(No Model.) 4 Sheets—Sheet 1.

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BOLT.

No. 485,373. Patented Nov. 1, 1892.

FIG. I.

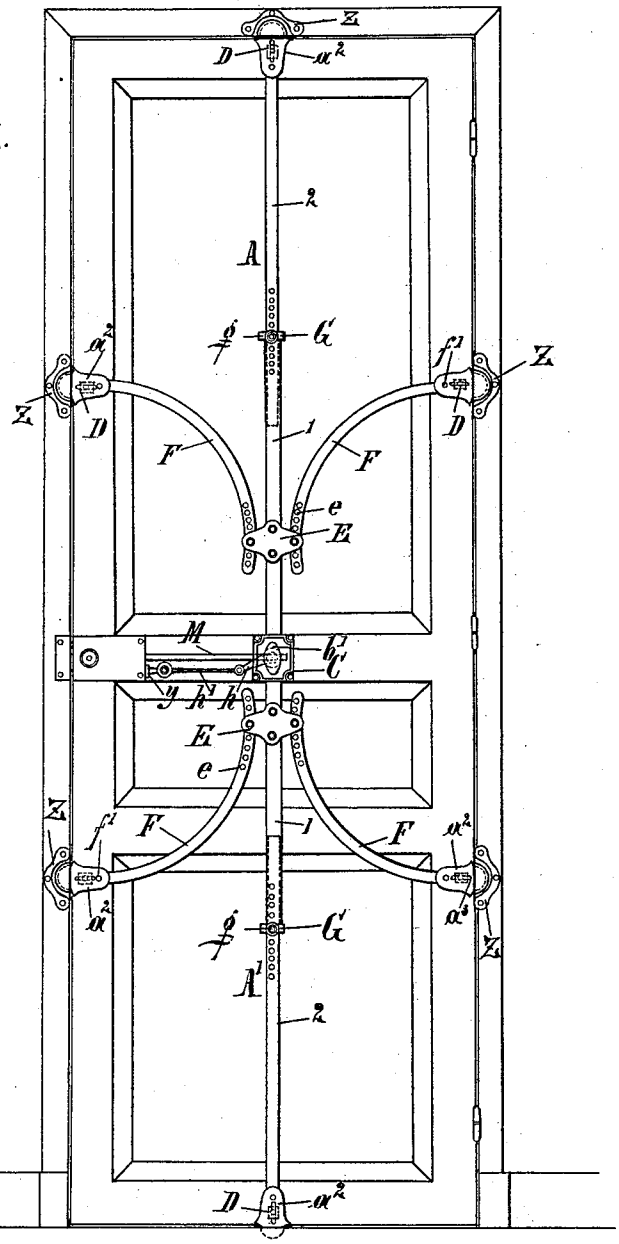

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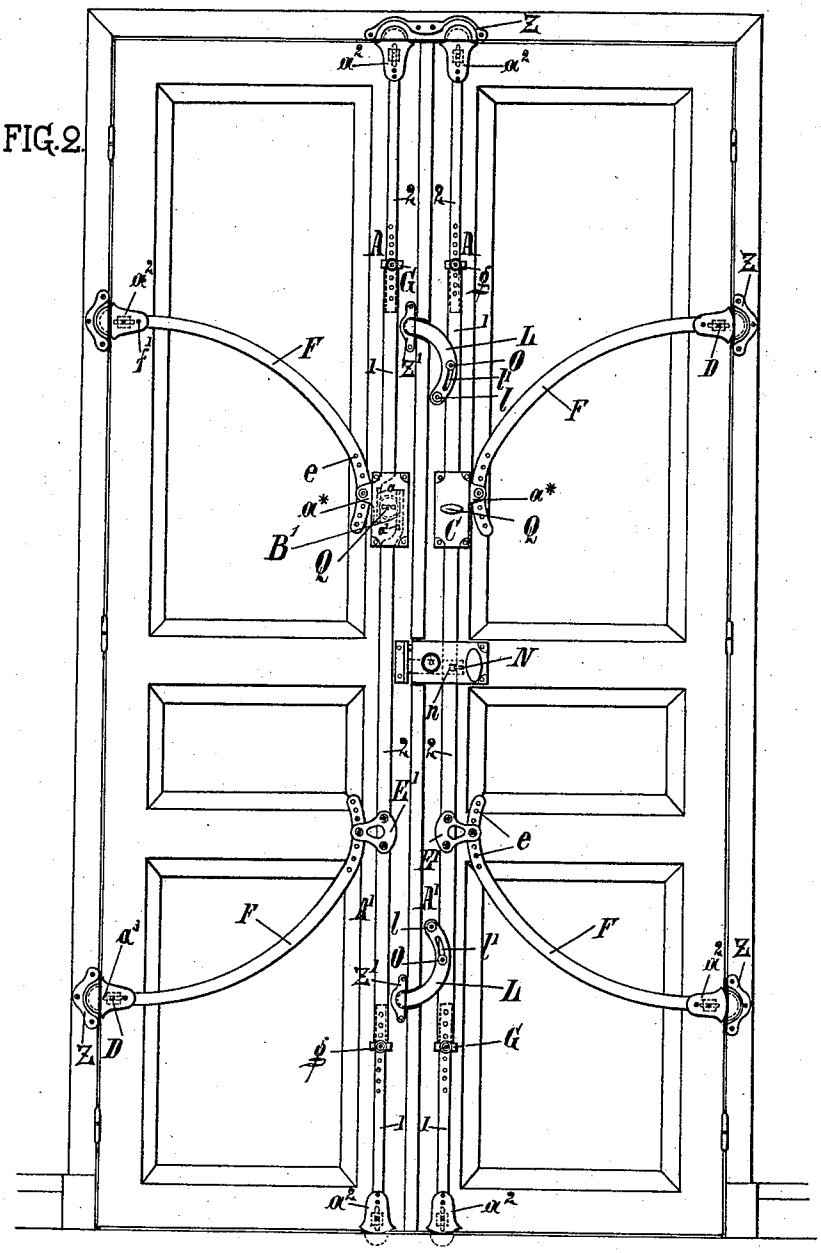
FIG. 2.



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(No Model.) 4 Sheets—Sheet 3.

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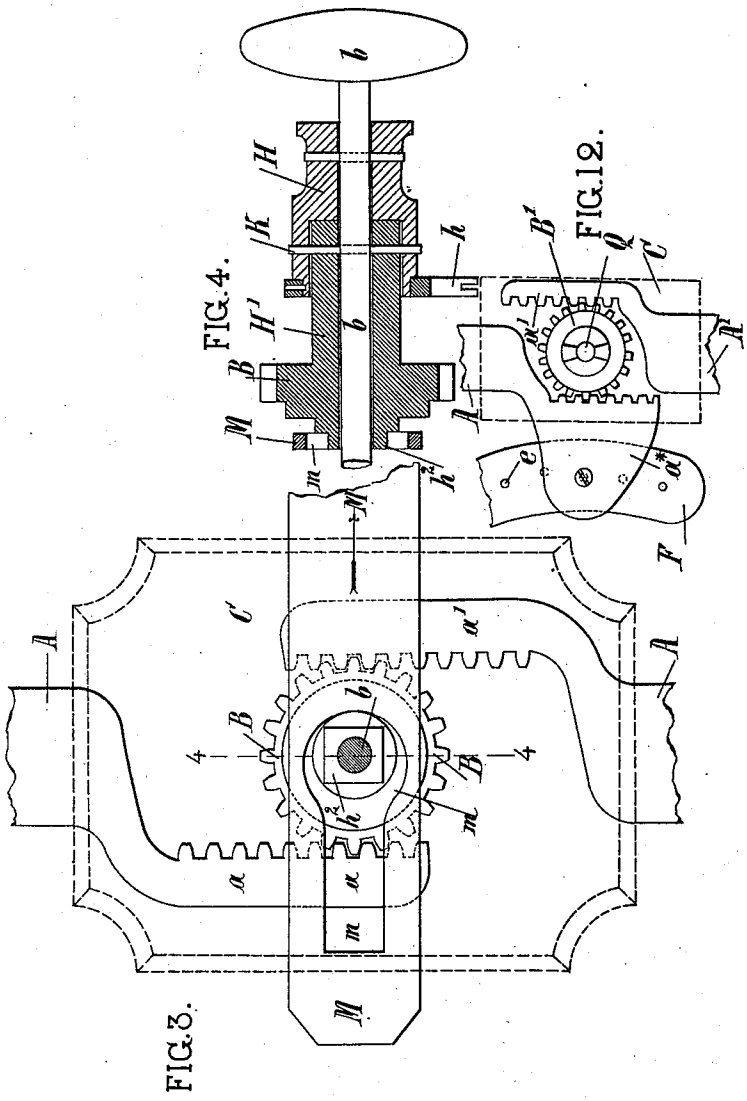

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No. 485,373. Patented Nov. 1, 1892.

FIG. 11.

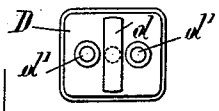


FIG. 9.

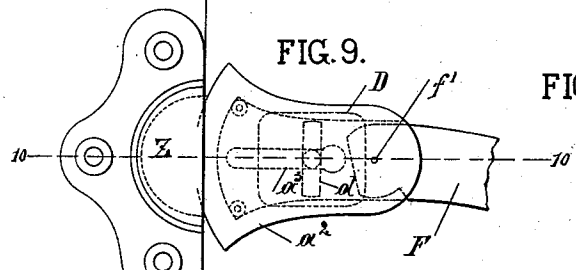
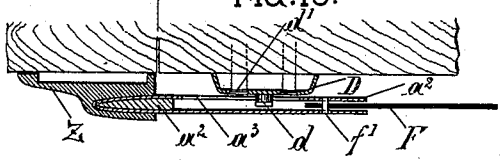


FIG. 10.



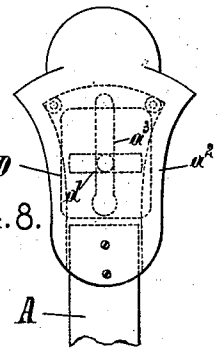
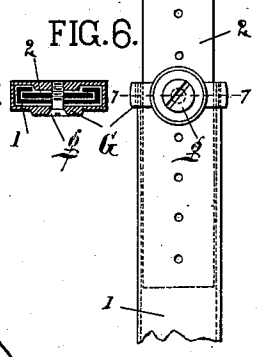


FIG. 8.

FIG. 6.

FIG. 7.



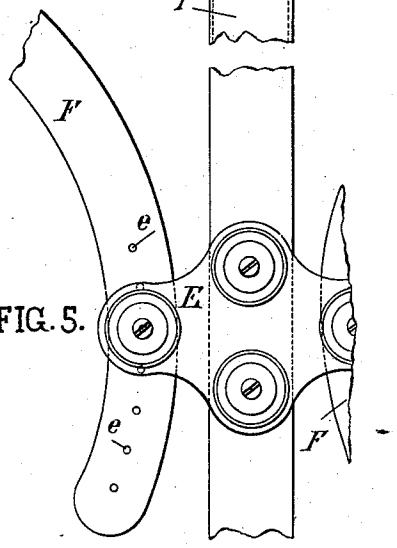


FIG. 5.

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UNITED STATES PATENT OFFICE.

GUSTAVE DROUET, OF PARIS, FRANCE.

BOLT.

SPECIFICATION forming part of Letters Patent No. 485,373, dated November 1, 1892.

Application filed April 11, 1892. Serial No. 428,741. (No model.) Patented in France September 2, 1891, No. 215,871; in Belgium November 17, 1891, No. 97,227; in Spain November 20, 1891, No. 12,693, and in England November 25, 1891, No. 20,535.

To all whom it may concern:

Be it known that I, GUSTAVE DROUET, a citizen of the French Republic, residing at Paris, France, have invented certain new and useful Improvements in Locking Devices for Doors and Shutters, (for which I have obtained Letters Patent in France, No. 215,871, dated September 2, 1891; in Belgium, No. 97,227, dated November 17, 1891; in England, No. 20,535, dated November 25, 1891, and in Spain, No. 12,693, dated November 20, 1891,) of which the following is a description.

My invention relates to a new locking device which can be applied to doors and shutters of dwelling houses and will efficaciously protect against burglary.

The annexed drawings, which make a part of this specification, illustrate my device when put together, and also the several detail views.

Figure 1 shows my invention as applied to a single door. Fig. 2 shows it as applied to a double door. Fig. 3 is an enlarged detail view of the operating-pinion and its connection. Fig. 4 is a sectional view on line 4 4 of Fig. 3. Fig. 5 is a view of the connection between one of the main rods and the curved rods. Fig. 6 is a view illustrating the connection between the main-rod sections. Fig. 7 is a sectional view on line 7 7 of Fig. 6. Fig. 8 is a view of the upper bolt proper. Fig. 9 is a view of one of the side bolts. Fig. 10 is a sectional view on line 10 10 of Fig. 9. Fig. 11 is a view of one of the guiding-studs and its plate, and Fig. 12 illustrates the connection between the pinion and racks in the construction employed for double doors.

In Fig. 1, A and A′ are two straight rods, made of metal or any other suitable material, arranged one upon the lower and the other upon the upper part of the door. The approaching ends of these rods are provided with racks *a* and *a′*, Fig. 3. The ends of the bars, which are formed into racks, are bent outwardly and are narrower than the rest of the bars, so that when the rods A and A′ are placed in position a sufficient space is left between the racks for the arrangement of a toothed pinion B gearing with the two racks. (See Fig. 3.) A casing C, similar to the casing of a lock, is fixed upon the door in any convenient manner. The pinion B is acted upon by a stem *b*, that is provided outside the cases with a suitable handle *b′*. At their other ends the rods A and A′ are provided with bolts a^2. These bolts are formed in one piece with the rods, or secured thereto, and are made hollow, at least partly, so that guiding devices can be lodged in the same and the bolts be still freely moved. To this end the inside of the bolt is provided with a groove a^3, the length of which corresponds to its motion and sufficiently wide for the passage of the stud of the guide, Figs. 8, 9, and 10. This guide, Fig. 11, is composed of a T-shaped stud *d*, mounted on the plate D, that is provided with holes *d′* for the screws by which it is fixed on the door. This plate D is fixed on the door in such manner that the T-shaped end of the stud forms a right angle with the longitudinal axis of the groove a^3 when the rod E is in its place. (See Figs. 8 and 9.)

E, Fig. 5, are jointing-pieces fixed in any suitable manner to the rods A and A′ for the purpose of connecting to the same the curved bars F.

The rods A and A′ can be made in one piece; but in order to be enabled to lengthen or shorten them, so as to make my device suitable for any door, I prefer to form the rods in two pieces 1 and 2, sliding into each other. The rods are then fixed in the suitable position by means of a collar G, provided upon that part of the rod into which the other part slides, (1 in the drawings,) and equipped with a set-screw *g*, Figs. 6 and 7.

F are curved bars connected to the straight bars A and A′ in the manner heretofore described. At their free ends they are provided with bolts a^2, constructed similarly to those of the straight bars, with the exception that they can turn on a pivot *f′*, Fig. 9. The fixed ends of the rods F, which are screwed onto the jointing-pieces E, are provided with several holes *e*, arranged in the center of the rod, as shown in Fig. 5, so that the connection to the jointing-pieces can be changed in accordance with the width of the door. Z are the catches arranged on the frame for the reception of the bolts.

In order to utilize the handle of the lock-

bolt y for the operation of my apparatus, I have devised the arrangement illustrated in Figs. 3 and 4.

b is the axle on which the toothed pinion B is keyed that imparts motion to the racks a and a', and consequently the bars A and A'. On this axle or pin I arrange two bosses H and H'. The boss H, that is keyed on the pin b, is provided with a lever h, which acts upon the lock-bolt y by means of a small chain h'. The second boss H is loosely mounted on the pin b, but is rigidly connected to the toothed pinion B, and will thus carry the latter along in its motion. By means of a removable key or pin K, which I insert in a suitable passage made in the bosses H H', and the axle b, the whole device is connected, and the motion of the handle b will be directly transferred to the pinion.

In order to lock my closing apparatus, it is sufficient to turn the handle after first having coupled the parts by inserting the key or pin K and having disconnected the little chain h'. The toothed pinion B is then set in motion and will act upon the racks a and a', and thus upon the straight bars A and A', the bolts of which enter into the catches Z at the same time with the bolts of the curved bars F, to which motion is communicated by the straight bars. To open the device, it is only necessary to turn the handle in the opposite direction.

Fig. 2 shows the arrangement which I prefer to adopt for double doors or shutters. A A' are the straight rods, exactly like those heretofore described, with the exception that the rods A, instead of being connected to the curved bars F by jointing-pieces, (as is the case with the bars A' at the jointing-pieces E',) are connected to a projection a^*, provided on the outside of the racks a, Fig. 12. The rods are also set in motion by a toothed pinion B', constructed as heretofore described.

L is a connecting-bolt having for its purpose firmly to connect the two doors. It is composed of a bent iron rod pivoted at one of its ends l, and is provided with a slot l', in which slides a stud O, fixed upon the straight bar A. Z' is the catch into which this connecting-bolt enters.

In order to manipulate my apparatus by means of the lock of the door when this is locked, I have devised the arrangement shown in Figs. 2 and 3, the former for double doors and the latter for single doors.

In the device for double doors I pass one of tho straight bars A underneath the lock, and I arrange on the rear end of the night-bolt of the lock a stud N, which when the bolt is pushed forward will enter into an opening n, arranged on the corresponding side of the straight bar, thus preventing any up or downward motion of the latter.

In the device for single doors, Fig. 3, I extend the rear end of the night-bolt with a piece M, wherein I arrange a rectangular slot, one end of which is formed circular, so as to allow the square h^2, fixed upon the pin b, to turn freely in this part of the opening—that is to say, when the bolt is open—while it cannot make any motion in the other part of the opening when the bolt is closed, (after having been moved in the direction of the arrow.)

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

1. In a closing device for doors, &c., the combination, with the main bolts, of side bolts, curved rods by which the side bolts are connected to the main bolts, and a means for throwing the main bolts.

2. In a closing device for doors, &c., the combination, with sectional rods A A', of bolts carried thereby and a pinion arranged to engage racks carried by the inner sections of the rods, substantially as described.

3. In a closing device for doors, &c., the combination, with rods A A', of bolts carried thereby, a means for throwing the rods, curved rods F, adjustable connections between the rods A A' and the rods F, and bolts carried by the rods F, substantially as described.

4. A closing device for doors and shutters characterized by the following principal parts: the straight bars A A', carrying racks at their inner ends, gearing with a pinion mounted on the pin b, manipulated by the handle b' and provided with the connecting-plates E, to which are screwed the curved rods F, said straight bars being composed of two parts sliding into each other and equipped with a collar G, the straight and curved bars being provided with bolt-shaped end pieces engaging with catches Z and guided by guiding devices passed through slots a^3, arranged in the bolts, the boss H, keyed upon the pin b and equipped with the lever-arm h, which acts by means of a small chain upon the lock-bolt, the second boss H', mounted loosely upon the pin b', but which can be made rigid by the key K, and thus firmly connected to the pinion B, and the piece M, formed at the rear end of the lock-bolt and provided with a slot m, the square part of which fits snugly around the square h^2, keyed upon the pin b, substantially as described.

5. In a closing device for doors and shutters, a straight bar A, formed in two pieces sliding into each other and kept in place by a collar G, a similar straight bar A', provided with a little side notch n, which engages with a stud N, arranged on the rear end of the lock-bolt, a curved rod F, provided at its outer end with a bolt a^2, equipped with a slot a^3, guided by the guiding-stud d and engaging with the catch Z, said rod being connected at its inner end to a projection of the straight bar, a pinion gearing with the toothed inner ends of the straight bars A and A' and acted upon by a key Q, and a curved bar having at its outer end a bolt and jointed to the straight bar by means of a connecting-piece E', substantially as described.

6. In a closing device for doors and shut-

ters, in combination with the straight bars [illegible]at I claim the foregoing as equipped with racks and bolts acted upon by [illegible]unto affixed my signature a pinion, curved bolts L, pivoted at *l* and guided by a stud O, fixed upon the straight bar sliding in the slot *l'*, so that these bolts engage with catches Z', substantially as hereinbefore described and set forth.

in presence of two witnesses.

GUSTAVE DROUET.

Witnesses:

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