

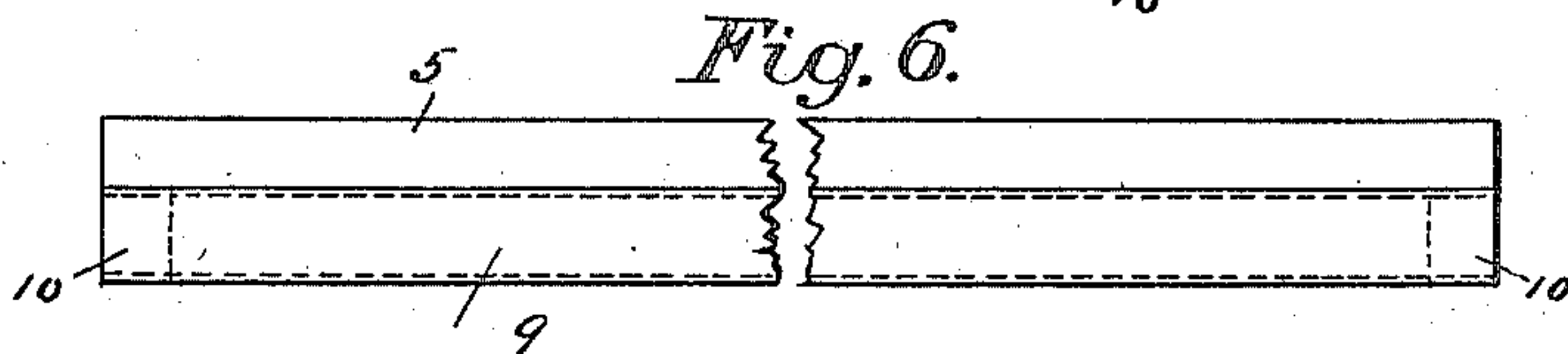
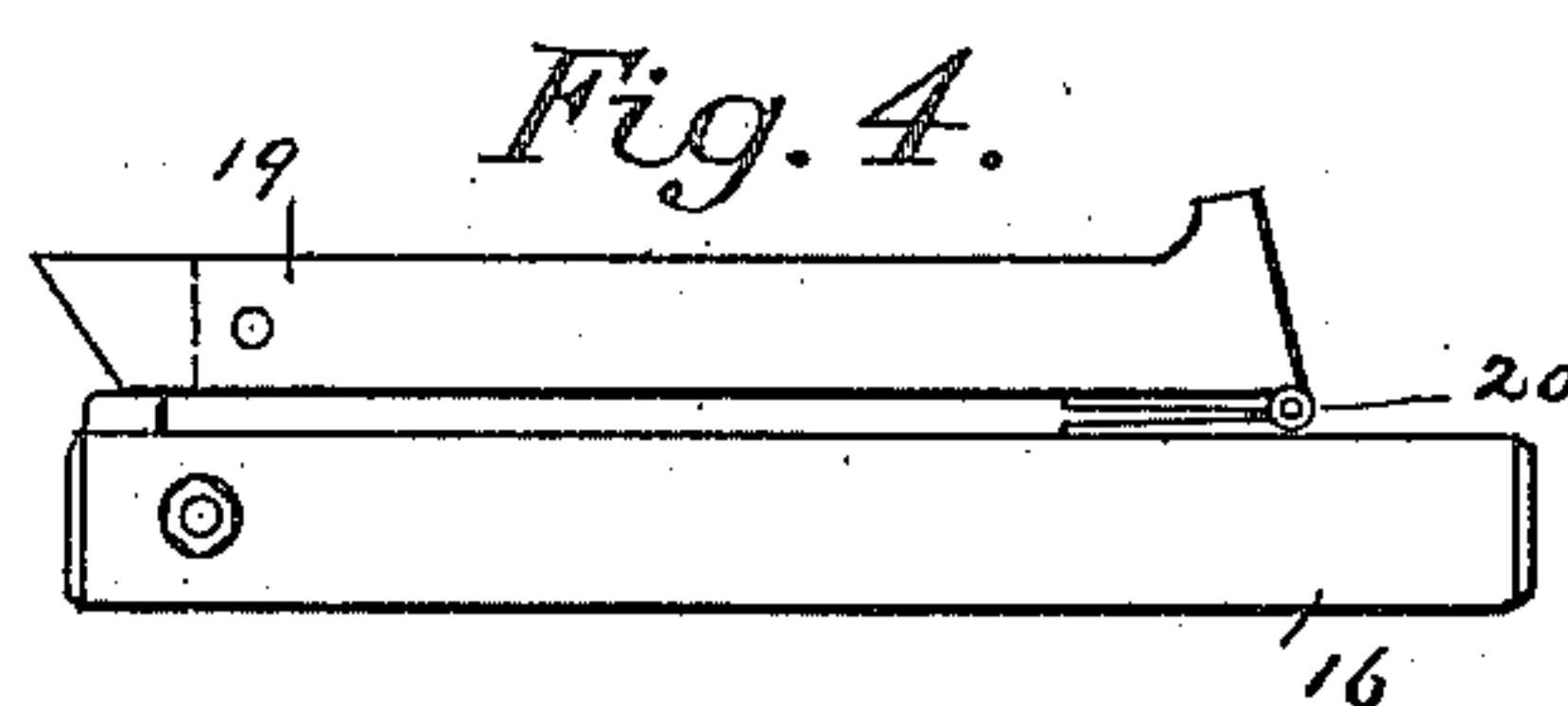
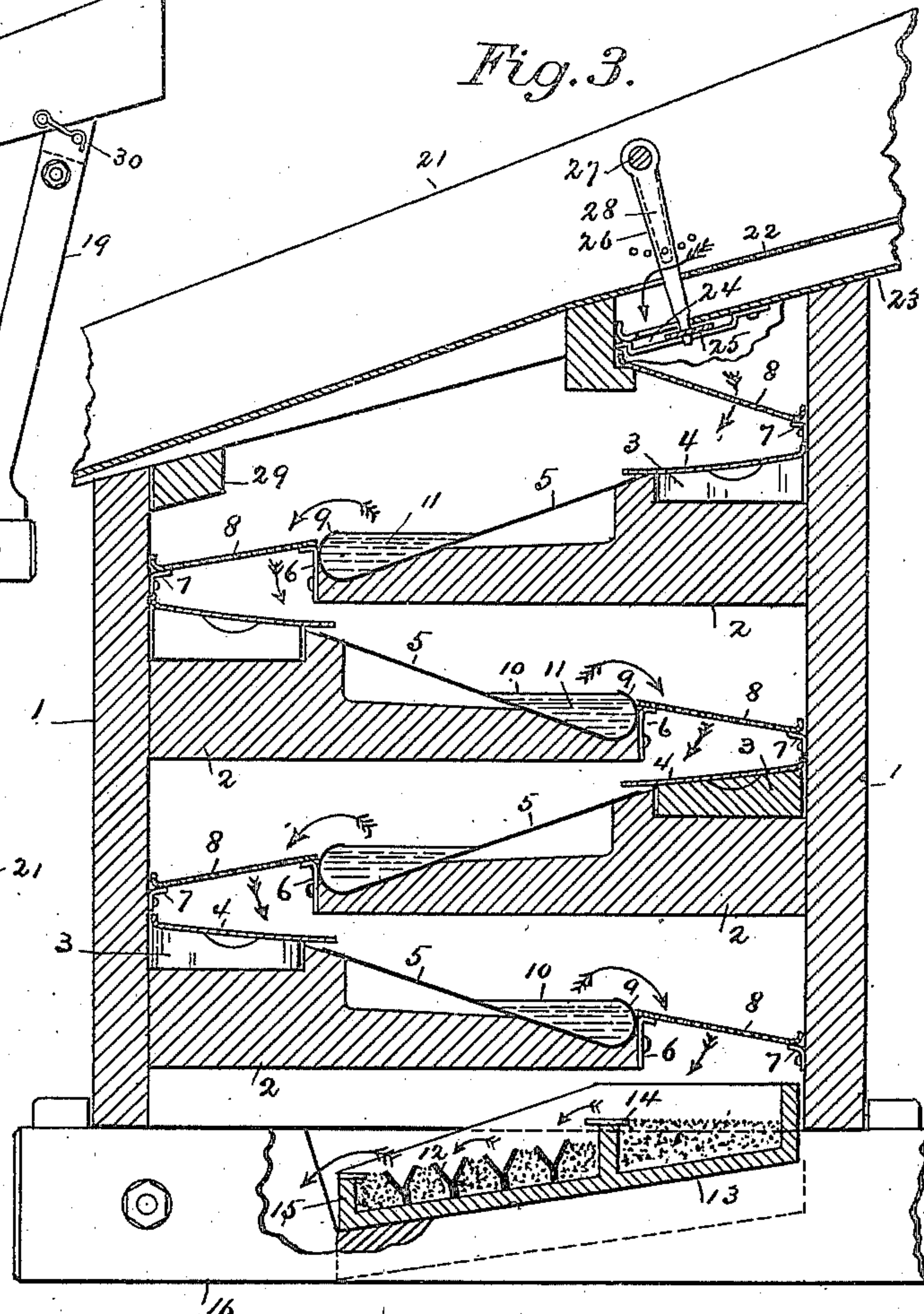
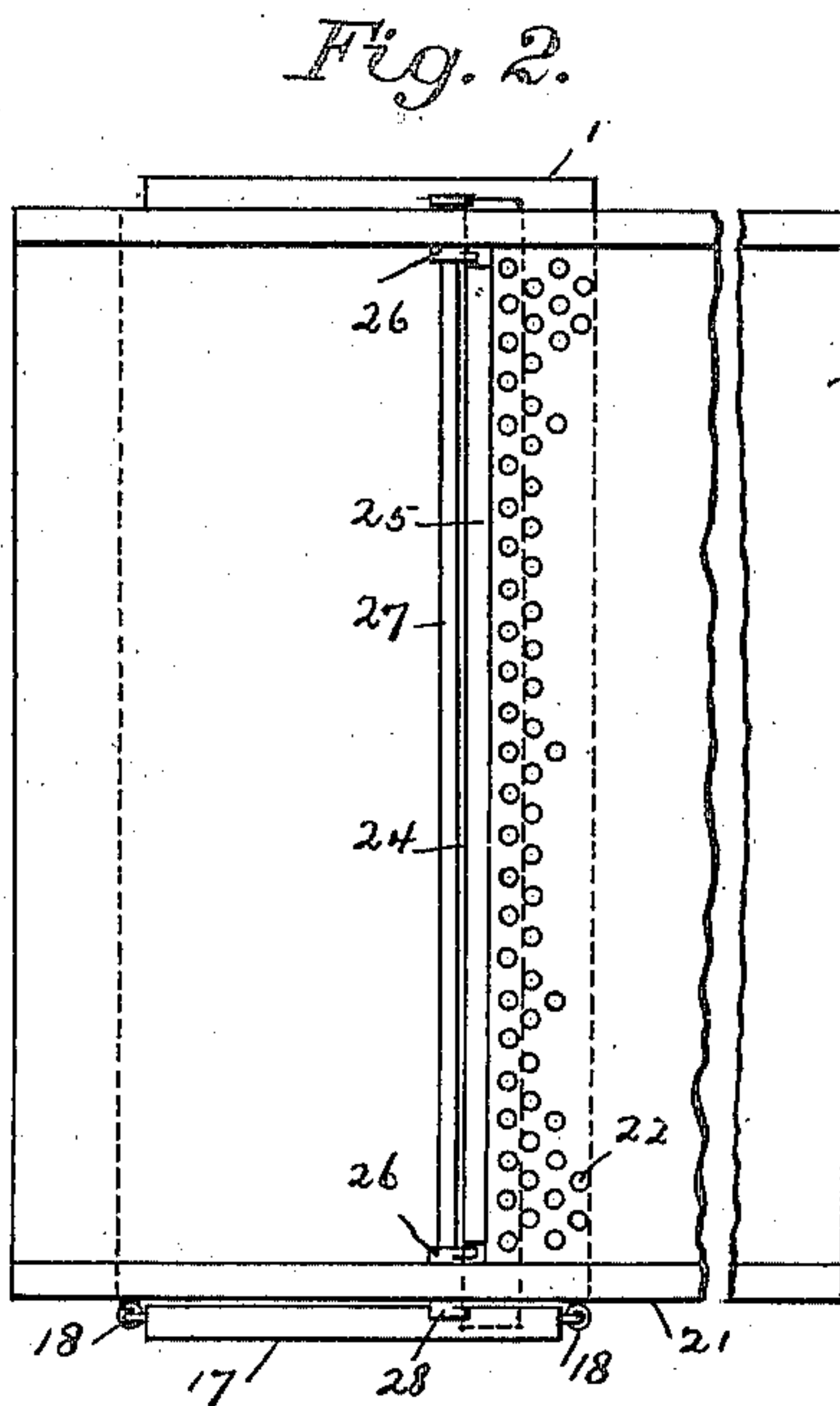
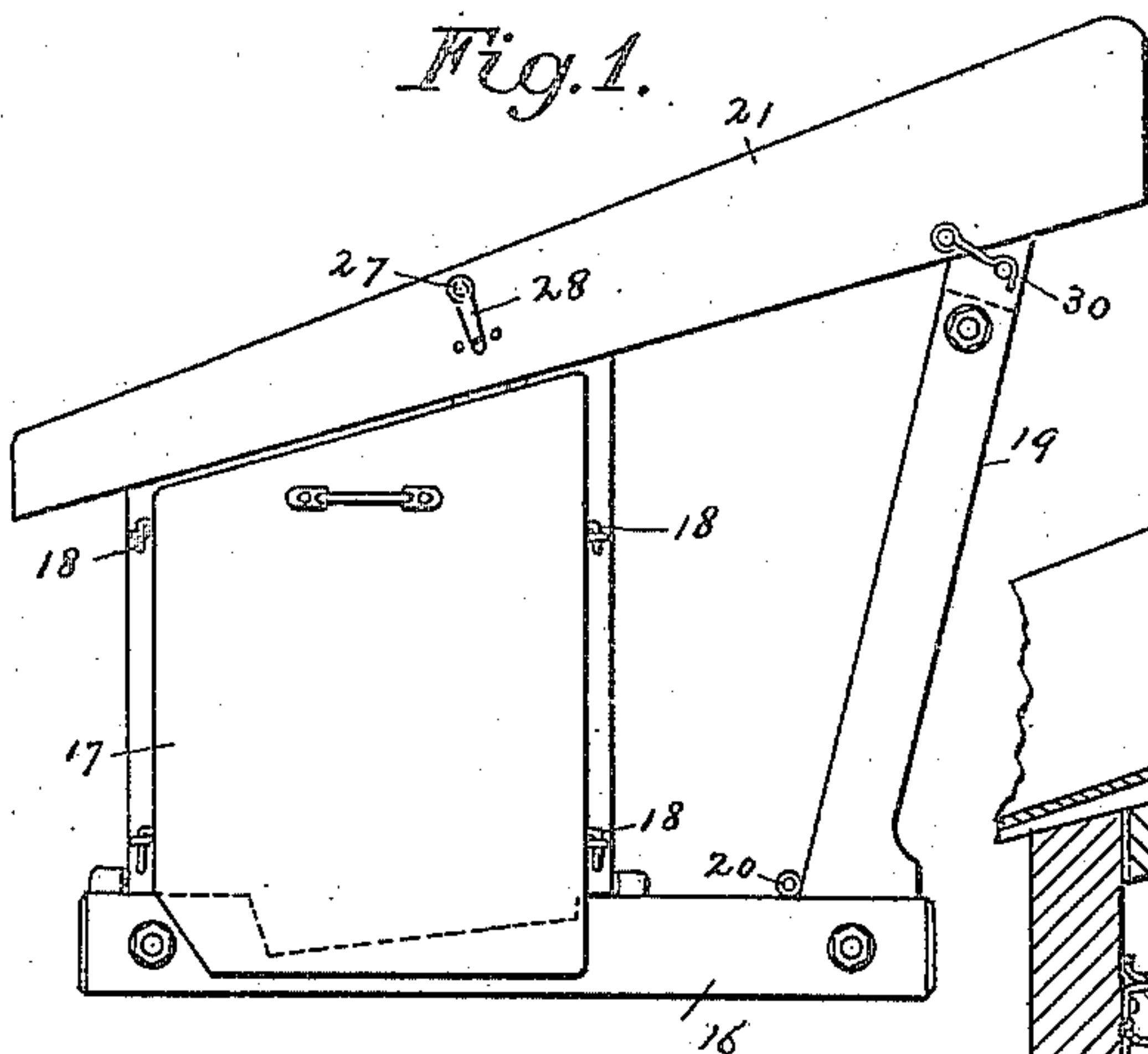
No. 688,802.

Patented Dec. 10, 1901.

S. A. WEST.  
ANALGAMATOR.

(Application filed Dec. 11, 1899.)

(No Model.)



Witnesses:  
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# UNITED STATES PATENT OFFICE.

SAMUEL A. WEST, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF FIVE-EIGHTHS TO BERTIN A. WEYL, OF SAN FRANCISCO, CALIFORNIA.

## AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 688,802, dated December 10, 1901.

Application filed December 11, 1899. Serial No. 739,990. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL A. WEST, a citizen of the United States, residing at 158 First street, in the city of San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Amalgamators; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to improvements in amalgamators.

In the drawings, Figure 1 is a side elevation of an amalgamator and sluice-box constructed and combined in accordance with this invention. Fig. 2 is a plan view of the same, the sluice-box being cut and compressed. Fig. 3 is an enlarged view in vertical section, the arrows indicating the path of the water and pulp. Fig. 4 is a detail view, in side elevation, of the collapsible frame collapsed for holding the amalgamator and sluice-box. Fig. 5 is a detail view in section of the central plates of the amalgamator. Fig. 6 is an end elevation of the same, being cut and compressed.

The present invention has for its objects to prevent the formation of scum or coating on the free mercury utilized in this invention, to capture flake or incrustated gold by forcing it under the said free mercury, to provide a construction whereby the plates may be readily and quickly removed and replaced, to provide means whereby the flow into the amalgamator may be regulated, and to provide means for mounting and for packing the amalgamator and the sluice-box with which it is accompanied.

With these objects in view the invention consists in providing a box-like frame 1, with open top and bottom and provided with alternately-arranged shelves 2 2. These shelves are shaped, substantially as shown in Fig. 3 of the drawings, to form a slideway for the blocks 3, upon which are secured the slightly-curved plates 4. These plates are formed of sufficient breadth to overhang the plates 5. This overhang has the effect of dropping the water and pulp from the plate 4 to the plate

5, tending thereby to scatter any massed particles of the pulp. The plates 5 are maintained in the rather steep inclined position shown by the light strip of angle-iron 6, which is secured to the outer edge of the shelves 2. The strips 6 and the strips 7 form rests to support the perforated plates 8 8, which span the space between the outer edges of the shelves 2 and the opposite side of the frame 1 directly above the curved plate 4 of the next succeeding lower tier of plates.

Each tier of plates consists of the three plates 4, 5, and 8, each inclined in the direction of the flow of the water, but the inclination of each being set at a slightly different angle. Thus the plate 4 is inclined slightly and is curved, which provides two speeds of movement of the water and pulp, fast at the edge next the frame 1 by reason of the curvature accentuating the effect of the inclination and slower or retarded at the edge removed from the frame by reason of the curvature of the plate. From the plate 4 the water and pulp are dropped onto the upper end of the more steeply inclined plate 5. From the plate 5 the water and pulp are delivered upon the perforated plate 8, which is more slightly inclined than plate 5. Through the perforations in these plates the water and pulp are dropped to the plates 4 of the tier next below. The plates 5 are provided with the curved edge 9. At both ends of the plate are fitted the small blocks 10, of wood or other suitable material, which form of the curled edge a pocket in which to place the free mercury 11. The objects in the employment of the free mercury and of this construction are to provide the amalgamator with an abundance of mercury and to prevent the mercury becoming covered with the coating usually accumulated on free mercury over which water passes and which thereby renders the amalgamation more uncertain. By thus providing a pocket to hold the mercury having a curled wall and by inclining the straight portion of the plate acutely a partial or complete rotation of the mercury in the pocket is caused by the water and pulp flowing through the amalgamator accordingly as the flow be strong or weak. By being run down the steep straight portion of the plate 5 the flow impinges on the



forward edge of the mass of mercury in the pocket with considerable force, tending to press the mercury before it and throwing it against the curled edge 9, up the side of which it rides until overbalanced, when it falls on the other and lower mercury. This action continued causes a rotation of the entire body of mercury contained in the pocket. When the flow of water and pulp is not in sufficient quantities to effect this described full rotation, it does cause the free mercury to rock back and forth in the pocket, keeping it in motion, and thus preventing the formation of the scum above referred to. The described action of the mercury 11 has a further effect in agitating the water and pulp passing over it, and thereby causing all parts of it to come in contact with the mercury. This causes a churning of the water and pulp, breaking up any mass formation in the same before it is delivered to the perforated plates 8. This rotation or rocking catches any flake or incrustated gold where it sinks under the mercury. Furthermore, the agitated pulp in the amalgamating member is thrown therefrom upon the screen 8, as indicated by the curved arrows in Fig. 3, the pulp being thereby scattered upon said screen. By the arrangement of the solid plate 4 under the perforated plate 8 the water and pulp are caused to scatter over the plate, and in the instance of material passing through the first perforations the material descending the plate is thereby scattered. There may be provided as many of these described tiers as desired or are found needful.

This amalgamator is provided with a series of V-shaped riffles 12, set up from the floor of the box 13 and which is divided in two compartments by a partition 14. The compartments are partly filled with white or bank sand, which will pass the water, but float the black sand usually accompanying gold. The riffles 12 are filled with mercury, and the water and pulp are compelled to flow over each riffle, of which there may be any desired number. The water and pulp pass from the lower compartment over the wall 15 and out of the amalgamator. The box 13 rests on the beams 16, the one of which is cut away so as to permit the said box to be withdrawn when desired.

All the plates above described may be withdrawn from the frame 1 by removing the door 17, which is fitted over the side of the frame by the hooks 18 and eyelets provided to receive them. The door is covered with a suitable material to fit the plates closely and prevent the flow of the water down the side of the door.

The water and pulp are delivered to the amalgamator by a sluice-box which in the

present invention is supported on the amalgamator-frame and on the legs 19, which are hinged at 20 to the beams 16. The sluice-box 21 is provided with a perforated plate or grizzly 22, forming part of the bottom of the runway. Under the grizzly is a solid metal plate 23, in the lower end of which is formed a slot 24, resting just above the upper plate 8 of the amalgamator when the sluice-box is in position. This slot is adapted to be closed by a sliding plate 25, which is engaged by an arm 26 at either end. The arms 26 are connected to a shaft 27, which extends across the sluice-box and may be rotated by a crank 28 to move the slide 25 to close or open the slot 24. By this construction the flow of material into the amalgamator may be instantly controlled. Also by the grizzly 22 the large stuff or debris is cleared away from the material passing into the amalgamator.

When it is desired to pack the amalgamator and sluice-box, this is accomplished by releasing the hooks 30 and lifting the box 21, carrying the cleat or brace 29. The amalgamator may then be raised off the beams 16 and the legs dropped forward, as shown in Fig. 4 of drawings. The various parts may now be packed together or carried separately, as desired. By being thus conveniently packed and readily set up the machine is very desirable for use by prospecting miners, as well as for established plants.

Having thus described this invention, what I claim is—

1. An amalgamating-box provided with a pocket adapted to contain mercury, and white or bank sand in said box at the side of the pocket traversed by the pulp before reaching said pocket, said sand being adapted to receive the water but to float the gold-containing sand of the pulp and said pocket projecting above the sand; substantially as described.

2. An amalgamating-box provided with a series of V-shaped pockets adapted to hold mercury, and white or bank sand in said box about said pockets, the pockets projecting above the sand, and the sand being adapted to receive the water but to float the gold-containing sand of the pulp; substantially as described.

3. In a device of the nature indicated, a base-beam, an amalgamator detachably supported thereon, a leg upon said beam and adapted to be folded thereagainst, and a sluice-box detachably fitting upon said amalgamator and said leg; substantially as described.

In testimony whereof I have hereunto set my hand this 28th day of November, 1899.

SAMUEL A. WEST.

Witnesses:

MAUD A. CAHN,  
FRANKLIN L. RATHBUN.