A. J. ELLIS.

DOOR.

APPLICATION FILED SEPT. 21, 1907.

916,128. Patented Mar. 23, 1909.

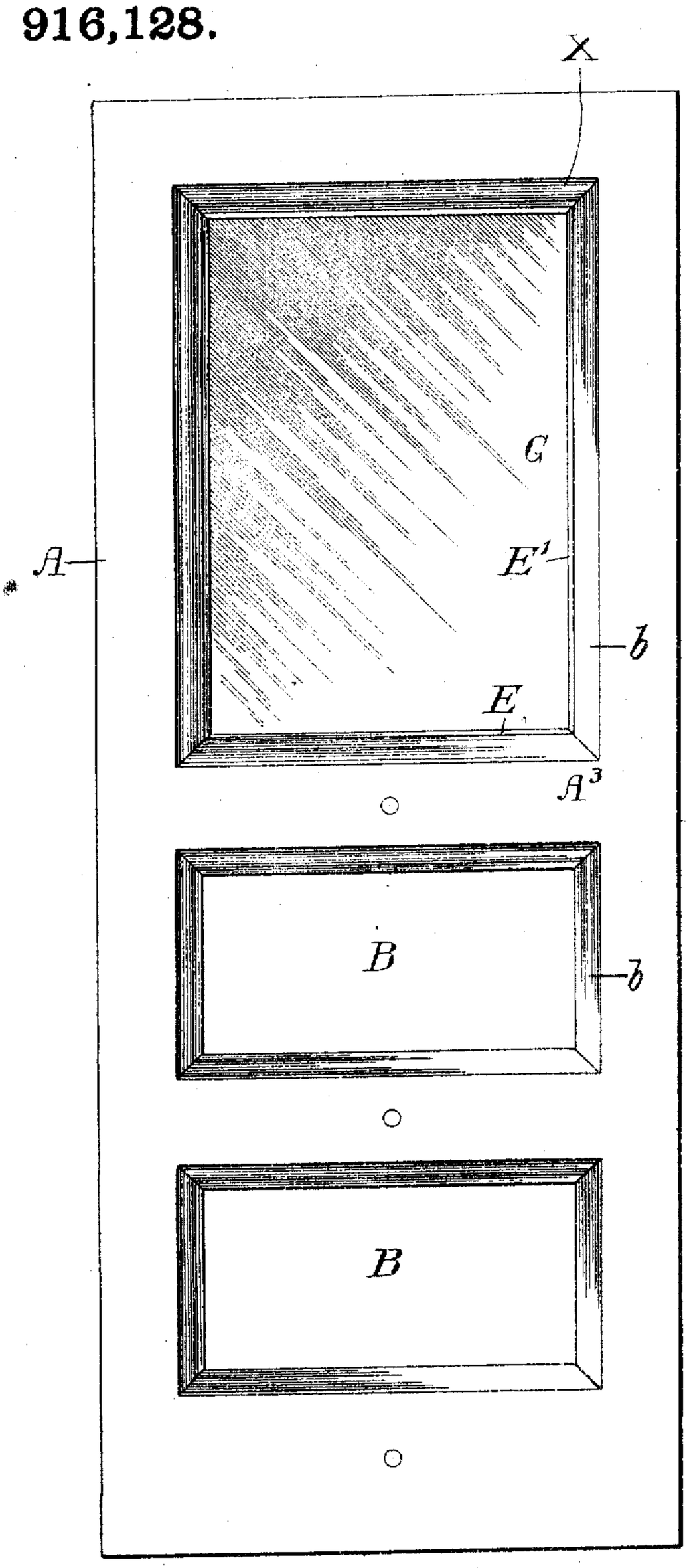

Fig: 1.

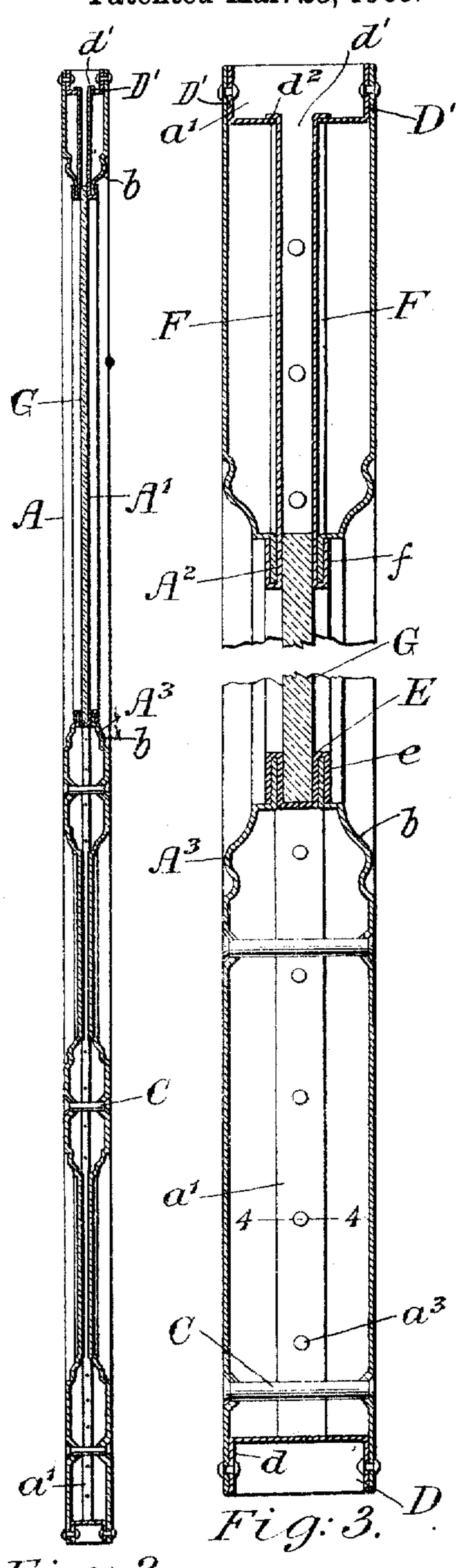

Fig: 2.

Fig: 3.

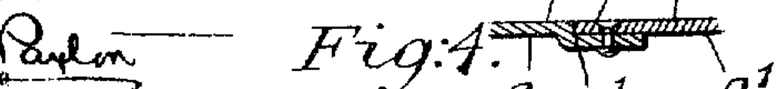

Fig: 4.

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UNITED STATES PATENT OFFICE.

ALFRED J. ELLIS, OF WOODCLIFF-ON-HUDSON, NEW JERSEY.

DOOR.

No. 916,128. Specification of Letters Patent. Patented March 23, 1909.

Application filed September 21, 1907. Serial No. 393,909.

To all whom it may concern:

Be it known that I, ALFRED J. ELLIS, a citizen of the United States, and resident of Woodcliff-on-Hudson, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Doors, of which the following is a specification.

My invention relates to improvements in doors and particularly to that class known as fire-proof doors usually constructed of metal.

In the present invention, I have provided a door which is made entirely of sheet metal or of sheet material possessing the requisite durability and fire-proof qualities.

The object of my invention is to provide a door of this character which will be simple in its construction, comparatively cheap to make, dispense with all filling materials generally used in doors of this type, and present a door of highly finished and attractive appearance.

A further object is to provide a door of this character, having a glass panel whereby light may pass to opposite sides of the door, the surface edges of the panel molding adjacent to the glass, being finished to promote the attractive appearance of the door.

In the accompanying drawing forming part of this specification, Figure 1, is an elevational view of one form of the improved door. Fig. 2, is a central vertical sectional view of the door illustrated in Fig. 1. Fig. 3, is an enlarged vertical sectional view of the door minus the panels below the glass, said section being broken to permit the enlarged illustration. Fig. 4, is a sectional detail view on the line 4—4, Fig. 3.

The main or body portion of the door is constituted by two sections preferably of sheet metal of the required thickness and each are subjected to heavy pressure by proper dies so as to assume the special form necessary for the purposes in view. One section is designated A, while the other section is A′, and at the upper portion of both of the sections A and A′ the metal is removed to present a large rectangular opening suitable for the application of the glass panel retaining-means and the glass panel. These details will be more fully dwelt upon shortly.

In the operation of shaping the sections A and A′ they may have any desired features or configuration imparted thereto. Thus Figs. 1 and 2 show the door sections so pressed that they present below the glass panel opening, the pressed panels B B which can be surrounded by an ornamental molding *b*.

The metal at the edges of the sections A and A′ is turned at right angles to constitute vertical end walls for the door, the turned parts *a* of the section A at both edges of the door having offset bends a' each of which receives the adjacent turn a^2 of the section A′ and thus provides a flush over-lapping joint externally at both door edges. The sections A and A′ through the medium of their turns and over-lapping portion are rigidly connected together by rivets a^3 which are externally inserted through openings therefor in the over-lapping portions and upset and headed by means of a heavy metal bar which is introduced within the space between the sections and held against the rivets to afford a proper abutment during the riveting operation.

As shown, the removal of the metal from the sections A and A′ for presenting the glass panel opening results in flanges A^2 for each section, which flanges extend inwardly with respect to the panel opening and are located at the four sides of said opening. Manifestly, the arrangement of flanges is duplicated and strictly corresponds at all sides to the panel opening. The door illustrated has an ornate molding A^3 immediately contiguous to each flange. The character of such ornamentation, however, can be left entirely to fancy or omitted altogether.

The spaces between the sections A and A′, below the lower panel B, between said lower panel and the upper panel B, and between the latter and the glass panel opening, are spanned by stay bolts C, which while headed at one end are inserted through openings therefor in one section of the door and bear within openings therefor in the opposite section of the door where they are riveted. The metal of the sections A and A′ immediately surrounding each stay bolt perforation is inwardly upset to permit the ends of the bolt to lie flush with the exterior surfaces of the door.

The sections A and A′ are further connected and braced relative to each other at the bottom of the door by a metal reinforce D

consisting of a sheet of metal having its side and end edge portions bent down at a right angle so that said reinforce will snugly occupy the space between the sections A and A' at the bottom portion of the door. The side edge portions *b b* of said reinforce D are connected to the lower edge portions of the sections A and A'. This reinforce, besides constituting a further connection and brace between the main door sections as stated, also serves to close the space between said sections at the bottom portion of the door.

E E' designate U-shaped strips which are designed to serve as retaining means for the glass panel. The bottom strip E is supported in position by virtue of the fact that it has over bends *e* which engage the bottom flanges A^2 of the sections A and A'. The vertical side U-shaped retaining strips E' have bends corresponding with the bends *e*, and these are held engaged with the vertical side flanges A^2 of the main door sections and thus prevent said sections E' from being laterally displaced in one direction or the other. A reinforce D', similar to the reinforce D, but in inverted relation relative to the latter, snugly occupies the space between the main door sections at the top part of the door and is riveted to said section sides. The bottom of the reinforce D' has an opening therein extending to the edge portions *d'* of said reinforce.

Downwardly inserted through the reinforce opening are two parallel plates F F which extend the width of the opening and depend down so that lower edge parts thereof can be bent to form overturns *f* embracing the upper transverse flanges A^2 and thus presenting the top section of the glass panel retaining means. The upper edge portions of the plates F are bent horizontal upon the bottom of the reinforce D so as to maintain such plates properly in position.

From the description thus far, it will be seen that a sheet metal door of fire-proof qualities and highly attractive appearance is produced and of comparatively simple construction and durable character. The glass panel G is introduced into position by simply being permitted to slide down the opening presented at the top of the plates F F and when said panel is at the limit of its descending movement it will be firmly retained by the U-shaped strips at the bottom, and sides and the lower portions of the plates F at the top of the panel opening.

In the event of the sections A, A', being absolutely imperforate when the door is in its completed form, which would be the case if the glass panel opening was omitted, the fire-proof qualities of the door would obviously be greatly augmented.

The heads of the stay bolts C, may be brazed to the metal providing their counter sink bearings, and thus act to prevent the collapse of the side sections A, A'.

In Fig. 3, the door structure is practically the same as that previously described, but with the omission of the panels B B.

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

1. A door comprising two side sections, secured together and both having metal removed at their upper portions to present an opening for an independent panel, the metal of the side sections at the four sides of the panel opening embodying inwardly projecting pairs of flanges, and U-shaped bearing sections engaging said flanges and having overbends to maintain them against dis-engagement, and a panel bearing in and retained by said U-shaped sections.

2. A door comprising two side sections secured together and both having metal removed at their upper portions to present an opening for an independent panel, panel retaining means at the bottom and sides of said opening, the side sections embodying depending horizontal flanges at the top of said panel opening, a reinforce within the top portion of the door and secured to the side sections, the bottom of said reinforce containing an opening extending parallel with the width of the door, plates depending down from said reinforce opening and having overbends to embrace the upper flanges of the panel opening, the upper edge portions of said plates being turned upon the reinforce bottom, and a panel insertible at the top opening presented by the plates and adapted to descend, bear in and be retained by the overbend sections coöperating with the opening flanges.

3. A door comprising two continuous sheets of thin metal pressed to form the entire side of a door, each having pressed therein panels, and the vertical edges of each of said sheets being turned to overlap the turned edges of the other sheet when assembled; reinforcing strips adapted to be inserted between said sheets at the top and bottom of the door to render the construction rigid and fix the thickness of the completed door, said strips being bent to form channels opening outward from the top and bottom of the door; and suitable fasteners for securing the lapped metal portions together.

4. A door comprising two continuous sheets of thin metal pressed to form the entire side of a door, each having pressed therein panels, and the vertical edges of each of said sheets being turned to overlap the turned edges of the other sheet when assembled; reinforcing strips adapted to be inserted between said sheets at the top and bottom of the door to render the construction rigid and fix the thickness of the completed door, said strips being bent to form channels opening outward from the top and bottom of the

door; the said reinforcing strips at the top being provided with a central open slot adapted to permit the passage downward between the door sections of an inserted panel; and suitable fasteners for securing the lapped metal portions together.

Signed at New York in the county of New York and State of New York this 13th day of June A. D. 1907.

ALFRED J. ELLIS.

Witnesses:
WM. PAXTON,
FRANK M. ASHLEY.