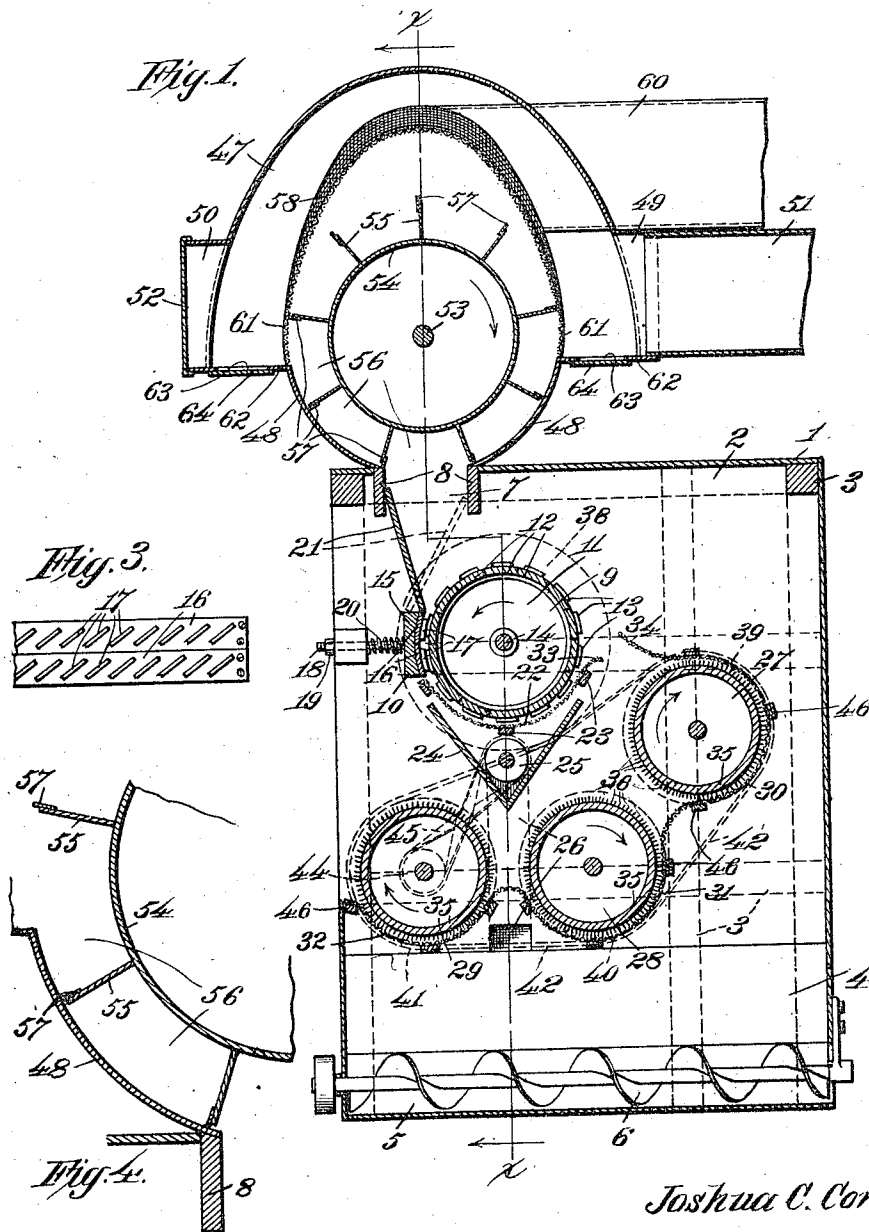


J. C. CONRAD.
COTTON MACHINE.
APPLICATION FILED AUG. 22, 1911.

1,046,441.

Patented Dec. 10, 1912.

2 SHEETS—SHEET 1.



Witnesses

H. J. Austin
Inventor

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Joshua C. Conrad

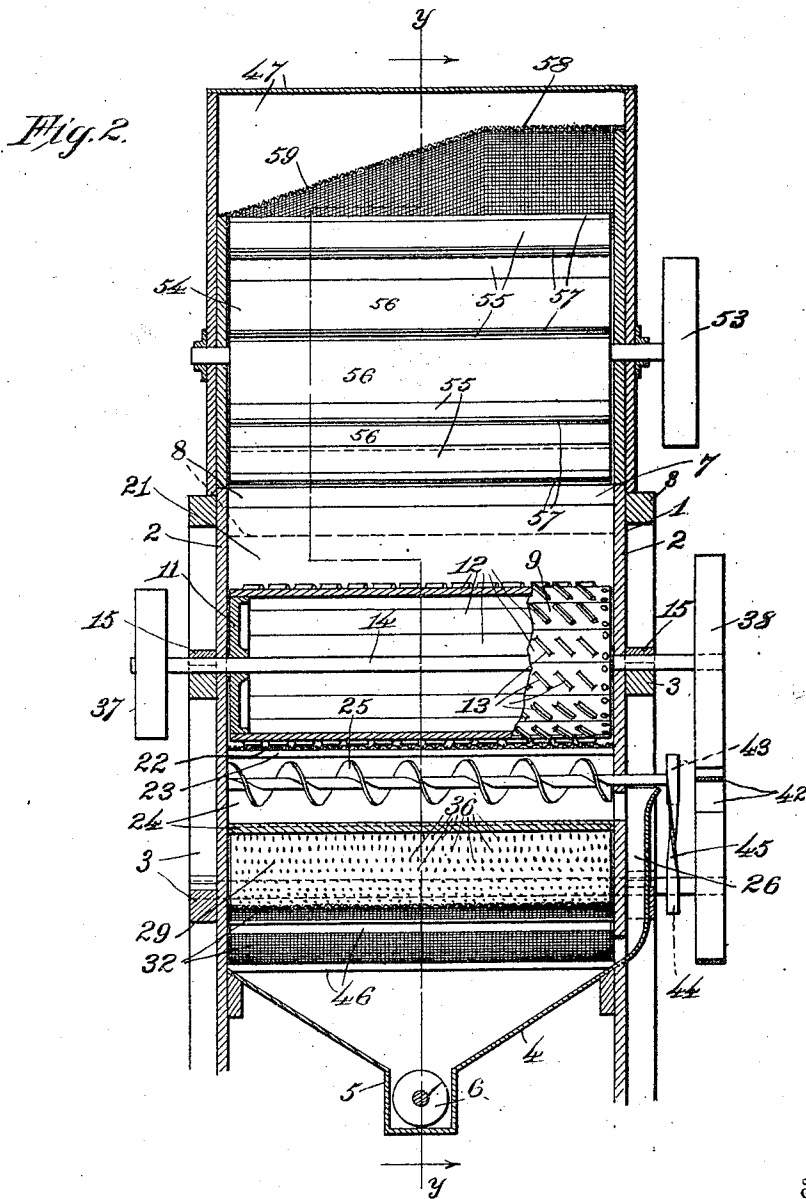
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UNITED STATES PATENT OFFICE.

JOSHUA C. CONRAD, OF CEMENT, OKLAHOMA.

COTTON-MACHINE.

1,046,441.

Specification of Letters Patent.

Patented Dec. 10, 1912.

Application filed August 22, 1911. Serial No. 645,345.

To all whom it may concern:

Be it known that I, JOSHUA C. CONRAD, a citizen of the United States, residing at Cement, county of Caddo, and State of Oklahoma, have invented certain new and useful Improvements in Cotton-Machines, of which the following is a specification.

My invention relates to cotton machines and particularly to machines for cleaning the picked cotton or for threshing and cleaning boll cotton.

My invention further relates to an improved feeding device for cotton machines.

The object of my invention is to provide an improved machine adapted to clean cotton which has been picked from the boll and for threshing and cleaning cotton which has been picked with the boll.

A further object of my invention is to provide a machine of the class mentioned equipped with means for crushing the bolls and of such construction that a stone or other hard substance passing therethrough will not injure the same.

A further object of my invention is to provide a device of the class mentioned in which the parts may be readily removed for cleaning or repairs.

A further object of my invention is to provide a machine for the purpose mentioned which shall occupy a comparatively small space and of such improved construction that it shall not become choked when in operation.

A further object of my invention is to provide a pneumatic feeding device for the cleaning machine which shall remove all of the cotton from the current of air used for delivering the cotton through the device and deliver the cotton to the cleaning apparatus free from the action of the air currents.

Other objects will appear hereinafter.

With these objects in view my invention consists generally in a cotton threshing and cleaning machine consisting of a pair of co-acting boll crushing members yieldingly mounted with relation to each other, means for feeding the cotton between said members, suitable screens, a series of rotary members or cylinders for moving the cotton through the machine in intimate contact with said screens whereby part of the bolls and the trash and dust together with other dirt such as gravel and small stones, is sifted from the cotton and the cotton delivered

from the machine to the distributor of a gin or other place as desired.

My invention further consists in a machine characterized as above mentioned equipped with suitable hoppers for receiving the dirt which passes through the screens and suitable conveyers for removing the dirt from the hoppers.

My invention further consists in a device as mentioned in which the screens are removably secured in position in order that the same may be removed from the device for cleaning and repairs.

My invention further consists in a feeding device for a cotton machine comprising a casing equipped with a conduit leading to a fan or other suitable device for creating a partial vacuum within the casing, a rotary member in the casing provided with portions projecting from the periphery forming a number of pockets and engaging successively the lower portion of the casing, a discharge opening being provided in the casing below the rotary member and positively shut off from direct communication with the upper portion of the casing by the projecting portions of the rotary member, a foraminated hood in the upper portion of said casing spanning said rotary member and spaced therefrom and a conduit for the cotton leading into the space between said hood and said member.

My invention further consists in a cotton threshing and cleaning machine and the feeding device for the same and means whereby the cotton delivered from the discharge opening of the feeding device may be fed to the crushing members of the threshing machine or directly to the gin or other desired place.

My invention further consists in various details of construction and arrangements of parts all as will be fully described hereinafter and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification and in which—

Figure 1 is a longitudinal vertical section through a cotton machine embodying my invention in its preferred form, Fig. 2 is a transverse section taken on the line *x—x* of Fig. 1, Fig. 3 is a detail face view of one of the crushing members, and Fig. 4 is a detail view upon an enlarged scale

illustrating the engagement between the rotary member of the feeding device and the adjacent parts of the lower portion of the casing.

Referring now to the drawings 1 indicates the housing of the threshing and cleaning machine which includes a pair of parallel sides 2-2 and frame members 3. The housing is provided with a hopper bottom 4 terminating at its lowermost portion in a trough 5 in which is mounted a screw conveyer or worm 6. The top of the housing has an inlet or feed opening 7 defined by the side walls 2 and a pair of transverse frame members 8.

Directly below the feed opening 7 are the boll crushing members consisting of a rotary cylinder 9 and a coacting concave 10. A cylinder 9 comprises a pair of solid end wheels 11 and a plurality of bars 12 secured at the ends to said wheels. The wheels and bars 11 and 12 are preferably formed of heavy cast iron and the bars are arranged with their edges abutting forming a closed cylinder. Each bar 12 is provided with a plurality of diagonally disposed lugs or ribs 13. The cylinder 9 is mounted upon a shaft 14 having bearings in boxes 15 fixed to the frame of the device. The concave 10 is coextensive in length with the cylinder 9 and comprises a heavy timber 15 and a plurality of cast iron bars or plates 16 bolted or secured to one face thereof and provided with diagonally disposed lugs or ribs 17 similar to the ribs 13 and adapted to cooperate therewith.

It should be noticed that the face of the concave 10 is curved to conform to the cylinder 9 with which it cooperates to crush the bolls. The concave 10 is fixed to the ends of rods 18 which are slidably mounted in frame members of the housing and which rods are provided with nuts threaded upon the ends of the same to limit the movement of the concave toward the cylinder. A spring 20 is coiled about each of the rods 18 and interposed between the concave and the frame thereby holding the concave yieldingly in position. When the device is in operation the cotton and bolls are fed between the cylinder and the concave and by mounting the latter in the manner specified injury to the machine is prevented in the event that a stone or other hard substance should be fed through with the cotton and bolls. 21 indicates a hinged mounted board above the concave 10 and extending into the inlet or feed opening 7 and constituting a valve whereby the cotton fed through said opening may be directed either to the crushing devices or out of the machine to the gin or other place as desired.

Arranged beneath the cylinder 9 is a

coarse screen 22 which is curved to conform to the cylinder and arranged close thereto. The screen 22 reaches from a point adjacent the bottom of the concave 10 to the other side and is mounted upon removable supports 23. The cotton and bolls passing from between the crushing cylinder and concave are carried by the cylinder across the top of the screen 22 through which a large portion of the crushed bolls, refuse and dirt is dropped and the cotton with the remainder of the bolls and dirt is discharged from the opposite side of the screen from the concave. Directly beneath the screen 22 is a V-shaped trough 24 adapted to receive the siftings from the screen 22 and in the bottom of said trough is a screw conveyer 25 which extends transversely of the machine discharging dirt at the side thereof into a chute 26 leading to the hopper 4 in the bottom of the device.

After the cotton leaves the screen 22 it passes between a series of beaters 27, 28 and 29 and co-acting screens 30, 31 and 32 by means of which the remaining dirt and part of the bolls are removed from the cotton. The beater 27 is arranged behind and in a lower plane than the cylinder 9, and the beaters 28 and 29 are arranged in a still lower plane, in front of the beater 27 and below the hopper 24. The screen 30 extends over the top of the beater 27, around the rear of the same and for a considerable distance under the bottom thereof, whereby the cotton is maintained in contact with a large area of screening and the direction of the same through the machine reversed in order that the device shall occupy a minimum amount of floor space. The screens 30 and 31 are arranged to cooperate with substantially the entire lower half of the respective beaters 28 and 29. It should be noted that the rear edge of the screen 22 is curved outwardly as at 33 and that the forward end of the screen 30 is curved upwardly as at 34 in order to direct the cotton passing from the screen 22 between the screen 30 and beater 27. The cylinder 9 and the several beaters rotate in the directions indicated by the arrows. The dirt and refuse passing through the screens 30, 31 and 32 drops upon the hopper bottom 4 from whence it passes into the trough 5 and is then discharged from the machine by means of the worm or screw conveyer 6. As the cleaned cotton is discharged from between the beater 29 and screen 32 it may be fed directly to the distributor of a gin or otherwise disposed of as desired.

The beaters 27, 28 and 29 each comprise a wooden cylinder 35 provided with a large number of pins 36 projecting from the peripheral face thereof. In practice I have formed these pins by driving wire nails into the cylinders 35 and then cutting off the

heads of the nails, however, I do not confine myself to this specific manner of constructing this portion of the device.

A minimum amount of belting is used for operating the device. The shaft 14 of the cylinder 9 is provided with a pulley 37 which is connected by a suitable belt with the line shaft of the gin house. The opposite end of the shaft 14 is provided with a large belt wheel 38 and the shafts of the beaters are provided with similar but smaller pulleys or belt wheels 39, 40 and 41 respectively. An endless belt passes around the wheels 39, 40 and 41 and the periphery of the wheel 38 extends within the common tangent of the wheels 39 and 41 in order to frictionally engage the belt 42. By this construction and arrangement the beaters are driven at a greater speed than the cylinder 9 thereby preventing choking of the machine. The shaft of the worm 25 and the shaft of one of the beaters are provided with a pair of small pulleys 43 and 44 respectively which are connected by a belt 45.

The screens 30, 31 and 32 are mounted upon removable transverse members 46 in order that the same may be removed for cleaning and repair. The several screens of the device extend from side to side and the cylinder 9, concave 10 and the several beaters extend substantially the width of the machine leaving but sufficient clearance at the ends to prevent binding of the moving parts.

A pneumatic device is provided for feeding the cotton to the machine. This comprises a casing divided by a foraminated hood, a duct leading from the outer portion of the casing to a fan, a conduit leading into the inner portion of the casing beneath the hood forming an inlet for the cotton and a rotary member for feeding the cotton from the space beneath or within the hood to the feed opening 7 of the cleaning machine and for cutting off the air current or suction from said feed opening. The casing comprises a large upper portion 47 and a smaller, substantially semi-cylindrical lower portion 48. The upper portion 47 is provided with openings 49 and 50 either one or both of which are adapted to form a communication through a duct 51 between the upper portion of the casing and a fan or other suitable means for creating a partial vacuum.

52 indicates a closure for one of the openings when not connected with the duct leading to the fan. Mounted within the casing on a shaft 53 is a rotary member 54 co-axial with the cylindrical portion 48 of the casing. The member 54 is provided with a plurality of longitudinally disposed and preferably radially extending paddles 55 forming a series of pockets 56 to receive the cotton and deliver the same to the opening

7, which opening is at the center of the cylindrical portion 48 of the casing. The outer edges of the paddles 55 are provided with flexible strips or wipers 57 which are adapted to engage the inner face of the portion 48 of the casing and effectually cut off all suction or air currents from the discharge opening. The width of the opening 7 is substantially the same as the distance between two of the paddles and the width of the sections of the cylindrical portion 48, from the discharge opening to the upper edges of said sections is somewhat greater than the distance between two of the paddles in order to insure an airtight joint at all times.

58 indicates a foraminated hood spanning the rotary member 54 and extending from the upper edge of one section of the portion 48 of the casing to the upper edge of the other section of the same. The upper portion of the hood is raised at one part, considerably above the rotary member and tapers downwardly therefrom to the end or ends of said member as indicated at 59 in Fig. 2. A conduit 60 for the cotton leads into the hood beneath the raised portion thereof. A partial vacuum is created within the upper portion of the casing which causes a strong current in the conduit 60 by means of which the cotton is drawn into the feeding device beneath the hood and scattered over the inner face of the hood. The area of the hood being many times greater than the cross section of the conduit 60, the suction is greatly reduced on the cotton under the hood which therefore drops from the hood on to the rotary member 54, and entering the pockets 56 is carried to the opening 7.

To prevent the cotton from completely choking up the foraminated hood and thereby maintaining too great a pressure under the same to permit the cotton to drop from the hood into the pockets, the lower portion of the hood is shaped to conform or form a continuation of the cylindrical walls 48, as indicated at 61 in Fig. 1, by which construction the wipers 57 keep the cotton clean from the lower portion of the hood permitting escape of enough air to sufficiently reduce the pressure. Horizontal portions 62 connect the upper edges of the cylindrical portions 48 and the lower edges of the larger upper portions 47, and the horizontal portions are provided with openings 63 for cleaning the casing. 64 indicate closures for said openings. The hood 58 is of fine mesh to permit dust and fine sand to pass through the same and yet retain all of the cotton.

Besides being used with a cleaning machine, the feeding device may also be used as an unloader from the wagon to the storage house.

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

1. In a cotton threshing and cleaning machine, a pair of co-acting boll crushing members comprising a rotary cylinder and a yieldingly mounted concave provided on their co-acting faces with metal plates having a plurality of projecting lugs, a screen extending under said cylinder from said concave, a beater arranged in a plane below said cylinder and to the rear of the same, a screen extending over, back of and under said beater to receive the cotton passing from the first mentioned screen, the upper vertical end of said screen being curved upwardly above the adjacent end of the first said screen, and a plurality of similar beaters and screens arranged forwardly of the first mentioned beater and in a plane below the same, substantially as described.

2. In a cotton threshing and cleaning machine a pair of co-acting boll crushing mem-

bers comprising a rotary cylinder and a co-acting concave, a screen arranged beneath said cylinder, a beater and screen arranged back of and in a plane below said cylinder, a plurality of similar beaters and screens arranged forwardly of the first mentioned beater and in a plane below the same, a transverse hopper arranged beneath the first mentioned screen and above the last mentioned beater, a conveyer in said hopper, a hopper arranged beneath said beaters and co-acting screens, a conduit connecting the first mentioned hopper with the last mentioned hopper and a conveyer in the last said hopper, substantially as described.

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

JOSHUA C. CONRAD.

Witnesses:

W. B. NORTHCUTT,
J. E. GILL.