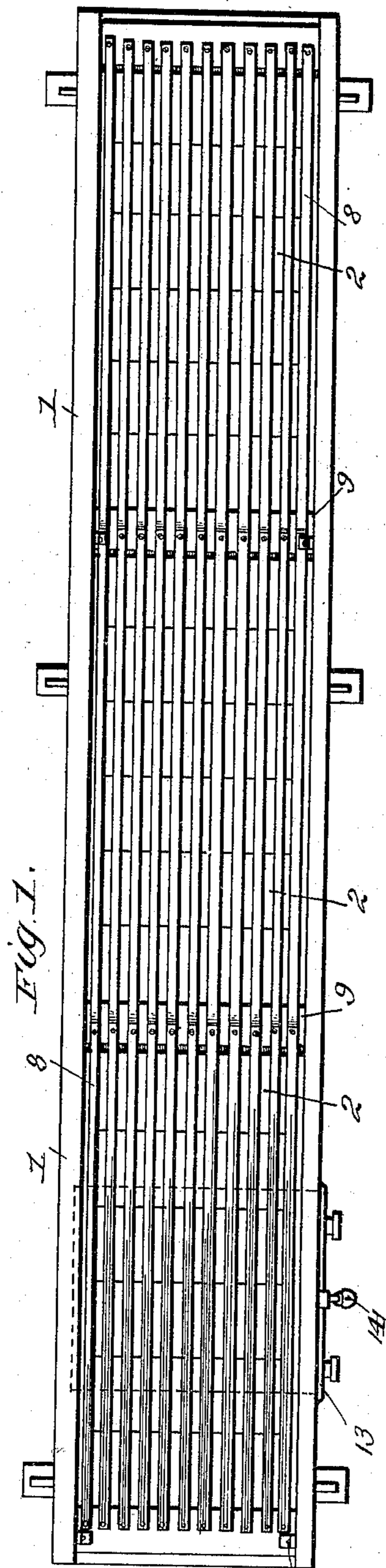


(No Model.)

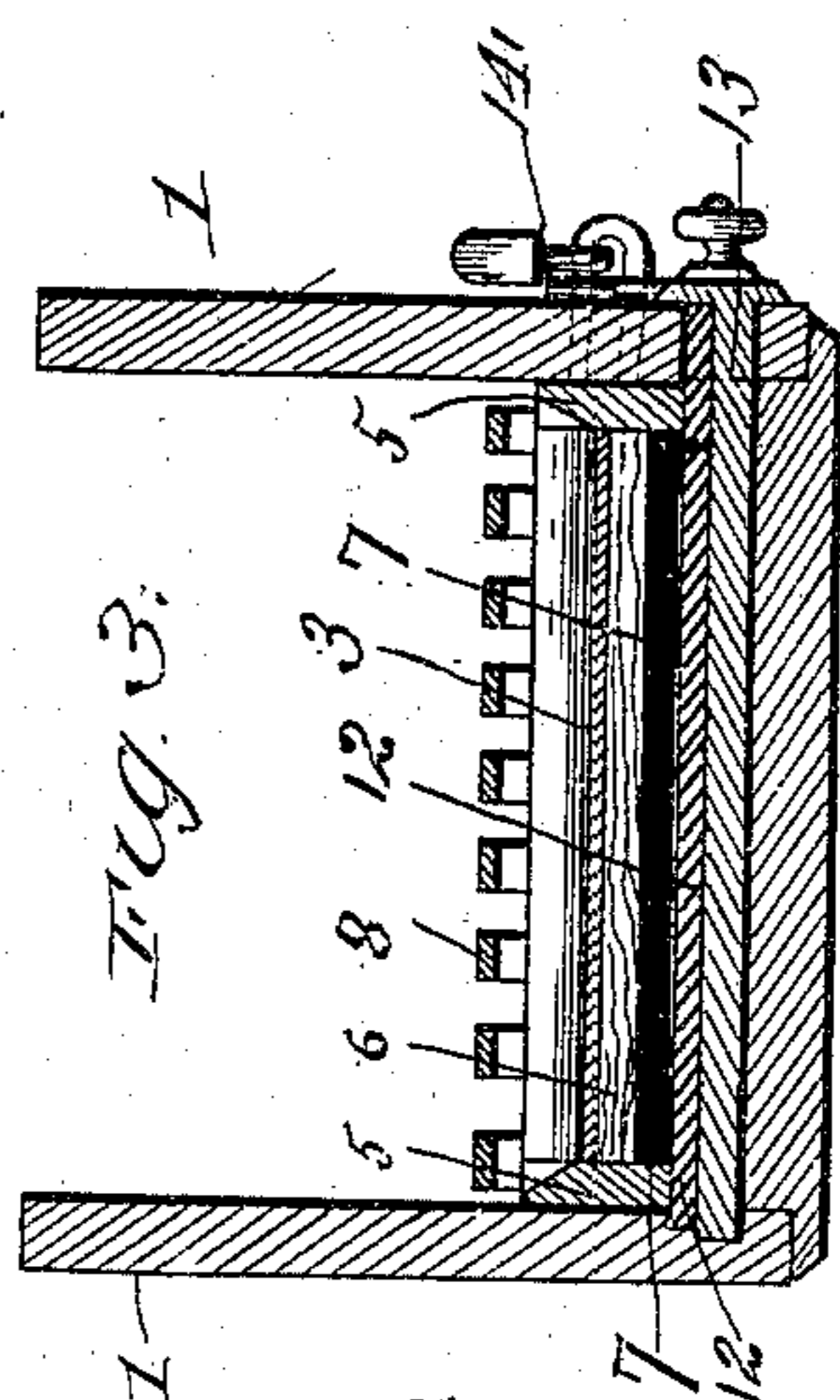
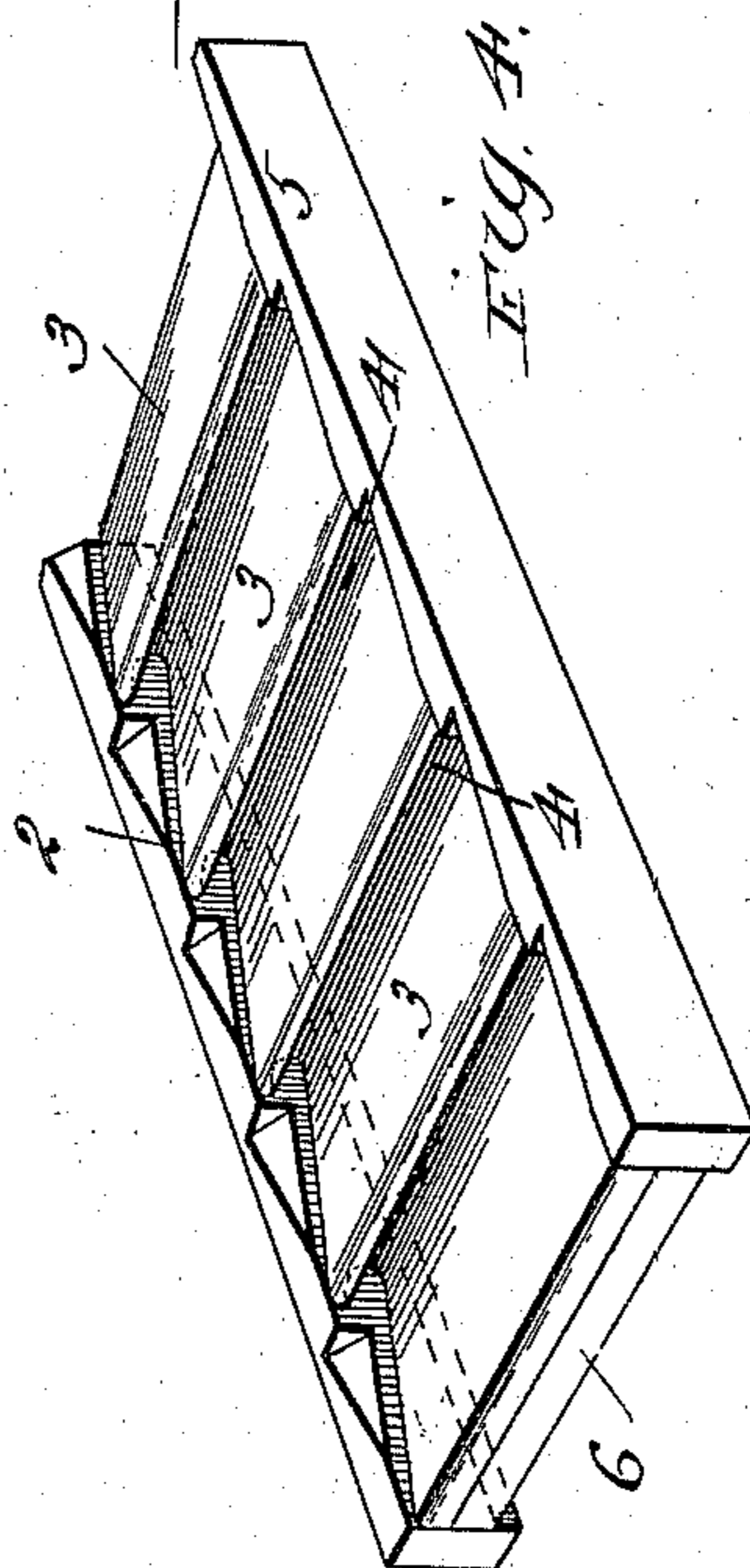
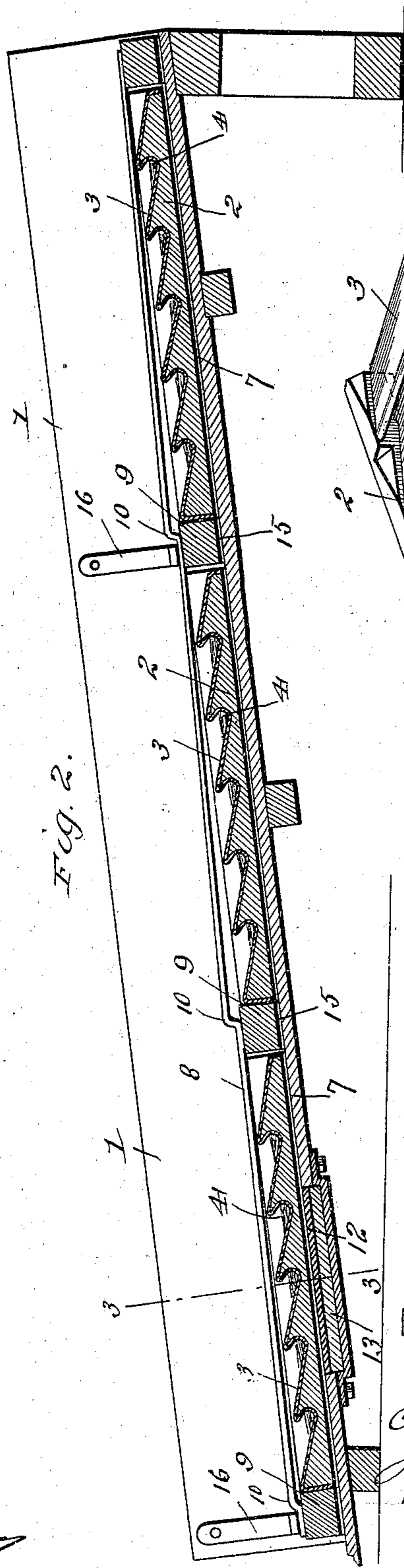
C. R. SPICER & J. B. WILSON.  
GOLD SLUICE BOX.

No. 545,106.

Patented Aug. 27, 1895.



Witnesses  
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# UNITED STATES PATENT OFFICE.

CHARLES R. SPICER AND JOHN B. WILSON, OF HELENA, MONTANA.

## GOLD SLUICE-BOX.

SPECIFICATION forming part of Letters Patent No. 545,106, dated August 27, 1895.

Application filed December 13, 1894. Serial No. 531,677. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES R. SPICER and JOHN B. WILSON, citizens of the United States, residing at Helena, in the county of Lewis and Clarke and State of Montana, have invented certain new and useful Improvements in Gold Sluice-Boxes, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in that class of amalgamators which consist of a sluice way or box in which mercury is used to extract the gold from the dirt and other impurities combined with it in the ores in which it is found, the mercury forming an amalgam with the gold.

The invention has for its object to provide a sluice-box constructed of removable sections of amalgamated riffles, to provide means for holding said sections in place, and to provide means for catching any fine gold which may find its way between the sections of riffles, and other features of construction, which will be hereinafter fully described, and particularly pointed out in the claims appended.

In the drawings, Figure 1 is a plan view of a portion of my sluice-box; Fig. 2, a vertical longitudinal sectional view thereof; Fig. 3, a cross-sectional view on line 3 3 of Fig. 2; Fig. 4, a detail view of one of the sections of the riffle.

Referring to the various parts by numerals, 1 designates the sluice way or box, which may be of the ordinary construction, and is of a size suitable for the work to be performed, and 2 the removable sections of the corrugated or stepped riffle-boards. These sections are stepped or corrugated transversely, and each step consists of the flat inclined portion 3 and the pocket 4, said stepped surface being covered or lined with sheet-copper, as shown. These sections each consist of the side pieces 5 5 and the central stepped portion 6, the under side of said stepped portion being raised above the lower edges of the side pieces in order to leave a slight space 7 between the under side of said central portion and the surface of the bottom of the sluiceway when said sections are in position, as shown clearly in Figs. 2 and 3.

In order to protect the amalgam riffles from

the wear and grinding action of the large bowlders and stones which find their way into the sluiceway, and to secure them in position in said sluiceways, I provide a removable screen formed of longitudinal parallel steel bars 8, which are arranged in the sluiceway just above the riffles. To removably support this screen in the sluiceway, the bars forming it are at suitable intervals secured to cross-bars 9, of wood, which fit transversely in the sluiceway. The distance between each pair of these cross-bars is equal to the length of one of the riffle-sections 2, so that one of said sections may be placed between each pair of cross-bars. In order to agitate the coarse material, stones, &c., which will be supported by this screen, shoulders 10 are formed in the bars at suitable intervals. These shoulders will cause said material to receive slight and sudden shocks as it passes over them, said shocks and agitation materially aiding in releasing any particles of gold that may adhere to them.

The space 7 under the central portions 6 of the riffle-sections is for the purpose of permitting the water and gold-bearing dirt which finds its way down between and under the sections to flow unobstructedly down the sluice way. The water flowing down this channel will cause a slight suction and draw through it a sufficient quantity of water to wash any fine gold from the joints between the sections and carry it down the sluice-way. In order to catch this fine gold, an amalgam plate 12 of suitable size is let into the bottom of the sluiceway and extends across the same. The upper surface of this plate is flush with the surface of the sluiceway, and the particles of gold will be caught on this upper surface as the water and fine dirt pass over it. This plate is carried by a draw-board 13, which may be removed whenever desired by sliding it out endwise, as clearly shown in Fig. 3. A lock 14 is provided for locking the board in place to prevent it being withdrawn by evilly-disposed persons.

The cross-bars 9 are cut away on their under sides, as shown at 15 in Fig. 2, to permit of the flow of the under-current of water through the passage 7.

Pivoted locking-dogs 16 are secured to both

sides of the sluiceway, their lower ends, when the dogs are in their locked position, bearing down on the bars 8 or the cross-bars 9 and securely holding the screen in position. It will be readily understood that by securing the screen in position the riffle-sections will also be secured in their positions.

The operation is as follows: When the riffles and amalgam plates are suitably charged with quicksilver or mercury, water carrying the gold-bearing dirt is let in the sluiceway at its upper end, the sluiceway being given a suitable inclination, as shown in Fig. 2, to secure the desired flow of water. The fine particles of earth and the gold will pass through the screen and be washed along over the riffles, while the coarse material will pass along over the screen. The finer particles will be agitated by being washed off each step and dropping onto the broad inclined surface 3 of the next step below. In this manner the gold particles will be brought into contact with the mercury and will be caught and retained thereby, the heavier particles of the gold falling back into the pockets 4, while the lighter particles will be retained by the surfaces 3. The coarse material is washed along over the screen, and the fine particles of gold which find their way into passage 7 are caught by the plate 12, as previously described. When it is desired to clean the sluiceway, the dogs 16 are released from the screen, and the screen and its attached bars 9 may then be removed, leaving the riffle-sections free to be cleaned in the sluiceway, or they may be removed and cleaned, as desired. The screen and the riffle-sections may be as large as is found desirable, and as many draw-boards 12 may be employed as are necessary to the successful working of the sluiceway. As many screens may be employed as is found necessary, the number depending on the length of the sluice.

Having thus fully described my invention, what I claim is—

1. An amalgamator consisting of a sluiceway, a removable sectional riffle in said way, a screen over said sectional riffle, and securing it in position, said screen consisting of the longitudinal bars 8 secured to cross-bars 9, means for removably securing said screen in place, an under passage, as 7 being formed under the sections of the riffle and under the bars 9, and an amalgam plate in said passage, sub-

stantially as described and for the purpose set forth.

2. An amalgamator consisting of a sluiceway, a removable sectional riffle in said way, a removable screen over said sectional riffle, said screen consisting of the bars 8 and cross-bars 9, said cross-bars holding the sections of the riffle in position, means for removably securing the screen in position, an under passage as 7 being formed under the sections and the cross-bars 9, and an amalgam plate in said passage, said plate being adapted to be removed sidewise from the sluiceway without disturbing the riffles, substantially as described.

3. In an amalgamator, the combination of a sluiceway, a sectional riffle in said way, a screen over said riffle, said screen extending over a plurality of sections of the riffle and consisting of the parallel bars 8 formed with shoulders 10 and secured to cross-bars 9, said bars extending across the sluiceway between the sections of the riffles, said sections fitting loosely between these cross-bars, and abutting at their ends against the cross-bars, means for removably securing the screen in position, whereby the riffle sections will be protected and held in position, substantially as described.

4. In an amalgamator the combination of a sluiceway, sectional removable riffles in said way, each of said sections consisting of side pieces 5, 5, and the central portion 6, the upper side of the portion 6 being stepped to form the inclined surfaces 3 and the pockets 4, said upper surface being covered with sheet-copper, the lower side of the section 6 being raised above the lower edges of the sides 5, 5, whereby a space or passage is formed between the bottom of the sluiceway and the bottom of the riffles, and an amalgam plate in said space or passage, substantially as described.

5. An amalgamator consisting of a sluiceway, a riffle in said way, an under passage, as 7, being formed under said riffle, and an amalgam plate in said passage, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES R. SPICER.  
JOHN B. WILSON.

Witnesses:

JOHN S. MILLER,  
J. N. SANDERS.