

Nov. 12, 1940.

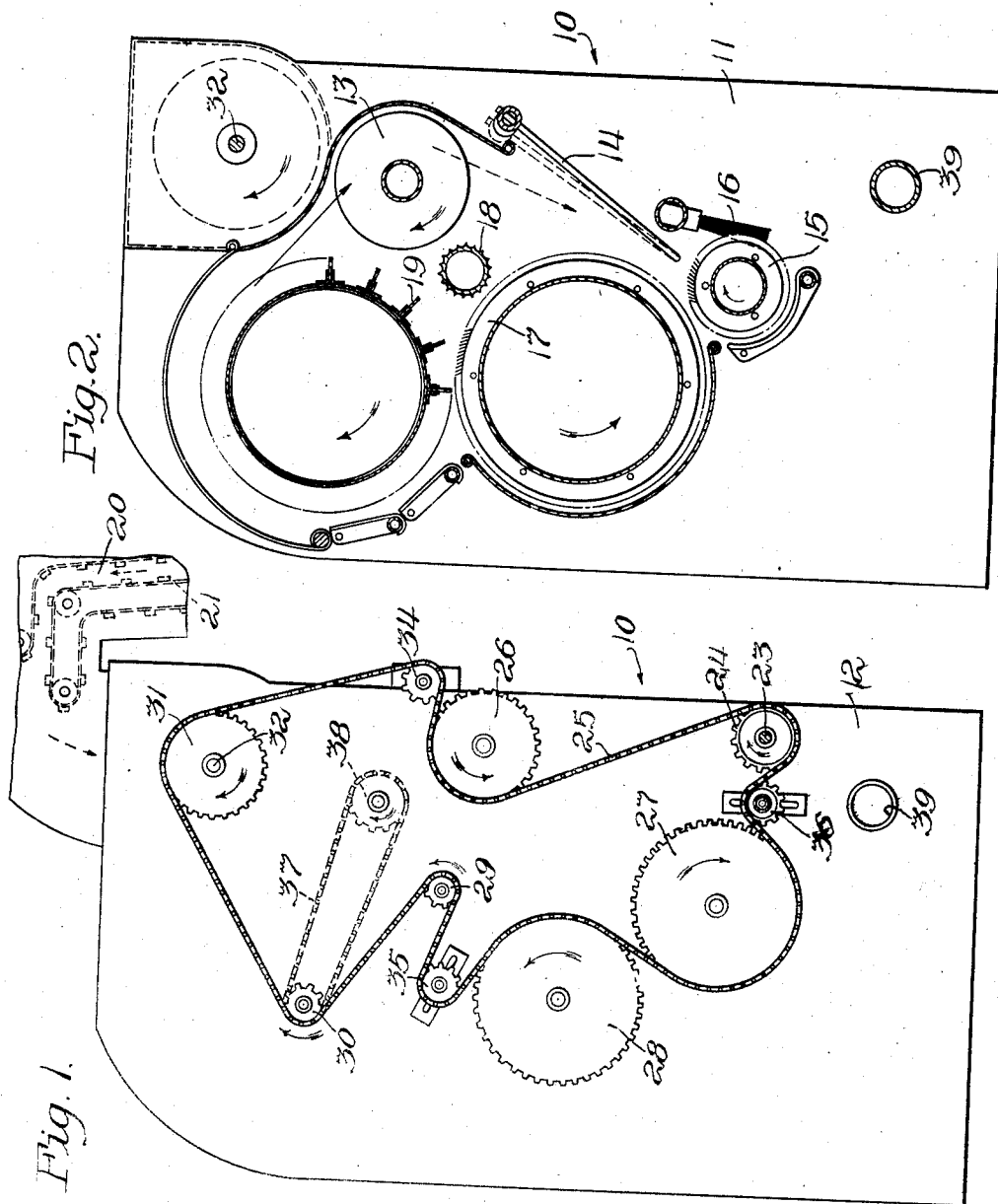
E. A. JOHNSTON

2,221,545

COTTON CLEANER

Filed June 14, 1938

2 Sheets-Sheet 1



Inventor  
Edward A. Johnston  
By *W. F. McGuire*  
Att'y.

Nov. 12, 1940.

E. A. JOHNSTON

2,221,545

COTTON CLEANER

Filed June 14, 1938

2 Sheets-Sheet 2

Fig. 4.

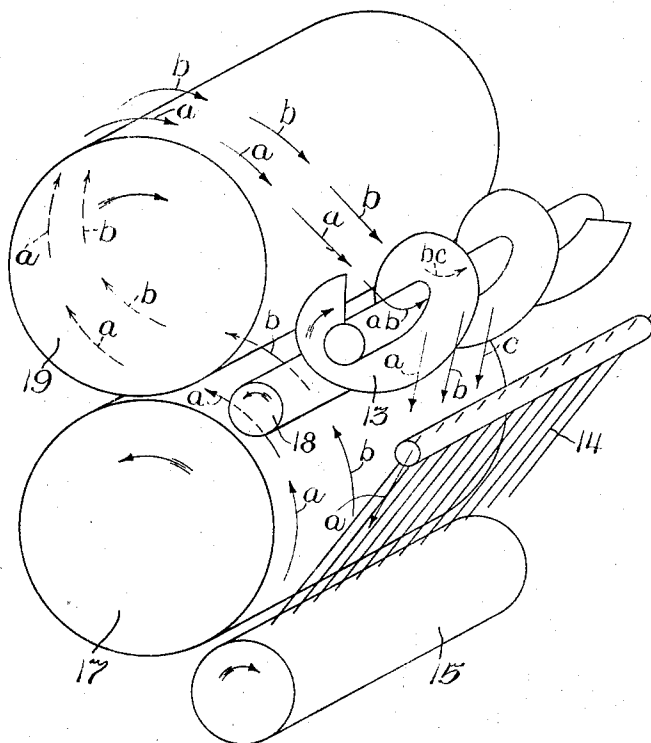
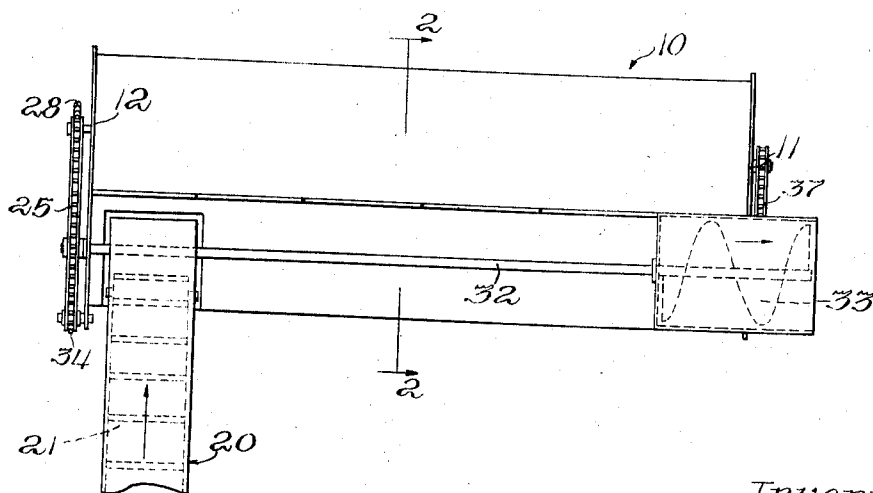


Fig. 3.



Inventor  
Edward A. Johnston  
By *V. F. Casagrande*  
Att'y.

## UNITED STATES PATENT OFFICE

2,221,545

## COTTON CLEANER

Edward A. Johnston, Chicago, Ill., assignor to  
International Harvester Company, a corporation  
of New Jersey

Application June 14, 1938, Serial No. 213,639

6 Claims. (Cl. 19—35)

This invention relates to a cotton cleaner. More specifically it relates to a cotton cleaner which performs the cycle of cleaning operations a number of times on the same cotton.

Cotton cleaners of various types are well known in the art. A major problem has always been to provide a cotton cleaner which is simple and compact in construction but which will perform a complete and thorough cleaning of the cotton.

An object of the invention is to provide an improved cotton cleaner.

Another object is the provision of a cotton cleaner of simple and compact construction.

A further object is to provide an improved cotton cleaner which will, with the same mechanism, perform a cleaning cycle a number of times upon the same cotton.

According to the present invention, a shaker grating, cleaning roll, carding roll, boll crusher, and doffer are positioned so as to act successively upon cotton passing over them. A spiral conveyor or auger feed is located so as to supply the cotton to the shaker grating originally, and is also in position to receive the cotton from the doffer and redeliver it to the shaker grating. In the period that the cotton is in the spiral conveyor from the time it is received from the doffer and redelivered to the shaker grating, it travels lengthwise of the conveyor a certain small amount. The result is that the same cotton is subjected to a number of cleaning cycles by the same mechanism, each cycle being performed a certain amount further along the length of the carding roll, doffer, etc., than the preceding cycle. Thus, the cotton enters at one end of the cleaner and passes to the other end to be discharged there while being subjected to a number of cleaning cycles. The following is a more detailed description of a construction embodying the invention.

Figure 1 is a side elevation of the cotton cleaner;

Figure 2 is a transverse section through the cotton cleaner taken along the lines 2—2 of Figure 3;

Figure 3 is a top view of the cleaner; and,

Figure 4 is a diagrammatic view of the operative elements of the cleaner taken in perspective.

The cotton cleaner 10, forming the subject-matter of the invention, has a pair of end walls 11 and 12, which support at their ends an auger feed or spiral conveyor 13, shaker grating 14, cleaning roll 15, brush 16 for the cleaning roll, carding roll 17, boll crusher 18, and doffer 19. Cotton to be cleaned is delivered through the

auger feed through a casing 20 on the top of the cleaner by means of a conveyer 21.

The driving mechanism for the cleaner is shown in Figure 1. A drive shaft 23, driven by any suitable source of power, not shown, has fixed thereto a gear 24 which drives a sprocket chain 25. Driven by this sprocket chain are gear 26 driving an eccentric for the shaker grating 14, not shown, gear 27 for the cleaning roll 15, gear 28 for the carding roll 17, gear 29 for the boll crusher 18, gear 30 for the doffer 19, and gear 31 driving a shaft 32 for a spiral conveyor or auger feed 33 (Figure 3) adapted to receive cotton as it is discharged from the cleaner. Chain tighteners 34, 35 and 36 are also driven by the sprocket chain 25. On the opposite end of the cleaner from the chain 25 is a chain 37 driven by the doffer 19, which in turn drives a gear 38 for the auger feed 13. A bracing shaft or pipe 39 extends between the sides 11 and 12 of the cleaner.

In operation, the various rolls of the cotton cleaner turn in the direction indicated by the arrows. Cotton is fed from the conveyer 21 down through the spiral conveyor 13, from which it drops upon the shaker grating 14, through which some of the trash falls. Then the cotton falls down the shaker grating into contact with the carding roll 17. It then passes under the boll crusher, which crushes the bolls and may knock out some of the hulls. Next it is removed from the carding roll by the doffer from which it passes back to the spiral conveyor 13. The cleaning roll 15 picks up cotton fibers from the trash, the brush 16 pressing against the roll so as to press the fibers and trash against the roll and cause a retention by the roll of the fibers. The fibers are then picked up from the cleaning roll 15 by the carding roll 17. This entire cycle of operation is shown in Figure 4 by a series of arrows marked "a." When the cotton passes from the doffer back to the spiral conveyor 13, it is fed a slight distance along the length of the conveyor, as indicated by the bent arrow "ab," so that it drops from the conveyor upon the shaker grating in order to pass through a second cycle of operations indicated by the arrows "b." The second cycle of operation carried out is displaced a slight distance longitudinally of the rolls and drums of the cotton cleaner from the first cycle. Consequently, it comes from the doffer to the spiral conveyor 13 at a point displaced longitudinally from the original points of delivery by the doffer to the spiral feed. As it again passes through the spiral conveyor, it is moved a small amount longitudinally of the conveyor, as indicated by the

bent arrow "bc," and falls upon the shaker grating at the start of a new cycle of operations, indicated by the arrow "c." These cycles are continued until the cotton has reached the end of the cotton cleaner at the wall 11 and is finally discharged by the spiral conveyer 13 onto the spiral conveyer 33, which carries it to suitable bagging apparatus, not shown.

Regulation of the cleaner is effected through a regulation of the speed of the spiral conveyer 13. If, for example, the cotton is to be subjected to a large number of cleaning cycles, the spiral conveyer 13 is run slowly, so that the longitudinal displacement of the cotton between each cycle is small, and a large number of cycles are required for passage from one end of the cleaner to the other. If a smaller number of cleaning cycles is required, then the spiral conveyer 13 is speeded up. The longitudinal displacement of the cotton between the cycles is greater, and a smaller number of cycles is required for passage through the machine.

From the foregoing description, it will be apparent that a new and improved cotton cleaner has been provided. The cleaner is as simple and compact in construction as the cleaner ordinarily used for cleaning by a single cycle of operations. Yet, the cleaner is capable of a number of cleaning cycles, which are normally effected by a plurality of apparatuses through which the cotton passes successively.

The intention is to limit the invention only within the terms of the appended claims.

What is claimed is:

1. A cotton cleaner comprising an auger feed, a shaker grating arranged to receive cotton from the auger feed, a carding drum arranged to re-

ceive the cotton from the shaker grating, and a doffer arranged to remove the cotton from the carding drum and to deliver it to the auger feed.

2. A cotton cleaner comprising a shaker grating, a carding roll, and a doffer roll, all of considerable length, the carding roll and doffing roll rotating on parallel axes, and feeding means extending the length of the grating and rolls and positioned to effect the original delivery of cotton to the shaker grating and repeatedly to receive it laterally from the doffer roll, to feed it longitudinally, and to redeliver it to the shaker grating.

3. A cotton cleaner as specified in claim 2, the feeding means specified being an auger feed having its axes parallel to the axis of the rolls.

4. A cotton cleaner comprising a carding roll and a doffing roll positioned with their axes of rotation parallel, and feeding means extending the length of the rolls arranged repeatedly to receive the cotton from the doffing roll and to redeliver it to the carding roll at a point spaced longitudinally of the rolls from the point of reception.

5. A cotton cleaner as specified in claim 4, the feeding means specified being an auger feed having its axis parallel to the axes of the rolls.

6. A cotton cleaner comprising a unitary cleaning device and means extending in the direction of the length of the cleaning device arranged to receive partially cleaned cotton from the cleaning device and to return the cotton for another cleaning to the same cleaning device at a different point in the length of the cleaning device.

EDWARD A. JOHNSTON.