

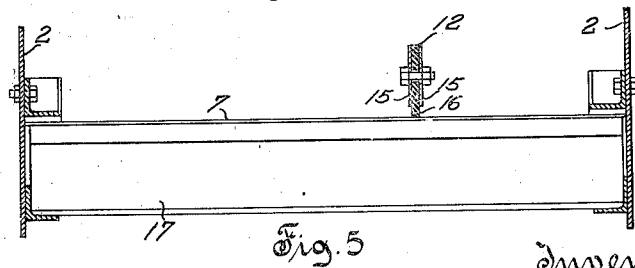
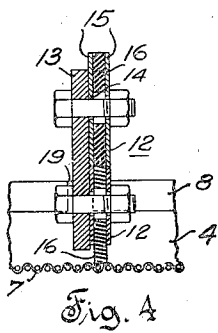
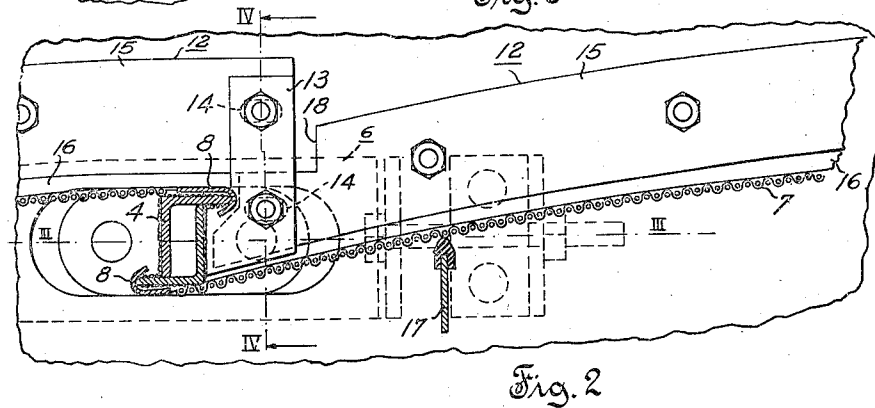
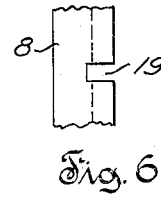
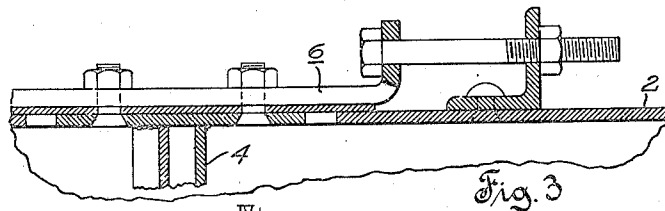
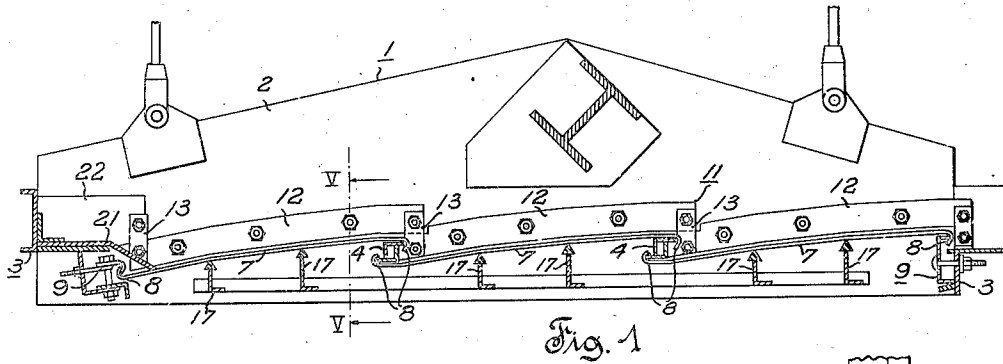
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2,479,945

SCREEN WITH ADJUSTABLE LONGITUDINAL PARTITION

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2,479,945

SCREEN WITH ADJUSTABLE LONGITUDINAL
PARTITION

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8 Claims. (Cl. 209—265)

This invention relates to screens for separating liquids or fine materials from two or more streams of dissimilar mixtures and is particularly concerned with longitudinally dividing the space above the upper surface of an end-tensioned screen deck.

Particularly in the "sink-float" process of separation of solids of different densities in a heavy fluid medium, the occasion arises for recovering the separating medium from the separated materials. This may readily be done by separately screening the sink and float mixtures on separate screening devices. However, due to the desirability of keeping plant cost low, and saving space, it frequently becomes desirable, if possible, to use a single vibrating screen device, as its cost and space requirements per unit of area will be lower than those of two separate screening devices of the same total capacity.

The most suitable screens for this work are screens of the end tensioned type shown in the applicant's U. S. Patent No. 2,338,523 in which a laterally flat, longitudinally stepped, screen surface is obtained. Placing of an effective longitudinal partition in a screen of this type to keep the sink and float products separate while recovering the medium, was unknown or difficult of accomplishment before the present invention because cross members of the screen must be relatively movable for tensioning and replacement of screen cloth sections.

An object of the present invention is to provide an adjustable longitudinal partition for an end tensioned screen deck in order to obtain effective partitioning without interfering with the normal adjustability of the screen deck structure.

Another object is to provide a partition for mounting on the movable cross members of an end tensioned screen deck, which will accommodate itself to the change in distance between cross members and to changed screen contour upon adjustment of the screen tension.

More particularly, the invention consists in providing a screen having relatively movable transverse screen mounting and tensioning members with an effective longitudinal partition for dividing the space above a single width of screen cloth.

The invention having the above and still further objects and advantages which may appear hereinbelow can best be carried into practical effect as fully described hereinbelow in connection with the accompanying drawing, in which:

Fig. 1 is a vertical longitudinal section through a screen according to the invention;

Fig. 2 is an enlarged fragmentary view of a portion of the structure shown in Fig. 1;

Fig. 3 is a fragmentary view partially in section on the line III—III of Fig. 2;

Fig. 4 is a fragmentary cross section on the line IV—IV of Fig. 2;

Fig. 5 is a fragmentary cross section taken on the line V—V in Fig. 1; and

Fig. 6 is a fragmentary detail view showing in top elevation, a portion of a screen hook strip.

In order to longitudinally divide the space above a single width of screen cloth in a screen such as that shown in the drawing, it is important that the use of superstructure which would interfere with the changing of screens and with the placement of the partition at any chosen plane intermediate the side walls be avoided.

Referring to the drawing, it is seen that a screen deck construction embodying the invention may include a screen body or frame 1 having side walls 2 rigidly connected by end, cross members, or transverse members 3 to form a rectangular framework, and may be supported and actuated, for example, to vibrate or reciprocate, by conventional means such as are more fully described in Letters Patent No. 2,338,523, issued to Charles S. Lincoln.

Intermediate the end members 3, one or more transverse screen mounting members 4 may be attached to side walls 2 for longitudinal adjustment relative to said side walls 2 by known adjusting mechanisms 6, as shown in Figs. 2 and 3, and more fully described in Patent No. 2,338,523 previously referred to. Suitable longitudinally extending screen cloth sections 7 having end hook strips 8 and extending laterally between the side walls 2 are attached, supported and longitudinally tensioned between successive pairs of transverse members 3 and 4 in a manner shown and described in detail in U. S. Patent No. 2,338,523 to form a longitudinally-stepped, transversely-flat, screen surface, each section extending from a lower surface of one transverse member 3 or 4 to an upper surface of a succeeding transverse member. End transverse members 3 may be adapted as screen mounting members by providing them with movable screen hook engaging members 9, of known suitable type shown in Fig. 1, for engagement with and tensioning of the adjacent screen sections 7. Vertically extending surfaces of members 4 form risers in the stepped screen surface.

The foregoing description forms no part of the invention except as combined with a longitudinal partition 11 to provide for a division of the ma-

terial treating screen surface into separate longitudinal portions for treatment of dissimilar mixtures of materials, as described hereinafter.

Partition 11 may be made up of a number of wall sections 12 corresponding to the number of screen sections 7 (shown as three in the drawing) mounted in such a manner as to contact the screen surface at their lower edges. Lugs 13 or gusset plates for mounting wall sections 12 are rigidly secured in any suitable manner, as by welding, to transverse members 3 and 4, intermediate the side plates 2. These lugs 13 may be metal plates, formed at their lower ends to fit the transverse members to which they are attached. Those attached to intermediate transverse members 4 are formed to fit the forward faces of the members to which they are attached. All lugs 13 project substantially above the general level of the screen cloth, that is, the upper surfaces of their respective transverse members 3 and 4, and those attached to movable members 4 are movable therewith. Wall sections 12 may be provided with longitudinally elongated holes, or slots 14, and may be bolted at their opposite ends to lugs 13 in longitudinally adjustable relation as shown in the drawing. The adjoining ends of wall sections 12 are overlapped and inter-fitted in any suitable manner, or as clearly shown in Fig. 2, to fit the stepped screen deck surface and form a continuous wall or partition 11 intermediate side walls 2, dividing the screen surface in any desired proportion.

Each wall section 12 may be composed of a pair of strips 15 of metal, plastic, wood, or other suitable hard material, between which is sandwiched a sheet 16 of resilient rubber, or other soft plastic, which projects at one edge below the plates or strips 15 to provide an edge capable of deformation to fit the contour of the upper surface of a screen cloth section 7, which may be upwardly crowned, as shown, over one or more fixed cross members 17. The plates 15 and rubber sheet 16 may be cut away, as shown at 18 in the drawing, to allow wall sections 12 to be inter-fitted in longitudinally aligned relation, and may be curved in a vertical plane to approximately match the stepped, crowned, screen surface.

It will be readily apparent that partition 11 may be located at any desired plane intermediate side walls 2 and that longitudinal adjustment of one or more movable transverse members 4 may be accommodated by relative longitudinal adjustment of sections 12 relative to each other and to the lugs 13 by which they are supported.

The device shown in the drawing provides an end tensioned, transversely-flat, screening surface, divided longitudinally into a number of material treating portions in any chosen proportion (shown in Fig. 5 as two portions in the proportion of about one to two in width) by a dividing wall 11, which effectively accommodates changes in longitudinal screen surface contour and seals against a transversely continuous screen cloth surface without seriously reducing its effective area.

Reversible screen cloth sections 7 described in U. S. Patent No. 2,334,707 to W. C. Johnson, and U. S. Patent 2,338,523 to C. S. Lincoln, may be accommodated, as shown in the drawing, by merely cutting slots in the hook strips 8 at the points where lugs 13 might interfere with their attachment, as shown at 19 in Figs. 4 and 6. Wall sections 12 may be readily removed, for permitting removal and replacement of screen

sections 7, by unbolting the sections 12 from lugs 13.

A feed apron 21 attached to feed end member 3 in any suitable manner may be divided by a short upstanding wall member 22 secured to its upper surface in any suitable manner, as by welding, in alinement with partition 11. Its forward end may be bolted to a lug 13 so as to form a continuation of partition 11.

It will be readily apparent from an inspection of the drawing and description that streams of dissimilar mixtures of materials placed on the screen at opposite sides of partition 11 will be kept separate above the screen cloth as they move longitudinally of the screen body 1 and may be separately discharged after treatment.

It will be understood that the precise structure specifically described and illustrated is purely illustrative, and that the invention is intended to include such modifications and equivalents as may readily occur to persons skilled in the art to which it appertains, within the scope of the appended claims.

It is claimed and desired to secure by Letters Patent:

1. A partition for longitudinally dividing the space above a screen deck surface comprising longitudinally spaced supports mounted on the frame of said deck and extending above said deck surface in longitudinal alinement, and a composite wall adjustably secured to said supports formed of two separate sheets of hard durable material and a layer of resilient rubber-like plastic material sandwiched between and adjustably extensible beyond the lower edges of said metal sheets into sealing contact with said screen deck, said sheets being perforated for passage of securing elements therethrough, said layer of resilient material having enlarged perforations through which said securing elements pass, said enlarged perforations providing for adjustment of said layer relative to said sheets, and said securing elements being operable to move one of said sheets relatively to the other in clamping relation to said resilient layer.

2. A screen for separating a plurality of streams of dissimilar mixtures of materials comprising side walls, at least three frame members extending transversely between said side walls, at least two sections of screen cloth attached at their ends to and spanning successive pairs of said transverse members and extending transversely between said side walls to form a longitudinally stepped screen surface, an intermediate one of said transverse frame members having a vertically extending surface forming a riser between adjacent ends of the said screen sections attached thereto, an upright lug supported solely by attachment to said riser surface and extending above said stepped screen surface intermediate said side walls, and at least two longitudinally aligned partition wall sections individually adjustably attached at their adjacent ends to said lug in overlapping relation to form a partition wall longitudinally dividing the space above said stepped screen surface and between said side walls.

3. A partition wall for dividing the space adjacent a stepped screen surface having at least one riser, one upper screen section and one lower screen section, said wall comprising a plate-like support member secured edgewise to and supported solely by said riser and extending therefrom in a plane perpendicular to said riser and screen sections over said lower screen section throughout

5

the depth of said riser, a plate member having an edge contour to fit said upper and lower screen sections of said stepped surface and means to secure said plate to said support in supported relation with said edge contour engaging said upper and lower screen sections; said support and plate cooperating to divide said space substantially in the plane of said support member.

4. A partition wall for dividing the space adjacent a stepped screen surface having at least one riser, one upper screen section and one lower screen section, said wall comprising a plate-like support member secured edgewise to and supported solely by said riser and extending therefrom in a plane perpendicular to said riser and screen sections over said lower screen section throughout the depth of said riser, a pair of separate plate members, one having an edge contour to substantially fit said upper screen section, the other having an edge contour to substantially fit said lower screen section of said stepped surface, and means to secure said plate members to said support in supported relation with said edge contours engaging said upper and lower screen sections respectively; said plate members and support cooperating to divide said space substantially in the plane of said support member.

5. In a screen construction involving a transverse frame member of substantial vertical depth having oppositely extending, overhanging, hook-engaging edges in vertically spaced parallel planes and a pair of screen sections having end hook strips hooked over said edges from above and below, respectively, in such a manner that said sections extend in opposite directions to form a stepped screen surface with said transverse frame member as a riser, a plate-like partition support member secured in edgewise relation to a riser surface of said transverse member supported solely by securement to said riser surface and extending from said riser surface in a plane perpendicular to said riser and screen sections over the screen section hooked from below throughout the full depth of said riser surface, partition plates having edge contours to fit said screen sections and means to secure said plates to said support member with said edge contours engaging corresponding screen sections; said plates cooperating with said support member to form a partition wall dividing the space above said stepped surface substantially in the plane of said support member.

6. A partition wall for a stepped screen surface having an upper screen section, a lower screen section and a riser surface joining said upper and lower screen sections, comprising a gusset plate in a plane perpendicular to said riser surface and formed to fit said riser surface, said gusset plate being supported solely by securement to and filling the angle between said riser surface and said lower screen section, a partition plate having a lower edge adapted to fit the contour of said lower screen section, and means for securing one end of said partition plate to said gusset plate in such a manner that its lower edge forms a continuation of that of said gusset plate; said gusset and partition plates cooperating to divide the space above said lower level substantially in a plane perpendicular to said screen and riser surfaces.

7. In a partition wall having a variably stepped lower edge for fitting to a variably contoured

6

stepped screen surface, a first wall section having a lower edge adapted to fit an upper screen surface contour, a second wall section having a lower edge adapted to fit a lower screen surface contour, a connecting plate forming a part of said wall and having a corner fitting the angle between said lower screen surface contour and the riser surface joining same with said upper screen surface contour, said connecting plate having its plane perpendicular to said riser surface and said stepped screen surface, and being supported solely by securement to said riser surface, and means adjustably securing said wall sections to said connecting plate in wall forming relationship.

8. In a screen for separating and conveying at least two dissimilar streams of material, a frame having side walls, at least three transverse frame members extending between said side walls at least an intermediate one of which is movable relative to the others, at least two sections of screen cloth, one said section being secured at its ends to and tensioned longitudinally between one said transverse member and the upper edge of a succeeding said transverse member, a second said screen section being secured at its ends to and tensioned between the lower edge of said succeeding transverse member and an upper edge of the next succeeding transverse member, each said section extending laterally between said side walls, said sections forming a longitudinally stepped screen surface, said intermediate transverse member having a vertically extending surface forming a riser between adjacent ends of the screen sections attached thereto, means for moving said intermediate member longitudinally of said screen, an upright lug rigidly attached to said intermediate transverse member intermediate said side walls and extending above said screen surface, said lug being supported solely by securement to said vertically extending riser surface of said intermediate member, a longitudinally extensible partition longitudinally dividing the space over said screen surface intermediate said side walls, said partition wall comprising at least two longitudinally aligned plate sections and means securing adjacent ends of said plate sections to said lug in longitudinally adjustable, overlapping relation.

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Executrix of the Estate of Charles S. Lincoln, Deceased.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
161,147	O'Brien	Mar. 23, 1875
444,252	Palm	Jan. 6, 1891
924,358	Jessup	June 8, 1909
1,136,293	Sutton et al.	Apr. 20, 1915
2,052,004	Remick	Aug. 25, 1936
2,068,413	Hunsicker	Jan. 19, 1937
2,090,767	Sayers et al.	Aug. 24, 1937
2,115,110	Keil	Apr. 26, 1938
2,298,153	Overstrom et al.	Oct. 6, 1942
2,310,736	Gruender	Feb. 9, 1943
2,334,707	Johnson	Nov. 23, 1943
2,338,523	Lincoln	Jan. 4, 1944
2,378,463	Burls	June 19, 1945