No. 687,908. Patented Dec. 3, 1901.

# S. W. TRAYLOR.

## CONCENTRATOR.

(Application filed Jan. 16, 1901.)

(No Model.) 2 Sheets—Sheet 1.

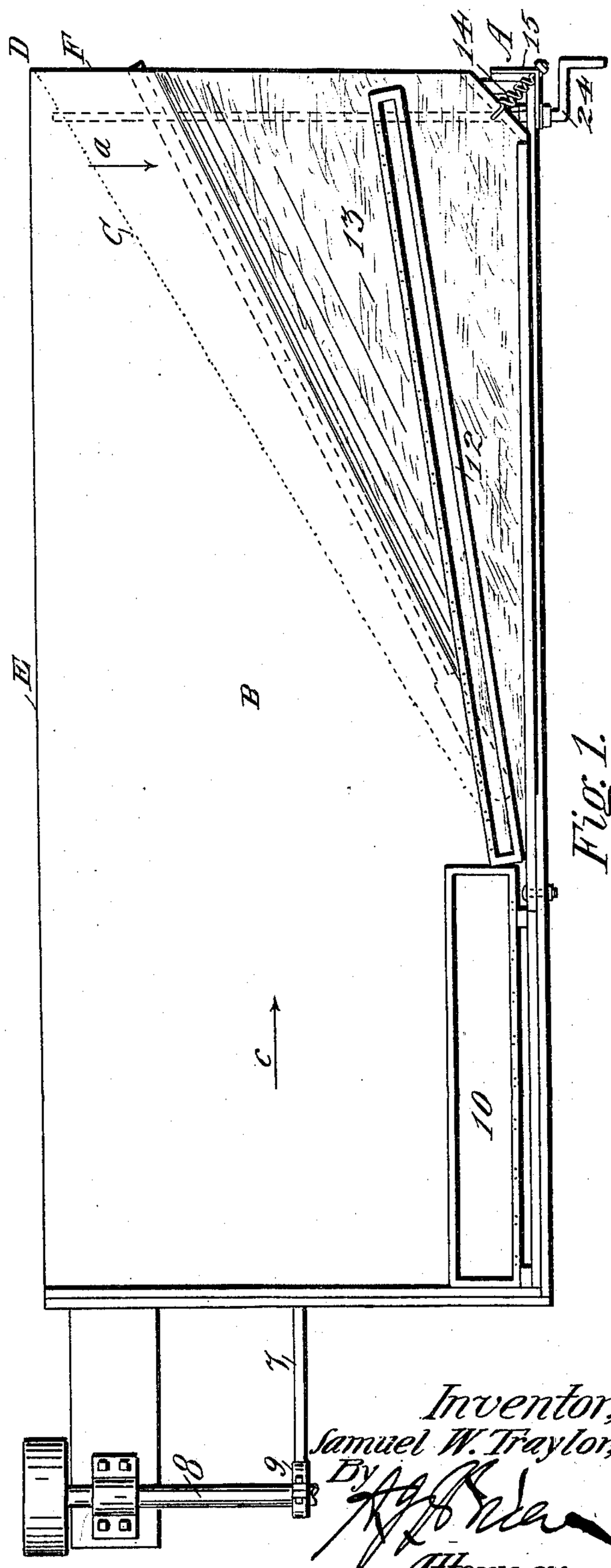


Fig. 1.


Fig. 3.

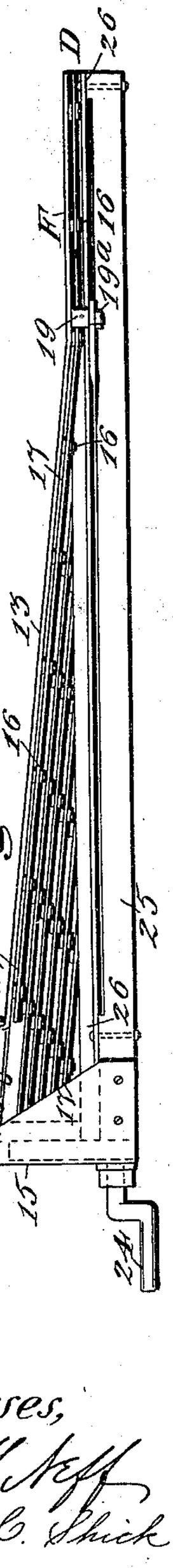


Fig. 2.

Witnesses,
S. M. Neff
Dora C. Shick

Inventor,
Samuel W. Traylor,
By
Attorney.

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(No Model.) 2 Sheets—Sheet 2.

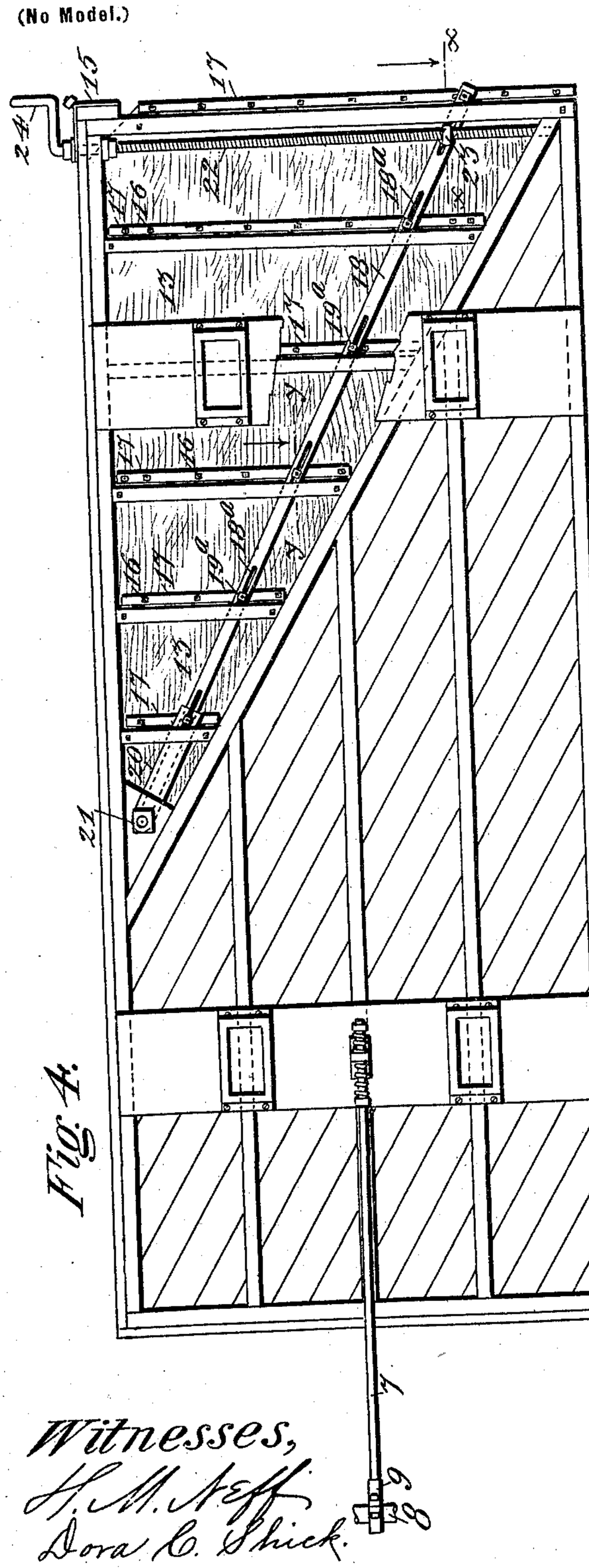


Fig. 4.

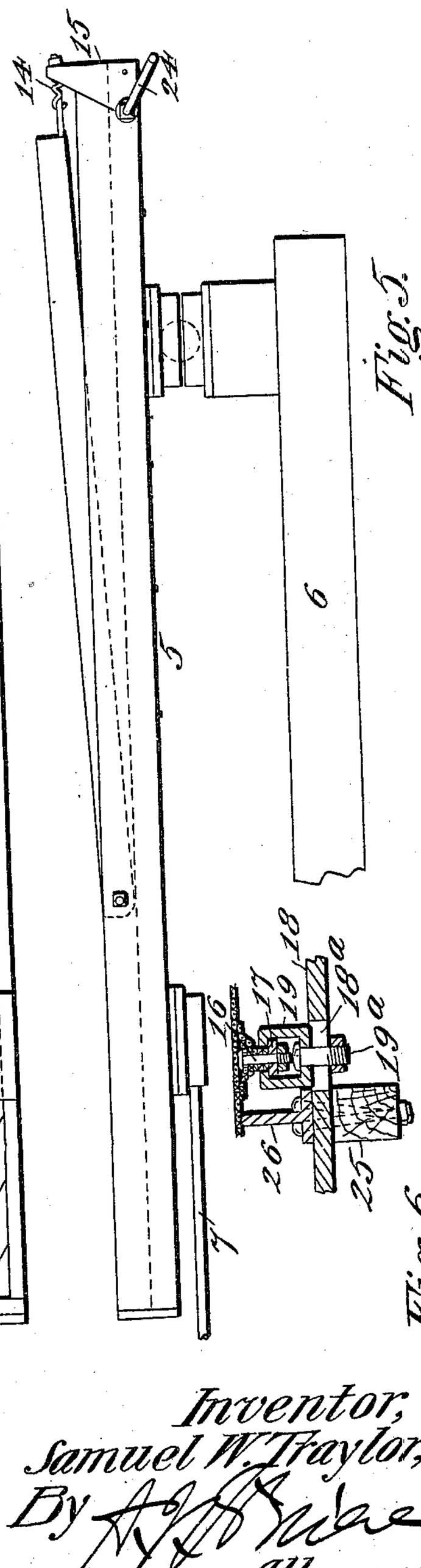


Fig. 5.




Fig. 6.

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

Inventor,
Samuel W. Traylor,
By A. J. Brace
Attorney.

# UNITED STATES PATENT OFFICE.

SAMUEL W. TRAYLOR, OF DENVER, COLORADO.

## CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 687,908, dated December 3, 1901.

Application filed January 16, 1901. Serial No. 43,544. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL W. 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 the features, arrangements, and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a top or plan view of my improved concentrating-table. Fig. 2 is a rear end view of the same. Fig. 3 is a section taken on the line *x x*, Fig. 4, shown on a larger scale. Fig. 4 is an underneath view of the table. Fig. 5 is a side elevation of the same. Fig. 6 is a section taken on the line *y y*, Fig. 4, the parts being enlarged.

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

Let the numeral 5 designate the table, which is mounted to vibrate or reciprocate longitudinally on a suitable stationary support 6. Any suitable means may be employed to impart the longitudinal movement to the table. As shown in the drawings, a pitman 7, operated by an eccentric 9 on a shaft 8, is employed. This movement has a tendency to cause the material fed from a pulp-box 10 to travel in the direction of the arrow. (See Fig. 1.) For convenience of description the left-hand extremity of the table, referring to Fig. 1, will be termed its "head" and the opposite extremity the "foot" or "tail" of the table. This table may be transversely inclined or not, as may be desired. If inclined, it will be downwardly from the feed-box 10, whose location will be at the upper edge of the table.

At the tail of the table is located an inclined surface 13, which slopes downwardly from one corner A toward the surface B of the table. This surface 13 may consist of canvas, thin sheet metal, or any suitable or desirable material. The specific construction shown in the drawings will be described, though it must be understood that any other suitable construction may be employed. This surface 13, as shown in the drawings, is composed of canvas and is triangular in shape, extending from the corner A of the table to a line C running diagonally from the corner D of the table. The canvas is fastened to the body of the table at the diagonal line C. The corner of the canvas opposite this line is supported by a spring 14, which may be of any suitable construction. To the corner A of the table is attached a bracket 15, which projects upwardly sufficiently to give the adjacent corner of the canvas the desired elevation. To this bracket is attached one extremity of the spring 14, while the other extremity is connected with the canvas by means of a hook which engages a reinforcing-strip attached to the corner of the canvas. Attached to the under surface of the canvas, by means of bolts 16, (see Fig. 6,) are a number of transverse metal strips 17, forming springs. A bar 18 is connected with each spring 17 by means of a clip 19, which is slidingly connected with the spring 17 and secured to the bar by a bolt $19^a$, passing through the slot $18^a$, formed in the bar. The forward extremity of the bar 18 is arranged to telescope in a sleeve 20, pivotally connected with the table, as shown at 21. The bar 18 is actuated to regulate the area of the inclined surface of the table by means of a screw-shaft 22, journaled in the framework of the table. This screw-shaft passes through a nut 23, connected with the bar 18 by a threaded shank $23^a$, which passes through a slot $18^c$ of the bar and is suitably secured thereto by nuts and washers. (See Fig. 3.) The screw-shaft 22 is provided at one extremity with a crank 24. By turning this crank the bar 18 may be moved in a horizontal plane or in a plane parallel with the surface B of the table in either direction, as circumstances may require. This bar turns on the pivot-bolt 21 as a center. This bolt is located near the edge of the table and in the vicinity of the rear extremity of the feed-box

10. Theoretically the bar 18 may occupy a position coinciding or approximately coinciding with the line C or coinciding with the line extending diagonally across the table from the corner C, though in actual operation it would probably never occupy this position. The movement of the bar 18 through the instrumentality of the screw-shaft is permitted by virtue of the slots through which the bolts connecting the bar with the springs 17 pass and also by reason of the fact that the threaded shank $23^a$ of the nut 23 also passes through a slot in the said bar. The position of this bar determines the space F at the foot of the table for the discharge of the concentrates. This space has width from the corner D of the table to the rear extremity of the bar 18. As the bar is moved in the direction of the arrow *a* in Fig. 1 the canvas 13 is drawn down to a horizontal plane or to a plane coinciding with the surface B of the table. During this operation the clips 19, moving with the bar, slide on the springs 17, which are connected with the under surface of the canvas, as heretofore explained. The springs 17 are of unequal length, the longest being at the foot of the table. The other springs decrease in length toward the angle formed by the line C and the side of the table intersected by said line.

In the operation of my improved concentrator it is given a longitudinal reciprocation or vibration of a character calculated to carry the material in the direction indicated by the arrow *c*. The material to be treated is fed in the form of pulp from the box 10 to the surface B of the table. The mineral values or concentrates being heaviest settle to the bottom under the influence of the table's motion and travel rearwardly in contact with the surface of the table, while the gangue is carried transversely across the table and discharged over the edge E, which is lowest if the table is transversely inclined. The discharge of the gangue is facilitated by the action of the wash-water from the trough 12. The concentrates move rearwardly in the direction of the arrow *c* until they reach the line of the bar 18 or the line where the surface 13 begins its upward inclination. The concentrates then pass diagonally across the table along this line and are discharged over the part F of the tail of the table between the corner D and the rear extremity of the bar 18. The concentrates normally travel rearwardly faster than the gangue, and when they reach the diagonal line C they crowd the gangue toward the gangue-discharge edge E of the table. By adjusting the bar 18 the width of the space F may be varied at will. The width of this space will be determined by circumstances. If the person in charge of the table notices any gangue discharged at the tail of the table—that is to say, between the concentrate-discharge and the corner D—he knows that the space F is too wide. Hence he will move the bar 18 in the direction opposite the arrow *a* until all the gangue is discharged over the edge E of the table at the left of the corner D, (see Fig. 1,) which is the point of division between the gangue and the concentrate-discharge. This adjustable feature makes it practicable to accurately separate the mineral values from the gangue. If he notices any concentrates discharged at the left of the corner D, (referring to Fig. 1,) he knows that the space F is too narrow. Hence he will move the bar 18 in the direction of the arrow *a* until the entire concentrate-discharge is between the corner D and the extremity of the bar 18.

The portion of the canvas 13 located between the line C and the bar 18 and lying in the plane of the surface B of the table rests on transverse bars 26, (see Fig. 6,) which are bolted at their extremities to bars 25 underneath. The top of each bar 25 is cut away beneath the bar 26 to allow the pivoted bar 18 to move between the two bars 25 and 26. (See Fig. 2.)

Having thus described my invention, what I claim is—

1. A concentrating-table provided with an adjustable inclined surface located at the tail of the table and extending diagonally across the same, the said surface sloping downwardly toward the concentrating-surface of the table and being adjustable independently of the concentrating-surface whereby the concentrate-discharge at the tail of the table may be regulated and controlled.

2. In a concentrator the combination of a table having a triangular inclined surface, located at one corner of its tail extremity and sloping downwardly toward the working surface of the table, and means for adjusting the area of said inclined surface to regulate and control the concentrate-discharge.

3. The combination of a table having a triangular inclined surface located at one corner of the tail thereof, said surface being yieldingly supported at said corner and sloping downwardly toward the concentrating-surface of the table, and suitable means for regulating the area of said inclined surface for the purpose set forth.

4. In a concentrator, the combination of a table having a yieldingly-supported inclined surface located at one corner of the tail thereof, and sloping downwardly toward its concentrating-surface, a bar pivoted to swing in a plane parallel with the concentrating-surface of the table and movably connected with the inclined surface, whereby as the bar is moved, the area of the said inclined surface may be increased or diminished at will.

5. The combination of a table having a yieldingly-supported inclined surface located at one corner of the tail thereof, and sloping downwardly to the concentrating-surface of the table, springs connected with said inclined surface underneath, and a bar slidingly connected with said springs, said bar being pivoted at one extremity and arranged

to swing below and in a plane parallel with the concentrating-surface of the table, whereby as the bar is moved, the area of the inclined surface may be regulated at will, and a greater or less portion of the inclined surface, made to coincide with the plane of the concentrating-surface of the table.

6. The combination of a concentrating-table having a yieldingly-supported inclined surface located at one corner of the tail thereof, springs attached to said surface underneath, a pivoted bar slidingly connected with said springs, and a screw-shaft connected with the bar whereby as the shaft is turned, the bar may be adjusted to regulate the area of the said inclined surface.

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

SAMUEL W. TRAYLOR.

Witnesses:

DORA C. SHICK,

MARY C. LAMB.