

J. R. WEMLINGER.

SHORING.

APPLICATION FILED SEPT. 23, 1907. RENEWED APR. 26, 1910.

975,665.

Patented Nov. 15 1910.

Fig. 1

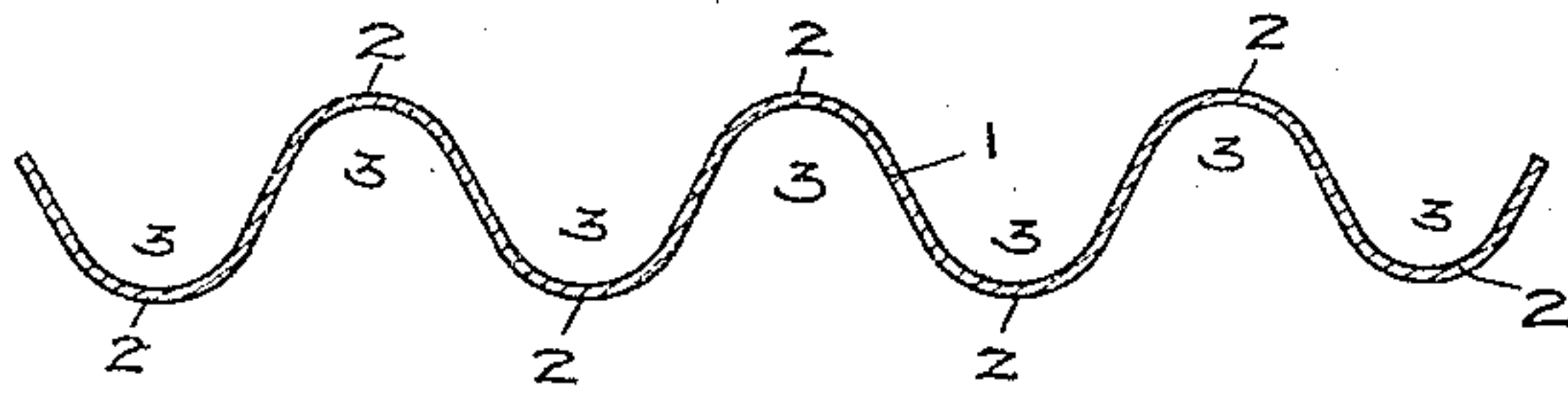


Fig. 2

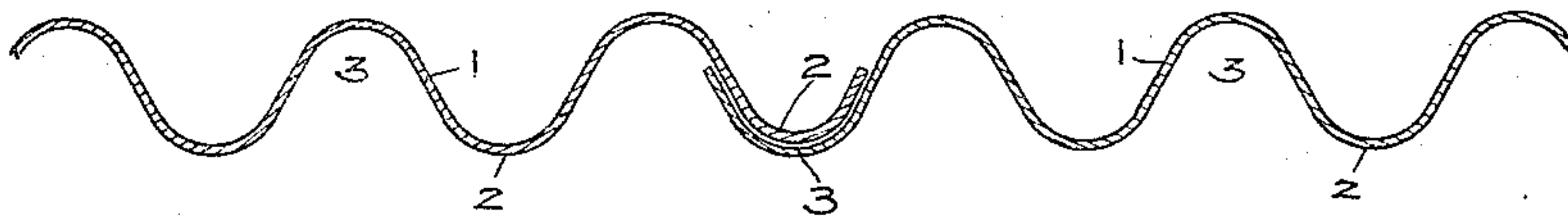


Fig. 3

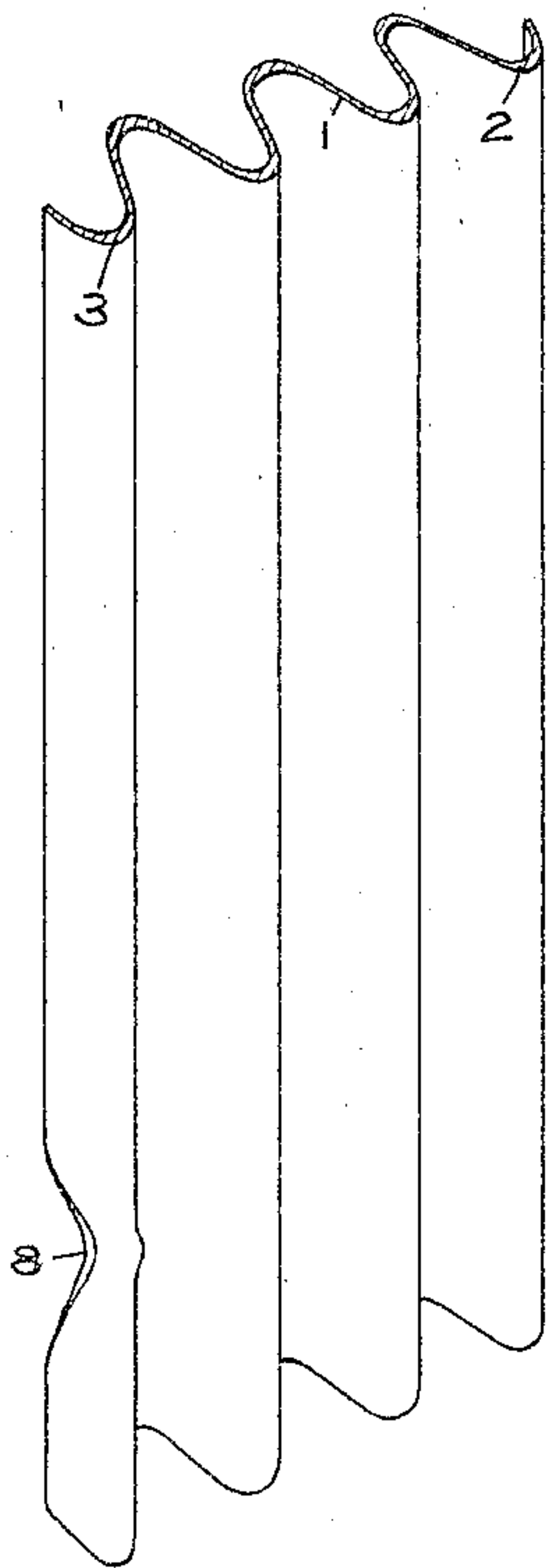
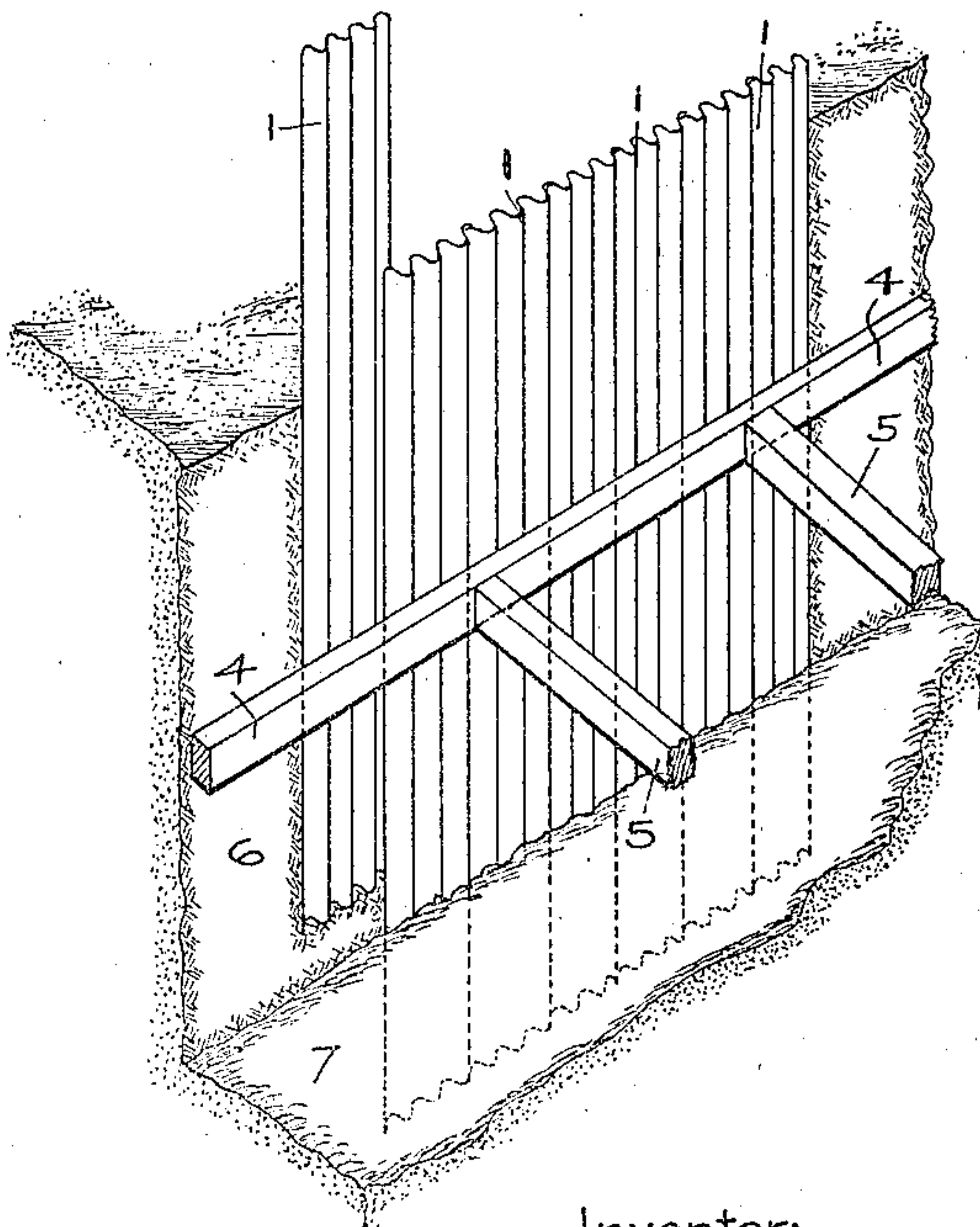


Fig. 4



Witnesses:

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JULIUS R. WEMLINGER, OF NEW YORK, N. Y.

SHORING.

975,665.

Specification of Letters Patent.

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Application filed September 23, 1907, Serial No. 394,109. Renewed April 25, 1910. Serial No. 557,593.

To all whom it may concern:

Be it known that I, JULIUS R. WEMLINGER, a citizen of the United States, residing at Brooklyn, in the city of New York, State of New York, have invented certain new and useful Improvements in Shoring, of which the following is a specification.

This invention relates to shoring and especially to such as is used for holding up the sides of ditches and trenches.

The principal objects of my invention are to provide such a shoring as will insure perfect safety, by entirely preventing the falling or caving in of the walls of an excavation, and that will also have all the strength and rigidity required for the purpose, with the least possible weight; that can be readily and quickly applied and removed, and the vertical sections of which can be easily and instantly guided to their proper positions and driven into the earth.

My invention consists in the construction herein described and set forth.

The accompanying drawing illustrates one embodiment of my invention, in which—

Figure 1 is a transverse section of one of the vertical members or sheets of the shoring; Fig. 2 is a similar view of two adjacent members in the position they will assume in relation to each other when in actual use as shoring; Fig. 3 is a perspective view of one of said members, but of a slightly modified form; and, Fig. 4 is a perspective view of a part of a trench and my improved shoring applied thereto, and also showing the method of application.

Heretofore, in the digging of trenches and ditches, the shoring or temporary support for the walls of these excavations has been made of wooden planks, the planks being held in place by wales or rangers extending across the planks, the said wales or rangers being in turn held in place by struts or braces extending across the trench or to some bearing within the excavation. The use of wooden planks for the upright portions of the shoring cannot be relied upon for strength, as they are never of uniform strength, and they are likely to have weakening defects in places where they should be the strongest. Moreover, in order to give the said planks any strength at all, it is necessary to give them considerable thickness. This fact renders them difficult to drive down into the earth, especially when it is hard, and the act of driving often

breaks or splits the upright plank. Furthermore, these planks can be used only two or three times at best, and they require so much bracing and the operation of driving them is so slow that the entire shoring operation by means of planks or boards is very expensive. If any of the planks break during the process of driving them into the earth, it renders them useless for the purpose intended.

My invention overcomes all the above difficulties; it provides vertical members for shoring that have the greatest strength and least weight and thickness, that can be readily driven with little power into the earth, that can be properly guided while being driven, so as to attain their proper positions relatively to the trench or excavation and their adjacent sections, that can be used over and over again, and that can be readily removed as soon as the retaining wales or braces are removed.

In the drawing, similar figures represent like parts.

1 is a vertical member or unit of my improved shoring and, as shown, is provided with longitudinal projections and recesses 2 and 3, respectively. The particular form of the member or unit of my shoring as shown in the drawing is that of a corrugated or wavy sheet or plate of metal, this form being especially suitable for the purpose for which it is intended, as giving the greatest strength and stiffness with the least practicable weight and thickness, and also as being thin enough, or sharp enough, at its edge or point to be readily driven into the earth, and also as providing a number of vertically extending ridges and recesses that will register with corresponding recesses and ridges in the adjacent member and thereby permit the proper guiding of the same while it is being driven and after the shoring is in position.

In addition to the vertical sections or members 1, the shoring consists of breast-pieces, wales or rangers 4 extending longitudinally within the trench and transversely across and bearing against the vertical members 1, and struts or braces 5 with their ends bearing against the wales 4 so as to force them against the members 1.

Fig. 4 illustrates my improved shoring as applied to a trench, one side of the trench and shoring being broken away to more

clearly show the construction and application, it being understood that, in this case, there is another line of vertical members 1 bearing against the other wall, and a similar wale 4, and that the struts and braces 5 bear against the two wales 4 at their ends.

The mode of application is as follows: The trench is dug a few feet, 6 being the wall of the trench and 7 its bottom. The wales or rangers 4 are then extended longitudinally with the trench bearing against the wall 6; then the struts or braces 5 are applied between the two opposite wales with their ends bearing against the said wales. The members 1 are then driven between the wale and the adjacent wall down to the bottom 7 of the trench, the wale 4 being a guide to the front of members 1 during said operation. The said members 1 are preferably driven one at a time, an edge or a longitudinal ridge of one member being made to engage with a corresponding bend or recess of the contiguous member, so that the two will overlap and keep their proper positions relatively to each other.

In Fig. 4, it will be seen that six vertical members have been driven, as above stated, and for some distance below the bottom of the trench, and another member has been partly driven and is just about to be forced into the bottom of the trench. If for any reason it be not desired to drive the members 1 into and below the bottom 7 of the trench, it may be necessary and expedient to have additional wales and struts at and near the bottom of the trench, to hold the lower portions of the members 1 against the wall 6.

In Fig. 2, the registering portions of the two contiguous members 1 are shown as overlapping a little more than any of the two adjacent sections in Fig. 4. When the sections are made with alternate ridges and recesses of similar size and similar distances apart, it is obvious that the two contiguous sections or members 1 can be made to overlap as much or as little as practicable and desirable.

If it is desired to more thoroughly unite the members or vertical sections, this can be done by providing a nib in one section to provide a wedging action which forces the member being driven against the member already in position. Said nib or projection may be made by denting the section as at 8 in Fig. 3, before the sections 1 are driven. This usually provides a water- and quicksand-tight joint between the sections; but, if any leakage occurs, it is readily stopped by tightening the bracing and thus increasing the pressure of the wales. Inasmuch as the shoring is flexible and of double thickness only at the overlapping joints the pressure of the wales is received mainly by the joints and a tight joint secured. This can-

not be accomplished with ordinary shoring or with the tongued and grooved planking frequently used.

After the trench or ditch has been dug down to the required depth and the work to be done completed, the excavation is usually refilled and the shoring is no longer needed. It is obvious that, as soon as the wales and struts are removed, the sections 1 will fall apart and can be readily taken out and be ready for re-shoring.

While I have described my method of shoring as applied to a trench, it is evident that it is applicable to any kind of excavation with slight modifications. For instance, if the excavation is too large for the struts 5 to extend horizontally across, the said struts 5 are arranged to bear at one end against the wales 4 and at the other against the ground of the excavation itself or some other object.

I prefer to use corrugated sheet metal for the vertical sections 1 for the reasons above stated, and also for the reason that they can be obtained thus in an almost infinite variety of widths and thicknesses, and because of the great facility of procuring such forms.

I am aware that corrugated sheets and other stiffened plates have been used for roofing and for sheet-piling, but such sheets were secured together by either nails or other fastenings. This construction is not appropriate for temporary shoring of vertical walls of earth, as it would be exceedingly difficult, if not impossible, to separate the plates if used as vertical sections after they have been so secured and driven into the earth. Moreover, such construction has never been used for the purpose of this invention, and could not separate or drop apart and be readily removed in the same manner as my improved shoring.

I do not limit myself to the precise construction above described and shown, as many changes may be made therein without departing from the spirit of my invention or sacrificing its chief advantages.

What I claim as new and desire to secure by Letters Patent, is:

1. A wall shoring comprising a plurality of independent sheet metal sections, having curved adjacent edges, and with the edge of one section engaging, but not locking with, the curve of the adjacent section, a removable bar or wale extending transversely across said sections and a strut bearing against said bar or wale.

2. A wall shoring comprising a plurality of independent corrugated sections, and with a longitudinal ridge of one section engaging with a corresponding recess of an adjacent section, and a removable bar or wale extending transversely across said sections.

3. A wall shoring comprising a plurality of independent corrugated sections, and with

a longitudinal ridge of one section engaging with a corresponding recess of an adjacent section a bar or wale extending transversely across said sections, and a brace bearing
5 against said bar or wale.

4. A metallic shoring comprising a series of independent longitudinal corrugated plates adapted to support a bank of earth or similar material with their adjacent edges
10 laterally overlapping to the extent of at least a part of one corrugation, in combination with waling pieces arranged against the free surface of said piling, and supporting means abutting said waling pieces for
15 holding same and the piling in position.

5. A wall shoring comprising a series of independent vertically arranged, corrugated plates, assembled with their adjacent edges in lateral contact and overlapping; the ex-

posed surfaces of said plates being supported 20 by transverse waling pieces and struts, to form substantially water-tight joints and permit the ready disengagement of said plates when the supports are removed.

6. A wall shoring comprising a series of 25 longitudinally corrugated metal plates, each having means on one of its lateral edges for forcing a driven plate into close contact with an adjacent plate, and means for supporting the exposed surface of said plates. 30

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this 21st day of September 1907.

JULIUS R. WEMLINGER.

Witnesses:

EDITH J. FULLER,
LEIBER HERMANN.