

No. 817,774.

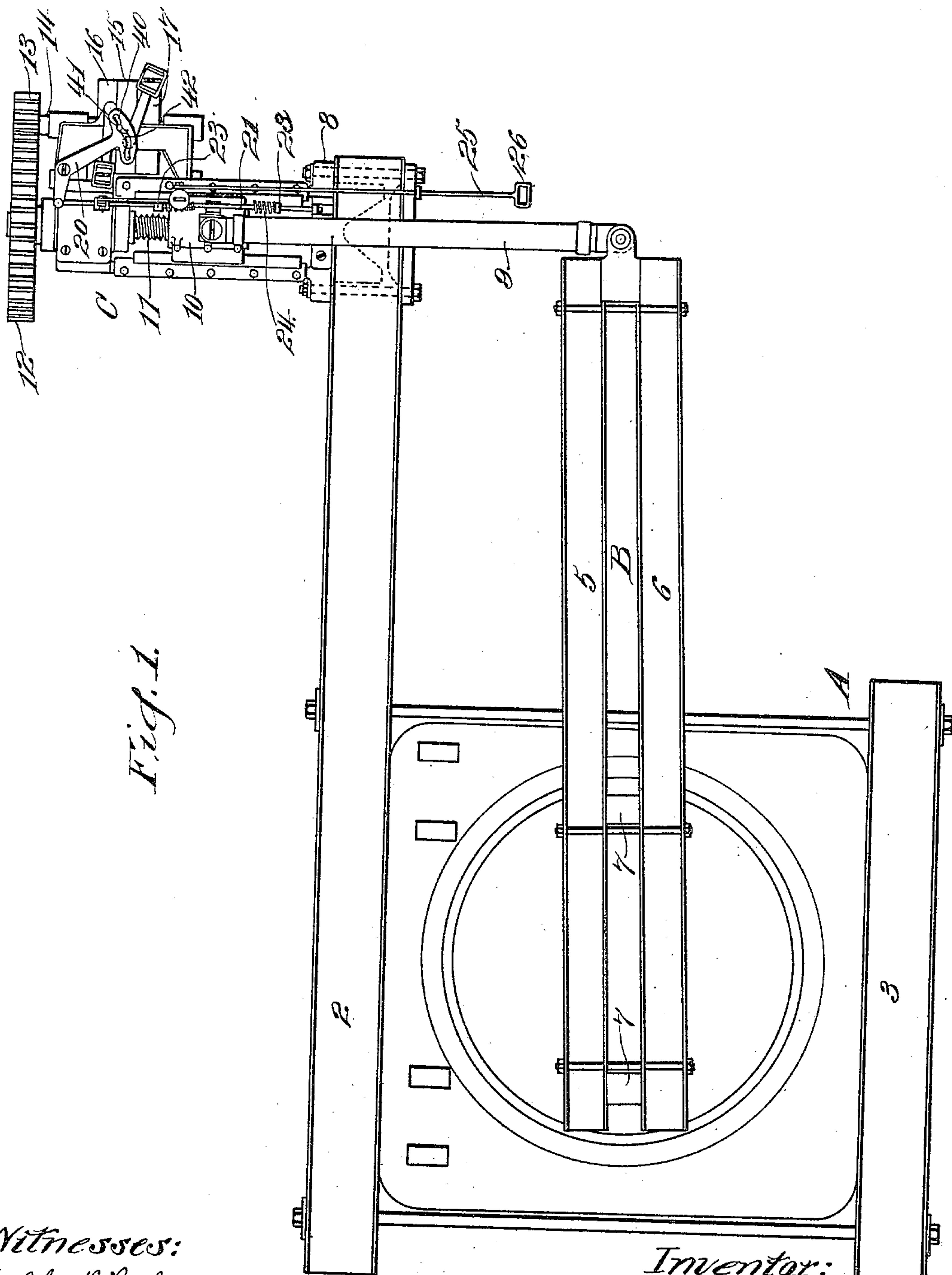
PATENTED APR. 17, 1906.

H. D. HIBBARD.

SAFE OR VAULT DOOR SEATING MACHINE.

APPLICATION FILED SEPT. 27, 1904.

2 SHEETS—SHEET 1.



Witnesses:

John H. Lynch.

C. G. Fuss.

Inventor:

Henry D. Hubbard;
By his Attorney, A

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F. A. Richards.

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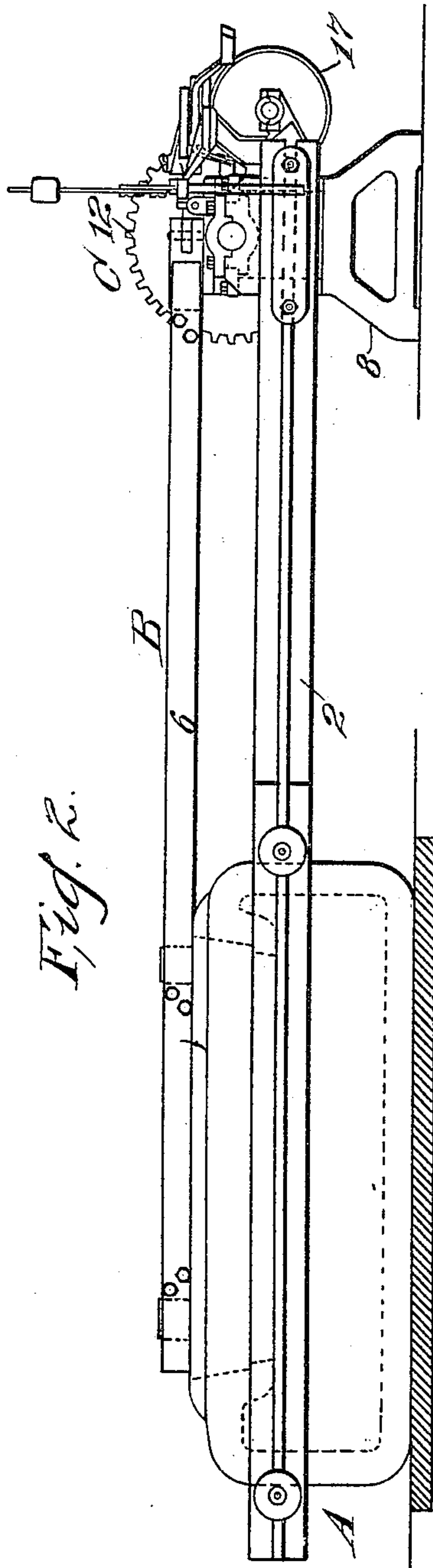


Fig. 2.

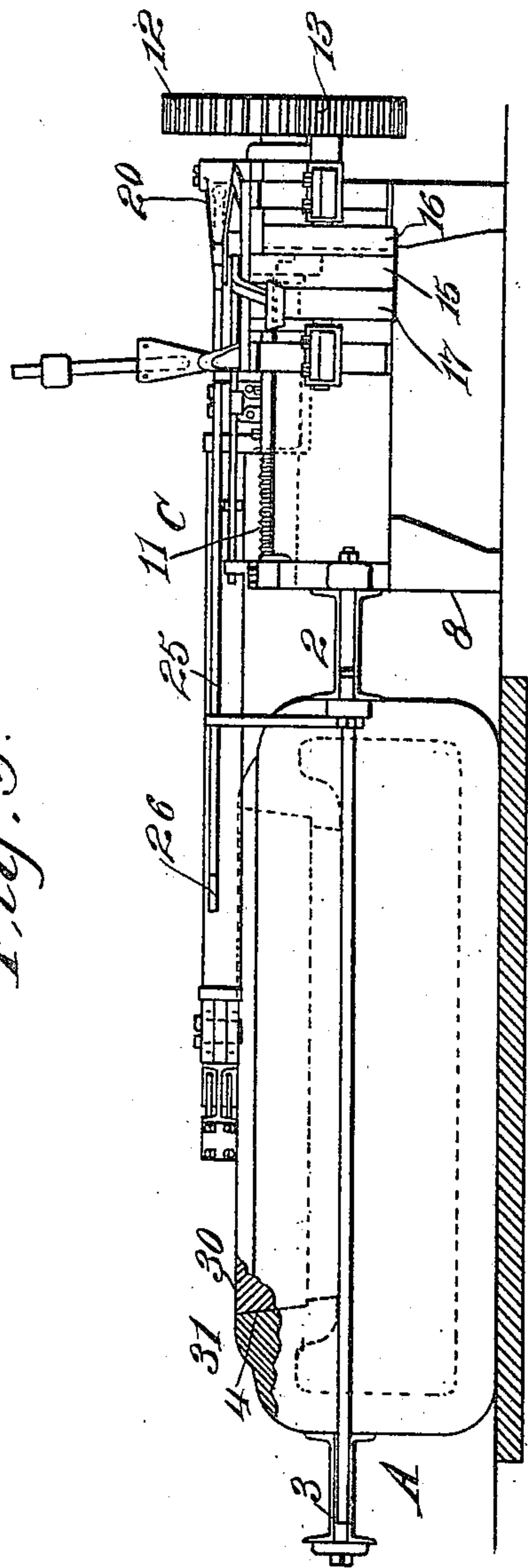


Fig. 3.

Witnesses:
John H. Lynch.
C. C. Fuss.

Inventor,
Henry D. Hibbard;
By his attorney,
F. A. Richards.

UNITED STATES PATENT OFFICE.

HENRY D. HIBBARD, OF PLAINFIELD, NEW JERSEY.

SAFE OR VAULT DOOR SEATING MACHINE.

No. 817,774.

Specification of Letters Patent.

Patented April 17, 1906.

Application filed September 27, 1904. Serial No. 226,123.

To all whom it may concern:

Be it known that I, HENRY D. HIBBARD, a citizen of the United States, residing in Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Safe or Vault Door Seating Machines, of which the following is a specification.

The present invention is provided for the purpose of seating conical or circular safe or vault doors in the body-jambs or doorways of safes or vaults, the object of the invention being to provide a simple but effective apparatus which will enable such doors to be ground to a matching fit by rotary or oscillatory movement of the door itself within the jamb or door-seat of the body.

The best burglar-proof safes or vaults are now made with conical or circular doors, since a much tighter fit of the door within the jamb can be obtained with such a door than is possible with a square door. It is essential, however, in such a structure that there be a metal-to-metal tight fit around the periphery of the door in order to prevent the insertion of nitroglycerin into the joint, since if the structure is defective in this regard, so that this explosive can be forced into the joint, it may be but a question of a few minutes before the door can be blown from its seat, and this by a comparatively small amount of nitroglycerin, sometimes less than an ounce, making a noise not much, if any, louder than a good-sized firecracker, so that it is within the power of a burglar to accomplish the complete opening of the safe in this manner.

In order to prevent the drilling of the safe, it is necessary that the body and door be composed of unmachineable metal—such, for instance, as manganese steel, a superior metal for this purpose, as has been demonstrated frequently, especially where it is heat-treated, by which it is rendered very tough, so that it will not break under the action of a sledge or explosive force. A safe made of this metal and in the manner herein set forth has been found in practice to be both burglar and mob proof, this having been demonstrated by many tests in which many ounces of glycerin, as well as pounds of dynamite, have been used in attempts to open the same; but as unmachineable metal, such as manganese steel, resists the action of a drill it also resists the action of ordinary tools, and consequently it is necessary to

grind the meeting faces of the several parts by the use of carborundum wheels in order that proper meeting surfaces be provided, and to insure a proper tight metal-to-metal fit of the door in its jamb the door, it has been found, must be seated in the jamb by a grinding movement of the door relative to such jamb in connection with a suitable attritive material, as such a fit is not obtainable with the same accuracy and precision when the door and jamb are ground independently, aside from the time taken and expense incurred to secure even a good fit of such parts. In this manner an extremely tight fit of one relatively to the other is obtained, so tight, in fact, that a safe having its door seated in this manner and accidentally thrown into a river lay under water for several weeks without a drop of water penetrating the interior of the safe. As some forms of these safes are extremely large, having a capacity, for instance, of ninety cubic feet, while vault-doors are frequently much larger, it is not practicable to grind the doors to their seats by manual means or to grind them to their seats while supported in a vertical plane, and therefore in order to accomplish this object in an effective manner the present improvement is provided.

In the drawings accompanying and forming part of this specification, Figure 1 is a top or plan view of this apparatus, illustrating a safe properly supported to have its door seated in the manner set forth. Fig. 2 is a side elevation of this machine. Fig. 3 is an end view thereof.

Similar characters of reference indicate like parts throughout the several figures.

The apparatus comprises a safe or vault body or jamb member supporting or clamping means, (designated in a general way by A,) a door carrying or connecting means, (designated in a general way by B,) and means (designated in a general way by C) for imparting movement to the door to grind it to its seat, and in the preferred form thereof herein shown and described the supporting or clamping means for the body comprises a pair of members or beams 2 and 3, suitably bolted or clamped to the sides of the safe or vault body or to that part thereof which carries the jamb or doorway 4, which body or part may rest upon the floor, or when of considerable depth may be located in a pit in such floor. The door carrying or connecting means comprises likewise a pair of beams 5 and 6, clamped or bolt-

ed to the door in some suitable way, as by means of the lugs 7, which are usually cast integral with the door for the reception of the crane hinge-pintle. This door-supporting means is shown extending transversely to the axis of the door and crosswise of such door. The body-supporting beams 2 and 3 are shown bolted to the bed 8 of the machine, while the door-connecting means is shown pivotally connected to a plunger or rod 9, the inner end of which is pivotally connected to a traveler or traveling head or nut 10, located on a screw-shaft 11, to which motion is imparted by a gear 12, fixed to the end of said shaft and in mesh with a pinion 13, secured to the end of a shaft 14, carrying a series of belt-pulleys, shown as three in number, the intermediate one, 15, of which is fixed to said shaft, the two outer ones, 16 and 17, being loose thereon. Motion may be imparted to these belt-pulleys in any suitable manner, but as shown herein is imparted by means of a pair of belts 18 and 19, one of which will be in practice crossed, and which belts will be in practice shifted to the fixed pulley by means of a belt-shifter 20, one end of which is connected to a reciprocatory rod 21, having stops 23 and spring-buffers 24, while the other end is provided with a cam-groove 40, in which pins 41 and 42 of the belt-shifter arms proper are located, and which cam-groove is so formed that it is effective to shift one belt onto the fixed pulley while shifting the other from such fixed pulley to a loose one. The belt-shifter is also provided with a starting device in the form of a rod 25, having a handle 26, connected with the rod, upon which the stops are located and by means of which the starting of the mechanism may be effected.

When the machine is in operation, movement is imparted by the power-driven means hereinbefore described to the traveling head, which, moving in one direction, rotates the door through the medium of the connecting means in one direction a certain distance and until the traveling head engages one of the stops 23, when one of the belts will be moved from the tight pulley onto the loose one and simultaneously the other belt will be shifted from the loose pulley onto the tight one, thereby reversing the traveling head, which on traveling in the opposite direction rotates the door the same distance in an opposite direction to that in which such door was previously rotated and until the traveling head comes into engagement with the opposite stop, whereupon the door is again reversed. This is kept up until the door is ground by its engagement with the jamb to a matching fit and until the outer contiguous edge 30 of the door is flush with the outer contiguous edge 31 of the body and a tight matching fit of the door obtained, so tight, as a rule, that it is very difficult to see exactly where the joint is located around the door.

The door may be lifted from its seat for inspection during the grinding operation, and when finished by uncoupling the door connecting or carrying members 5 and 6 from the reciprocatory rod or plunger 9, connected with the traveling head and lifted by some means provided for this purpose.

The door is shown supported in a horizontal plane—that is, depthwise relatively to its seat or jamb—the weight of the door thus tending to force it during the grinding operation into its seat. By supporting the door in this manner all parts thereof can be properly and equally ground, which would not be the case if the door were supported vertically, since the weight of the door in such a case would then be at the bottom or under side of its periphery, thus tending to grind this part, together with its jamb, owing to the great weight of the door, to a much greater extent than other parts thereof, while also requiring additional means to force the door into its seat to insure a proper grinding operation.

Having thus described my invention, I claim—

1. A safe or vault door seating apparatus, comprising means connected to the door and extending transversely to the axis of such door, the weight depthwise of the door assisting in the seating thereof, and means for imparting through said connecting means a rotative movement to the door in the jamb of a safe or vault body.

2. A safe or vault door seating apparatus, comprising means for imparting a limited rotative movement to the door in the jamb of a safe or vault body, and including means connected to the door and extending transversely to the axis of such door.

3. A safe or vault door seating apparatus, comprising means clamped to the door and extending transversely to the axis of such door and projecting crosswise thereof, the weight depthwise of the door assisting in the seating thereof, and means for imparting through such connecting means a rotative movement to the door, first in one direction and then in the opposite direction, within the jamb of a safe or vault body.

4. A safe or vault door seating apparatus, comprising supporting or clamping means for a safe or vault body or jamb member, a door, means clamped to the door and projecting transversely to the axis of such door, the weight depthwise of the door assisting in the seating thereof, and power-driven mechanism connected with said means for imparting a rotative movement, first in one direction and then in the opposite direction, to the door within said jamb.

5. A safe or vault door seating apparatus comprising means for imparting a rotative movement alternately in opposite directions and comprising an oscillatory member connected to the door and supporting it so that

the weight thereof will assist in seating such door, and a power-driven reciprocatory member connected to said oscillatory member.

6. A safe or vault door seating apparatus 5 comprising means for imparting a rotative movement alternately in opposite directions, and embodying means connected to the door for supporting such door in a horizontal plane so that the weight thereof will assist in seating 10 it, a traveling head connected thereto, and means for imparting movement alternately in opposite directions to said traveling head.

7. In a safe or vault door seating apparatus, the combination of means clamped to 15 the door for imparting oscillatory movement thereto, a traveling head pivotally connected to said means, means for imparting movement to said traveling head, and means for reversing the movement of said traveling 20 head.

8. In a safe or vault door seating apparatus, means for imparting to the door a rotative movement alternately in opposite directions for a limited distance, comprising oscillatory means connected to the door, and 25 reciprocatory means pivotally connected to said means for imparting an oscillatory movement thereto.

9. In a safe or vault door seating apparatus, means for imparting to the door a rotative movement alternately in opposite directions for a limited distance, comprising 30 means connected to the door, reciprocatory means for imparting an oscillatory movement to said means and comprising a screw-shaft, means for imparting motion thereto, and a traveling head mounted upon said shaft and connected to said door-connecting 35 means, and means for reversing the movement of said traveling head. 40

10. In a safe or vault door seating apparatus, means for imparting to the door a rotative movement alternately in opposite directions for a limited distance, comprising means

connected to the door, reciprocatory means 45 for imparting an oscillatory movement to said means, and comprising a screw-shaft, means for imparting motion thereto, a traveling head mounted upon said screw-shaft and connected to said door-connecting 50 means, and means for reversing the movement of said traveling head, including belt-shipper mechanism.

11. In a safe or vault door seating apparatus, the combination of means for supporting 55 the jamb member of a safe or vault, and means for supporting the door so that during the grinding operation thereof the weight of such door will seat it in its jamb, and means for imparting to the door a limited rotative 60 movement in opposite directions in such jamb and comprising mechanism for transforming a reciprocatory motion into an oscillatory one.

12. In a safe or vault door seating apparatus, the combination of clamped means for supporting the jamb member of a safe or vault, and means for imparting to the door a limited rotative movement in alternately-opposite directions in such jamb and comprising an arm clamped to said door, a rod 70 pivotally connected thereto, a traveling head connected to said rod, a screw-shaft supporting said traveling head, and means for imparting motion to said screw-shaft. 75

13. A safe or vault door seating apparatus, comprising means extending transversely to the axis of the door, and means connected to said means for imparting a rotative movement to the door in the jamb of a safe or 80 vault body alternately in opposite directions, the movement in each direction being but a small part of a circle.

HENRY D. HIBBARD.

Witnesses:

HENRY C. TAYLOR,
MORRIS UNDERHILL.