

May 31, 1927.

1,630,698

T. J. FLOREY

CONCRETE BUILDING UNIT

Filed Aug. 21, 1926

2 Sheets-Sheet 1

*Fig. 1.*

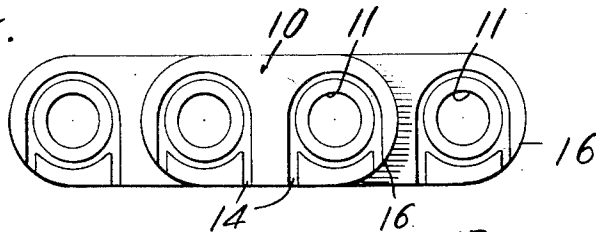


*Fig. 2.*

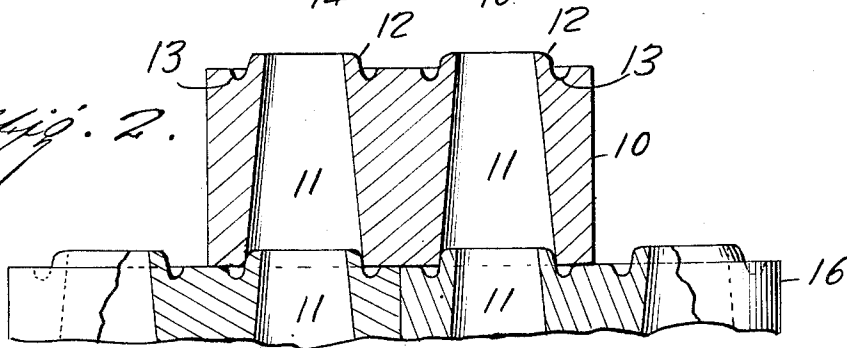


*Fig. 3.*

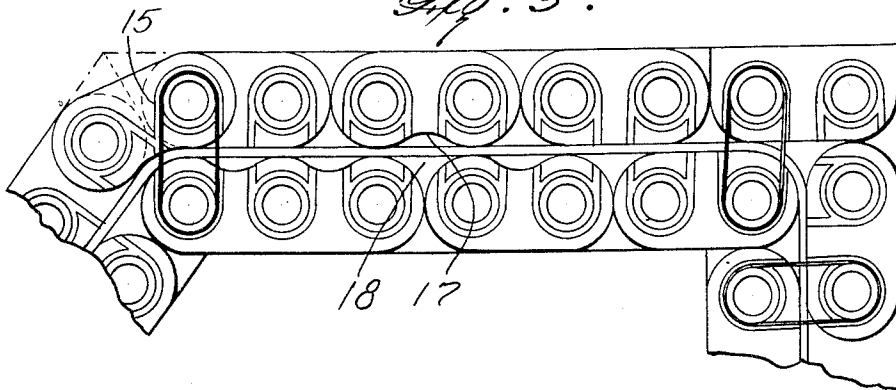
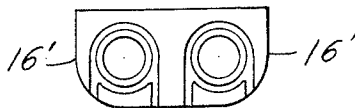


*Fig. 5.*



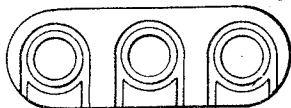
*Fig. 6.*



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*Fig. 7.*

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*Fig. 11.*

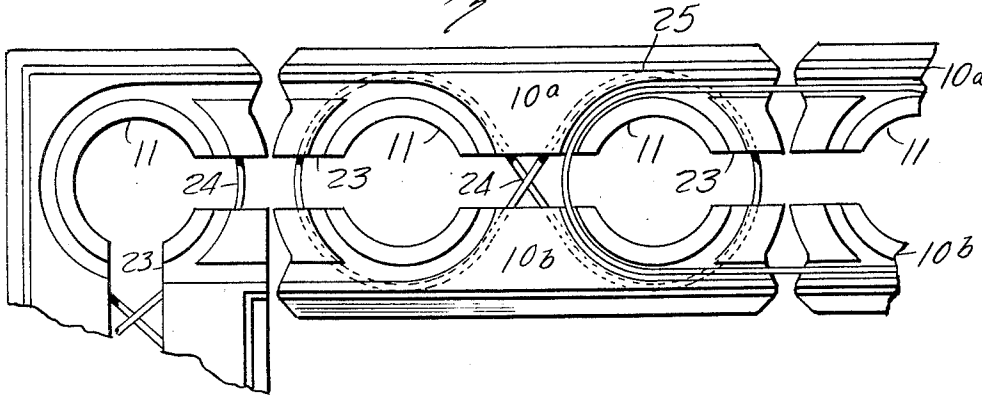


*Fig. 13.*

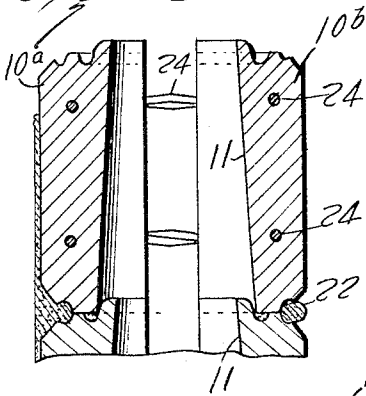


*Fig. 12.*

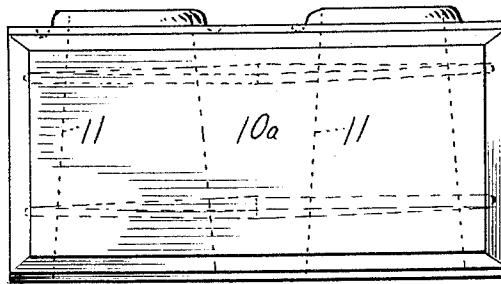


*Fig. 8.*

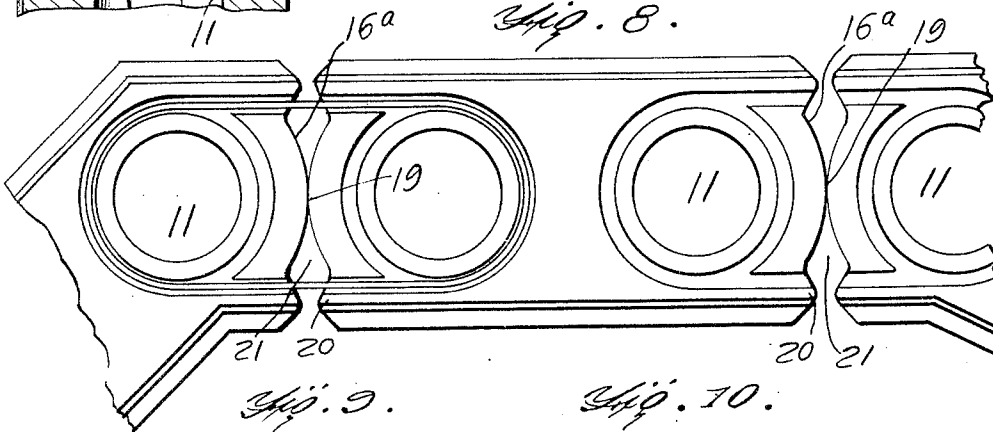


*Fig. 9.*

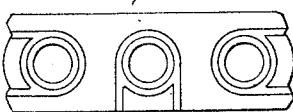
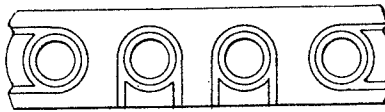


*Fig. 10.*

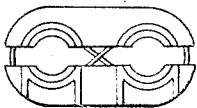


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*Fig. 4.* By



Patented May 31, 1927.

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# UNITED STATES PATENT OFFICE.

TILGHMAN J. FLOREY, OF WASHINGTON, NEW JERSEY.

## CONCRETE BUILDING UNIT.

Application filed August 21, 1926. Serial No. 130,655.

This invention relates to concrete building units.

An important object of the invention is to provide a device of this character which may be laid after the manner of laying bricks and in which the building units interlock as they are laid.

A further object of the invention is to provide a device of this character which not only facilitates the actual laying of the units, but in the complete wall provides continual vertically extending funnels or air flues which assist in drying the wall and in rendering the same heat insulating.

A further object of the invention is to provide a device of this character in which the laying of a single block or unit wall will provide not only the flue structure hereinbefore referred to, but likewise a complete double wall.

A further and more specific object of the invention is to provide a unit constructed in two sections bound together by reinforcing elements, so that they may be handled as a single element and so constructed that in the building of the wall, they act as a single element and interlock with one another.

A still further object of the invention is to so construct the building units that in the construction of the wall they provide interstices, for the reception of mortar which serves not only to lock the blocks to one another but to a stucco or interior wall finish which may be applied thereto.

A still further object of the invention is the provision of a construction of this character in which separate units may be bonded to one another by reinforcing elements with great facility.

These and other objects I attain by the construction shown in the accompanying drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention and wherein:—

Figure 1 is a fragmentary plan of a section of a wall constructed with units formed in accordance with my invention;

Figure 2 is a side elevation of the wall section illustrated in Figure 1, one of the units being shown in section;

Figure 3 is a fragmentary plan view of a double wall employing units;

Figure 4 is a view showing a unit of this character modified to produce a double wall structure with the use of a single unit.

Figures 5, 6 and 7 are views of units employed when turning corners;

Figure 8 is a fragmentary plan of a wall embodying a unit having an end face construction allowing for a very efficient mortar bond;

Figures 9 and 10 are plan views of special units of the type shown in Figure 8 which are to be employed for tying in cross walls or the like;

Figure 11 is a plan view of a wall constructed with the unit similar to that shown in Figures 8, 9 and 10, but modified to provide a double wall structure;

Figure 12 is an inner face view of the wall shown in Figure 11;

Figure 13 is a vertical sectional view through the unit of the type shown in Figures 11 and 12.

Referring now more particularly to the drawings, the numeral 10 designates a relatively simple form of my building unit which is particularly adapted for use in the construction of double unit thickness walls. This unit in common with other units constructed in accordance with my invention and hereinafter described has formed there-through a plurality of vertically extending tapering openings 11, at present illustrated as conical. Surrounding the upper end of each opening is a rim or ledge 12 which is of such size that it will enter the lower end of a similar opening in a second unit. Surrounding each rim, the upper surface of the unit is formed with grooves 13 and from diametrically opposed points on this groove extend straight grooves 14, the grooves 14 associated with each groove 13 opening through the same side edge of the unit. The grooves 13, as fully illustrated in Figure 3, in combination with the grooves 14, are adapted for the reception of tie wires 15 which are formed as endless loops engaging in the aligned grooves 13 of two units and the grooves 14 associated therewith.

The end walls 16 of the unit are preferably constructed upon a radius having as its center the axis of the adjacent opening 11. The length of this radius is equal to one-half the distance between the axes of adjacent openings of the unit, so that when the end faces of two units in the same tier are abutted against one another without regard to the angle at which they are arranged, the rims about adjacent openings of the units will be properly positioned to be re-

ceived in the lower ends of two adjacent openings in a superimposed unit. It will, of course, be understood that this statement as to its radial formation of the ends of the units does not apply to such units, as are necessary for particular constructions in turning angles or corners, where it is desired that a square finish be provided. In such instances, the end face of one or both ends of the unit will be only partially radially curved, as more particularly illustrated at 16<sup>a</sup> in Figures 5 and 6. One side face of the block which, in the finished construction of the wall, would be the inner face of the unit, is preferably provided with a vertically extending groove 18, these grooves particularly in combination with the spaces 18 provided between adjacent ends of the blocks serve to provide a double wall with additionally vertically extending flues, increasing the ventilation thereof and further increasing the heating resisting properties. If desired, in the construction of the wall, tar paper or some other suitable moisture resisting sheet can be disposed between the inner and outer tiers of the wall to prevent the transmission of water from the outer to the inner tier by capillary action.

The form of unit disclosed in Figures 8, 9 and 10 is exactly similar to that just described, with the exception of the construction of the end walls and the provision of the vertically extending grooves in one face of the unit. This unit is more particularly adapted to the erection of simple single tier walls and accordingly the grooves 14 in each of the ordinary units open through the end walls 16<sup>a</sup> of the unit. Where a cross wall or the like is to be tied in, it will, of course, be obvious that it will be necessary that these grooves be opened through the side faces of the units, as illustrated in Figures 9 and 10. In this form of unit, the end faces 16<sup>a</sup> are provided with central engaging portions 19, which maintain the ledges 12 in properly spaced relation, these points representing the central portions of bowed end faces for the unit. Each end face adjacent each edge thereof is provided with a vertically extending rib 20 which, in the assembled relation of the units, approaches without contacting the corresponding rib of the end face of the adjacent unit. Thus, a mortar space 21 is provided, which is reduced in size intermediate its ends, so that the mortar can very firmly lock therein and permit application to the wall of either an interior or exterior finish. The upper and lower edges of the unit are similarly constructed, as indicated at 22, in Figure 13. In addition to permitting tying in of interior and exterior wall finishes, this groove construction further permits pointing between the units, if desired, as will be noted from an inspection of this figure.

In the form of the invention shown in Figures 11, 12 and 13, the unit illustrated in Figures 8, 9 and 10 has been shown, as constructed in two sections 10<sup>a</sup>, 10<sup>b</sup>, the unit being centrally slotted at 23 to form these sections. In a unit of this character, bond wires 24 are twisted in the form of a figure 8 and embedded in the unit, one loop 25 of each bond wire being embedded in the material surrounding each opening 11 of the unit. These bond wires are sufficiently stiff to maintain the sections of the unit in properly spaced relation during shipment and handling, and it will be obvious that a wall built with units of this character will have all of the characteristics of a double wall and the inner wall formed by the sections 10<sup>b</sup> will be effectually moisture-insulated from the outer wall formed by the sections 10<sup>a</sup>. It will also be obvious that a unit, such as illustrated in Figure 1, may be constructed in this manner, as more particularly illustrated in Figure 14.

Since the construction of the unit is obviously capable of a further range of change than that herein illustrated, I do not limit myself to such specific structure except as hereinafter claimed.

I claim:—

1. A building unit comprising a block of material having vertically directed circular openings formed therethrough, the openings tapering from their lower to their upper ends, the upper ends of the openings being surrounded by a circular ledge adapted to extend into the lower end of a similar opening of a second unit, the upper face of the unit having a groove surrounding each ledge and adapted for the reception of plastic material and a pair of straight parallel grooves tangential to the ledge, the grooves of each pair communicating at their inner ends with the associated annular grooves and at their outer ends opening through a vertical face of the block at spaced points.

2. A building unit comprising a block of material having vertically directed openings formed therethrough, the openings tapering from their lower to their upper ends, the upper ends of the openings being surrounded by a ledge adapted to extend into the lower end of the similar opening of a second unit, the upper face of the unit having a groove surrounding each ledge and adapted for the reception of plastic material and a pair of straight parallel grooves tangential to the ledge and communicating with each annular groove, said straight grooves combining with their associated annular groove and with the corresponding grooves of a second unit of the wall for the reception of a bonding wire.

3. A building unit comprising a block of material having vertically directed openings formed therethrough, the openings tapering

from their lower to their upper ends, the upper ends of the openings being surrounded by a ledge adapted to extend into the lower end of the similar opening of a second unit, said block being longitudinally split to provide spaced separated sections and bonding elements embedded in the sections and connecting the sections in a rigid unitary structure.

10 4. A building unit comprising a block of material having vertically directed openings formed therethrough, the openings tapering from their lower to their upper ends, the upper ends of the openings being surrounded by a ledge adapted to extend into the lower end of the similar opening of a second unit, the upper face of the unit having a groove surrounding each ledge and adapted for the reception of plastic material, said block being longitudinally split to provide spaced separated sections and bonding elements embedded in the sections and connect-

ing the sections in a rigid unitary structure.

5. A building unit comprising a block of material having vertically directed openings 25 formed therethrough, the openings tapering from their lower to their upper ends, the upper ends of the openings being surrounded by a ledge adapted to extend into the lower end of the similar opening of a second unit, the upper face of the unit having a groove surrounding each ledge and adapted for the reception of plastic material, a pair of straight parallel grooves tangential to the ledge and communicating with each 35 annular groove, said block being longitudinally split to provide spaced separated sections and bonding elements embedded in the sections and connecting the sections in a rigid unitary structure. 40

In testimony whereof I hereunto affix my signature.

TILGHMAN J. FLOREY.