DRAFTSMAN.

No. 874,729. PATENTED DEC. 24, 1907.

T. DE BOBULA.

REINFORCED CONCRETE DOOR STRUCTURE.

APPLICATION FILED OCT. 11, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

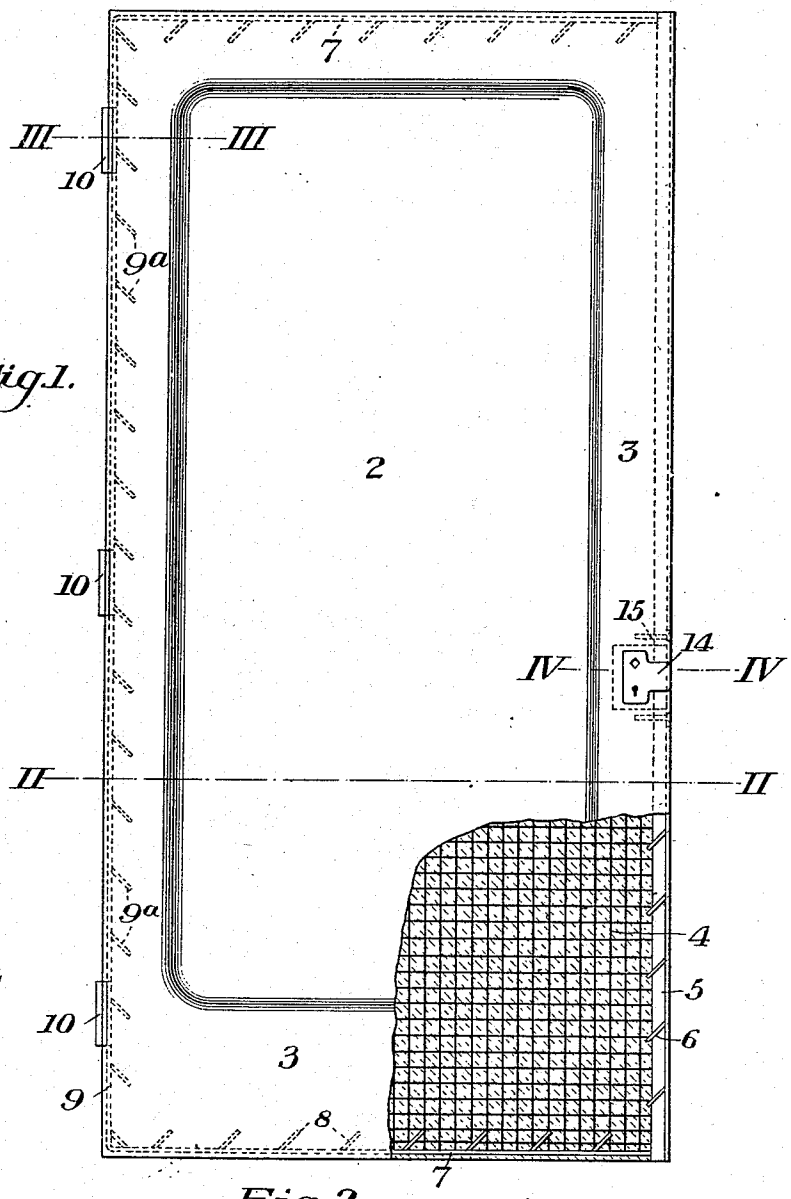
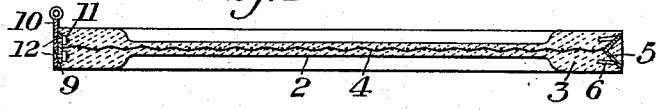


Fig. 2.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

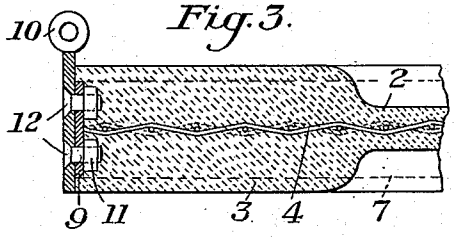


Fig. 4.

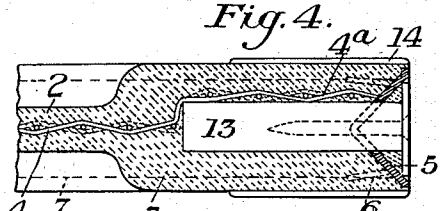


Fig. 5.

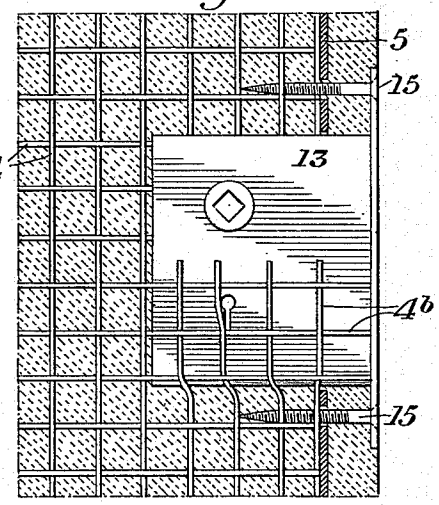


Fig. 6.

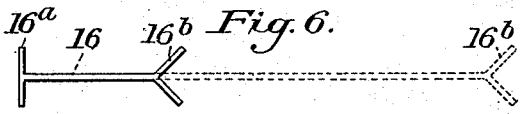


Fig. 7.

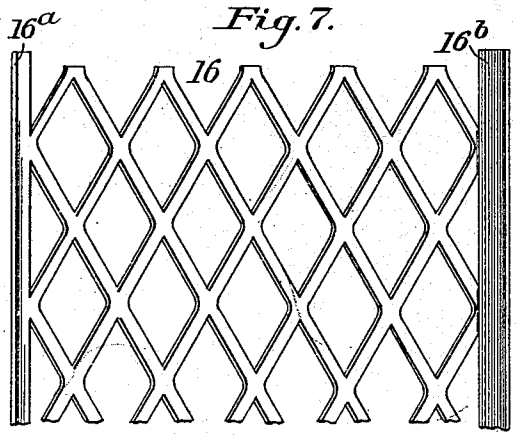
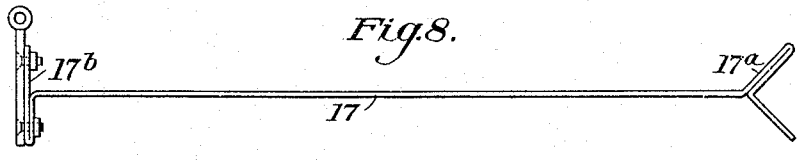


Fig. 8.



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UNITED STATES PATENT OFFICE.

TITUS DE BOBULA, OF PITTSBURG, PENNSYLVANIA.

REINFORCED CONCRETE DOOR STRUCTURE.

No. 874,729. Specification of Letters Patent. Patented Dec. 24, 1907.

Application filed October 11, 1906. Serial No. 338,347.

To all whom it may concern:

Be it known that I, TITUS DE BOBULA, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Reinforced Concrete Door Structure, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of a door partly broken away embodying my invention; Fig. 2 is a section on the line II—II of Fig. 1; Fig. 3 is an enlarged section through one of the hinge attachments taken on the line III—III of Fig. 1; Fig. 4 is a similar view through the lock taken on the line IV—IV of Fig. 1; Fig. 5 is a detail sectional view on a larger scale showing the manner in which the lock casing is seated in the structure; Fig. 6 is a detail view showing a modified form of reinforcement; Fig. 7 is a detail view showing a portion of another style of reinforcement; and Fig. 8 is a detail view showing still another form of reinforcement with a hinge member attached thereto.

My invention has relation to concrete doors, and is designed to provide a door of this character which shall combine maximum strength with minimum weight; and in which the concrete composing the body of the door shall be reinforced in a manner to not only provide great strength but also to protect the closing edges of the door.

A further object is to provide novel means for securing to the door structure the hinge and lock fixtures, which have heretofore been a source of much difficulty in concrete doors.

With these objects in view, my invention consists in the novel construction, arrangement and combination of parts all substantially as hereinafter described and pointed out in the appended claims.

In the drawings, the numeral 2 designates the concrete door body which is of increased thickness at its marginal portions 3, its central portion or panel being appreciably thinner. Molded in the concrete which forms the door body is a reinforcement 4, which in the form shown in Figs. 1 to 5, inclusive, consists of ordinary wire mesh. The closing edge of the door is reinforced by a vertical member 5, which is preferably in the form of a V-shaped strip, having tongues 6, cut therefrom, and bent backwardly into and embedded in the concrete. The concrete flows through the openings formed by cutting out this tongue, and fills the space within the concave face of the angle strip, as shown in Fig. 2, the edges of the strip coming flush with the edge face of the door and forming a protection for the corners thereof. The top and bottom edges of the doors are reinforced by transverse metal strips 7, which may be of the same form as the strip 5, or which may be simply flat strips with tongues 8, cut therefrom and extending back into and embedded in the concrete. The hinge edge of the door is reinforced by a flat vertical strip 9, which is embedded in the concrete, and which has fingers 9^a similar to the fingers 6 and 8 of the strips 5 and 7.

10 designates hinge attachments or straps. To provide for securing these straps to the door, threaded nuts 11 are molded into the door behind the reinforcing strip 9 in a manner shown in Fig. 2, screws being inserted in these nuts prior to molding the concrete. After the door is molded the screws are withdrawn leaving openings by means of which the screws 12 which secure the hinge straps to the door may be afterwards inserted and engaged with the nuts 11.

13 designates the lock case, which is inserted into the edge of the door in a cavity molded therein, the reinforcing plate 5 having a slot or opening to receive it. The wire mesh 4 which constitutes the reinforcement is split, one portion 4^a being brought around one side of the lock case, as shown in Fig. 4, and another portion 4^b being brought against the opposite side, as shown in Fig. 5.

14 designates the usual face plate secured to the face of the door, and through which the knob passes, thereby holding the lock case in place. The said case is further secured by means of screws or nails 15, which extend into the concrete in the manner shown in Fig. 5.

Instead of the wire mesh 4, various kinds of metal reinforcement may be employed. Thus, I may take a rolled shape 16 of the form shown in full lines in Fig. 6, and cut or slit its web portion to enable it to be expanded into the shape shown in dotted lines in said figure. The flanges 16^a at one edge of this strip form the vertical reinforcement for the hinge edge of the door, while the V-shaped flanges 16^b at its opposite edge constitute the reinforcement for the closing edge of the door.

Fig. 8 illustrates another form of rein-

forcement, consisting of a sheet 17 of expanded metal, one edge portion of which is folded upon itself to form the V-shaped flanges 17^a which constitute the angular vertical reinforcement for the closed edge of the door, while its other edge portion is bent to form the flange 17^b which constitutes the reinforcement for the hinge edge of the door. Instead of securing the hinge straps to the reinforcing member, they may obviously be formed integrally therewith.

By the construction described, the concrete body is so thoroughly reinforced by metal that a minimum amount of concrete may be employed, thereby reducing the weight of the door to a minimum. These doors may be cheaply manufactured; they are fireproof; and the hinge and lock attachments are securely provided for. The edge portions of the doors are also protected by the reinforcements.

Various changes may be made in the details of construction and arrangement without departing from the spirit and scope of my invention, since

What I claim is:—

1. A concrete door having a metal reinforcement embedded therein and extending across substantially the entire body of the door and having a V-shaped portion embedded in one vertical edge portion of the door, the free edges of said V extending to the surface at the corner edges of the door, and a reinforcing piece at the opposite edge of the door, said piece and the V-shaped portion providing means for the attachment of lock and hinge fixtures; substantially as described.

2. A concrete door having a metal reinforcement embedded therein, and extending across substantially the entire body of the door, and having a V-portion at one edge, the edges of the V extending to the surface at the corner edges of the door; substantially as described.

3. A concrete door structure having a V-shaped edge reinforcing strip formed with fingers extending into and embedded in the body portion of the door, and forming openings through which the concrete fills said strip; substantially as described.

4. A Concrete door structure having a reinforcement embedded therein and extending throughout substantially the entire body of the door composed of expanded metal having a flat strip or flange at one edge portion and a V-shaped flanged at the opposite edge portion; substantially as described.

In testimony whereof, I have hereunto set my hand.

TITUS DE BOBULA.

Witnesses:

GEO. H. PARMELEE,

H. M. CORWIN.