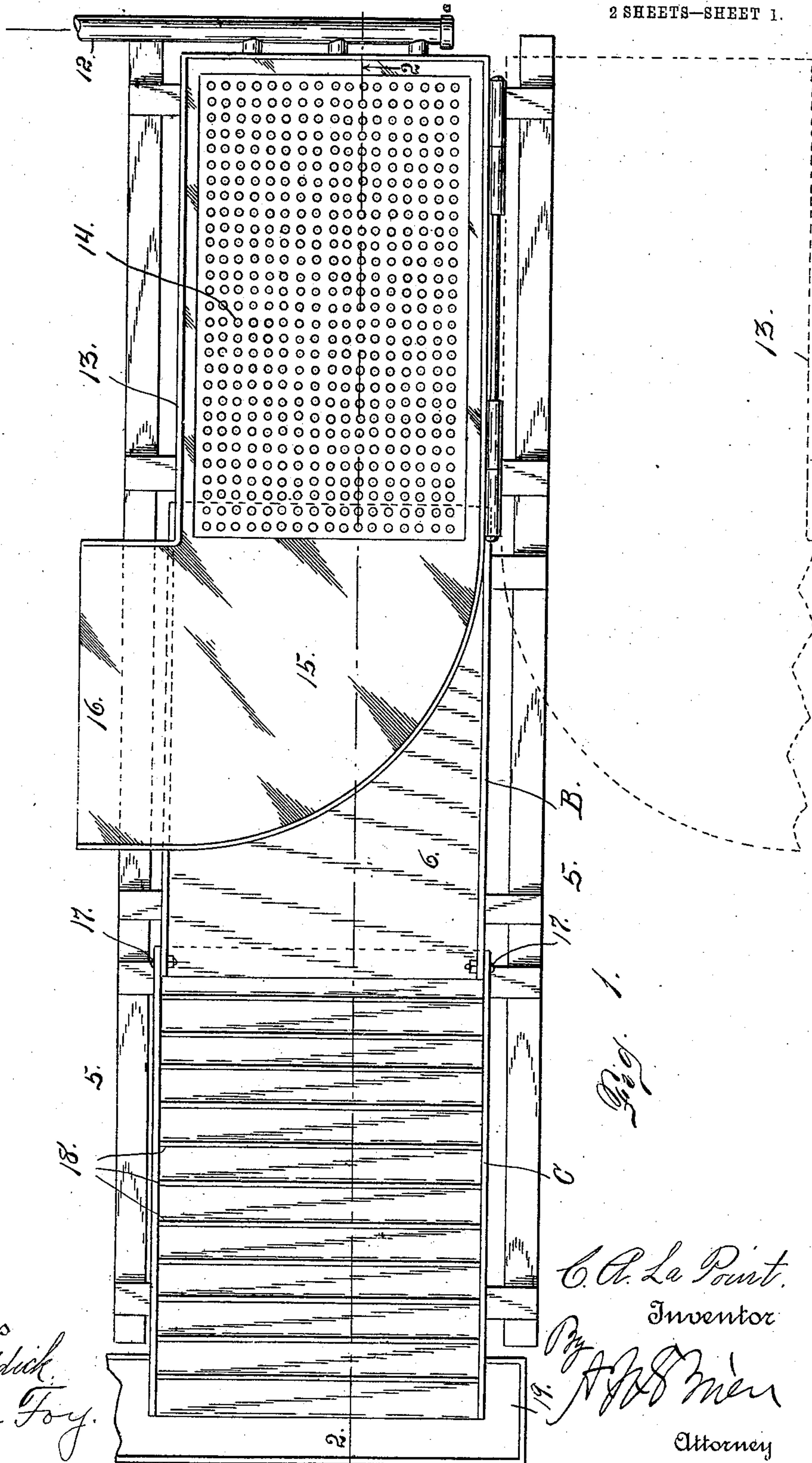


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CONCENTRATING APPARATUS.
APPLICATION FILED AUG. 27, 1906.

928,870.

Patented July 20, 1909.

2 SHEETS—SHEET 1.



Witnesses
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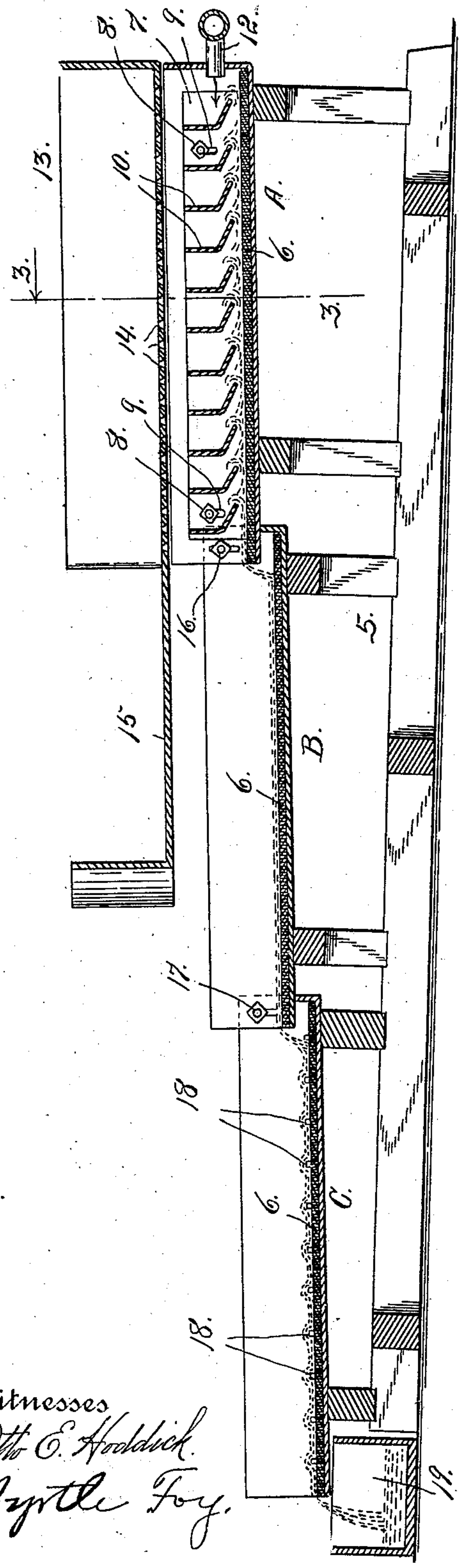


Fig. 2.

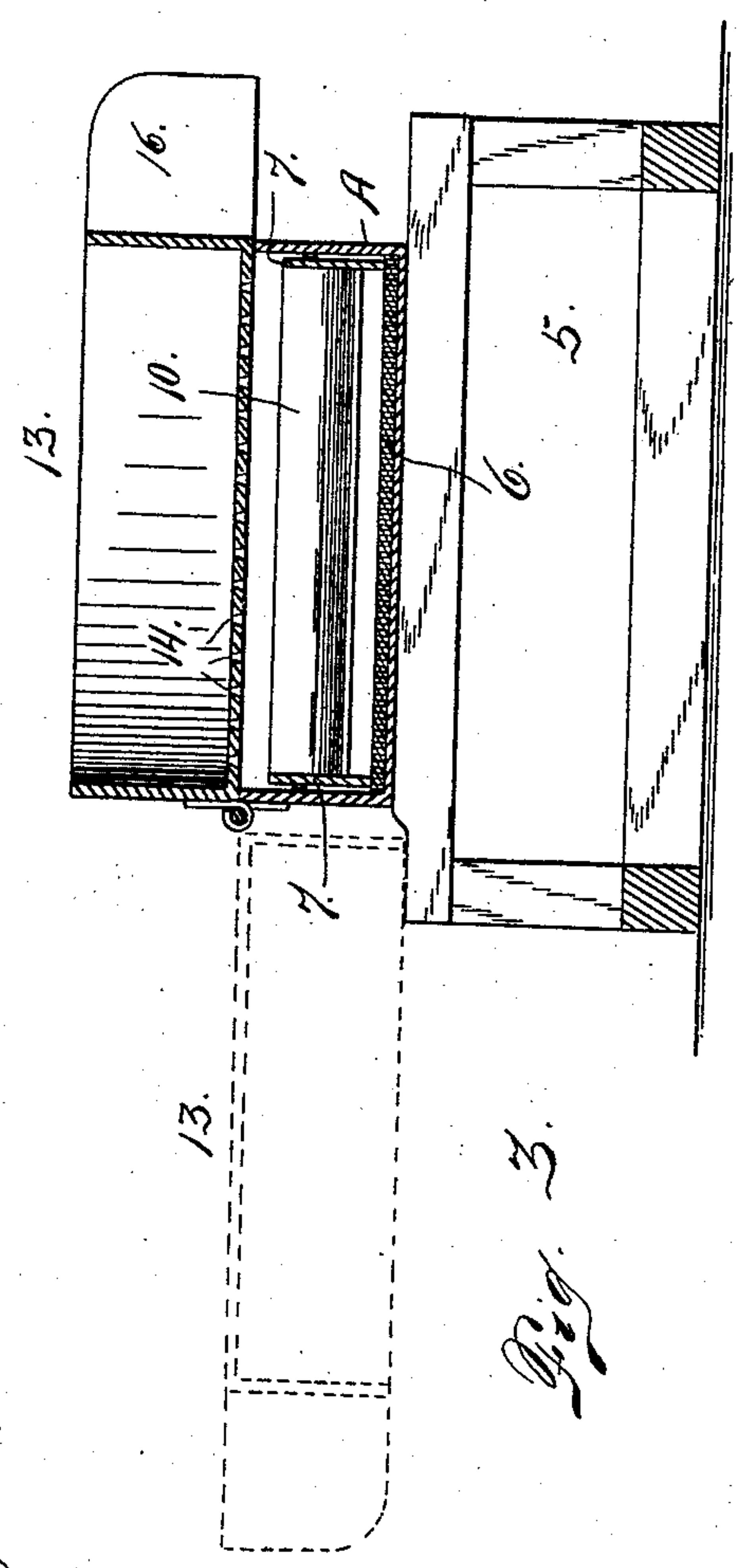


Fig. 3.

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UNITED STATES PATENT OFFICE.

CHARLES A. LA POINT, OF ELDORA, COLORADO.

CONCENTRATING APPARATUS.

No. 928,870.

Specification of Letters Patent.

Patented July 20, 1909.

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To all whom it may concern:

Be it known that I, CHARLES A. LA POINT, a citizen of the United States, residing in the city of Eldora and county of Boulder and State of Colorado, has invented certain new and useful Improvements in Concentrating Apparatus; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in concentrating apparatus.

The body part of the construction is in the form of a sluice, and preferably is composed of a number of distinct separable sections, whereby the construction may be taken apart and reduced to small compass for convenience of transportation.

At the head of the apparatus, I provide a sort of feed trough, having a perforated plate upon which the material to be treated is discharged, the orifices of the plate being constructed to reject the coarse worthless material, which is discharged from the trough by virtue of the inclination of the apparatus. Below this trough is located one of the sluice sections in which is placed a tray having riffles shaped to give the material a forward direction. These riffles terminate a short distance above the concentrating surface of the sluice, which is preferably composed of carpeting, matting, or other similar woven material adapted to receive and retain the fine mineral particles.

The sluice sections are inclined downwardly from the head of the table, and the riffles of the tray are constructed to discharge the material upwardly and forwardly as it strikes the concentrating surface as just explained. This tray is vertically adjustable in the sluice section, whereby the distance between the lower extremities of the riffles and the concentrating surface may be regulated as desired.

Below the first sluice section is an unriffled section preferably provided with carpeting or matting constituting the concentrating surface; while the third sluice section is provided with riffles placed transversely of the sluice and resting on the concentrating surface, preferably composed of the same material as

the concentrating surfaces of the other sections.

Having briefly outlined my improved construction, I will proceed to describe the same in detail, reference being made to the accompanying drawing, in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a top plan view of my improved concentrating apparatus, the feed trough being shown in two positions, the normal position being in full lines and the other position in dotted lines. Fig. 2 is a central longitudinal section taken on the line 2—2, Fig. 1. Fig. 3 is a cross-section taken on the line 3—3, Fig. 2.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a suitable stationary base, the upright parts of which are highest at the head or toward the right, referring to Figs. 1 and 2, and gradually diminish downwardly or toward the left. At the head of the supporting structure is located a sluice section A; immediately below the sluice section A and receiving the discharge therefrom is a second sluice section B; while below the latter is a sluice section C. Each sluice section is provided with a concentrating surface 6 composed of woven material, as carpeting. The uppermost sluice section A is provided with a tray 7, open at the top and bottom and connected with the sides of the sluice by means of bolts 8, passing through vertical slots 9 formed in the sides of the tray, thus permitting vertical adjustment of the latter within the sluice section. This tray is provided with riffles 10 extending transversely thereof, the extremities of the riffles being connected with the sides of the tray. The riffles, as shown in the drawing, are angular in shape, their upper portions occupying a vertical position and their lower adjacent portions a downwardly and forwardly inclined position, whereby the material which passes to the concentrating surface of the first section is directed forwardly and upwardly having reference to the downward inclination of the sluice sections from the head toward the tail of the apparatus.

It must be understood that I do not limit the invention to the exact shape of riffles or plates 10 illustrated in the drawing, since any form may be employed so long as the riffles are constructed to give the material

passing into the sluice a forward direction when it strikes the concentrating surface, thus forming a sort of water riffle.

At the upper end of the uppermost sluice, 5 is located a wash water pipe 12, which discharges water into the sluice section, in addition to that which is received with the material under treatment. Above the uppermost sluice section, is located the feed trough 10 13, whose bottom portion located directly above the section A, is composed of a perforated plate 14, the perforations in the bottom of the plate being preferably cone shaped and having their lower extremities largest, the 15 object being to prevent the material from clogging the bottom of the trough. Below the perforated plate 14, the trough is provided with a closed bottom 15, provided with a lateral discharge 16, whereby the 20 coarse material rejected by the perforated plate is discharged from the machine. The sluice section B is connected at its upper extremity with the lower extremity of the section A by means of bolts 16; while its lower 25 extremity is connected with the upper extremity of section C by means of bolts 17. The bolts 16 and 17 are fitted into openings formed in one of the sluice sections and engage vertical slots formed in the other sluice 30 section, in order to permit a suitable range of vertical adjustment. The lowermost sluice section C is provided with transverse riffles 18, placed on top of the woven concentrating surface 6. The lower extremity of the section C is arranged to discharge into a tailings 35 trough 19, from which the gangue may be carried to any desired location.

In the operation of the apparatus, the material in the form of pulp, is discharged into 40 the feed trough, the finer portion thereof and that containing the values, passing through the perforated plate in the bottom of the feed trough, while the coarse material is discharged at the lower extremity of the trough. 45 The material which passes through the perforated plate in the bottom of the feed trough passes downwardly to the riffles of the tray 7 and through this tray to the concentrating surface of the sluice, the material being given 50 a forward impetus as it strikes the said surface, thus creating a sort of water riffle or eddy, which temporarily checks the downward flow of the pulp and causes the finer values to settle into the woven fabric, constituting the bottom of the sluice or the concentrating surface thereof. By virtue of 55 this construction, the greater portion of the fine mineral values is caught in the sluice A. The object of the sluice B is to catch any 60 fine mineral values that may have escaped from the sluice section A. An unriffled surface is superior to a riffled surface, for catching fine mineral values, for the reason that if transverse riffles are employed, a portion of 65 the heavy material, such as black sand, will

be caught by the riffles, thus to a certain extent covering the fibrous concentrating surface and preventing the finer precious metal values from entering the meshes of the said surface, whereby the said fine values are carried with the gangue and wash water over the concentrating surface and lost. For this reason, I make the section B an unriffled section. I provide the section C with riffles, in order to catch any coarse precious metal particles, which the material under treatment may contain. Hence, I claim that the three sluice sections of the character described, co-act with one another in a special way in saving the precious metal values; the sections 80 A and B being designed to catch the finer values and the section C, the coarser values.

The feed trough 13 is hinged to one side of the uppermost sluice, whereby it may be swung laterally to uncover the sluice for 85 clean up purposes, and also for the purpose of cleaning the perforated plate in case the same shall for any reason become clogged.

Having thus described my invention, what I claim is: 90

1. A concentrating table or sluice section downwardly inclined from its forward extremity, and whose concentrating surface is composed of woven fabric and lies in the same plane throughout its entire area, the 95 said sluice section being provided with transverse riffles angular in cross section, and whose front surface is composed of two faces forming an interior angle, the lower of said faces being inclined in a direction opposite 100 the inclination of the sluice, and means for delivering wash water to the sluice in a direction opposite the travel of the material as it leaves the riffles and in a plane cutting the latter. 105

2. A concentrating table or sluice section downwardly inclined from its forward extremity and provided with transverse riffles angular in cross section, and whose front surface is composed of two faces forming an interior angle, the lower of its faces being inclined in a direction opposite the inclination of the sluice, and means for delivering wash water to the sluice in a direction opposite the travel of the material as it leaves the riffles, 110 and in a plane cutting the riffles. 115

3. A concentrating table or sluice section provided with a vertically adjustable tray raised above the concentrating surface and having transverse riffles inclined to give the 120 material an initial impetus opposed to the direction of its normal travel through the said section, the bottom of the sluice section being composed of woven material lying in the same plane throughout its entire area 125 which forms a concentrating surface, and means for delivering wash water to the sluice in a direction opposite the travel of the material as it leaves the riffles and in a plane cutting the riffles. 130

4. An inclined concentrating table or sluice section provided with transversely arranged riffles raised above the concentrating surface and inclined to give the material an initial impetus opposed to its normal downward travel through the sluice section, the bottom of the sluice being provided with a covering of woven material which forms the concentrating surface, and means located at the upper extremity of the sluice for delivering wash water thereto in a direction opposite the travel of the material as it leaves said riffles and in a plane cutting the riffles for the purpose set forth.

5. A concentrating table or sluice section whose concentrating surface is composed of woven fabric, the said section having transverse riffles inclined to give the material an impetus opposed to its normal direction of travel through or over the sluice, the said riffles being raised above the concentrating surface, a feed trough mounted above the sluice section and having its bottom perforated to prevent the passage therethrough of the coarser gangue, and means for delivering wash water to the sluice in a direction opposite the travel of the material as it leaves the riffles, and in a plane cutting the riffles.

6. In concentrating apparatus, the combination of a number of downwardly inclined sluice sections, the uppermost section having raised riffles inclined to give the material a forward impetus; and means for delivering wash water to the last named sluice section in a direction opposite the travel of the material as it leaves the riffles and in a plane cutting the riffles, the bottom of each sluice section being composed of woven material forming its concentrating surface, said surface lying in the same plane throughout its area.

7. In concentrating apparatus, the combination of a number of downwardly inclined sluice sections, the uppermost section having a concentrating surface composed of woven material lying in the same plane throughout its area, raised riffles inclined to give the material a forward impetus; and means for delivering wash water to the last named sluice section in a direction opposite the

travel of the material as it leaves the riffles and in a plane cutting the riffles, the next section having an unriffled concentrating surface; and the third section having a riffled concentrating surface, the sluice sections being separably connected and adapted to cooperate, substantially as described.

8. In a concentrating apparatus, the combination of a downwardly inclined sluice section having its concentrating surface composed of woven fabric, the said sluice having riffles raised above its concentrating surface and inclined to give the material an impetus opposed to its downward direction of travel through the sluice, and means for delivering wash water to the upper extremity of the sluice in a direction opposite the incline of the riffles and directly against said riffles and independently of the water contained in the material which is fed to the apparatus.

9. A concentrating table or sluice section downwardly inclined from its forward extremity, and provided with a concentrating surface composed of woven fabric, and transverse riffles angular in cross-section, whose front surface is composed of two faces forming an interior angle, the lower of said faces being inclined in a direction opposite the inclination of the sluice to give the material a whirling action whereby an eddy is produced which facilitates the separation of the metallic values from the gangue.

10. A concentrating table or sluice section downwardly inclined from its forward extremity and provided with a concentrating surface, and transverse riffles angular in cross-section and whose front surface is composed of two faces forming an interior angle, the lower of said faces being inclined in a direction opposite the inclination of the sluice, to give the material a whirling action whereby an eddy is produced which facilitates the separation of the metallic values from the gangue.

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

CHARLES A. LA POINT.

Witnesses:

A. J. O'BRIEN,
DENA NELSON.