

Feb. 27, 1962

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3,022,893

SEALING MECHANISM FOR OSCILLATABLE SEPARATORS

Filed Jan. 25, 1960

3 Sheets-Sheet 3

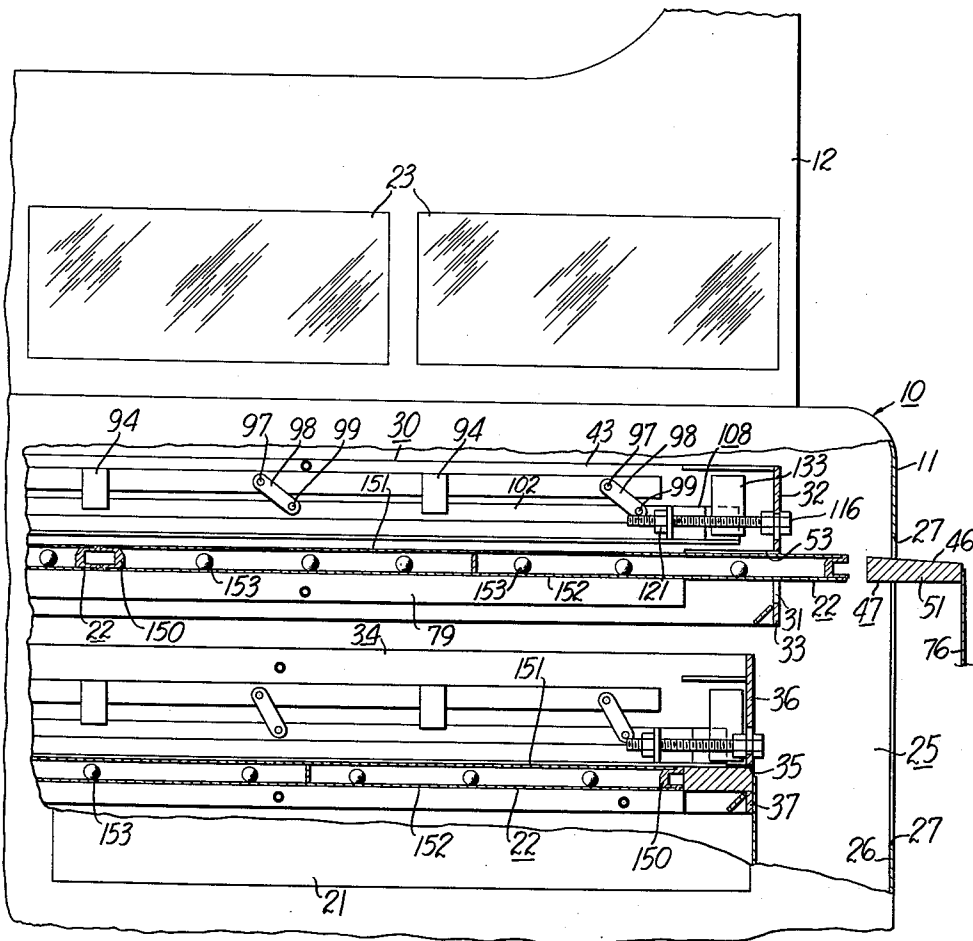


Fig. 6

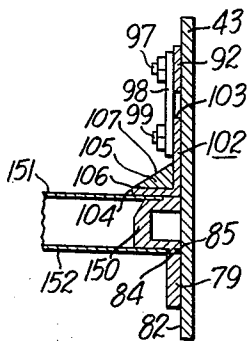


Fig. 7

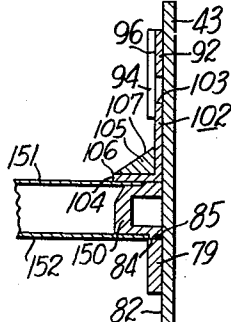


Fig. 8

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SEALING MECHANISM FOR OSCILLATABLE SEPARATORS

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Filed Jan. 25, 1960, Ser. No. 4,547

7 Claims. (Cl. 209-405)

This invention relates generally to oscillatable separators for sifting and separating aggregated materials having discrete particles of different and various sizes and, more particularly, to an improved mechanism for sealing and locking removable screen decks in operative position within such separators.

The class of oscillatable separators, generally known as "purifiers," find extensive use in the flour milling industry.

Prior art purifiers comprise a wooden housing including an integral frame portion upon which a screen cloth is fastened by a multiplicity of tacks and adjustable bolts. Such a design is disadvantageous and cumbersome to use because it requires the removal of all wing nuts from the bolts and all of the tacks holding the screen cloth to the frame just to clean or change the screen cloth. Thus, when the cloth requires service, it is not only necessary to interrupt the processing cycle in which the purifier is used (purifiers are normally employed as but one station in a continuous sequence of several stations), it requires an extensive shut down time to dismantle the screen frame, change the cloth and reassemble the frame into the machine. Furthermore, repeated insertion and removal of tacks into and out of the wood frame member eventually chews up the wood and requires the frame member to be replaced.

Furthermore, in addition to the extremely laborious procedures necessary to effect either the cleaning or the replacement of the screen decks as already described, these prior art purifiers possess the disadvantage that they create a number of hiding places where the grain, or like material being processed, can accumulate and become infested with insects. Insect infestation or other contamination of a consumable product is obviously a grave problem for it constitutes a serious hazard to the health and general welfare of the consumer community.

The present invention is predicated upon the design of an improved mechanism for sealing and holding removable and interchangeable screen decks in a purifier and which further permits the ready insertion and replacement of screen cloths in the purifier without causing interruption of the processing cycle or a major dismantling of the machine. The present invention further eliminates the hiding places where insect infestation previously occurred and provides a positive seal which precludes the lateral passage of dust particles from within the screen to its surroundings and the lateral passage of foreign matter from outside of the machine into the processed material.

Accordingly, one of the prime objects of the present invention is to provide an improved oscillatable separator of the purifier type having a unique mechanism which provides a positive sealing and holding arrangement for maintaining the screen decks associated therewith in operative position within the purifier.

It is another object of the present invention to provide an improved sealing mechanism for purifiers in which clamping and sealing of associated screen decks is achieved with an easily maintained and simply operated mechanical linkage which further eliminates hiding places where insect infestation of a consumable product being handled therethrough might otherwise occur.

It is another object of the present invention to provide a mechanism for sealing purifiers which precludes the

lateral escape of dust from the treated material on the deck and the lateral entrance of foreign matter thereinto.

It is still another object of the present invention to provide an improved mechanism for sealing and clamping sectional screen decks in a middling purifier which readily accepts screen decks of varied length and thickness for operative mounting therewith.

A further object of the present invention is to provide a mechanism for sealing and clamping segmented screen decks in a purifier which enables the screen deck to be easily removed for cleaning or other maintenance without requiring that the machine be shut down.

A still further object of the present invention is to provide an improved mechanism of the type described which, in addition to clamping screen decks in a purifier, provides vertical adjustability and a shed which directs material being processed onto the working surface of the screen deck while precluding the material from reaching dead or nonworking surfaces.

Still another object of the present invention is the provision of an improved design for a purifier including a novel mechanism for sealing and clamping screen decks with greatly enhanced sanitary conditions whereupon the material processed therethrough may be used for human consumption without hesitation.

These, and still further objects as shall hereinafter appear, are fulfilled by the present invention in a remarkably unexpected fashion as shall be easily discerned by a careful consideration of the following detailed description of an exemplary embodiment thereof, especially when read in connection with the accompanying drawing.

In the drawings:

FIG. 1 is a perspective view of a middlings purifier employing the present invention;

FIG. 2 is a fragmentary isometric screen carrier frame employing a sealing mechanism made in accordance with the present invention;

FIG. 3 is an enlarged elevation of the tailings end of the screen carrier frame of FIG. 2;

FIG. 4 is an enlarged showing, partially broken away for clarity, of a sealing mechanism embodying the present invention when a screen deck is in clamped and operable relationship thereto;

FIG. 5 is a showing of the same portions as in FIG. 4 after the actuating mechanism has moved the sealing bar to a nonclamping position to permit insertion or removal of a screen deck;

FIG. 6 is a side elevation, partially broken away, of the purifier of FIG. 1;

FIG. 7 is an enlarged cross section taken along line VII-VII of FIG. 4; and

FIG. 8 is an enlarged cross section taken along line VIII-VIII of FIG. 4.

Referring to the drawing wherein an illustrative embodiment of the present invention is shown, an oscillatable separator of the purifier type is indicated by the general reference numeral 10.

As shown in FIG. 1, purifier 10 comprises a housing 11 which carries an overhead suction hood 12 and supports a series of hoppers 13 which depend therefrom in the normal fashion. Each hopper 13 is provided with a coupling 14 for connecting the machine into the desired material flow system. A plurality of leg members 15 support the purifier 10 upon a floor or other suitable surface 16.

As shown, housing 11 comprises a pair of side walls 20 (one not shown) having a plurality of access doors 21 which permit the visual inspection of and access to the screen decks 22 without removing the decks from their mounted position. Additionally, two rows of inspection windows 23, 24 are respectively disposed in suction hood 12 and hoppers 13 to provide visual observation of the

interior of the machine and the material being processed thereby while the machine is running.

At one end 25 of the purifier 10, which end shall hereinafter be referred to as "tailings end 25," a removable cover plate (not shown) is detachably secured to an end wall 26 of housing 11 over an end wall opening 27 through which a plurality of screen decks 22 may be removably inserted in a manner to be hereinafter explained.

It is, of course, understood that while the purifier herein illustrated and described to exemplify the present invention is a twin deck type of purifier, the sealing mechanism of the present invention is equally suited for use with any screen deck carrier frame arrangement as shall hereinafter become apparent.

As shown particularly in FIGS. 1 and 6, screen decks or frames 22 for the upper carrier frame 30 are introducible into and withdrawable from purifier 10 through end wall opening 27 and an opening 31 defined between upper end plate 32 and lower end plate 33 in the upper carrier frame 30. Screen frames 22 for the lower carrier frame 34 are similarly introducible and withdrawable from purifier 10 through end wall opening 27 and an opening 35 defined between the upper end plate 36 and the lower end plate 37 in lower carrier frame 34.

Each of the carrier frames, for example, upper carrier frame 30, contains two screen frame receiving means 40, 41 (see FIG. 3) so that when all screen decks 22 have been inserted into operative relationship with the machine, two substantially identical, or "twin" arrangements exist.

To avoid unnecessary duplication of description, therefore, the present invention will henceforth be described in its relationship to just one of the twins, it being understood that the description is equally apt when applied to all of the twins.

Referring now to FIGS. 2 and 3 of the drawing, one of the twins is shown with its related equipment which shall now be described.

Screen frame receiving means 40, i.e., the upper left hand twin, comprises a left side plate 42 and a right side plate 43 (relative to FIG. 3) which are joined together by upper and lower end plates 32, 33, respectively, at the tailings end 25 thereof and by another end plate (not shown) at the other or feed end thereof. In joining upper end plate 32 to the outer side plates, for example, side plate 42, a triangular reinforcing plate 44 may be welded or otherwise suitably secured therebetween to add to the rigidity of the joint.

While, as illustrated, upper end plate 32 is shown as a continuous member extending across both of the parallel receiving means 40, 41, it is, of course, understood that separate plates may be employed for each of the deck arrangements if desired.

Referring to FIG. 3, upper end plate 32 is provided with a cutaway portion 45 generally symmetrical with receiving means 40 and which defines with the upper surface 46 of a tailings bar 47 a tailings discharge opening 48.

Tailings bar 47 comprises a body portion 51 extending generally parallel and in spaced relationship to lower end plate 33 and having two end portions 52 (one not shown) which slidably engage within slot 53 defined in side plate 42 (and the corresponding slot in side plate 43) whereupon, since tailings bar 47 is wider than the lateral spacing between side plates 42, 43, the bar is carried in the slots by plates 42, 43.

Tailings bar 47 is shown as a unitary member extending across both of the parallel frame receiving means although it also may be rendered independent for each of the units if desired.

An angle member 54 is suitably secured to each end portion 52 (one not shown) of tailings bar 47 and comprises a body portion 55 which engages the respective outer surfaces 56 of end portions 52 in intimate surface engagement, and a foot portion 57 which extends gen-

erally normal to surface 56 away from its adjacent side plate 42, 43, respectively.

Slot 53 is provided with an end cover by attaching a U-shaped member 62, having a base portion 63, to the outer surface 65 of side plate 42 in any suitable fashion such as by welding (see FIG. 3).

A bolt 69 extending outwardly from U-shaped member 62 and passing through base portion 63 (which is spaced from side plate 42) carries the eye 70 of an eye bolt 71 pivotably circumscribed thereabout. In this manner, eye bolt 71 is rotatable about bolt 69 into and out of engagement with a vertically open slot 72 defined in foot portion 57 of member 54. Eye bolt 71 may be held laterally by screwing a suitable nut (not shown) onto the threaded portion 73 of bolt 69.

Eye bolt 71 is similarly provided with a threaded shank portion 74, remote from eye 70, upon which a nut 75 is threaded and may be tightened to hold foot portion 57 securely in place when the tailings bar is in its operative position within slot 53.

As indicated, a like arrangement is provided at the other end of the tailings bar.

A suitable tailings cloth 76 is hung from tailings bar 47, as shown in FIG. 6, to direct tailings spilling off the end of the deck 22 down into the corresponding of the hoppers 13 for the tailings.

Referring now to FIGS. 3 and 7, a pair of longitudinally extending support members 78, 79 are one each suitably secured as with rivets 80 to inner surfaces 81, 82 of side plates 42, 43, respectively. Each support member, for example, member 79, presents a screen frame supporting surface 85 for carrying an edge 84 of a screen deck 22. Support member 78 presents a like surface 83 for carrying another edge of screen deck 22. Support members 78, 79 are also herein referred to as "lower bar members."

A second pair of longitudinally extending parallel bars 91, 92, are likewise secured, one each, to inner surfaces 81, 82 of side plates 42, 43, respectively, in any suitable fashion, as with bolts 93 (see FIG. 4). Bar 91 thus is fixed in a vertically spaced parallel relationship to support member 78 while bar 92 is positioned in a like relationship to support member 79. Bars 91, 92 are also herein referred to as "upper bar members."

Bars 91, 92 each carry a plurality of guide plates 94 suitably secured, as by welding, to their respective inner surfaces 95, 96.

Guide plates 94 are disposed along each bar 91, 92 in axially spaced relationship to each other and depend downwardly from bars 91, 92 for a reason to be explained.

Intermediate each of the several guide plates 94 on each of bars 91, 92, a plurality of pivot pins 97 are mounted in juxtaposition with plates 94 throughout the length of each bar.

Each pivot pin 97 has a link member 98 pivotably secured thereto which depends downwardly therefrom into pivotable engagement with a corresponding one of a plurality of like pivot pins 99 mounted in like fashion in axially spaced relationship along a corresponding one of intermediate bars 101, 102. Each intermediate bar, for example, bar 101, is free relative to its adjacent side plate, for example, plate 42, but hangs by the several link members 98 from and in parallel relationship to its corresponding upper bar, for example, bar 91.

Each intermediate bar, for example, bar 102 (as shown in FIGS. 2, 3, 7 and 8), comprises a generally L-shaped member having a mast portion 103 generally coplanar with the vertical plane of upper bar 92 and a foot portion 104 extends generally normal thereto. Foot portion 104 is provided with a full fillet 105 which extends completely from mast portion 103 to the outer edge 106 of foot portion 104 to provide a sloping surface 107 thereupon for a purpose to be hereinafter explained.

At the end of bar 102 adjacent end plate 32, an angled member 108 having a body portion 109 and a foot portion

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110 is secured in a suitable manner, as by welding, so that body portion 109 intimately engages inner surface 111 of bar 102 and foot portion 110 extends generally normal to bar 102 inwardly from side plate 43.

An aperture 115 is defined in foot portion 110 and circumscribes bolt 116 extending through a vertically elongated slot 117 disposed in upper end plate 32. Bolt 116 has a head portion 118 which is larger than the width of slot 117 whereby head portion 117 is prevented from passing therethrough, and a threaded shank portion 119 which carries an elastic stop nut 120 and a second nut 121 is welded or otherwise secured to foot portion 110 so that its threaded bore is in register with aperture 115.

A like arrangement is provided intermediate bar 101 so that angle member 123 presents a foot portion 124 having an aperture 125 through which passes a bolt 126 extending inwardly from a vertically elongated slot 127 in upper end plate 32 which holds head portion 128 from passing therethrough. Bolt 126 also has a threaded shank portion which carries an elastic stop nut and a second nut secured to foot portion in register with aperture 125 which, though not shown, is substantially identical to the arrangement of bolt 116.

Stop means 132, 133, each having a bar engaging surface, for example, surface 135 as shown in FIGS. 2, 4 and 5, are secured one each to inner surfaces 136, 137 of side plates 42, 43, respectively. Each stop means, for example, stop means 133, as shown in FIGS. 4 and 5, depends downwardly into the path of the intermediate or movable bar 102 from an axially spaced position relative to the adjacent end surface 138 of the upper or fixed bar 92. In this manner, a limit is provided to the rearward movement of movable bar 102 (as it moves longitudinally in response to the action of turning bolt 116 through fixed nut 121) by the stop engaging surface 139 of the body portion 109 of angle member 108 striking stop means 133.

Again, an identical relationship is provided to limit the rearward movement of movable bar 101 in response to turning bolt 126 by stop means 132.

The movement of intermediate bars 101, 102 in a direction generally longitudinally of upper carrier frame 30 causes bars 101, 102 to also move vertically relative to the adjacent one of fixed bars 91, 92 through the action of the pivotable link member 98. In this fashion, a relative vertical displacement is created in the arrangement between the corresponding parallel bars 91, 101 and 92, 102, respectively, as well as between movable bars 101, 102 and their respectively adjacent lower bar member 78, 79. Vertically extending slots 117, 127 carried in upper end plate 32 and through which bolts 116, 126 respectfully extend, thus provide a vertical dimension which is long enough to permit the desired vertical displacement of intermediate bars 101, 102 while maintaining the generally parallel relationship between intermediate bars 101, 102 and upper bars 91, 92.

As each of the intermediate bars, for example bar 102, is raised toward its parallel fixed bar 92, the space 142 defined between bar 102 and support member 79 is enlarged. Similarly, when bar 101 is drawn toward bar 91, the space 143 defined between bar 101 and support member 78 is enlarged. When the cooperating pairs of parallel bars are drawn away from each other, the converse is true, i.e., spaces 142, 143 are diminished. (See the arrows on FIGS. 3, 4 and 5.)

As can be better seen in FIG. 5, spaces 142, 143, when enlarged to a maximum, provide for the ready introduction of screen decks 22 between intermediate bars and the screen supporting surfaces 83, 85 of support members 78 and 79, respectively.

When the screen frames 22 are placed in the desired position, intermediate bars 101, 102 are moved longitudinally forward by the actuation of bolts 116, 126, acting as previously described, whereupon the screen frame is securely clamped and sealed between the opposed cooperating screen engaging surfaces 83, 144 of support

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member 78 and intermediate bar 101, respectively, on the edge of the frame 22 and between screen engaging surfaces 85, 145 of support member 79 and intermediate bar 102, respectively, on the other edge of the frame 22 as is shown in FIG. 7.

The screen decks 22, as shown herein, comprise a metal frame 150 over which is stretched a screen cloth 151, which may be made of silk grit gauze, stainless steel wire, light bolting wire and the like, and a lower mesh deck 152 for supporting a plurality of balls 153 which bounce in response to oscillation of the device 10 to prevent blinding of the cloth 151. Deck 152 is generally formed of wire or rods of any suitable gauge to provide a mesh which is smaller than the diameter of the balls so that the balls do not fall through. The ball supporting deck 152 and the screen cloth 151 are mounted in frame 150 in any suitable fashion to maintain cloth 151 under tension to facilitate the separating operations.

It is, of course, understood that the foregoing description of one of the twins is equally applicable to all four included in the device chosen to illustrate the present invention and it would, therefore, be redundant to further describe these units. It is furthermore understood that the upper and lower carrier frames are likewise substantially identical and that the respective sides of a single twin are substantially mirrored images of each other.

It is still further understood that a parallel twin arrangement as here shown may utilize a common center plate (side plate 43 of unit 40 can also be used as the left hand side plate of unit 41) or separate plates as the exigencies of a particular installation dictate.

Let us now consider purifier 10 operative and oscillating in response to suitable motor driven oscillating means (not shown) and follow the operator as he removes the tailings end screen deck from within frame receiving means or unit 41 as shown especially in FIGS. 1 and 6 with greater detail being set forth in FIGS. 4, 5, 7 and 8.

When screen decks 22 are in place, i.e., have their respective edges clamped and sealed between the screen frame engaging surfaces of their corresponding support members and lower bar members (see FIG. 7), the material being processed is maintained on the screen cloth 151 by the action of the inclined surface 197 of fillet 105 which sheds all of the material which may fall thereupon back onto the cloth 151. In this fashion, no material is permitted to accumulate upon nonworking surfaces and a serious source of potential insect infestation (i.e., upon the flat surface heretofore provided the screen frames by the prior art) is eliminated.

To remove a screen deck 22 from unit 40 (looking at FIGS. 3, 4 and 5) the operator will loosen nuts 75 on the shank 74 of eye bolts 71 at each end of tailings bar 47 and rotate each eye bolt 71 out of engagement with its associated slot 72 into the free swinging position shown in FIG. 5. Upon rotating the eye bolts 71 at each end of tailings bar 47, the tailings bar 47 is removed by simply drawing end portions 52 out of their respective channels defined between U-shaped members 62, 62 and side plates 42, 43.

With the tailings bar 47 thus removed, the bolts 116 and 126 are rotated in their respective fixed nuts 121 (and the corresponding nut for bar 101 which is not shown) to move intermediate bar members 101, 102 from the sealing position shown in FIGS. 4 and 7 to the retracted position as shown in FIG. 5. The mast portion 103 of the intermediate bar members 101, 102 is maintained aligned with the corresponding upper bars 91, 92 through the offices of the guide plates 94 which overhang and keep them in line as shown in FIG. 8.

When the intermediate bars 101, 102 have been retracted to the position shown in FIG. 5, the screen deck 22 (which had been clamped between the clamping surfaces 144, 145 of the bars 101, 102, respectively, and the corresponding support members 78, 79 riveted to side plates 42, 43, respectively) is now free to be ejected. It

has been found that the machine, if left in operation, will discharge the decks automatically by its oscillating action through the openings defined by and between the end plates so that all the operator needs to do is catch them as they are discharged.

A new deck can then be introduced through the end openings 31, 35 between corresponding upper and lower end plates into the enlarged spaces corresponding to spaces 142, 143 to ride upon its associated support members, for example, members 78 and 79. When the deck 22 has penetrated into the machine the desired amount (which normally will be defined either by its abutting the back edge of the frame or the lead edge of the screen adjacent to it in the series which may be axially aligned in a given section), the screen deck is released and the bolts corresponding to bolts 116, 126, on each side of the sealing mechanism, are rotated to move the fixed nuts and longitudinally advance the intermediate bar. The forward movement of the intermediate bar increases the vertical displacement between it and its cooperating upper bar while lowering the screen deck engaging surface of the intermediate bar into clamping and sealing engagement with the screen deck sitting upon the support members as shown in FIG. 7. Next, the tailings bar 47 is returned to its operative position by inserting end portions 52 into channels 62, rotating eye bolts 71 into slots 72 and tightening nuts 75.

It now can be seen that the invention herein described and illustrated fulfills all of the aforestated objectives to a remarkably unexpected extent and provides a significant advance in the art of oscillatable separators.

It is, of course, understood that the embodiments herein described and illustrated are presented to exemplify the present invention rather than to limit it. Indeed, it is intended that such modifications, alterations and applications of the present invention as result from a perusal of this disclosure by one skilled in the art are intended within its spirit, especially as defined by the scope of the claims appended hereto.

Having now particularly described and ascertained the nature of my said invention and the manner in which it is to be performed, I declare that what I claim is:

1. A mechanism for sealing a frame mounted screen deck in the carrier frame of an oscillatable separator comprising: an upper pair of elongated bar members adapted to be rigidly secured, one each to an inner wall of a carrier frame of an oscillatable separator in spaced opposing relationship to each other; an intermediate pair of elongated bar members, one each being hung from each one of said upper bar members and movable relative thereto; a lower pair of elongated bar members adapted to be rigidly secured to the carrier frame in spaced opposing relationship to each other and in fixed parallel spaced relationship to a corresponding one of said upper pair of bar members, each of said lower pair of bar members coacting with corresponding one of said intermediate pair of bar members to define therebetween a vertically extending elongated screen deck receiving space therebetween; and actuating means connected to each of said intermediate pair of bar members to move said bar members relative to said corresponding ones of said upper and said lower pair of bar members in response thereto to vary the vertical displacement between said corresponding ones of said intermediate and lower pairs of bar members and, upon insertion of a screen deck into said spaces, sealingly engaging said screen deck between corresponding ones of said intermediate and lower pairs of bar members.

2. A mechanism for sealing a frame mounted screen deck in the carrier frame of an oscillatable separator comprising: a set of upper and a set of lower spaced parallel elongated bar members adapted to be rigidly secured in spaced opposed relationship to each other to a carrier frame of an oscillatable separator; a pair of elongated angle members, each having an upstanding body portion

and an inwardly extending foot portion, each of said foot portions having an inwardly sloped shed means carried thereby; linking means suspending said angle members, one each from one of said upper bar members in permanently parallel movable relationship thereto in superposition to the adjacent of said lower bar members, each of said foot portions having a bottom surface in spaced parallel facing relationship to the upper surface of the adjacent one of said lower bar members, and coacting therewith to define a screen deck receiving channel therebetween; and actuating means connected to said pair of bar members to move said bar members in response thereto and varying the vertical displacement between each of said bottom surfaces and said facing upper surface of said lower bar member into sealing engagement with a frame mounted screen deck insertable into said screen deck receiving channels.

3. A mechanism for sealing a frame mounted screen deck in the carrier frame of an oscillatable separator comprising: an upper pair of elongated bar members adapted to be rigidly secured to the carrier frame in spaced opposed relationship to each other; a lower pair of elongated bar members adapted to be rigidly secured to the carrier frame in spaced opposed relationship to each other and in spaced parallel relationship to an adjacent one of said upper bar members, each of said lower pair of bar members having supporting surfaces on the upper edge thereof in generally coplanar relationship to each other; an intermediate pair of elongated bar members interposed one each between each of said corresponding ones of said upper and said lower bar members and carrying a screen deck engaging surface in spaced opposed relationship to a corresponding one of said supporting surfaces; a plurality of linking means pivotally connected to each of said upper pair of bar members and each of said intermediate pair of bar members in axially spaced relationship thereto to rockingly suspend each of said intermediate pair of bar members from a corresponding one of said upper pair of bar members; a plurality of guide plates secured to each of said upper pair of bar members intermediate adjacent of said linking means and depending downwardly therefrom into overlapping relationship with the corresponding one of said intermediate pair of bar members, said guide plates coacting with said linking means to substantially prevent the lateral movement of said intermediate pair of bar members relative to its corresponding one of said upper pair of bar members; and actuating means connected to each of said intermediate pair of bar members to move said members relative to the corresponding one of said upper pair of bar members to vary the spaced relationship between said cooperating of said screen engaging surfaces and said support surfaces whereby, upon the insertion of a screen deck between said supporting surfaces and said engaging surfaces, said actuating means decreases the vertical displacement therebetween and said respective screen supporting surfaces and said screen engaging surfaces sealingly engage said screen deck therebetween.

4. A mechanism for sealing a frame mounted screen in the carrier frame of an oscillatable separator comprising: a carrier frame having a pair of spaced opposed side plates, each of said side plates having an internal surface upon which is mounted one of a pair of mechanisms, each of said mechanisms comprising upper and lower elongated bar members fixedly secured to said surface in spaced generally parallel relationship to each other, and an intermediate bar member pivotally suspended from said upper bar member in fixed radial relationship thereto for movement relative thereto; and actuating means connected to said intermediate bar member for moving said intermediate bar member axially of said side plate to vary the vertical displacement between said intermediate and said lower bar member while maintaining said members generally parallel to each other.

5. A mechanism for sealing a frame mounted screen

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deck in the carrier frame of an oscillatable separator comprising: a carrier frame having a pair of spaced opposed side plates; an upper pair of elongated bar members, each one rigidly secured to the interior surface of one each of said side plates; a lower pair of elongated bar members, each one rigidly secured to one each of said side plates in fixed vertically spaced parallel relationship to the adjacent one of said upper pair of bar members, said lower bars having screen deck supporting surfaces on the upper edge thereof in generally coplanar relationship to each other; an intermediate pair of elongated bar members interposed one each between each of said corresponding ones of said upper and said lower bar members adjacent each of said side plates, and having a screen deck engaging surface in spaced opposed relationship to said corresponding one of said screen deck supporting surfaces and defining a screen deck receiving passage therewith; a plurality of linking members pivotally mounted in axially spaced relationship along each of said upper pair of bar members and depending therefrom into pivotable engagement with corresponding portions of the corresponding one of said intermediate pair of bar members to suspend each of said intermediate pair of bar members from the corresponding one of said upper pair of bar members for swinging action relative thereto; and actuating means connected to each of said intermediate pair of bar members to move said members relative to the corresponding one of said upper pair of bar members and vary the vertical dimension of said screen deck receiving passage whereby, upon the insertion of a screen deck into said screen deck receiving passage, said actuating means decreases the vertical dimension of said passage and said respective screen supporting surfaces and said screen engaging surfaces sealingly engage said screen deck therebetween.

6. A sealing mechanism for an oscillatable separator including an upper carrier frame having spaced generally parallel side plates connected at their corresponding ends by a plurality of end plates at least one of which has an access opening defined therein to permit the passage of screen decks therethrough, said sealing mechanism comprising: an upper pair of elongated bar members rigidly secured to the interior surface of each of said side plates in spaced opposing relationship to each other; a lower pair of elongated bar members rigidly secured to each one of said side plates in spaced opposing relationship to each other and in vertically spaced parallel relationship to an adjacent one of said upper pair of bar members, each of said lower pair of bar members having a screen deck supporting surface defined on the upper edge thereof in generally coplanar relationship to each other; a pair of elongated angle members each operatively interposed between adjacent ones of said upper and said lower pairs of bar members, each of said angle members having an upstanding body portion disposed in spaced generally parallel relationship to its adjacent side plate and an inwardly extending foot portion disposed generally normal to said body portion and having a sealing surface on the bottom thereof in spaced parallel facing relationship to an adjacent one of said supporting surfaces, each of said angle members having angle means rigidly secured thereto adjacent said one end plate, said angle means having a body portion secured to said angle member in intimate surface engagement with said body portion thereof and a foot portion extending from said body portion beyond said foot portion of said angle member and having follower means defined thereupon; a plurality of pivot pins extending inwardly from and generally normally to each of said upper pair of bar members and said body portion of each of said angle members in axially spaced relationship therealong; a plurality of rigid link members of identical length, each one being pivotally secured at one end thereof to one of said pivot pins disposed on said upper pair of bar members and each one being secured at another end thereof to one

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of said pivot pins disposed on said angle members adjacent thereto and suspending each of said angle members from an adjacent one of said upper pair of bar members in a permanently parallel movable relationship thereto; a plurality of guide plates secured to each of said upper pair of bar members intermediate adjacent of said pivot pins and depending downwardly therefrom into overlapping relationship with suspending angle member and coacting with said link members to substantially prevent the movement of each of said angle members relative to its adjacent side plate; a pair of bolt members, each having a head portion secured against axial movement relative to the one end plate of the carrier frame by the plate and a shank portion extending therethrough into operative engagement with said follower means whereby rotation of said bolt causes axial movement of said follower means relative thereto, said angle member moving in response thereto to vary the space of the spaced parallel relationship between said sealing surface and said adjacent supporting surface into and out of sealing engagement with a frame mounted screen deck insertable therebetween.

7. In an oscillatable separator including screen deck carrier frames each having access means defined in at least one end plate there permitting the passage of screen decks therethrough into and out of operative relationship between a pair of spaced generally parallel side plates, an improved mechanism for sealing and clamping said screen decks relative to said side plates comprising: an upper pair of elongated bar members, one each being rigidly secured to the interior surface of each one of said side plates in coplanar relationship to each other; a lower pair of elongated bar members, one each being rigidly secured to each one of said side plates in coplanar relationship to each other and in vertically spaced parallel relationship to an adjacent one of said upper pair of bar members, each of said lower bar members having a supporting surface defined on the edge thereof facing said adjacent of said upper pair of bar members; an intermediate pair of bar members, one each interposed between each adjacent one of said upper and said lower pair of bar members in spaced proximity to each of said side plates, each of said intermediate bar members having an upstanding body portion disposed in spaced generally parallel relationship to an adjacent one of said side plates and an inwardly extending foot portion carrying a sealing surface on the bottom thereof, each of said intermediate pair of bar members having an angle member rigidly secured at one end thereof, having a body portion secured to said body portion of said bar member in intimate surface engagement therewith and a foot portion extending from said body portion generally normal to and beyond said foot portion of said bar member, said foot portion having threaded bolt receiving means defined therewith; a plurality of axially spaced pivot pins mounted generally normal to and extending inwardly from each of said upper pair and each of said intermediate pair of bar members; a plurality of rigid link members, one each being pivotally secured at one end thereof to each one of said pivot pins axially disposed along each of said upper pair of bar members and depending therefrom into pivotal engagement with an adjacent one of said pivot pins axially disposed along each of said intermediate pair of bar members to suspend said last named bar members parallel to the adjacent one of said upper pair of bar members for swinging movement relative thereto; a plurality of guide plates carried by the inner surface of each of said upper pair of bar members intermediate adjacent ones of said pivot pins and depending downwardly therefrom into overlapping relationship with the adjacent one of said intermediate pair of bar members, said guide means coacting with said rigid link members to maintain said spaced relationship between each of said intermediate pair of said bar members and the adjacent of said side plates substantially constant; and

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a pair of elongated bolts, each having a head portion anchored against axial movement and permitted vertical and rotational movement by said one of said end plates and a shank portion extending therethrough into operative engagement with one of said threaded bolt receiving means whereby rotation of said bolt head portion transmits axial movement to the associated one of said intermediate pair of bar members through the corresponding one of said bolt receiving means, each of said intermediate pair of bar members thus receiving a horizontal and vertical component of motion while said linking member maintains its parallel relationship to its adjacent fixed bar members whereupon the space between each of said intermediate pair of bar members and the adjacent one of said lower pair of bar members is varied to cause said screen engaging surfaces of said intermediate pair

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of bar members and the adjacent one of said screen supporting surfaces of each of said lower pair of bar members to move relative to each other so that, when rotation of said bolt is effective to reduce said space therebetween, an effective sealing engagement is established with a screen deck insertable therebetween and when said rotation of said bolt is effective to increase said space therebetween, such screen decks may be readily withdrawn from therebetween.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,022,893

February 27, 1962

Howard A. Hasley

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 9, line 54, for "pares" read -- pairs --; line 69, for "normally" read -- normal --.

Signed and sealed this 19th day of June 1962.

(SEAL)

Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents