

May 3, 1932.

T. E. XISTRIS

1,856,450

PULP STRAINER

Filed May 31, 1930

2 Sheets-Sheet 1

Fig. 1

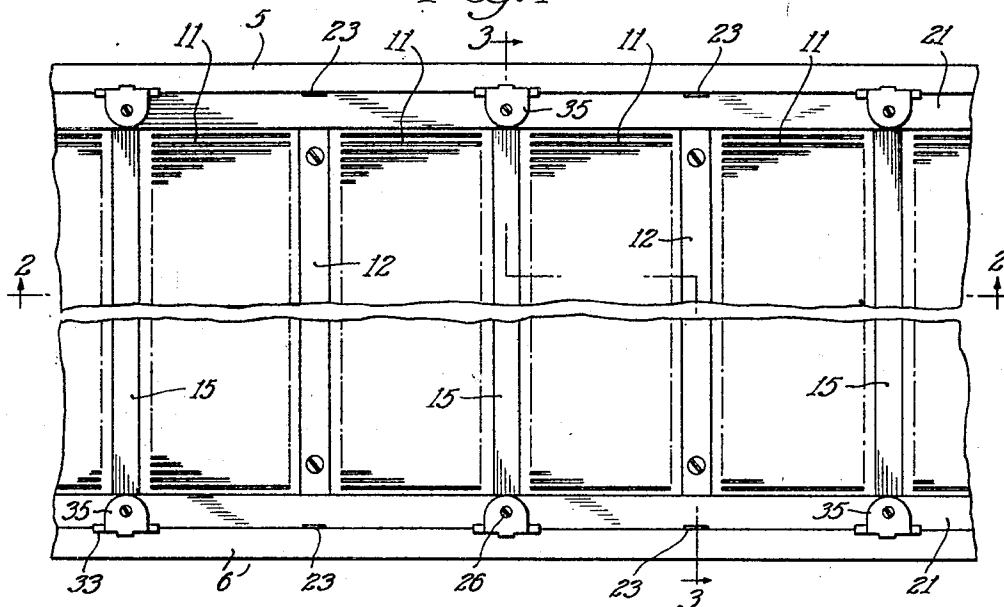
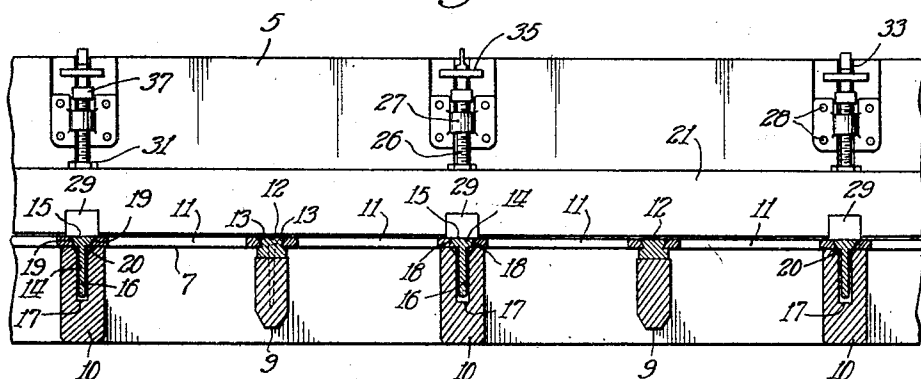


Fig. 2



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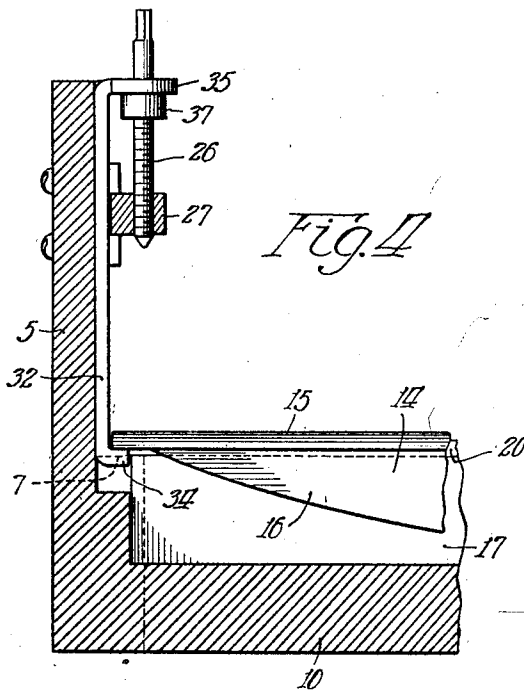
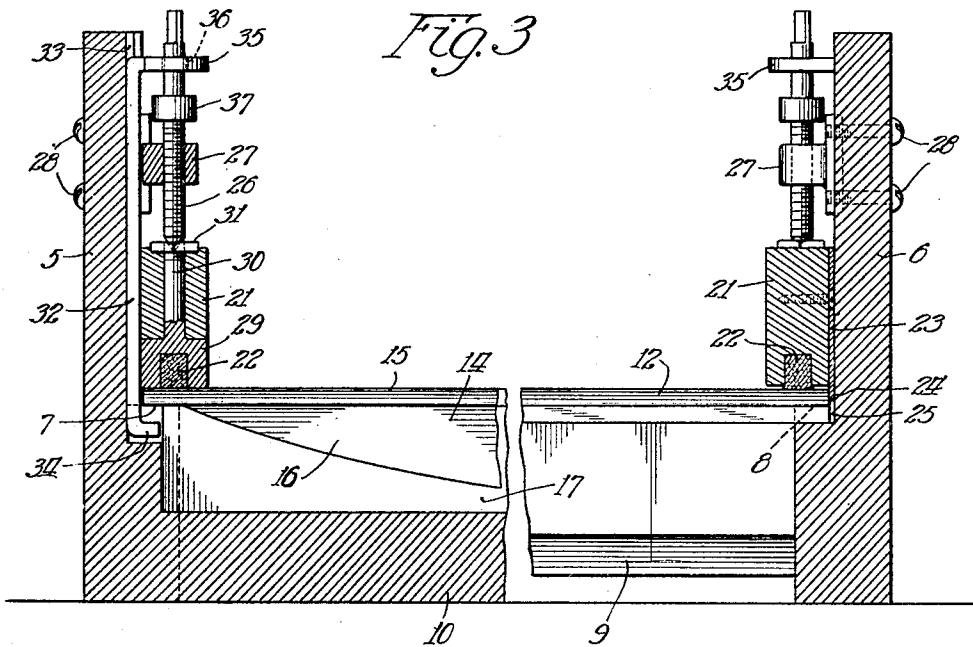
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UNITED STATES PATENT OFFICE

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PULP STRAINER

Application filed May 31, 1930. Serial No. 458,132.

This invention relates to pulp strainers and more particularly to a pulp strainer for use in the art of paper making. The invention further relates more particularly to the type of pulp strainers embodying a vat or trough-like structure having a flat bottom composed of one or more strainer plates.

The main object of my invention is to provide an improved arrangement for locking the strainer plates in operative position and for facilitating removal of the same.

Other objects and advantages of my invention will be understood by reference to the following specification and accompanying drawings in which I have illustrated a pulp strainer embodying a selected form of my invention.

There are two sheets of drawings in which Fig. 1 is a plan.

Figs. 2 and 3 are sections on the lines 2—2 and 3—3 respectively of Fig. 1, and

Fig. 4 is a section corresponding to a portion of Fig. 3 but showing the parts in a changed position.

Referring now to the drawings, the strainer structure herein disclosed includes a main supporting or body structure which comprises wall members 5 and 6 forming the side walls of a vat or trough-like structure. In cases where the strainer is to be for continuous operation, end walls are not provided so that the structure may be likened to a trough. The side walls 5 and 6 are provided with inwardly projecting portions adjacent their lower ends which form upwardly facing shoulders 7 and 8 respectively, these shoulders extending along the entire length of the respective sides. The sides are connected by means of cross members 9 and 10 respectively which rigidly maintain the side members in relatively fixed position. Other means may also be provided to additionally support the sides in the desired position.

Strainer plates such as indicated at 11 form the bottom of the trough-like structure, the opposite end portions of the respective plates being seated on the shoulders 7 and 8 and marginal side portions of the plates being seated on the cross members 9 and 10 respectively as clearly shown in Fig. 2. The

strainer plates 11 are of any conventional form and in this instance are illustrated as being in the form of metal plates provided with a plurality of fine slits arranged in parallel relation and extending transversely of each plate.

In the embodiment herein illustrated, the strainer plates 11, at one marginal side portion are mounted directly on the upper edge of the cross members 10 which, in this instance, are formed of wood. The opposite marginal side edge of each plate is mounted in a metal or other suitable top strip 12 which is fastened to the top edge of the cross member 9. The top strip 12 is provided with under cut grooves or seats indicated at 13 which receive bevelled edges of the respective plates so that the adjacent edges of the plates are supported in fixed vertical position and incidentally locked against vertical displacement.

The marginal edge portions of the plates 11 which are seated on the cross members 10 are locked in position by removable retaining members 14 which extend transversely of the strainer, i. e. from side to side, each retaining member 14 including a head part 15 and a depending stiffening web or flange 16.

The cross members 10 are recessed as indicated at 17 to receive the webs or flanges 16 of the retaining members. The head portions 15 of the retaining member are provided with bevelled edges 18—18 which are designed to overlie similar bevelled edges 19—19 on the adjacent edges of the strainer plates so that when the retaining members 16 are locked in place, the adjacent edges of the strainer plates are also locked against vertical displacement. It will also be noted that by reason of the angular arrangement of the engaging portions of the retaining member and plates, the plates are forced to move laterally into tight engagement with the respective top members 12. The upper portions of the recesses 17 in the cross members 10 are flared outwardly as indicated at 20 so as to avoid any danger of obstructing or limiting downward movement of the retaining members 14.

Clamping bars 21—21 are provided adjacent the inside of the respective side walls 5

and 6 for holding down the opposite ends of the strainer plates and the removable plate retaining members 14. The clamping bars 21—21 are recessed longitudinally in their bottom edges to receive a packing strip of rubber or other suitable material such as indicated at 22, which packing strip serves to form a leak-proof joint with the parts engaged thereby. A plurality of anchoring members 23 are secured to the clamping bars 21—21, these anchoring members having end portions 24 which depend from the respective clamping bars and fit into recesses such as shown at 25 (see Fig. 3) formed between the walls of the strainer and the adjacent ends of the top members 12. The anchoring members 23 serve to prevent inward lateral displacement of the clamping bars as will be readily understood from an inspection of Fig. 3.

The clamping bars 21—21 are preferably made of wood and, in the present instance, screw devices are provided for forcing the clamping members downwardly to lock the screen plates and the screen plate retaining members in operative position. Each of the screw devices includes a screw 26 which threadedly engages a nut 27, the latter being secured to the wall of the strainer by suitable means such as screws 28. The arrangement is such that the lower ends of the screws 26 engage the upper edges of the clamping bars 21. Inasmuch as the clamping bars are formed of wood, it is preferable to provide metallic means on the bars to prevent penetration of the bars by the screws 26. In this instance, such metallic means includes members 29 which are recessed into the lower edge of the bars and which are provided with stems or shanks 30 which extend upwardly through the bars. The upper ends of the shanks 30 are threaded and a nut 31 fitting the threaded shanks serves to lock the metallic member in place in the clamping bar. The upper ends of the shanks 30 are each provided with a seat for receiving the lower end of the screw 26 whereby the latter applies its force to the shank 30.

The metal members 29 preferably project slightly below the lower edge of the clamping bars so that the lower ends of the members 29 engage directly against the ends of the screen plate retaining members 14 as clearly shown in Fig. 3. It will be seen that the ends of the retaining members 14 are thus effectively forced downwardly so that the screen plates are firmly locked in place.

For facilitating removal or disengagement of the retaining members 14, I provide a device which includes a metal bar 32 vertically slidable in a recess 33 provided in the side wall of the strainer. The lower end of the member 32 is provided with a toe or hook portion 34 which extends inwardly and underlies one of the ends of the retaining member as

clearly shown in Fig. 3. The end portion 34 is located in a recess provided in the shoulder 7. The upper end of the bar 32 is provided with an inwardly extending ear portion 35 which is apertured as indicated at 36 to fit over the upper end of the screw 26. The screw is provided with a collar 37 rigidly secured thereto so that when the screw is turned so as to move upwardly, the collar 37 will engage the bottom side of the ear 35. Upon continued turning of the screw 26, the collar 37 will force the bar 32 upwardly, whereby the hook portion 34 will pull the adjacent end of the retaining member 14 upwardly to disengage the same from the screen plates.

In the operation of removing the screen plates, the screws 26 are first turned upwardly so as to release the clamping bars 21—21 whereupon the said bars are removed from the strainer. Cleaning of the strainer, for instance, by flushing, unhampered by the clamping bars, may thus be done without positively disturbing the seating of the screen plates. After the collars 37 are brought into engagement with the ears 35, further turning of the screws 26 serves to pull the retaining members 14 upwardly so as to disengage the same from the strainer plates and when both ends of each retainer have been raised so as to free the retainer, the latter may be removed from the strainer, whereupon the screen plates may readily be removed. It thus appears that there is no prying or like difficult work necessary to be done in removing the strainer plates when my improved mechanism is provided.

I am aware that changes may be made in the above described structure while retaining the advantages thereof and without departing from the spirit of my invention, the scope of which should be determined by reference to the following claims, the same being construed as broadly as possible consistent with the state of the art.

I claim as my invention:

1. In a strainer of the class described, the combination of a main supporting structure including a cross member, a strainer plate having a marginal side portion overlying said cross member, a retaining member removably associated with said cross member and having engagement with said marginal plate portion for holding the plate in operative position, clamp means overlying an end portion of said retaining member, actuating means mounted on said supporting structure for forcing said clamp means into clamping engagement with said retaining member to hold the latter in operative position, means vertically adjustably mounted on said supporting structure, having a toe portion underlying said end of the retaining member and an operating connection with said actuating means, the latter being thereby operative to displace said retaining member through the

agency of said vertically adjustably mounted means.

2. In a strainer of the class described, the combination of a main supporting structure including a cross member, a strainer plate having a marginal side portion overlying said cross member, a retaining member removably associated with said cross member and having engagement with said marginal plate portion for holding the plate in operative position, a clamp bar overlying a marginal end portion of said strainer plate and having a portion overlying the adjacent end portion of said retaining member, actuating means mounted on said supporting structure for forcing said clamp bar into clamping engagement with said plate and retaining member to hold the latter in operative position, means vertically adjustably mounted on said supporting structure, having a toe portion underlying said end of the retaining member and an operating connection with said actuating means, the latter being thereby operative to displace said retaining member through the agency of said vertically adjustably mounted means, said actuating means and vertically adjustably mounted means being arranged to permit limited initial adjustment of said actuating means to release said clamp bar before effecting displacement of said retaining member.

3. In a strainer of the class described, the combination of a main body structure including a cross member, a strainer plate removably mounted on said structure and overlying said cross member, disengageable means associated with but movable relative to said cross member for locking said strainer plate in operative position relative to said cross member, means for disengaging said locking means, means selectively operable to hold said locking means in locking position and to actuate said disengaging means, said selectively operable means comprising a screw, a stationary nut carried by said main structure and receiving said screw, said screw having operative engagement with said locking means whereby the screw is operative, when turned in one direction, to force said locking means into operative position, and means carried by said screw for actuating said disengaging means to effect disengagement of said locking means when the screw is turned in the reverse direction.

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