

Dec. 10, 1929.

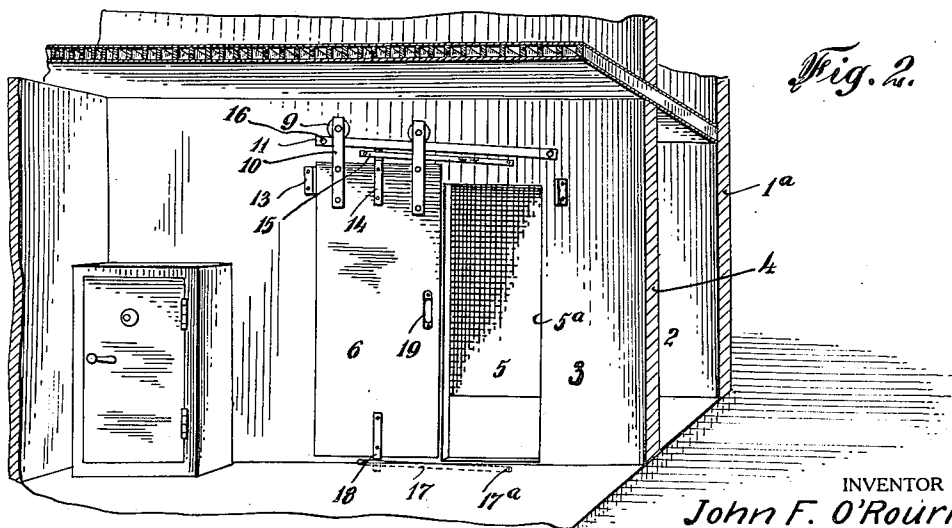
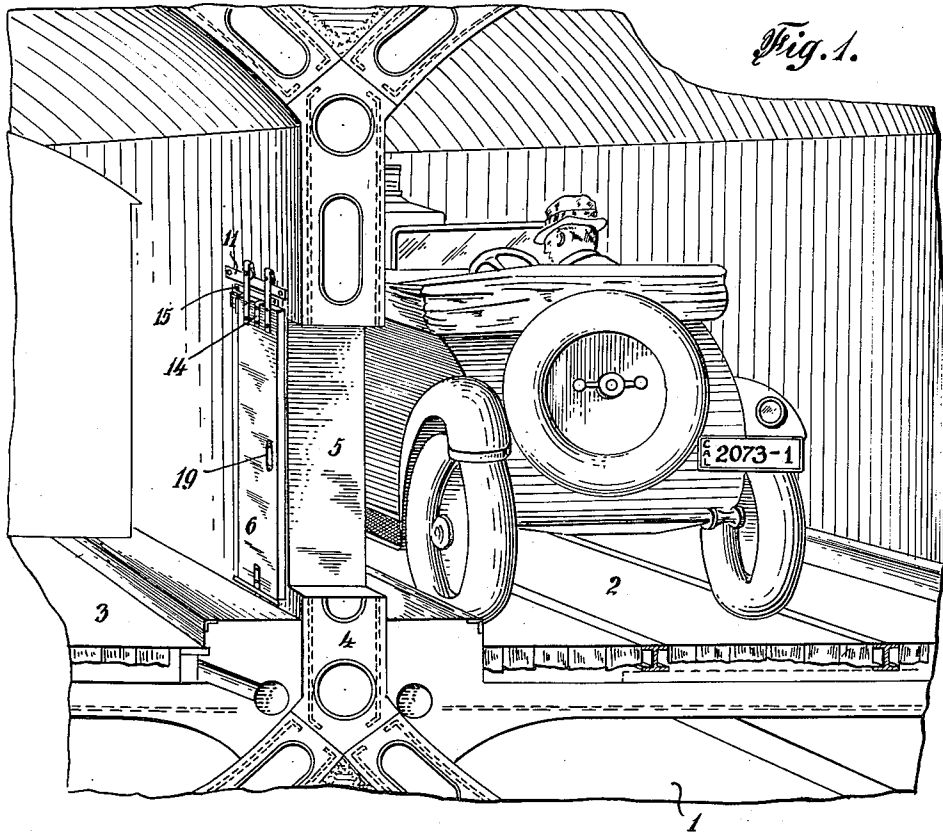
J. F. O'ROURKE

1,738,792

DOOR

Filed Nov. 13, 1925

3 Sheets-Sheet 1



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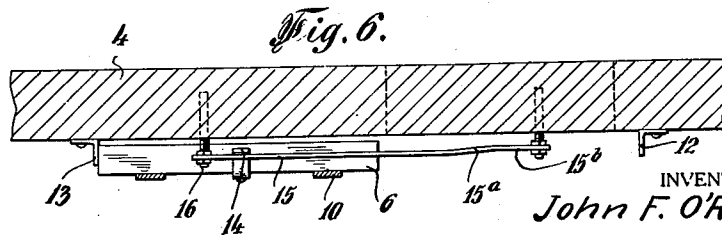
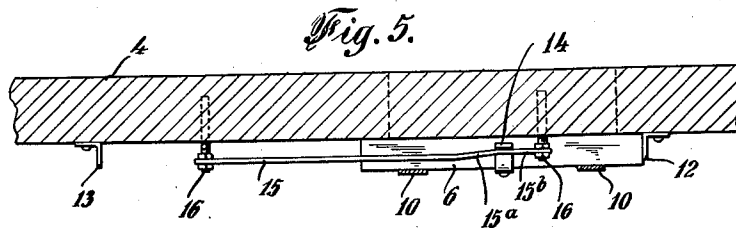
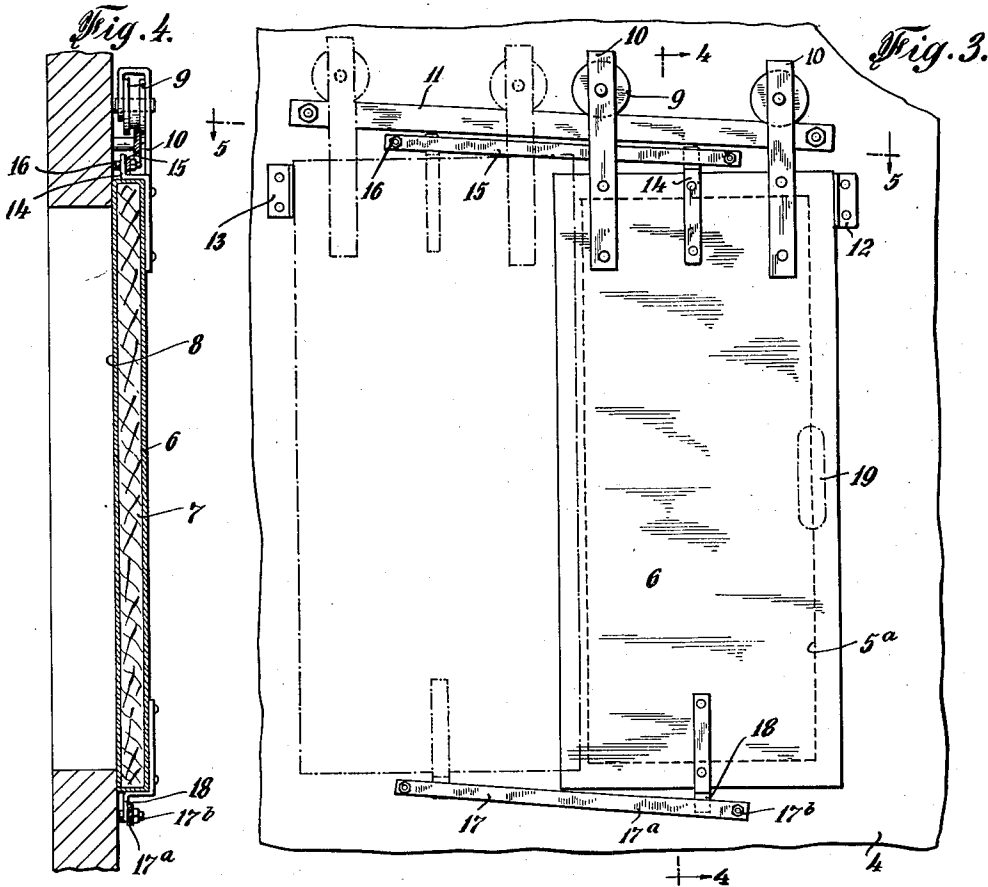
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Fig. 8.

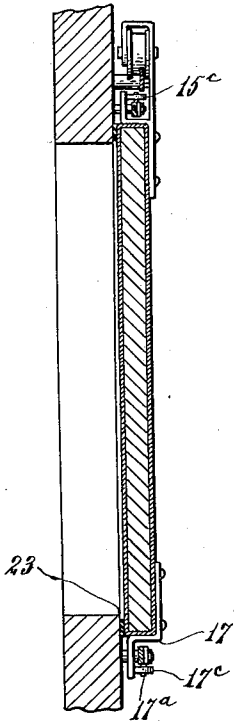


Fig. 7.

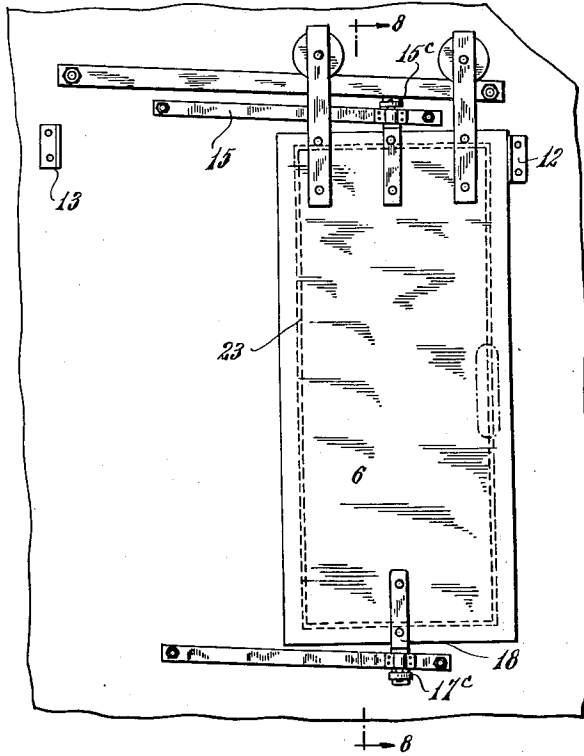


Fig. 9.

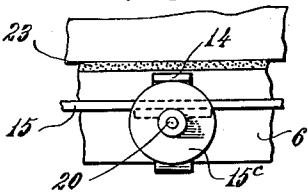


Fig. 11.

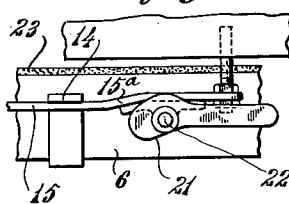


Fig. 12.

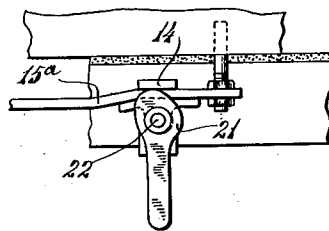


Fig. 10.

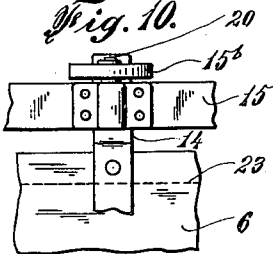
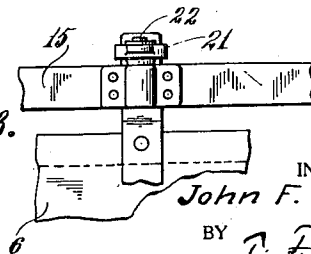


Fig. 13.



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UNITED STATES PATENT OFFICE

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DOOR

Application filed November 13, 1925. Serial No. 68,801.

In structures having adjoining compartments adapted for communication therebetween through one or more openings or doorways, such as in tunnels or subways having a common wall therebetween, as well as in buildings, particularly for some uses, it is important to be able to permit access from one compartment to another and have assurance that the door between the compartments will automatically close when released by the person who opens the same. This is particularly important in connection with tunnels and subways for vehicular traffic, whereby in case of fire, spilling of acids or for other reasons, smoke, gases, or fumes become disseminated in one of the compartments, whereby persons therein may readily make their exit to an adjoining compartment and be assured that the door between the compartments will close rapidly to prevent the smoke etc. from passing into the second named compartment.

The object of my invention is to provide means for so supporting a door that it will automatically close a doorway or opening in a wall or partition between adjoining compartments and will be forced automatically tight and rigidly retained against the wall to prevent the passage of smoke, gases and the like between the compartments.

My invention comprises novel details of improvement that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part hereof, wherein

Fig. 1 is a fragmentary view illustrating a portion of a tunnel or subway having two adjoining compartments or tubes embodying my invention;

Fig. 2 is a sectional view illustrating my improvements in connection with adjoining compartments in a building;

Fig. 3 is an enlarged side view illustrating my improved door in closed position;

Fig. 4 is a vertical section on line 4, 4, in Fig. 3;

Figs. 5 and 6 are horizontal sections, substantially on line 5, 5, in Fig. 3, respectively illustrating the door closed and open;

Fig. 7 is a detail side view illustrating a modification;

Fig. 8 is a vertical section on line 8, 8, in Fig. 7;

Fig. 9 is a detail plan view of part of Fig. 7;

Fig. 10 is a side view of Fig. 9;

Figs. 11 and 12 are detail plan views illustrating a modification, showing parts in different positions; and

Fig. 13 is a side view of Fig. 12.

Similar numerals of reference indicate corresponding parts in the several views.

In Fig. 1 I have illustrated a portion of a tunnel or subway 1 having parallel adjoining compartments or tubes 2, 3 separated by a common vertical wall 4, whereas in Fig. 2 the structure 1^a, having adjoining compartments 2^a, 3^a, divided by wall partition 4 is shown in the conventional form of building, such as a ware house.

The tunnel or subway 1 may be of any well known construction, as well as the structure 1^a. The opening or doorway 5 in wall 4 may be of any suitable dimensions adapted to permit access between the compartments. At 6 is a door, preferably of any suitable or well known fireproof construction, such as of wooden inner members at 7 protected by exterior metal sheets 8, as indicated in Fig. 4. The door 6 is adapted to slide edgewise to open and close the doorway 5 and said door is shown provided with upper spaced wheels 9 journaled upon straps or supporting bars 10 in such a manner that said wheels may travel upon a track 11 suitably secured to wall 4 and spaced therefrom so that the door may slide edgewise along the wall. The track 11 is shown downwardly inclined so that when the door has been pushed to the open position (shown in dotted lines in Fig. 3) and is

released the door will automatically slide to a position to close the opening or doorway 5, a stop at 12 on wall 4 engaging the door to retain it in closed position, (Fig. 3). I provide means to cause the door to close laterally tightly against wall 4 in front of opening or doorway 5 when the door is in the closed position, (Fig. 5), and by preference so arrange the parts that when the door is opened and abuts a stop 13 on wall 4 the door will be in a position free from the wall, as indicated in Fig. 6. For such purpose I provide a projection or lug 14 on the door, preferably projecting above its upper edge, adapted to engage a bar 15 that preferably extends inclined substantially parallel with track 11 and inclined in substantially the same way as said track, which bar is spaced from wall 4 as by means of bolts 16 secured in the wall and to said bar. The bar 15 is shown as extending for a portion of its length substantially parallel with wall 4, (Figs. 5 and 6), and at a point near the vertical side 5^a of opening or doorway 5, the bar 15 is inclined inwardly toward the wall at 15^a, and at 15^b, (beyond the part 15^a), the bar 15 preferably extends substantially parallel with the wall 4, the bar thereby having an inset portion whereby as the door slides to its closed position by gravity along the downwardly extending track 11 the projection 14 will engage the inclined inset portion 15^a of bar 15 and the door will thereby be caused to move bodily laterally so as to press or jamb against the wall 4 when the door is in closed position. At or below the bottom of the door I preferably provide a second bar 17 secured to the wall by bolts 17^b, said second bar having an inset portion at 17^a substantially similar to the portion 15^a of bar 15, and the lower part of the door is provided with a downwardly extending projection 18 adapted to engage the bar 17, whereby when the projection 18 engages the inset portion 17^a of bar 17 the lower portion of the door will be forced laterally against the wall.

The bolts 16 and 17^b, with the two nuts on each bolt, as illustrated, permit the bars 15 and 17 to be adjusted respecting the distance from the wall and be locked in set position by the nuts on opposite sides of the bars to regulate the degree of pressure of the door against the wall in the closed position of the door.

In accordance with my invention, the door 6 being maintained closed by reason of the downwardly inclined position of track 11 and by the cooperation of the bars 15, 17 with the corresponding projections 14, 18 on the door, affords security between adjacent compartments against the escape from one compartment to the other of smoke, gases, fumes, or the like, through a doorway. In the event that there should be the necessity for sudden exit of one or more per-

sons from one compartment to the other, as by reason of the accumulation of smoke, gases, fumes or the like, in one compartment, such person may readily open the door by sliding it edgewise utilizing a hand grip 19 on the door, and as soon as such person has passed through the doorway into the adjacent safe compartment and has released the door it will automatically slide to its closed position and will be automatically pushed laterally against the wall to prevent the escape of smoke, etc. from one compartment to another. My invention is particularly useful in tunnels and subways for vehicular and pedestrian traffic since the doorways 5 with their automatically closeable doors may be arranged along the common wall 14 between the tubes of the tunnel or subway at any suitable distances apart, whereby persons in any portion of the tunnel or subway readily may make their exit through a near-by doorway from one compartment to another and be assured that the door will close automatically behind him to prevent smoke, etc. from following through the doorway. My invention is particularly useful in subaqueous tunnels built for vehicular traffic, although it is also advantageous in tunnels and subways having tracks for trolleys and railway cars as well as roadways for automobiles. In warehouses and buildings for other purposes my improved door will also be of great advantage to permit the passage of people from one compartment to another to escape from smoke, gases, fumes and the like.

In Figs. 7, 8, 9 and 10 I have illustrated a modified construction in which the inset 15^a of bar 15 is illustrated as movable so that when the projection 14 engages the same the projection will bear against said movable portion to reduce friction. As shown in said figures the movable inset portion is shown in the form of a wheel or roller 15^c, which is journaled upon a pivot or stud 20 secured upon bar 15 at the approximate position of the inset portion 15^a previously described, so as to rotate when engaged by the projection 14. The same construction is shown applied near the bottom upon the bar 17 which carries a movable inset shown in the form of a roller 17^c journaled upon said bar by means of pivot or stud 17^d for engagement with projection 18, in the manner described with respect to the movable inset portion 15^c.

In the form shown in Figs. 11 to 13 I provide a movable member 21, shown in cam-like form, pivotally supported upon a pivot 22 carried by bar 15, whereby when the door 6 is open the member 21 may be set in the position shown in Fig. 11, and when the door is closed a person passing through the doorway may operate the member 21 to force its free end against the projection 14 to press or jam the door closed tight against the wall.

In any of the forms shown a packing or

gasket 23 may be provided either along the margin of the doorway, as indicated in Figs. 7 and 8, or may be provided along the door in the margin of the door, as indicated in Figs. 9 to 13, whereby when the door is forced closed against the wall it will be made smoke and gas proof.

While I have illustrated and described a particular form of embodiment of my invention it will be understood that my invention is not limited to the details of construction set forth since the same may be varied, within the scope of the appended claims without departing from the spirit of my invention.

Having now described my invention what I claim is:—

1. A structure of the class described comprising a wall and a doorway in said wall, a door to close said doorway, means slidably supporting the door for edgewise travel relatively to the doorway, a bar carried by the wall and having an inset portion adjacent to the closed position of the door, said door having a projection cooperative with said bar adapted to cause the door while traveling edgewise to move bodily laterally to jam its edges tightly against the wall and close the doorway tightly all around the margin of the door.

2. A structure of the class described comprising a wall and a doorway in said wall, a door to close said doorway, means slidably supporting the door for edgewise travel relatively to the doorway, a bar spaced from the wall, said bar having a portion substantially parallel with the wall and having an inclined inset portion adjacent to the doorway, said door having a projection cooperative with said bar for causing the door to move bodily laterally against the wall while traveling to closed position and to move away from the wall in open position, and means adjustably securing the bar to the wall to regulate the degree of pressure of the door against the wall in the closed position of the door.

3. A structure as set forth in claim 2, in which the means securing the bar to the wall comprise bolts secured to the wall supporting the bar, and nuts on the bolts on opposite sides of the bar to adjust the bar for regulating the degree of pressure of the door against the wall in the closed position of the door.

4. A structure of the class described comprising a wall and a doorway in said wall, a door to close said doorway, means slidably supporting the door for edgewise travel relatively to the doorway, a bar carried by the wall and having an inset portion adjacent to the closed position of the door, said door having a projection located between its vertical edges and cooperative with said bar adapted to cause the door to move bodily laterally against the wall while traveling to closed position, a bar adjacent to the lower portion of the door secured to the wall and

having an inset portion near the doorway, and a projection extending downwardly from the door between its vertical edges adapted to engage the last named bar to move the door laterally against the wall while traveling to closed position for closing the door tightly all around its margin.

5. A structure as set forth in claim 4, provided with means adjustably retaining the bars for regulating the degree of pressure of the door against the wall in the closed position of the door.

JOHN F. O'ROURKE.