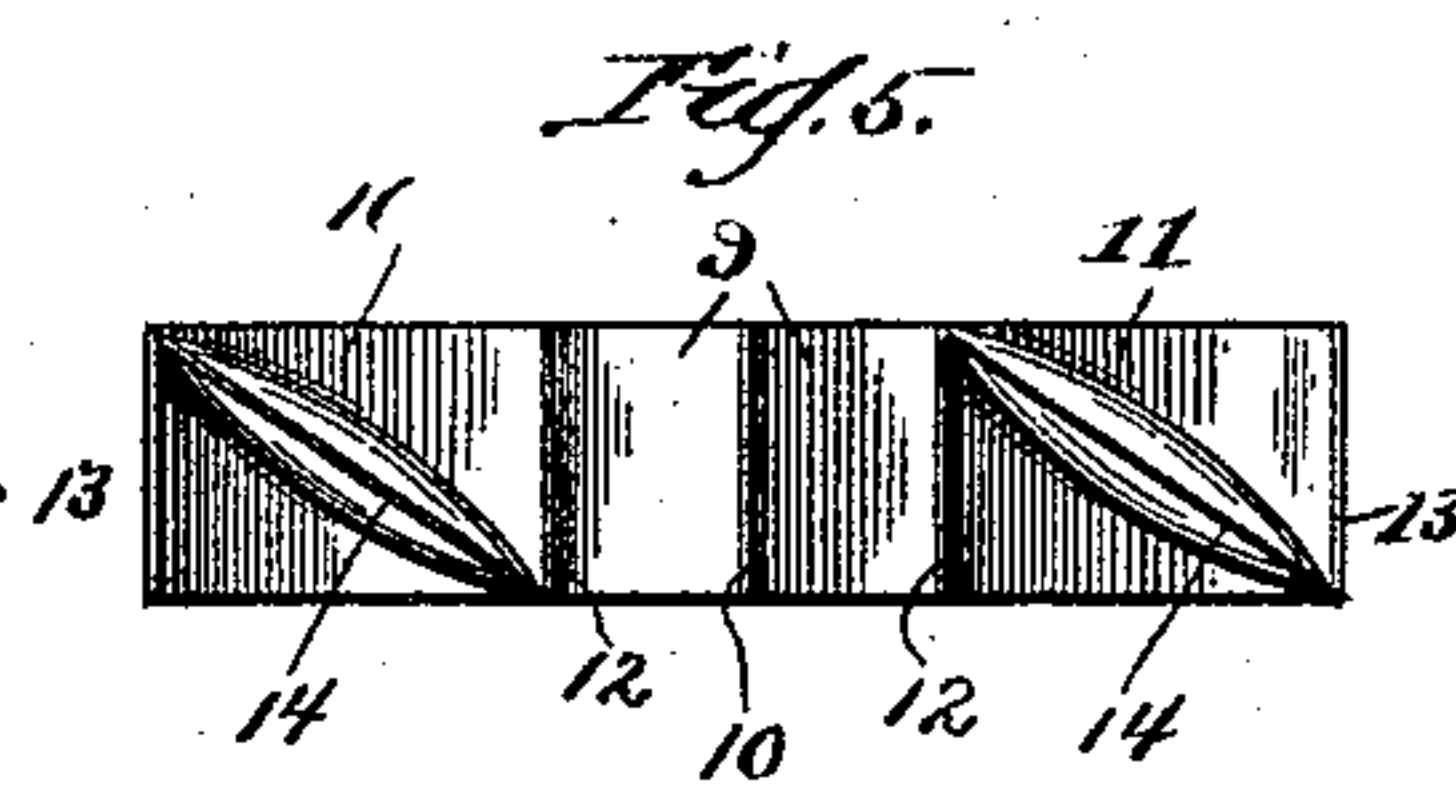
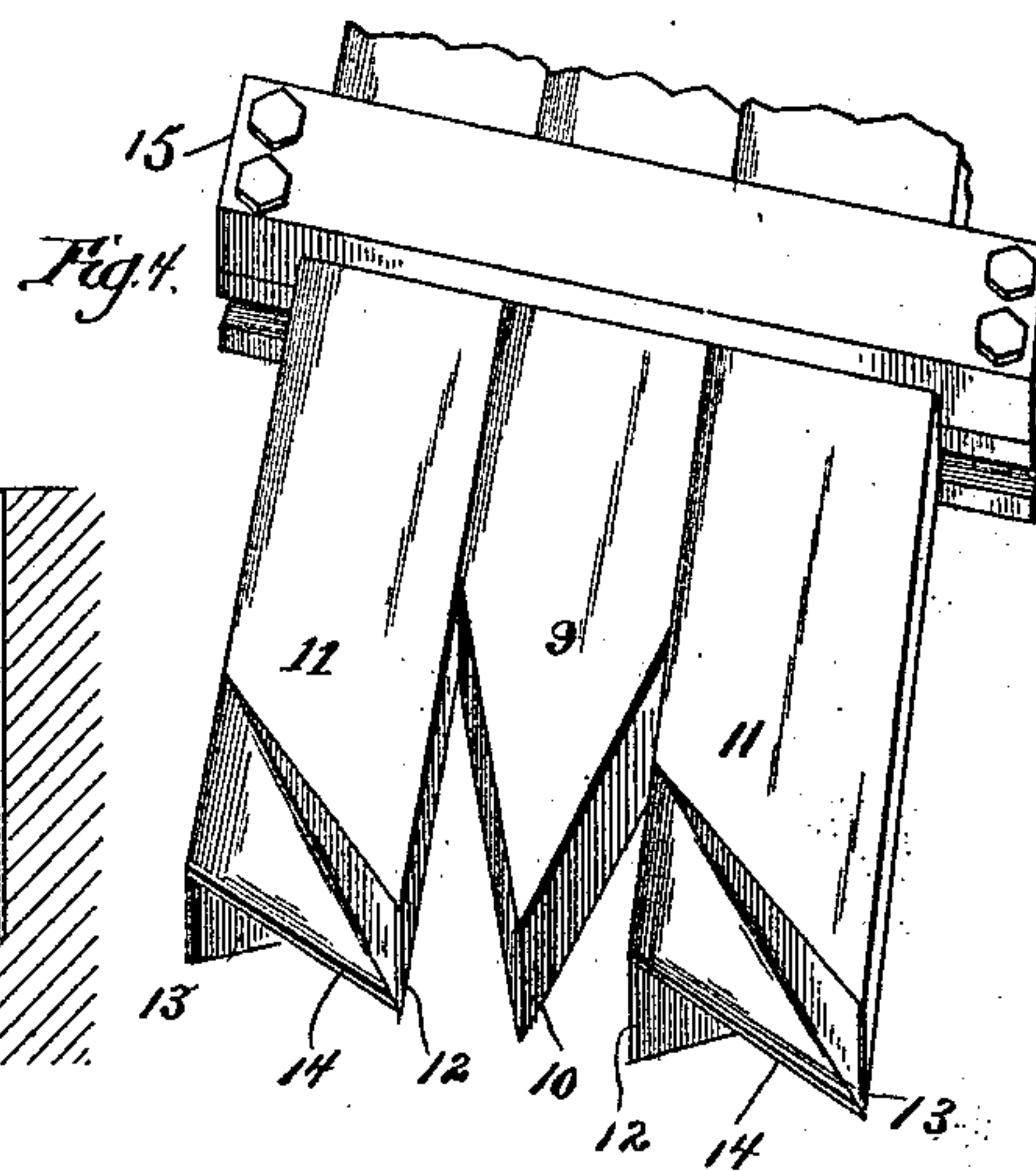
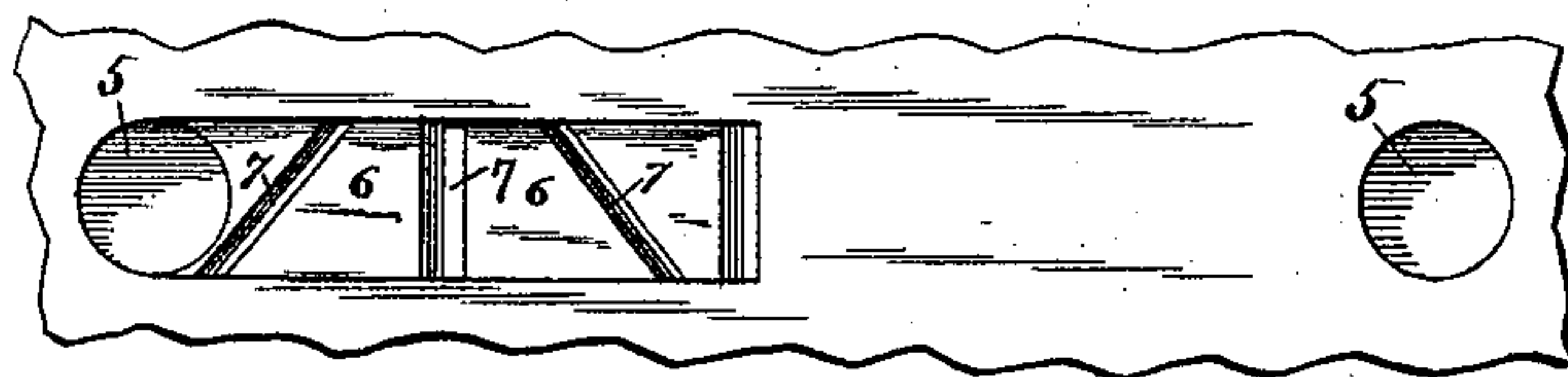
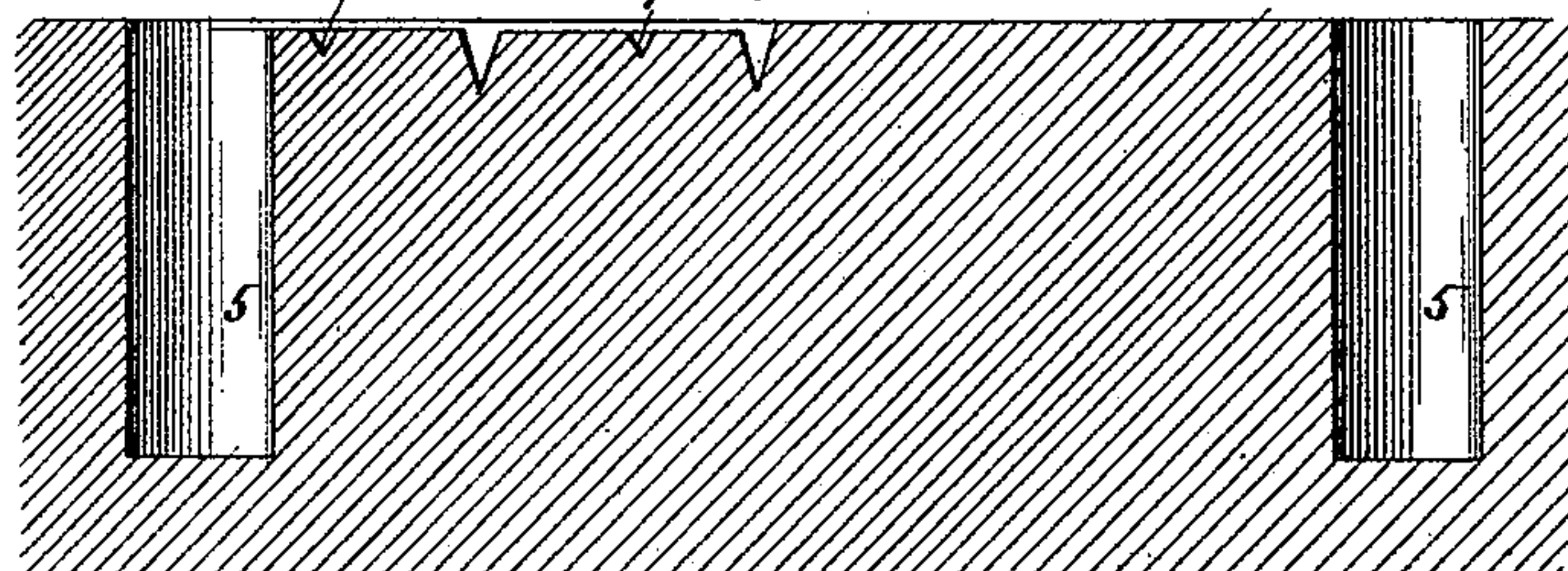
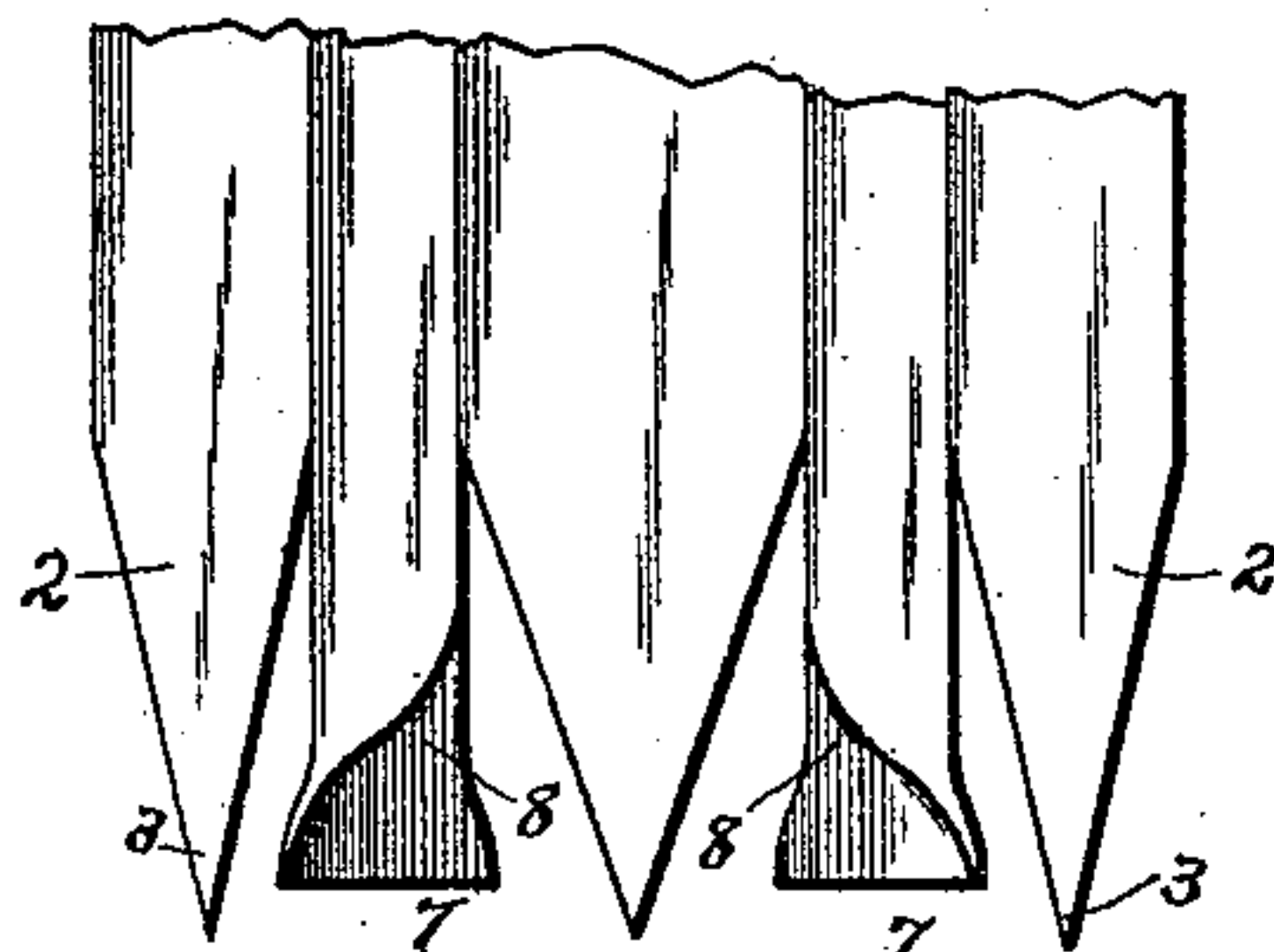
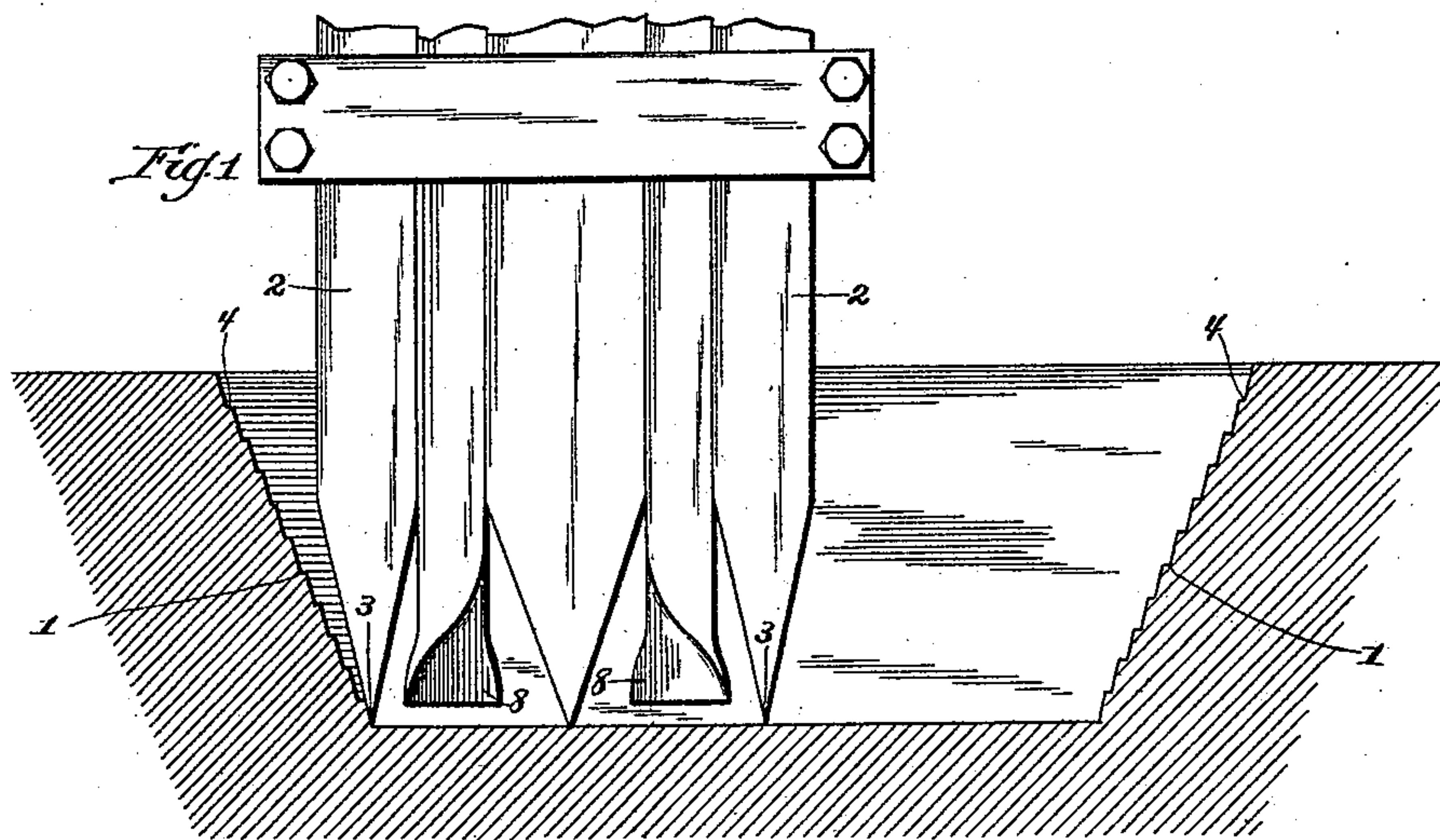


(No Model.)

Z. LASSAR.  
STONE CHANNELING MACHINE.

No. 497,379.

Patented May 16, 1893.



Witnesses:  
Wm. M. Rheem.  
Wm. F. Lanning

Inventor:  
Zabby Lassar  
By Elliott & Ormhund  
Attys.



# UNITED STATES PATENT OFFICE.

ZABBY LASSAR, OF STINESVILLE, INDIANA, ASSIGNOR OF TWO-THIRDS TO CHARLES C. DUNN AND ABNER CONNER, OF SAME PLACE.

## STONE-CHANNELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 497,379, dated May 16, 1893.

Application filed August 2, 1892. Serial No. 441,920. (No model.)

*To all whom it may concern:*

Be it known that I, ZABBY LASSAR, a citizen of the United States, residing at Stinesville, in the county of Monroe and State of Indiana, have invented certain new and useful Improvements in Stone-Channeling Machines, of which the following is a full, clear, and exact specification.

This invention relates more particularly to improvements in the cutters, chisels or picks employed in that class of stone channeling machines in which such cutters are arranged in "gangs" or series, and cut the stone by rising and falling thereon while traversing the line throughout which the channel is to be produced.

The object of my invention is to improve the form and arrangement of the cutters whereby the stone will be more thoroughly hashed or chopped, the channel made more regular and uniform and all twisting action of the cutters avoided.

With these ends in view, my invention consists in certain features of novelty in the construction, combination and arrangement of parts by which the said objects and certain other objects hereinafter described are attained, as fully explained, with reference to the accompanying drawings, and more particularly pointed out in the claim.

In the said drawings, Figure 1 is a side elevation of a gang of cutters or chisels of the old form, illustrating the "shelving" of the rock, or the inclines at the ends of the channel, which result from the use of such cutters without first preparing the stone by boring, as before explained. Fig. 2 is a similar view illustrating the rock prepared in the manner usually followed in the art. Fig. 3 is a plan view of a channel as produced by the old form of cutters or chisels, illustrating the formation of the frogs in the stone. Fig. 4 is a side elevation of a gang of cutters or chisels constructed according to my improvements; and Fig. 5 is a face or end view thereof, illustrating the form of the cutting edges.

Like signs of reference indicate like parts throughout the several views.

Practice has demonstrated that in the employment of stone channeling cutters of the old form, the cutters have a tendency to work

away from the ends of the groove or channel, and thus produce an inclined wall, 1, at each end of the channel, instead of descending perpendicularly through the stone, a function necessary for the production of a perfect channel. This defect is due to the fact that the end picks, 2, have heretofore been constructed with beveled ends, 3, and consequently when these picks descend into the stone their beveled edges strike the edge or end wall of the channel, and this causes them to move forward while descending. This results in a slight shoulder, 4, on the end wall, 1, which when the cutters again descend, strikes the bevel on the end pick and forces the gang of cutters still farther forward or away from the original starting point; and so, on, until the channeling is finished, when it will be found that the bottom of the channel is much shorter than the top, the difference in length being dependent upon the vertical extent or depth of the channel. In order to avoid this difficulty, it has been proposed to first prepare the stone by boring a hole, 5, therein at each end of the line to be channeled out, so that the end picks, 3, when they reach the end of the channel, will not strike the end walls, but will descend into the bores, 5, in a straight line, without forcing the cutters one way or the other. This method, however, while effective in avoiding the shelving of the rock as shown at 1, in Fig. 1, is nevertheless objectionable, as considerable time is consumed in drilling the holes 5, and the channeling process cannot proceed until such holes are completed. Another great objection to this prior form is that the arrangement of the cutting edges is such as to form frogs or projections, 6, at the bottom of the groove, which being inclined at their edges, like the chisels, 8, have a tendency to throw the chisels out of alignment, and force them against the side walls of the channel, thus marring the same, and increasing the resistance to the cutters and resulting in unnecessary work. In order to overcome these objections of the prior art, I form the cutting edges of each of the end picks or cutters, directly under or in a plane with the extreme end edges of the cutter bar, so that the cutting edges alone will come into contact with the



stone; and I provide each of the end picks with a number of cutting edges, the outer or advance edges of each of such picks being at substantially right angles to the channel or the line of travel of the gang.

The intermediate, or middle cutter bar 9 and its cutting edge, 10, may be of the usual and well known form, beveled on both sides at the same angle of inclination whereby it will not shift when entering the stone, but the end picks or cutter bars 11 are each constructed with cutting edges, 12, 13, on their inner and outer end edges respectively, which are parallel with each other, and with the cutting edge, 10, of the cutter 9, the edges 12, 13, being formed integrally with their respective bars 11.

As shown more clearly in Fig. 4, the outer cutting edges, 13, are formed on the extreme edges of the bars 11, and the distance between such edges 12, 13, on each bar is at least equal to the diameter of the bar at any point throughout that portion of its length which is intended to enter the channel, so as to preclude the possibility of the side of either of the bars 11 striking or rubbing against the end walls of the channel. Thus it will be seen that no matter how deep the channel may be, the cutting edges, 13, will always strike in the same place at the end of the channel, and the shelving of the rock as shown at 1, in Fig. 1, resulting from the use of the beveled edges, 3, of the end picks of the old form, will be entirely avoided, and the end walls of the channel will be formed parallel with each other and the cutters. The end picks 11 thus constructed have the further advantage that the inner cutting edges, 12, are much nearer to the cutting edge 10, of the intermediate cutter than they would be if formed at the apex of the double bevel, 3, as in the old form, and consequently the stone is more minutely divided or shattered by the action of my improved cutters. In order that the stone occupying the space between the edges, 12, 13, may be more finely divided or chopped by the cutters 11, I connect the ends of such edges, 12, 13, on each of the cutters 11, by a cross-cutting edge 14, which extends diagonally across from one corner to the other, and

forms on each of the end picks or cutters 11 a substantially Z-shaped cutter, as shown in Fig. 5. With cutters thus constructed it will be observed that with but three cutter bars I produce seven cutting edges. It will also be seen that by the employment of my cutters having the parallel edges, 10, 12, 13, the formation of frogs with the inclined edges, such as shown at 7, Fig. 3, is avoided, as all of the edges, save the edges 14, cut transversely, or at right angles to the channel, and the cuts formed by the edges 14 can have no tendency to twist or deflect the cutters, inasmuch as the succeeding edges, 10, 12, 13, can never enter the oblique cuts formed by such edges 14, but will always strike transversely thereof, and the oblique edges 14 cannot by any possibility enter any cuts made by the transverse edges; nor can the oblique edges 14 possibly produce any twisting action of the cutters individually, because the advance edges on both of the end picks or cutters 11 are at right angles to the line of travel of the gang or to the channel. It will of course be understood that the cutters may be held by a clamp 15, of any suitable or well known form.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

In a gang of cutters for stone channeling machines, the combination of the end cutters 11 having an oblique edge 14, and the transverse edges 12—13 arranged one at each end of the edge 14 and forming a Z therewith, and an intermediate cutter 9 having a cutting edge 10 arranged between said edges 12 of the said Z cutters, and having its end beveled on both sides at the same angle of inclination, the said cutting edges 10, 12, 13 being arranged parallel with each other and strictly at right angles to the line of cut, and the end edges 12—13 on each of the cutters 11 being arranged flush with the end edges of the said cutters 11, substantially as and for the purposes set forth.

ZABBY LASSAR.

Witnesses:

LOUIS N. WILLIAMS,  
CHARLES C. DUNN.