

No. 862,897.

PATENTED AUG. 13. 1907.

W. D. FORSYTH.
EXPANDED METAL.
APPLICATION FILED FEB. 1, 1907.

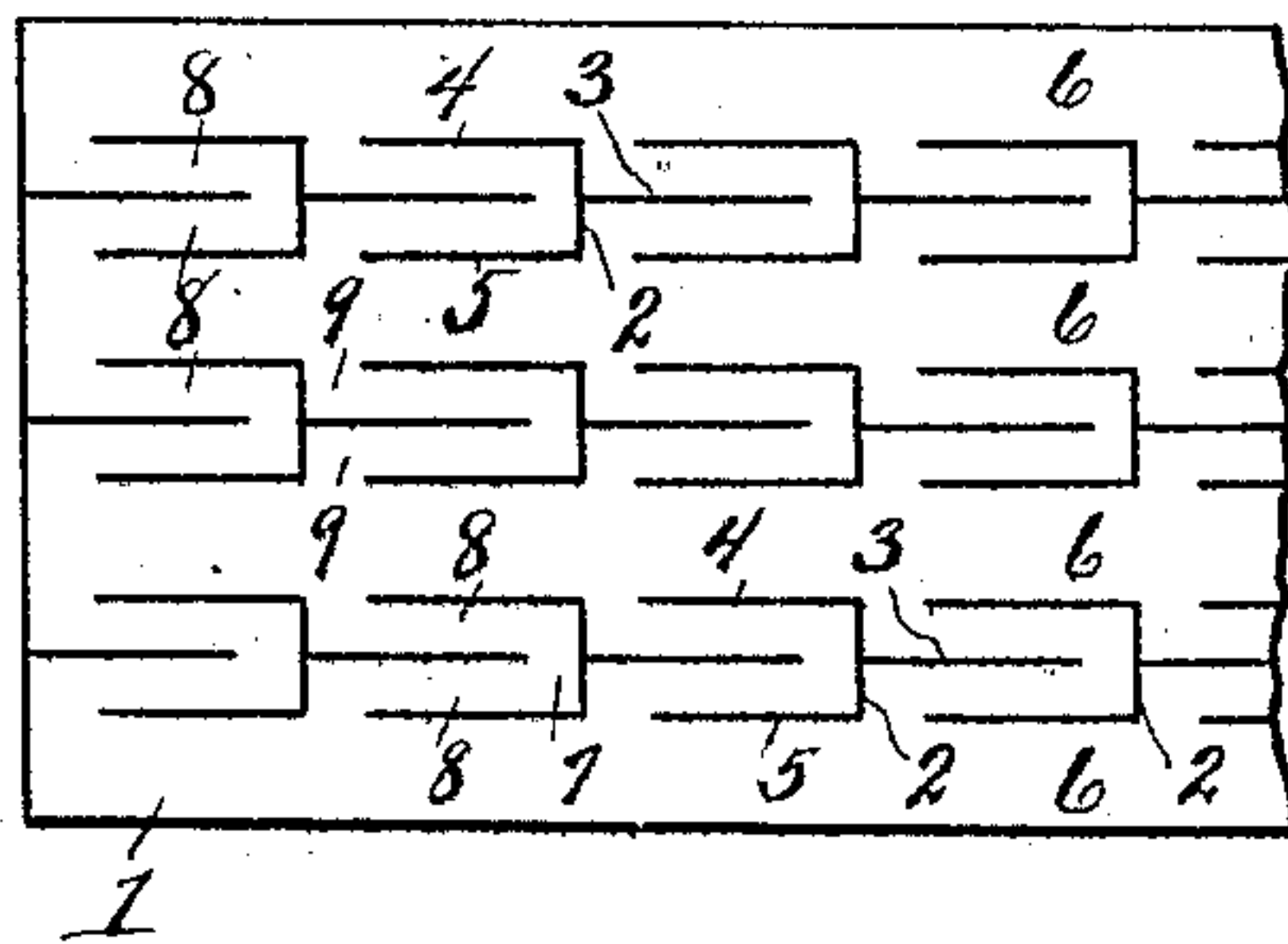


Fig. 1.

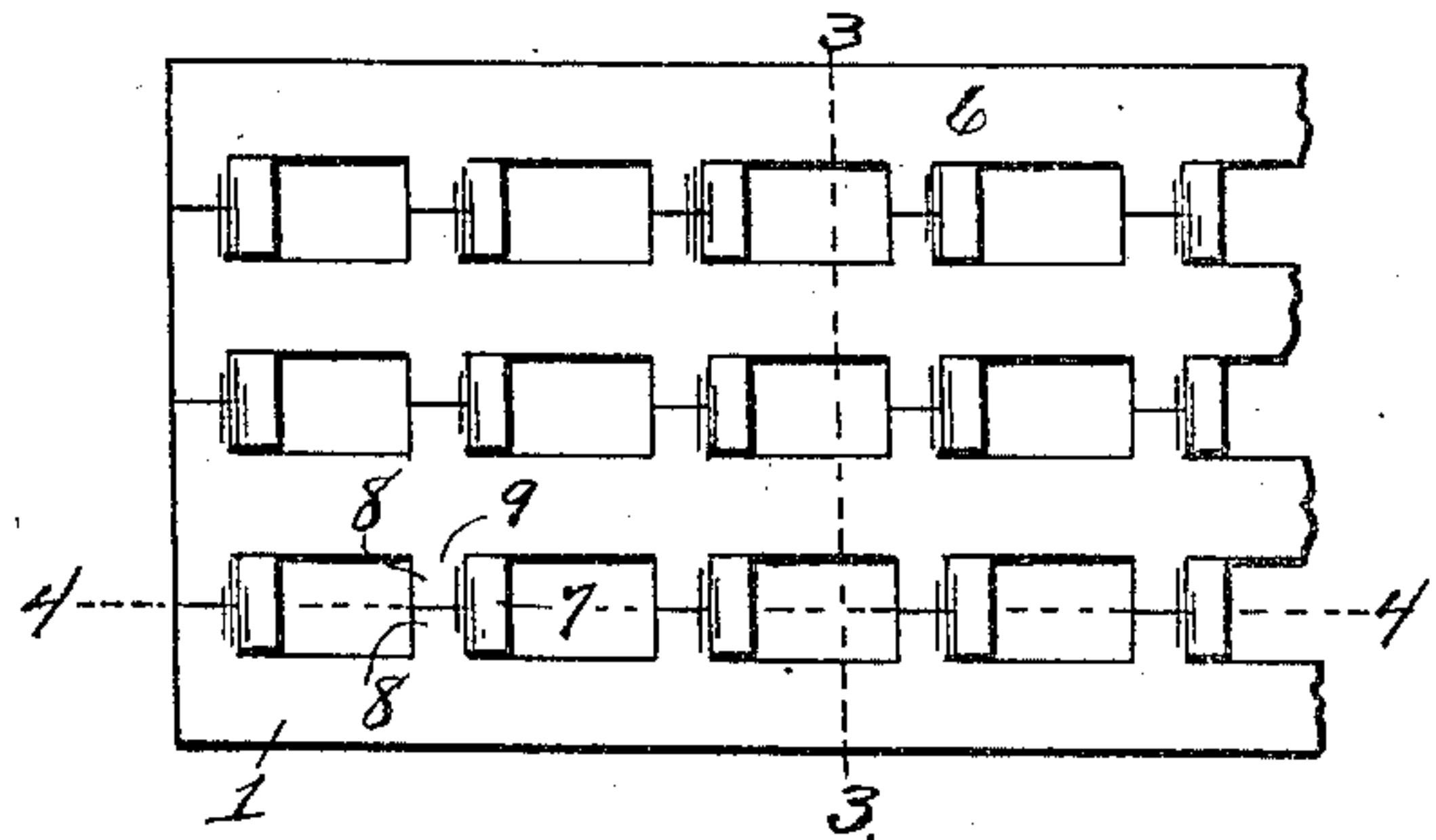


Fig. 2.

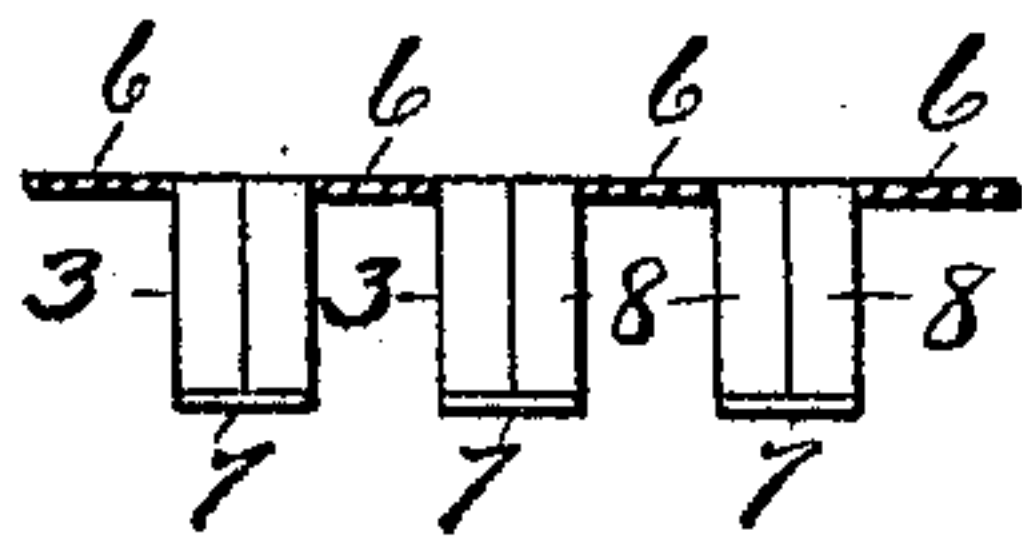


Fig. 3.

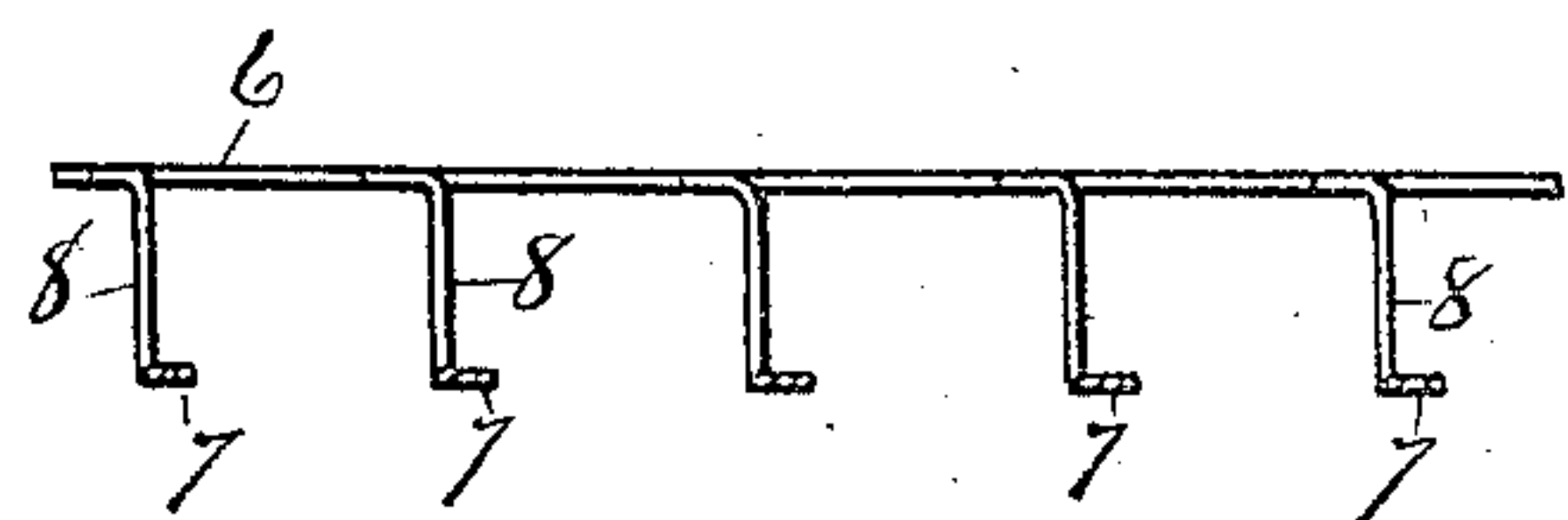


Fig. 4.

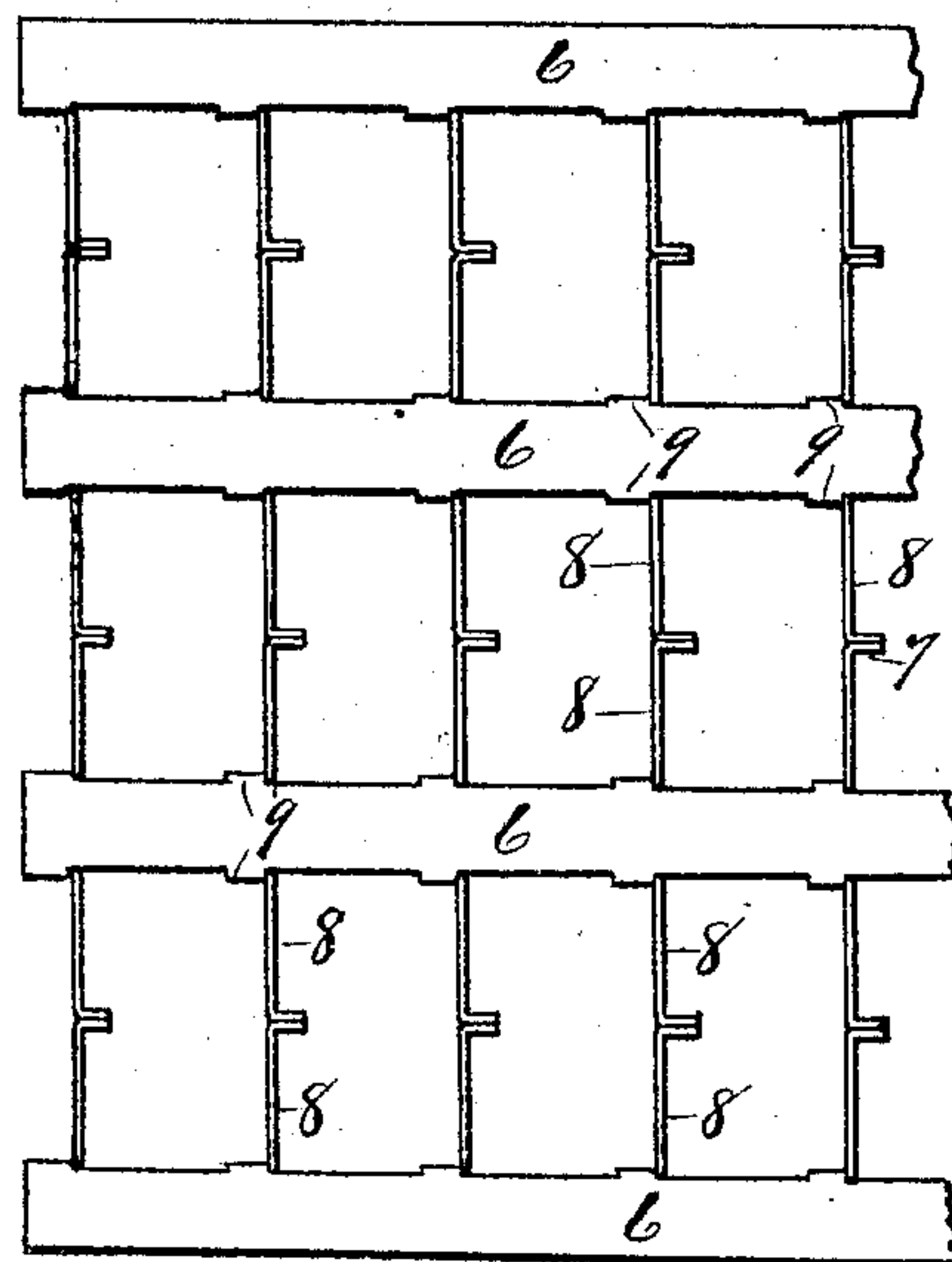


Fig. 5.

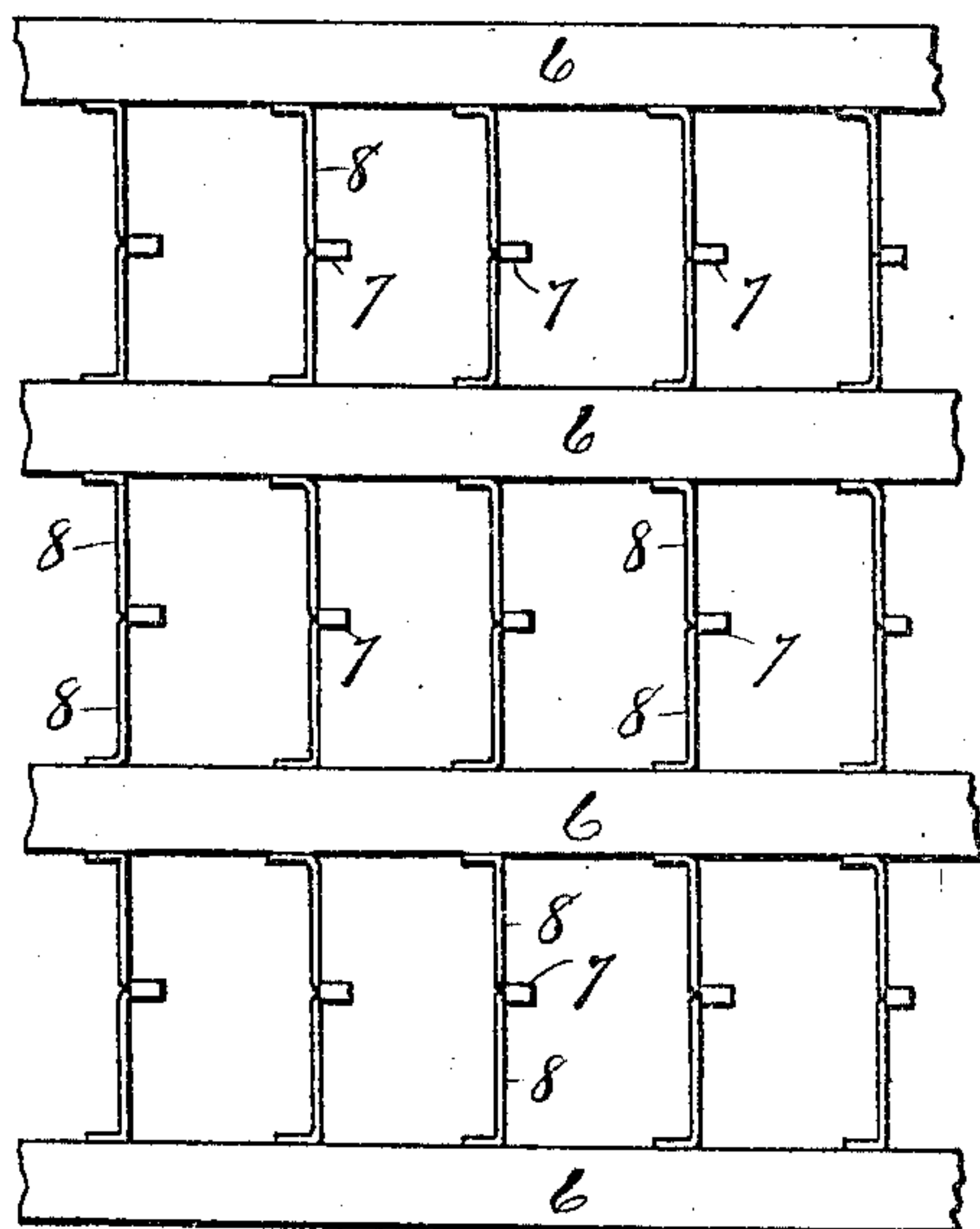


Fig. 6.

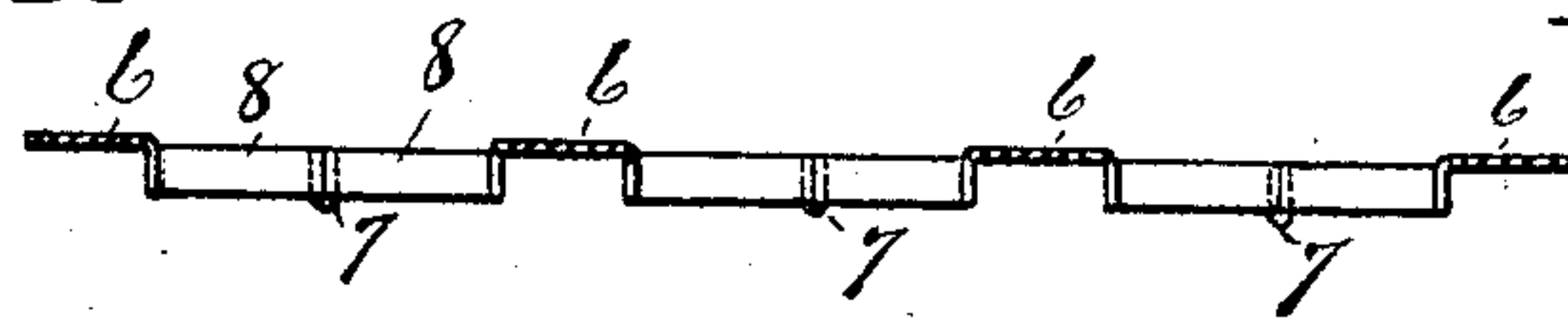


Fig. 7.

Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM D. FORSYTH, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO TRUSSED CONCRETE STEEL COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

EXPANDED METAL.

No. 862,897.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed February 1, 1907. Serial No. 355,188.

To all whom it may concern:

Be it known that I, WILLIAM D. FORSYTH, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Expanded Metal, of which the following is a specification.

My invention relates to a new and improved form of expanded sheet metal adapted to be used in place of lath to hold plaster, and also adapted for reinforcing concrete construction; and the process of making the same.

My invention consists of a process for forming expanded metal which is made up of three steps;—1st,—shearing the sheet metal along longitudinal lines, the slits being formed of four connected portions, one of the portions extending transversely of the line of the slits, one of the portions extending in one direction from the center of the first slit and parallel to the general line of slits, and the two other portions extending parallel to the first but in opposite directions and from the ends of the first slit, the second portion of the slit extending up between the third and fourth portions of the next adjacent; 2nd,—striking up the tongues which are formed by the first, third and fourth slits spoken of, so that said tongues project at right angles from the body of the plate and have portions at their ends projecting parallel to the plate; and 3rd,—expanding the sheet laterally so that the halves of the tongues will separate at their bases and swing down toward the main sheet.

My invention also consists in a novel expanded metal consisting of longitudinal ribs or bands connected by transverse ties, each in a plane at right angles to the main sheet. These ties are formed in halves connected at the outer ends to the main ribs and connected together at the inner ends, the ribs and ties being integral.

My improved sheet metal is illustrated in the accompanying drawings in which

Figure 1 shows a piece of sheet metal slitted preparatory to placing the same in the forming dies. Fig. 2 is a view of the same after passing through the forming dies. Fig. 3 is a transverse and Fig. 4 a longitudinal cross section on the lines 3—3 and 4—4 of Fig. 2 respectively, both inverted. Fig. 5 is a top view, Fig. 6 is a bottom view and Fig. 7 is an end view of the sheet after it has been expanded.

Similar reference characters refer to like parts throughout the several views.

My improved expanded metal may be formed of sheet steel of any desirable thickness, depending upon the service to be performed. Where the supports are close together and the plaster to be carried is not heavy, number 32 sheet metal may be employed,

while in case the material is to be used as a tension member for long composite concrete and metal floor spans, its thickness may be one-eighth of an inch or more. While I have shown a sheet with but three lines of slits and four ribs, it will be evident that any number of lines of slits and ribs are possible. In forming this sheet metal, the slitting may be done by a self feeding machine which slits the entire sheet transversely to the rows of slits at a single stroke and at the same time strikes up the tongues from a line of slits caused by the previous stroke.

In Fig. 1 the sheet 1 is provided with three longitudinal lines of slits. Each slit is composed of four portions, the transverse portion 2, a longitudinal portion 3 which connects to the middle of the part 2 and extends to the right in Fig. 1, and two portions 4 and 5 which connect to the ends of part 2 and extend to the left in Fig. 1. The portion 3 of one slit extends up between the parts 4 and 5 of the next adjacent slit and the distance between the end of the part 3, and the part 2 of the next adjacent slit is preferably about the same as the transverse distance between this part 3 and the parts 4 and 5 of the adjacent slit. The sheet having been slitted, it is placed where it may be acted upon by a forming die which presses down the tongue included between the parts 2, 4 and 5 of each slit bending it so as to extend at a right angle to the main sheet and also bending the ends 7 of the tongues so that they are extended parallel to the main sheet as shown in Figs. 3 and 4. Referring to the first four figures, it will be noticed that these tongues are bent up on a transverse line extending across the sheet at the ends of the portions of the slots marked 4 and 5, and that the ends of the tongues which are parallel to the main portion of the sheet are bent on lines that extend across the sheet at the ends of the portions 3 of the slots. The tongues thus struck up are split their entire length with the exception of the small bent-over ends 7 of the same, which ends of the tongues now form the only connection between the longitudinal ribs 6. There are thus formed upstanding tongues which have short bent-over portions 7 to which are connected the parts 8, which parts in turn connect to the ribs 6 at 9.

After the sheet has been formed, the outer longitudinal ribs 6 are pulled from each other which will cause all the tongues to open along the slots 3, and the portions 7 of the tongues will fold up on their central lines until they approach each other, and the side portions 8 will bend at the lines 9 until the parts 8 of each rib assume the positions indicated in Fig. 7. The resultant material is therefore composed of ribs or longitudinal members 6 connected by a series of ties, each of which is composed of a pair of members 8 having a connecting portion 7, and having outer ends bent at right angles

and united to the longitudinal members 6 by longitudinal portions at 9.

It will be noticed that the distance that the longitudinal members 6 can move from each other is equal to double the distance that the portion 3 of a slot extends between the parts 4 and 5 of an adjacent slot. All that is necessary to expand the metal more is to increase the length of the slots 3, 4 and 5. The resultant material possesses great transverse strength for weight, because the parts 8 are at right angles to the longitudinal members 6 and because they are so strongly connected thereto.

Having now explained my improvement, what I desire to secure by Letters Patent is:—

1. The process for forming expanded metal which consists in slitting the same along longitudinal lines so as to form parallel bands connected by tongues split through their bases, striking up the tongues and bending the unsplit portion of the same back parallel to the main sheet, and then expanding the material by separating the longitudinal members laterally.

2. The process for forming expanded metal which consists in shearing a sheet to form longitudinal lines of slits, each slit comprising a transverse portion, a longitudinal portion connected to the center of the transverse slit, and two other longitudinal portions extending in the opposite direction from the first and connecting to the

ends of the transverse portion of slit, the central longitudinal portion of one slit extending up between the oppositely extending longitudinal portions of the adjacent slit; and striking up the tongues formed by such slits and then expanding the metal laterally.

3. The process of forming expanded metal which consists in slitting the same along longitudinal lines so as to form parallel bands connected by tongues split through their bases, and expanding the material.

4. An expanded metal comprising a series of longitudinal members, and a series of ties connecting the same, each tie formed of two parts connected at a line midway between the main tension members, all the members being integral.

5. An expanded metal formed from a sheet which is slitted along longitudinal parallel lines, each slit formed of a transverse portion, a central longitudinal portion, and a pair of longitudinal portions extending from the ends of the transverse portion in the opposite direction to the first, the slitted sheet being then expanded laterally.

6. An expanded metal comprising longitudinal members, and a series of ties between adjacent longitudinal members, each tie formed of two parts united at their ends.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM D. FORSYTH.

Witnesses:

EDWARD N. PAGELSEN,
ELIZABETH M. BROWN.