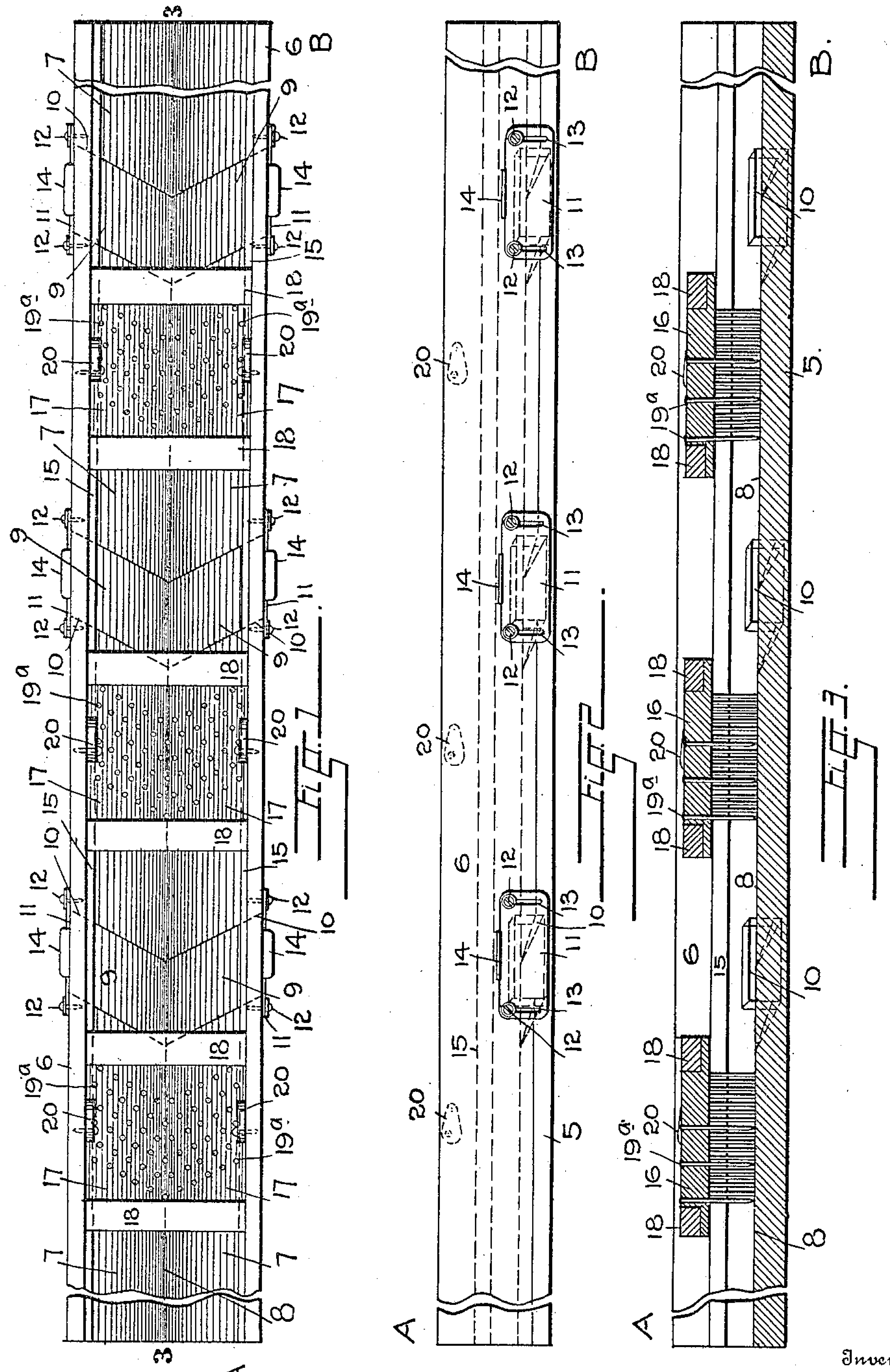
No. 831,545. PATENTED SEPT. 25, 1906.

R. L. DIMMICK.

LAUNDER.

APPLICATION FILED JUNE 14, 1905.

2 SHEETS—SHEET 1.



Witness

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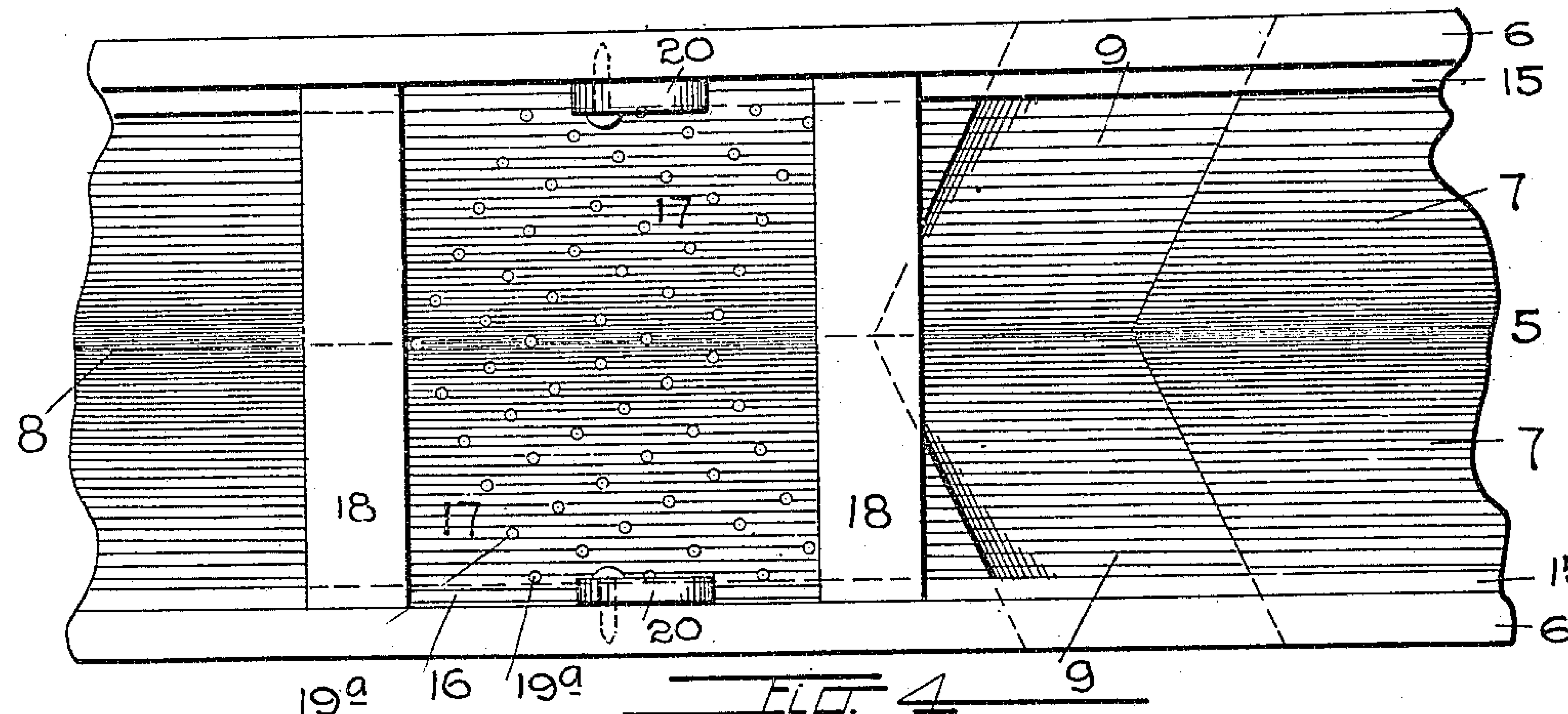

Fig. 4

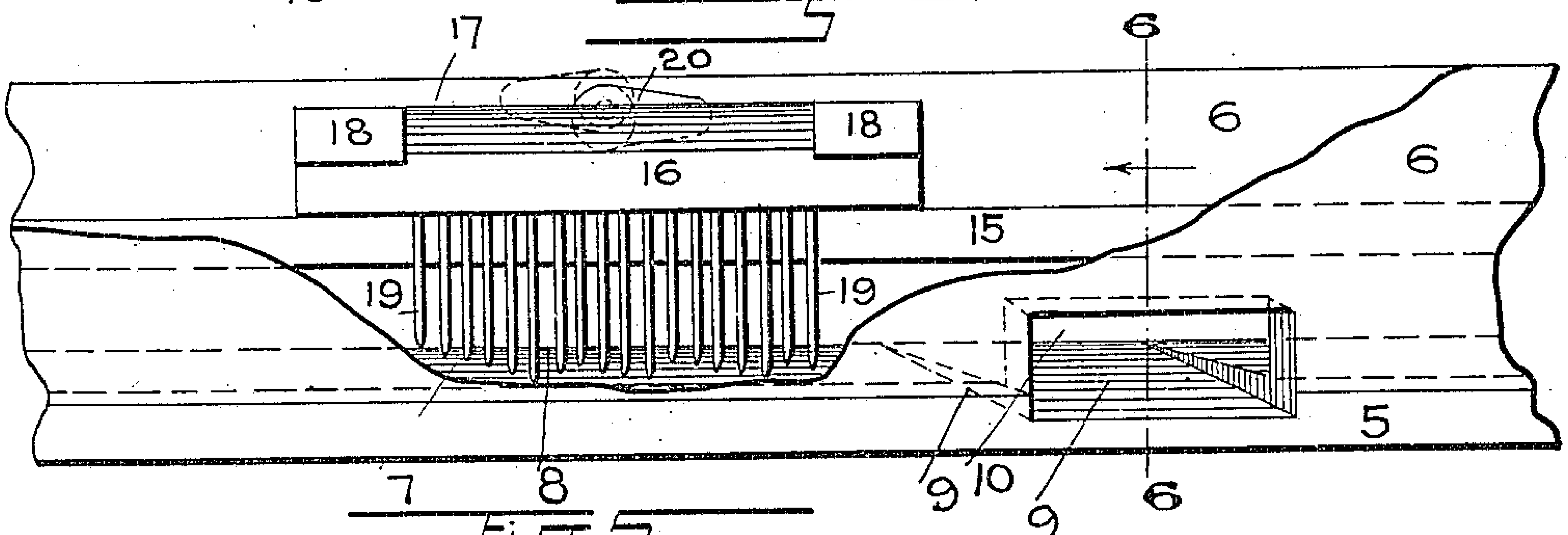

Fig. 5.

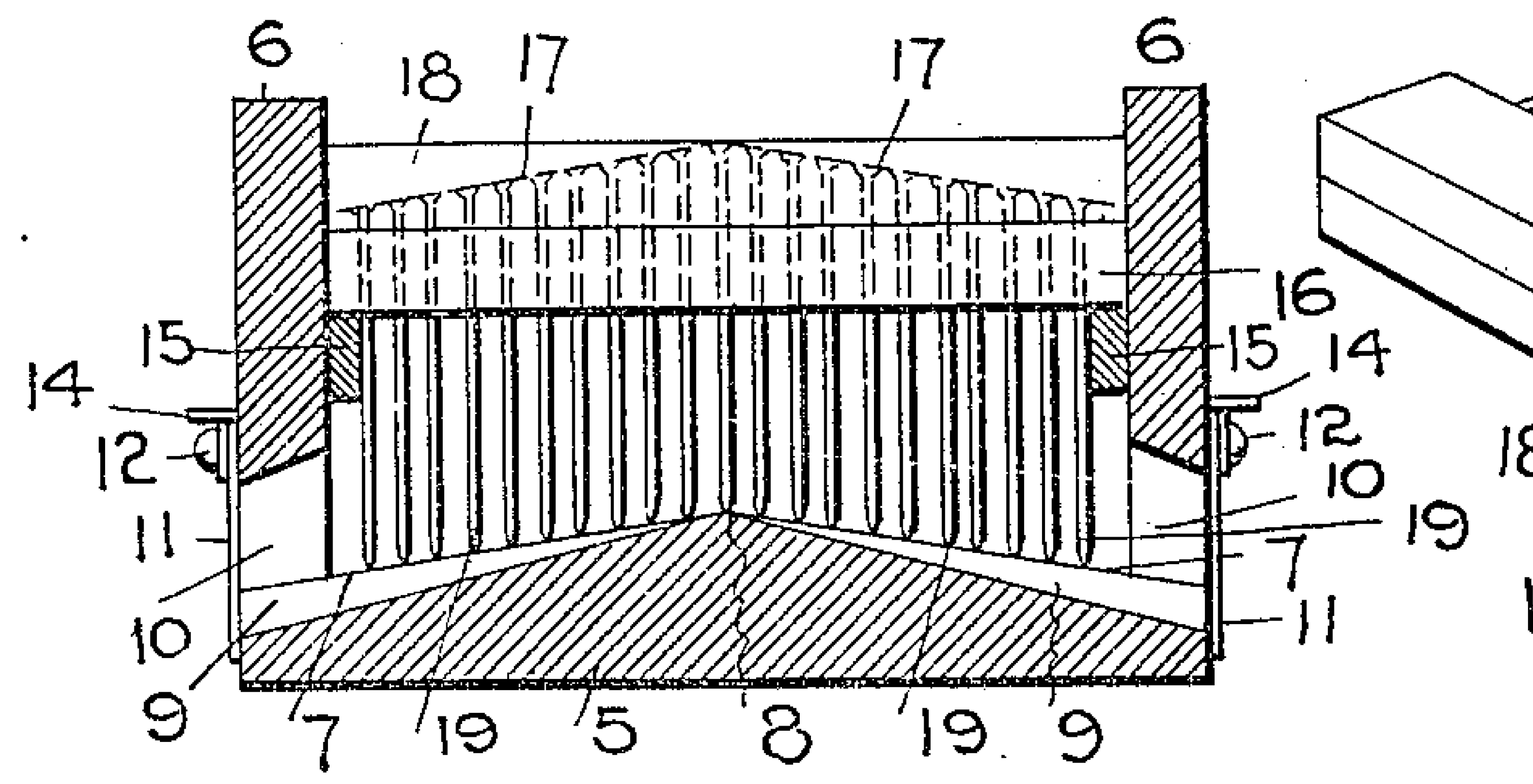

Fig. 6.

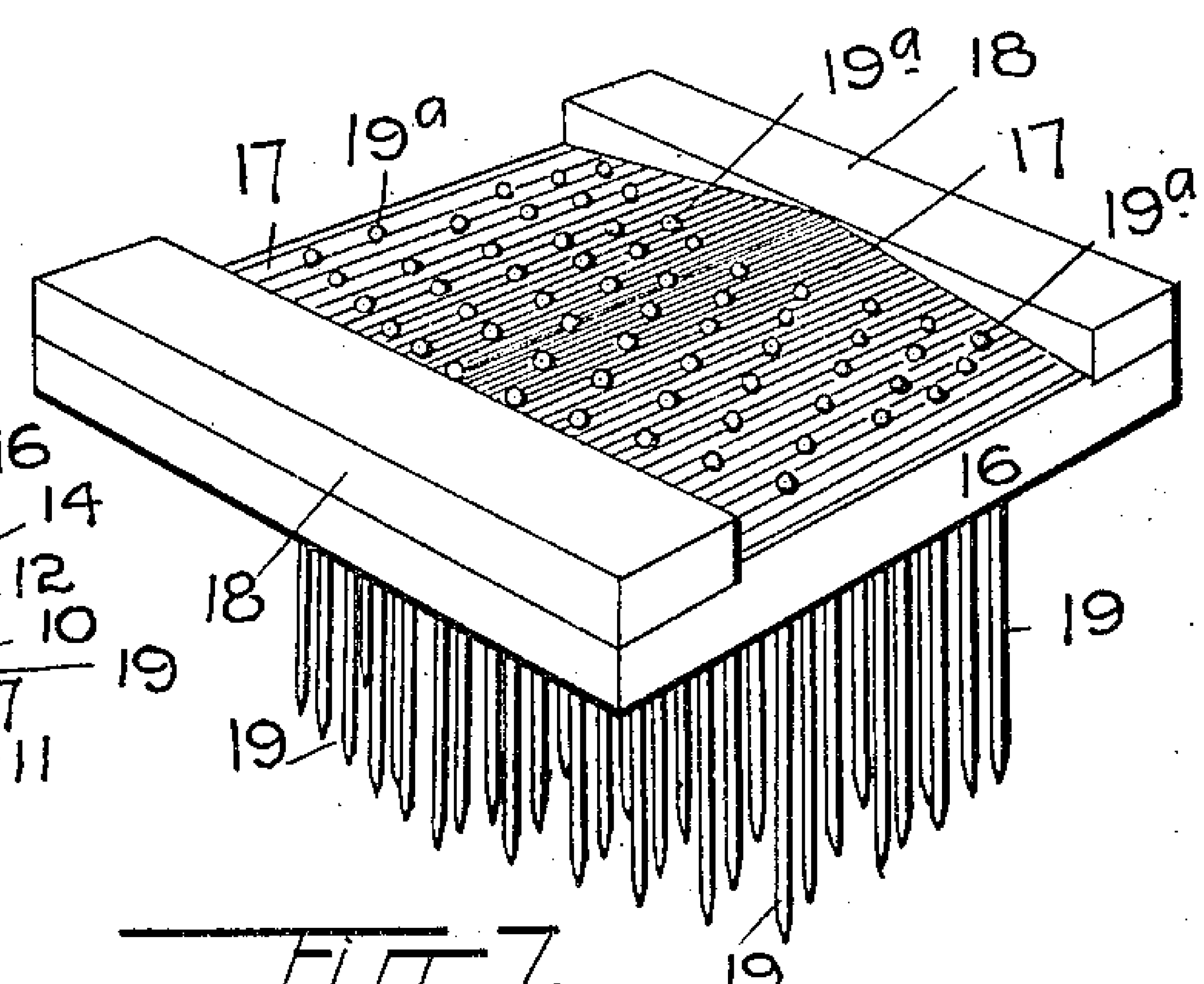

Fig. 7.

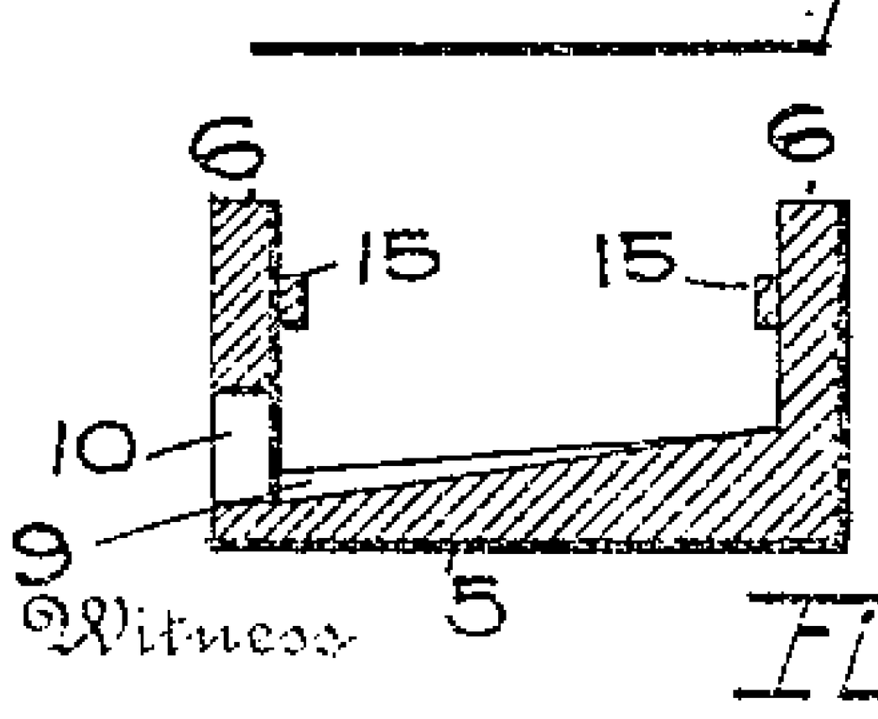

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Fig. 9

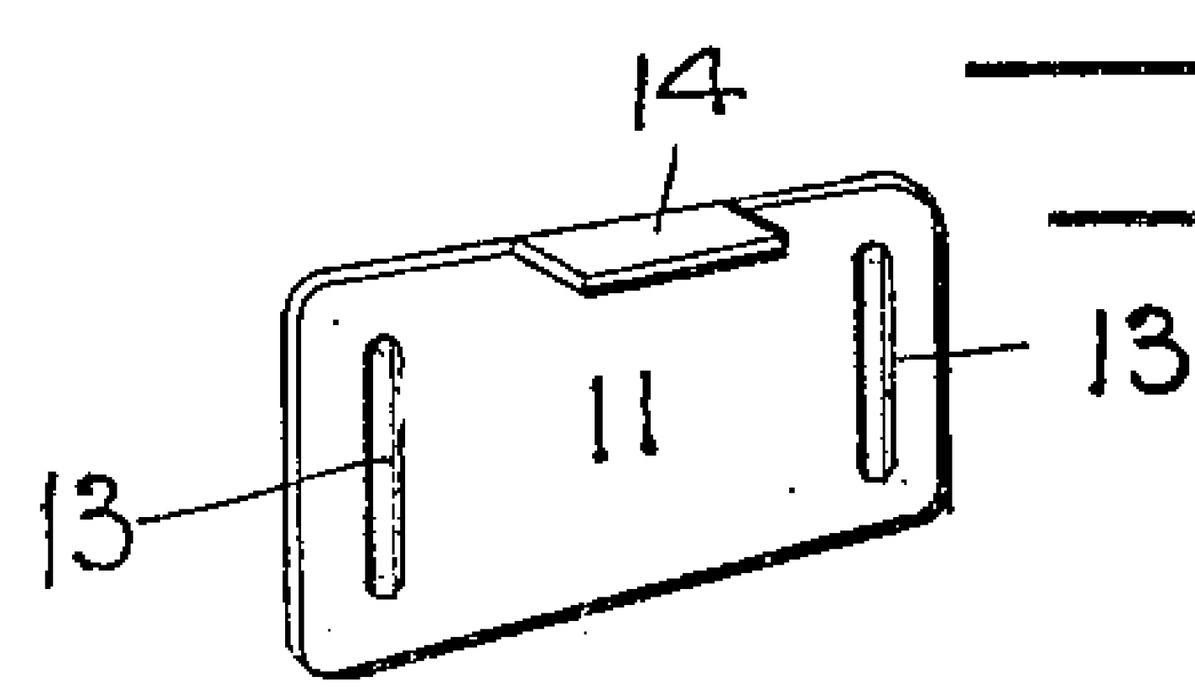

Fig. 8.

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RAYMOND L. DIMMICK, OF DENVER, COLORADO.

LAUNDER.

No. 831,545. Specification of Letters Patent. Patented Sept. 25, 1906.

Application filed June 14, 1905. Serial No. 265,298.

To all whom it may concern:

Be it known that I, RAYMOND L. DIMMICK, a citizen of the United States of America, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Launders, of which the following is a specification.

This invention relates to launders for use in ore-mills, and has for object the provision of a launder by which the ore will be sized or classified while being conveyed from the stamp-battery or other ore-comminuting apparatus to the concentrating-tables, amalgamating, cyanid, or analogous ore-treating appliances. By the use of this launder the comminuted ore is, according to the specific gravity of its particles, divided into a number of classes which may be discharged into suitable receptacles at various points of the device. This last-named feature is of special importance in cyanid plants, where by leading the launder over the row of tanks the ore may be consecutively discharged therein, according to its size or weight.

I attain my object by the mechanism illustrated in the accompanying drawings, in the several views of which like parts are similarly designated, and in which—

Figure 1 represents a plan view of my launder; Fig. 2, a side elevation thereof; Fig. 3, a vertical longitudinal section along line 3 3, Fig. 1; Fig. 4, an enlarged fragmentary plan view; Fig. 5, a side elevation thereof, part of the side board being broken away; Fig. 6, a cross-section taken along the line 6 6, Fig. 5, looking in the direction of the arrow; Fig. 7, a perspective view of one of the pin-supporting covers used in the operation of the device; Fig. 8, a perspective view of one of the gates, and Fig. 9 a cross-section showing modified form of launder.

My launder, which may be made of any suitable material and of the usual size, is composed of a bottom or floor 5 and vertically-extending side boards or walls 6. The upper surface of floor 5 consists of two longitudinally-extending inclined planes 7 and 7, which, intersecting each other along a central line, slope transversely in opposite directions toward walls 6, thus forming a ridge along the bottom of the launder, the vertex 8 of which coincides with the longitudinal center thereof.

In case it is desirable to discharge the material at but one side of the device the upper surface of the floor may be made to slope transversely from one of the walls 6 to the opposite one, as illustrated in Fig. 9. At regular intervals the inclined surfaces 7 of the floor have been provided with channels 9, which meeting along a common line in vertex 8 extend rearwardly while sloping downwardly toward the sides of the device. Channels 9 communicate at their lowermost portion with discharge-openings 10 in the vertical walls, the flow through which may be controlled by means of vertically-slidable gates 11, placed on the outside of the walls and held and guided by screws or bolts 12, extending through vertical slots 13. The number of channels, as well as the distance between them, varies according to the length of the launder and the nature and fineness of the ore to be conveyed. Gates 11 are preferably made of sheet metal and provided at their upper edge with an outwardly-extending lip 14, which facilitates manipulation. It should be understood that by the word "rearwardly," as used in this description, is meant the direction toward the tail end of the device, which is designated in the drawings by the letter B to distinguish it from the opposite or head end A. The launder is furthermore provided with parallel supporting strips or cleats 15, which, extending longitudinally along the inner surface of the side boards 6, are arranged to support the pin-studded cover-boards 16, the construction of which will now be described.

Boards 16, which in practice extend across the entire width of the launder, may be of any desired length. Their upper surface is rigid in conformity with the bottom 5 of the launder, the angle contained by the transversely-inclined sides 17 being equal to that of the oblique sides 7. Cleats 18, secured along the upper surface at opposite ends of the board, strengthen and brace the structure. Boards 16 are provided with a plurality of downwardly-extending pins or nails 19, which being driven therethrough from its upper or rigid side depend perpendicularly from its lower surface. As pins 19 are of uniform length, their points will extend along inclined planes parallel to the sloping sides of the upper surface of the board when the heads 19[a] are driven home, and when boards 16 are in place on cleats 15 in the launder these points uniformly engage the rigid surface of floor 5 by reason of the parallel relation of its beveled sides to those of the upper surface of the board, as well as on account of the distance

between them, which is equal to the length of pins 19. Nails 19 are equidistantly arranged in two series of parallel rows along lines which extending rearwardly in opposite directions intersect each other in points along the center line of the board. The nails thus secured form a series of equidistant consecutively-arranged wedges, the points of which in practice lie in the center line of the device. The angles made by the intersecting rows of nails may vary, although it is preferable in the operation of the apparatus that they should not exceed ninety degrees and be in conformity with the angle formed by the channels in floor 5. Boards 16 when in place on cleats 15 are held in place by means of cams 20, which being eccentrically mounted on the inside of walls 6 may be made to bear against the upper surface of the board.

Having thus explained the mechanical features of the device, its operation is as follows: The launder being placed between the comminuting and ore-treating devices employed in the mill is inclined from head to the tail end, according to the nature and fineness of the ore to be conveyed. The pin-bearing boards are now placed on cleats 15 at any desired point ahead of the sets of channels 9, the rows of pins extending rearwardly and engaging the upper transversely-sloping surfaces of the floor 5, as heretofore described. Gates 11 are raised in accordance with the size of the particles of comminuted ore to be conveyed and the latter, together with a quantity of water, permitted to enter at the head end of the device. As the gravity-impelled ore particles flow down the trough their velocity increases in ratio to the traveled distance, the larger and heavier particles moving ahead of those of lighter weight. The former will at the same time move toward the lower portions of the inclined surfaces 17, leaving the lighter constituents of the ore nearer the vertex of the ridge, where, as a matter of fact, the water is more shallow. On striking the wedge-shaped group of nails in the first board the flow of ore is interrupted, the lighter particles being retarded, while the heavier ones having attained a greater momentum and moving in a greater depth of the water will flow onward in between the pins, which, owing to their rearward arrangement, further direct them to the lower sides of the inclined surfaces 7. In consequence of these conditions the heaviest particles of the comminuted ore will be the first to reach the adjacent set of channels 9, which being filled thereby convey them through openings 10 into suitable receptacles, while the lighter constituents of the ore, continuing on their downward way, pass over the heavier particles contained in the channels. Moving along the intervening plain portion of the floor, they continually gain in velocity until retarded by the next group of pins, where the above-described operation is repeated and the next coarsest particles are separated from the downwardly-flowing mass. The process of separation as set forth may be repeated as many times as is consistent with the nature of the ore, after which the remaining fines and slime are discharged through the tail end of the device.

Having thus described my invention, what I claim is—

1. An ore launder and sizer comprising in combination, a stationary inclined trough having upright sides provided with a plurality of gate-controlled discharge-openings, and a floor having transversely-sloping surfaces intersecting in a central line, and provided with channels extending from said line in opposite directions toward the tail end of the device and individually communicating with one of said openings, and separate suitable means in proximity to each of the channels to retard the flow of ore prior to its reaching the channels.

2. An ore launder and sizer comprising in combination, a stationary inclined trough having upright sides provided with a plurality of gate-controlled discharge-openings, and a floor having transversely-sloping surfaces intersecting along a central line, and provided with transversely-extending channels communicating with the said openings, and a plurality of pins on said surfaces above and in suitable proximity to said channels.

3. An ore launder and sizer comprising in combination, a stationary inclined trough having upright sides provided with a plurality of gate-controlled discharge-openings, and a floor having transversely-sloping surfaces intersecting along a central line and provided with transversely-extending channels communicating with the said openings, and detachable covers having a plurality of downwardly-extending pins, placed in said launder in suitable proximity to said channels.

4. An ore launder and sizer comprising in combination, a stationary inclined trough having upright sides provided with a plurality of gate-controlled discharge-openings, and a floor having transversely-sloping surfaces intersecting along a central line and provided with transversely-extending channels communicating with the said openings, a plurality of rows of pins extending on said surfaces in opposite rearward directions from points in said central line, above and in suitable proximity to said channels.

5. An ore launder and sizer comprising in combination, a stationary inclined trough having upright sides provided with a plurality of gate-controlled discharge-openings and a floor having transversely-sloping surfaces intersecting along a central line and provided with transversely-extending channels communicating with the said openings,

and a plurality of wedge-forming rows of pins consecutively arranged in suitable proximity to said channels.

6. An ore launder and sizer comprising in combination, a stationary inclined trough having upright sides provided with longitudinally-extending cleats along their inner surface and a plurality of discharge-openings in their lowermost portions, and a floor having transversely-sloping surfaces intersecting along a central line and provided with transversely-extending channels communicating with said openings, covers having a plurality of downwardly-extending pins, supported on said cleats, and suitable means to hold said covers at any of a plurality of predetermined points.

7. An ore launder and sizer comprising in combination, a stationary inclined trough having upright sides provided with a plurality of gate-controlled discharge-openings and a floor having transversely-sloping surfaces intersecting along a central line and provided with a plurality of channels extending rearwardly and downwardly from said line while increasing in depth, and individually communicating with one of said openings, and separate suitable means to retard the flow of ore through said launder at points above and in suitable proximity to each of said channels.

8. An ore launder and sizer comprising in combination, a stationary inclined trough having upright sides provided with a plurality of gate-controlled discharge-openings and a floor having transversely-sloping surfaces intersecting along a central line and provided with a plurality of channels extending rearwardly and downwardly from said line while increasing in depth and communicating with said openings, and a plurality of consecutive, angularly-arranged rows of pins on said surfaces, above and in suitable proximity to said channels.

9. An ore launder and sizer comprising in combination a stationary inclined trough having a transversely-inclined floor provided with down and rearwardly extending channels, and a plurality of separated groups of pins on said floor above and in suitable proximity to each of said channels.

In testimony whereof I have affixed my signature in presence of two witnesses.

RAYMOND L. DIMMICK.

Witnesses:
G. J. ROLLANDET,
K. M. STUMP.