

C. BARTELS.  
SAFE DOOR CAM.

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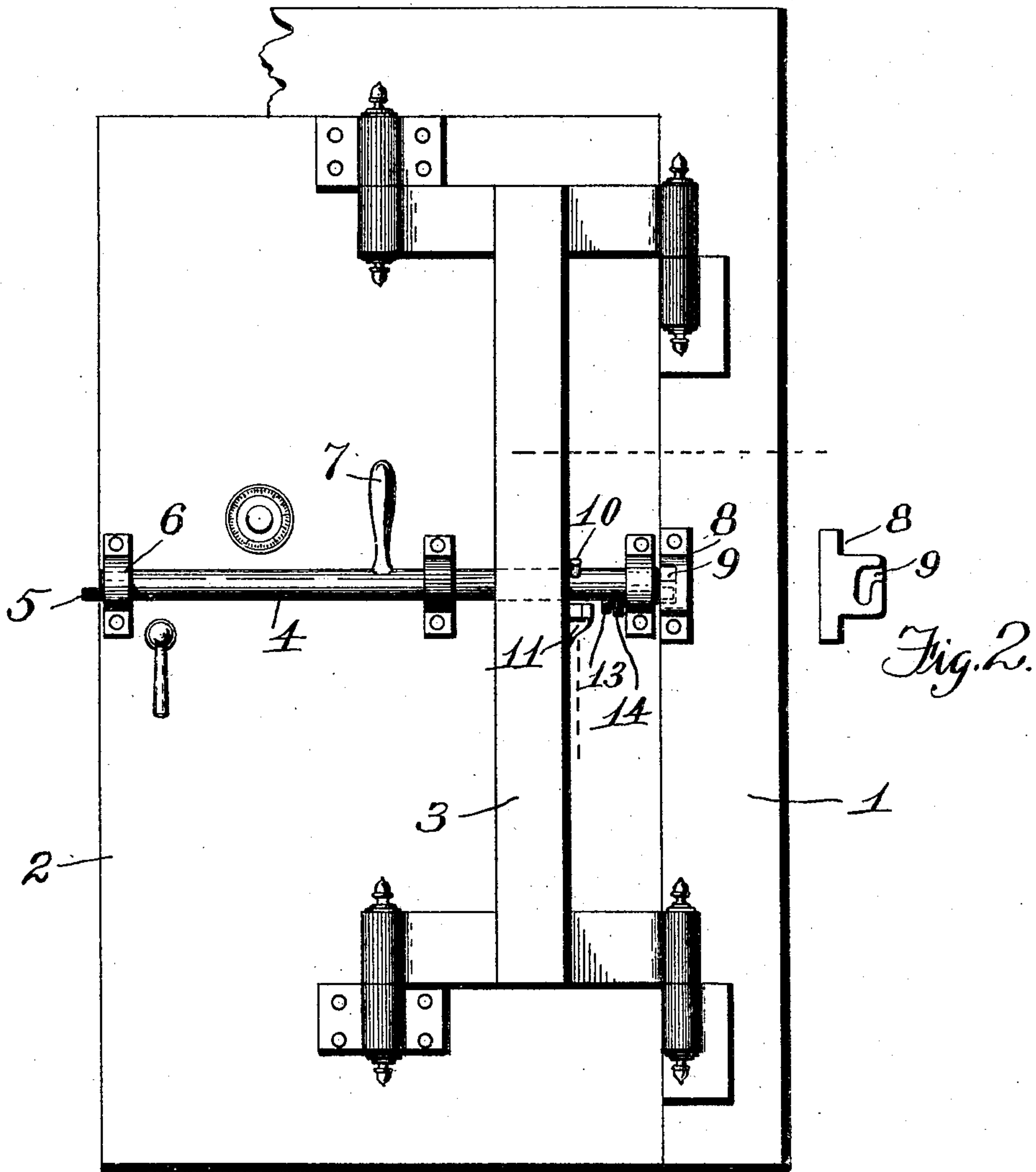


Fig. 1.

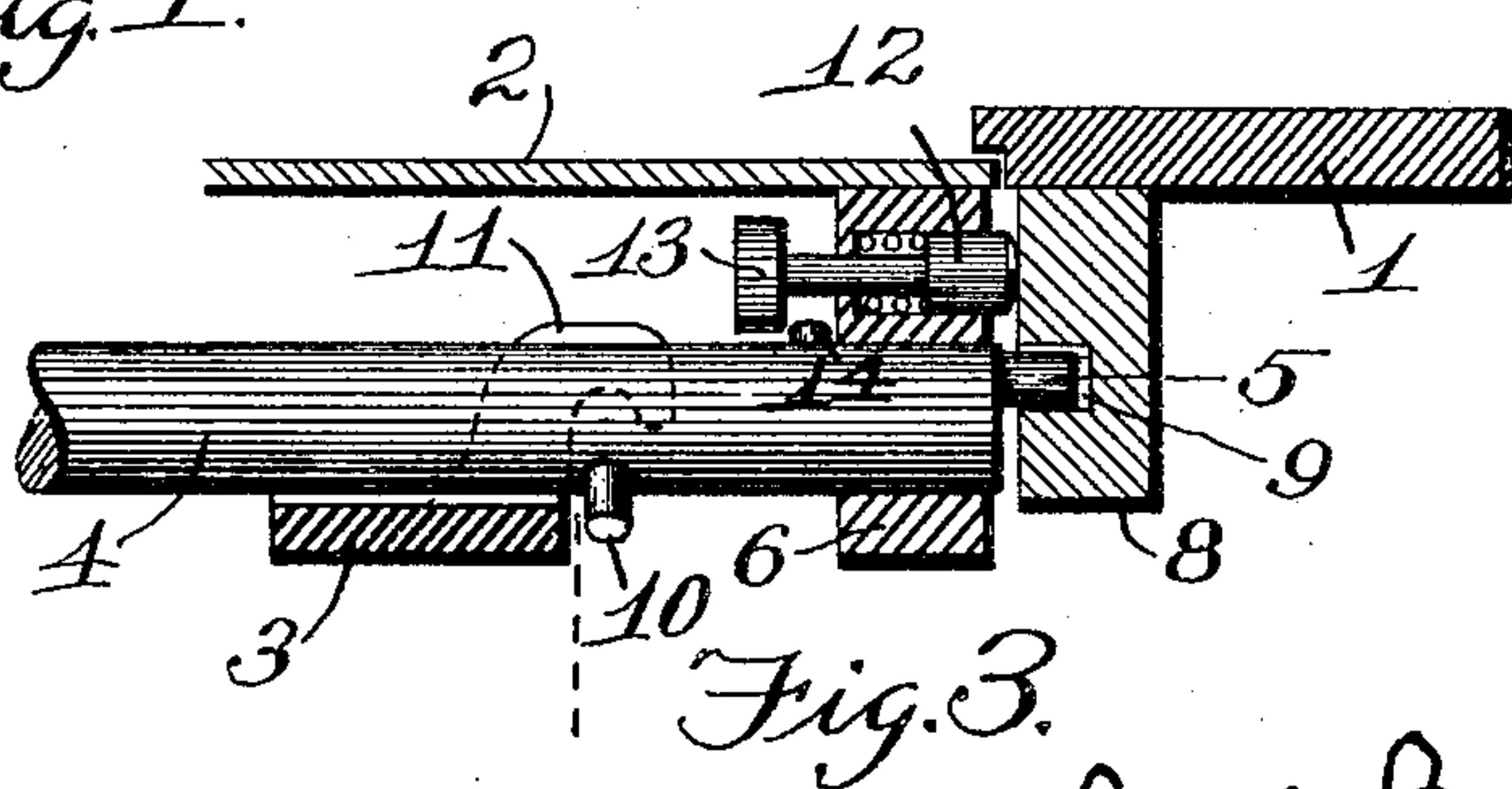


Fig. 3.

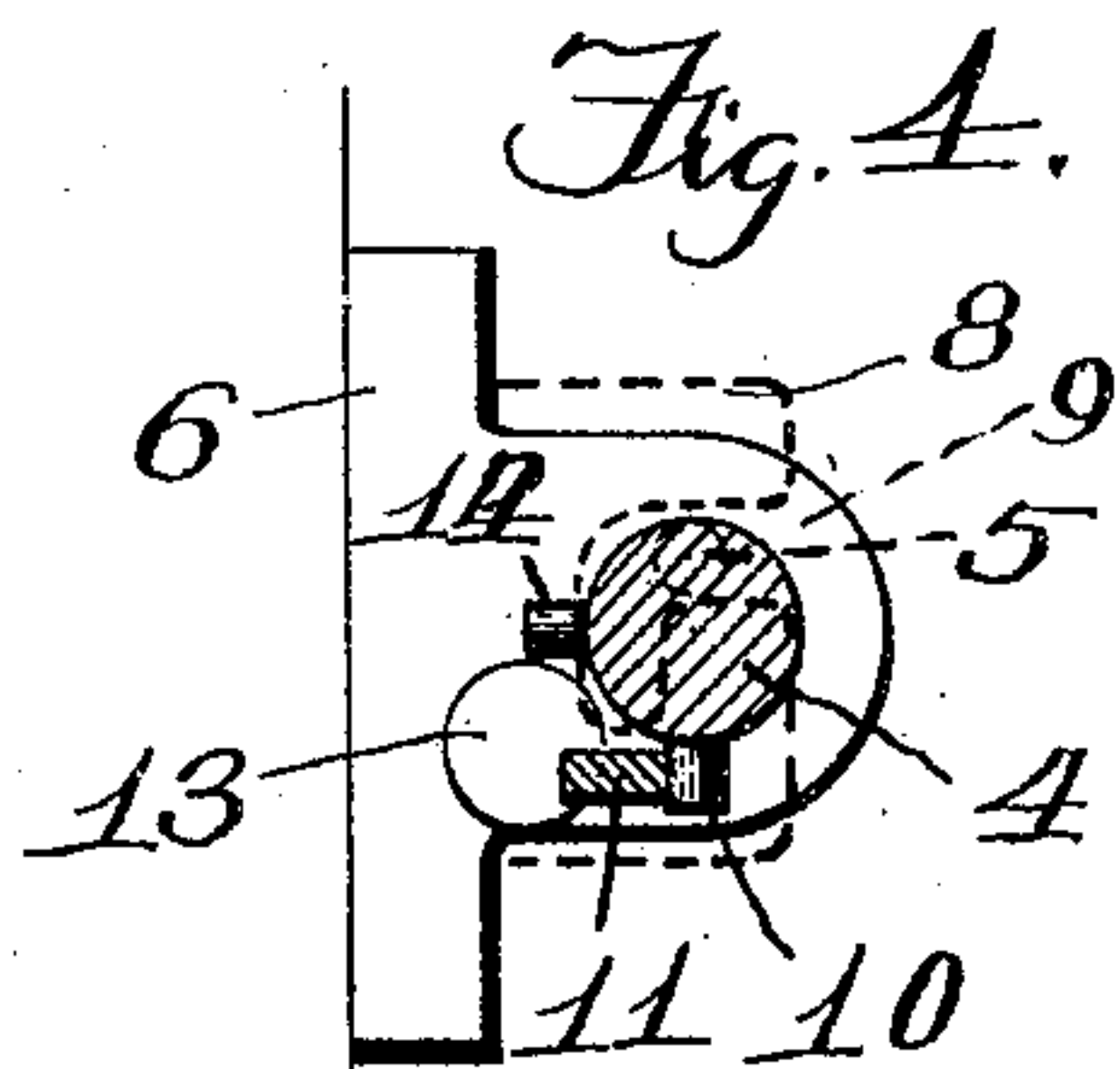


Fig. 4.

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# UNITED STATES PATENT OFFICE.

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## SAFE-DOOR CAM.

938,545.

Specification of Letters Patent.

Patented Nov. 2, 1909.

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*To all whom it may concern:*

Be it known that I, CARL BARTELS, a citizen of the United States, residing at Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Safe-Door Cams, of which the following is a specification.

This invention, pertaining to improvements in the cams employed in forcing the doors of safes tightly home before locking, will be readily understood from the following description taken in connection with the accompanying drawing in which:—

Figure 1 is a front elevation of a safe or vault door fitted with my improved cam mechanism: Fig. 2 an elevation of the inner face of one of the usual slotted jamb-lugs; Fig. 3 a horizontal section of the device; and Fig. 4 a vertical section of the cam-bar.

In the drawing:—1, indicates the door-jamb: 2, the door: 3, the crane-bar: 4, the cam-shaft journaled on the door: 5, the eccentric wrists at the end of the cam-shaft: 6, the bearings secured upon the door of the cam-shaft: 7, a handle upon the cam-shaft, typifying means for forcibly turning the cam-shaft: 8, the cam-lugs secured to the door-jamb at each end of the cam-shaft: 9, a slot on the inner face of each cam-lug, the cam starting inwardly from its open front and then turning vertically: 10, a stop-pin projecting from the cam-shaft: and 11, a stop, illustrated as being on the crane-bar, in position to limit the angular motion of the cam-shaft.

As thus far referred to all of the parts are or may be as usual and subject to usual modifications, and in use the operation would be as usual. In Fig. 1 the door is closed and the cam-shaft has been so turned that the eccentric wrists are down in the vertical portions of the cam-lug slots in which position they have acted in forcing the door home. If, now, the door is to be opened, then handle 7 is to be turned downward, turning the cam-shaft as far as the engagement of stop-pin 10 with stop 11 will permit, this turning of the cam-shaft bringing the eccentric wrists 5 to the level of the horizontal branches of the slots in the cam-lugs. The door, having been unlocked, is now at liberty to be opened and, when the door is to be again closed, the undisturbed eccentric wrists are free to enter the horizontal branches of the slots in the cam-lugs.

But it very often happens that while a vault door is standing open some official meddler will turn the cam-shaft out of normal entering position, and in such case, when an attempt is made to close the door the eccentric wrists, instead of entering their slots, strike the faces of the cam-lugs and, in many cases, parts become bent or broken. It is the purpose of my improvement to guard against a meddling disturbance of the cam-shaft while the door is open.

Proceeding with the drawing:—12, indicates a spring plunger mounted in that one of the bearings 6 nearest the hinge-stile of the jamb, this plunger sliding parallel with and near the cam-shaft, its outer end having a projection abutting against the contiguous cam-lug when the door is closed, the spring tending to maintain this abutting condition: 13, a head on the inner end of the plunger, this head standing at some distance from the inner face of the bearing in which it is mounted: and 14, a pin projecting from the cam-shaft in position to clear head 13 when the door is closed and the plunger in inward position, and to engage the head when the door is open and the plunger in outward position.

Now, turning to Fig. 1, if it be desired to open the door, the cam-shaft is to be turned as usual, till pin 10 strikes lug 11, the spring plunger being without office at this time. This has brought the eccentric wrists into position to leave the lug-slots and the doors at liberty to be opened. As the door opens, the spring moves the head of the plunger into the vertical plane of pin 14 and while the plunger is in this position the cam-shaft cannot be turned or the position of the eccentric wrists disturbed, and this condition obtains so long as the door remains open. In other words, no meddler can disturb the cam-shaft while the door is open. In closing the door, the effect is to so move the spring plunger that head 13 will go out of the path of pin 14, thus permitting the cam-shaft to be properly turned for the performance of its office.

From the above description it will be apprehended that the improvement virtually represents a lock automatically preventing the turning of the cam shaft out of slot-entering position while the door is open, the lock being automatically unlocked in the act of closing the door.



I claim:—

1. Safe door cam mechanism comprising, a cam-shaft mounted on the door, eccentric wrists on the ends of the cam-shaft, means for turning the cam-shaft, slotted cam-lugs on the door-jamb at the ends of the cam-shaft, a stop to limit the turning of the cam-shaft to a position corresponding with capacity of the eccentric wrists to enter and leave the slots of the cam-lugs, a projection from the cam-shaft, a stop mounted on the door and adapted for movement into and out of the path of said projection, a spring connected with said stop and tending to urge it into the path of said projection, and a projection from said stop in position to engage a fixed part carried by the door-jamb and serve in moving said stop out of active position when the door is brought to closed position, whereby, when the door is open the cam-shaft is locked against rotation, combined substantially as set forth.

2. Safe door cam mechanism comprising, a cam-shaft mounted on the door, eccentric wrists on the ends of the cam-shaft, means for turning the cam-shaft, slotted cam-lugs on the door-jamb at the ends of the cam-shaft, a stop to limit the turning of the cam-shaft to a position corresponding with capacity of the eccentric-wrists to enter and leave the slots of the cam-lugs, a spring-plunger mounted on the door and arranged to slide parallel with the cam-shaft, a projection from the cam-shaft, a head on the plunger to come into the path of said projection, a spring connected with the plunger and tending to urge said head to position in the path of the projection, and a projection from the plunger in position to engage a fixed part carried by the door-jamb when the door is closed and move said head out of the path of said projection, combined substantially as set forth.

3. Safe door cam-mechanism compris-

ing, a cam-shaft mounted on the door, eccentric wrists on the ends of the cam-shaft, means for turning the cam-shaft, slotted cam-lugs on the door-jamb at the ends of the cam-shaft, a stop to limit the turning of the cam-shaft to a position corresponding with capacity of the eccentric-wrists to enter and leave the slots of the cam-lugs, a projection from the cam-shaft near the inner face of that one of the cam-shaft-bearings nearest the hinge-stile of the jamb, a plunger mounted to slide in said bearing parallel with the cam-shaft and having its outer end engaging the contiguous cam-lug, a spring tending to press said plunger toward said contiguous cam-lug, a pin projecting from the cam-shaft near said bearing, and a head on the inner end of said plunger in position to clear said head when the plunger is in inner position and to be arrested by said head when the plunger is permitted to go to its outer position by the opening of the door, combined substantially as set forth.

4. Safe door cam-mechanism comprising, a cam-shaft mounted on the door, eccentric wrists on the ends of the cam-shaft, means for turning the cam-shaft, slotted cam-lugs on the door-jamb at the ends of the cam-shaft, a stop to limit the turning of the cam-shaft to a position corresponding with capacity of the eccentric-wrists to enter and leave the slots of the cam-lugs, a locking device associated with the cam-shaft to lock it against being rotated out of slot-entering position, and a part connected with said door-jamb and adapted to cooperate with the locking device when the door is closed to unlock said device and leave the cam-shaft free to be turned, combined substantially as set forth.

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