Nov. 2, 1926. 1,605,788

T. SELF

COTTON CLEANER

Filed July 3, 1925 2 Sheets-Sheet 1

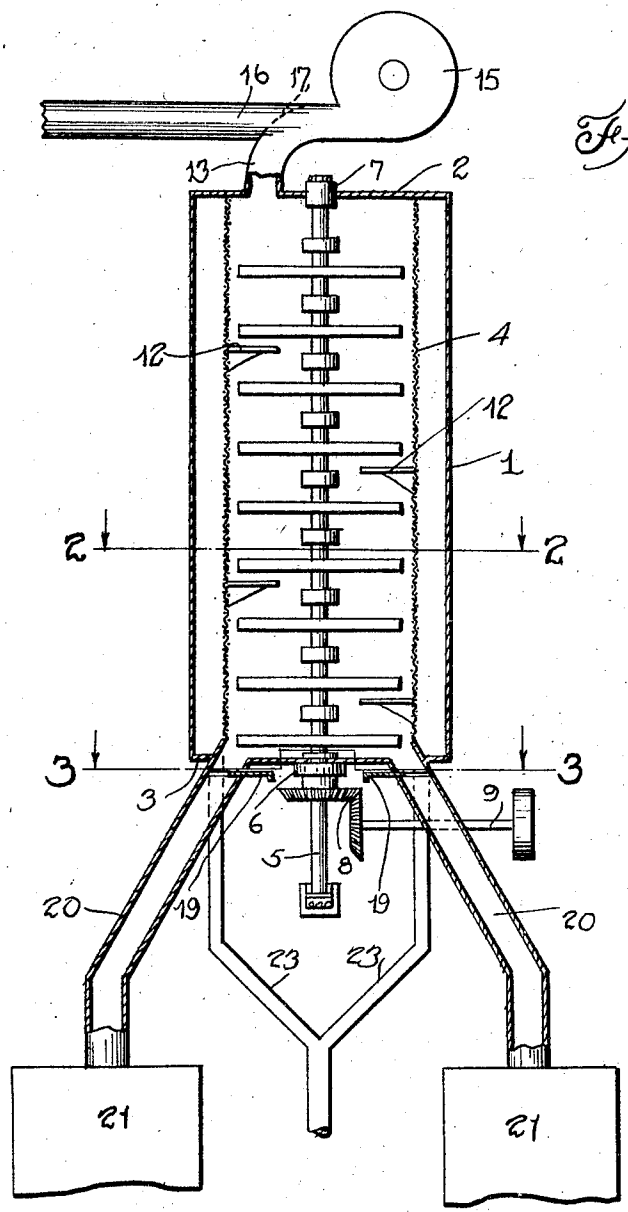


Fig. 1.

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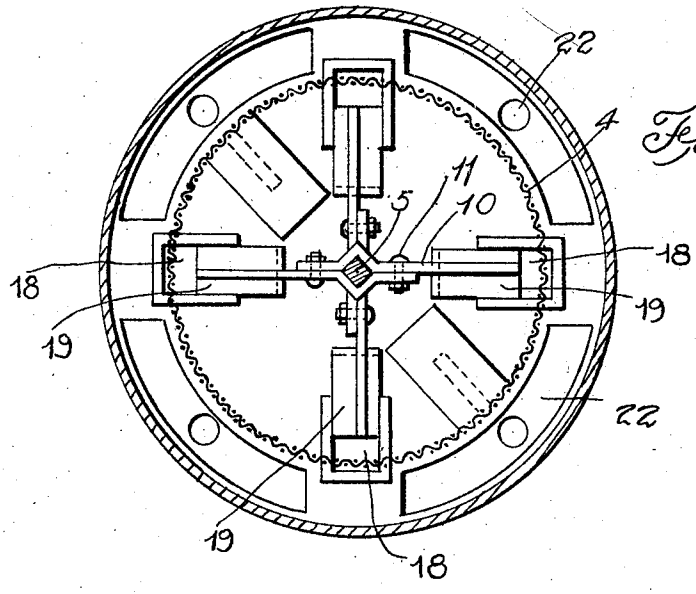


Fig. 2.

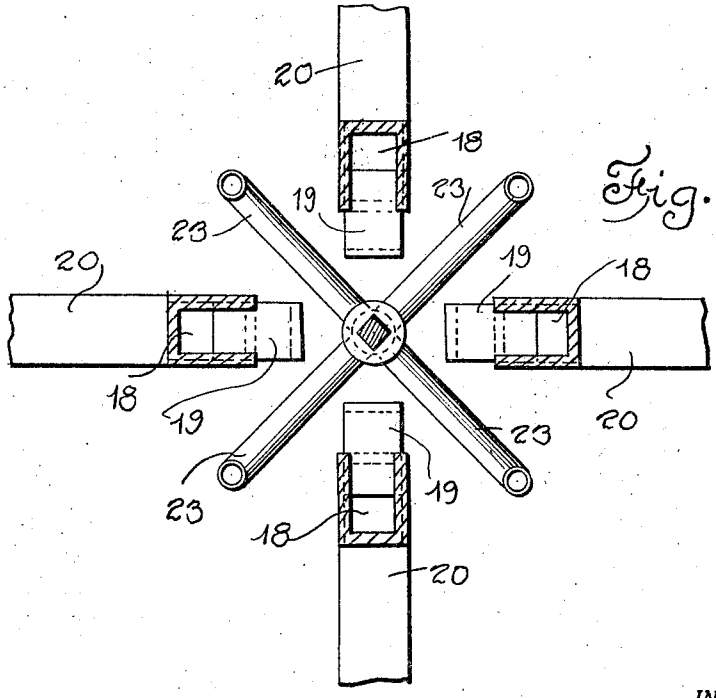


Fig. 3.

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UNITED STATES PATENT OFFICE.

THOMAS SELF, OF CROCKETT, TEXAS.

COTTON CLEANER.

Application filed July 3, 1925. Serial No. 41,416.

This invention relates to an apparatus for cleaning cotton and for distributing the same to various gin stands, wherein the cotton is fed vertically by gravity from one end of the machine to the other, and while in transit, is subjected to the action of a series of beater arms by which the cotton is projected against a screen wall with sufficient force to separate the shale, dirt, sand and the like, from the cotton and force the same through the screen wall into the refuse receptacle which encircles the screen wall.

The cotton in its transit through the cleaner is vibrated with the result of fluffing up the same to increase the workability of the material. At the lower end, the cleaner is provided with outlets leading to gin stands and controlled by gates so that any one or more of the stands may be cut off from the supply when desired.

The invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a view in vertical section of the improved cleaner.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is a section on line 3—3 of Fig. 1.

The improved cleaner comprises an imperforate outer metallic cylinder 1, closed at the top and bottom 2 and 3 except as hereinafter provided for. Within the cylinder 1, and extending throughout the length thereof in spaced concentric relation therewith, is an annular wall of screen material, hereinafter referred to as the screen cylinder 4. A shaft 5 extends through the bottom of the outer cylinder, being mounted in appropriate bearings 6 and 7 in the bottom and top of such cylinder, and being driven through cooperating bevel pinions 8 actuated from a power shaft 9. Above the bottom 3 of the outer cylinder, the shaft 5 is rectangular in cross section, and at appropriate intervals throughout the length of such shaft within the cylinder are arranged beater arms 10. Each arm is in the form of a bar, which at its free end extends more or less close to the screen cylinder 4, its opposite end being shaped to embrace the shaft 5 and extend therebeyond. The companion and diametrically opposite arm is similarly formed, and the extended portions are connected together by bolts 11, whereby the arms may be adjusted relative to each other lengthwise the shaft 5, and conveniently removed and replaced when necessary. The successive arms longitudinally of the shaft 5 are in right angle relation, the alternate arms being thus in the same plane.

Baffle plates 12 are secured at appropriate intervals to the screen wall 4, these plates being arranged intermediate the beater arms and extending for short distances circumferentially of the screen wall, these baffle plates being preferably arranged in a spiral path throughout the length of the screen wall. The raw material is admitted to the interior of the screen wall through the top 2 of the outer cylinder by means of a conduit 13 in communication with an outlet from a suction fan 15, the inlet of which (not shown) may be directed to any source of supply as a wagon or the like in which the cotton has been brought to the cleaner. An air outlet 16 leads from the fan and has a screen wall 17 between such outlet and the cotton feed conduit 13. Thus a considerable portion of the air is permitted to escape, while a part is utilized to exert a downward pressure upon the cotton in the cleaner. The bottom 3 of the outer cylinder within the plane of the screen wall 4 is formed with outlets 18 controlled by sliding gates 19. The outlets 18 lead through conduits 20 to gin stands 21. Of course it is to be understood that any number of gin stands may be employed and that the gates control the delivery of cotton to the selected gin stands, as may be desired.

The bottom 3 of the outer cylinder exteriorly of the screen wall 4 is formed with refuse openings 22, by which the dirt driven beyond the screen wall in the cleaning of the cotton may be directed to conduits 23 for discharge.

The cotton delivered to the cleaner under pressure is directed lengthwise the same by gravity and pressure. During this travel, the cotton is subjected to the action of the beater arms, being projected more or less violently against the screen wall to thereby break up and force from the cotton the contained dirt or refuse, which by the centrifugal force generated, is driven through the screen wall and falls as refuse to the openings 22. The cotton in its descent is interrupted in its direct travel by the baffle plates 12 so that each and every portion will receive a proper treatment by the beater arms.

The action of the beaters tends to shatter and break up partly open bolls, particularly when such bolls are driven against the baffle plates, so that the improved cleaner also serves as a boll breaker. The improved

cleaner is effective not only as a cleaner, but by reason of the breaking action and complete efficiency in properly treating the cotton, the use of the present cleaner eliminates the requirement of independent boll breakers, the usual cumbersome distributor, the usual air cut-off valve, and the elaborate system of pipes, belts, and pulleys usually employed in the operation of the different types of these previously employed machines.

Claims:

1. A cotton cleaner comprising a vertically arranged imperforate outer cylinder substantially closed at the upper and lower ends, an open ended screen cylinder secured directly to and extending between the upper and lower ends of the outer cylinder, said screen cylinder being spaced from the outer cylinder to provide an annular refuse passage, a shaft extending longitudinally of and mounted in the upper and lower ends of the outer cylinder, beater arms carried by the shaft and having a length slightly less than the diameter of the screen cylinder, the upper end of the outer cylinder within the plane of the screen cylinder being formed with a cotton inlet, the bottom of the outer cylinder within the plane of the screen cylinder being formed with cotton outlets, and the bottom of the outer cylinder in the plane between the screen cylinder and outer cylinder being formed with refuse outlets.

2. A cotton cleaner comprising a vertically arranged outer cylinder, a screen cylinder arranged within and spaced from the outer cylinder, an operating shaft extending longitudinally of and within the screen cylinder, a series of beater arms carried by said shaft, and baffles carried by the screen cylinder and projecting inwardly thereof, outlets for the cotton formed in the bottom of the outer cylinder and communicating with the screen cylinder, gates controlling said outlets, and conduits leading from the respective outlets with independent gin stands.

3. A cotton cleaner comprising a vertically arranged imperforate outer cylinder, a screen cylinder arranged within and spaced from the walls of the outer cylinder, a pressure inlet for the cotton at the upper end of the screen cylinder, gate controlled outlets for the cotton at the lower end of the screen cylinder, and refuse outlets at the lower end of the outer cylinder and communicating with the space between the outer cylinder and screen cylinder.

4. A cotton cleaner comprising a vertically arranged imperforate outer cylinder, a screen cylinder arranged within and spaced from the walls of the outer cylinder, a pressure inlet for the cotton at the upper end of the screen cylinder, gate controlled outlets for the cotton at the lower end of the screen cylinder, and refuse outlets at the lower end of the outer cylinder and communicating with the space between the outer cylinder and screen cylinder, an operating shaft mounted in the top and bottom of the outer cylinder, beater arms removably secured to said shaft and operating within the screen cylinder, and baffle plates carried by the screen cylinder intermediate the arms.

In testimony whereof I affix my signature.

THOS. SELF. [L. S.]