Sept. 20, 1927. 1,643,103

R. TROZZO

BUILDING UNIT AND METHOD

Filed July 14, 1926

4 Sheets-Sheet 1

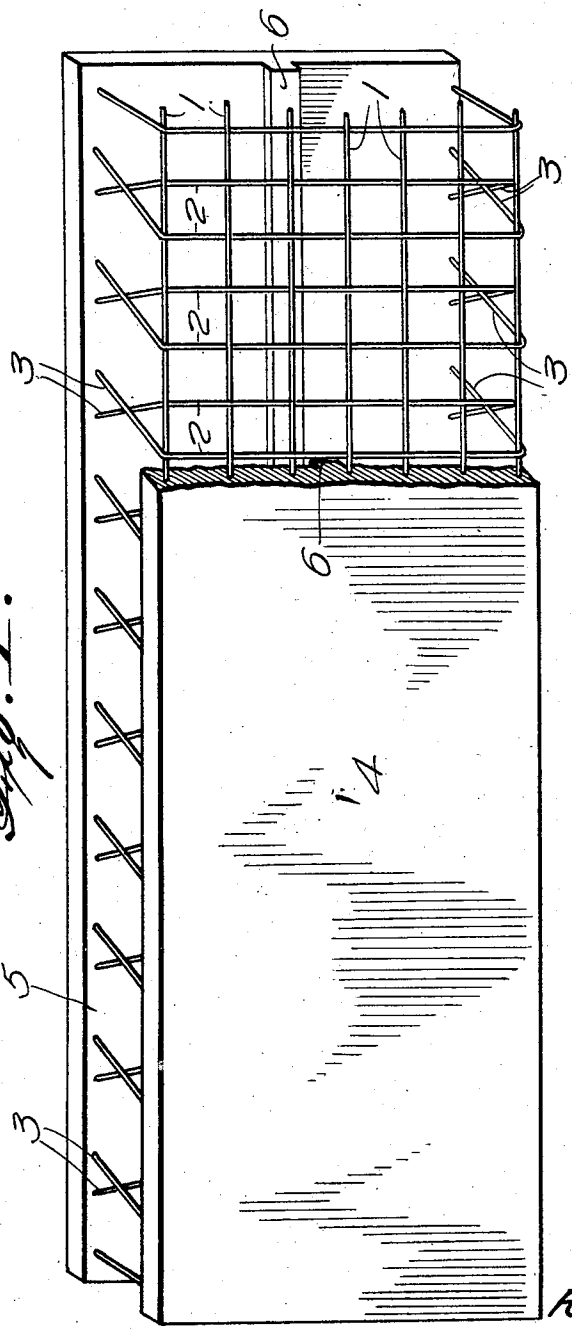


Fig. 1.

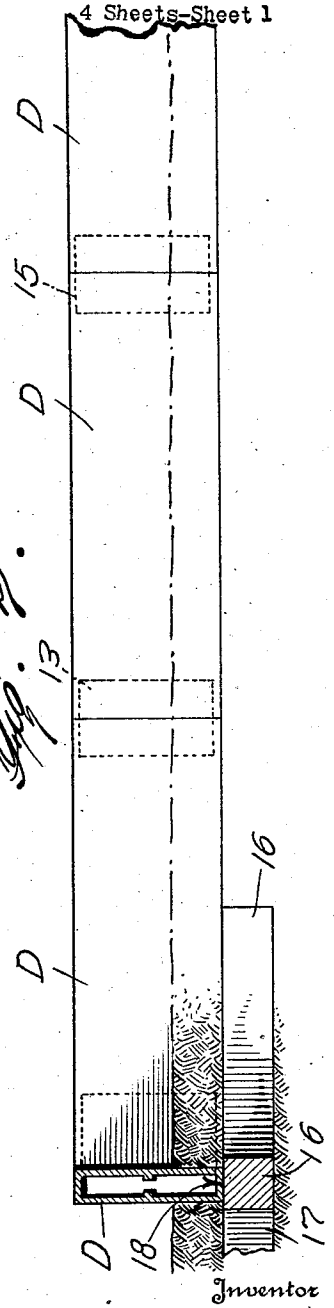


Fig. 2.

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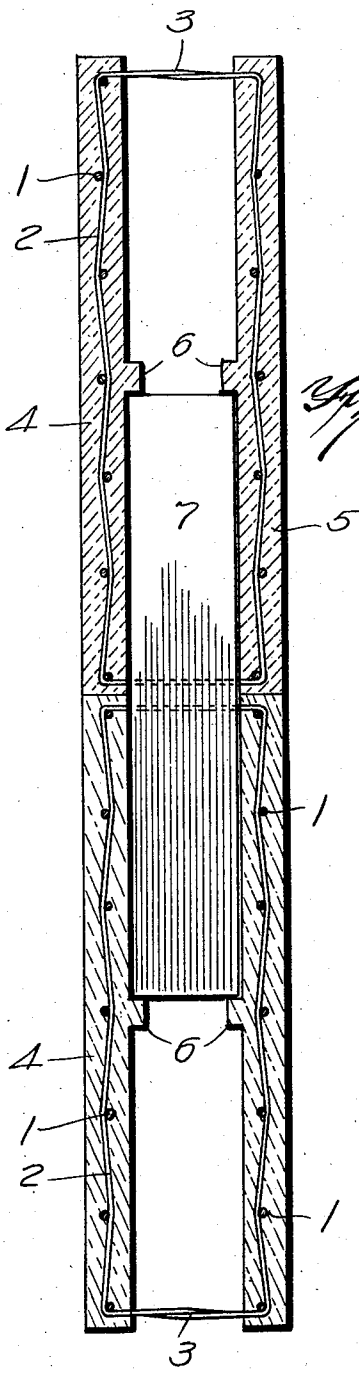


Fig. 2.

Fig. 3.

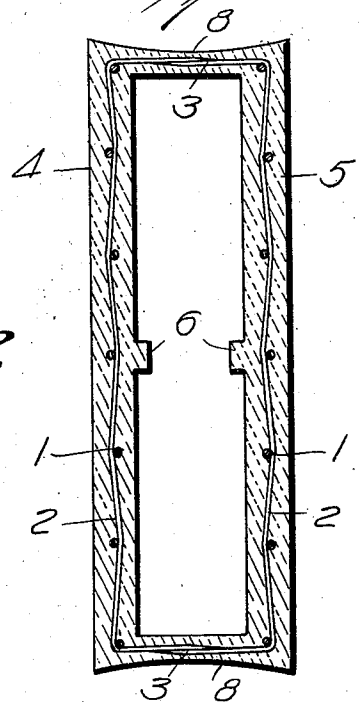
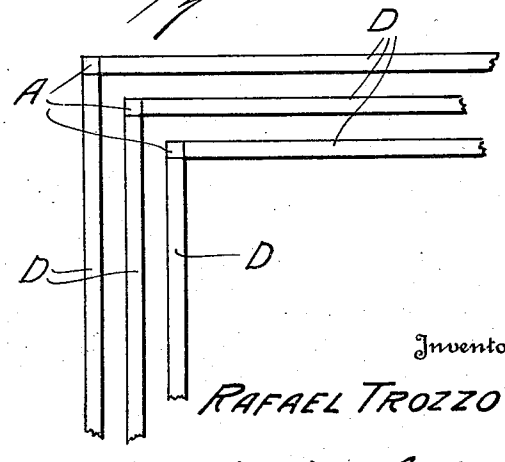


Fig. II.



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Fig. 8.

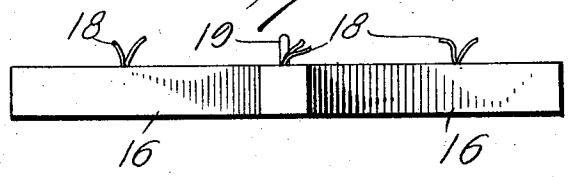


Fig. 4.

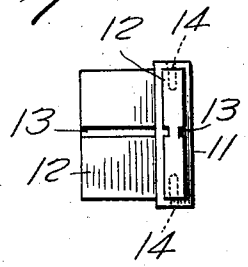


Fig. 9.

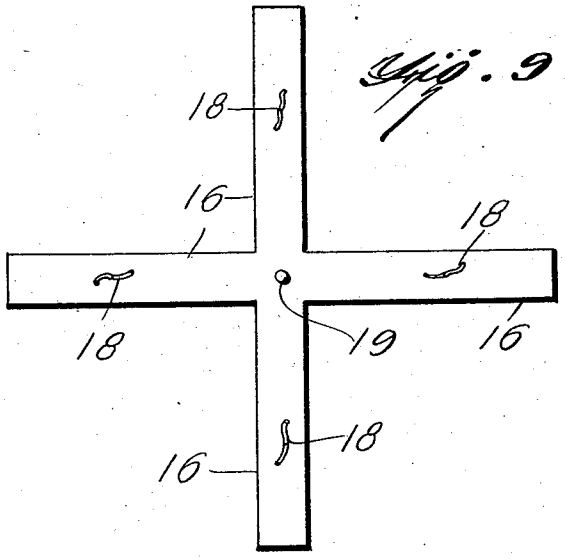


Fig. 5.

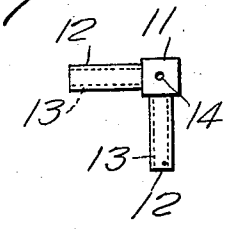
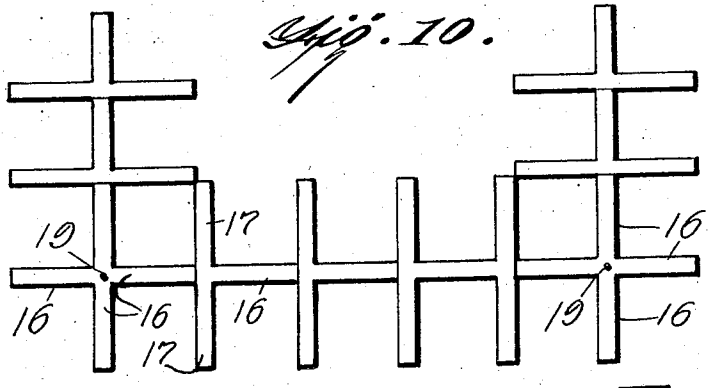


Fig. 10.



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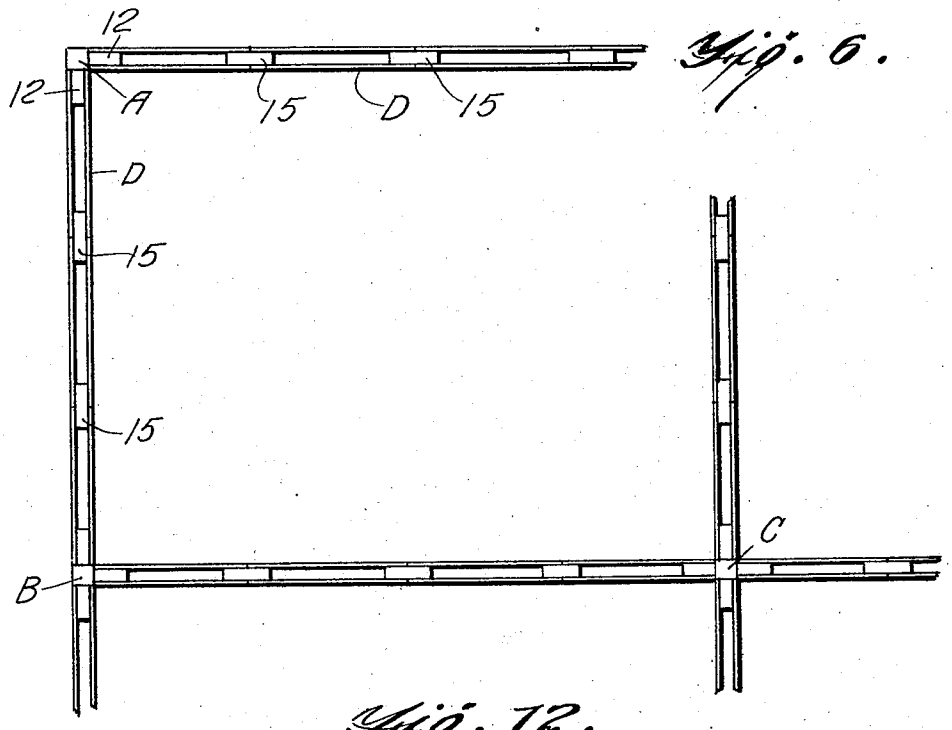


Fig. 6.

Fig. 12.

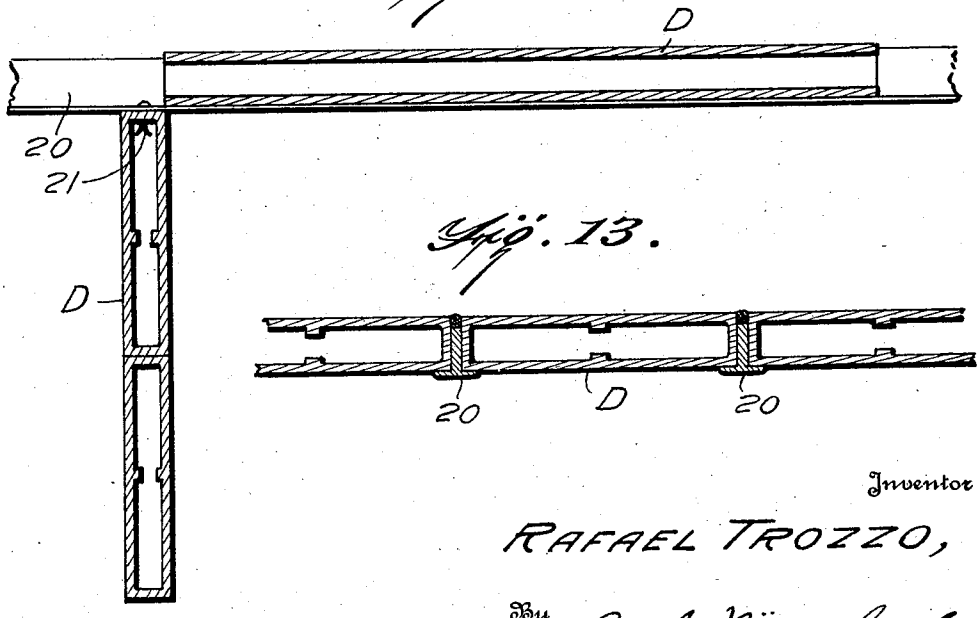


Fig. 13.

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Patented Sept. 20, 1927. 1,643,103

UNITED STATES PATENT OFFICE.

RAFAEL TROZZO, OF BUENOS AIRES, ARGENTINA.

BUILDING UNIT AND METHOD.

Application filed July 14, 1926. Serial No. 122,476.

This invention relates to a novel or improved unit of material for building purposes and has for its object to provide a simple and cheap building unit of light weight and capable of being readily placed in position, which besides these advantages has also that of considerable strength, being particularly adapted for use in substitution of the materials of similar description used heretofore, such as bricks, reinforced concrete blocks or slabs and the like.

The invention also has for its object to provide certain improvements in said building unit or means, designed to facilitate interconnection of the several units employed and give the necessary degree of rigidity to the whole construction.

The invention further relates to an improved method of building, of the kind wherein for the erection of walls, hollow double walled bodies or units of suitable material, either reinforced or not, are employed, and also has for its object to provide a novel method for the speedy and economical construction of buildings of considerable strength and durability and which may be carried out even by rather unskilled operators.

It is also an object of this invention to provide means for the kind of buildings as above set forth, which shall render the same of the required degree of solidity and rigidity, without the use of pillars, and also render the same perfectly tight.

Other objects of the invention will appear in the course of this specification and will be particularly referred to in the final claims hereto annexed.

In order that the invention may be clearly understood and readily carried into practice, the same is represented by way of example in the accompanying drawings, wherein:—

Figure 1 is a view in front perspective, partially sectional, of a building unit according to this invention.

Figure 2 is a vertical central section of two of such superposed building units or bodies.

Figure 3 illustrates a vertical section of an alternative form of construction of the building unit.

Figure 4 shows a front elevation of a corner piece or unit, adapted for use in this kind of construction.

Figure 5 shows a plan view of the same.

Figure 6 is a diagrammatical sectional plan view of part of a building constructed in accordance with this invention.

Figure 7 is a part sectional front elevation, showing the position of the lower course of building units.

Figure 8 is a front elevation of a type of unit adapted to be used in constructing the foundations of a building.

Figure 9 is a plan view of the same.

Figure 10 illustrates in plan view the position of several of said units, arranged to form the foundations of a building.

Figure 11 is a diagrammatic illustration of the arrangement of three parallel partitions for the construction of large walls or for providing an increased number of air chambers or passages.

Figure 12 shows the upper part of a building and the manner of arranging the roof on the cross beams, and

Figure 13 is a partial section of said roof.

In all the said views, similar characters of reference are used to indicate like or corresponding parts.

In the form of construction shown, the building unit is substantially of rectangular shape, but it will be evident that within the scope of the invention any other suitable or convenient form may be adopted in order to suit the same to the several conditions of the building to be constructed.

In the form shown, said unit consists of a metallic framing, formed of rods, wires or the like, part of which are placed endwise as indicated by 1 and the remainder extending in a transverse direction as shown by 2, and every two successive transverse rods or wires cross each other near the lower and upper surfaces, as indicated by 3. On the two lateral surfaces of the framing, the slabs or partitions 4 and 5 are cast or moulded, in parallel position and of any desired thickness; said slabs or partitions, owing to the particular arrangement of the frame, are prevented from approaching each other, as any strain exerted in the way of collapsing or joining of said slabs or partitions 4 and 5, will be counteracted and caused to take place in the direction of incline of the metallic framing in the part 3, which latter exerts a drawing strain and will thereby balance the aforesaid forces, owing to the symmetric incline of the crossed parts of the above described metallic reinforcing structure.

At the middle part of each of said units

and on the inner surface of the respective partitions are formed the flanges 6, serving to support the free, intermediate supporting blocks 7 (see Fig. 2) which after the units are assembled or superposed, prevent the same from deviating one with regard to the other, and serve at the same time as a binding and guiding piece, so as to render the partitions or walls constructed of said units, absolutely stable, solid and homogeneous.

In Figure 3, a modified form of construction is shown, wherein the crossed wires which form the framing in the upper and lower part of the unit, or in the ends of the same, are covered with a thin layer of cement mortar, so as to form a partition 8, preferably of concave shape on its outer surface, so as to allow of applying of the necessary amount of mortar in order to obtain the binding between every two adjacent or superposed units.

In accordance with this invention, a building unit is obtained which in use does not sacrifice the advantages of those of known construction, heretofore employed, but which owing to its reduced weight, permits of being constructed of much larger dimensions and which on account of the facility with which it may be placed in position, will cheapen by a considerable percentage the cost of labor, and in consequence, that of the entire building.

When it is desired to give to the wall a monolithic appearance, the edges of the partitions 4 and 5 may be slightly bevelled on the outer side, so that cement mortar or the like may be applied thereto in order to obtain a perfectly smooth and continuous surface.

Also, if desired, the partitions 4 and 5 of each of the units may be made of different materials, so as to adapt the same to the several requirements of the rooms which they are to confine, or to other uses made thereof.

In accordance with this invention, in order to form the corners and crossing angles between two or more of the walls, the units shown in Figures 4 and 5 are used; these consist of a square centre or core part 11, provided with two, three or four flanges 12, formed with a central recess 13, adapted to receive ribs or flanges formed on the units or parts of which the walls are being constructed. The units shown in Figures 4 and 5 are of reinforced concrete and their dimensions are such as to correspond with the units used in the remainder of the building which, as above explained, are of a type including a double partition of any suitable material. Said corner units or pieces are preferably provided at their centre part with upper and lower orifices 14 which allow of the insertion of a binding pin, so as to secure the perfect vertical alinement of the parts and permit of applying the necessary amount of mortar for obtaining an efficient binding of the same. A building constructed in the manner above set forth, will be perfectly solid and as the corner parts above referred to may be purchased in a ready made condition, it will be understood that the erection of the building in a true perpendicular and square condition, may be performed without difficulty.

In the form shown in Figure 6, units A provided with two flanges are shown, to be used for forming the outer corners of a building; units B provided with three flanges will be used for joints between two walls, and units C with four flanges for crossings between two walls.

When erecting the building, the flanges 12 of said units are inserted into the hollow space between the two partitions of each of the units forming the wall, said wall units, corner and intermediate supporting blocks being successively superposed and bound in position by means of a suitable mortar, or are left to support themselves by simple gravity.

In the form of construction shown, the units used for the erection of walls are shown as consisting of blocks or slabs of reinforced concrete, with the partitions arranged substantially parallel and spaced one from another. In the drawings they are referred to by the letter D. In the hollow space between said partitions and in the space corresponding to every following two partitions, small blocks 15 of reinforced concrete are placed which substantially correspond to the flanges 12 of the corner pieces. By the superposition of said blocks 15 in the entire extension of the walls of the building, a sort of vertical reinforcing column is formed which assists to increase the solidity and stability of the same and at the same time tends to simplify their construction.

For the erection of the building, foundations of any suitable or known kind may be provided and along the line corresponding to the hollow space of the several corner pieces and of the blocks forming the base of the walls, metallic staples are arranged to project, so that when filling the said base blocks with cement, they will be made to form monolithic blocks with said foundation parts.

If desired and in case the kind of ground operated on allows or requires it to be done, special units may be used for laying the foundations, consisting of cross or T shaped parts, such as shown in Figures 8, 9 and 10. Said special parts or units may be constructed of reinforced concrete, substantially square in cross section, of dimensions to be determined in accordance with the weight they are to support.

Figure 10 clearly illustrates the arrange-

ment of the several parts, which may also be seen in Figure 7. In accordance therewith, a central part or body 16 is formed, for the support of the partitions, and reinforcing flanges 17 are provided on the outside thereof, in order to provide for a larger supporting area. In each of said parts 16, a series of projecting metallic staples or forks 18 is arranged, for insertion into the hollow space of the units D and at the crossing places is provided a stud or rod 19, to be inserted in the central hole of the units A, B, C.

From the foregoing description and by referring to the drawings, the manner of erecting the building will be readily understood. The crossings between the units D and between these latter and the units A, B and C are provided inside and outside with a layer of suitable mortar, so as to well cover the joints and permit of a monolithic construction. It will also be evident that when the parts D are of reinforced concrete or similar material, the direct joints between the several parts or units, will be established by means of a suitable mortar, in order to assure the rigidity of the hole construction.

If deemed convenient and as shown in Figure 11, walls of any desired thickness may be constructed by arranging two or more partitions (three, in the figure represented), whereby also an increased number of air passages or chambers is provided which may be used for placing conduits for electric leads, gas pipes, water mains and ventilating tubes, etc.

For mounting the roof, a most simple method has been devised which consists in placing on top of the finished construction the iron T beams 20 (Figures 12 and 13), provided on their lower flanges with the staples 21 or like means, rivetted thereto and which enter into the hollow space of the building units of the uppermost course with which they are rendered integral by filling up with mortar. The said beams are placed apart at suitable intervals and upon the same are secured the roofing units D which are substantially similar to the units D used for the walls. The roof units D are supported by their lower edges on the flanges of the beams 20, with their upper surfaces situated above the level of the neck part of said beams, the points being covered with suitable mortar. In this way, roofs may be formed with projecting parts and any suitable incline may be given to them, as the conditions may require.

For the construction of such roofs, the units D may be shaped so that their lower surfaces will directly constitute the ceiling, while their upper parts, made of an increased thickness, may be formed by or covered with a waterproof material, so as to exclude the passage of moisture.

It will be evident that modifications of construction and detail might be introduced without departing from the scope of the invention, as clearly determined and set forth in the claims hereto annexed.

I claim:

1. A building unit, consisting of spaced slabs of cementitious material, and a reenforcement therefor, said reenforcement including a plurality of connecting elements between the slabs, crossing one another in the space separating the slabs, each slab having a longitudinal flange along its inner surface.

2. A building unit, consisting of spaced slabs of cementitious material, a reenforcement therefor, said reenforcement including a plurality of connecting elements extending from the edge of the one slab to the adjacent edge of the other slab and crossing one another in the space between the slabs, each slab having a longitudinal flange along its inner surface, and layers of cementitious material between the longitudinal edges of the slabs, the crossed connecting elements being embedded in said layers.

3. A building unit as claimed in claim 2, in which the layers of cementitious material between the slabs have concave outer surfaces.

In testimony whereof I affix my signature.

RAFAEL TROZZO.