

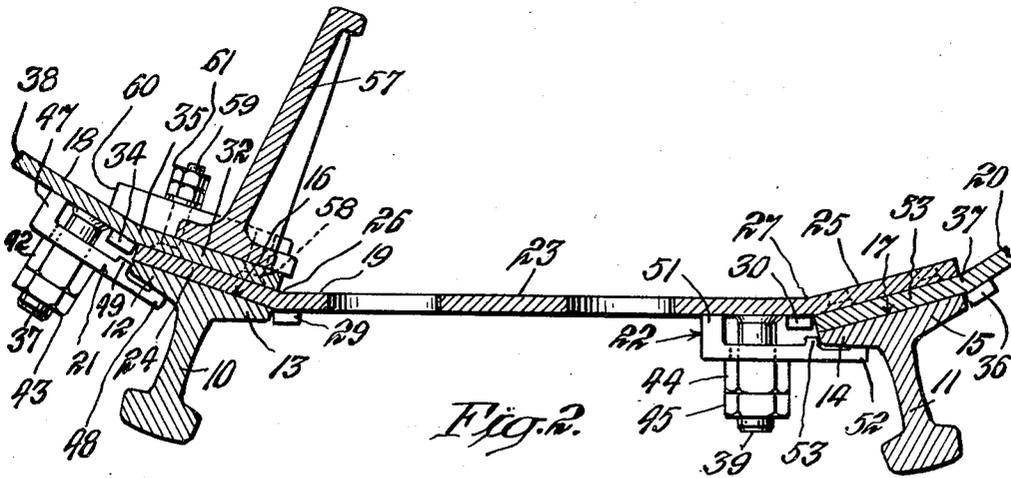
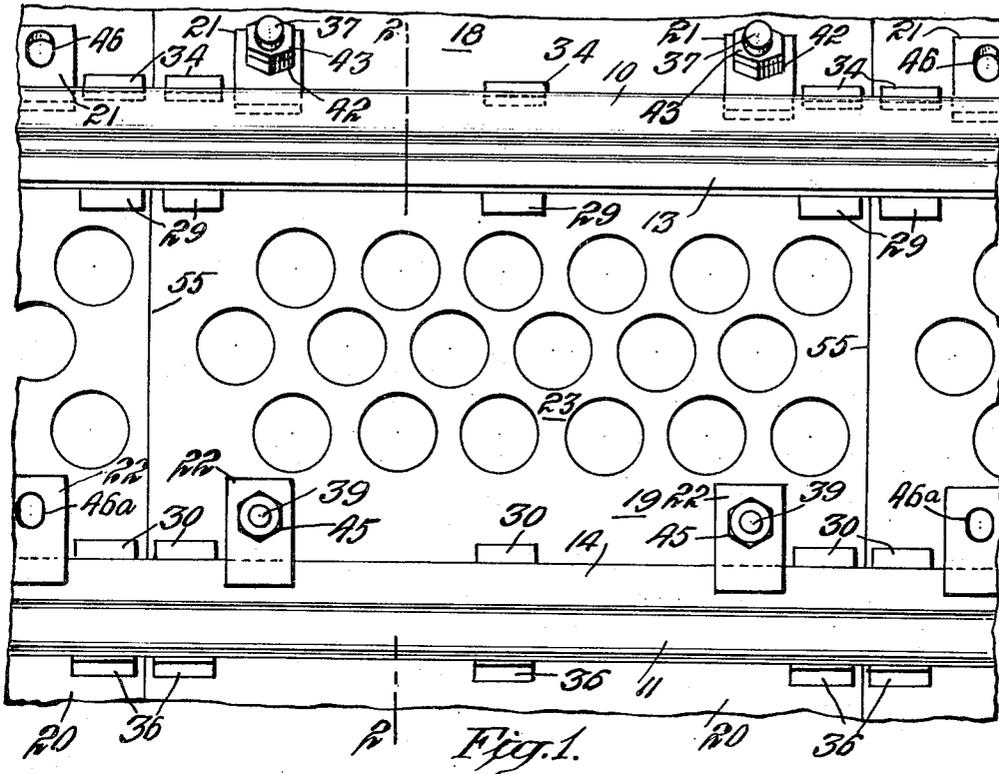
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SCREEN PLATE AND MOUNTING

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SCREEN PLATE AND MOUNTING

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6 Claims. (Cl. 241-91)

This invention relates to rotating drum type breakers and particularly to the mounting of the walls of the drum on the supporting beams.

The invention applies particularly to rotating drum breaker of the Bradford type for reducing frangible material such as coal. The breaker has a drum with a cylindrical perforated wall mounted on longitudinal extending supporting beams and uniformly spaced around the drum. The beams are fastened at their ends to ring-shaped members or spiders to form a supporting structure for the drum. The drum wall comprises individual plates attached along their longitudinal edges to the beams to form a continuous surface from one end of the drum to the other. The plates are perforated with closely spaced openings to pass the broken coal or material. Extending longitudinally along the inner surface of the drum are circumferentially spaced lifting shelves which project inwardly. As the drum rotates the shelves pick the coal up and drop it.

An object of this invention is to provide means for easily and readily attaching and detaching screen plates to the longitudinal supporting beams.

Another object of this invention is to provide a screen plate that readily and securely fits on the longitudinal supporting beams.

Another object of this invention is to provide a screen plate that may be removed without disturbing the peripherally adjacent plates.

Another object of this invention is to provide a means for attaching screen plates without bolting the screen plates to the longitudinal supporting beams.

Another object is to interleave the edges of the screen plates without bolting the plates together.

Other and further objects of the invention will be apparent from the specification taken in connection with the accompanying drawings in which:

Fig. 1 is an outer fragmentary view of the drum; and

Fig. 2 is a cross-sectional view of the drum wall taken along lines 2-2 of Fig. 1.

The uniformly spaced supporting beams 10, 11 have flanges 12, 13 and 14, 15 respectively and flat inwardly facing mounting surfaces 16, 17 respectively. The screen plates 18, 19 and 20 are mounted on the beams and tightly secured thereto by the clamps or dogs 21, 22. Each screen plate is similar with a central portion and longitudinal edge portions.

In Fig. 2 the screen plate 19 has a planar central portion 23 with edge portions 24, 25 along opposite edges of the central portion. The edge portions are bent at the same angle to the central portion and form bends or curved sections 26, 27 with the central portion. Along the curved portion 26 are stops 29 and along the curved portion 27 are stops 30. The edge portion 32 of plate 18 and the edge portion 33 of plate 20 have stops 34 along the bend 35 of plate 18 and stops 36 along the bend 37 of plate 20.

Studs are spaced along an edge portion of each plate for threading nuts thereon to hold the clamps. Clamps

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21 are mounted on studs 37 welded to the outwardly facing surface of the central portion 38 of plate 18 adjacent the edge portion 32 and clamps 22 are mounted on the studs 39 welded to the outwardly facing surface of the central portion 23 of the plate 19 adjacent the edge portion 25. Nuts 42, 43 are threaded on the studs 37 and nuts 44, 45 are threaded on the studs 39 to securely hold the respective clamps 21, 22.

The edge portions of adjacent flanges overlap at the inwardly facing surfaces of the supporting beams. The edge portions 32, 24 of plates 18, 19 overlap and are held in overlapping relation by the studs of plate 18, 19 and the clamp 21. Similarly the edge portions 25, 33 of plates 19, 20 overlap and are held in overlapping relation by the studs of plate 19, 20 and clamp 22.

The edge portion 25 is held in position by the stops 30 bearing against the end or edge of the secured plate 20 and the clamping of the plate 19 to the wedge-shaped flange 14 by the clamps 22. The stops 29 bear against the flange 13 to further position the plate 19. The edge portion 24 is pressed down against the beam 10 by the clamp 21 so that the stops 29 will bear against flange 13. The edge portion 32 is positioned by the stop 34 to overlap with the edge portion 24 and the inwardly facing surface. The plates are held in position by the coaction of the successive plates on the preceding plates. The interbracing of the plates and clamping forms a rigid and secure drum wall.

The clamps 21, 22 have elongated holes 46, 46a respectively to pass the studs 37, 39. The feet 47, 48 of the clamp 21 bear against the central portion of the plate 18 and the flange 12 respectively. A guide 49 between the two feet engages the edge of the flange 12 to position the clamp. The feet 51, 52 of clamp 22 bear against the central portion of the plate 19 and the flange 14 respectively. The guide 53 between the two feet engages the edge of the flange 14.

The clamps 21 are tightened by the nuts 42, 43 threaded on the studs 37. The feet 47, 48 bear against the central portion of plate 18 and flange 12 respectively. As the nuts are tightened the edge portion 32 is drawn against the edge portions 24 of plate 19 and the stops 34, 29 are drawn into locking relation with the end of plate 19 and flange 13 to prevent any lateral or peripheral movement of the two plates. The clamp 21 and stud 37 hold the plates from moving radically inward.

The edges 55 of the screen plate extend peripherally around the drum and are in abutting contact to prevent the plates from moving longitudinally. Thus in each direction the plates are firmly held. The plates form a drum structure that is not directly bolted to the supporting beams.

A screen plate can be mounted or removed without affecting the portion of the other adjacent plates or disturbing them to any appreciable extent. The plate 19 may be removed by unthreading the nuts 44, 45 and loosening or unthreading the nuts 42, 43 on stud 37. The end of plate 19 with stud 39 may be pulled into the interior of the drum and the edge 24 drawn from between the edge portion 32 of plate 18 and the flat inner surface of the beam 10. The plate 18 and the plate 20 are both securely held along the other edges (not shown) so that the two plates remain in position.

A screen plate 19 may be mounted fitting the edge portions 24 in between the loosened or free edge portions 32 and beam 10. The edge portion 24 may then be fitted in place and the clamps 22 secured on the studs 39. The stops 29 and 30 are fitted between the flange 13 and the end of plate 20 so that the screen plate 19 with the edge portions will fit snugly in place and hold the plate against transverse movement on the frame.

Lifting shelves 57 may be mounted on the inner wall

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of the drum and extend inward towards the center. Holes are provided in the edge portion adjacent the clamp. On plate 18 holes 58 are provided in the edge portion 32. The shelf 57 is attached to the plate by the bolts 59 extending through the edge portion and the base 60 of the shelf. Nuts 61 are threaded on the bolts to securely hold the shelves in place. The adjacent plate 19 may be removed without disturbing the attachment of the shelf to plate 18.

The weight of the coal is carried by the screen plates and passed to the beams depending on the position of the drum wall plate. When the plate is at the bottom of the load is transmitted to the beams through the edge portions of the plate. As the shelf and adjacent plates the drum the coal piles up on the central portion and move up on the side of the drums the coal slides on the drum wall and catches in the lifting shelf. As the shelf turns to a more horizontal position the weight of the coal is carried by the shelf and transmitted through the bolts 59 to the screen plate. The ridge 49 on the clamp 21 rests on the edge of the flange 12 of the beam so that the weight of the coal on the shelf is carried by the beams through the studs and clamps spaced along the screen plate. The load may also be transmitted to the succeeding beam 11 through the stops to the succeeding clamps 22. Thus the load on one shelf is distributed to adjacent supporting beams.

In the above description the various features and elements of the invention have been specifically described for purposes of clarity. It is understood that various modifications and changes may be made without departing from the scope of the invention.

I claim:

1. A breaker drum wall comprising longitudinal supporting beams evenly spaced circumferentially around the drum and each having a flat inwardly facing mounting surface, a drum wall plate mounted on said rail beams and having a central portion and two edge portions extending longitudinally along opposite edges of the central portion and bent on the same side of the central portion at an angle thereto to fit in overlapping relation with said inwardly facing mounting surfaces, a clamp attached to the central portion of the drum plate and having an engaging projection gripping said beam to hold one of said edge portions in overlapping position.

2. A breaker drum wall comprising longitudinal supporting beams evenly spaced circumferentially around the drum and each having a flat inwardly facing mounting surface, a drum wall plate mounted on said rail beams and having two edge portions extending longitudinally along opposite edges of the plate to fit in overlapping

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relation with said inwardly facing mounting surfaces, a clamp attached to the drum plate and having an engaging projection gripping said beam to hold one of said edge portions in overlapping position.

3. A breaker drum wall comprising longitudinal supporting beams evenly spaced circumferentially around the drum and each having a flat inwardly facing mounting surface, a drum wall plate mounted on said rail beams and having a planar central portion and two edge portions extending longitudinally along opposite edges of the central portion and bent on the same side of the central portion at an angle thereto to fit in overlapping relation with said inwardly facing mounting surfaces, a clamp attached to the central portion of the drum plate and having an engaging projection gripping said beam to hold one of said edge portions in overlapping position.

4. A breaker drum wall as claimed in claim 3 wherein stops are provided on said central portion adjacent the respective edge portions, said stops along the other of said edge portions bearing against the adjacent beam and the stops along the edge portion adjacent said clamps bearing against an overlapping edge portion of an adjacent plate.

5. A breaker mill as claimed in claim 4 wherein a lifting shelf is mounted on one of the edge portions.

6. A breaker drum wall comprising longitudinally extending and even circumferentially spaced supporting beams, each beam having an inwardly facing mounting surface, screen wall plates having uniformly spaced openings and mounted on said beams to form a substantially cylindrical perforated drum for passing material below a given size, each plate having a planar central portion and two mounting edge portions extending longitudinally along opposite edges of the central portion and bent inwardly at an angle to the central portion to fit in overlapping relation with said inwardly facing mounting surfaces, circumferentially adjacent plates having the mounting edge portions overlapping each other and said beam mounting surface, a clamp attached to the central portion adjacent the innermost edge portion, said clamp having an engaging projection gripping said beam and holding the intermediate edge portion between said innermost edge portion and the mounting surface to rigidly secure said plates to said beams.

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