No. 889,910. PATENTED JUNE 9, 1908.

H. F. CUNTZ.

DOOR.

APPLICATION FILED JULY 12, 1907.

Fig. 1.

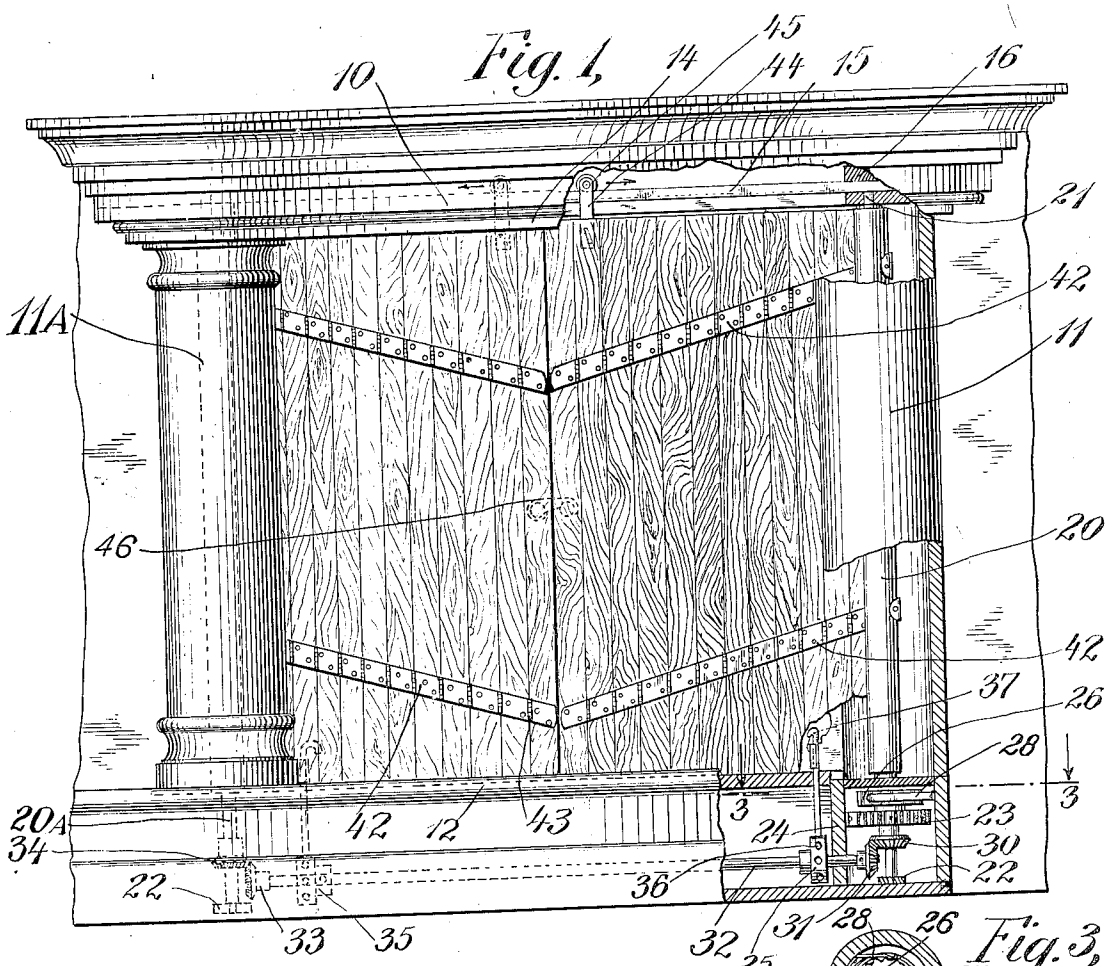


Fig. 3.

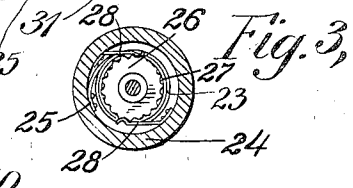


Fig. 2

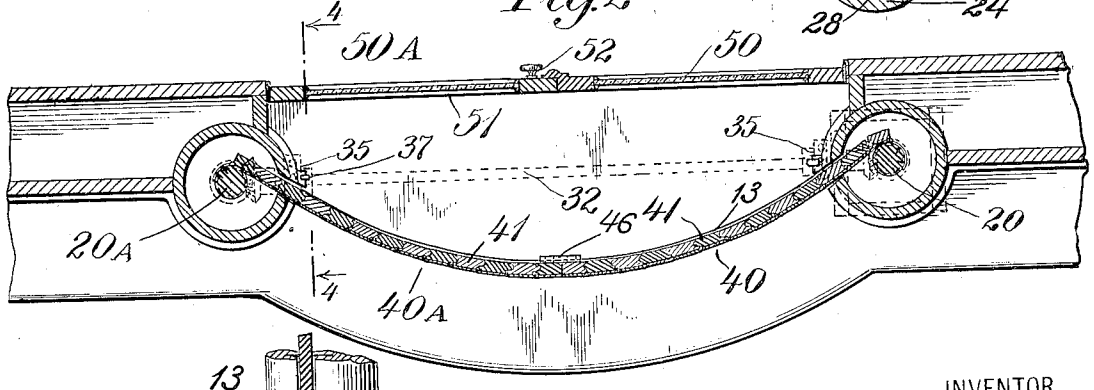
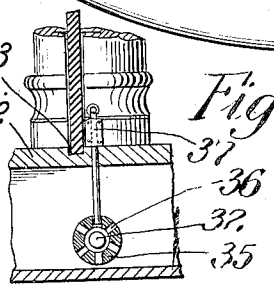


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HERMANN F. CUNTZ, OF NEW YORK, N. Y., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-HALF TO ALOIS STANDT AND ONE-HALF TO JOSEPH A. BENISCH, OF NEW YORK, N. Y.

DOOR.

No. 889,910. Specification of Letters Patent. Patented June 9, 1908.

Application filed July 12, 1907. Serial No. 383,439.

To all whom it may concern:

Be it known that I, HERMANN F. CUNTZ, a citizen of the United States, and a resident of the city of New York, in the county of New York and State of New York, United States of America, have invented certain new and useful Improvements in Doors, of which the following is a specification.

My invention relates to new and useful improvements in doors and consists in the arrangement and construction of parts which I will describe in the following specification and the novel features whereof I will point out in claims.

Referring to the drawings, Figure 1 is a front elevation, partly in section, of a door made according to my invention. Fig. 2 is a sectional plan view of my improved door. Fig. 3 is a sectional plan view of a portion of a spring actuating mechanism and holding device, the section being taken on line 3—3 of Fig. 1. Fig. 4 is a sectional elevation of a part of my apparatus, the section being taken on line 4—4 of Fig. 2.

Like characters of reference designate corresponding parts in all of the figures.

10 designates a door frame; 11 and 11^{A} are vertical columns forming the door-posts. These are preferably of ornamental design and are made hollow for the reception of certain parts which I will point out later.

12 designates the threshold which is provided with a ridge or groove 13.

14 is the lintel through which a slot is cut. A curved rail 15 is attached to the inner portion of this lintel and forms a track for supporting certain parts of the door.

20 and 20^{A} designate vertical spindles which are within the hollow columns 11 and 11^{A}. The upper ends of these spindles are pivoted in the lintel 14 as at 21 and their lower ends are pivotally supported in bearings 22.

23 designates a spiral spring, one end of which is attached to one of the spindles 20 and the other end of which is attached to a fixed point of the casing 24 as at 25. Above this spring 23 a cam 26 may be affixed to the spindle, and this cam is provided with a plurality of depressions 27, into which springs 28, 28 are arranged to press. These springs are mounted upon the casing 24. The cam 26 and its engaging springs form a non-positive holding device for keeping the spindle from turning under the action of spiral spring 23.

A bevel-gear 30 is attached to the spindle 20 below the spring 23. A similar gear 31, which is attached to a horizontal shaft 32 below the floor, is in mesh with this gear 30. At the other end of shaft 32 another bevel-gear 33 is attached and this is in mesh with a similar gear 34 on spindle 20^{A}. It may be seen that this mechanical arrangement so connects the two spindles that it causes any rotation of one of the spindles to be transmitted to the other spindle and to give it a similar rotation but in an opposite direction.

40 and 40^{A} designate two sections of a horizontally slidable door. Each of these sections is constructed of a plurality of vertical strips 41 which are connected together by means of hinge-straps 42, 42. The vertical edges of the strips 41 are provided as shown with alternate projecting portions and recesses which are arranged to fit together, so that when these parts of the door are closed they will present unbroken surfaces. This gives the door a neat appearance and makes it practically air-tight. The hinge-straps are pivoted together as at 43 at the lines of junction of the various strips. These hinge-straps are firmly secured to each of the vertical strips which comprise this part of the door and hold them together securely. I prefer to set the straps obliquely across the door as this construction is stronger and prevents the parts from sagging.

To the top of the outside strip of each door section a supporting strap 44 is affixed in which is pivoted a roller 45 which is arranged to run upon the rail 15 and to thus support the outer portion of the door sections. The lintel is constructed to form guides for the upper edges of the door sections and to hold them in proper position when closed. The ridge or groove 13 in the threshold similarly guides and holds in position the lower edges of the door sections.

The actuating spring 23 is arranged to be wound up when the door sections are closed and is of sufficient strength to rotate the spindles 20 and 20^{A} and to thereby wind up the door sections when the latter are moved. A stop such as 16 is placed in the path of travel of the roller 45 to arrest the movement of the door sections at the proper point. To open the door then, it is only necessary to

start it sliding and the spring 23 and its connected mechanism will complete the operation. When the door is thus opened the outer strips will come in such position as to make them flush with the surfaces of the door-posts 11 and 11A so that this part of the door is disappearing. When the holding cam 26 and its engaging springs are provided the door sections may be partly opened and will be held in such intermediate positions.

Upon one or both ends of the shaft 32 I attach a locking member 35 which is provided with a plurality of holes 36. Directly above this on the door-post is a vertically slidable bolt 37 which may be pushed down into one of the holes in the locking member 35. This will securely lock the shaft 32 and both of the spindles 20 and 20A. This may be done when the door sections are in their closed positions, and thus the door is securely locked so that it cannot be opened from the outside. This is especially secure on account of the curved shape of the door, as the latter with its base-line formed by the shaft 32 forms a segment of a circle which, being secured to the ends of its chord, cannot be pushed in or out. The construction of the lintel and threshold which hold the strips of the door in their proper positions when closed add to this security. To obtain this security it is necessary to lock the inner strips of the door sections in some suitable manner, and the manner which I have described is only illustrated as one means of accomplishing this result. A lock or latch 46 may also be provided to lock the outer portions of the two door sections together when closed. The parts are thus securely locked and the hinge-straps over the curved surfaces bind the strips together and produce a similar effect to that of hoops about barrels.

It is my purpose to construct the vertical strips of the door sections of heavy material such as metal, or of wood covered with metal so that they form a fireproof and burglar-proof outside door which may be closed at night and thus protect the edifice to which the door is applied.

Behind the sliding door-sections 40 and 40A are placed swinging doors 50 and 50A, supported upon the door-posts 11 and 11A or upon the adjacent parts of the door frame as shown. These inner swinging doors may be of light construction and I prefer to provide them with large glass panels 51. They may be supported in any of the well-known manners and may be provided with the usual latch 52.

What I claim is.—

1. A pair of door sections, each comprising a plurality of vertical strips, hinge-straps set diagonally across said strips and attached thereto, a stationary curved track, a curved guide for the door sections, a roller attached to the outer end of each of the door sections, said rollers being upon the track, pivoted spindles arranged to support the inner ends of the door sections, and a mechanical connection between said spindles.

2. A pair of door sections, each comprising a plurality of vertical strips, hinge-straps set diagonally across said strips and attached thereto, a stationary curved track, a curved guide for the door sections, a roller attached to the outer end of each of the door sections, said rollers being upon the track, pivoted spindles arranged to support the inner ends of the door sections, a shaft between the two spindles, and gears connecting the spindles with the shaft.

3. A pair of door sections, each comprising a plurality of vertical strips, hinge-straps set diagonally across said strips and attached thereto, a stationary curved track, a curved guide for the door sections, a roller attached to the outer end of each of the door sections, said rollers being upon the track, pivoted spindles arranged to support the inner ends of the door sections, a shaft between the two spindles, gears connecting the spindles with the shaft, and a locking device for the shaft.

4. A pair of door sections, each comprising a plurality of vertical strips, hinge-straps set diagonally across said strips and attached thereto, a stationary curved track, a curved guide for the door sections, a roller attached to the outer end of each of the door sections, said rollers being upon the track, pivoted spindles arranged to support the inner ends of the door sections, a mechanical connection between said spindles, and a latch for connecting the inner ends of the door sections.

5. A door comprising a plurality of vertical strips engaging with one another, hinge-straps set diagonally across said strips and attached thereto, a stationary track, a roller upon the track and attached to the door and arranged to support one end of the door, and a spring actuated spindle arranged to support the other end of the door and to wind the door upon itself when the door is opened.

6. A pair of door sections each comprising a plurality of vertical strips, hinge straps attached thereto connecting said strips together, a curved path for guiding the movement of the door sections about the periphery of the segment of a circle, pivoted spindles at the ends of said segment arranged to support the inner ends of the door sections, a shaft connecting said spindles and forming the chord of the segment, and means for locking said shaft.

7. A pair of door sections, each comprising a plurality of vertical strips, hinge straps attached thereto connecting said strips together, a stationary curved track, a curved path for guiding the movement of the door sections about the periphery of a segment of a circle, a roller attached to the outer end of

each of the door sections, said rollers being upon the track, pivoted spindles at the ends of said segment arranged to support the inner ends of the door sections, a shaft connecting said spindles and forming the chord of the segment, and a locking device for said shaft.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERMANN F. CUNTZ.

Witnesses:
GEORGE B. SELDEN,
COKER F. CLARKSON.