No. 695,969. Patented Mar. 25, 1902.

B. W. TRAYLOR.

CONCENTRATOR.

(Application filed Jan. 7, 1901.)

(No Model.) 2 Sheets—Sheet 1.

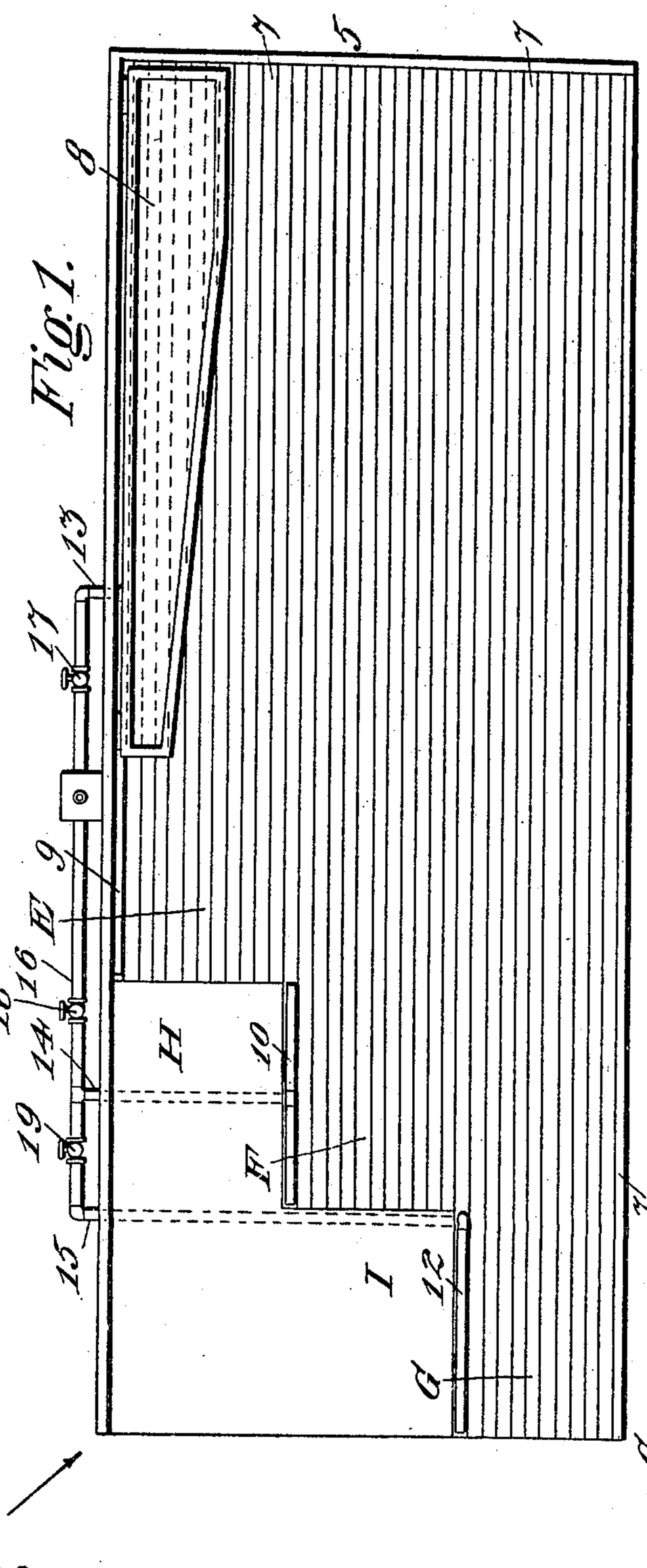

Fig. 1.

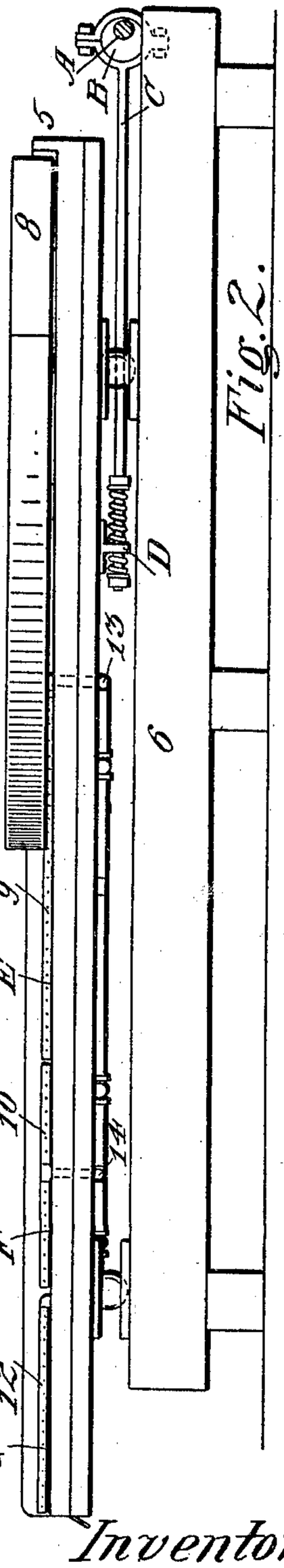

Fig. 2.

Witnesses,
H. M. Steff
Dora C. Shick.

Inventor,
Bruce W. Traylor,
By A. G. Steele
Attorney.

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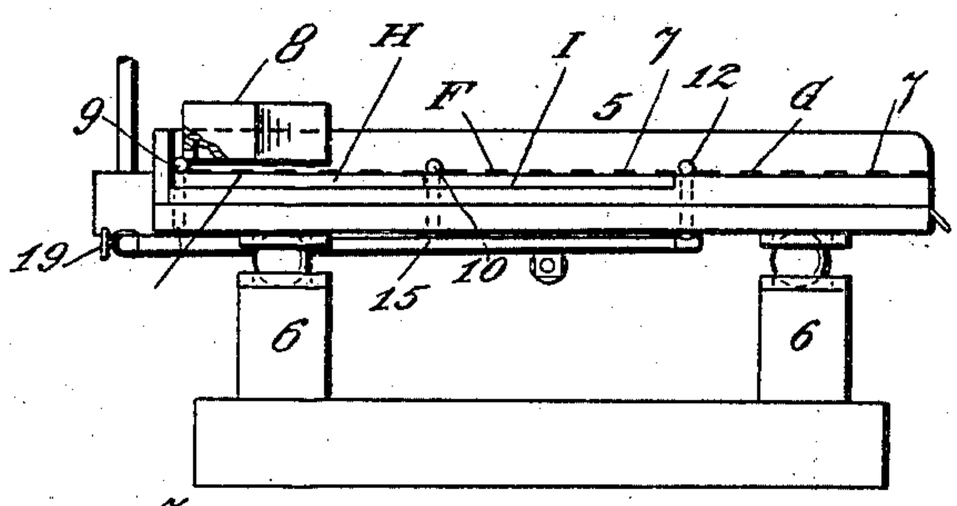

Fig. 4.

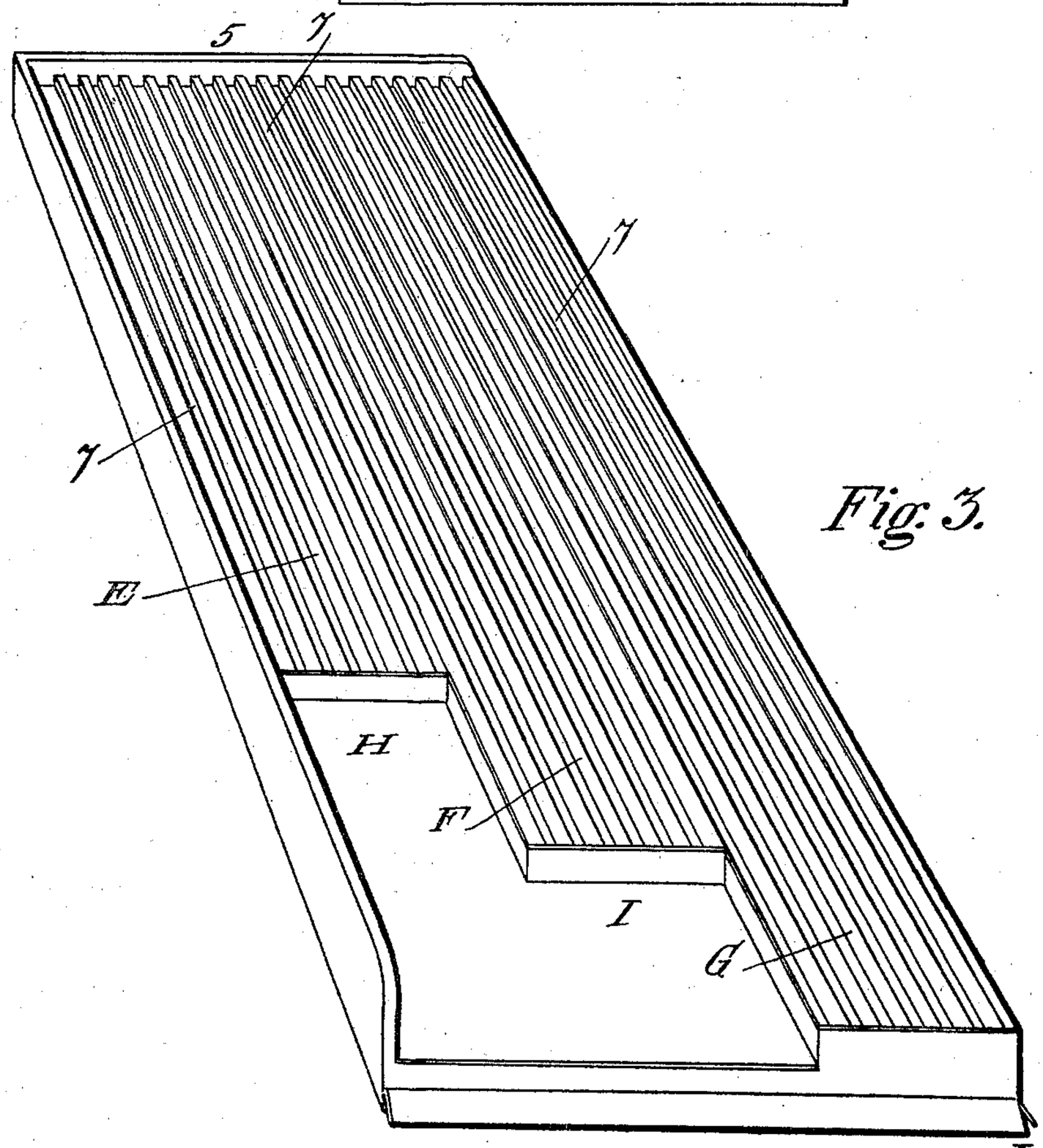

Fig. 3.

Witnesses,
H. M. Steff
Dora C. Shick

Inventor,
Bruce W. Traylor,
By A. J. & S. Lucke
Attorney.

UNITED STATES PATENT OFFICE.

BRUCE WHITE TRAYLOR, OF DENVER, COLORADO.

CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 695,969, dated March 25, 1902.

Application filed January 7, 1901. Serial No. 42,286. (No model.)

To all whom it may concern:

Be it known that I, BRUCE WHITE TRAYLOR, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Concentrators; 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 concentrators; and it consists of certain features of construction whereby the mineral values, graded according to their fineness, are subjected to the action of the wash-water only long enough to effect the separation, after which they are discharged beyond the reach of the wash-water. This principle requires that the finest concentrates, which are first separated from the gangue, shall be first discharged from the concentrating-surface of the table and the other grades successively discharged in the order of their fineness, the coarsest grade of concentrates being last discharged. Hence the coarsest grade of concentrates is longest subjected to the action of the wash-water and the other grades in the order of their fineness—that is to say, the finest grade is subjected to the action of the water during the shortest period, the next grade in fineness during a longer period, and so on. This operation prevents the loss of the mineral values through the action of the wash-water after they have been separated from the gangue.

My invention embraces generically a construction whereby the concentrates are discharged, and therefore relieved from the action of the wash-water, the instant or proximately the instant the separation from the gangue is effected, and as the finest grade is first separated on a vibrating table this grade is first discharged and the other grades discharged in the order of their fineness, the coarsest being last discharged, as heretofore explained.

My improved construction performs the sizing or classifying function as well as the function of concentrating. Hence no previous sizing of the ore is necessary. The concentrates to be saved are of different sizes, but of the same specific gravity. This is the class of ore the machine is intended to treat, and it is evident, assuming that the mineral particles are of the same or of substantially the same specific gravity, that the finest grade when subjected to the vibratory action of a table will first settle to the bottom and the other grades in the order of their fineness, the coarsest grade being last to come in contact with the surface of the table—that is to say, after the other grades have been discharged.

The invention will now be described in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a top or plan view of a concentrating-table, illustrating my improvements. Fig. 2 is a side elevation of the same. Fig. 3 is a perspective view of the table looking in the direction indicated by the arrow at the upper left-hand corner of Fig. 1. Fig. 4 is a rear end elevation of the table.

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

Let the numeral 5 designate a table mounted on a suitable stationary support 6 and provided with longitudinal riffles 7. The right-hand extremity of the table, referring to Figs. 1 and 2, will for convenience of description be termed the "head" and the opposite extremity the "foot" or "tail" of the table. The riffles 7 are highest at the head of the table and taper gradually toward the foot, where the height of their rear extremities is reduced to zero. A longitudinal vibration, having a tendency to cause the material to travel from the head toward the tail of the table, is imparted to the latter by means of any suitable mechanism. As shown in the drawings, a shaft A is provided with an eccentric B, whose shaft is connected by a pitman C with a lug D, fast on the bottom of the table. The rod is provided with buffer-springs on opposite sides of the lug.

The table is transversely inclined from its upper to its lower edge, referring to Fig. 1. This inclination would be from the left to-

ward the right, referring to Fig. 4; but it is not indicated in the drawings, since nothing is claimed, broadly, on this feature. At the upper right-hand corner of the table (see Fig. 1) is located the feed-box 8, in which the material in the form of pulp is discharged and from which it passes to the riffled concentrating-surface of the table. The concentrates or metallic values are caught by the riffles, while the gangue is carried transversely downwardly and discharged from the lower edge of the table. The vibratory action of the table causes the concentrates to settle in the riffles and travel gradually toward the tail of the table. As shown in the drawings, there are three series of riffles or three table-sections, (designated, respectively, E, F, and G.) The riffles of the uppermost series or section E, where the finest mineral values are caught, are shortest. The material on this portion of the table is subjected to the action of the wash-water from a perforated pipe 9, which extends along the upper edge of the table rearwardly to the extremities of the riffles. The finest concentrates are discharged from the series of riffles E upon a depressed portion H of the tail of the table, where they are no longer in any danger of being carried away with the gangue at the lower edge of the table. Extending from the rear extremity of the riffle series E and along the upper edge or step of the riffle series F to the rear extremity of the latter is a perforated wash-water pipe 10, which, in connection with the pipe 9, furnishes wash-water for the material while on the portion of the table provided with the riffles F. A grade of concentrates coarser than that caught by the riffles E is caught by the riffle series F and discharged upon the depressed portion I of the table, where it is no longer subjected to the action of the wash-water from the pipe 10. Still another and coarser grade of concentrates is caught by the riffle series G and discharged at the tail of the table. Extending from the extremity of the riffle series F along the upper edge of the riffle series or section G to its rear extremity is a perforated wash-water pipe 12, which, in connection with pipes 9 and 10, supplies the wash-water for treating the material upon the portion of the table provided with the riffle series G. It is evident that the number of series of riffles or table-sections and the number of riffles in a series or the width of each table-section may be regulated at will, according to the material under treatment or as circumstances may require. The perforated pipes 9, 10, and 12 are supplied with water by branch pipes 13, 14, and 15, respectively, which lead from a main pipe 16. The quantity of water passing to each branch pipe may be regulated by valves 17, 18, and 19, attached to the main pipe.

Having thus described my invention, what I claim is—

1. A transversely-inclined concentrating-table mounted to reciprocate and composed of a number of sections extending rearwardly different distances, giving the rear edge of the table a stepped appearance in the plane of its concentrating surface or bed, the uppermost section on the transversely-inclined surface, extending the shortest distance toward the rear, and the other sections in the order of their location, the lowermost section extending the farthest distance toward the rear, a wash-water feed located at the upper edge of the uppermost section, and a separate wash-water feed for each of the other sections, the wash-water feed of any lower section, extending rearwardly from the rear extremity of the section next above, along the upper edge or step of the said lower section.

2. A transversely-inclined concentrating-surface mounted to reciprocate and arranged in sections which extend rearwardly unequal distances, the lowermost section extending farthest toward the rear, the next section above a less distance and so on to the uppermost section which extends the shortest distance rearwardly, a wash-water feed located at the upper edge of the uppermost section, and a separate wash-water feed for each of the lower sections, the wash-water feed of any lower section, extending rearwardly from the rear extremity of the section next above, along the upper edge of the said lower section, and a depressed portion adapted to receive the concentrates as they are discharged from the different sections of the table.

3. A concentrating-table mounted to reciprocate and having its concentrating-surface arranged in sections which extend rearwardly unequal distances, the first section with which the mineral particles come in contact, extending the shortest distance toward the rear, a wash-water feed for the first section, and a separate wash-water feed for each of the other sections, the wash-water feed of any section except the first, extending rearwardly from the rear extremity of the adjacent section.

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

BRUCE WHITE TRAYLOR.

Witnesses:
DORA C. SHICK,
MARY C. LAMB.