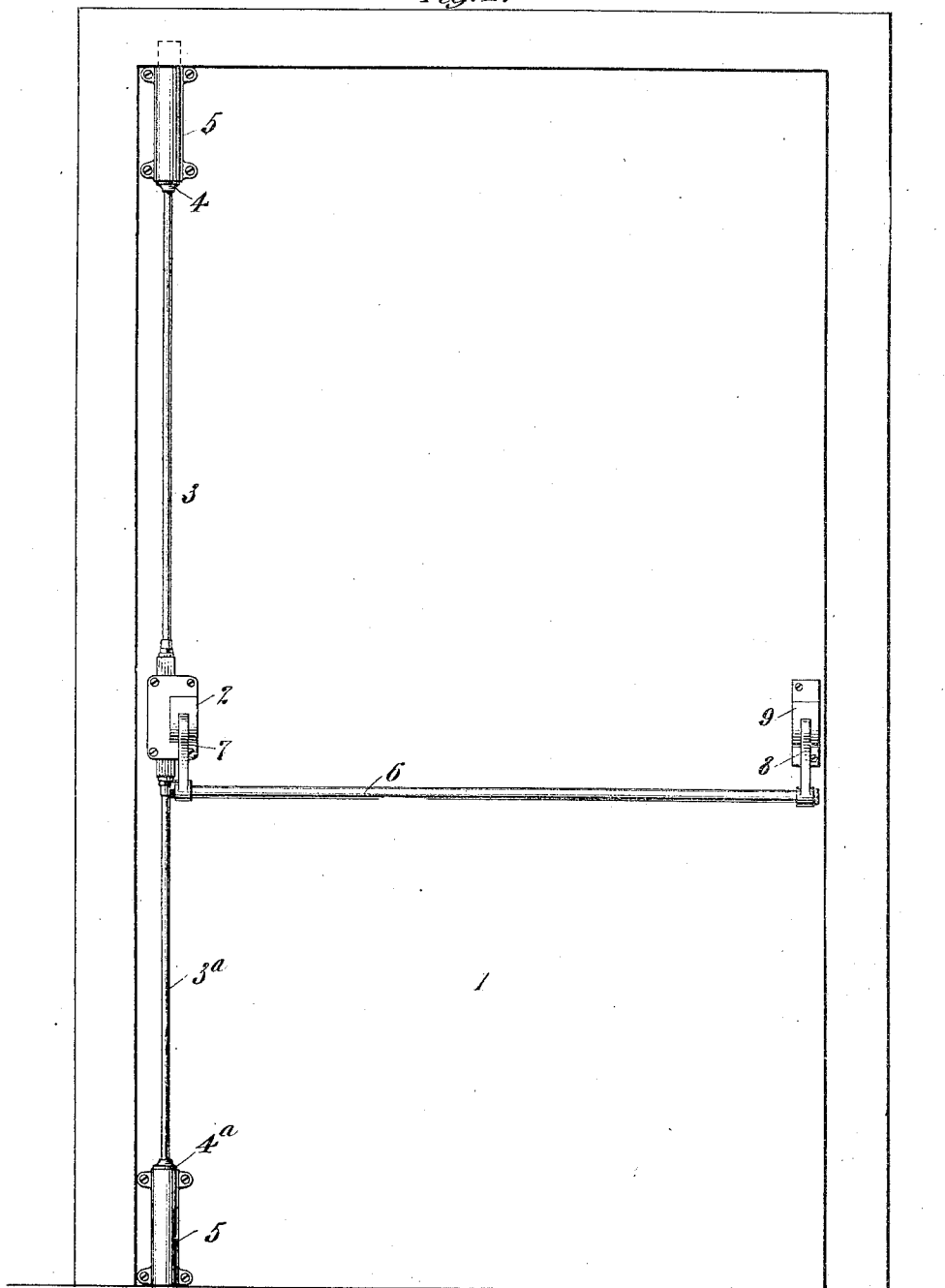


H. G. VOIGHT.
 PANIC BOLT WITH ADJUSTMENT BETWEEN TOGGLE AND BOLT.
 APPLICATION FILED OCT. 8, 1909.
 Patented June 14, 1910.
 3 SHEETS—SHEET 1.

FIG. 1.



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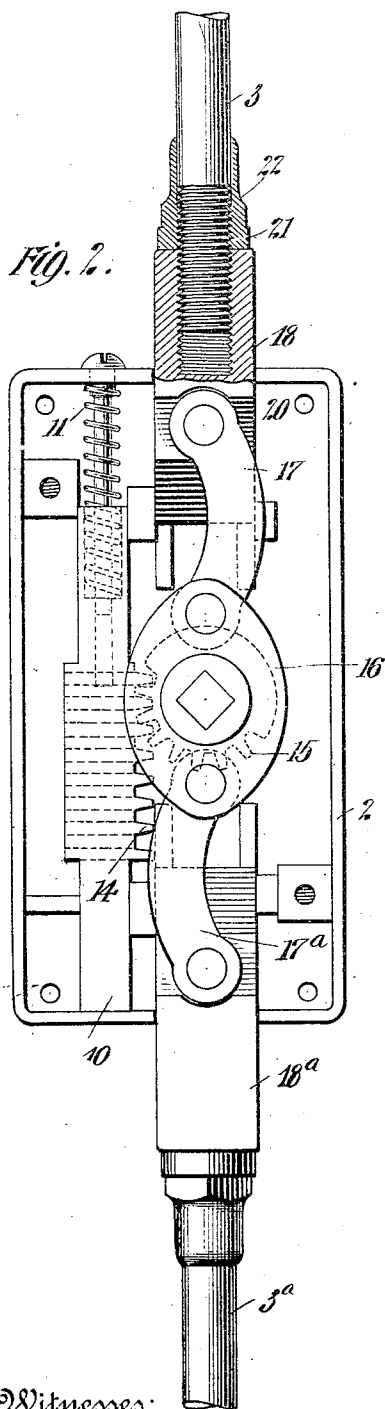
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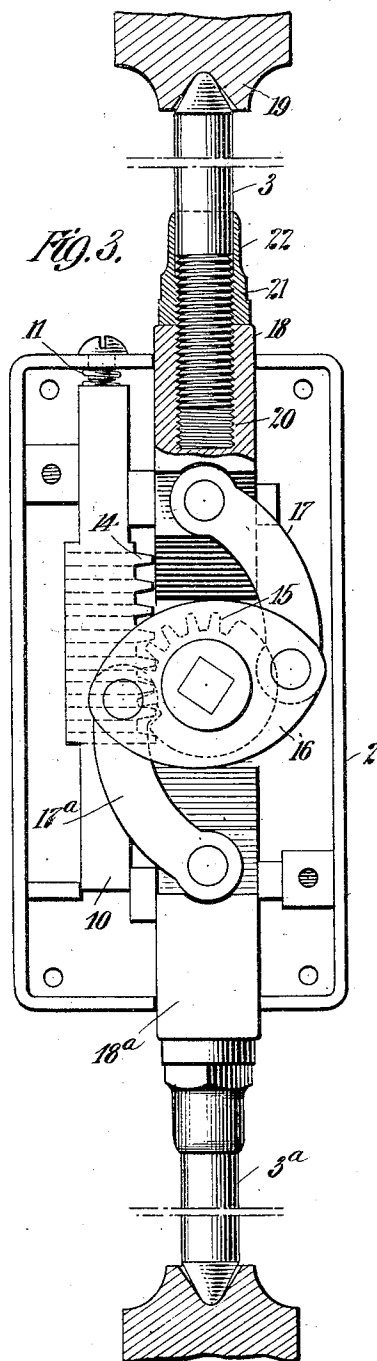
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3 SHEETS—SHEET 2.

961,327



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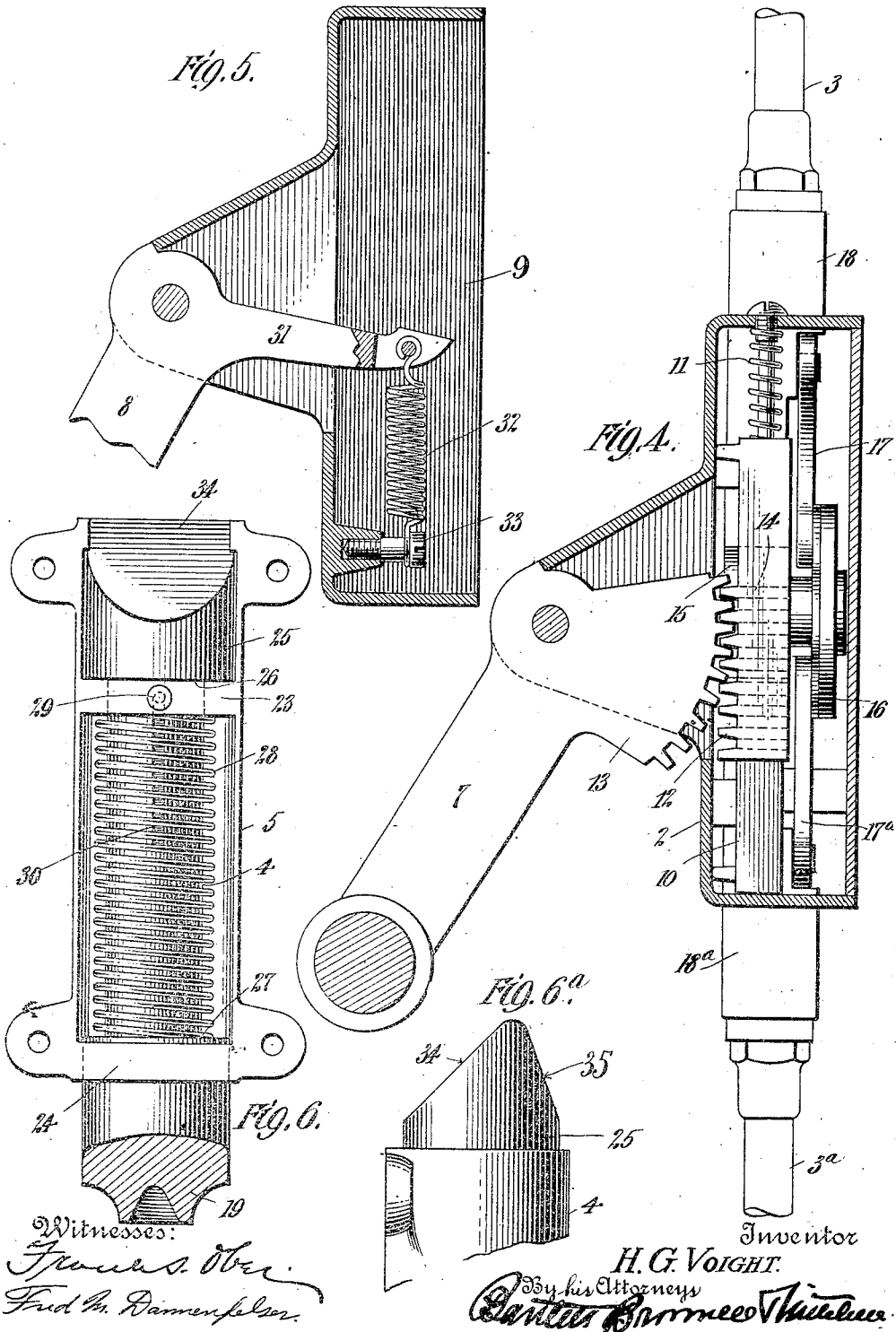
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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PANIC-BOLT WITH ADJUSTMENT BETWEEN TOGGLE AND BOLT.

961,327.

Specification of Letters Patent. Patented June 14, 1910.

Application filed October 8, 1909. Serial No. 521,765.

To all whom it may concern:

Be it known that I, HENRY G. VOIGHT, a citizen of the United States, residing at New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Panic-Bolts with Adjustments Between Toggles and Bolts, of which the following is a full, clear, and exact description.

My invention relates to improvements in locks for doors and is particularly concerned with improvements in locks of the so-called panic bolt type, which are intended for use on doors of public buildings and the like in which large numbers of persons congregate and is designed as an improvement upon the constructions illustrated in my Patent No. 912,211, granted Feb. 9, 1909, and copending application No. 447,074, filed Aug. 5, 1908. These locks are provided with means such as a bar extending transversely of the door at approximately the height of the usual lock and connected with the bolt operating mechanism whereby the bolt will be released by pressure against such bar.

The object of my invention is to provide a lock of this general description with means for adjustment between the lock bolts and the operating mechanism whereby said bolts may be at all times positioned accurately and properly with respect to their striker plates to compensate for wear on the striker plates and for variation in the relative position of the striker plate and bolt due to settling of the door or otherwise.

A further object is to simplify the lock mechanism proper by which the bolts are operated and to provide a substantially equal and uniform support of the transverse operating bar in operative position throughout its length.

With these objects in view 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 a face view of the inner side of a door showing a lock embodying my invention attached thereto. Fig. 2 is a rear view of the interior of the lock case, the cap plate being removed, showing the locking mechanism in the position assumed when the same is locked. Fig. 3 is a view similar to Fig. 2, showing the mechanism in un-

locked position. Fig. 4 is a side elevation with the case in section of the locking mechanism showing the operating lever therefor. Fig. 5 is a view similar to Fig. 4 of the supporting bracket for the outer end of the operating bar. Fig. 6 is a rear view of one of the bolt housings, showing the bolt mounted thereon, and Fig. 6^a shows a detail of one of the bolts.

In the embodiment of my invention herein selected for illustration, 1 indicates the door to which the lock is attached.

2 indicates the lock case containing the bolt operating mechanism proper.

3—3^a indicate bolt operating rods connected with the lock mechanism in the case 2 and arranged to operate the bolts 4—4^a respectively in the housings 5—5^a which are secured to the upper and lower ends of the door respectively.

6 indicates the operating bar extending transverse of the door and supported at one end by an actuating lever 7 operatively connected with the locking mechanism and at the opposite end by lever 8 mounted in the supporting bracket 9 at the opposite side of the door.

Referring to Figs. 2, 3 and 4, the bolt operating mechanism proper comprises a slide 10 mounted between suitable guides in the lock case 2 and normally held in the position indicated in Fig. 2 by means of a spring 11, said slide being provided on its forward side with a series of rack teeth 12, arranged to be engaged by a segmental rack 13 on the actuating lever 7. Said slide is also provided upon one side with a second series of rack teeth 14, arranged to mesh with a pinion 15 rotatably mounted on the lock case 2. Fixed to the pinion is a toggle lever 16, which is connected by means of toggle links 17 and 17^a with the blocks 18 and 18^a, arranged to slide within the opposite ends of the lock case and to which the bolt actuating rods 3 and 3^a are adjustably attached. The outer extremities of the actuating rods 3 and 3^a are coned to fit corresponding cone-shaped sockets 19 in the inner ends of the bolts 4 and 4^a. By this construction the actuating rods may be freely turned for adjustment. To effect such adjustment, the inner ends of said rods 3—3^a are threaded to engage corresponding threaded bores 20 in the sliding blocks 18 and 18^a respectively,

and each rod is provided with a lock nut 21 having an extended sleeve 22 which serves to conceal the threads on the rod 3 throughout a considerable range of adjusting movement of said rods, and thereby preserve a smooth finish at these points of connection.

The bolts 4 and 4^a at the top and bottom of the door respectively being of the same construction, a description of one will suffice for both.

Referring to Fig. 6, the housing 5 is provided with guides 23 and 24 in which the bolt 4 slides, and said bolt is provided at the head 25 with a shoulder 26 which normally engages the stop formed by the guideway 23 and the opposite end of the bolt is provided with a shoulder 27 between which and the guideway 23 is interposed a spring 28 which tends normally to retract the bolt within its housing. The bolt is prevented from rotation in its housing by a pin 29 engaging a slot 30 in the shank of the bolt.

Referring to Fig. 5, it will be seen that the actuating lever 8 which supports the buter end of the transverse operating bar 6 is provided with an arm 31 connected by a spring 32 with the screw stud 33 in the interior of the bracket 9, the action of said spring, together with that of the spring 11 in the lock case, tending to move the operating bar away from the door. The combined action of these springs 11 and 32 furthermore is sufficient to project the bolts 4 and 4^a against the pressure of their springs 30.

Referring to Fig. 6^a, it will be noticed that the head of the bolt is beveled at a considerable angle at 34 which beveled surface faces the outside of the door and engages the striker plate in such manner that upon outward pressure upon the door the striker plate tends to retract the bolt. In the normal locking position of the mechanism, however, the pivot connections of the links 17 and 17^a with the toggle lever 16 and with the connecting blocks 18 and 18^a are substantially in vertical alinement, as will be seen from Fig. 2, hence retraction of the bolts by outward pressure thereof on the striker plates will be blocked until these pivotal connections are drawn out of alinement by rotation of the pinion 15 through the slide 10 and bar 6. The parts are so arranged, however, that upon very slight actuation thereof by the operating bar 6 further outward pressure on the door combined with the action of the bolt springs 30 will serve effectually to retract the bolts and permit the door to freely open. The bolt heads furthermore are provided at the rear with beveled faces 35 which cooperate with the striker plate to facilitate the retraction of the bolts to permit the closing of the door. By the construction just described it will be seen that very slight movement of the transverse operating bar 6 toward the door will

serve to break the toggle connection of the locking mechanism with the bolts and that thereafter both the beveled faces 34 and the bolt springs 30 cooperate to completely retract the bolts. This mode of operation is particularly advantageous in case of panics, inasmuch as all tendency of the bolts to become jammed is practically eliminated.

While I have herein described a preferred embodiment of my invention, it is to be understood that 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. In a panic bolt for doors, a bolt operating mechanism connected therewith and comprising a rack slide, an operating lever connected therewith, a bar extending transversely of the door for operating said lever, a pinion cooperating with said rack and having a toggle connection with said bolt, and means for adjusting said bolt with respect to said toggle connection.

2. In a panic bolt for doors, a bolt, a housing therefor, means in said housing tending to retract the bolt therein, bolt operating mechanism operatively connected with said bolt and comprising a rack slide, an operating lever therefor, an operating bar extending transversely of the door to operate said lever, a toggle connection between said slide and said bolt, means in said mechanism to hold said bolt normally projected, and means for adjusting said bolt relatively to said mechanism.

3. In a panic bolt for doors, a bolt, a housing therefor, a spring in said housing tending normally to retract said bolt, bolt operating mechanism operatively connected with said bolt and comprising a rack slide, an operating lever connected therewith, a bar extending transversely of the door to operate said lever, a pinion engaging said slide, a toggle connection between said pinion and said bolt, and means for adjusting said bolt with respect to said toggle connection.

4. In a panic bolt for doors, a bolt, mechanism for operating said bolt comprising a rack slide, an actuating lever therefor, an operating bar extending transversely of the door for operating said lever, an actuating rod having a swivel connection to said bolt and adjustably secured to said mechanism whereby said bolt may be adjusted relatively to said mechanism.

5. In a panic bolt for doors, a bolt member, a lock mechanism to operate said member comprising a rack slide, an actuating lever connected therewith, an operating bar extending transversely of the door to operate said lever, a pinion cooperating with said slide, a toggle connection between said pinion and said bolt comprising a toggle lever fixed to said pinion and a link connect-

ing said lever and said bolt, and adjusting mechanism between said bolt and said link.

6. In a panic bolt for doors, two oppositely projecting bolt members, means for
 5 projecting and retracting said bolts simultaneously and in opposite directions, said means comprising a slide rack, a lever for
 10 operating said rack, an actuating bar extending transversely of the door for operating said lever by movement toward the
 door, a toggle connection between said slide rack and said bolts including a pinion engaging said slide rack, a toggle lever fixed
 15 to said pinion, toggle links operatively connecting said toggle lever and said bolts respectively, and means in said connections for adjusting the position of said bolts with respect to said lever.

7. In a panic bolt for doors, a bolt, operating mechanism therefor, a bolt operating
 20 rod extending between said mechanism and said bolt and freely rotatable with respect

to the latter, and an adjustable connection between said rod and said operating mechanism comprising a threaded nut engaging
 25 the end of said rod and having a sleeve extension to conceal the thread on said rod in all positions of adjustment of the parts.

8. In a panic bolt for doors, a bolt, operating mechanism therefor, a connection between said bolt and said mechanism comprising a rod rotatable with respect to said
 30 bolt, a sliding member operatively connected with the operating mechanism, and an adjustable connection between said sliding member and said rod comprising an adjusting
 35 nut adapted to engage the threaded end of said rod said nut having means to conceal the threads on said rod in all adjusted positions of the parts.

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