May 12, 1942. C. M. FULLER 2,282,860

DRY CONCENTRATOR TABLE

Filed Dec. 4, 1939 2 Sheets-Sheet 1

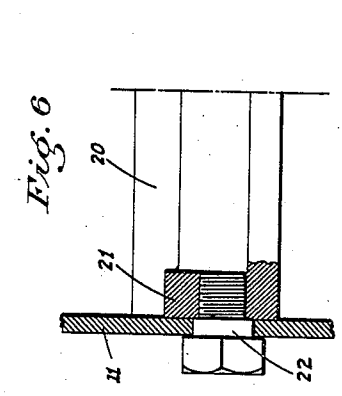


Fig. 6

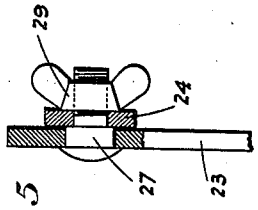


Fig. 5

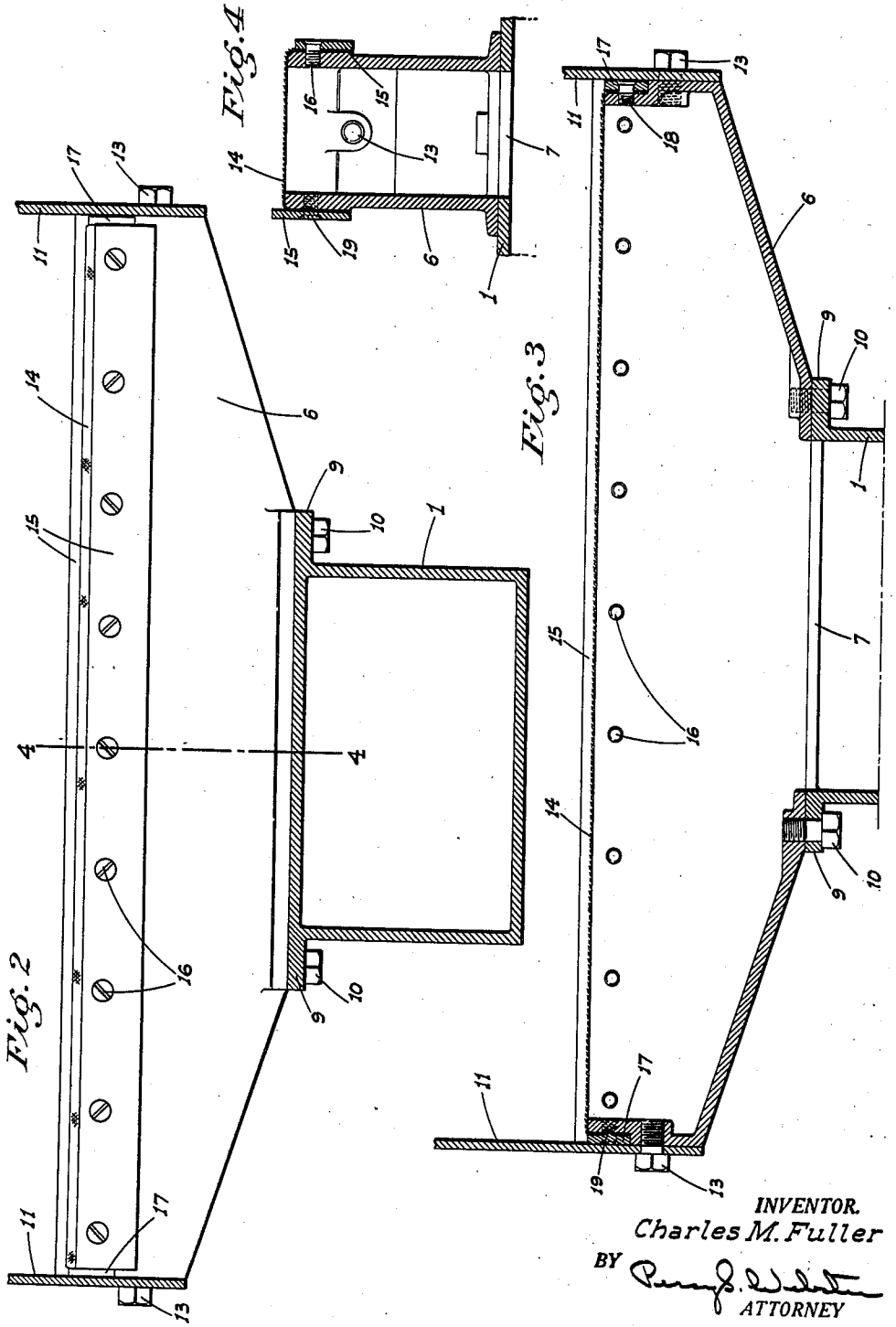
Fig. 1

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2,282,860

DRY CONCENTRATOR TABLE

Charles M. Fuller, Lodi, Calif., assignor to E. D. Wilkinson, Stockton, Calif.

Application December 4, 1939, Serial No. 307,464

2 Claims. (Cl. 209—474)

This invention relates to dry concentrators, and particularly represents an improvement over the concentrating table as shown in my patent, No. 2,148,068, dated February 21, 1939.

Such a table includes a number of transversely extending spaced passage forming members, the passages at the upper end thereof being individually covered by tensioned fabric strips which together form the top of the table. As originally shown and constructed, it was a very difficult and tedious task to initially mount these strips in position, or replace them as becomes necessary with their deterioration or stretching following a period of use.

It is therefore the principal object of the present invention to so construct the table that the strips may be easily and quickly mounted in position either during manufacture or when subsequently making replacements.

A further object is to simplify the mounting of the riffle bars which cooperate with the fabric-covered passage members, and in general to simplify and lessen the cost of the operations incidental to the manufacture of the table.

Still another object is to arrange the riffle bars so that instead of being all operated simultaneously to discharge the concentrates, as was previously the case, they are now connected in separate banks or sets for independent operation. Also, each bar of a bank is arranged for individual adjustment relative to the bottom strip with which it cooperates, without affecting the simultaneous operation of all the bars in the bank when desired.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a side elevation of my improved table, shown as mounted in place in connection with the suction and pressure conduits and control valve, and with the near side plate removed.

Figure 2 is an enlarged transverse section on line 2—2 of Fig. 1, with the adjacent riffle bar removed.

Figure 3 is a similar view on line 3—3 of Fig. 1.

Figure 4 is a cross-section on line 4—4 of Fig. 2.

Figure 5 is a fragmentary enlarged cross section on line 5—5 of Fig. 1.

Figure 6 is an enlarged fragmentary view, partly in section, showing the pivotal mounting of a riffle bar in connection with a side plate.

Referring now more particularly to the characters of reference on the drawings, the table comprises an air tunnel 1 of rectangular cross section and adapted to be disposed at a downward slant from one end. At its high end, the tunnel 1 is flanged as at 2 for supporting engagement with the casing 3 of a rotary valve, which, as in the aforementioned patent, intermittently and alternately establishes communication between an air suction conduit 4 and an air pressure conduit 5 disposed respectively above and below the casing.

The top surface of the tunnel 1 is flat, and supported on and upstanding from said surface is a plurality of separate members 6 forming riffle wind-ports of rectangular form in plan, and disposed transversely of the tunnel in spaced relation lengthwise thereof. The members 6 are freely open both at top and bottom, and at the top are considerably longer, transversely of the tunnel, than the width of the tunnel itself, and with which they individually communicate through openings 7 in the top surface of the tunnel. The members 6 are relatively narrow lengthwise of the tunnel, and they are spaced apart somewhat less than their width so as to leave open discharge passages 8 therebetween. The top edges of all the members are in a plane parallel to the top of the tunnel.

In order to removably secure the members 6 on the tunnel, the latter is flanged on the sides at the top as at 9, to receive cap screws 10 from below, and which screw into the members 6 at the base thereof as shown. The bottom of the members 6 slopes upwardly from the flanging on both sides, so that the cap screws are readily accessible for removal or placement from either side.

The opposed end portions of the members 6, above said slope, are flat and vertical and are flatly engaged by upstanding side plates 11 which together with a hinged lid 12 form an enclosure for the top of the table. The members are removably secured together in connection with said side plates by cap screws 13 projecting through the plates and into the adjacent walls of members 6 some distance below their upper edge. Each member 6 is covered by a strip of tensioned fabric 14, which is folded down outside the member all about the same. The strip, along the transversely extending sides of the member, is clamped against the same by rigid metal straps 15 held in place by screws 16 disposed flush with the straps. The fabric strip, along the ends of the member, is also clamped against the same by metal straps 17 held in place by screws 18 and disposed above cap screws 13. These straps, however, do not project outwardly of the side-plate engaging faces of the member, as do the straps 15, but are entirely countersunk therein as plainly shown, so as not to interfere with the desired close contact of the side plates with said members 6. The straps 17, as well as the straps 15, and the adjacent clamping surfaces of the member 6, are provided with a rib and groove arrangement 19, extending from end to end of the

straps intermediate their top and bottom edges and preferably in the plane of the corresponding holding screws. The fabric of course extends across the grooves, and is deformed by the ribs, thus giving a more secure hold than would otherwise be the case, and also aiding in obtaining the desired tensioning of the fabric.

The members 6 are set too close together for the placing of an ordinary screwdriver therebetween to manipulate screws 16, while screws 18 are normally entirely inaccessible. However, merely by removing a pair of cap screws 10 and a pair of cap screws 13, the corresponding member 6 may be easily lifted out without disturbing the other members, and removal of the various strap screws and replacement of the fabric 10 is then a simple matter as will be obvious.

Disposed above and normally substantially closing the various passages 8 on top are the riffle bars 20, which is in said patent cooperate with the straps 15 of the members 6. At their rear or relatively low point, the bars are formed with end cheeks 21 tapped to receive the threaded portion of shouldered cap screws 22 turnably supported in the side plates 11. Upon removal of the two cap screws therefor, any riffle bar may be lifted out from between the side plates.

Secured on and upstanding from the riffle bars are arms 23. A bar 24 extending lengthwise of the table is associated with a certain number of the arms from the feed end of the table, while a similar bar 25 is associated with the remainder of the riffle bars. Each bar is spring pulled in the direction of the feed or upper end of the table, and the bars normally abut stop elements 26 limiting the spring pulling action. The lowermost or rearmost arm 23*a* of the banks or sets of riffle bars are extended upwardly as shown, to form operating handles.

Each arm is connected to the corresponding bar by a shouldered bolt 27 turnable in said arm and slidably projecting through a longitudinal slot 28 in the bar; the bolt being clamped against movement from any desired position along the slot by a wing or other clamping nut 29 on the bolt. It will thus be seen that any riffle bar may be set to provide any normal desired relationship with the cooperating strap 15, without affecting the relationship of the other riffle bars with the corresponding straps.

The reason for connecting the riffle bars in separate sets is that concentration takes place rapidly at the feed in or upper portion of the table, and it is necessary or desirable to frequently allow the same to discharge into passages 8 to prevent clogging of the riffles. On the lower portion of the table, however, concentration is effected more slowly, since the bulk of the material being acted on has already been discarded, and it is therefore advantageous to leave this material on the table for a longer time to cut down to the minimum the possibility of any such worthless material being discharged into passages 8 to mix with the concentrates.

The material to be concentrated is fed onto the table from a hopper 30 above the vacuum conduit 4 as before, an apron 31 leading direct from the hopper to the fabric cover of the topmost member 6.

The concentrates as they accumulate are discharged at intervals from the table through passages 8 by lifting of the riffle bars; the concentrates falling to the sides of the tunnel and being received as before in a suitable chute or container not here shown.

At the discharge or lower end of the tunnel, the discarded material passes over the lowermost riffle bar and into a tailings chute 32, the front side of which above the table is formed by a back plate 33 and cooperating with said riffle bar to provide a partition between the tailings chute and the adjacent concentrates passage 8.

While I have above described fabric as being the table top material, fine wire screen or cloth, pervious membrane or other suitable pervious material may be used instead, if so desired.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:

1. In a dry concentrating table, a plurality of individually removable transversely disposed table-top forming members arranged in a row in spaced relation lengthwise of the table to provide concentrates discharge passages therebetween, riffle bars above the members normally substantially closing the passages at the top and overhanging the adjacent portion of the members, means pivoting the bars for upward movement to open the passages, said pivoting means including, with upstanding plates forming the sides of the table and between which the bars extend for the full distance therebetween, pivot elements projecting through and supported by the plates and removable therefrom from the outside; said elements at their inner end removably engaging in the ends of the bars.

2. In a dry concentrating table, a plurality of transversely disposed table-top forming members arranged in a row in spaced relation lengthwise of the table to provide concentrates discharge passages therebetween, riffle bars above the members normally substantially closing the passages at the top, means pivoting the bars for upward movement to open the passages, arms connected to the bars in substantially radial relation to their axis of rotation, an operating bar extending lengthwise of the table and overlapping all said arms adjacent their outer end and means individually securing the arms on said operating bar for adjusting movement along the same; said securing means each comprising, with a longitudinal slot in the bar, a bolt projecting the arm and slot, a head on the bolt engaging the arm on the side thereof opposite the bar, a shoulder on the bolt engaging the side of the bar nearest the arm and a clamping nut on the bolt to clamp the bar between the nut and shoulder; the length of the bolt from the head to the shoulder being greater than the thickness of the arm to prevent the latter being clamped against the bar and allowing of relative rotation of the bolt in the arm.

CHARLES M. FULLER.