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Ginaven

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[54] **THIN WATERFALL SEPARATING AND SCREENING APPARATUS**

[75] Inventor: **Marvin E. Ginaven**, Springfield, Ohio

[73] Assignee: **The Bauer Bros. Co.**, Springfield, Ohio

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[52] **U.S. Cl.** **209/264**, 209/281, 209/393

[51] **Int. Cl.** **B07b 1/06**

[58] **Field of Search** 210/248, 255, 312, 314, 210/461, 498, 513; 209/17, 274, 268, 281, 264, 393

[56] **References Cited**

UNITED STATES PATENTS

678,857	7/1901	Betzold	210/314 X
2,916,142	12/1959	Fontein	209/274
3,259,244	7/1966	Kaljo et al.	209/281 X

FOREIGN PATENTS OR APPLICATIONS

4,286	9/1883	Great Britain	210/498

Primary Examiner—Theodore A. Granger
Attorney, Agent, or Firm—Jerome P. Bloom

[57] **ABSTRACT**

This invention is directed to screen units and screen assemblies applied primarily to the separation and reclamation of solids, particularly fibrous solids, from a fluid slurry. Preferred embodiments are distinguished by a screen section or sections the flow surface of which is defined by bars or wires arranged in closely spaced relation and in a direction transverse to slurry flow thereacross. In use, the screen sections are so established that the flow surface defined thereby is in a plane or planes inclined to a horizontal. Each embodiment of the invention is characterized by a screen section or assembly of screen sections having in connection therewith a feed system including a variable flow control means. The controls provided enable a directed initial feed of a fibrous or like slurry in a thin waterfall form and in a manner whereby the initial engagement of the slurry with the flow surface can be variably placed with an impact effect. The structural features provided enable oily, fatty and like adherent substances to be optimally separated from the solids content of the slurry in movement thereof to and over the flow surface provided by the invention embodiments.

10 Claims, 8 Drawing Figures

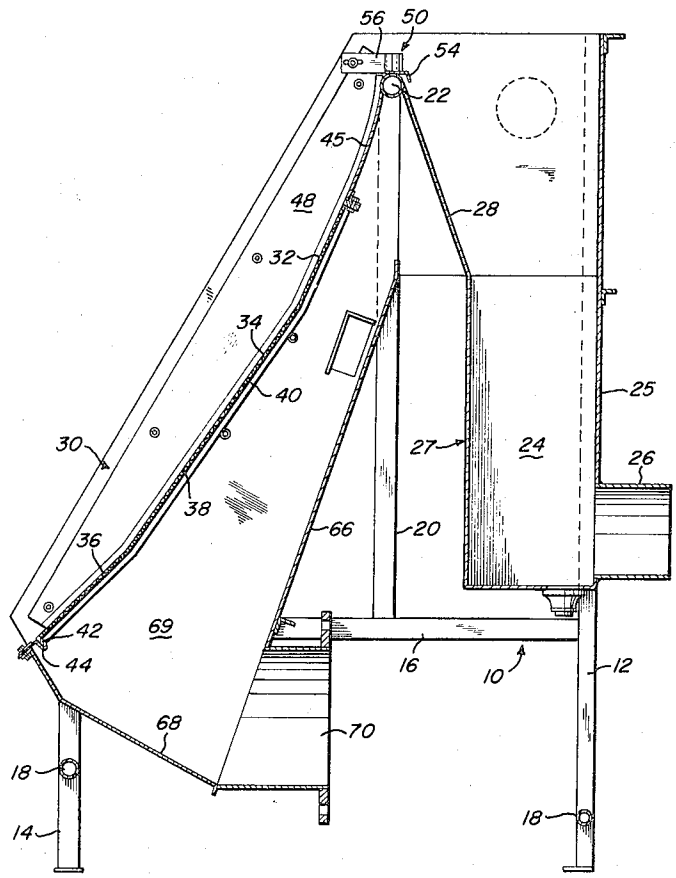
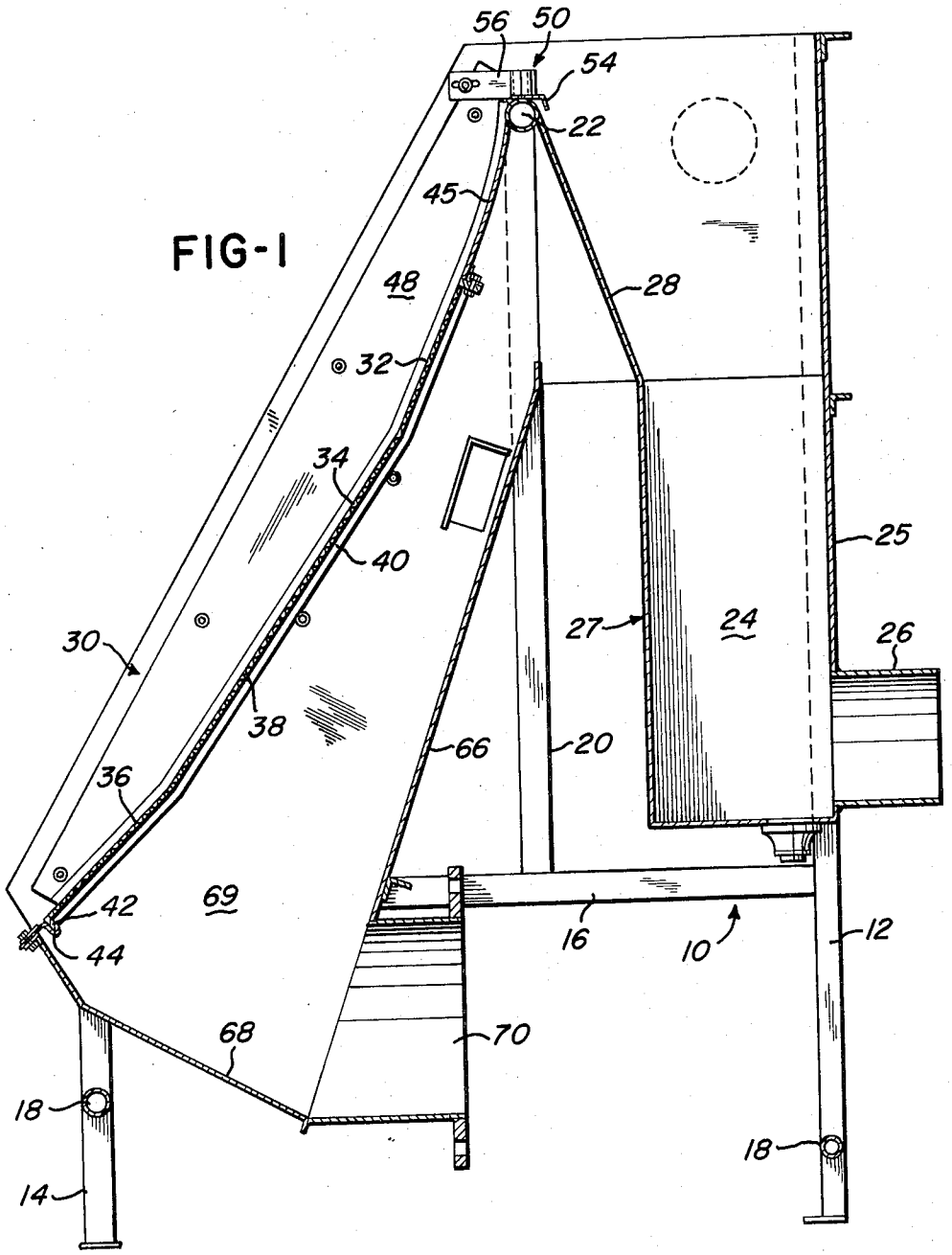


FIG-1

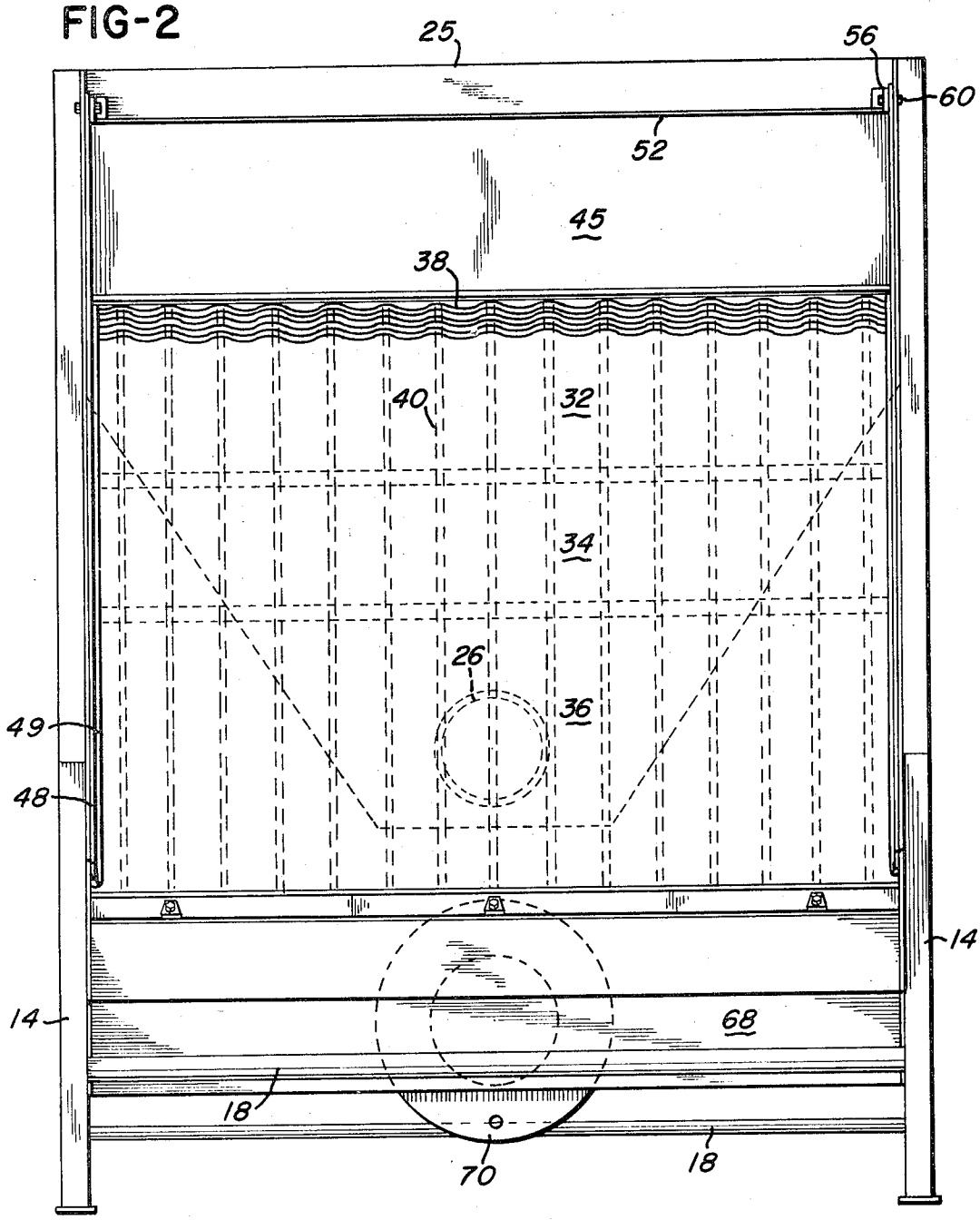


INVENTOR
MARVIN E. GINAVEN

BY Jerome P. Bloom

ATTORNEY

FIG-2



INVENTOR
MARVIN E. GINAVEN
BY Jerome P. Bloom
ATTORNEY

FIG-4

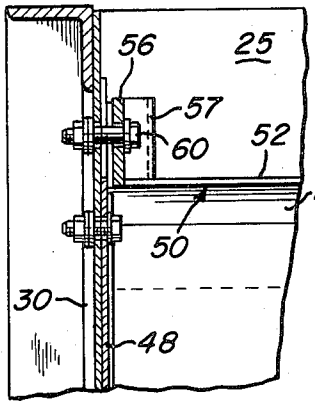


FIG-5

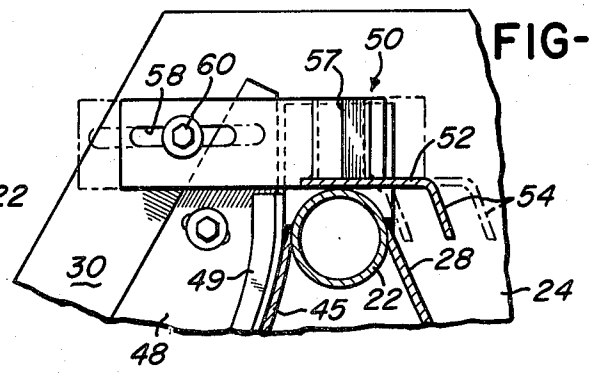


FIG-7

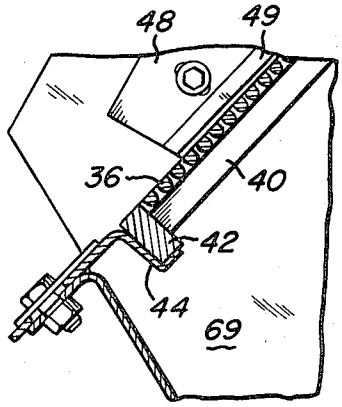


FIG-3

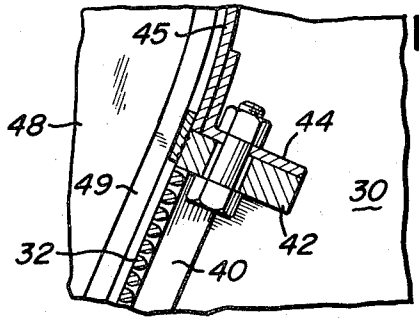


FIG-6

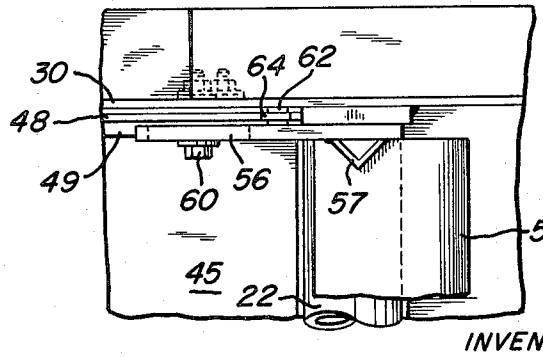
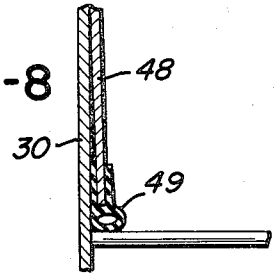


FIG-8



INVENTOR
MARVIN E. GINAVEN
BY Jerome P. Bloom
ATTORNEY

THIN WATERFALL SEPARATING AND SCREENING APPARATUS

BACKGROUND OF THE INVENTION

Pollution of the environment is and has been a problem of utmost concern in the manufacture and processing of base materials as well as reclamation of materials for use in various important end products. Also, of particular concern, for example in the Pulp and Paper, Meat Packing and Tanning Industries, is the separation of desirable solids from a liquid flow thereof through various processing steps in a manner to leave them in the best possible form for further application and/or treatment. For the foregoing reasons, it has necessarily become a primary objective of manufacturers in the processing of materials to provide for effective screening and separating systems to enable maximum recovery and use of what might otherwise be waste substance and to simultaneously avoid unnecessary pollution of streams and rivers.

A point of major concern in the pertaining industries has been the difficulty and expense of multiple processing steps that have been necessary to relieve recovered solids from normally adherent oils, fats and like sticky adherent substances. For example, in the Meat Packing Industry, in the course of processing there is carried away in a slurry form, depending on the particular substances on which the plant is operating, feathers, hair and fibers to which adhere oils, fats and like sticky substances. With prior art systems and practice it has proven difficult and costly to relieve the feathers, hair and fibers of their adherent materials. A similar situation exists in tanneries where hides have to be buffed and otherwise processed. Comparable circumstances are found in the processing of wood pulp from raw material. In the latter case, for example, processing steps can many times produce white water which embodies a substantial amount of fibers, both long and short, to a degree sufficient that a slurry assumes the form of an emulsion and becomes, thereby, a slow draining substance making it difficult to extract therefrom usable relatively clean fibers. As has been and is self-evident, the net result has been an inadequate extraction and recovery of usable solids and a substantial involvement in the waste liquids which have been discharged from the operating plants. Inherent has been the resulting water pollution and/or expensive plant operation in the area in question. There have been many systems proposed to overcome the noted problems and some are being used with what has been considered reasonable success. However, on the whole, the systems have not been as efficient, economical or as safe, in respect to the environment, as should be required or desired. It has been basically proven extremely difficult to inexpensively and readily separate oily and fatty substances from solids which are transmitted or processed in a slurry form in the course of which processing the objective is to extract and recover clean solids, particularly fibrous solids.

SUMMARY OF THE INVENTION

The present invention provides a simple and direct solution to the aforementioned problems. It enables a faster and more efficient separation of solids from a slurry flow and is of particular advantage in rapidly removing residual fibrous solids from a slurry, even one wherein there are adherent oils, fats and the like. The net result of use of the invention is a more efficient screening and separating operation, one which is more economical than heretofore contemplated. Of course, an important consequence of the use of the invention is the reduction of pollution of the environment.

The present invention enables improvements in the available apparatus and methods of screening or separating solids from a liquid vehicle and for basically separating solids from liquid in the course of their flow in a slurry form. The invention will be particularly described as applied to a recent screen development in the pertaining art known as a "Hydrasieve." This structural embodiment produces a particularly advantages screen assembly capable not only of most effectively separating fibrous solids from a liquid vehicle but separating normally adherent oily, fatty and sticky substances from the fibrous solids per se. It enables the separation to be achieved in a simple and economical manner and with a minimal amount of equipment.

While the application of the invention will be described in reference to fibrous solids and its embodiment in reference to a particular type of screen, it will become obvious that the application and the embodiment of the invention improvement is not so limited. Such certainly is not intended.

In its presently preferred embodiment the invention provides, in conjunction with an inclined screen type flow surface defined by longitudinally spaced generally parallel bar or wire elements arranged generally transverse to flow, means providing for a variable feed of a slurry to said flow surface characterized by a "waterfall" effect. The arrangement is such that a slurry is so directed on entrance to the screen flow surface in the first instance that there is a physical inducement for the normally adherent oily, fatty and sticky substances which tend to cling to the fibrous solids to release and/or separate therefrom to a substantial degree. The results of the use of the invention structure, particularly in the embodiment described, is the separation of embodied hairs, feathers and other fibrous-type substances in a form that on delivery from a single pass over the invention screening or separating unit they are in a cleaner and better condition than heretofore considered possible. The end result is an optimal conditioning of the fribrous substances for further use and avoidance of having to discharge fibrous substance to waste because of circumstances which render it uneconomical to salvage the same. Moreover, if it would be desirable to further remove elements of the liquid vehicle separated in the use of the invention structure, oils, fats and the like can normally be more readily separated and rendered re-usable or more easily and more safely disposed.

It is accordingly a primary object of the invention to provide an improved apparatus having particular advantage for application to separating fibrous solids including hairs, and/or feathers or other fibrous substance from a liquid vehicle, which is more economical to fabricate and more efficient and satisfactory in use than apparatus heretofore available for like purpose and unlikely to malfunction.

Another object of the invention is to provide improvements in means and methods available for separating usable fibrous solids from a liquid vehicle wherein are entrained fatty, oily, sticky and like adherent substances.

A further object of the invention is to provide improved means for reclaiming or extracting usable solids from a liquid slurry.

An additional object of the invention is to provide a unique improvement in the screening art characterized by means for producing a variable thin waterfall effect in delivery of a slurry embodying hairs, feathers and/or other fibrous solids to an inclined screen flow surface which is distinguished by longitudinally spaced bars or wires arranged transverse to flow, whereby to more effectively separate entrained solids from their liquid vehicle and to release oily, fatty or sticky substances which might otherwise tend to adhere to the solids, resulting in maximum separation of the solids in a condition where minimal treatment will be required to put them to further use and a discharge which is less likely to pollute the surrounding environment.

Another object of the invention is to provide improvements in separating and screening apparatus characterized by the structural features, the inherent meritorious characteristics, and the means and mode of use thereof herein described.

With the above and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and the mode of operation as hereinafter described or illustrated in the accompanying drawings, or their equivalents.

Referring to the drawings wherein is shown one but not necessarily the only form of embodiment of the invention,

FIG. **1** illustrates a screen assembly in accordance with the invention, shown generally schematically and in side elevation;

FIG. **2** of the drawings illustrates a front view of the assembly of FIG. **1**; and

FIGS. **3** through **8** present fragmentary sectional views illustrating details of the screen assembly shown in FIGS. **1** and **2.**

Like parts are indicated by similar characters of reference throughout the several views.

As noted previously, for purposes of illustration and because of its particular advantage in the combination, the invention will be described as embodied to provide improvements in a "Hydrasieve" type screen unit. With this in mind reference is made to the drawings wherein the assembly shown has as its support a rectangular frame **10.** The corners of this frame are defined by four posts including a pair of vertically mounted elongated posts **12** to its rear and a pair of short posts **14** at the front thereof. A horizontally extending brace bar **16** interconnects the posts **12** and **14** to each side of the frame **10.** Also, the respective pairs of posts **12** and **14** are further rigidified adjacent their bottoms by a brace bar **18.**

A third pair of parallel posts **20** respectively seat at their bottoms to the bars **16** to either side of the frame **10,** to project vertically therefrom in a relatively adjacent, spaced, parallel relation to a co-planar rear post **12** so as to dispose their upper ends at a level adjacent and slightly below the upper ends of the posts **12.** As may be seen, a tubular structural member **22** is positioned to extend in a plane common to the posts **20** and between their upper ends.

A rectangular receptacle **24** nests in the space defined between the posts **20** and **12,** above the level of the brace bars **16,** with its back portion in bridging relation to the posts **12** and suitably fixed thereto. A tubular adapter **26** rims an opening in the back wall **25** to define an inlet to the receptacle **24** adjacent its bottom. The top portion **28** of the front wall **27** of the receptacle **24,** which at its bottom portion is spaced rearwardly of the plane defined by the posts **20,** is inclined forwardly to define with the vertical plane of its bottom portion an angle of approximately 30°. The upper end of the top portion **28** of the front wall **27** connects tangentially to and merges with the rear-most surface of the tubular element **22.**

A plate forming a wall element **30** is fixed to cover inner surface portions to either side of frame **10.** As seen in FIG. **1,** each side wall element is fixedly connected by suitable means to the upper portion of a post **20,** the upper portion of a post **14** and forward portions of a brace bar **16.** It is noted that only so much of the detail of the frame **10** and the wall elements **30** and the connections therebetween is here recited as may be necessary for an understanding of the invention. The disposition and connection of the respective elements in a fixed relation is well within the ability of a mechanic versed in the art and such need not be particularly described. Of course it will be obvious from the drawings that the tubular structural element **22** is disposed between the plates **30.**

Laterally coextensive therewith, merging with and extending downwardly from the front portion of the tube **22** are means defining a flow surface including screen portions comprised as follows. As seen, a screen flow surface includes substantially planar sections **32, 34** and **36** which are respectively inclined, each at a successively lesser angle to a horizontal plane and successively positioned in following relation. The section **32,** as well as each of the sections **34** and **36,** is defined by bars or wires **38** arranged in a longitudinally spaced relation and oriented in a sense transverse to the direction of anticipated slurry flow. The bars or wires **38** are supported by and have fixed in underlying relation thereto a series of laterally spaced longitudinally extending bars **40.** The connection of the bars **40** to the wires or bars **38** forms an integrated screen structure and provides a continuous flow surface, successive sections of which are in inclined planes, successively closer to a horizontal. At their respective upper and lower ends the bars **40** are welded, in each instance, to a cross bar **42.** The bars **42** are based on suitable support structure including right angled bars **44** extending between and anchored to the wall plates **30.** The screen unit so provided is thus contained against inadvertent movement and to fixedly establish the vertical disposition of the screen flow surface.

A relatively smooth plate segment **45** is connected to form an upwardly directed extension of the screen flow surface and the same is suitably interconnected with the upper bar **44** and at its uppermost end with the forwardmost portion of the structural element **22,** with which it merges.

Connected to and disposed over the inner face of each of the transversely spaced parallel wall elements **30,** above the flow surface provided by the plate segment **45** and the sections **32, 34** and **36** of the screen unit, is a stainless steel plate **48.** The lower edge of each plate **48** has mounted thereon, the length thereof, a boot-like rubber gasket **49.** The gaskets **49** seat over the respective lateral edges of the underlying bar or

wire elements **38** defining the screen flow surface, in sealing relation thereto.

Looking once more to the tubular structural element **22**, this is positioned between the upper projected extremities of the plates **48**. Positioned over the top of the tubular element **22** is a unique and important medium for controlling flow from the receptacle **24** to the surface defined by the screen unit above described and the approach plate **45**. Bearing on the uppermost surface portion of the element **22**, extending the transverse width thereof, is a control assembly **50** including a base plate **52**. The rearmost end portion **54** of the plate **52** is shown to extend into the top forward portion of receptacle **24**, over its forwardly inclined wall portion **28**, where it is angularly depressed relative to the remainder of the plate **52** which has a horizontal orientation. In connection with each of the respective side surfaces or lateral extremities of the base plate portion **52** is a perpendicularly projected side plate portion **56**. The portions **56** are vertically oriented and project in a sense forwardly of the plate section **52**. Also, plate portions **56** have longitudinally directed and horizontally oriented lots **58** formed in their forwardly porjected extremities. Bolts **60** are projected through the slots **58** and releasably secured in suitable fashion to the adjacent wall elements **30**. By this means the control assembly **50** is adjustably supported on the frame **10**. Interposed between the wall elements **30** and each side plate portion **56** are a pair of gaskets **62** which have sandwiched therebetween plate segments **64**. The latter form upward extensions of the upper end of the integrated structure providing the flow surface between plates **48** and the interconnected wall elements **30**. As will be self-evident, on release of the bolts **60** and an obvious adjustment of the side plate segments **56**, as accommodated by slots **58**, and clamping once more of the bolts **60** to the wall elements **30**, one can selectively position the forward edge of the base plate **52** in respect to the continuous flow surface defined by the plate **45** and the screen sections **32, 34** and **36**.

Note, in FIGS. **5** and **6** of the drawings, that included on the rear extremities of the plate segments **56**, on their innermost adjacent surfaces, are flow control elements **57**. The elements **57** are triangular in horizontal section and have their apex portions projected inwardly of the flow path provided by the control plate portion **52**.

Thus, the control assembly **50** above described basically comprises base plate **52, 54**; side plate segments **56**; and the flow control elements **57**.

As seen in FIG. **1** of the drawings, the plates forming the wall elements **30** extend below the elements forming the flow surface and screen assembly above described. Spaced below the screen assembly, the plates **30** are connected at their bottoms by a plate **66** and at their lower extremity by a plate **68** to form thereby, in underlying relation to the screen assembly, a receptacle **69** for liquid which might pass through the screen. At the lower end and to the back of receptacle **69** is a tubular adapter framing an opening providing a discharge outlet **70**. Of course there are provided such additional brace elements for the wall **66** and between the wall elements **30**, suitably interconnected with the frame **10**, as may be necessary to achieve the stable screen assembly constituting an embodiment of the present invention.

In the example illustrated, the screen flow surface provided in conjunction with the receptacle **24** is vertically inclined with the section **32** thereof being angularly depressed to have its flow surface disposed in a plane at an angle of approximately 140° to 150° to a horizontal plane. Moreover, successive sections **34** and **36** are each positioned successively 10° closer to a horizontal. This constitutes a highly desirable arrangement to achieve the objectives of the present invention. However, it is to be understood that such is not to be construed as limiting. Invention embodiments can employ a screen flow surface which is inclined in a single plane, as well as in plural planes of infinite variety, achieving thereby a varying measure of improved result. Particular attention, however, is directed to the fact that the screen flow surface in the example illustrated is defined by bars or wires which between successive supports **40** depart from a straight line in a single curve, the apex of which is generally centered between the supports and projected in the direction of the slurry flow which moves over the screen flow surface. Utilizing this arrangement in conjunction with the control features to be described will have special benefits.

In utilizing the illustrated structure, effluent may be directed to the receptacle **24** in slurry form by way of the adapter **26**. As the slurry fills the receptacle and moves up to the top, it will move to and over the forwardly inclined wall segment **28** and flow over the control plate **52**. Depending on the nature of the slurry and the solid materials embodied therein, particularly the degree of fatty, oily and sticky substances clinging to the solids content, the plate segments **56** of the control assembly will be suitably adjusted to provide that the forward edge of the plate portion **52** is projected a predetermined amount over the flow surface provided, which includes that afforded by the screen unit. In this manner the portion **52** of assembly **50**, which substantially bridges the space between the plates **48** defining the limits of the operating flow surface, will dictate the line of discharge from the receptacle to the flow surface. The flow which leaves the receptacle will move in a thin flat stream over the plate portion **52**, in transit being defined laterally by the interposition of the sharp edged guides **57** which inhibit frictional adherence of the stream to the plate segments **56** in movement thereof to the forward edge of the control plate. From said forward edge the slurry drops in a thin sheet-like waterfall, to impact initially on a selected portion of the underlying flow surface. Depending on the position of the control plate **52**, there will be a selected length of drop and a selected position of impact of this waterfall, which includes a liquid vehicle in which are embodied solids, for example fibrous solids to which are adherent oily, fatty or like substances. The invention provides, and tests have so proved, that on initial impact of the fibrous matter there is a physical release therefrom of the oily and fatty substances to a substantial degree, as a consequence of which the released substances are entrained with the liquid and immediately a substantial portion thereof moves with liquid separated from the solids as the impacted slurry moves down the sections of the screen flow surface. This separated liquid containing only fine solids will move rapidly through the slots defined by the longitudinally spaced wires **38**, between the underlying support bars **40**.

In reference to application of the invention embodiment to a slurry including animal hair, tissue or the like, for example, including a clinging adherent medium, the controlled thin sheet delivery concept afforded by the invention, which may be selectively directed for initial impact on the screen flow surface, enables the fibrous solid content to be treated so that maximum effect is obtained in initial impact on the inclined flow surface. At that instant there is produced a significant release from the fibrous solids of oily and fatty substances, a substantial amount of which follows the surface of the bars **38** to be quickly washed through the screen slots in movement thereof down the inclined flow surface. The discharge of the fatty substances and total release thereof from the solids is achieved by accompanying and following liquid. Tests have proven that the change in the character of the solids content extracted in proceeding down a screen surface such as shown, utilizing the waterfall effect to impact in controlled areas, is significant. By the time of a single pass over the screen flow surface, a major portion of the adherent fatty and oily substances moves with water to the receptacle below the screen unit and is discharged. As a result, the dewatered solids moving over and from the top of the screen surface are ready for further use with minimal further handling and/or treatment. Not only this, but the effluent leaving the outlet **70** may be more readily accommodated and, furthermore, readily treated so that the resultant liquid discharge has a minimal of undesirable pollutants.

Looking in detail to the screen assembly, following initial thin waterfall slurry impact the liquids and the released fatty substance will successively move over the line of the transversely disposed bars or wires **38** defining the screen surface. Adhering thereto and rapidly and successively moving in part through the screen slots the development of the separation is enhanced by the tendency of the flow to move laterally to discharge through the apex portions of the slots and by movement in successively defined planes in which there is a gradual change in direction of the residual slurry flow which is successively dewatered in proceeding. It has been found that the controlled direction of flow in conjunction with the waterfall effect facilitates the longest and best fiber, feather or hair type elements to roll in bundles and eventually slide from the discharge end of the screen flow surface in an optimal form for further use. The rolling effect eventually achieved by the successive planes of movement of the solids facilitates the maximum extraction of the attendant liquid and entrained substances. As noted, the quick release of the liquids is expedited by the use of the particular form of the bars or wires wherein between supports the apex portions of the curves are directed towards the lower end of the screen unit. This maximalizes discharge.

A feature of the invention has been found to lie in utilizing elements **38** in bar form where the leading edge is relatively sharp. By placing the thin waterfall so that impact will be achieved at least in part on the front edge surfaces of the bars, this will expedite initial through flow of liquid and fatty substance by release on impact while the lighter and long fiber and like solids of desirable character move down over the screen flow surface, entrained by following liquid portions of the slurry flow.

A further feature of the invention is that it eliminates the blinding which is often caused by adherent oily, fatty or sticky substances existing in the fluid flow across a screen, as a consequence of which the efficiency of a screening unit such as described may be readily impaired. Thus, by provision of the variably positioned waterfall effect of the invention, particularly in conjunction with a bar-type screen surface such as described, one can lend important economies and advances in the art and environmental advantages as well.

While the invention has been described in a particularly desirable embodiment, it will work to substantial advantage when applied with screen surfaces formed by bars and wires of shape other than that described, including simple parallel rod-type bars of rectangular and other shape. It is noted that the variable character of the control here provided for the waterfall effect is significant since there can be variations not only in the form of the slurry which is to be treated but in its flow rates and viscosity, which makes it critical as to the position and direction of impact of the slurry in initial delivery thereof to the particular screen surface employed.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise but one of several modes of putting the invention into effect and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described my invention, I claim:

1. A screen type separating and/or classifying apparatus comprising apertured screen structure defining a flow surface successive segments of which are arranged in different planes and formed by transversely extending bar-like elements having transversely spaced longitudinally extending underlying supports, said flow surface being positioned at an angle to a horizontal plane, means providing for connection of a source of supply of a slurry embodying hair, feathers or other fibrous material, and means for directing the slurry to said flow surface including means for selectively impacting said slurry on said flow surface to induce release from said material of adherent substance, said directing means including a formed plate-like structure over which the slurry is caused to flow to reach said flow surface, said plate-like structure including a generally horizontally orienting flat plate means made adjustable to direct flow to a selected specific area of the flow surface, said plate means having a selectively positioned edge portion over which the slurry will move in a waterfall effect to impact on said flow surface at a selected distance from and in correspondence with the adjusted position of said plate means.

2. A screen assembly as set forth in claim **1** characterized by said flow surface being comprised, at least in part, of spaced parallel bars or wires arranged generally transverse to the direction of slurry flow, said bars in-

cluding edge portions presented for impact of the slurry thereon as determined by the position of said flow directing means and said edge portion of said plate means being projected over said flow surface in the sense of flow to determine that the slurry will move downwardly therefrom in a thin sheet-like flow the impact of which produces a physical release from the solids in the flow of adherent substance as well as liquid and the form of said flow surface being such that the impacted slurry will move down the same in the process of which attendant liquid and separated adherent substances will be washed from and through said flow surface.

3. In a screen type separating and/or classifying apparatus of the type providing a screen surface declining from the horizontal and backed by a reservoir receiving a slurry of liquids, solids and semi-solids, which slurry overflows the reservoir and runs down the screen surface, the improvement comprising means intermediate the reservoir and screen surface for causing the overflowing slurry to reach the screen surface in a free fall waterfall effect productive of a more thorough scouring of the screen surface and a more complete release of liquids and semi-solids for passage through the screen surface, said means including a control plate at an upper side edge of said reservoir and projecting in the sense of flow from said reservoir in a generally horizontal plane above said screen surface, said plate being overflowed by slurry from said reservoir and presenting an outer edge over which the overflowing slurry cascades in a flat concentrated stream downwardly upon the screen surface.

4. Apparatus according to claim **3,** wherein said plate is adjustable relatively to said screen surface to select areas of the screen surface to receive the downwardly cascading slurry.

5. Apparatus according to claim **3,** wherein said means intermediate the reservoir and screen surface include sharp edged guide means defining lateral extremities of the stream as delivered to said outer edge.

6. In a screen type separating and/or classifying apparatus of the type providing a screen surface declining from the horizontal and backed by a reservoir receiving a slurry of liquids, solids and semi-solids, which slurry overflows the reservoir and runs down the screen surface, means for framing said screen surface including sidewalls and means disposed laterally between said sidewalls defining a point of overflow of the slurry from said reservoir, and a control assembly superposed on said laterally disposed means between said side walls including a horizontally oriented plate receiving the slurry from the reservoir and conducting it to a selected position over the screen surface, said plate having an edge projecting in the sense of flow in a vertically spaced overlying relation to the screen surface over which the slurry flows in a cascading stream downwardly upon the screen surface.

7. Apparatus according to claim **6,** wherein said control assembly includes means defining sharp edged guides defining lateral extremities of the slurry stream as delivered to said projecting plate edge.

8. Apparatus according to claim **6,** wherein said control assembly includes means effecting an adjustable mounting of said plate to said sidewalls whereby said plate may be adjusted in a longitudinal sense relative to said screen surface to determine a location on said screen surface to receive the downwardly cascading slurry stream.

9. A screen type separating and/or classifying apparatus comprising means defining an apertured flow surface, said flow surface being positioned at an angle to a horizontal plane, and means for directing a slurry embodying solids including, for example, hair, feather or other fibrous material, to said flow surface, said slurry directing means including generally horizontally oriented plate means for conducting the slurry to a selected position over said flow surface, said plate means having a delivery edge portion projecting in the sense of flow and positioned in a spaced overlying relation to said flow surface and said edge portion being arranged to provide that the slurry moves downwardly therefrom in a cascading stream to impact on said flow surface and thereby achieve a definitive initial separation of said solids and the liquid vehicle comprising the slurry.

10. Apparatus as set forth in claim **9** characterized by at least part of said flow surface being defined by longitudinally spaced apart bars or wires arranged transverse to flow forming apertures with underlying supports, said bars or wires forming curves between said supports and apex portions of said curves being directed in the sense of slurry flow across said flow surface.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,815,740 Dated June 11, 1974

Inventor(s) Marvin E. Ginaven

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 13, correct "advantages" to read -- advantageous --.

line 45, correct "fribrous" to read -- fibrous --.

Column 5, line 23, correct "lots" to read -- slots --;

same line, correct "porjected" to read -- projected --.

Signed and sealed this 15th day of October 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

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