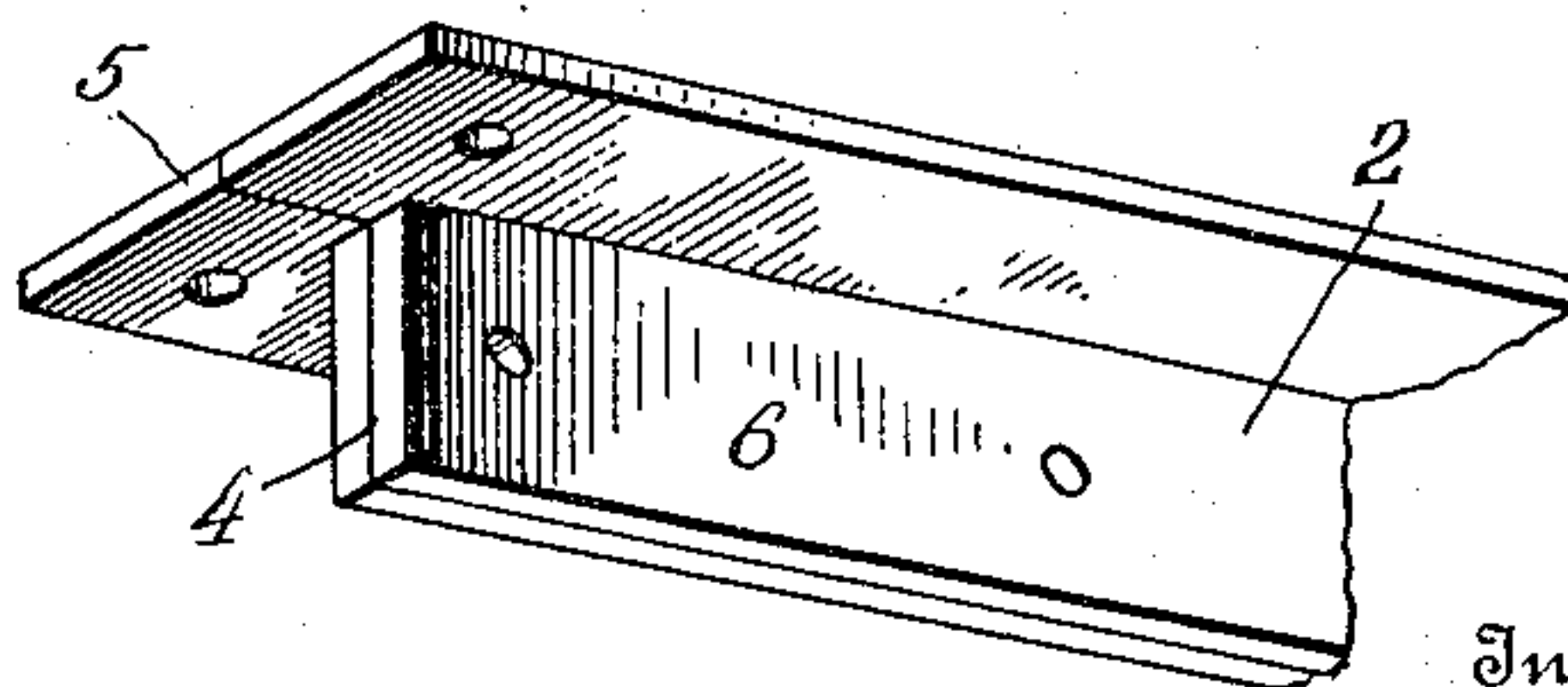
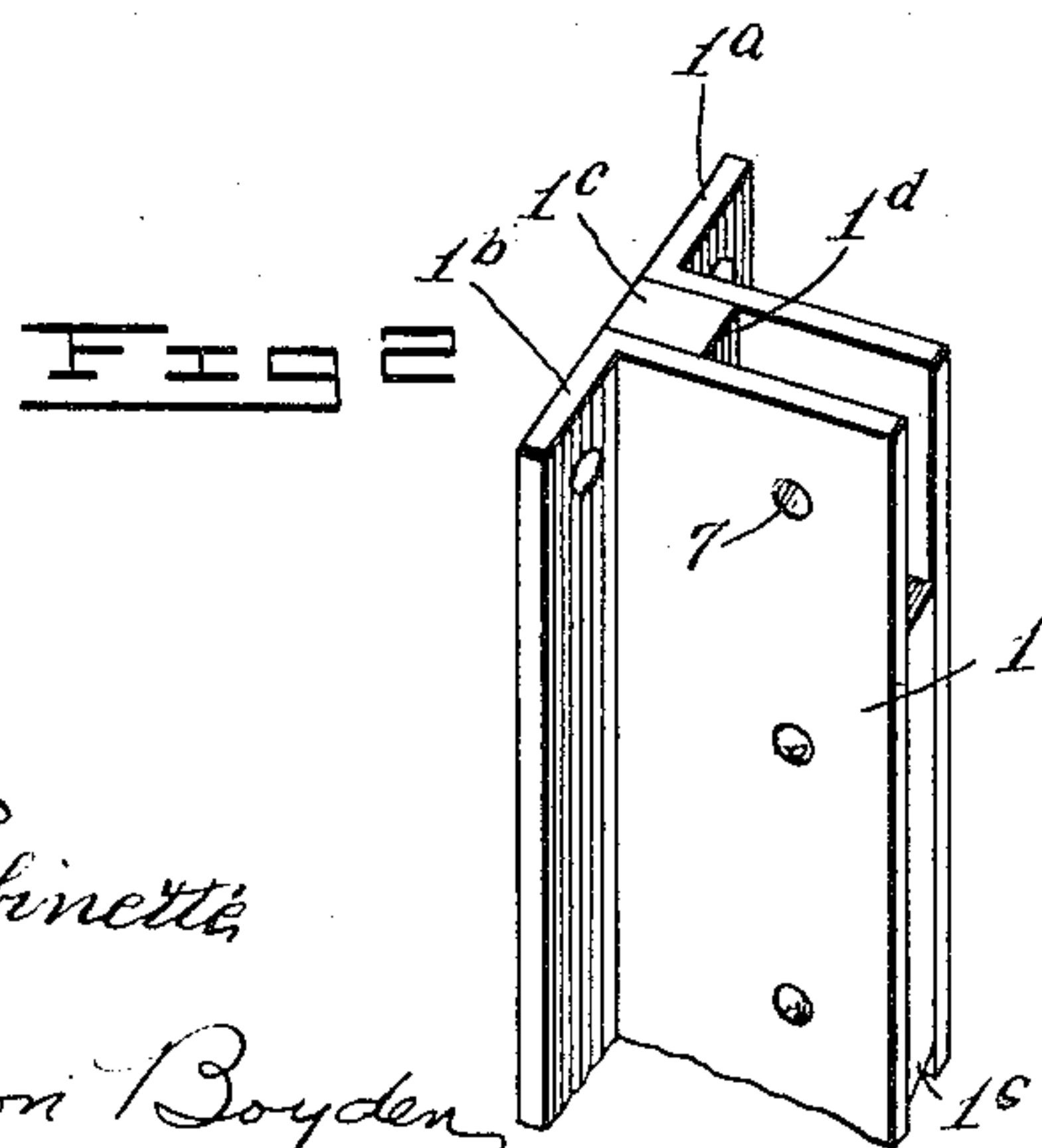
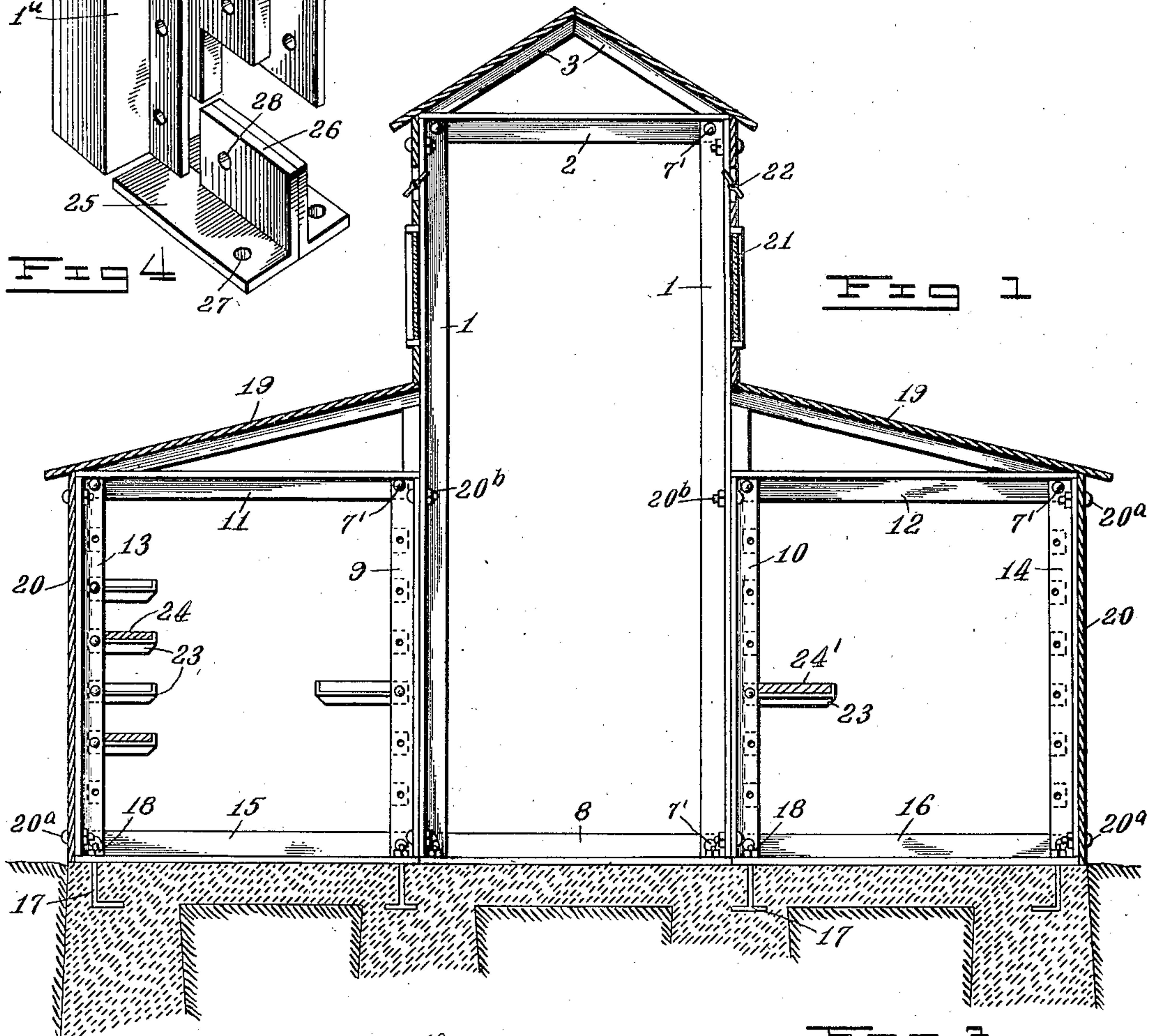
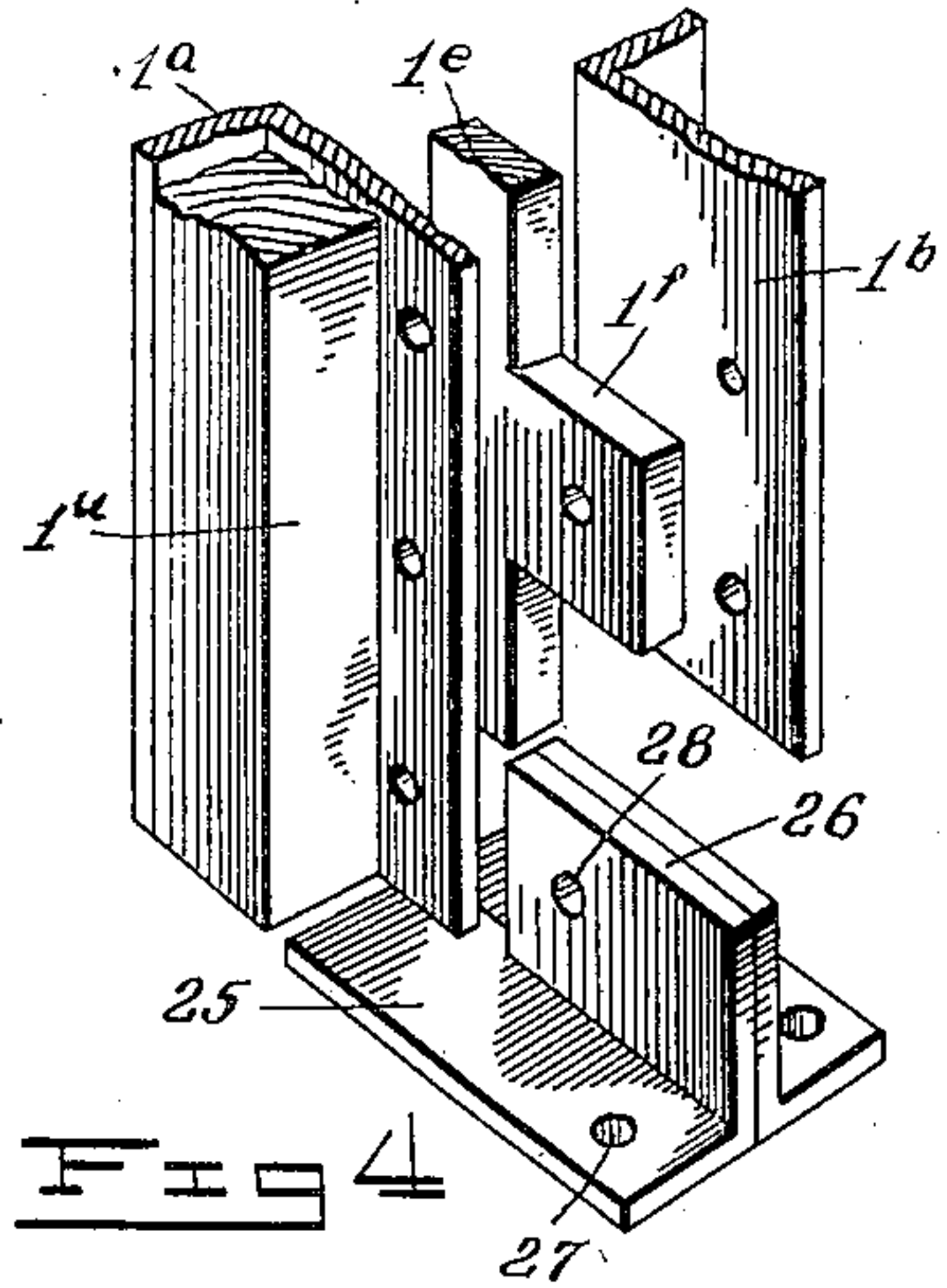


R. R. BELCHER.
BUILDING AND SHELVING CONSTRUCTION.
APPLICATION FILED APR. 27, 1908.

925,677.

Patented June 22, 1909.

3 SHEETS—SHEET 1.



Witnesses
H. G. Robinette

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Ralph Roy Belcher

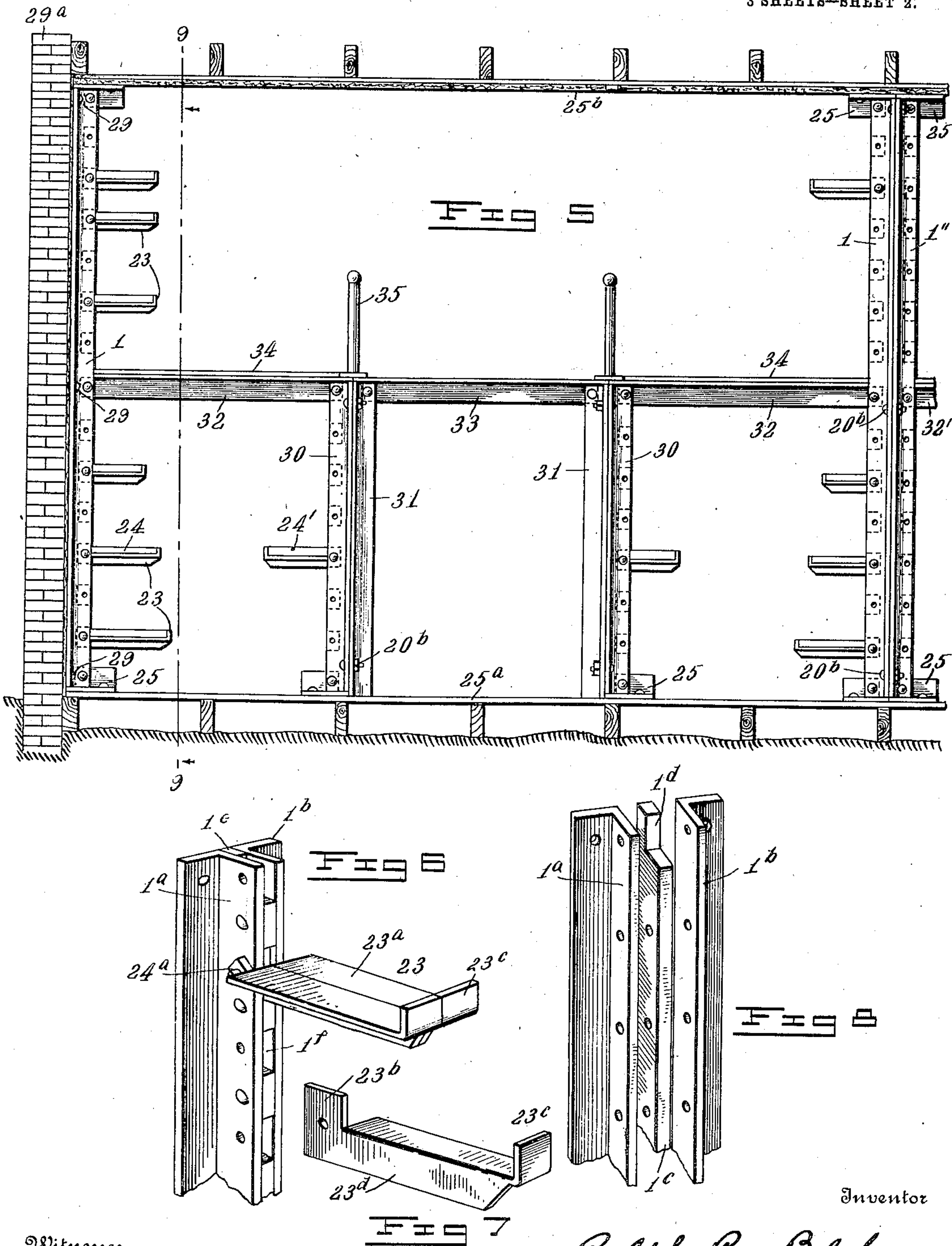
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3 SHEETS—SHEET 2.



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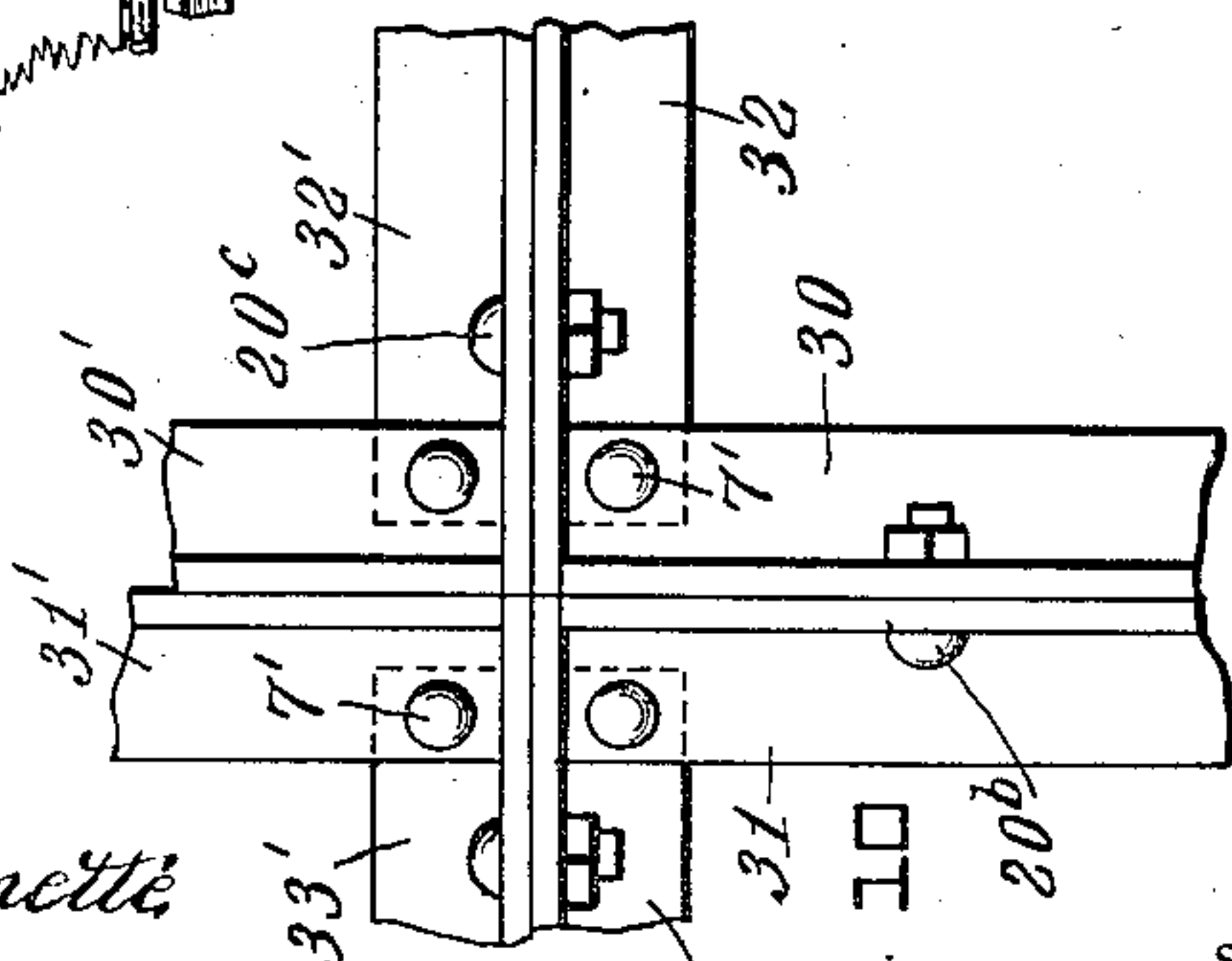
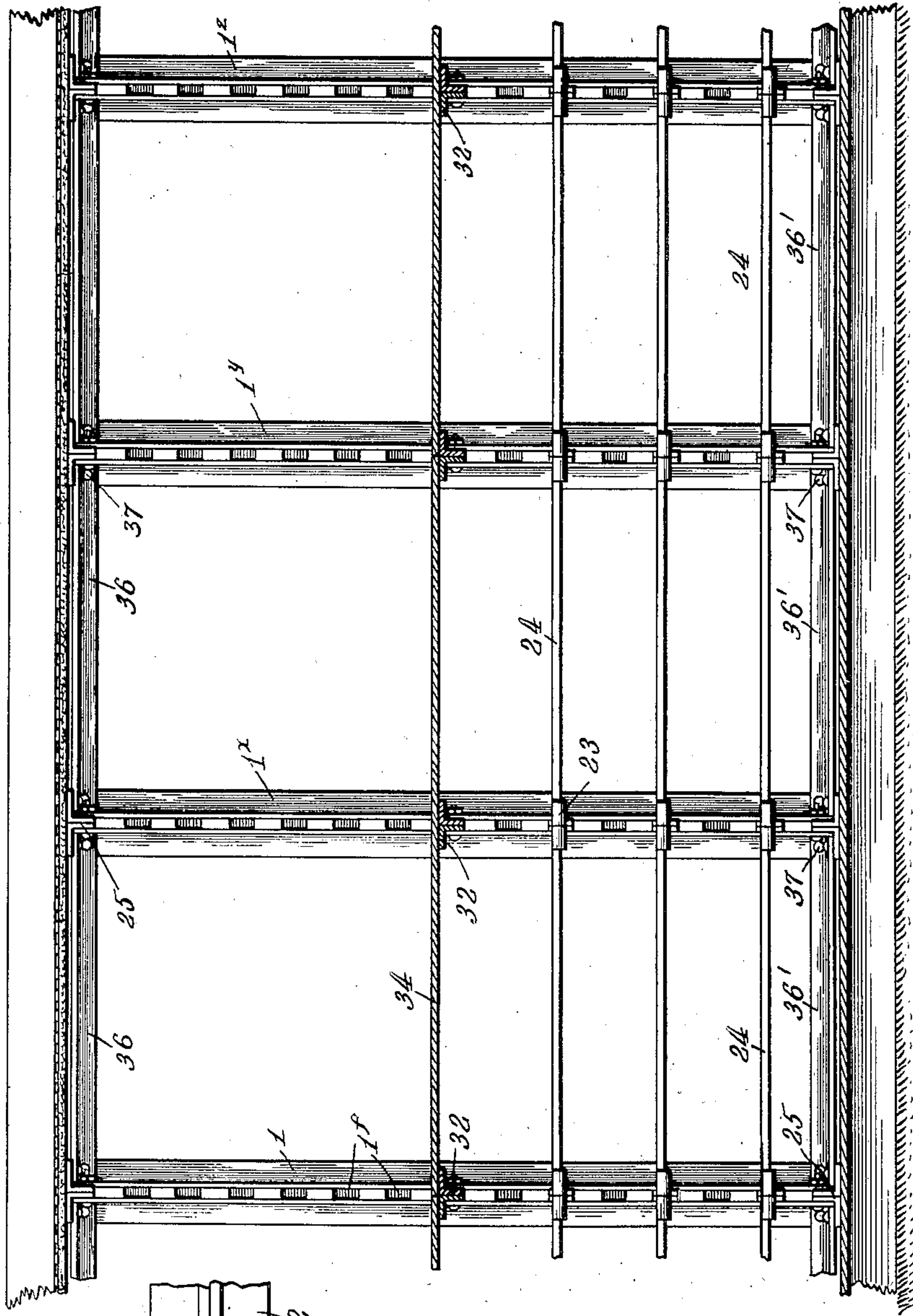
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3 SHEETS—SHEET 3.

FIG 3



Witnesses
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FIG 4

UNITED STATES PATENT OFFICE.

RALPH ROY BELCHER, OF BAINBRIDGE, GEORGIA.

BUILDING AND SHELVING CONSTRUCTION.

No. 925,677.

Specification of Letters Patent.

Patented June 22, 1909.

Application filed April 27, 1908. Serial No. 429,399.

To all whom it may concern:

Be it known that I, RALPH ROY BELCHER, a citizen of the United States, residing at Bainbridge, in the county of Decatur and State of Georgia, have invented new and useful Improvements in Building and Shelving Construction, of which the following is a specification.

My invention relates to a system of building construction and more particularly to a system especially designed for store rooms, ware houses and the like.

One object of the invention is to provide a unit system of construction by means of which a building may be extended indefinitely in all directions.

A further object of the invention is to provide a knock down structure which may be readily assembled and disassembled.

A still further object of the invention is to provide a strong, simple, and cheap system of building construction which may either be applied to buildings already in existence, or which may be readily utilized to erect either permanent or temporary new structures.

With the above and other objects in view, my invention consists in the construction and arrangement of parts hereinafter described, and illustrated in the accompanying drawings in which:

Figure 1 is a transverse section of a building constructed in accordance with my invention. Fig. 2 is a perspective view of the top of one of my improved columns. Fig. 3 is a perspective view from below of the end of the sill or lintel. Fig. 4 is a fragmentary perspective view of the bottom of a column and associated pedestal, the parts being shown separated for the sake of clearness. Fig. 5 is a cross sectional elevation showing my invention applied to a building already constructed. Fig. 6 is a perspective view showing my improved shelf rest and supporting column. Fig. 7 is a perspective view showing one of the members of such shelf rest. Fig. 8 is a perspective view of my improved column, showing the parts thereof separated. Fig. 9 is a longitudinal section through a building in which my invention is employed, such section being taken substantially on the line 9—9 of Fig. 5. Fig. 10 is a fragmentary side elevation on an enlarged scale showing a detail of construction hereinafter described.

Referring to the drawings in detail, one of the fundamental elements of my improved construction consists of a novel form of column 1.

As clearly shown in Figs. 2 and 8, this column comprises a pair of L-irons 1^a and 1^b , spaced apart by means of a plate 1^c co-extensive with said L-irons, the three parts being securely riveted together. The upper end of the plate 1^c is cut away or notched, as at 1^d , to provide a socket for the reception of the cross beams, hereinafter described. In erecting the building, such for example, as shown in Fig. 1, I place two such columns 1 in position, and connect them at their upper ends by means of a lintel 2, above which is arranged the usual or any desired roof, 3.

By reference to Fig. 3, it will be seen that the lintel is of substantial T-shape and preferably comprises a pair of L-irons riveted together. The web $6'$ of such T-shaped lintel is preferably cut away as at 4, so as to leave the flanges projecting, as at 5. By reference to Figs. 2 and 3, therefore, it will be readily understood that the web portion 4 is adapted to be embraced by the two spaced members of the column, and to fit into the notch in the plate 1^c . In this position the flanges 5 rest upon the top of the spaced members of the column, and the parts are secured in position by means of bolts $7'$, passing through the holes 7, in said members.

At the bottom of the columns, I provide a member 8 which constitutes a sill, and is in all respects similar to the lintel 2, just described. This sill may rest upon a bed of concrete, and is secured to the bottom of the columns by means of bolts $7'$, in the manner just described in connection with the lintel. The space between the columns 1, constitutes the aisle or passageway of the storehouse, and near the top may be provided with windows or sky lights 21, and with suitable ventilators 22. It will thus be seen that ample light and ventilation may be obtained throughout the entire length of the building.

In order to provide suitable shelf space for the storage of merchandise, I may place one or more of my improved structural units of frame work on each side of the aisle. As shown in Fig. 1, I arrange short columns 9 and 10, which are composed of a pair of L-irons as shown in Fig. 6, back to back, against the outside of the columns 1, and secure them thereto by means of bolts 20^b .

These short columns rest upon sills 15 and 16 similar in all respects to the sill 8 and at the outer end of these sills I arrange other short columns 13, 14 of the same height as the columns 9 and 10, and finally connect the upper ends of columns 9 and 13, 10 and 14 by means of lintels 11 and 12, respectively. These lintels are identical with the lintel 2, and are secured to their columns by means of bolts 7' in the same manner. Suitable roofing 19, is arranged to extend between the columns 1 and 13, 1 and 14, and walls 20 preferably formed in sections of sheet metal, or other suitable material, may be secured to the outside or inside of the columns 13 and 14. The sills 15 and 16, as well as the sill 8, may be secured to a concrete foundation by means of anchors 17, embedded in such foundation, and provided at their upper ends with screw threads and nuts, as at 18.

In order to provide means for supporting the shelves, I may construct the short columns above described, as shown in Fig. 6. By reference to this figure it will be seen that the column is identical with that shown in Figs. 2 and 8, except that the plate 1^a is notched, not only at its ends, but also at regular intervals throughout its length, to provide sockets for the reception of the shelf rests. As clearly shown in Figs. 6 and 7, the shelf rest is composed of two members formed of sheet metal and each comprising a shelf supporting portion 23^a, a socket engaging portion 23^b, an upturned end 23^c, and a depending web 23^d. These two webs are fitted and riveted together, and the two socket engaging portions are inserted into the socket, side by side. When in position, a bolt 24^a, passing through the socket engaging portions and the spaced members 1^a and 1^b of the column, secures the parts together.

It will be understood that these shelf rests may be placed in any desired location in any of the columns. As shown at 24' in Figs. 1 and 5, they may be used adjacent the aisle to support counters or display tables. In the rests 23, the shelving, preferably formed of boards of suitable width and length, is laid, and is retained in position by the turned up ends 23^c. As shown in Fig. 5 these rests and shelves may be of the same width, or of progressively different widths, as found convenient.

Referring now more particularly to Fig. 5, the method of employing my invention in a store room already constructed, is illustrated. Columns 1, preferably provided with shelf-rest receiving sockets, are ranged along a wall such as 29^a, of the building, and if the wall is of such a nature as to permit it, may be bolted thereto. In this arrangement of my structural units, it is preferable to omit the sills such as 15, shown in Fig. 1, and to employ in their stead, pedestals 25, for supporting the columns. By reference to Fig. 4, it

will be observed that such a pedestal comprises a base portion having an upstanding web 26, adapted to enter the notch formed at the lower end of the member 1^a, and to be embraced by the members 1^a and 1^b. The base portion of the pedestal is provided with bolt holes 27, by means of which the pedestal may be secured to the floor of the building. A similar attaching device or pedestal 25, is employed at the upper end of each of the columns 1, and is adapted to be bolted to the ceiling. In case the wall of the building is of such a nature as to render the bolting of the columns thereto impracticable, these pedestals secured to the floor and ceiling at the top and bottom of the columns will be found ample to hold them in position.

In addition to the long columns 1, I may set up short columns 30 and 31 arranged back to back in the same manner as the columns 1 and 10 in Fig. 1. These columns may similarly be supported on pedestals 25, and the columns 30 are connected with the columns 1, by means of beams or lintels 32 as clearly shown, the space between the columns 31 constituting an aisle, and between the columns 30 and 1, constituting shelf space. Above the lintels 32 may be laid flooring 34, around the sides of the building, thus constituting a second story or gallery, and serving to economize space, and increase the storage capacity of any given building. It will be understood, of course, that the columns 31 and lintel 33 may be omitted and simply the columns 1 and 30 and their connecting beams 32 employed, if desired.

While in Fig. 1 I have shown a single central aisle with shelf spaces on either side thereof, it will be obvious that units similar to that composed of the members 10, 12, 14 and 16 for instance, may be added indefinitely. I have illustrated this feature further in Fig. 5, where I have shown at the right of the figure a third long column 1'', arranged back to back to the column 1, and secured thereto by means of bolts 20^b. From this column, a beam 32' may extend to a similar column, or to another short column, and it will thus be seen that by simply adding structural units of the type shown, the frame work may be extended indefinitely, and may be made to conform to any requirements whatever.

In Fig. 10 I have illustrated the manner in which units can be placed one above another, as well as connected side by side. This figure illustrates on an enlarged scale, a corner, such, for example, as that formed by the junction of members 30, 31, 32 and 33. If desired, a second set of units constructed of the members 30 to 33' inclusive may be superposed upon the members 32 and 33, and secured thereto and to each other as by bolts 20^b and 20^c.

In Fig. 9 I have shown a longitudinal view of a portion of a structure, erected in accord-

ance with my invention, and from this figure it will be seen that I may connect any number of columns such as 1, 1^x, 1^y, 1^z, arranged along the side wall of a building, by means of L-irons, beams, or members 36 and 36', disposed at the tops and bottoms of said columns respectively, and secured thereto by means of bolts 37. In this way it will be obvious that the structure may be extended indefinitely in length, as well as in width and height, as above described, and these beams 36, 36' serve to support any flooring which it may be desired to lay.

In order to facilitate the work of attaching walls, doors and transoms to the columns, and especially in order to provide for the attachment of plate glass windows and the like, I may, if desired, lay wooden strips 1^u, (see Fig. 4) in the angles of the L-irons used for the columns, and secure them in place by means of bolts (not shown). By this means the doors, transoms, and walls, or window framing, can be easily attached directly to these wooden strips.

It will of course be understood that in any structure where shelving is required, the type of column illustrated in Fig. 6 will be employed, but where it is desired merely to produce a building construction without shelving, the form of column shown in Figs. 2 and 8 will be employed.

It will thus be seen that I have provided a novel system of interchangeable parts and units, by means of which supporting frame work may be applied to existing structures, or new buildings may be quickly and readily erected, and that the various parts may be readily assembled or disassembled, and the structure extended indefinitely in all directions.

Units embodying the features of my invention can be also readily adapted to what are known as bargain counters, that is to say little booths interposed in large department stores in the aisles, so that passers may quickly inspect the articles deposited thereon. In such uses two of the unit elements may be backed up, back to back with the pedestals connected thereto and to the floor and the shelves connected in suitable disposition to the vertical elements. Such arrangement which I have termed "bargain booths" or "bargain counters" can be very readily set up at any point in the store and be as readily removed without in any wise defacing the general arrangement of the store or defacing or mutilating the flooring.

It will be understood of course that while I have used the word "rivets" throughout the specification and claims, I do not intend to limit my invention to the use of this exact form of fastening device. Obviously, screws, nails, bolts or any suitable fastening devices may be employed instead of rivets, if found more desirable.

What I claim is:

1. In a unit system of building construction, a structural unit comprising a pair of columns, and a sill and lintel connecting said columns so as to form a rectangular frame, each of said columns being composed of a pair of separately formed, spaced members, and said sill and lintel being of substantial T-shape, the webs of said sill and lintel being embraced by said spaced members at each end, and the flanges of said sill and lintel abutting the ends of said spaced members, such units adapted to be combined indefinitely, and when so combined, having the sill of one unit resting on the lintel of the next, and secured together.

2. In a system of building construction, a pair of columns, each being of substantial T-shape in cross-section, and each column having a socket formed at each end thereof, longitudinally of the web, pedestals adapted to rest upon a suitable foundation, and each having a tenon adapted to enter the socket at one end of each column, and a lintel, also T-shaped in cross-section, supported by said columns, and having the ends of its webs seated in the sockets at the upper ends of said columns.

3. In a system of building construction, a column composed of a pair of L-irons having a plate arranged between them, and co-extensive therewith, the parts being riveted together, and the plate being cut away at its ends to provide notches for the reception of suitable beams.

4. In a system of building construction, a column composed of a pair of L-irons having a plate secured between them, and co-extensive therewith, the end of said plate being cut away so as to provide a notch or socket, and a pedestal for said column having a tenon adapted to enter said socket.

5. In a system of building construction, a column comprising a pair of spaced members, a plate secured between said members and co-extensive therewith, and a sill on which such column is adapted to rest, said sill comprising a base and an upstanding web, and said plate being cut away at its lower end to provide a socket to receive said web.

6. In a system of building construction, a pair of columns, and a lintel connecting the same, each of said columns comprising a pair of separately formed spaced members, and said lintel being of substantial T-shape, the web of said lintel being embraced by said members, and the flanges of said lintel resting on the tops of said members.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

RALPH ROY BELCHER.

Witnesses:

F. FITZGERALD,

J. E. SAPP.