

No. 829,884.

PATENTED AUG. 28, 1906.

C. L. MORGAN & J. F. HOHEISEL.
FLOATING METAL SAVING DEVICE FOR CONCENTRATORS.

APPLICATION FILED APR. 11, 1904.

2 SHEETS—SHEET 1.

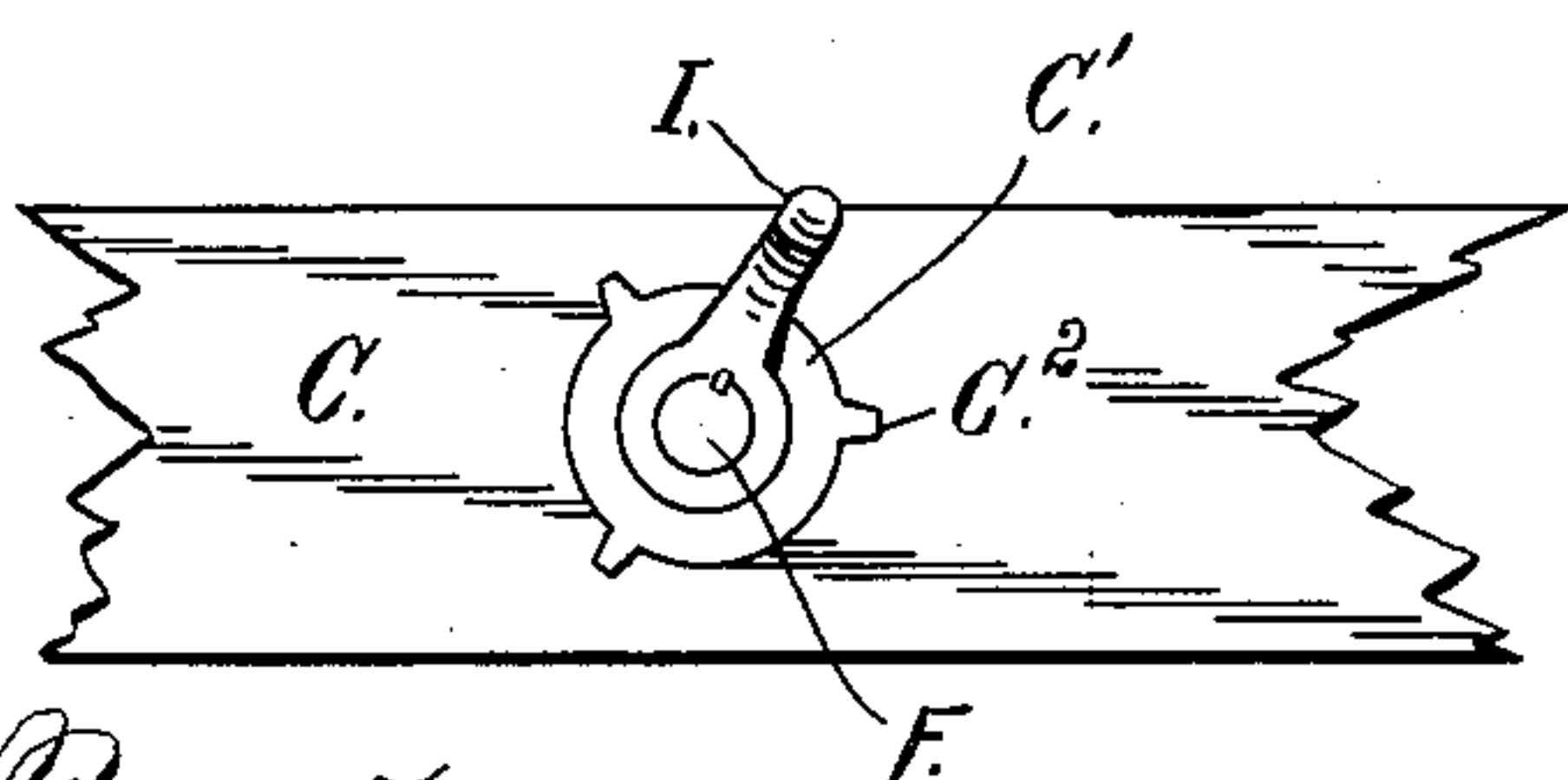
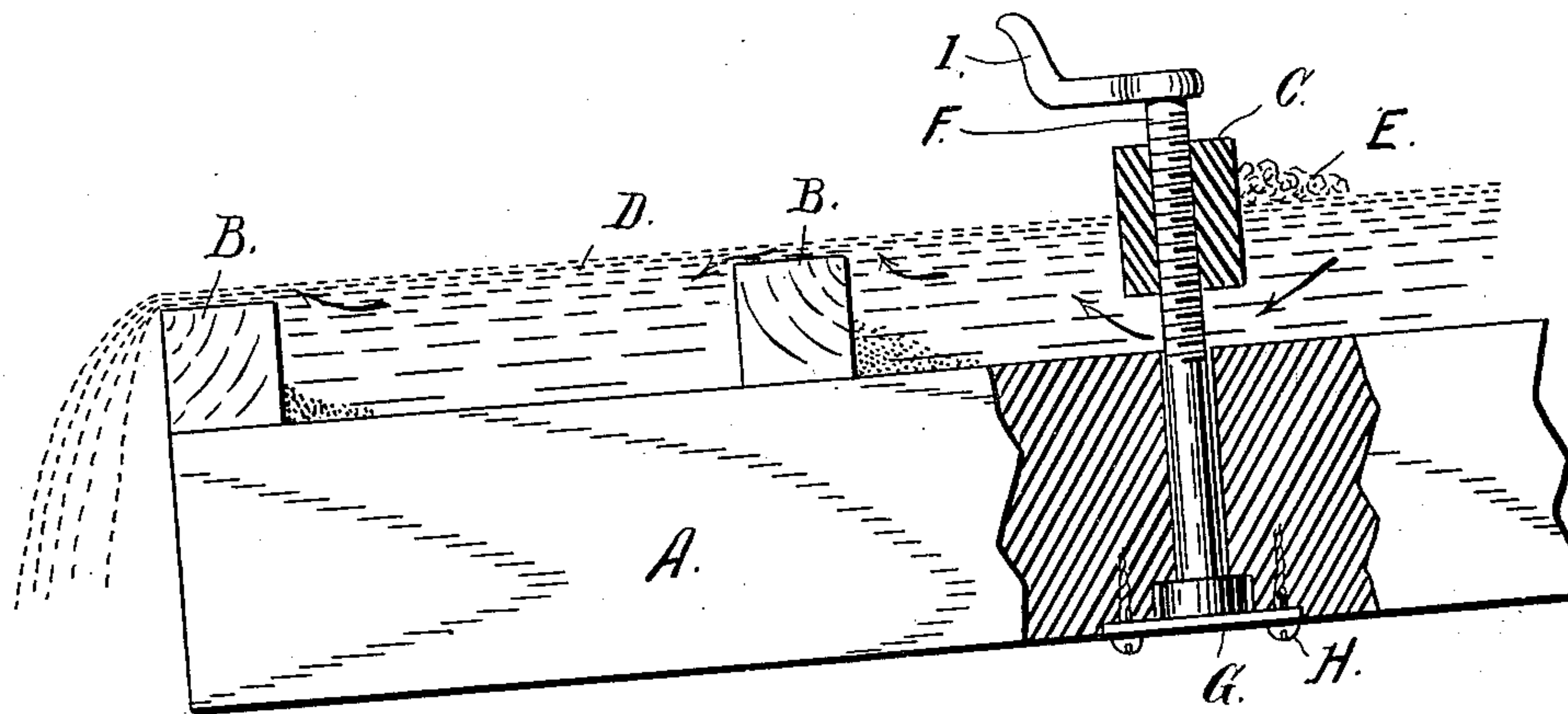


Fig. 3.

Fig. 1.

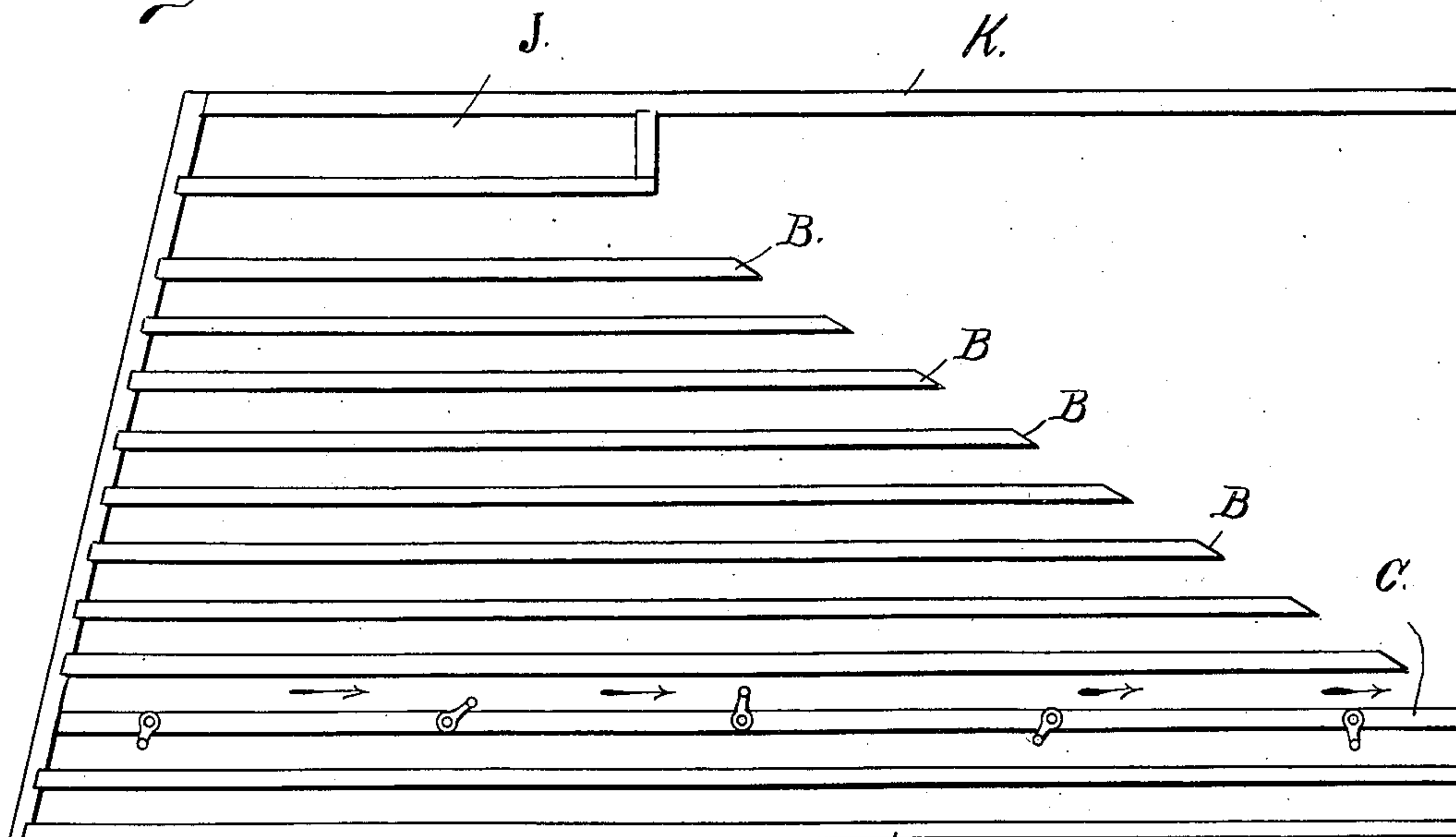


Fig. 2.

J. F. Hoheisel.
C. L. Morgan.
Inventors

Witnesses
Otto E. Hoddick.
Dena Nelson.

By *Attorney*
Attorney

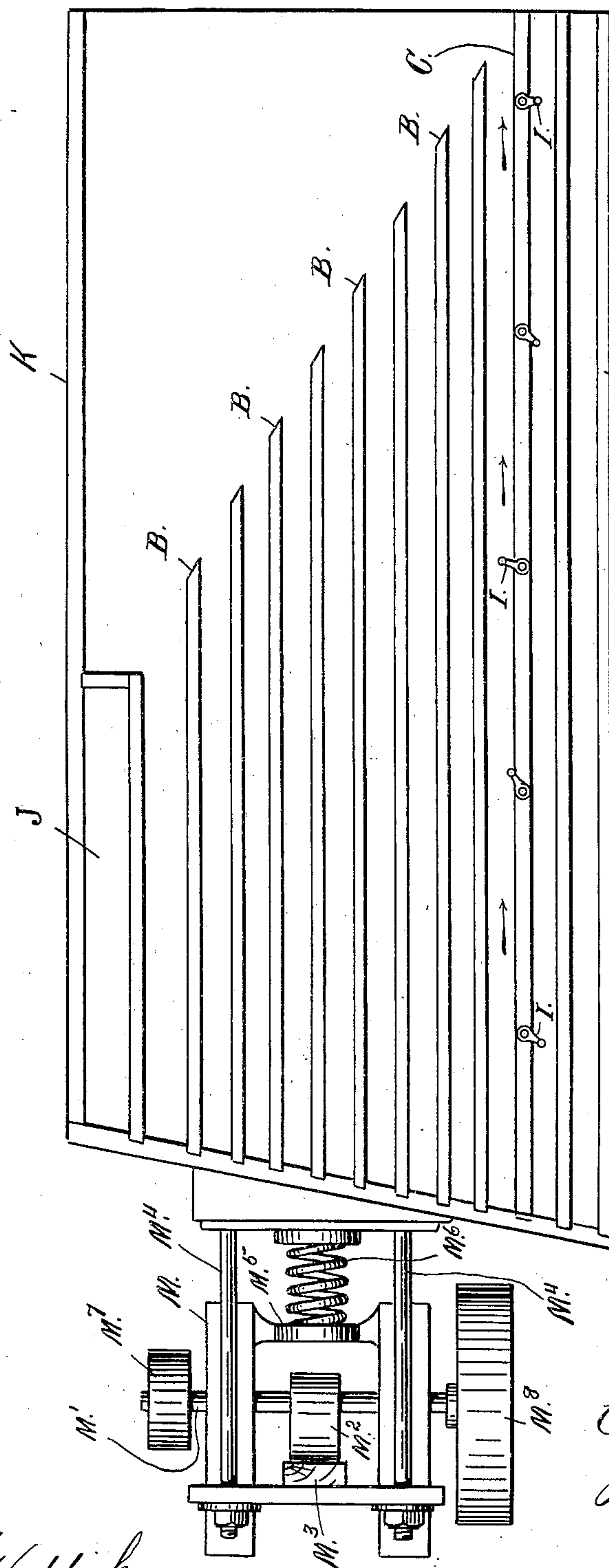
No. 829,884.

PATENTED AUG. 28, 1906.

C. L. MORGAN & J. F. HOHEISEL.
FLOATING METAL SAVING DEVICE FOR CONCENTRATORS.

APPLICATION FILED APR. 11, 1904.

2 SHEETS—SHEET 2.



Witnesses
Otto C. Hoddick.
Dena Nelson.

C. L. Morgan.
J. F. Hoheisel.
Inventor

[Signature]
Attorney

UNITED STATES PATENT OFFICE.

CLAUDE L. MORGAN AND JOSEPH F. HOHEISEL, OF IDAHO SPRINGS,
COLORADO.

FLOATING-METAL-SAVING DEVICE FOR CONCENTRATORS.

No. 829,884.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed April 11, 1904. Serial No. 202,679.

To all whom it may concern:

Be it known that we, CLAUDE L. MORGAN and JOSEPH F. HOHEISEL, citizens of the United States of America, residing at Idaho Springs, in the county of Clear Creek and State of Colorado, have invented certain new and useful Improvements in Floating-Metal-Saving Devices for Concentrators; and we 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 of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in means for saving the light portion of the metallic values sometimes termed "slimes," which float upon the top of the water and under ordinary conditions are lost with the gangue.

Our improvement is adapted for use in connection with concentrating-tables of the Wilfley type, in which the concentrating-surface of the table is provided with longitudinally-disposed riffles extending lengthwise of the table or in the direction of motion, the table being transversely inclined and having a movement in the direction of the riffles; the material to be treated, as well as the wash-water, being fed upon the upper edge of the table. In this style of tables the gangue is carried transversely across the table and discharged over its lower longitudinal edge, while the concentrates are carried lengthwise of the table and discharged at its rear or tail extremity. In the treating of some classes of material a very important proportion of the values are in the form of slimes or floating material, which in this style of table and under the conditions above outlined naturally are carried transversely across the table and lost with the gangue. Our improvement is intended to overcome this difficulty; and it consists in equipping the table with a raised riffle or retarding device located near its gangue-discharge edge, said retarding device being raised from the bottom of the table, its lower surface, however, occupying a position beneath the top of the depth of pulp on the table, whereby the floating material is stopped thereby and made to travel along to the tail extremity of the table. In the con-

struction herein illustrated and which will in regular order be described in detail, we have chosen to place our retarding device in a position where a third riffle from the lower or gangue-discharge edge of the table would be placed; and for this reason the riffle corresponding to this position is removed, or it may be said to be raised to form the retarding slime-saving device. This retarding device may be supported in any suitable manner. It is preferred, however, to connect it with suitable means whereby it may be readily adjusted in order that the said device may be vertically adjustable at will, since it may be desirable in some instances to have a greater depth of pulp upon the table than in other instances, and to this end in the drawings the retarding device is threaded on a number of bolts which are journaled in the table and provided at their upper extremities with hand-cranks, whereby as the bolts are turned the retarding device is made to travel up or down at will, according to the direction of the bolts' movement.

Having briefly outlined our improved construction, as well as the function it is intended to perform, we will proceed to describe the same in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a fragmentary end view, partly in section, illustrating a concentrating-table equipped with our improvement. Fig 2 is a plan view of a concentrating-table provided with our improved device, the same being shown on a smaller scale. Fig. 3 is a top view illustrating a modified form of construction shown on a larger scale. Fig. 4 is a plan view of a concentrating-table provided with our improvements, the table being shown in connection with means for imparting a reciprocating movement thereto lengthwise of the table.

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

Let A designate the body of a suitable concentrating-table, which, as shown in the drawings, is transversely inclined and provided with a number of riffles B. As shown in the drawings, these riffles terminate in a diagonal line across the table, being of unequal length, the riffle highest on the table, being shortest and the other riffles increasing in length toward the lower or gangue-dis-

charge edge of the table. In the drawings the two riffles adjacent the gangue-discharge edge extend the whole length of the table, while immediately above the next to the lowest riffle is located our improved device, which is designated by the reference character C. This device consists of a bar composed of any suitable material and may be of any desired size. It takes the place of one of the riffles on the table, but may be of different size, if desirable or required. This device C, which we term the "retarding" device, since it stops the slimes or floating material from passing downwardly over the table with the gangue, is mounted above the upper surface of the table; but its bottom or lower edge occupies a position beneath the level of the pulp D on the table, (see Fig. 1,) whereby the slimes E or floating values are prevented from escaping with the gangue and are carried over the tail or concentrates-discharge end of the table in the direction indicated by the arrows, the said tail of the table being located at the right in Fig. 2 of the drawings. As heretofore intimated, this retarding device or means for saving the floating metallic values may be supported in the required position in any suitable manner. In the drawings it is shown provided with a number of threaded openings, through which are passed a number of bolts F, which are passed upwardly through the body of the table and journaled therein, their threaded portions being passed through the threaded openings of the floating-mineral-saving device. The heads of these bolts are let into the sockets in the under surface of the table, and the bolts are retained in place by plates G, secured to the lower surface of the table by screws H, whereby the said plates are flush with the lower surface of the table. To the top of each bolt F above the device C is secured a hand-crank I for ease of manipulation. It will be understood that as these hand-cranks are turned the retarding device C may be raised or lowered, as may be desired, according as it is necessary to lower the bottom of the device C or raise it in order that it may occupy a proper position with reference to the depth of pulp or water upon the table.

In Fig. 4 of the drawings we have illustrated suitable mechanism for imparting a reciprocating movement to the table lengthwise thereof, whereby the concentrates are made to travel rearwardly on the table toward the right, referring to Fig. 4. Any suitable mechanism may be employed for imparting this movement. In the drawings, M illustrates a suitable stationary support, in which is journaled a shaft M', provided with a cam M², acting on an abutment M³, connected with the head of the table by rods M⁴. Between the table and the stationary cross-piece M⁵ is located a coil-spring M⁶. A pulley M⁷ is applied to one end of the shaft M'

and a fly-wheel M⁸ to the opposite end of the shaft. As the shaft M' is rotated the cam acts on the abutment M³ to draw the table rearwardly, and as the cam leaves the abutment the table is thrown forwardly through the recoil of the spring M⁶. The cam again engages the abutment in time to check the spring-actuated movement of the table, whereby the concentrates are caused to continue their forward movement by the stopping of the table. As this movement is continued the concentrates are carried forwardly and discharged at the rear open extremity of the table.

Nothing is claimed on the operating mechanism in this application, since we are aware that many devices may be employed for this purpose; neither do we claim that we have illustrated the best mechanism for imparting the reciprocating movement. The device shown is only for the purpose of illustrating one way of imparting a longitudinally-reciprocating movement or a vibratory action to a table of this character.

In treating ore upon a table of this class the pulp to be treated may be said to be discharged into a feed-box J and pass therefrom to the body of the table at its upper edge, which is designated K in Fig. 2. At the same time that the material to be treated is fed to the table wash-water is also fed thereto at the upper edge K. The vibrating longitudinal movement being imparted to the table, the concentrates are carried toward the right, referring to Fig. 2, while the gangue is carried downwardly and discharged over the lower edge L. The slimes or floating values, however, are caught by the device C and carried along in the direction of the arrow (see Fig. 2) and discharged with the concentrates into a general trough or into a separate receptacle, as may be desired.

Attention is called to the fact that as nothing is claimed on the general features of a concentrating-table we have not thought it necessary to indicate any mechanism or mechanical power or movement for imparting the longitudinal vibration to concentrating-tables of this class. We have, however, called attention to the general operation of the table which it is believed will be as readily understood from the foregoing description as if it had been fully illustrated, since mechanisms of this kind are very common nowadays, and while many different types may be employed they all seek to perform substantially the same function.

In Fig. 3 of the drawings we have illustrated a construction for use when it is desired to form a device C of wood. In this case it would not be practicable to thread the bolts F in the wood, and consequently a sleeve C', provided with exterior ribs C² to prevent it from turning in the wood, is employed, the sleeve being forced into an opening formed in

the wood and forming a nut which the threaded part of the bolt engages.

Having thus described our invention, what we claim is—

5 1. The combination with a transversely-inclined concentrating-table having a movement whose tendency is to cause the material to travel longitudinally thereon toward the rear or concentrates-discharge end of the
10 table, the said end being open and the table having longitudinally-disposed riffles, of a retarding device for saving the floating values, said device being supported above the bottom of the table, its lower edge, how-
15 ever, occupying a position beneath the top of the pulp or water thereon.

2. The combination with a transversely-inclined concentrating-table having a movement whose tendency is to carry the material
20 from the head toward the tail of the table, the said tail end of the table being open to permit the discharge of the concentrates, of a retarding device disposed longitudinally of the table and supported thereon above its
25 concentrating-surface, whereby the pulp is allowed to pass thereunder, the lower edge of the said device, however, occupying a position below the top of the water or pulp on the table whereby the travel of the floating-metal
30 values or slimes is arrested, and the said values separated from the gangue.

3. The combination with a transversely-inclined concentrating-table having longitudinally-disposed riffles, and means for imparting to the table a longitudinally-reciprocating movement whereby the material is
35 caused to travel toward the tail or concentrates-discharge end of the table, the said end of the table being open to permit said discharge, of a bar supported near the lower or gangue-discharge edge of the table and occupying a position above its concentrating-surface whereby the pulp is allowed to flow
40 thereunder, the lower edge of the bar occupying a position below the top of the water or pulp on the table, whereby the floating or metallic values or slimes may be arrested in

their downward travel with the gangue, and caused to travel toward the concentrates end of the table.

4. The combination with a transversely-inclined concentrating-table having a movement whose tendency is to cause the material to travel longitudinally thereon toward the rear of the table which is open to permit
50 the discharge of the concentrates, the table having longitudinally-disposed riffles, of a retarding device located adjacent the lower or gangue-discharge edge of the table and in the path of the flow of the gangue across the
55 table, the said device being raised above the bottom or concentrating surface of the table, its lower edge occupying a position below the top of the water or slimes thereon, the said device being vertically adjustable on the
60 table.

5. The combination with a transversely-inclined concentrating-table having a movement whose tendency is to cause the material to travel longitudinally thereon toward the
65 rear or concentrates-discharge end of the table, the said end of the table being open to permit such discharge, the said table having longitudinally-disposed riffles, of a retarding strip or riffle arranged along the table in the
70 path of the travel of the gangue thereon, the said retarding strip or riffle being provided with threaded openings, bolts journaled in the bottom of the table and having threaded parts engaging the openings in the retarding
75 device, a hand-crank applied to the upper extremities of the bolts whereby the retarding device may be vertically adjusted at will, the said device being raised above the concentrating-surface of the table and its bottom or
80 lower edge being located beneath the top of the pulp or water thereon.

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

CLAUDE L. MORGAN.
JOS. F. HOHEISEL.

Witnesses:

R. J. DAVIES,
W. A. ROBERTS.