J. F. LOUCKS.

REINFORCING MEMBER.

APPLICATION FILED APR. 6, 1910.

993,851. **Patented May 30, 1911.**

FIG. 1.

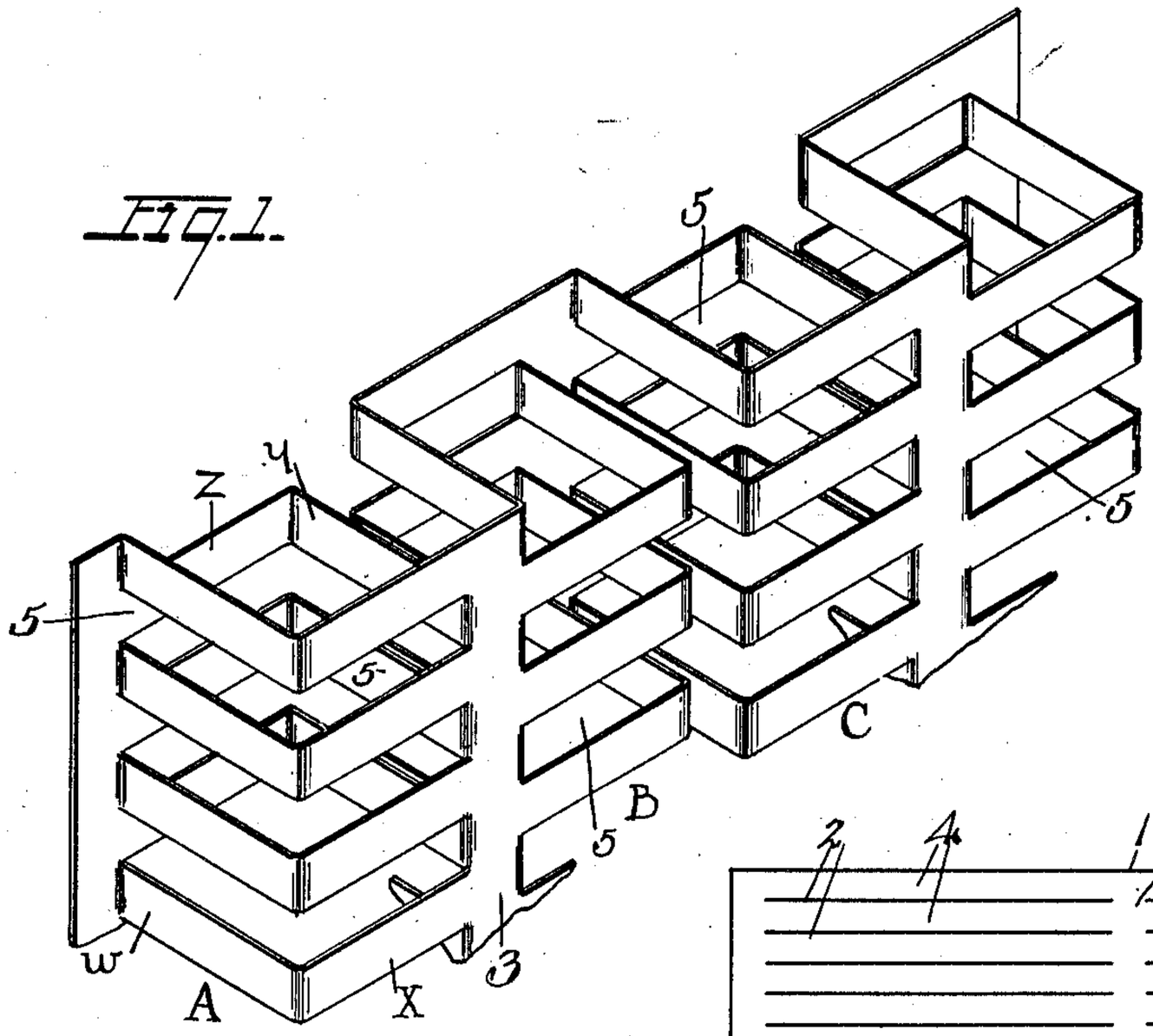

FIG. 2.

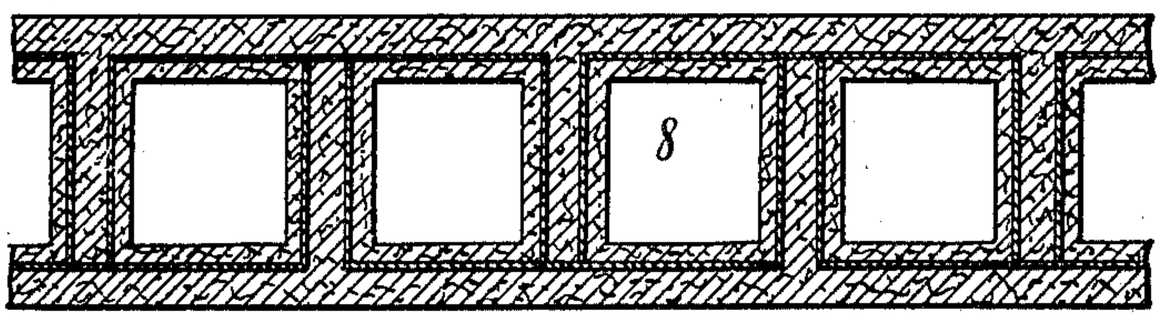

FIG 3

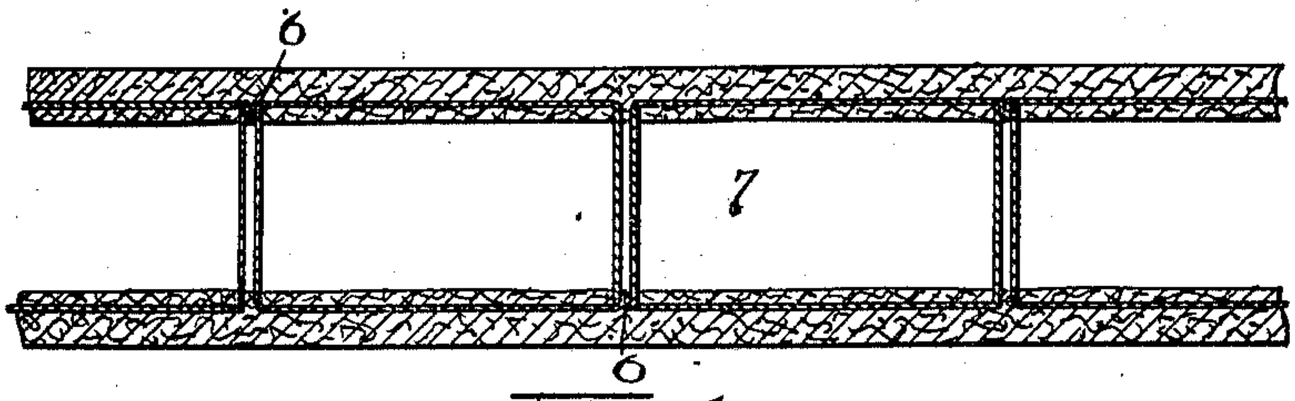

FIG 4.

Witnesses
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UNITED STATES PATENT OFFICE.

JAMES F. LOUCKS, OF CLEVELAND, OHIO.

REINFORCING MEMBER.

993,851. Specification of Letters Patent. Patented May 30, 1911.

Application filed April 6, 1910. Serial No. 553,704.

To all whom it may concern:

Be it known that I, JAMES F. LOUCKS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Reinforcing Members, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

My invention relates to reinforcing members for concrete, plaster or other materials which are used as an interior or exterior finish for buildings.

The device, the subject matter of this invention, makes unnecessary the use of studding or lath in a wall structure and at the same time provides an air space, either continuous or discontinuous between the opposite faces of the wall. Furthermore, the device is formed of sheet metal and pressed into its final shape in a very simple manner and at a low cost.

Generally speaking, the invention comprises the elements and combinations thereof set forth in the accompanying claims.

Reference should be had to the accompanying drawings in which—

Figure 1 is a perspective view showing the reinforcing member; Fig. 2 is a plan view of a portion of a sheet of metal from which the reinforcing member is formed; Fig. 3 is a longitudinal section through a wall showing the reinforcing member in place to form a tile wall; and Fig. 4 is a central longitudinal section of a wall showing the reinforcing member in place with a continuous air space between the two walls.

The reinforcing member herein shown and described may be used in forming the outer wall of a building or forming a partition wall within the building. In either event, it provides a dead air space between the two walls, which has the advantage of preventing the accumulation of moisture upon an inner wall and further, deadens sound as well as prevents transmission of heat.

In Fig. 2 is shown a fragmentary portion of a blank from which the reinforcing element is made. The sheet of metal 1 is cut in the direction of its length with a number of slits 2. These slits are arranged in groups and each group is separated by means of an integral piece of metal 3. While only two such groups are indicated in Fig. 2, it will be apparent that there may be a number of such groups, according to the length of the sheet of metal. The metal between the several slits 1 remains as strips and they are indicated at 4 upon Fig. 2. Each strip is bent at substantially the central portion thereof to form a right angle and the alternate strips in each row of strips is bent in the opposite direction so that between adjacent strips there will be spaces or slots as indicated at 5 in Fig. 1. It will be noted, from Fig. 1, that the strips in the succeeding groups of rows of strips are arranged in staggered fashion. That is to say, there is a strip in the second group of strips opposite the space 5 in the first group of strips. By bending the strips in each series as described, there is formed a hollow member or cage having four sides w, x, y and z each of the sides being composed of strips interspersed by spaces. Each cage forms one element of a completed reinforcing member. The opposite ends of each strip remain joined to the strip of metal 3 and the succeeding elements of the reinforcing member are joined to adjacent elements by the metal strips 3.

It will be apparent that a single element such as A of the reinforcing bar is complete in itself and it might be said that the reinforcing bar consists of a single element such as A. However, for convenience in manufacture and use, it is more practical to form the reinforcing bar with a series of elements such as A, B and C which are joined together. The front walls of each of these cages or elements A, B, C, etc., are arranged so as to lie in a common plane and likewise the rear faces are arranged to lie in a common plane. However, it is not absolutely essential that they lie in the same plane if it be desired to arrange them in different planes.

The width of the reinforcing element may be made as great as desired and I do not limit myself to any specific width. Furthermore, the elements or cages A, B and C may assume forms other than that shown in Fig. 1. For instance, they may be parallelograms or other shaped figures.

As shown in Fig. 4, the strips 3 may be folded upon themselves. This is indicated at 6 in the said figure and by such an arrangement it is possible to adjust the elements A and B upward or from each other. This is a very useful provision in the event that the reinforcing element, as a whole, is not quite wide enough to span the dis-

tance desired. If this distance be not too great, the folds in the strips 3 may be opened up and the element, as a whole, increased in width. This adjustment may be regulated between the position in which the sides of the fold are close together, to that position in which the sides are strained out into the same plane. The successive strips 3 may be provided with such folds. This fold also acts to stiffen the strip 3.

It will be noted by reference to Fig. 4 that the successive folded strips occur on opposite sides of the reinforcing element. A push on one side of the element puts the whole element, or at least that point adjacent to the point of application of the force, under compression upon the side where the force is applied, and this will tend to cause the folds in the vertical strips to tighten or fold closer. The opposite side of the element will be under tension and the folds upon this side of the element will tend to separate, and in so doing, take up the force producing tension. In this manner the stresses and strains to which the reinforcing element may be subjected is compensated.

In using my reinforcing element, the same may extend from the ceiling to the floor and, being fastened at the top and bottom, will support itself without the use of any studding whatsoever. Where a number of reinforcing elements are used in a wall, the adjacent reinforcing members may be joined together, if desired, or the end portions simply allowed to overlap. When in such position as described, the material which is to form the outer finish of the wall can be applied directly to the faces of the metal. The material so used will be pressed through the slots and will be supported by the strips. The plastic material may be applied to both sides of the reinforcing element so that a finished wall is produced. It is capable of use, with equal facility, with cement, plaster or other plastic material which might form the finish for the wall.

In Fig. 4 I have shown the ordinary method for using the reinforcing element in which it will be observed that the continuous air space 7 is formed between the parallel walls.

In Fig. 3 I have shown a wall formed to simulate a hollow tile structure and thereby forming a series of isolated air spaces 8 between the two walls. In this case the opposing side walls of adjacent elements or cages are covered with plastic material and the plastic material completely fills the spaces between the side walls.

The advantages obtained by the reinforcing member, which is here shown and described, will be very apparent, for, in effect, a double wall is obtained by use of a single reinforcing element. The double wall has certain characteristics which are very well known. If one wall of the double wall be an outside wall, the air space between the two walls will prevent moisture being carried through to the inner wall and furthermore, the air between the walls is a poor conductor of heat and cold and consequently rapid temperature changes are avoided. It will therefore be apparent that the reinforcing element here described presents many advantages.

Having thus described my invention, what I claim is:—

1. A reinforcing element formed from a single sheet of metal comprising a plurality of alined cages, the cages being formed of strips of metal arranged in rows, the successive strips in each row being bent in opposite directions, the ends of each strip in each row being joined to continuous connecting strips which occur between each row, the successive strips being alternately located upon opposite faces of the element.

2. A reinforcing element formed from a single sheet of metal comprising a plurality of alined cages, the cages being formed of strips of metal arranged in rows, the successive strips in each row being bent in opposite directions, the ends of each strip in each row being joined to continuous connecting strips which occur between each row, the successive strips being alternately located upon opposite faces of the element, and means for stiffening each strip in the direction of its length.

3. A reinforcing element formed from a single sheet of metal comprising a plurality of alined cages, the cages being formed of strips of metal arranged in rows, the alined strips in each row being bent in opposite directions the ends of each strip being joined to continuous connecting strips which occur between each row, the successive connecting strips being alternately located upon opposite faces of the element and each of said strips being provided with a fold in the direction of its length for the purpose described.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

JAMES F. LOUCKS.

Witnesses:
A. J. HUDSON,
BRENNAN B. WEST.