Feb. 28, 1939. L. S. LACHMAN 2,148,698

FABRICATED METAL PANEL

Filed April 13, 1937 3 Sheets-Sheet 1

Fig. 1

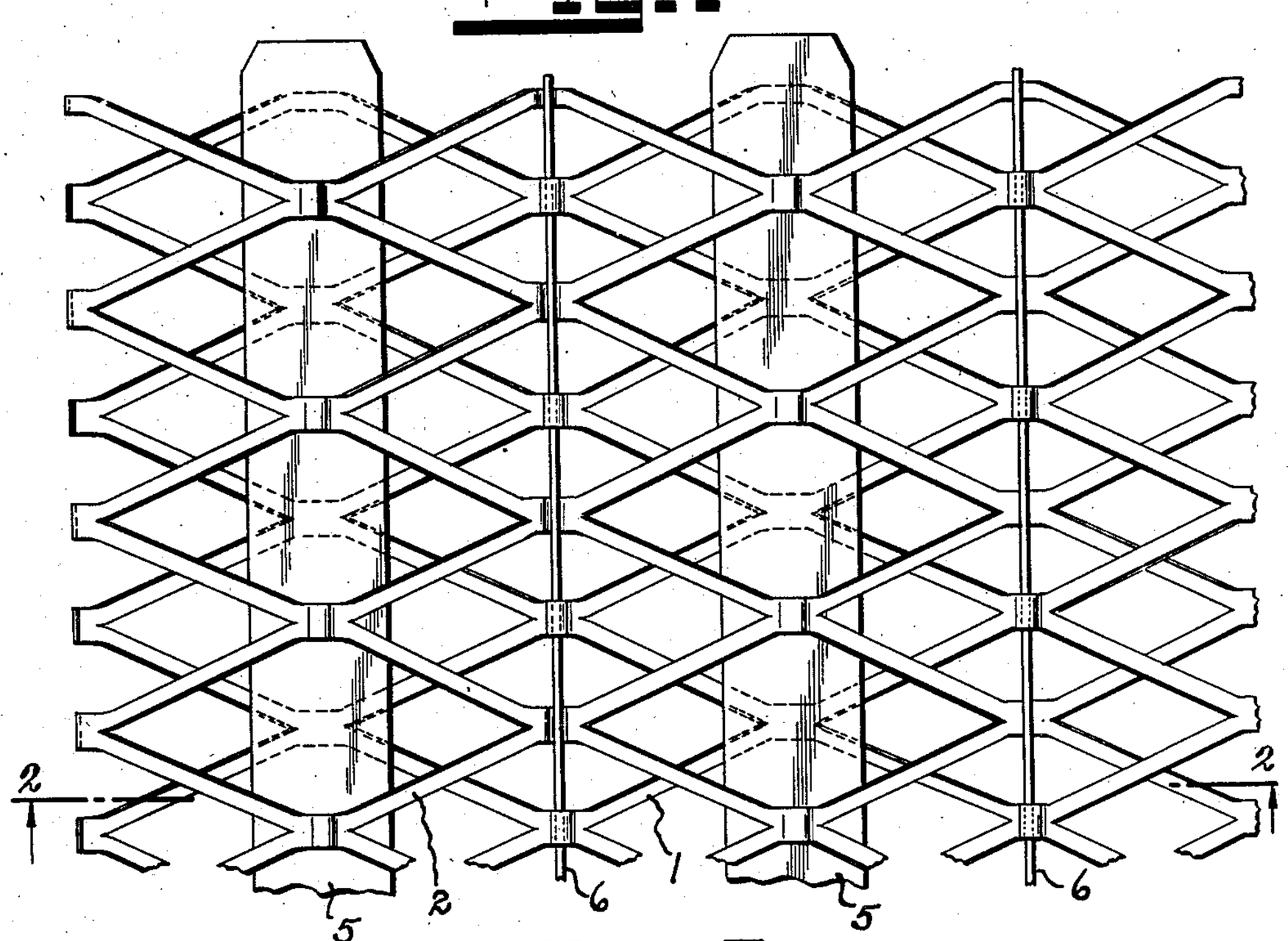


Fig. 2

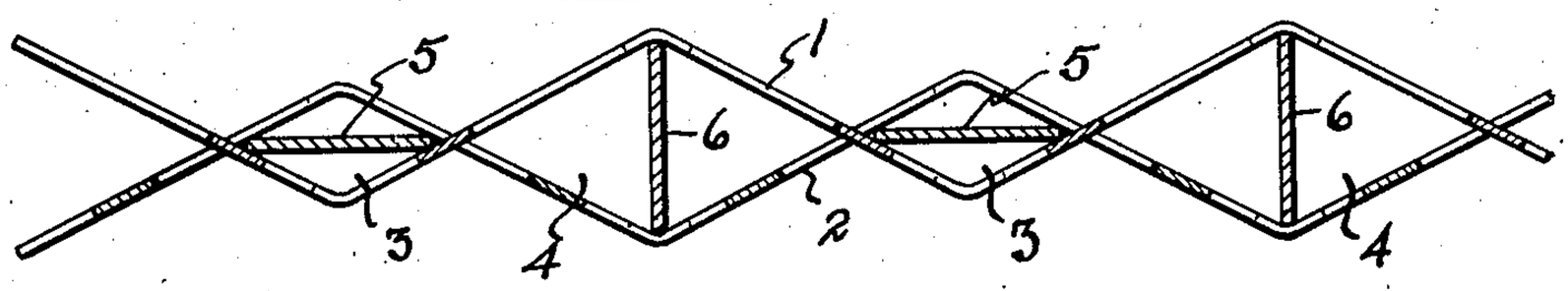
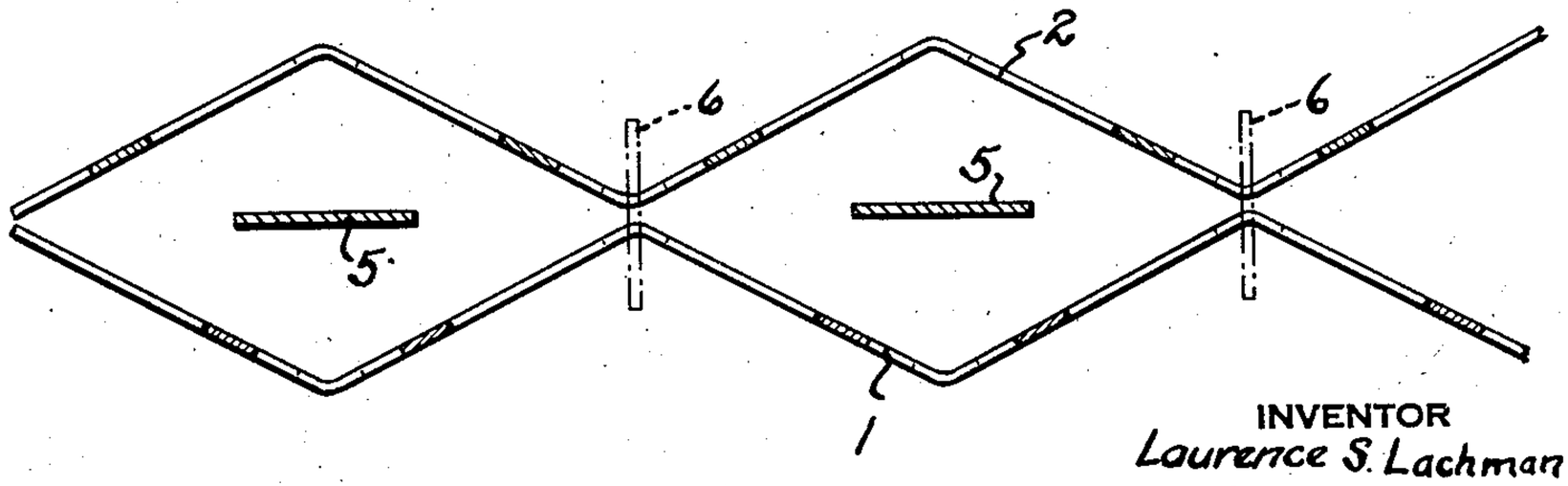


Fig. 3



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FABRICATED METAL PANEL

Filed April 13, 1937 3 Sheets-Sheet 2

Fig. 4

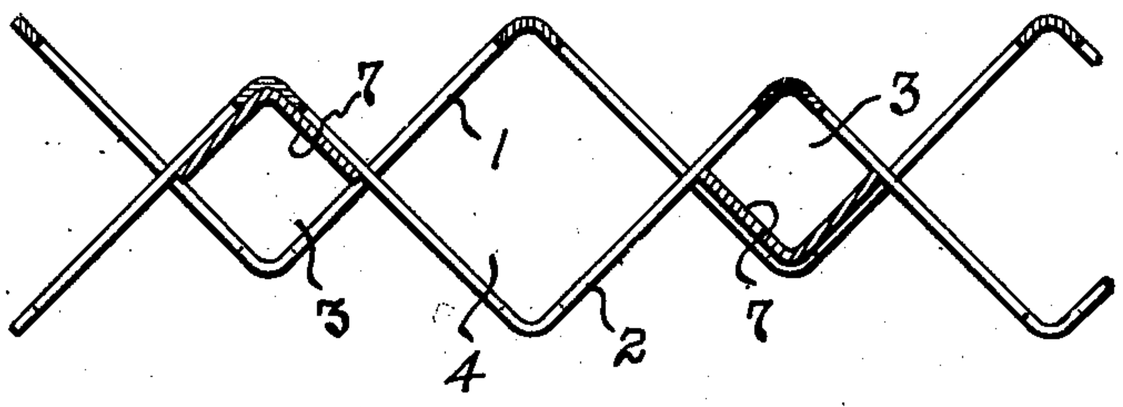

Fig. 5

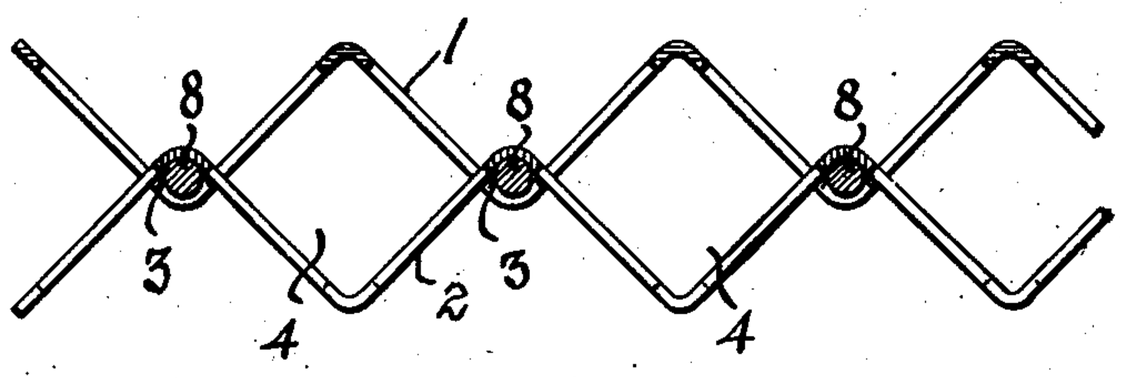

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Fig. 6

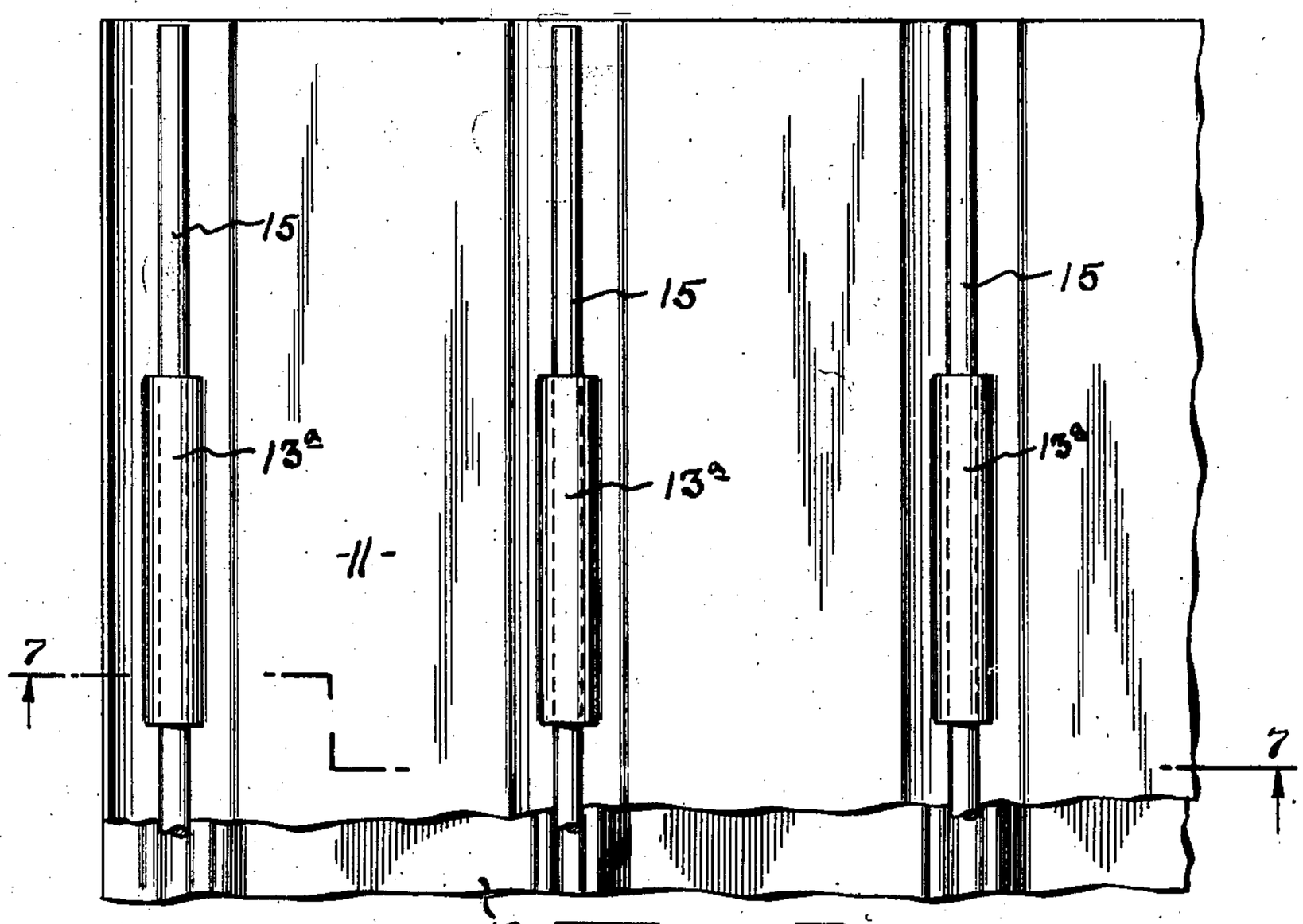


Fig. 7

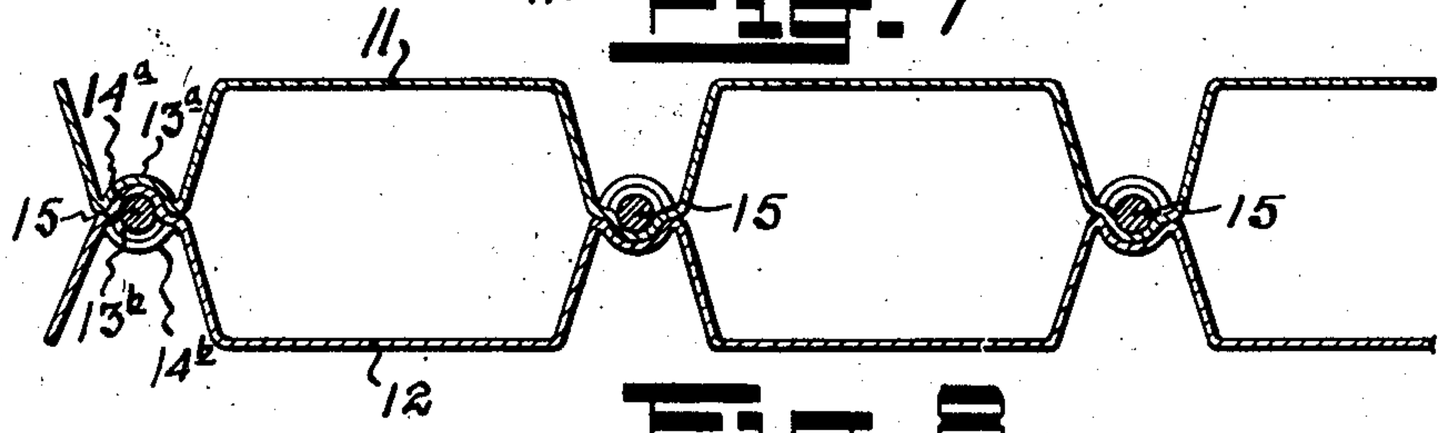
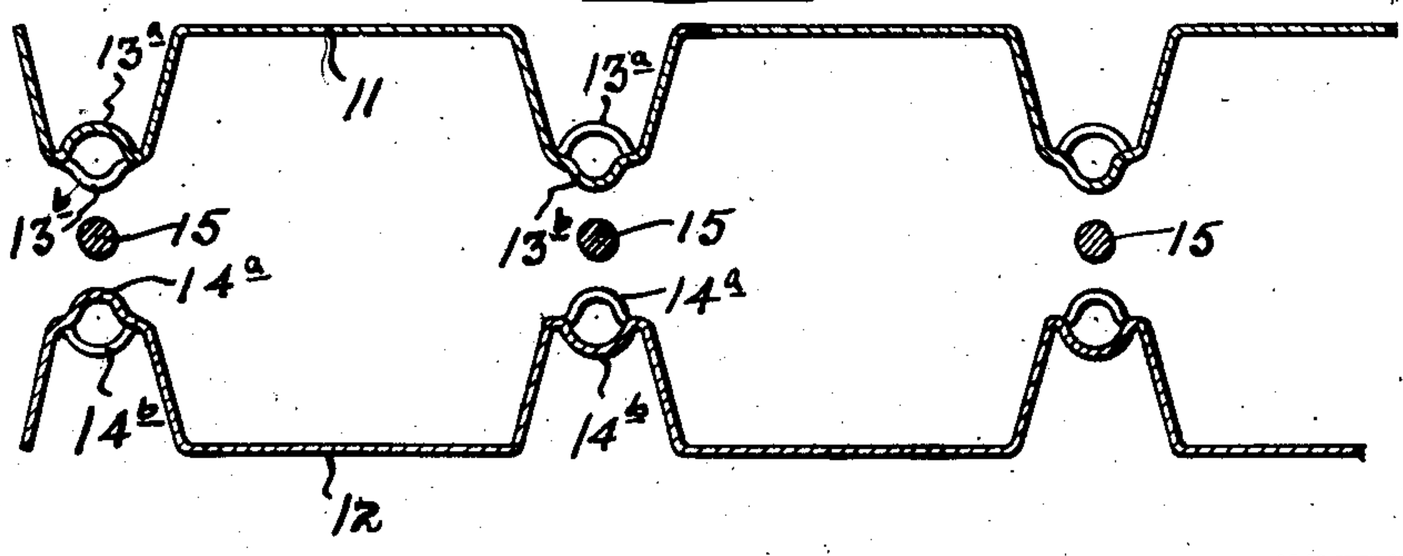


Fig. 8



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Patented Feb. 28, 1939 2,148,698

UNITED STATES PATENT OFFICE

2,148,698

FABRICATED METAL PANEL

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Application April 13, 1937, Serial No. 136,550

6 Claims. (Cl. 189—34)

This invention relates to improvements in fabricated metal panels suitable for use as flooring, walls and partitions or foundations therefor.

One of the objects of this invention is to provide a light, strong, fabricated metal panel composed of a pair of suitably formed metal sheets or meshes interlocked with each other by means of reinforcing members.

The many specific objects of the invention will be apparent from the following description in connection with the illustrations in the drawings employed for purposes of explanation.

This invention resides substantially in the combination, construction, arrangement and relative location of parts, all as will be described in greater detail in the following specification.

In the accompanying drawings,

Figure 1 is a top plan view of a portion of a panel in accordance with this invention;

Figure 2 is a cross-sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a similar view showing the formed metal sheets aligned for movement into interengaging position and indicating the relative position of the interlocking members;

Figures 4 and 5 are views similar to Figure 2 of modified forms of construction;

Figure 6 is a top plan view of a portion of another form of panel in accordance with this invention;

Figure 7 is a cross-sectional view taken on the line 7—7 of Figure 6; and

Figure 8 is a view similar to Figure 7 with the parts disconnected.

The construction illustrated in Figures 1 to 3, inclusive, results from the use of two sheets of reticulated metal such as that produced by the well known expanded metal process. By means of this process a solid sheet or strip of material is slit and expanded in such a way as to form diamond-shaped openings, as is clear from the drawings. These expanded metal sheets are used to a limited extent today in walls and partitions as a foundation therefor, but this use is limited by reason of the fact that the expanded sheets are not very strong.

In accordance with this invention, a pair of sheets of expanded metal, as indicated at 1 and 2, are formed into a corrugated or serpentine configuration, as is clear from Figure 3, and then interleaved with each other, as indicated in the drawings, to form a series of diamond-shaped openings 3 and 4. Into these openings are forced strips or bars 5 and 6 of suitable metal, such as high carbon steel, for example, which by reason of the multitude of points of frictional engagement between the metal fabric and strips and the natural springiness of the material locks the bars firmly in place. The planes of the bars 6 lie at right angles to the planes of the bars 5 and it is apparent that by relatively proportioning the widths of the bars and the angles of the corrugations of the sheets that the bars may be very firmly locked in place by the resulting frictional engagement between them and the fabric sheets.

The arrangement of Figure 4 in so far as the expanded metal sheets 1 and 2 are concerned is the same as that of the previous arrangement. In this case, however, the locking bars are in the form of angle bars, as indicated at 7, which are preferably placed into the openings 3 so as to face in opposite directions, as is clear from Figure 4. In this case it will be seen that the interlocking bars occur at every other opening and have been proportioned in size and shape so that the openings 3, 4, are in this case substantially square as distinguished from the diamond shapes of the previous construction. This also results from the fact, as will be apparent, that the fabric sheets 1 and 2 are more deeply crimped so that adjacent portions thereof meet at right angles rather than at an obtuse angle, as in the case of the previous construction. It is apparent that if the channels 7 are made larger that the openings 3 will become larger and under some conditions equal to or even greater than the size of the openings 4.

In the arrangement of Figure 5, the fabric sheets 1 and 2 are the same as those of Figure 4 and in this case the interlocking bars 8 are in the form of round rods, preferably of hardened steel, which fit into the alternate openings 3. In this case it will be seen that these openings are much smaller than the openings 4 because of the smaller diameter of the interlocking bars.

The construction illustrated has been found to be exceedingly strong, and, with the proper gauges of sheet metal, panels sufficiently strong to form floorings are produced. For example, these panels may be employed as flooring for a power plant, boiler house, engine room of a ship, and the like. In lighter sizes and gauges they may be used in walls and partitions, either alone or as a base for the usual covering materials. The nature of the construction in all cases is such that the reinforcing bars are frictionally held in place without the necessity of welding, as is common in similar structures known here-

tofore. A very important feature of this invention results by reason of the fact that welding is not necessary. That is, in the structure here disclosed high carbon and hardened steels may be used since welding is not necessary. If, as is the common case today, the bars are welded in place, only low carbon steels can be used, which are not strong enough for many purposes as when it is desired to use such panels for flooring. Thus, by providing the particular relationship of parts wherein the reinforcing and interlocking bars are frictionally held in place, thereby eliminating the necessity for welding, stronger bars may be used. The three forms illustrate but some of the possible variation in details of construction without departure from the true nature of the invention.

In the arrangement of Figures 6 to 8, inclusive, the sheets 11 and 12 corresponding to the expanded metal fabrics previously described are imperforate. Each sheet is corrugated or formed up to provide a series of oppositely facing channels. The cross-sectional size of these channels may be varied although in the example given the alternate channels are much smaller than the others. At the base of the alternate channels the material is cut at spaced points and pressed or formed, as indicated at 13*a* and 13*b*, on sheet 11, and 14*a* and 14*b* on sheet 12, to form channels or keyways relatively positioned on the two sheets so they may nest when the sheets are brought into juxtaposition, as is clear from Figure 7. In a large panel, of course, there will be a series of these keyways formed by striking out the metal into the shape shown at spaced points. The interlocking rods 15 are then forced into these keyways to lock the sheets together, the rods are frictionally held in place, and welding is not required. This provides an exceedingly strong structure which is particularly adapted for heavy flooring purposes where a perforated flooring would not be desirable.

The variability in specific detail of this invention is further illustrated by the construction of Figures 6 to 8, inclusive, and I, therefore, again emphasize my desire to be limited only as required by the claims granted me.

What I claim is:

1. A metal panel as described, comprising a pair of expanded metal sheets, each sheet being corrugated and said sheets being interleaved to form a series of transverse passages, and bars frictionally held in said passages.

2. A metal panel as described, comprising a pair of expanded metal sheets, each sheet being corrugated and said sheets being interleaved to form a series of transverse passages, and bars frictionally held in said passages, said bars being angle bars.

3. A metal panel as described, comprising a pair of expanded metal sheets, each sheet being corrugated and said sheets being interleaved to form a series of transverse passages, and bars frictionally held in said passages, said bars being circular in cross-section.

4. A metal panel as described, comprising a pair of expanded metal sheets, each sheet being corrugated and said sheets being interleaved to form a series of transverse passages, and bars frictionally held in said passages, said bars being polygonal in cross-section.

5. A metal panel as described, comprising a pair of reticulated metal sheets, said sheets being bent to form oppositely facing channels and interleaved with each other to provide a series of continuous transverse passages, and rods mounted in said passages.

6. A metal panel comprising a pair of reticulated metal sheets having diamond-shaped openings, said sheets being corrugated to provide parallel channels alternately facing in opposite directions and said sheets being superimposed on each other so as to intersect each other to form passageways, and rods frictionally held in said passageways.

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