

No. 637,482.

Patented Nov. 21, 1899.

L. C. PARK.
AMALGAMATOR.

(Application filed Mar. 29, 1899.)

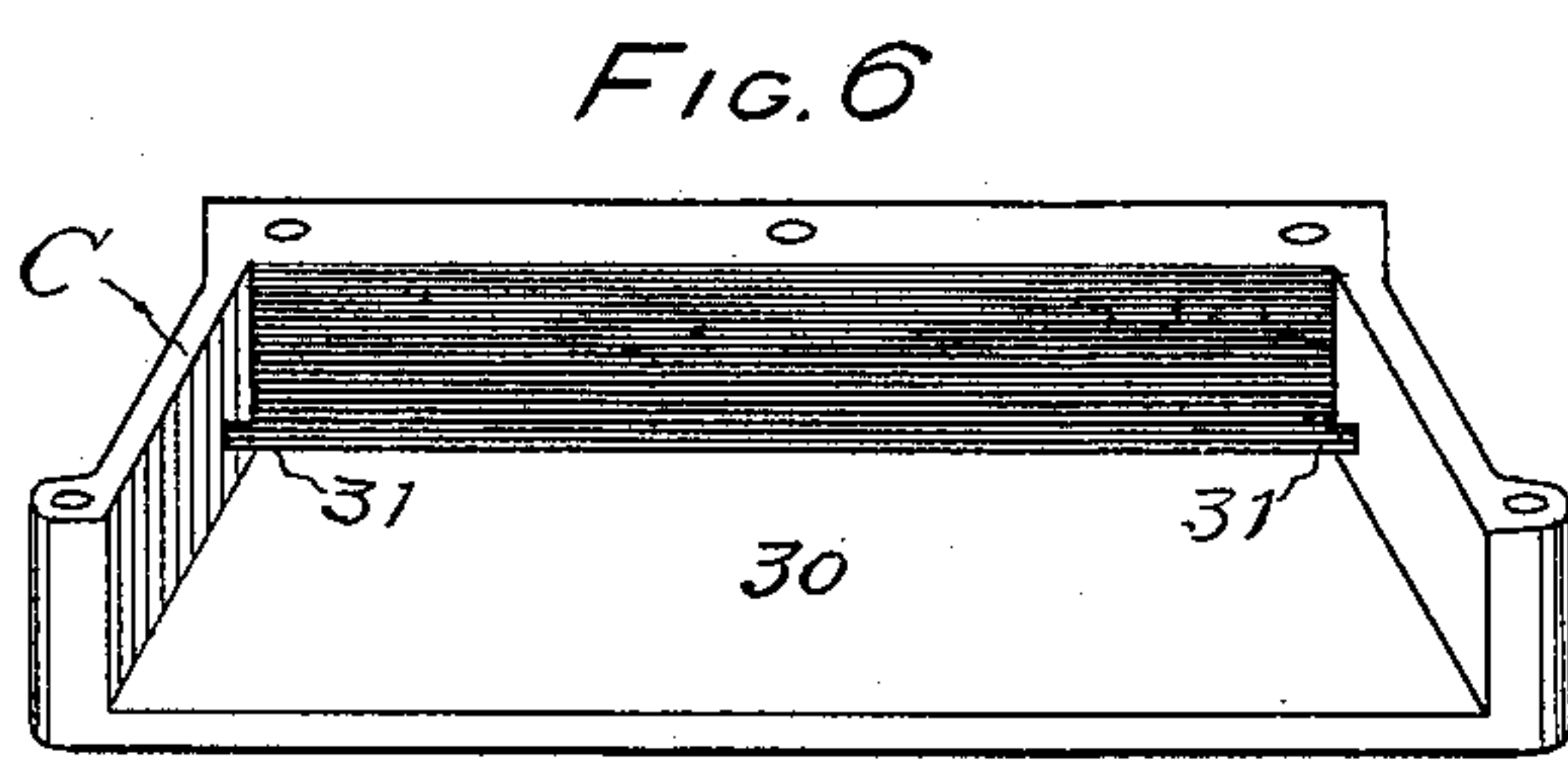
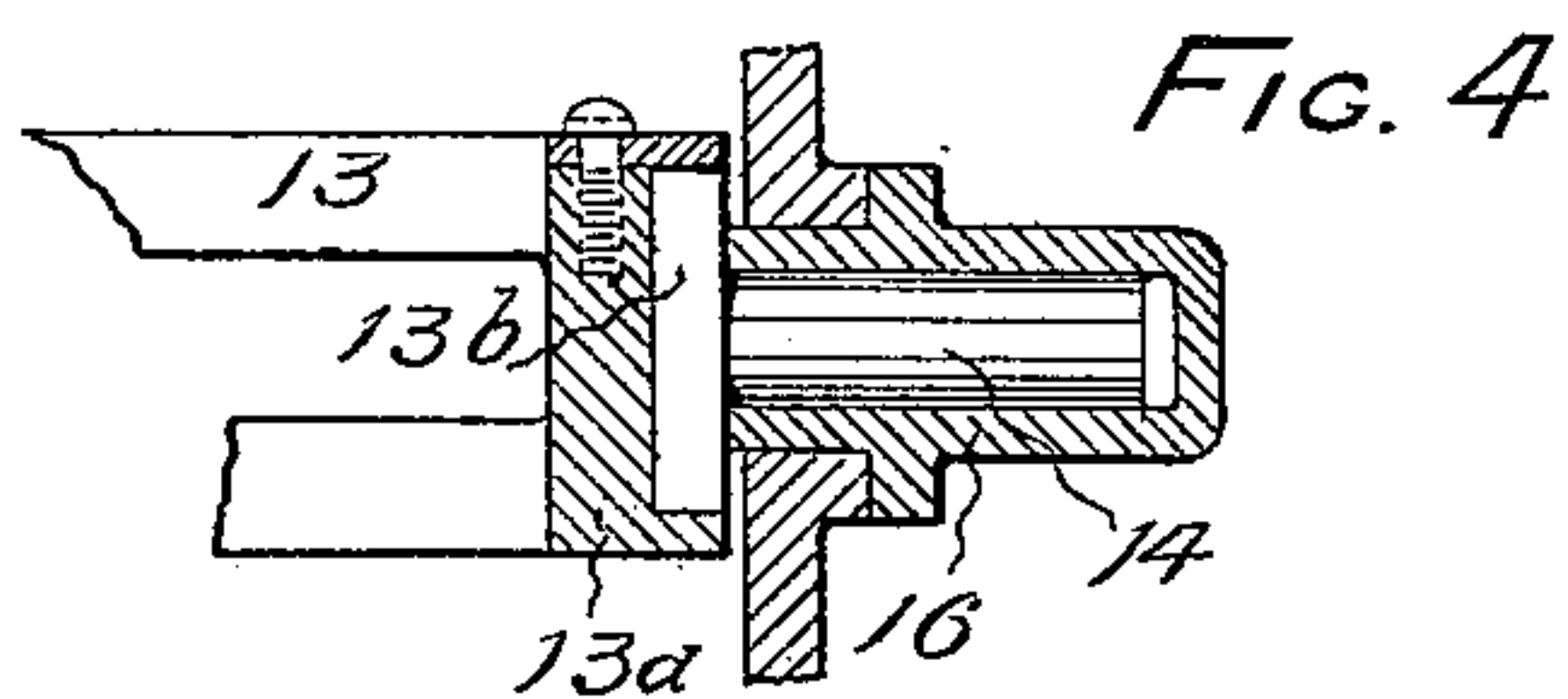
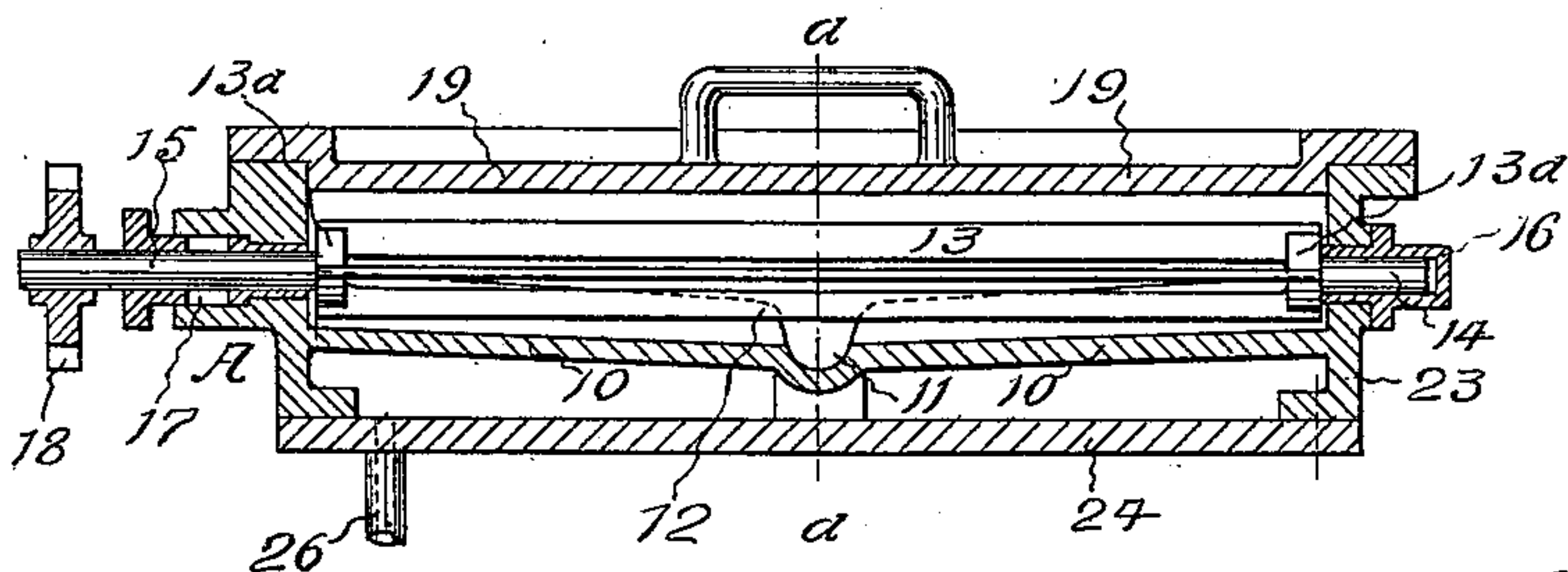
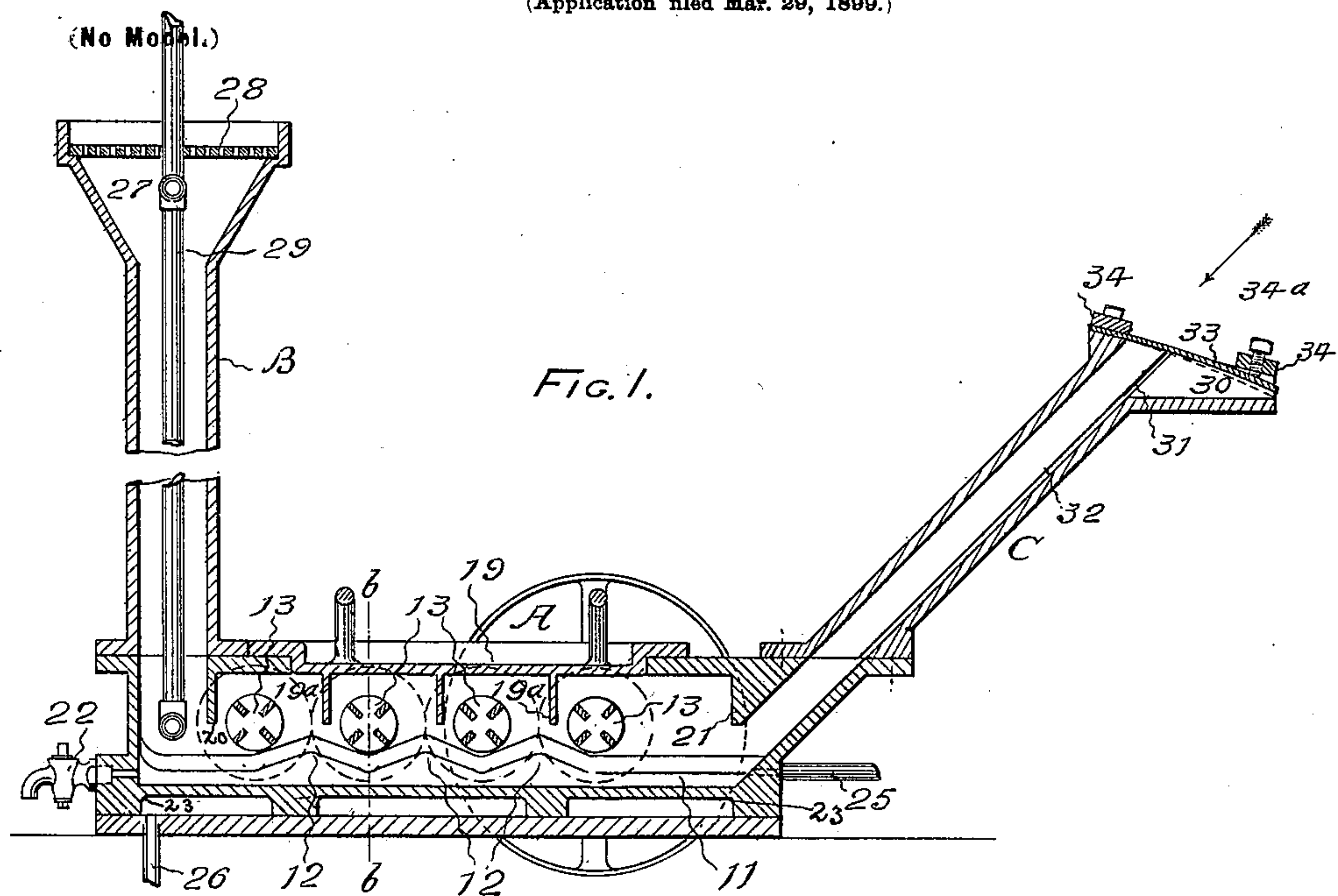


Fig. 3

Fig. 5

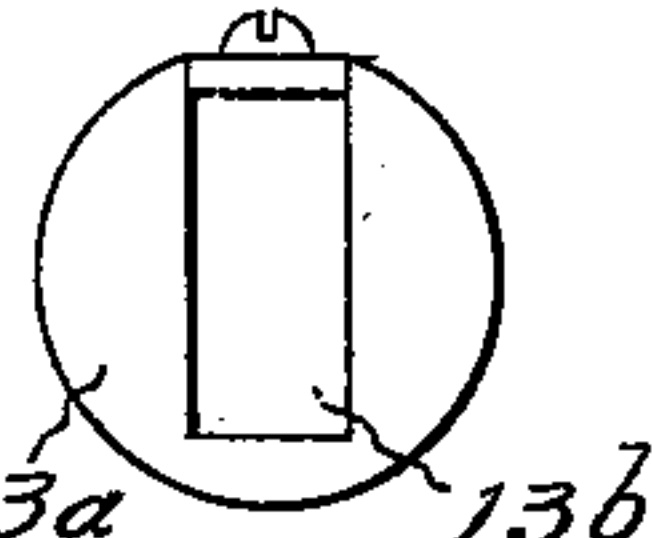
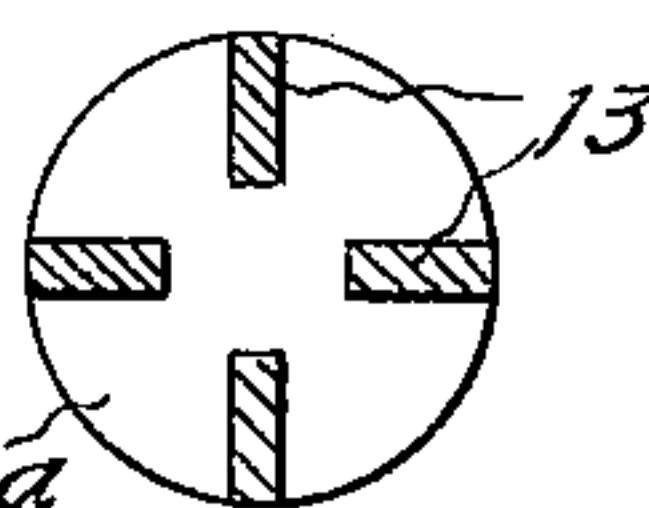


Fig. 7.

WITNESSES

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AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 637,482, dated November 21, 1899.

Application filed March 29, 1899. Serial No. 711,036. (No model.)

To all whom it may concern:

Be it known that I, LOUIS CHARLES PARK, a citizen of the Dominion of Canada, residing at Vancouver, in the Province of British Columbia, Canada, have invented certain new and useful Improvements in Amalgamators, (for which I have obtained a patent in Canada, No. 61,523, bearing date October 26, 1898,) of which the following is a specification.

My invention relates to improvements in that class of amalgamators operated by the gravity of water passing the pulp through a bath of mercury at a lower plane than the inlet and outlet, and to assist in thoroughly intermingling the pulp and water with the mercury a series of agitators and depressors are employed in a transverse direction to the flow of the auriferous matters being treated.

The objects of my improved machine are to provide a device which will readily win the precious metals, such as gold and silver, from the pulp or sand while being passed through the machine by depressing the pulp or auriferous matter and intermingling it at intervals with the mercury during its passage, and also to provide a receptacle for the mercury, formed in such a manner that the mercury and amalgam will separate from the pulp and return back to the forward part of the machine, the amalgam settling in a grooved recess or well and the uncharged mercury being again agitated and passed along, and thus producing a continuous movement of the mercury. This will be better understood from the following specification and the appended claims. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 shows a longitudinal sectional elevation of my machine, taken on line *a a* in Fig. 2. Fig. 2 is a cross-section of the same on line *b b* in the first figure. Fig. 3 is a cross-sectional detail of one of the agitators; and Fig. 4 is an enlarged sectional detail of the same, showing its means of support. Fig. 5 is an end view of one of the agitators with its gudgeon removed; and Fig. 6 is a view of the outlet of the machine with the plate 33 and bars 34 removed, taken in the direction of the arrow. Fig. 7 is an enlarged detail view of the chamber A.

Similar numerals and letters refer to similar parts throughout the several views.

The central portion of the amalgamator is arranged on a plane slightly sloping from the horizontal toward the front of the machine. This horizontal portion A is provided with a sloping bottom, as 10, which inclines toward the center and is provided with a recessed groove 11 traversing its entire length. Arranged at intervals along the opposite sides of the sloping bottom of the section A are ribs 12, placed at right angles to the groove 11, and terminating at the opposite edges of the said groove.

13 indicates agitators placed parallel to the ribs 12. As better shown in Figs. 2, 3, and 4, these agitators are arranged in groups of blades having their opposite ends connected together by solid pieces 13^a, and to support and turn the agitators fixed spindles 14 and 15 are let into recesses in the outer sides of the solid ends 13^a, as 13^b. The spindles 14 are journaled in bosses 16, which are suitably secured in the side wall of the portion A, and the spindles 15 pass through the glands 17 in the opposite wall, which glands form water and mercury proof connections. On the projecting ends of the spindles 15 are sprocket-wheels 18, over which is passed a chain belt to communicate movement thereto.

19 indicates a removable cover, which when the mercury is passed in the machine is securely bolted down, the joints being made tight.

Arranged at intervals and in proximity to the forward sides of the sweep of the agitator-blades are depending depressing blades or ribs 19^a, the same being for the purpose of forcing the stream of water and auriferous matters downward into the mercury. There are also similar depressing-blades 20 and 21 in the forward and rear ends, respectively, of the body A.

At the forward end of the body A and at the lowest plane of the groove 11 is a faucet 22 for drawing off the mercury.

Arranged around the lower edges of the body A is a depending web 23. This web or wall 23 is machined off level on its lower side and is covered by a bottom 24, thus forming a steam-jacket for keeping the mercury in a

heated condition. The steam is introduced by the pipe 25 and the waste is drawn off by the pipe 26.

Secured to the forward end of the body A is a vertical section B, which provides direct access for the water and pulp to pass to the horizontal chamber containing the agitators and depressing-blades. The top of the section B is bell or funnel mouthed, as 27, and in this is placed a grid 28. This grid 28 prevents obstacles from entering the machine that would perhaps damage the internal mechanism, and it also prevents the illegal extraction of mercury.

Passing from the chamber A down the section B and suitably supported therein is a heater-coil 29, into which is introduced steam. This raises the temperature of the matters before coming in contact with the mercury, which has a very desirable effect.

Secured to the rear end of the body A is a rearward and upwardly sloping section C, the outlet-apron of which is placed at a slight outward declivity, as indicated by the numeral 30. The outlet-apron 30 is on a much lower plane than the funnel-mouth of the section B, so that the water and sand or pulp will gravitate through the machine, the agitators placed in the section A being merely to agitate and not to convey.

Lying on the foot-wall of the sloping section C and secured therein by grooves 31 on either side thereof is an amalgam-plate 32. This is for the purpose of retarding the flow of mercury from passing upward and escaping from the section C.

It is shown in Fig. 6 that the discharge-apron 30 has its opposite sides flared outwardly, and between these walls is arranged a plate 33, depressible at one end. This plate is secured to the top of the section C on its forward side, and the rear end or side is arranged to be depressed by the screw 34^a, passing through the rear bar 34. (See dotted lines.) This is for the purpose of distributing the stream over a wider area before dropping it from the machine. Should there be a percentage of the mercury or amalgam carried out of the machine by the flow by reason of the stream being distributed over the flat surface 30, it will be in a proper condition to be concentrated and be saved by the ordinary form of concentrator.

In the operation of my invention sufficient mercury is put into the machine to fill the

section A to a plane above the lower edges of the deflecting-blades 19^a, 20, and 21. The agitators are put in motion and the auriferous matters to be passed through the machine are poured into the funnel-mouth of the section B with a suitable stream of water. Steam is introduced to the heating-surface below the section A and to the coils in the section B. As the pulp and water are forced through the machine the agitators will drive them downward and will thoroughly mix them with the mercury, which will extract all free gold and free silver there formed, and the amalgam as it accumulates will be deposited in the recessed groove 11 along the bottom of the machine. The uncharged amalgam will continue to circulate lengthwise of the machine, passing rearward with the flow of the auriferous matters at the top and returning to the forward part of the machine at a lower plane.

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

1. An amalgamator having the chamber-sections A, B and C arranged so that water will gravitate therethrough, in combination with a longitudinal groove 11 arranged along the center of bottom of said chamber A, the bottom of said chamber on the opposite sides of the groove 11 being sloping upwardly from the groove to the side walls of the said chamber, and ribs 12 placed on the oppositely-sloping sections of the bottom at intervals and at right angles to the groove with their approaching ends terminating at the opposite edges of such groove, substantially as specified.

2. In a machine for the purposes set forth having chambers A, B and C, vertical horizontal and sloping, in combination with agitators consisting of groups of blades 13 fixed into solid end pieces 13^a, recesses 13^b in such solid end pieces, and detachable spindles 14 and 15 having their inner ends of angular form let into said recesses 13^b, as specified.

3. In an amalgamator having the chambers A, B and the chamber C with the flared outlet 30 in combination with a depressible plate 33, secured at one side beneath a bar 34 and arranged to be depressed by the bolt 34^a on the opposite side, for the purposes as specified.

LOUIS C. PARK.

Witnesses:

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