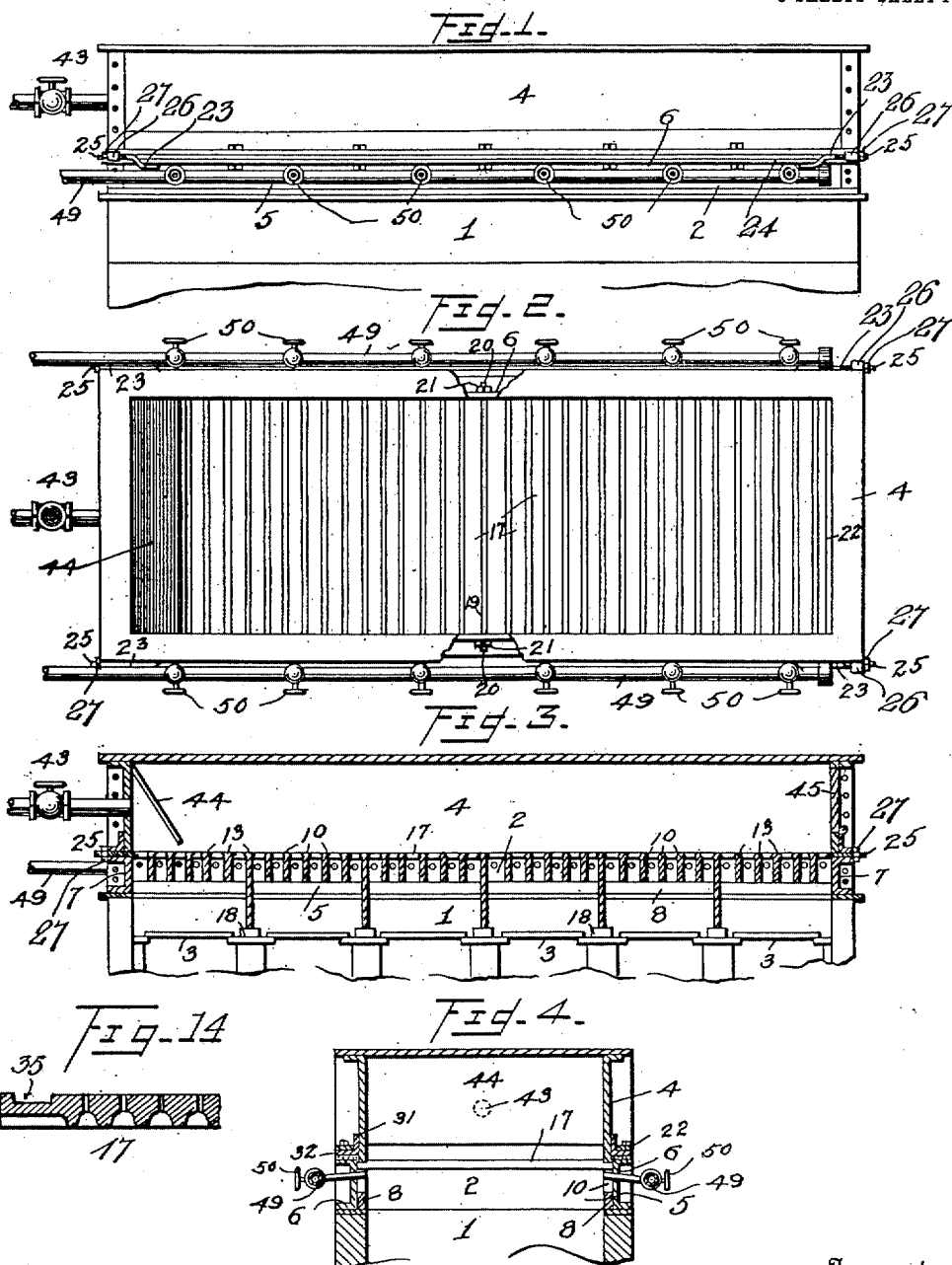


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METAL PULP STRAINING VAT.
APPLICATION FILED DEC. 21, 1909.

981,249.

Patented Jan. 10, 1911.

3 SHEETS-SHEET 1.



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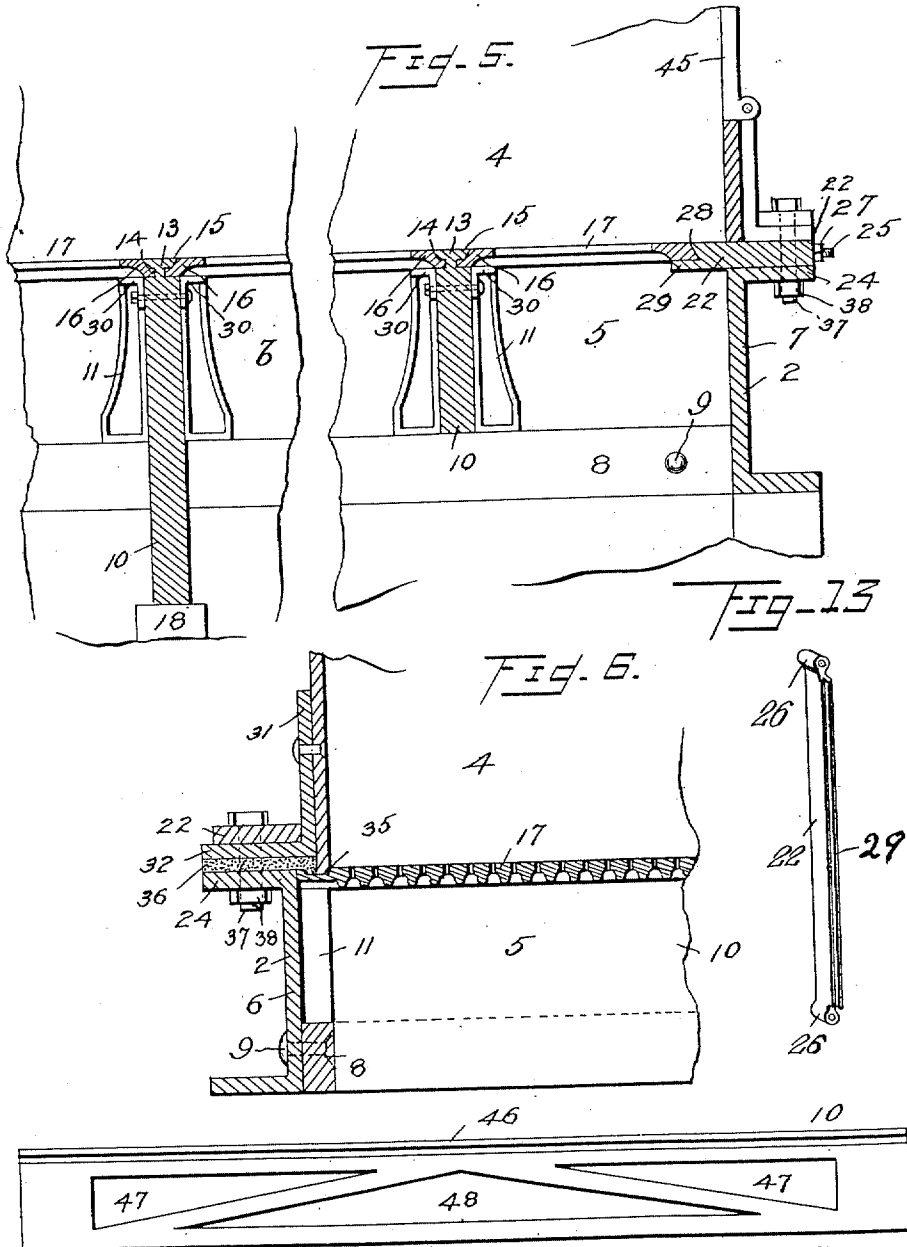


Fig. 7.

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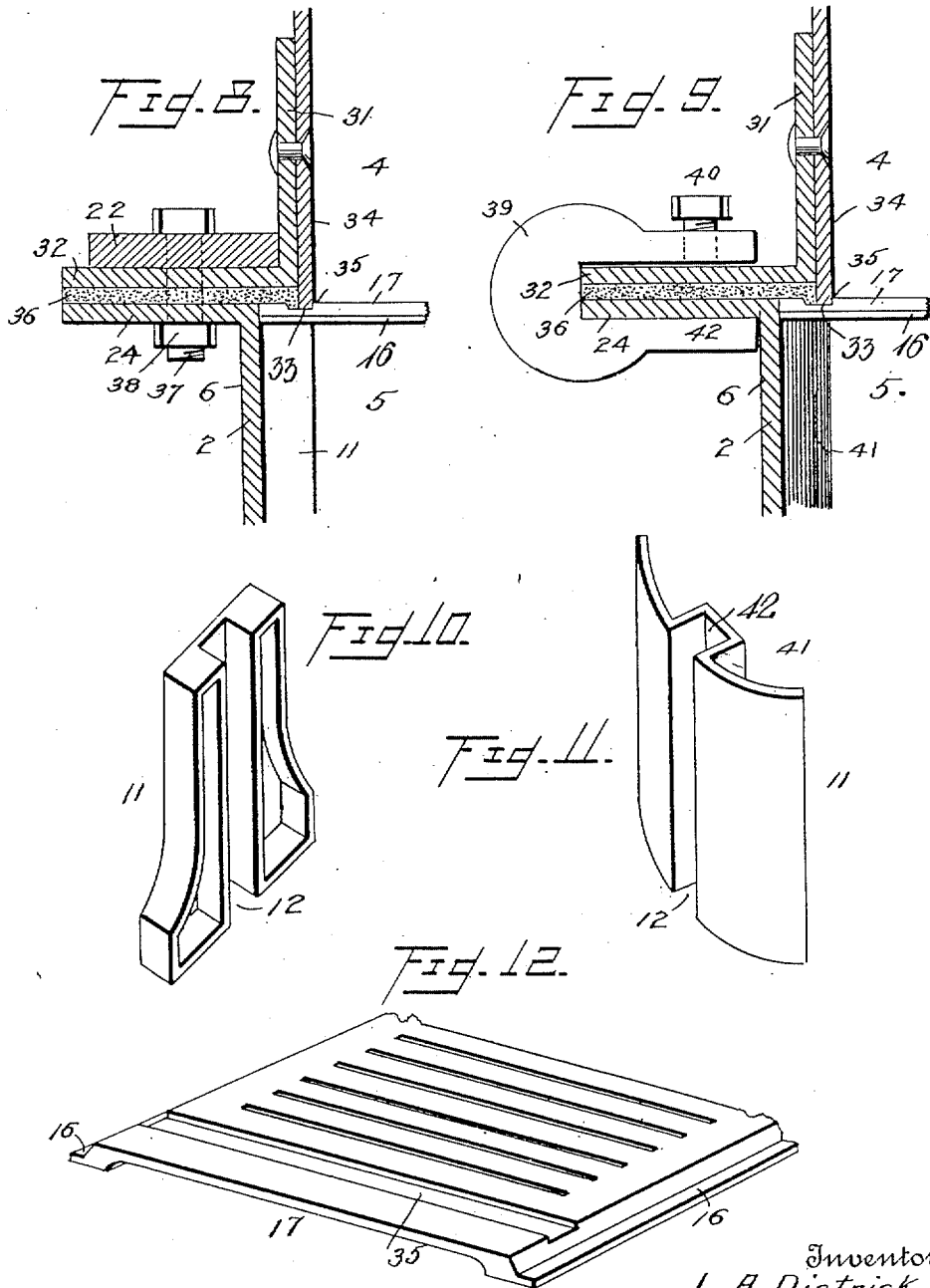
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3 SHEETS—SHEET 3.

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UNITED STATES PATENT OFFICE.

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METAL PULP-STRAINING VAT.

981,249.

Specification of Letters Patent.

Patented Jan. 10, 1911.

Application filed December 21, 1909. Serial No. 534,257.

To all whom it may concern:

Be it known that I, LYMAN A. DIETRICK, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Metal Pulp-Straining Vats; 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.

This invention relates to a pulp straining vat, and has for its object to provide a vat which is entirely constructed of metal or a composition of sulfite proof metal, the use of wood or other like material being dispensed with.

A further object of the invention is to provide novel means for holding the screen plates in position so that they may be readily removed for cleaning, or recutting.

A still further object of the invention is to provide means for effecting a water-tight joint between the plate supporting bars and the screen plates.

A still further object of the invention is to provide a straining vat in which the use of bolts and nuts and screws or other like fastening means is entirely dispensed with in securing the different parts in position.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of the straining vat embodying my improvements as arranged upon the usual stand or carriage; Fig. 2 is a plan view of Fig. 1; Fig. 3 is a central longitudinal section of Fig. 2; Fig. 4 is a vertical transverse section of Fig. 2; Fig. 5 is a longitudinal section of one end of the vat on an enlarged scale; Fig. 6 is a transverse section taken through one side of the straining box and one of the screen plates, the parts being represented on an enlarged scale; Fig. 7 is a detail view of a modified form of screen supporting bar; Fig. 8 is a sectional view on an enlarged scale, taken through one side of the straining box, showing the means for connecting the two sections comprising the same, together; Fig. 9 is a similar view, showing a different form of connecting means for the box sections;

Fig. 10 is a detail perspective view of one of the clips; Fig. 11 is a similar view of a modified form of clip; Fig. 12 is a detail perspective view on an enlarged scale of a portion of one of the screen plates; Fig. 13 is a detail view of one of the end clamping bars; Fig. 14 is a sectional view of the screen plate.

Referring to the drawings for a more particular description of the invention, the numeral 1 indicates the stand or carriage upon which the straining box 2, is mounted, the stand 1 being provided with the usual heavy rubber diaphragms 3, six being shown in the present instance.

The straining box 2, comprises the upper and lower sections 4 and 5, respectively. The lower section 5, is of rectangular oblong form and comprises the side pieces 6, of approximately U-shaped form in cross-section and the end pieces 7.

Arranged at the inner face and lower edges of the side pieces 6, of the lower section are the longitudinal supporting ledges 8, which are preferably held in position by the rivets 9, and which provide a support for the opposite ends of the transversely disposed screen supporting cradle bars 10. A series of clips or holders 11, are mounted upon the upper edges of the ledges 8, and are provided with the central vertical grooves 12, for the reception of the opposite ends of the screen supporting bars. As shown, in the drawings, the screen supporting bars extend across the entire width of the lower section and are provided at their upper edges with the T-shaped longitudinally disposed portions 13, the side edges 14, of the outer portions or heads 15, of which are beveled inwardly, as shown. These T-shaped portions of the screen supporting bars are for the purpose of receiving the correspondingly formed side edges 16, of the horizontal screen plates 17. A number of the screen supporting bars are of greater width than the remaining bars and project beneath the bottom of the lower section and rest upon the supports 18, of the stand or carriage. By this means, the lower section is divided into a number of main compartments to correspond with the diaphragms of the stand or carriage, the purpose of which will be presently disclosed. The screen supporting cradle bar 19, at the center of the lower section is provided at opposite ends with the threaded extensions 20,

which pass through the sides of said section and upon which screw the nuts 21. By this means, the lower section is held rigidly together at its center and the screen plates and screen supporting bars at either end of the lower section may be removed without disturbing the other plates. After the screen plates and screen supporting cradle bars have been arranged in position as described and shown, the flat clamping or retention bars 22, are arranged in position. These clamping bars are held in position by means of the attaching brackets 23, which are attached to the upper flanges 24, of the lower section, and are provided with the threaded extensions 25, which pass through loops 26, formed at opposite ends of the clamping bars. Nuts 27, are screwed on the outer ends of the extensions 25. The inner edges of the clamping or retention bars 22, are provided with the beveled recesses 28, leaving the inwardly extending flanges or extensions 29, which fit under the outer edges of the outer screen plates. By this construction, the clamping bars 22, are held against turning transversely as the nuts 27 are turned home to tightly clamp the screen plates and plate supporting bars in position. Brackets 30 are arranged at opposite sides and at the center of each of the screen supporting bars to help support opposite sides of the screen plates.

The upper section 4, is provided at opposite sides and ends with the angle bars 31, having the horizontal outwardly extending flanges 32, adapted to fit upon the upper flanges 24, of the lower section and the clamping plates 22. As shown, the lower edges 33, of the longitudinal sides 34, of the upper section project somewhat below the flanges 32, and fit in grooves or recesses 35, formed in the upper faces and upper edges of the screen plates and plate supporting bars, respectively. Strips of packing 36, are disposed between the side flanges at the bottom of the upper section and the upper side flanges 24, of the lower section while these flanges and the clamping bars 22 are suitably secured together by the bolts and nuts 37 and 38. By this construction, it will be evident that an absolutely water-tight joint is effected between the upper and lower sections while the screen plates and plate supporting bars are held firmly down upon the supporting ledges. If desired, instead of using bolts and nuts 37 and 38, I may employ the clamping brackets 39, and screws 40, to connect the adjacent flanges and clamping bars of the two sections together. Also, I may use the form of clip shown in Fig. 11 and indicated by the numeral 41, to receive the ends of the screen supporting bars. This clip is constructed from a single piece of metal bent or curved laterally, as shown, and provided with a central U-shaped por-

tion 42, to receive one end of a screen supporting bar.

The fluid to be strained is admitted by means of the supply pipe 43, into one end of the upper section against the apron or deflector 44, which deflects or spreads the incoming fluid over the entire transverse area of the screen plates and thus increases the efficiency of the device. The strained pulp flows over the screen plates and passes through the same on the diaphragms 3, of the box or carriage, while the overflow or by-product passes out through gates 45, arranged at the opposite or discharge end of the device.

In Fig. 7, a special form of screen supporting bar 46 is shown, which is made of composition metal and is especially constructed to stand the ravages of sulfite pulp straining. These bars are strengthened by the trusses 47 and 48, and are used only in sulfite work.

Steam pipes 49, provided with the valves 50, extend into the lower section and are used to inject steam against the under surfaces of the screen plates to wash off any pulp adhering thereto.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention as defined in the appended claims.

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

1. A pulp straining box comprising upper and lower sections, a plurality of screens having longitudinally extending grooves in their upper faces adjacent their side edges, means carried by the lower section to support said screens, an outwardly extending flange on the upper extremity of the lower section, and means for preventing the escape of liquid between the two sections, comprising packing arranged over said flange and extending into the grooves in the screen, and a flange on said upper section adapted to be secured upon said packing, the lower edges of the longitudinal sides of the upper section being also adapted to extend into the grooves in the screens in contact with said packing.

2. A pulp straining box comprising upper and lower separable sections, ledges at the inner sides and lower edges of the side pieces of the lower section, supporting clips mounted upon the upper edges of said ledges, a plurality of series of plate supporting bars extending across the lower section with their ends received by said sup-

5 porting clips, a screen supporting bar between each series of first mentioned bars of greater width than the latter and extending below the bottom of the lower section, horizontal screen plates slidably mounted
 10 between the screen supporting bars, and clamping plates to engage the outer screen supporting bars in position, the upper edges and upper faces of the screen supporting
 15 bars and screen plates respectively being formed with longitudinal recesses to receive the lower edges of the longitudinal side pieces of the upper section.
 20 3. A pulp straining box, comprising upper and lower open sections, ledges arranged on the inner sides of the lower section adjacent its lower edge, supporting clips mounted upon the upper edges of said
 25 ledges, a plurality of spaced series of plate supporting bars extending across the lower section with their ends in engagement with said supporting clips, a screen supporting bar arranged between each series of said plate supporting bars and extending below

the bottom of the lower section, horizontal screen plates slidably mounted between the screen supporting bars, clamping plates adapted to engage the screen plates to hold said screen plates and their supporting bars
 30 in position, the upper edges of the screen supporting bars and the upper faces of the screen plates being recessed to receive the lower edges of the longitudinal sides of the upper section, outwardly extending flanges
 35 formed at the upper edges of the lower section, angle irons carried by the upper section adjacent its lower edges, strips of packing arranged between the flanges of the lower section and the angle irons on the up-
 40 per section, and clamping bars secured over the angle irons.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LYMAN A. DIETRICK.

Witnesses:

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 EDGAR A. EGELSTON.