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G. M. STEDMAN

REVOLVING SCREEN

Filed April 27, 1921

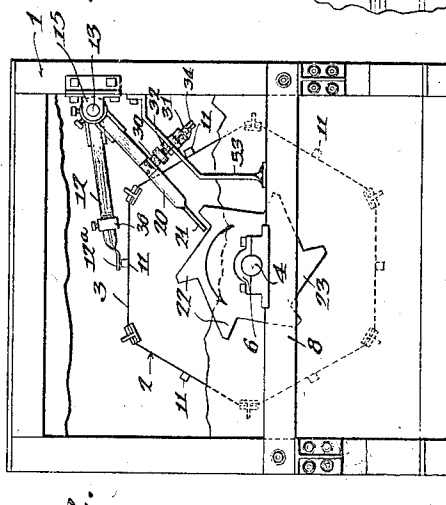
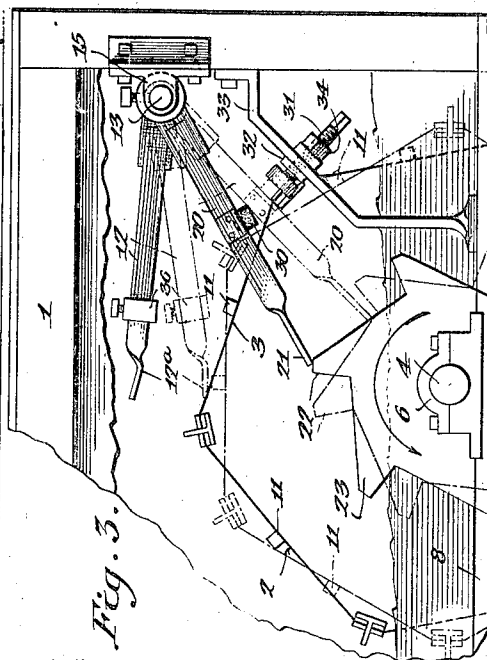
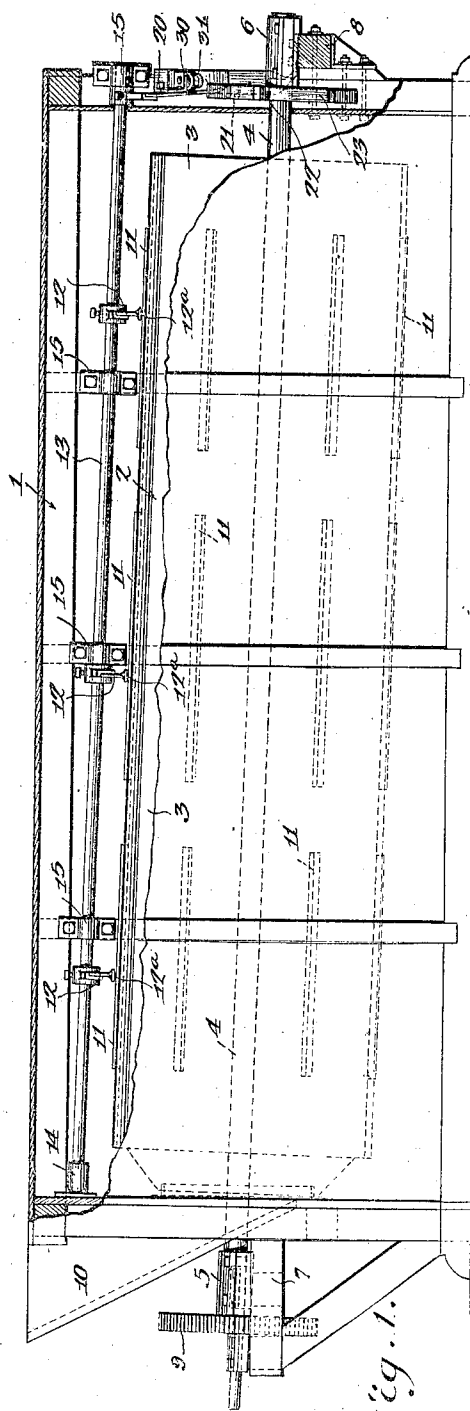


Fig. 2.

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REVOLVING SCREEN.

Application filed April 27, 1921. Serial No. 464,771.

To all whom it may concern:

Be it known that I, GEORGE M. STEDMAN, a citizen of the United States, and residing at Aurora, in the county of Dearborn and State of Indiana, have invented a new and useful Improvement in Revolving Screens, of which the following specification is a full disclosure.

This invention relates to tapper mechanism construction and operation, as applied to screening-drums of a type wherein the substance to be screened or sifted is placed, and the drum rotated to accomplish the sifting operation.

These drums are usually of hollow, prismatic, regular polygonal configuration and are formed of a series of spider-frames centrally mounted upon a shaft and covered with wire screening of the desired mesh. Baffles are generally suitably arranged at the interior to cause the material to be raised and dropped upon the lowermost faces of the drum. This invention does not pertain to the drum structure but only to the means for vibrating the drum walls. The adherence of the substance being screened within the interstices of the screen material at the interior of the drum prevents the proper functioning of the screen, and much difficulty has been experienced in loosening the adhered substances therefrom, throughout the entire area of the screen walls.

An object, therefore, of this invention is to percussively vibrate the drum walls to loosen the adhered substance, this object being furthered by successively sharply tapping or striking and vibrating each wall, throughout its entire area, while the wall is in its uppermost position, or by striking the periphery of the drum at a determined point or points, and with predetermined frequency at each cycle of revolution.

Another object is to provide for delivering whip-like blows to the walls, through the medium of strips or bars fastened to said walls, these blows being delivered in such a manner that the drum walls are permitted to vibrate freely thereafter.

Another object is to provide for varying the intensity of the whip-like blows.

Other objects and certain advantages will appear in the description of the drawings, forming a part of this specification, and reference is made to said drawings, in which:

Fig. 1 is a side elevation of one form of

screening machine, portions of the side wall of the same being broken away to show my improved tapper construction in operable conjunction therewith.

Fig. 2 is an end view of Fig. 1.

Fig. 3 is an enlarged fragmentary view of the structure of Fig. 2, showing in full and in dot-and-dash lines the tapper action.

The numeral 1 generally designates a type of machine technically known as a "screen," comprising a suitably enclosed frame structure, within which, and mounted lengthwise thereof for rotation, is a drum 2 of any preferred hollow prismatic or cylindrical formation, in this instance, having a cross sectional configuration of a regular hexagon, which may be composed of spider-frames over which screen material 3, of suitable mesh, is stretched, the drum structure per se forming no part of my invention. The drum is supported longitudinally of its central axis by a shaft 4, slantingly mounted in bearings 5 and 6, mounted upon cross frames 7 and 8, and is rotatable through any suitable means indicated at 9. The substance to be screened is introduced at the upper interior of the inclined drum through a hopper 10, a portion of the same passing through the screen, the residue being discharged at the lower end thereof.

Upon each outer face of the taut screen material centrally thereof and spaced longitudinally thereon are a plurality of wooden or metallic strips or bars 11, each functioning to sustain whip-like blows imparted thereto by a corresponding tapper-arm 12. These arms are rigidly but adjustably mounted upon a shaft 13, held in suitable bearings 14 and 15 at one side of and slightly above the drum 2, and the shaft and arms thereon are operated simultaneously to give springing whip-like or percussion blows to the bars 11, when any one of the drum faces is in its uppermost position, the rotation of the drum bringing each row of rods or bars 11 consecutively into a position to receive the said blows. The tapper arm shaft 13, at one end, and outside of the "screen" enclosure, is provided with a trip arm 20 rigidly but adjustably mounted thereon, its outer end 21 being engageable with the stepped teeth 22, of a trip wheel 23, rigidly mounted upon the shaft 4, the teeth of said wheel corresponding and being equal in number to the drum faces, or of such a number as will act

to control the periodicity and number of blows delivered against a cylindrical screen at each cycle of revolution. The teeth are so related to said drum faces that the trip arm 20 will be raised and allowed to fall, (see Fig. 3), imparting motion to the taper arms 12, causing the same to give the snapping, whip-like blows to the bars 11, thus percussively and uniformly agitating or vibrating the uppermost drum wall to loosen the material adhering to its under, inner surface and within the interstices thereof.

In order to adjust the throw of the taper arms and to increase or decrease the force and vary the quality of their whip-like blows conformable to requirements, adjustment and bumper means are provided, of which a description follows:

Attached to the trip arm 20 is a bumper 30, in the form of a rubber disk, which bumper is designed to contact a headed screw 31, held in a screw threaded boss 32 and adjustable therein, the boss forming an integral part of a supporting iron 33 attached to the side of the "screen" frame. A set nut 34 is provided for holding the screw 31 in its adjusted position. The screw adjustment is made, (see Fig. 2), so that the outer end of the trip arm, in its lower position, does not engage the trip wheel 23, and in this position, the outer ends 12^a of the taper-arms are spaced slightly above the bars 11. It has been found that the positioning of the ends of the two arms 12 and 20 in relation respectively to the bars and to the trip wheel, prevents a backward snap of the arms after the bars have received their blows, and after the drum wall is thus allowed to vibrate freely. Inasmuch as the ends of the taper arm are normally spaced from the bars 11, the arms in their arrested downward movement are sprung or flexed to give the whip-like blow to the bars and screen wall.

To increase or decrease the percussion blow of the hammer arm 12, it is provided with a weight 36 adjustable upon the arm toward and from the free end thereof, which will also vary the vibratory motions of the arm against the screen bars 11 necessary for an efficient cleansing of the screen.

The above described features are important and have been found to increase the output of the "screen" fifty per cent.

Having described my invention, I claim:

1. In a device of the class described, the combination with a rotatable foraminous walled polyfaced drum, of bars upon each face of said drum, intermediate thereof, arms momentarily contactable with said bars, and means for causing said arms to momentarily contact said bars when any face of the said drum is in its uppermost position.

2. In a device of the class described, the combination with a rotatable foraminous walled polyfaced drum, of bars upon each face of said drum, intermediate thereof, arms contactable with said bars for giving whip-like blows thereto, and means for automatically operating said arms to cause successive vibration of each of said walls, when in their uppermost position.

3. In a taper mechanism, the combination with a rotatable foraminous walled polyfaced drum, of bars upon each outer face of said drum, intermediate thereof, arms contactable with said bars, for vibrating the same and said walls, when in their uppermost position, and means automatically controlling the beating motion of said arms.

4. In a taper mechanism, a rotatable foraminous walled polyfaced drum, intermediate thereof, bars upon each face of said drum, arms contactable with said bars, and trip means for actuating said arms for delivering whip-like blows to said bars.

5. In a taper mechanism, the combination with a rotatable foraminous walled polyfaced drum, of bars upon each face of said drum, intermediate thereof, means for delivering whip-like blows to each of said walls in its uppermost position, said means comprising a rotatable shaft, arms attached to said shaft, and overhanging said bars, and a trip arm attached to said shaft engageable with a ratchet wheel, rotatable with said drum, and adjustable bumper means engageable with said trip arm for spacing said arms from said bars.

6. In a taper mechanism the combination with a rotatable polyfaced foraminous walled drum, of bars upon each face of said drum, intermediate thereof, means for delivering whip-like blows to each of said walls in its uppermost position, said means comprising arms attached to a rotatable shaft, and overhanging said bars, a trip arm also attached to said shaft and engageable with a stepped wheel rotatable with said drum, and bumper means cooperating with said trip arm, for adjusting the same relative to said stepped wheel.

7. In a device of the class described, a rotatable screen wire drum a plurality of bars secured to the periphery of the drum longitudinally with the axis thereof in spaced relation longitudinally and circumferentially, and means for percussively tapping said drum seriatim circumferentially at a determined point in the drum cycle, said means comprising arms attached to a rotatable shaft, and overhanging said bars, a trip-arm also attached to said shaft and engageable with a stepped wheel rotatable with said drum, and bumper means cooperating with said trip arm, for adjusting the same relative to said stepped wheel.

8. In a device of the class described, a rotatable screen drum, a hammer for periodically percussively striking said drum for cleaning said drum, and adjustable yielding cushioning means for said hammer for limiting the striking stroke thereof.

9. In a device of the class described, a rotatable screen drum, a hammer for periodically percussively striking said drum for cleaning said drum, adjustable yielding cushioning means for said hammer for limiting the striking stroke thereof, and means on said hammer for varying its pressure force.

In witness whereof, I hereunto subscribe my name, as attested by the two subscribing witnesses.

GEORGE M. STEDMAN.

Witnesses:

L. A. BECK,
J. C. JUNIUS.