

No. 814,192.

F. DENTLER.  
DOOR.

PATENTED MAR. 6, 1906.

APPLICATION FILED APR. 28, 1905.

2 SHEETS—SHEET 1.

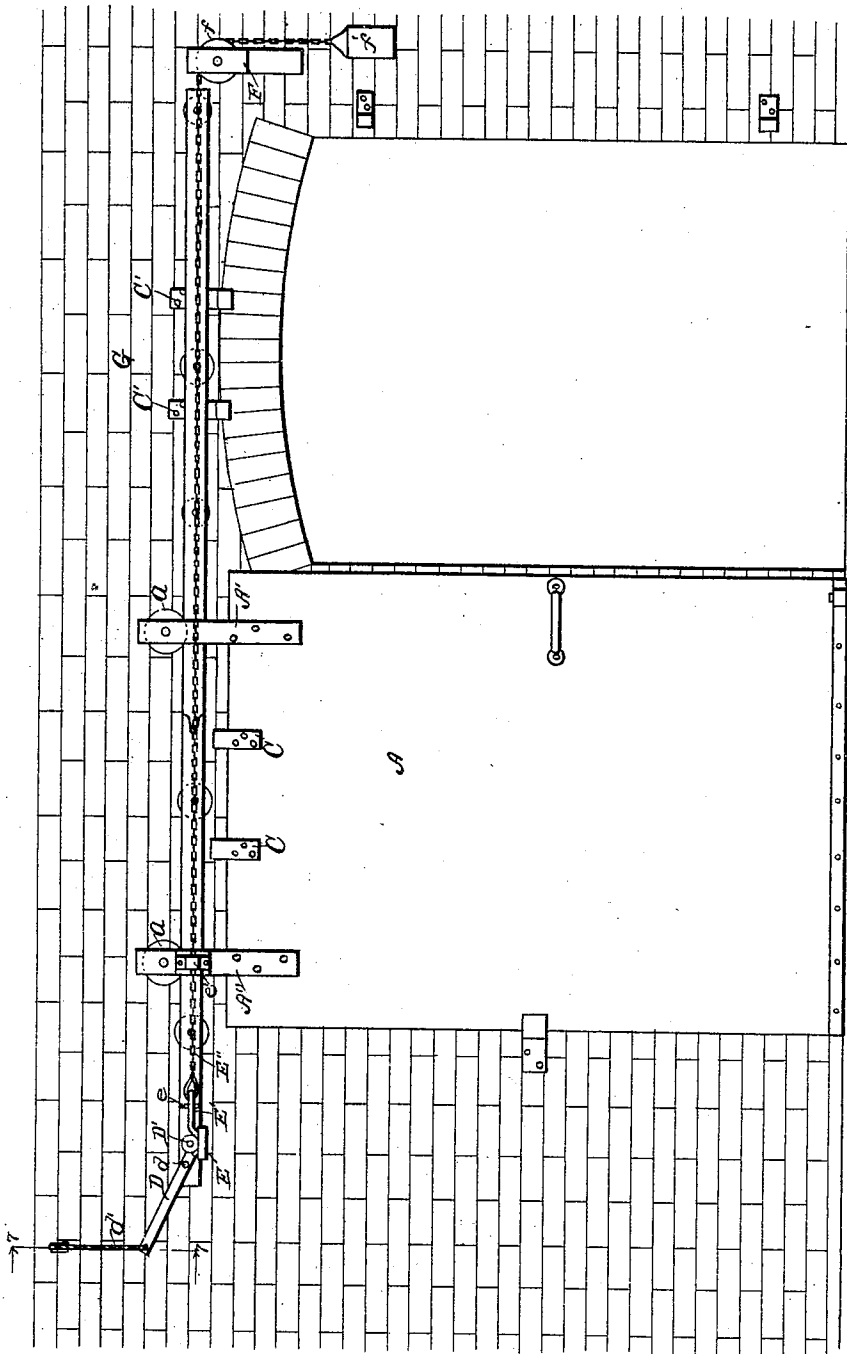


Fig. 1.

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Att'ys

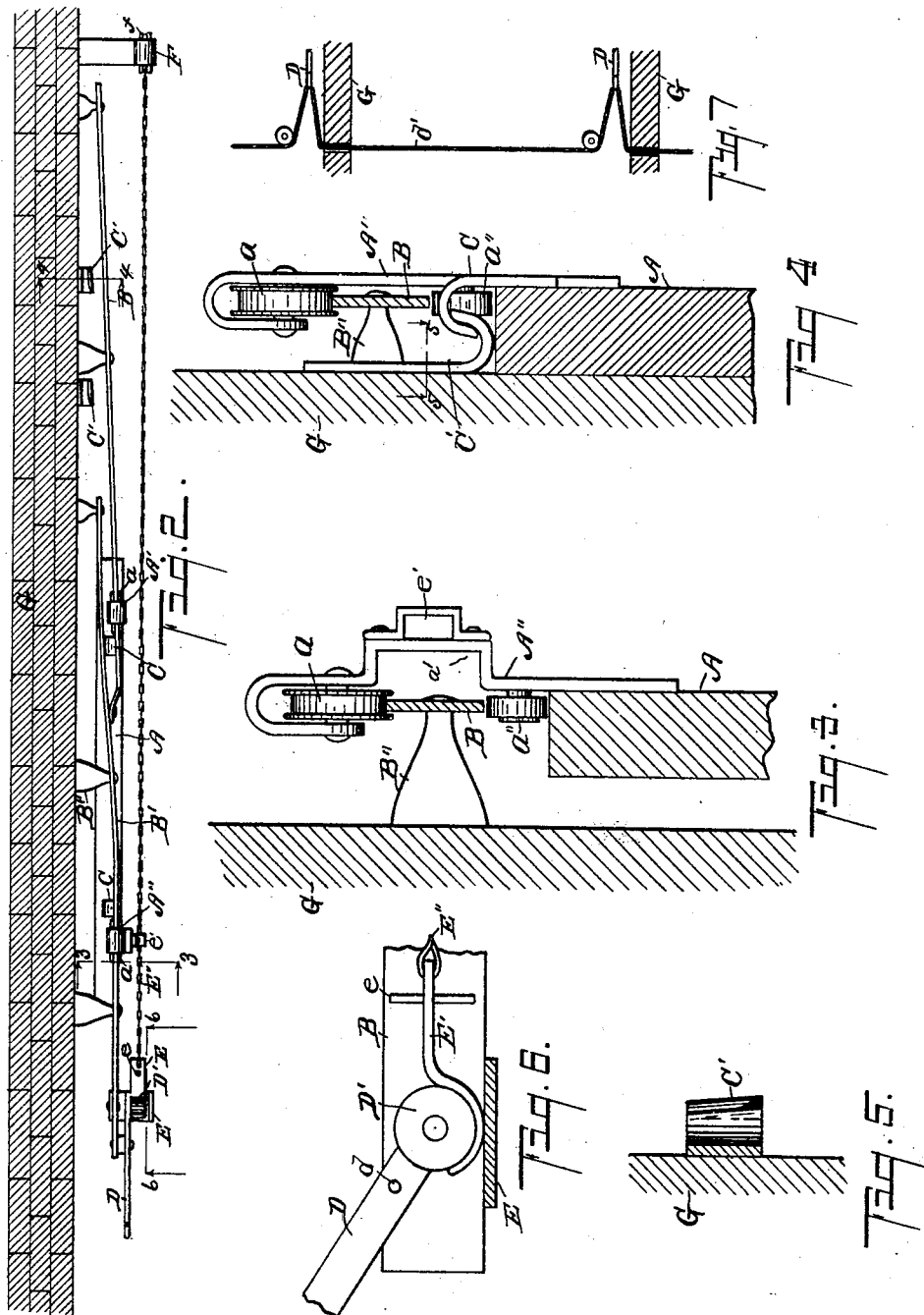
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2 SHEETS—SHEET 2.



Witnesses:

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## UNITED STATES PATENT OFFICE.

FRANK DENTLER, OF VICKSBURG, MICHIGAN.

## DOOR.

No. 814,192.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed April 28, 1905. Serial No. 257,958.

*To all whom it may concern:*

Be it known that I, FRANK DENTLER, a citizen of the United States, and a resident of Vicksburg, Kalamazoo county, Michigan, have invented certain new and useful Improvements in Doors, of which the following is a specification.

This invention relates to improvements in doors.

The objects of this invention are, first, to provide an improved door which is adapted to close automatically in the event of fire; second, to provide an improved sliding door which is adapted to form a very tight joint when closed and one which is very securely supported when in its closed position; third, to provide an improved automatically-closing fire-door the normal operation of which is entirely independent of the automatic closing means.

Further objects and objects relating to the structural details will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of a structure embodying the features of my invention. Fig. 2 is a plan view of the structure appearing in Fig. 1. Fig. 3 is an enlarged detail sectional view taken on a line corresponding to line 3 3 of Fig. 2, showing structural details. Fig. 4 is an enlarged sectional view taken on a line 4 4 of Fig. 2, showing structural details. Fig. 5 is a detail sectional view taken on line 5 5 of Fig. 4. Fig. 6 is an enlarged detail sectional view taken on line 6 6 of Fig. 2, showing the catch E' and its retaining means. Fig. 7 is a detail sectional view showing the manner for connecting a number of doors.

In the drawings the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the drawings, G represents a section of wall having a door-opening therein.

A represents a door.

Arranged above the door-opening is a track made up of sections B B', the section B being the front section and the section B' being the rear section thereof. These track-sections are supported by suitable hangers, as B''. The forward ends of these track-sections B B' are deflected inwardly, as clearly appears in Fig. 2. The rear end of the forward track-section overlaps the forward end of the rear track-section, which is secured thereto, as is also clearly illustrated in Fig. 2.

The door is supported by the track-hanger A', adapted to travel on the front track-section, and a track-hanger A'', adapted to travel on the rear track-section. These hangers A' A'' are provided with carrying-rollers a, which are grooved to engage the track. The track-hangers are also provided with retaining-rollers a'', which are located beneath the track when the hangers are in position. These rollers secure the hangers to the track, so that it is impossible for them to be detached therefrom without removing the retaining-rollers. The rear track-hanger A'' is provided with an offset a' opposite the track to receive the rear end of the forward track-section when the roller A' is traveling on the inwardly-deflected forward end of the rear track-section. By deflecting the forward ends of the tracks inwardly when the door is closed it is carried against the wall or door-casing to form a tight joint, and when opened it is carried outwardly therefrom, so that it has a free movement and does not come in contact with either the wall or the door-casing except as the door is about to close.

As an additional support for the door when it is in its closed position the interlocking hook-like members C C' are provided, the members C being carried by the door and the members C' being secured to the wall. These members are so arranged that when the door is in its closed position they engage each other. The door is thus supported not only by the hangers, but by these members, which hold the same firmly in position. It is found that in the event of fire doors are very likely to warp away from the casing, and thus form an opening, or the tracks are warped or destroyed and the door thus freed. By providing these members not only an additional support is provided, but they are much less likely to be affected by the heat than is the track, which of necessity is comparatively light. The engaging portions of these members C C'

are preferably deflected in a transverse direction, so that as the door is closed it is forced inwardly thereby. Another advantage of these supporting members is that in order to hold doors of suitable width effectively in their closed position it is necessary to provide more than the two supports afforded by the hangers. In a track of the construction I have illustrated it is impractical to utilize the third or central hanger on account of the binding on the tracks. The supports described are therefore of very great advantage. I have illustrated in the drawings herein two of these supports, although I wish to remark that ordinarily one centrally arranged will be found to meet all requirements.

In order to automatically close the door, I provide a weight  $f'$ , which is suspended from a suitable chain or cable, as  $E''$ . This cable is arranged over a suitable pulley  $f$  on the block  $F$  and is carried rearwardly in a line substantially parallel with the track. The chain is arranged through the loop  $e'$  on the rear hanger  $A''$ , (see Figs. 1 and 3,) so that the door may be freely opened or closed independently thereof. On the rear end of the chain or cable is a catch  $E'$ , having a transverse pin  $e$  therein adapted to engage the loop  $e'$  when the catch is released to connect the weight and the door, whereby it is closed. The catch  $E'$  is normally supported by the bracket  $E$ , which projects outwardly from the wall. The catch is retained on the track by the pivoted lever or trip  $D$ . This lever  $D$  is pivoted at  $d$ , and on its forward end is a roller  $D'$ , adapted to engage the hook-shaped end of the catch. The lever  $D$  is supported in its engaging position by the cord or cable  $d'$ , which is adapted to be severed by fire or heat, so that in case of fire the retaining-lever is released, thereby releasing the weight, so that it acts upon the door to close the same.

When there are several compartments and several doors therefor, the cord  $d'$  is preferably made common to all of them, (see Fig. 7,) so that they are all operated simultaneously.

While I prefer to form the retaining-cord of some combustible or fusible material, it is evident that it may be formed of some material so that it will be necessary for the same to be released manually.

By thus arranging the parts the door is operated normally entirely independent of the automatic closing means, so that no additional power is required to operate the same. As the automatic closing means are not operated or disturbed by the normal operation of the door, they are much less likely to get out of order than is the case where they are in any wise affected by its operation.

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

1. The combination of a door; a track consisting of front and rear sections having their

forward ends deflected inwardly, said front section overlapping said rear section; a front hanger for said door; a rear hanger for said door having an offset therein opposite said track; a hook-like bracket arranged above the door-opening, having an inwardly-deflected engaging portion; a hook-like member carried by said door adapted to engage said bracket when the door is in its closed position; a weight; a supporting-cable therefor arranged parallel with said track; a loop on said door through which said cable is arranged; a catch on said cable adapted to engage said loop when the cable is released; a support for said catch; a pivotally-supported lever adapted to engage said catch to retain it upon said bracket; and a trip-cord for said lever, for the purpose specified.

2. The combination of a door; a track consisting of front and rear sections having their forward ends deflected inwardly; hangers for said door; a hook-like bracket arranged above the door-opening, having an inwardly-deflected engaging portion; a hook-like member carried by said door adapted to engage said bracket when the door is in its closed position; a weight; a supporting-cable therefor arranged parallel with said track; a loop on said door through which said cable is arranged; a catch on said cable adapted to engage said loop when the cable is released; a support for said catch; a pivotally-supported lever adapted to engage said catch to retain it upon said support; and a trip-cord for said lever, for the purpose specified.

3. The combination of a door; a track consisting of front and rear sections having their forward ends deflected inwardly, said front sections overlapping said rear sections; a front hanger for said door; a rear hanger for said door having an offset therein opposite said track; grooved carrying-rollers for said hangers; retaining-rollers carried by said hangers arranged beneath said track; a weight; a supporting-cable therefor arranged parallel with said track; a loop on said door through which said cable is arranged; a catch on said cable adapted to engage said loop when the cable is released; a support for said catch; a pivotally-supported lever adapted to engage said catch to retain it upon said bracket; and a trip-cord for said lever, for the purpose specified.

4. The combination of a door; a track consisting of front and rear sections having their forward ends deflected inwardly, said front section overlapping said rear section; a front hanger for said door; a rear hanger for said door having an offset therein opposite said track; a weight; a supporting-cable therefor arranged parallel with said track; a loop on said door through which said cable is arranged; a catch on said cable adapted to engage said loop when the cable is released; a support for said catch; a pivotally-supported

lever adapted to engage said catch to retain it upon said bracket; and a trip-cord for said lever, for the purpose specified.

5 The combination of a door; a track consisting of front and rear sections having their forward ends deflected inwardly; hangers for said door; a weight; a supporting-cable therefor arranged parallel with said track; a loop on said door through which said cable is arranged; a catch on said cable adapted to engage said loop when the cable is released; a support for said catch; a pivotally-supported lever adapted to engage said catch to retain it upon said bracket; and a trip-cord for said lever, for the purpose specified.

6 The combination of a door; a track; a hanger for said door; a hook-like bracket arranged above the door-opening, having an inwardly-deflected engaging portion; a hook-like member carried by said door adapted to engage said bracket when the door is in its closed position; a weight; a supporting-cable therefor arranged parallel with said track; a loop on said door through which said cable is arranged; a catch on said cable adapted to engage said loop when the cable is released; a support for said catch; a pivotally-supported lever adapted to engage said catch to retain it upon said bracket; and a trip-cord for said lever, for the purpose specified.

7 The combination of a door; a track consisting of front and rear sections having their forward ends deflected inwardly; hangers for said door; a bracket arranged above the door-opening; a member carried by said door adapted to engage said bracket when the door is in its closed position; a weight; a supporting-cable therefor arranged parallel with said track; a loop on said door through which said cable is arranged; a catch device on said cable, said cable being adapted to engage said loop when released; and a trip-cord for said catch device, for the purpose specified.

8 The combination of a door; a track; hangers for said door; a bracket arranged above the door-opening; a member carried by said door adapted to engage said bracket when the door is in its closed position; a weight; a supporting-cable therefor arranged parallel with said track; a loop on said door through which said cable is arranged; a catch device on said cable, said cable being adapted to engage said loop when released; and a trip-cord for said catch device, for the purpose specified.

9 The combination of a door; a track consisting of front and rear sections having their forward ends deflected inwardly; hangers for said door; a weight; a supporting-cable therefor arranged parallel with said track; a loop on said door through which said cable is arranged; a catch device on said cable, said cable being adapted to engage said loop when released; and a trip-cord for said catch device, for the purpose specified.

10 The combination of a door; a track therefor consisting of front and rear sections having their forward ends deflected inwardly, said front section overlapping said rear section; a front hanger for said door; a rear hanger for said door having an offset therein opposite said track; a bracket arranged above said door-opening, having an inwardly-deflected engaging portion; a member carried by said door adapted to engage said bracket when the door is in its closed position; a weight; a supporting-cable therefor arranged to engage said door when released; a catch device for said cable; and a trip or releasing cord for said catch device, for the purpose specified.

11 The combination of a door; a track therefor consisting of front and rear sections having their forward ends deflected inwardly; hangers for said door; a bracket arranged above said door-opening, having an inwardly-deflected engaging portion; a member carried by said door adapted to engage said bracket when the door is in its closed position; a weight; a supporting-cable therefor arranged to engage said door when released; a catch device for said cable; and a trip or releasing cord for said catch device, for the purpose specified.

12 The combination of a door; a track therefor consisting of front and rear sections having their forward ends deflected inwardly, said front section overlapping said rear section; a front hanger for said door; a rear hanger for said door, having an offset therein opposite said track; a weight; a supporting-cable therefor arranged to engage said door when released; a catch device for said cable; and a trip or releasing cord for said catch device, for the purpose specified.

13 The combination of a door; a track therefor consisting of front and rear sections having their forward ends deflected inwardly; hangers for said door; a weight; a supporting-cable therefor arranged to engage said door when released; a catch device for said cable; and a trip or releasing cord for said catch device, for the purpose specified.

14 The combination of a door; a bracket arranged above said door-opening, having an inwardly-deflected engaging portion; a member carried by said door adapted to engage said bracket when the door is in its closed position; a weight; a supporting-cable therefor arranged to engage said door when released; a catch device for said cable; and a trip or releasing cord for said catch device, for the purpose specified.

15 The combination of a door; a bracket arranged above said door-opening; a member carried by said door adapted to engage said bracket when the door is in its closed position; a weight; a supporting-cable therefor arranged to engage said door when released; a catch device for said cable; and a trip or releasing cord for said catch device, for the purpose specified.

trip or releasing cord for said catch device, for the purpose specified.

16. The combination of a door; a track; suitable hangers for said door; a hook-like bracket arranged above said door-opening, 5 having an inwardly-deflected engaging portion; and a hook-like member carried by said door adapted to engage said bracket as said door is closed, whereby the same is 10 drawn inwardly against the door-casing; for the purpose specified.

17. The combination of a door; a track; suitable hangers for said doors; a bracket arranged above said door-opening; and a mem- 15 ber carried by said door adapted to engage said bracket as said door is closed, for the purpose specified.

18. The combination of a number of doors; tracks therefor, consisting of front and rear 20 sections having their front ends deflected inwardly, said front sections overlapping said rear sections; front hangers for said doors; rear hangers for said doors having offsets therein opposite said tracks; brackets ar- 25 ranged above the door-openings; members carried by said doors adapted to engage said brackets when the doors are in their closed positions; weights; supporting-cables there- 30 for, arranged to engage said doors when released; catch devices for said cables; and a common trip or releasing cord for said catch devices, all coacting for the purpose specified.

19. The combination of a number of doors; tracks therefor, consisting of front and rear 35 sections having their front ends deflected inwardly; hangers for said doors; brackets arranged above the door-openings; members carried by said doors adapted to engage said brackets when the doors are in their closed 40 positions; weights; supporting-cables therefor, arranged to engage said doors when re-

leased; catch devices for said cables; and a common trip or releasing cord for said catch devices; all coacting for the purpose specified.

20. The combination of a number of doors; 45 tracks therefor, consisting of front and rear sections having their front ends deflected inwardly, said front sections overlapping said rear sections; front hangers for said doors; rear hangers for said doors having offsets 50 therein opposite said tracks; weights; supporting-cables therefor, arranged to engage said doors when released; catch devices for said cables; and a common trip or releasing cord for said catch devices, all coacting for 55 the purpose specified.

21. The combination of a number of doors; tracks therefor, consisting of front and rear 60 sections having their front ends deflected inwardly; hangers for said doors; weights; supporting-cables therefor, arranged to engage said doors when released; catch devices for said cables; and a common trip or release cord for said catch devices; all coacting for 65 the purpose specified.

22. The combination of a number of doors; brackets arranged above the door-openings; members carried by said doors adapted to en- 70 gage said brackets when the doors are in their closed positions; weights; supporting-cables therefor, arranged to engage said doors when released; catch devices for said cables; and a common trip or releasing cord for said catch devices; all coacting for the purpose 75 specified.

In witness whereof I have hereunto set my hand and seal in presence of two witnesses.

FRANK DENTLER. [L. s.]

Witnesses:

ETHEL A. TELLER.

OTIS A. EARL.