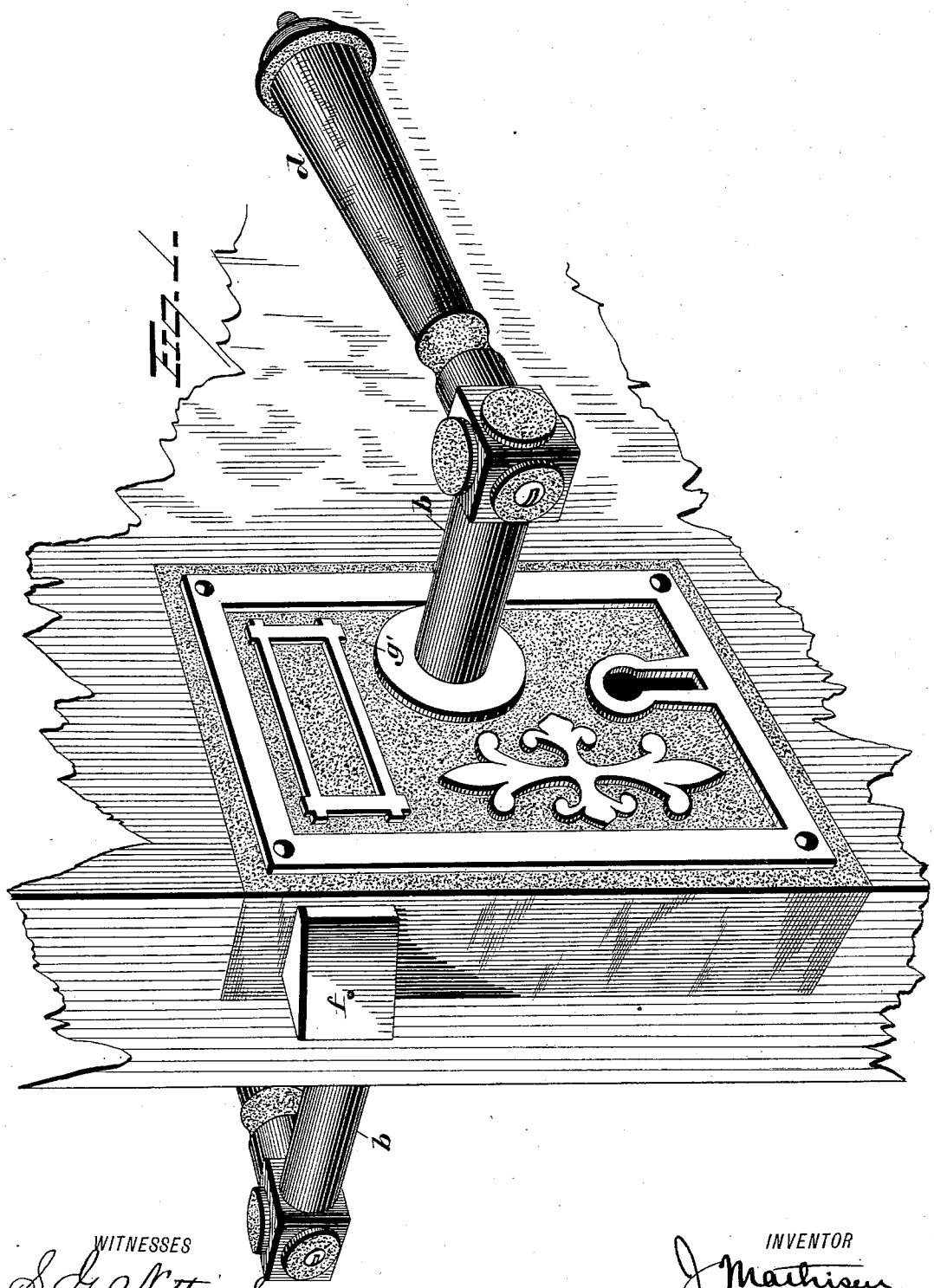
(Model.) 3 Sheets—Sheet 1.

J. MATHISEN.

DOOR LOCK.

No. 278,719. Patented June 5, 1883.



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(Model.)

3 Sheets—Sheet 2.

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Fig. 2.

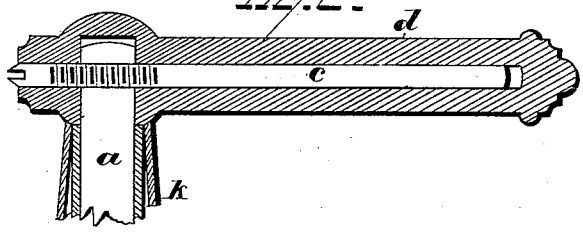


Fig. 3.

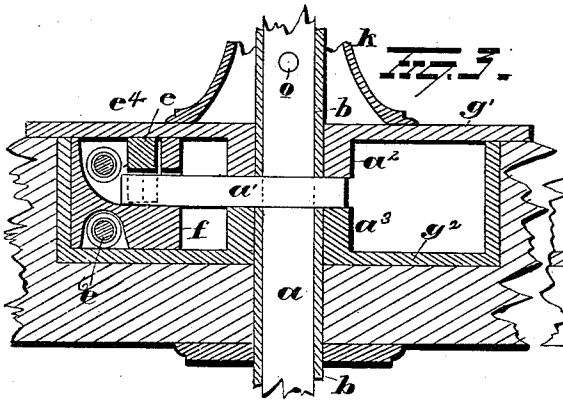


Fig. 5.

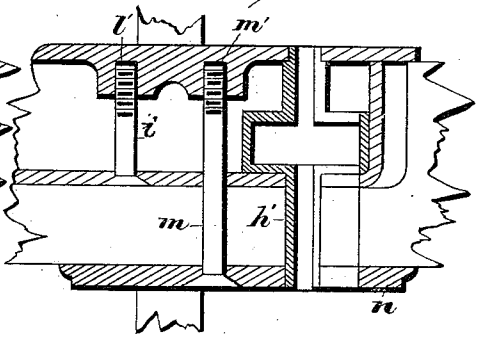


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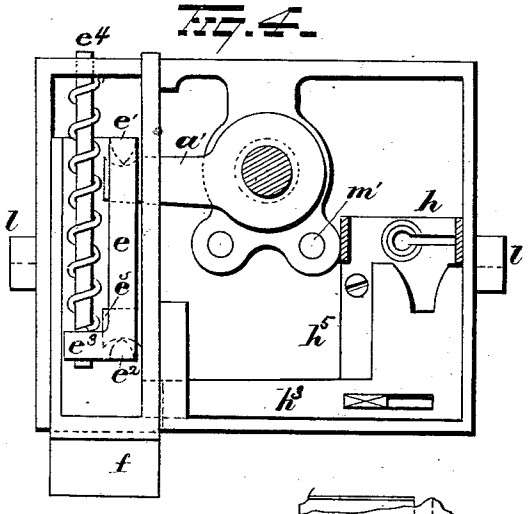


Fig. 7.

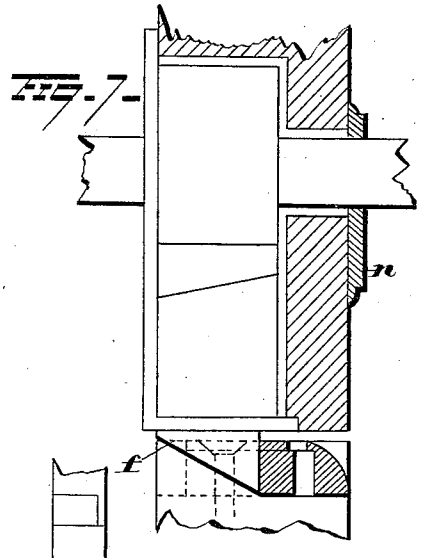


Fig. 6.

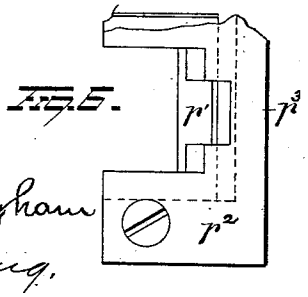
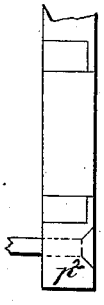


Fig. 6a.



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(Model.) 3 Sheets—Sheet 3.

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DOOR LOCK.

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Fig. 8.

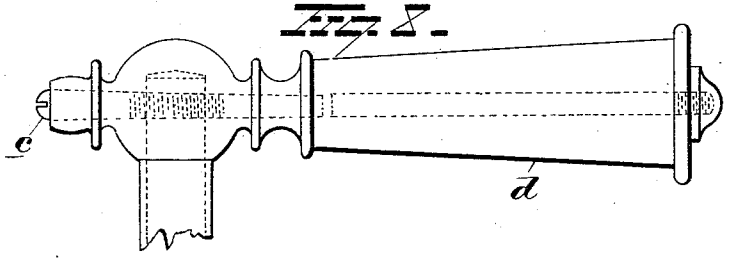


Fig. 9.

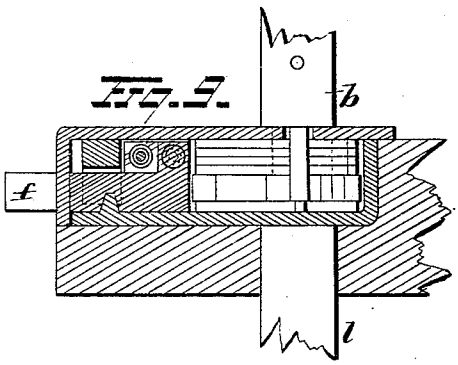


Fig. 10.

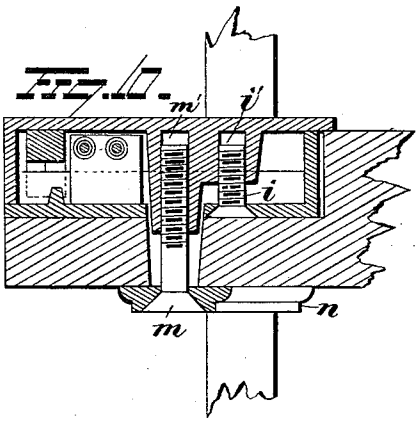


Fig. 11.

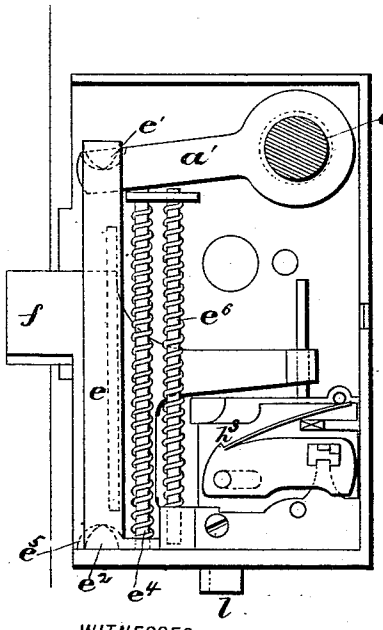
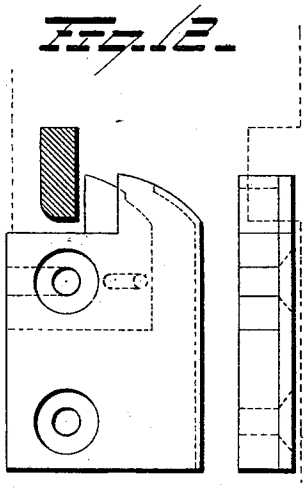


Fig. 12.



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UNITED STATES PATENT OFFICE.

JOHAN MATHISEN, OF CHRISTIANIA, NORWAY.

DOOR-LOCK.

SPECIFICATION forming part of Letters Patent No. 278,719, dated June 5, 1883.

Application filed October 9, 1882. (Model.) Patented in Belgium November 15, 1881, No. 56,159; in Norway November 22, 1881; in France December 17, 1881, No. 145,722; in England April 3, 1882, No. 1,607; in Portugal August 22, 1882, No. 769, and in Italy September 30, 1882, No. 14,424.

To all whom it may concern:

Be it known that I, JOHAN MATHISEN, of Christiania, in the Kingdom of Norway, have invented certain new and useful Improvements in Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in combined door lock and latch, the object of the same being to provide a device of this character which will combine simplicity, economy, and neatness in construction with durability and efficiency in use; and with these ends in view my invention consists in certain details in construction and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a door with my lock secured thereto. Fig. 2 is a longitudinal sectional view of the hand-knob. Fig. 3 is a sectional view of the lock, taken on the line A B of Fig. 4. Fig. 4 is a view of the lock with its top plate removed. Fig. 5 is a sectional view of a portion of a lock, taken on the line C D of Fig. 4. Fig. 6 is a view of the lock-strike as seen when attached to the door-jamb, and Fig. 6ª is a side elevation of the same. Fig. 7 is a top or plan view of the lock, showing the lock-strike in section. Figs. 8 to 12 show a modified form of lock.

This improved lock, as shown in the drawings, is constructed and arranged to be secured to the outer face of a door opening inward; but by slightly changing the same it can be adapted to doors opening outward. The outer face of the door is cut away or recessed for the reception of the lock-case, and is also provided with openings through the same for the passage of the knob-shaft *a* and key-guide *h'*. The escutcheon *n* is then placed in position on the inner face of the door, and the said lock and escutcheon are secured thereto by the single screw *m*, which latter first passes through the escutcheon, through the section of the door between the escutcheon and the lock, and finally into the female screw-threaded socket *m'* of the face-plate of the lock. Thus it will be seen that while the face-plate of the lock is exposed to view the screw for holding it in position is on the opposite side of the door, which precludes the possibility of removing the lock from the outside of the door for the purpose of obtaining ingress.

The bolt-arm *a'* is rigidly secured to or formed integral with the knob-shaft *a*, and moves against and is supported and held in position between the inwardly-projecting supports *a''a'''* of both lock-plates. By this means all longitudinal movement of the knob-shaft is effectually stopped, and all loose playing of the same through wear almost absolutely prevented.

To the inwardly-projecting stops *a''* and *a'''* of the face and inner plates, respectively, the hollow tubes *b* are rigidly secured. These tubes *b* form bearings for the knob-shaft through its entire length. They also protect or cover the knob-shaft and take all the wear therefrom, and, as a consequence, protect the other parts, which would be otherwise exposed to wear from the constant turning of the shaft. This construction also enables the knobs to be situated farther away from the door than they ordinarily are, without requiring a proportionate increase in the strength of the door, as the knob-shaft does not bear against the door, and consequently does not depend thereon for its solidity and firmness, as is the case with mortise-locks.

The knobs *d* are made of any suitable material, and each is provided with a socket or recess, into which the ends of the knob-shaft *a* are inserted and secured by the conical screw pins or bolts *c*. Should the knob by constant usage become worn, it is obvious that, owing to the conical or tapering form of the screw pins or bolts *c*, they can be screwed home as the parts wear away, and thereby again tighten the attachment.

In order to give the exposed parts of the lock a uniform and finished appearance, the tubular bearing *b* on the outside of the lock is covered by the tapering shell *k*, the large end of which bears against the face-plate of the lock while its small end abuts against the knob. This shell, being exposed to no strain or wear, can be constructed from any suitable

light material, and need not be rigidly secured in position.

f is the combined latch and bolt, recessed on its outer face for the reception of the spring-rod e'''' and the link *e*. This link is loosely placed against the bolt *f*, and is provided with the two inwardly-extending knife-edge lugs e' e'', which latter rest on opposite sides of the stud or partition e^5 of the lock-bolt *f*. A spring is coiled around the spring-rod e'''', and bears at one end against the lateral projection e''' of the link *e*, to which the said rod e'''' is rigidly secured, while the opposite end of the said spring bears against the lock-casing. The spring-rod e'''' passes through the lock-casing, and, as a consequence, is free to be moved longitudinally, while at the same time it is guided and held in position thereby.

The bolt *f* is provided with a spring-rod, e^6, rigidly secured thereto at one end, and situated directly behind the spring-rod e'''', and the spring thereon constantly tends to force the bolt *f* outward, so that the projection or partition e^5 thereof will bear against the lug e''' of the link *e*. The side of the bolt nearest the shaft *a* is provided with an oblong slot, through which the bolt-arm a' passes to engage the lug e' of the link *e*. Thus it will be seen that when either knob is turned the arm a' bears against the lug e' and moves the link *e*, which latter in turn, by means of the lug e'' bearing against the partition e^5, moves the bolt inward. As soon as the pressure on the knob is released the pressure of the spring around the rod e'''' causes the link *e* to resume its normal position, while the spring around the rod e^6 forces the bolt out simultaneously therewith. By this construction considerable wear on the bolt is prevented, and it is left free to move inward and outward while closing the door without moving the knobs. The two plates *g g*, which compose the lock-case, are held together by the screw *i*, which latter passes through the plate g'' and enters the female screw-threaded socket i' in the plate g'.

To assist in holding the lock in position on a door, wedge-shaped ribs *l* are formed integral with portion g'' of the lock-casing. These ribs are embedded in the door and most effectually prevent any displacement of the lock in case the screw *m* should work loose or become displaced.

Two different methods are employed for locking the bolt *e*, either or both of which can be employed on the same lock or used singly, as desired. One of these improvements consists in the introduction into the chamber of the lock, but forming a separate part and secured thereto byone screw, of the key-housing *h*, key-guards h', and the plate h^5, all being cast integral. h''' is the bolt or dog operated by the key, and adapted to move so that the end thereof will enter an open slot in the side of the latch *f* and hold the same in a locked position, so that it cannot be moved by the knobs. This auxiliary locking mechanism can at option be more or less complicated, and can be manufactured independent of the main lock, and it can be removed for repairs or replaced at pleasure without affecting or changing the main lock.

The second arrangement for locking the latch consists of a pin commonly attached by means of a chain or equivalent to the lock-case, and adapted to be passed through an opening in the tubular bearing *b* into the opening *o* of the shaft *a* and prevent the said shaft from being turned.

The adjustable lock-strike shown in Figs. 5 and 6 is adapted to be secured to the door-frame with the outer edge thereof even with the outer edge of said frame, while the rear or bearing edge thereof fits to the bolt irrespective of the thickness of the door-latch or lock-case. This lock-strike is composed of the parts p' p'', the outer one, p'', of which is so attached that its edge p''' rests flush with the outer edge of the door-frame, while the inner piece, p', is moved inward, as shown in Fig. 6, so that the bolt *f* rests against its bearing-face when the door is in a closed position.

The piece p'' is provided with screw-holes for the passage of screws, by which it is secured in position, while the inner piece, p', is adapted to slide under the outer piece, and is provided with oblong slots, through which screws pass. Before the lock-strike is firmly secured to the door-frame, the piece p' is first adjusted so that the bolt or latch *f* will bear against the same without allowing the door any movement or play when in a closed position. The screws are then driven home, and the part p' is held in proper position by frictional contact between the part p'' and the door-frame.

The modification represented in Figs. 8 to 12 shows another style of lock, in which the latch is adapted to move vertically instead of horizontally, as in the previous construction. The construction and formation of the main parts of this modified form of lock operate like the first construction, are lettered the same, and hence need not be again described. By this latter construction the width of the lock is greatly decreased, thereby enabling the application of the lock to doors with very narrow side pieces. The strike-plate shown in Fig. 12 and 12^a is somewhat differently formed, but is adjusted and acts precisely like the one before described.

It is evident that slight changes in the construction and relative arrangement of the several parts might be resorted to without departing from the spirit of my invention; and hence I would have it understood that I do not limit myself to the exact construction shown and described, but consider myself at liberty to make such changes and alterations as come within the spirit and scope of my invention.

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

1. The combination, with a lock-case having inward projections, a' and a'', and tubular bearings secured to the opposite sides thereof,

of a knob-shaft resting and adapted to turn in said tubular bearings, and a bolt-arm playing between said projections, substantially as set forth.

2. The combination, with the knob-shaft, of the handles or knobs situated at right angles to the knob-shaft, and provided with sockets to receive the ends of the latter, and the conical screws passing longitudinally through said handles and through the ends of said shafts, substantially as set forth.

3. The combination, with the knob-shaft and bolt-arm, of the latch or bolt *f*, provided with the lug e^5, the link *e*, provided with lugs e' e^4, and spring-rods e^3 e^6, with their springs, all of the above parts combined and adapted to operate as described.

4. The combination, with the knob-shaft or bolt-arm, of the bolt or latch provided with an oblong slot to receive the end of the bolt-arm, and the link *e*, adapted to be engaged by said arm, substantially as set forth.

5. The combination, with the bolt *f*, link *e*, arm *a'*, and shaft *a*, of the housing *h*, plate h^5, and dog h''', all combined and adapted to operate substantially as set forth.

6. The combination, with a lock, of a lock-strike consisting of an inner and an outer piece, the former being adapted to slide under the latter to adjust the strike to accommodate it to the latch or bolt.

7. In a lock-strike, the combination, with the part p'', provided with screw-holes, of the adjustable part p', provided with oblong openings for the passage of the fastening-screws, the said part p' being adapted to slide under the part p'', and both constructed, combined, and adapted to operate substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of June, 1882.

JOH. MATHISEN.

Witnesses:
CHR. S. MAQUIS,
S. BERNHD. ASUR.