G. P. DALY.

REVERSIBLE SCREENER.

APPLICATION FILED SEPT. 24, 1915.

1,185,595. Patented May 30, 1916.

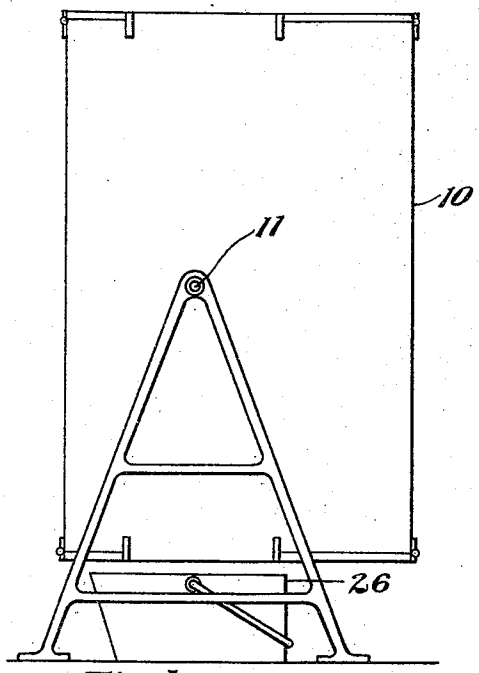


Fig. 1

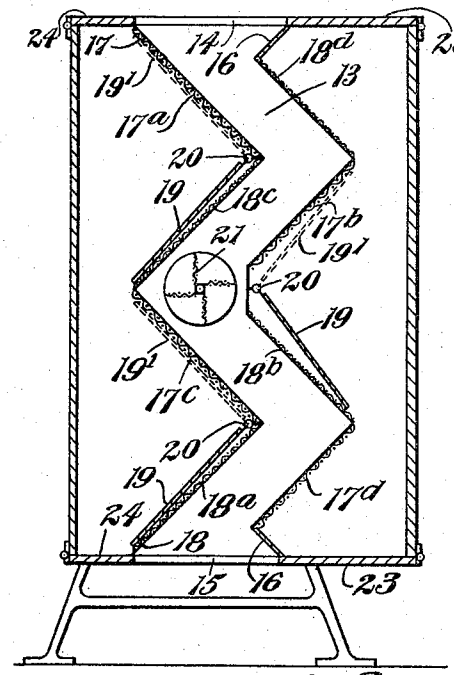


Fig. 2

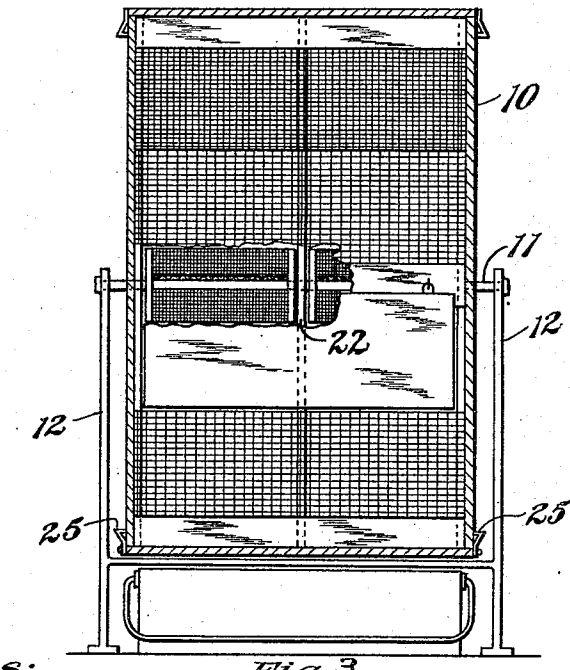


Fig. 3

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REVERSIBLE SCREENER.

1,185,595. Specification of Letters Patent. Patented May 30, 1916.

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To all whom it may concern:

Be it known that I, GEORGE P. DALY, a citizen of the United States, and resident of Boston, county of Suffolk, Commonwealth of Massachusetts, have invented an Improvement in Reversible Screeners, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts in each of the several views.

This invention relates to screening apparatus of a portable low down type adapted to screen and clean effectively, granular and lump material such as corks, grain, coffee, beans, small fruits, coal, etc.

A prime object of the invention is to provide an improved apparatus of this kind that is reversible to bring into operative position different screening members selectively without dismantling or removing any part of the mechanism, or performing any other manipulation than simply turning the screen housing or frame over to relatively inverted position. In this way I am enabled to practically combine in one, two screeners which may be, one of relatively fine mesh and the other of relatively coarse mesh, or the screening elements of the two screeners may be of different formations specially suited for different kinds of materials.

In accordance with my invention I preferably mount the screening elements on a central pivot axis about which they are adapted to turn, and mount on the same axis a freely moving wheel or drum with vanes in the path of the material as it moves by gravity, to further distribute and agitate the material over the screening surfaces by centrifugal action, this wheel or drum being operative equally well whether one or the other of the sets of screening members is in operative position.

The above and other objects and features of the invention will be better understood from the following detailed description taken in connection with the accompanying drawings and will be thereafter pointed out in the appended claims.

Referring to the drawings: Figure 1 shows in side elevation an apparatus constructed in accordance with my invention; Fig. 2 is a central vertical section thereof; and Fig. 3 is a view at right angles to Fig. 2 from the right in said figure with the housing broken away, and a part of the interior mechanism also broken away to better show other parts.

My improved screening mechanism is preferably contained in a suitable frame housing 10 oblong in shape and mounted centrally of its long dimension on an axis which may consist in a rod or shaft 11 with its end supported in standards or uprights 12, these of course merely typifying any suitable base support for holding the journal axis of the apparatus. The housing 10 has extending through its longer dimension screening elements at each side of, and forming the walls of, a zig-zag passage way 13, the ends of this passage way opening out at the ends of the housing as indicated at 14, 15, preferably with an outwardly beveled extremity as seen at 16 to constitute a receiving hopper whichever end happens to be uppermost. The screening elements which constitute the walls of the zig-zag passage 13 are formed as a series of generally plane screen surfaces obliquely mounted so that the material after sliding by gravity down over one of said surfaces toward one side of the apparatus, when it comes to the end of said surface is discharged across the passage 13 on to a similar screening surface disposed in receiving relation thereto and extending obliquely in the other direction across the apparatus by preference approximately at right angles to the preceding surface. Thus the screening members that will be in operative position at any time consist in screening surfaces alternately on one side and then the other of the passage 13. Thus whichever end up the apparatus may be, it will be noted that of the zig-zag screening members constituting the walls of passage 13, alternate ones that face upward on the inside of the passage will be operative and the intermediate ones inoperative.

I preferably make the alternate screening members at each side of the passage 13 of different formation or texture, and relatively arrange them so that the complete screening mechanism made up by alternate screening members at the two sides of the passage 13, as an entity is adapted to handle certain classes of material for which the other screening mechanism formed by the remaining alternate screen members may not be adapted. For illustration I show the screening mechanism 17 which is in opera-

tive position in Fig. 2 as of a relatively coarse mesh. This screening mechanism is formed of four screen members 17^a, 17^b, 17^c, 17^d disposed alternately in opposite oblique relation at the two sides of the passage 13 so that the material is jounced, bounced and agitated from each member on to the next lower one of the series until it is finally discharged from the lower passage 15.

When it is desired to use the apparatus for screening finer materials than the screening mechanism 17 is adapted for, the housing 10 is inverted on its axis 11 bringing the passage 15 on top where it will serve as a hopper while the passage 14 being then at the bottom will be the discharge outlet. The screening mechanism 18 composed of the relatively fine screen plates or members 18^a, 18^b, 18^c, 18^d will then be in operative position for screening the materials for which its range is best adapted. Thus without enlarging or appreciably complicating the apparatus its field of use is greatly extended and two screeners are practically combined in one. Since whichever end up the apparatus may be, the screenings that pass through the screens in operation will fall on to the next lower alternate screens on the same side that are inoperative, it is necessary to provide shield or cover members to prevent the screenings from passing through these inactive screen members back into the passage 13. For this purpose I show shield plates 19 pivoted at 20 in the angles between the respective screens and each of a size to substantially cover the next lower screen, against which they will in each case swing by gravity as will be readily understood when the apparatus is turned upright with either end up, the positions which these shield members will occupy when the housing is inverted from the position shown being indicated at 19′. It is to be understood that this showing of the two screening mechanisms as the one relatively fine, and the other relatively coarse, mesh screens is merely illustrative and intended to typify any different screen formations of the two screening mechanisms adapted for handling different kinds of materials, to widen and extend the field of use of the apparatus, whether the screen meshes of the two mechanisms be of different degrees of fineness or otherwise differentiated.

For furthering the bouncing and agitation of the material as it descends by gravity through the passage 13 so that it will be most effectively projected upon the screening surfaces, I preferably provide a free moving wheel or drum 21 with a series of vanes which may be of screen mesh, in the path of the material as it descends through the passage 13. I preferably mount this agitating drum on the axis shaft 11, and with this mounting it is adapted to serve its function equally well which ever end up the apparatus may be, being driven of course in one direction with the apparatus in the position shown, and in the opposite direction when the screening mechanisms are relatively inverted.

In cases where it is desired to enlarge the capacity of the apparatus I preferably mount a plurality of screening apparatus units as just described on a single base support, and with a common axis shaft mounting 11. As shown in Fig. 3 two of such units are arranged side by side in a common housing 10, there being an intermediate supporting partition 22. The end of the housing 10 adjacent the inlet and outlet openings 14, 15, may be closed by hinged members 23, 24 adapted to be held closed normally by a suitable means shown as spring catches 25 and opened at will to permit discharge of the waste screenings from the bottom whichever end is up. A suitable receiver is indicated at 26 for receiving the screened material. I thus provide a compact low down apparatus adapted to thoroughly screen and clean a wide range of materials by the action of gravity alone and am enabled to shift the apparatus from its position for screening one class, such as relatively coarse materials, to another class, such as relatively fine materials, quickly and easily. In practice suitable means (not shown) may be provided for holding the housing upright with either end up at will.

I am aware that the invention can be embodied in other specific forms without departing from the spirit or essential attributes thereof and I therefore desire the present embodiment to be considered as illustrative and not restrictive, referring rather to the appended claims to indicate the scope of the invention.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. Screening apparatus, comprising two screening mechanisms of different formations for handling different kinds of materials, mounted and arranged to form a zig-zag path down which the material will slide by gravity, and a mounting for said mechanisms permitting the bodily shifting of the same whereby either mechanism may be brought into operative position with the other inoperative at will for the purpose stated.

2. Screening apparatus, comprising two screening mechanisms, each composed of a set of screening members arranged in oblique zig-zag relation for screening material by gravity, the screening members of the two mechanisms being of varied formation for handling different kinds of materials, and a common mounting for said mechanisms journaled to permit bodily

swinging of the same to bring either screening mechanism into operative position at will with the other inoperative.

3. Screening apparatus, comprising two screening mechanisms, each composed of screen members arranged in oblique zig-zag relation for material to move thereover by gravity, the screen members of one mechanism being of finer mesh than the other, a mounting for said mechanisms journaled to permit swinging thereof to bring either to operative position at will with the other inoperative, and shield members movably mounted to cover inoperative screen portions in either position of the mechanisms for the purpose stated.

4. Screening apparatus, comprising two screening mechanisms having diverse screening properties, each of said mechanisms consisting in a set of screen members disposed in oblique zig-zag relation forming together a zig-zag descending passage way for the material with a member of one mechanism alternating with a member of the other mechanism at each side of said passage way, and a mounting for said mechanisms permitting the swinging thereof to bring said passage way upright with either end up at will, both ends of said passage way being formed to serve as receiving hoppers.

5. Screening apparatus, comprising two screening mechanisms having diverse screening properties, each of said mechanisms consisting in a set of screen members disposed in oblique zig-zag relation forming together a zig-zag descending passage way for the material with a member of one mechanism alternating with a member of the other mechanism at each side of said passage way, a mounting for said mechanisms permitting the swinging thereof to bring said passage way upright with either end up at will, and a free moving drum mounted upon the axis on which said mechanisms swing, said drum having vanes in the path of the material descending through said passage way.

6. Screening apparatus, comprising a plurality of screening units, each consisting in two sets of screening mechanisms, each screening mechanism composed of a set of screening members disposed in oblique zig-zag relation to form between them a passage way for the material, said mechanisms having diverse screening properties, a mounting for said apparatus journaled to permit turning thereof to bring said passage way upright with either end up at will, and a free moving wheel journaled on the same axis on which the apparatus turns, and situated in said passage way presenting vanes in the path of the material descending therethrough.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

GEORGE P. DALY.

Witnesses:
LOUISE A. JORDAN,
CLYDE L. ROGERS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."