

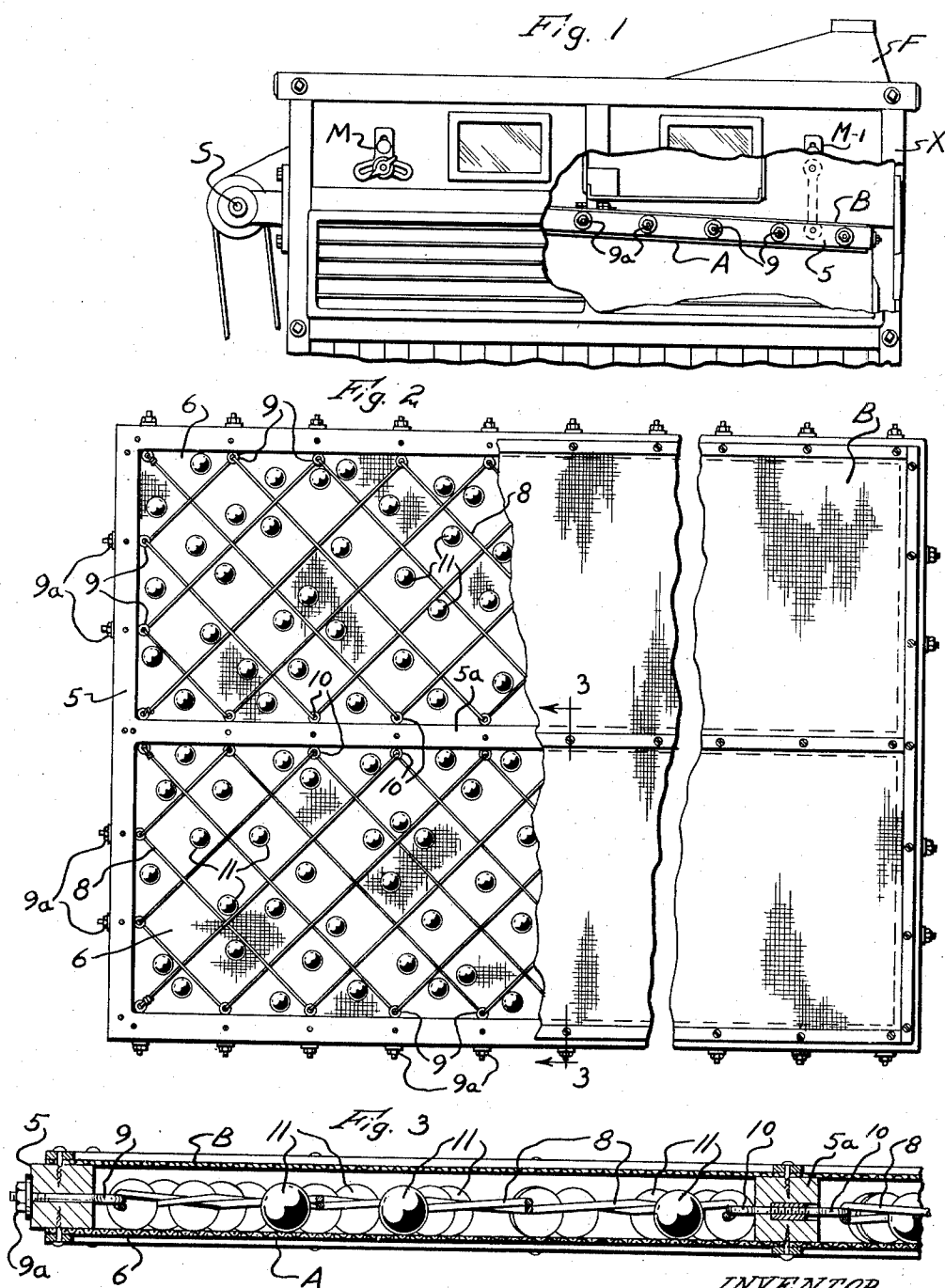
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CLEANER APPARATUS FOR PURIFIER SIEVES AND THE LIKE

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CLEANER APPARATUS FOR PURIFIER SIEVES AND THE LIKE

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3 Claims. (Cl. 209—381)

This invention relates to screens for gyratory or reciprocating sifters or bolting equipment such as are used in flour purifiers and the like.

At the present time, purifiers are provided with gyratory or reciprocating brushes beneath the bolting cloth which, in movement, contact the under-side of the cloth or other sifter to prevent clogging of the apertures therein. Such brushes require driving and guiding mechanism and also serve to obstruct the free flow of fines through the mesh of the sifter.

It is an object of my invention to provide simple, but highly efficient, cleaning apparatus for the screens of flour purifiers and the like which may be readily installed in conventional screens now used; which will eliminate the need for any driven or guided mechanism such as brushes and which will, in a highly efficient manner, prevent clogging of the mesh of the bolting cloth or sieve.

A further object is the provision of a commercially successful and economical apparatus or structure for producing the gyration of a purifier screen, light impacts at different points upon the sieve to free the pores or mesh thereof of particles and maintain the sieve in clean condition.

More specifically, it is an object to provide cleaning apparatus of the class described wherein a series of preferably resilient balls are confined in simple confining units between the under-side of a shaking screen and the sieve or bolting cloth at the top thereof whereby the gyration or reciprocation of the screen in operation, in cooperation with such confining means, agitates the balls to rapidly and intermittently tap the under-side of the sieve to maintain the same in clean condition.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings wherein like reference characters refer to the same parts throughout the several views and in which:

Figure 1 is a side elevation with portions broken away of a conventional type of purifier having an embodiment of my invention applied to the shaking screen thereof;

Figure 2 is a top plan view of one of the screens detached, portions of the bolting cloth being broken away; and

Figure 3 is a cross section on a larger scale taken on the line 3—3 of Figure 2.

In Figure 1, the upper portion of a conventional type of purifier is illustrated, having the rectangular supporting frame X, the built-in fan structure F, ventilation louvers L and the conventional powered shaft S. One of the side walls of this conventional purifier is broken away to show one of the shaker sieves or screens indicated as an entirety by the letter A. This screen, in conventional manner, is mounted for gyratory and substantially reciprocable movement and the adjustment of the stroke and slope of the screen may be adjusted exteriorly of the purifier housing by mechanisms M and M1 respectively.

My invention consists in the cooperation relationship

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of a multiplicity of individually confined ball members loosely disposed beneath the sieve or bolting cloth which, in combination with the screen frame and its reciprocating motion, strike or tamp the under-side of the screen at a great multiplicity of unpredictable points to free the mesh of the screen from particles.

The screen A, as shown in Figures 2 and 3, has a rigid rectangular frame 5 usually constructed of wood and, as shown, is provided with an intermediate reinforcing bar 5a. The sieve, which may consist of conventional bolting cloth B or very fine mesh, wire flour screen, covers the upper side of the frame 5, as shown in Figures 2 and 3. I provide a foraminous ball-supporting deck 6 which may consist of a relatively stiff wire netting of coarse mesh from 6 to 10 wires to the inch, which is tightly stretched across and secured to the lower side of frame 5 as by strips or cleats.

A ball-confining medium preferably in the form of a wire netting 8 is strung or otherwise supported immediately of the upper and lower faces of the screen frame, as shown, being woven from wire to form individual confining units or wire mesh of substantial area. In practice, I find that the mesh of the said netting 8 may define square or encircling areas of from 2½ to 5 inches and will function efficiently for the purposes intended. The wires of netting 8 are strung, as shown in Figure 2, with the squares defined thereby being diagonally disposed to the ends and sides of the screen frame. The wire netting 8 is strung through eye bolts 9 or the equivalent, whereby the netting may be tensioned by tightening up nuts 9a threadedly engaging such bolts and disposed externally of the side and end edges of the screen frame. Additional eye bolts 10 are appropriately spaced and secured to the intermediate reinforcing bar 5a cooperating with eye bolts 9 to secure the confining netting 8 in a substantially horizontal position immediately of and parallel to the bolting cloth or sieve B and the ball-supporting deck 6.

In close cooperative association with the individual confining units defined by the mesh of netting 8, I provide a multiplicity of independent and unconnected balls 11. These balls may conveniently be constructed of elastic rubber, plastic or other materials preferably, but not necessarily, having resiliency and having a specific gravity considerably less than copper or iron. The balls are preferably of a diameter somewhat greater than half the distance between the bolting cloth B and the supporting deck 6, so that they may not bounce out of their individual confining meshes. The diameter of balls 11 is much less than the dimensions of the areas defined by the confining units. In practice, I very successfully utilized rubber balls which have a diameter from ⅜ of an inch to 1¼ of an inch, but it is to be understood that successful results can be obtained with substantial variances from this range.

In operation, the entire screen is bodily and longitudinally shaken or gyrated through the conventional eccentric or crank mechanism of the purifier (not shown in detail), this gyratory or reciprocating movement producing sifting of the reduced farinaceous material or flour which is delivered to the upper end of the screen upon the bolting cloth or sieve. This said reciprocating movement through the medium of the wire mesh or confining units of netting 8 agitates the balls causing them to bounce back and forth between their supporting deck 6 and the under-side of the sieve. The balls, in such great multiplicity of agitations strike the under-side of the bolting cloth or sieves at unpredictable points within the areas of their respective confining units, thereby removing any particles which tend to clog in the pores or meshes of the sieve and effectively cleaning the sieve during operation.

It is to be understood that I do not require individual balls for each and all of the confining units or mesh of the netting 8, although most efficient results can be obtained if a ball is provided for each of the areas defined by the mesh of netting 8.

From the foregoing description it will be seen that I have provided simple, economical and highly efficient cleaning apparatus for the screens of flour purifiers and the like which may be embodied as standard equipment by the manufacturer or which may be readily installed in conventional sifters now used. It further will be seen that my apparatus eliminates the expense and complexity of auxiliary driving transmission and gyratory brushes while attaining results substantially improved over prior art structures.

It will, of course, be understood that various changes may be made in the form, detail, arrangement and proportions of the parts without departing from the scope of my invention.

What I claim is:

1. In a shaker screen for purifiers and the like having the usual rigid supporting frame and the usual sieve medium covering the upper side of said frame, cleaning apparatus for preventing clogging of the mesh of said sieve having in combination a highly foraminous ball-supporting deck supported from the lower portion of said frame, a stiff ball-confining netting support intermediate of said deck and said sieve and having a multiplicity of interconnected meshes, a multiplicity of resilient balls of a diameter less than the distance between said sieve and said deck and substantially less than the smallest dimension of one of said meshes, each ball being separately confined in an independent mesh, said netting

being strung intermediately of the top and bottom of said frame, and means supported from said frame for tensioning said netting.

2. Cleaning apparatus for preventing clogging of the sieves of purifier shaker-screens and the like, comprising a foraminous ball-supporting deck supported from the bottom portion of the frame of a shaker-screen in spaced, parallel relation to the conventional sieves supported on the upper portion of said frame, a ball-confining netting of stiff material traversing the interior of said frame and strung upon said frame intermediately of the top and bottom thereof and in spaced parallel relationship with both said deck and said sieve and providing a multiplicity of large, interconnected meshes, and a multiplicity of balls of a diameter less than the spaced relation between said deck and said sieve but of a greater diameter than the spaced relation between said netting and said sieve and between said netting and said deck, each of said balls being confined in an independent mesh of said netting whereby shaking of the screen and frame will produce agitation and rapid striking of said balls at frequent intervals against the underside of said sieve.

3. The structure set forth in claim 2 wherein said netting consists in strong, tensioned filaments defining mesh of rectangular shape and of very substantially greater area than the cross sectional area of one of said balls.

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