S. E., W. W. & J. MORRAL.

MACHINE FOR REMOVING SILK FROM EARS OF CORN.

APPLICATION FILED JAN. 24, 1907.

900,189.

Patented Oct. 6, 1908.

2 SHEETS—SHEET 1.

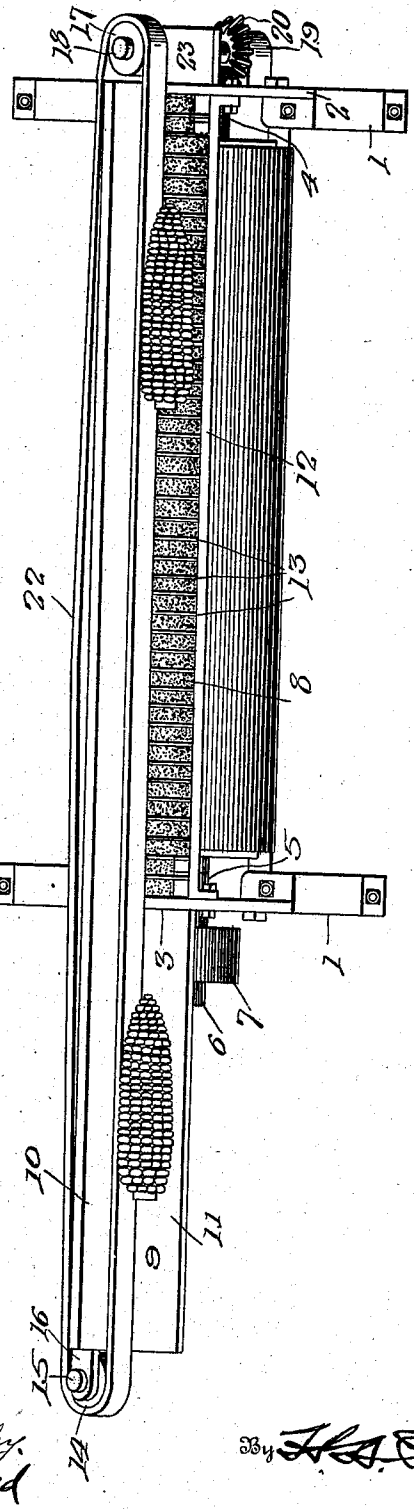



Fig. 1.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

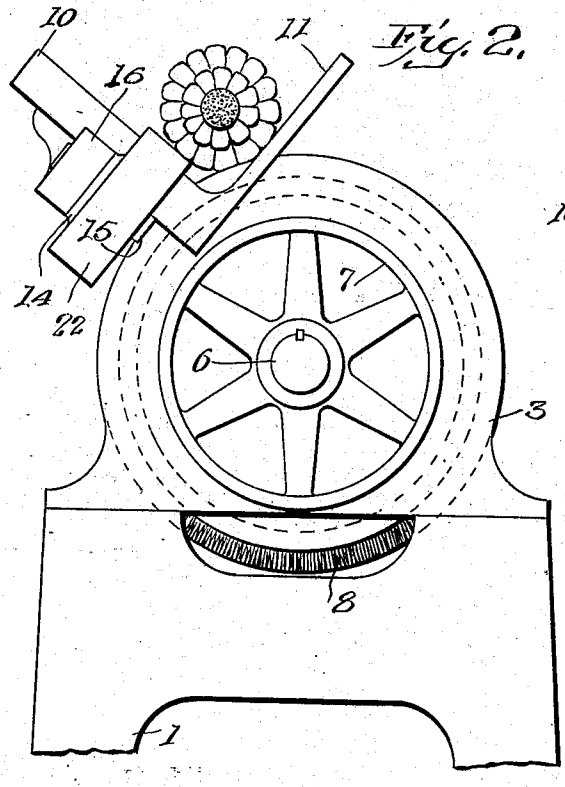



Fig. 3.

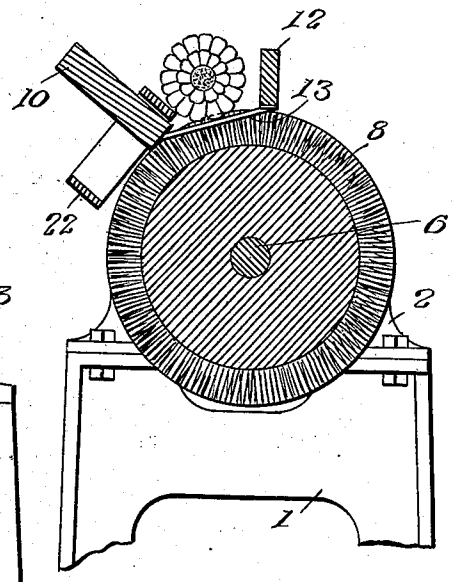



Fig. 6.

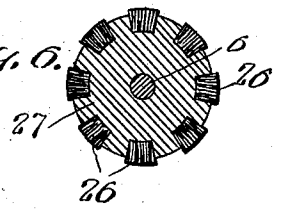



Fig. 4.

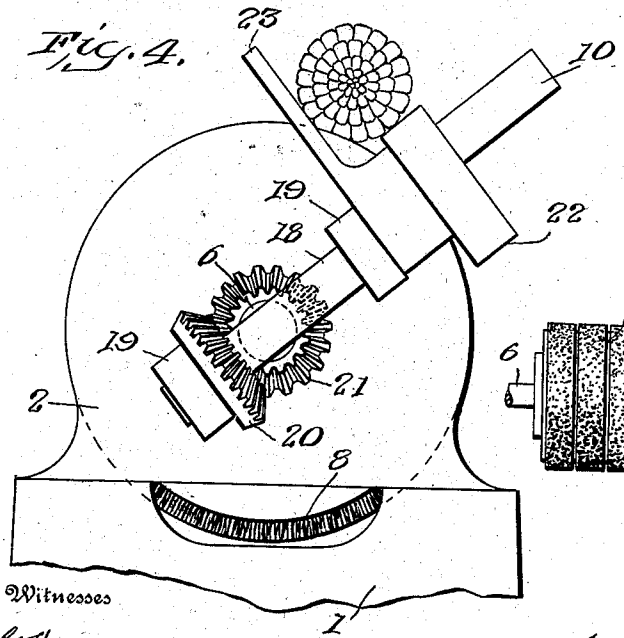
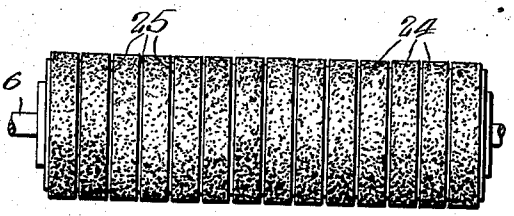



Fig. 5.




Witnesses

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# UNITED STATES PATENT OFFICE.

SAMUEL E. MORRAL AND WILLIAM W. MORRAL, OF MORRAL, AND JOHN MORRAL, OF LARUE, OHIO.

## MACHINE FOR REMOVING SILK FROM EARS OF CORN.

No. 900,189. Specification of Letters Patent. Patented Oct. 6, 1908.

Application filed January 24, 1907. Serial No. 353,928.

*To all whom it may concern:*

Be it known that we, SAMUEL E. MORRAL and WILLIAM W. MORRAL, residing at Morral, in the county of Marion and State of Ohio, and JOHN MORRAL, residing at Larue, in the county of Marion and State of Ohio, citizens of the United States, have invented certain new and useful Improvements in Machines for Removing Silk from Ears of Corn, of which the following is a specification, reference being had therein to the accompanying drawings.

The present invention relates to machines for removing silk from ears of corn.

Machines of this character are designed for use in canning factories and similar places where large quantities of green corn are consumed and it is very desirable that all the silk should be removed from the ear before the corn is cut from the cob.

The object of the present invention is to provide a machine of this character which will expeditiously remove all the silk from the ear without breaking or otherwise injuring the grains thereof, and the operation of which will be practically continuous; and further to provide such a machine which will be simple in construction and operation, whereby the same may be built and maintained at a comparatively low cost.

With these objects in view the invention consists of certain novel features of construction to be hereinafter described, and then more fully pointed out in the claims.

In the accompanying drawings, Figure 1 is a top plan view of our machine; Fig. 2 is a front end elevation of the machine, with the supporting legs broken away; Fig. 3 is a transverse sectional view of the same; Fig. 4 is a rear end elevation, with the supporting legs broken away; Fig. 5 is a detail view of the brush; and Fig 6 is a transverse sectional view of a modified form of the same.

In these drawings, we have illustrated one form of our invention, in which the reference numeral 1 indicates the supports or legs upon which the machine is mounted. These supports preferably consist of a pair of legs located at each end of the machine and having secured to the upper end thereof the end plates 2 and 3. These end plates are provided with suitable bearings 4 and 5 in which is mounted a shaft 6, provided at its outer end with a pulley 7, or other suitable driving connection, to which power may be applied from any suitable source.

Mounted on the shaft 6 and extending substantially the full length of that portion of the same which lies between the plates 2 and 3 is a rotary brush 8, preferably cylindrical in shape and provided with bristles of sufficient stiffness to engage the ears of corn and enter the recesses between the grains thereof and remove the silk therefrom, but not of sufficient stiffness to cut or injure the grains of corn. This brush may be of any suitable construction, that shown in the drawings consisting of a plurality of annular rings of fibers located a short distance apart and forming a practically continuous brush, but, obviously, the arrangement of the fibers is immaterial and the brush may assume any form, one modification of the same being shown in Fig. 6, in which the fibers are arranged in longitudinally extending grooves.

A support or guideway 9 is supported by the end plates 2 and 3, preferably immediately above the brush 8, and is adapted to guide the ears of corn along the surface thereof. This support in its preferred form consists of a strip 10, of wood, metal or other suitable material, which is supported on the end plates 2 and 3 and extends for some distance beyond the plate 3 at the front end of the machine. That portion of the support which lies beyond the plate 3 is completed by a strip 11 which lies substantially at right angles to the strip 10 and forms therewith a substantially **V**-shaped trough or guideway, while that portion of the guideway which lies between the plates 2 and 3 is completed by a strip 12, of wood, metal or other suitable material, which is secured at its ends to the said plates and is arranged at an angle to the strip 10. The lower edges of both the strips 10 and 12 are arranged close to the surface of the brush 8 and are spaced some distance apart, the space intervening between the edges of said strips being bridged by suitable transverse fingers 13, which are preferably wires spaced a short distance apart and connected at their opposite ends to the respective strips. The edges of the strips 10 and 12 being placed close to the surface of the brush and some distance apart, the transverse fingers 13 extend through a portion of the brush so that the bristles thereof extend into the trough

formed by said strips and said fingers. The distance between the transverse fingers may be varied to suit particular conditions or circumstances, but is preferably about one inch.

A pulley 14 is mounted on a stud shaft 15, which, in turn, is carried by a bracket 16 mounted on the strip 10 at the front end of the machine. A similar pulley 17 is mounted on a shaft 18 which is journaled in suitable bearing lugs 19 secured to the end plate 2. A bevel gear 20 is mounted on the shaft 18 and adapted to mesh with a similar gear 21 mounted on the shaft 6 and serves to impart a rotatory movement to the shaft 18 and its pulley 17. A belt or conveyer 22 passes around the pulleys 14 and 17 and extends on the opposite sides of the strip 10, the arrangement of the pulleys being such that that portion of the belt which lies on the inner side of the strip 10 lies very close to the rear surface of the strip and near the lower edge thereof. The conveyer 22 is herein shown simply as an endless belt, but, obviously, any suitable conveyer could be substituted therefor without departing from the spirit of the invention. The pulley 17 and belt 22 extend beyond the end plate 2 at the rear end of the machine and, in conjunction with the short strip 23, which is secured to the plate 2, form a continuation of the support or guideway 9.

The operation of the machine will be obvious from the foregoing description. Power is applied to the shaft 6 through the medium of the pulley 7 from any suitable source and the brush 8 rotated continuously in one direction. The rotation of the shaft 6 also serves, through the medium of the pinions 20 and 21 and the shaft 18, to rotate the pulley 17 and the belt 22. The ear of corn is fed to the trough 9 at the front end of the machine, and, as soon as it comes into engagement with the conveyer 22, is moved forward longitudinally of the guideway and of the brush. As the ear reaches that portion of the trough which conprises the transverse fingers 13, the bristles of the brush which extend between said fingers come into contact with the ear of corn and serve to rotate the same about its longitudinal axis, and, at the same time, to remove any silk which may adhere to the ear. As the ear is moved longitudinally of the brush and rotates about its longitudinal axis during such longitudinal movement, it will be obvious that all parts of the ear are subjected to the action of the brush and that the ear will be thoroughly cleaned of any silk or foreign substance which may adhere thereto. When the ear reaches the end of the machine it is discharged therefrom into a suitable receptacle or conveyer for removing the same.

While we prefer to employ the construction hereinbefore described and employing the transverse fingers 13, it is possible to so construct the brush as to obviate the necessity of these fingers, and in this construction that portion of the guideway 9 extending between the end plates 2 and 3 has its lower portion open, as distinguished from the form above described, in which it is provided with a series of transverse openings, and the brush which is mounted upon the shaft 6 is so constructed that it will in itself support the ear of corn. We have shown in Figs. 5 and 6 two forms of brush adapted to accomplish this end. That shown in Fig. 5 has the fibers arranged in a plurality of annular rows or rings 24, which are separated one from the other by partitions 25 which extend to within a short distance of the outer edge of the fibers; while in the form shown in Fig. 6 the fibers are arranged in longitudinal rows 26, with the partitions 27 extending between the rows of fabrics and extending to within a short distance of the outer ends thereof. In either of the constructions here described, the ear of corn rests upon the brush and the partitions or solid portions between the groups of fibers serve to prevent the ear from sinking into the brush and holds the same within the guideway and against the conveyer 22. This construction also leaves a continuous open space between the brush and that side of the trough towards which the brush moves, thus permitting the silk and the like to escape from the trough and preventing the same from accumulating therein as sometimes occurs when the trough has the transverse fingers connected to each side thereof.

We wish it to be understood that we do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. A machine of the character described comprising a frame, a trough mounted on said frame and having its lower side open, a rotary brush mounted on said frame adjacent to the open side of said trough, means independent of said trough for retaining an ear of corn within said trough, and means for moving said ear of corn longitudinally of said brush.

2. A machine of the character described comprising a frame, a trough mounted on said frame and having its lower side open, a rotary brush mounted on said frame adjacent to the open side of said trough and adapted to retain an ear of corn in said trough, and means for moving said ear of corn longitudinally of said brush.

3. A machine of the character described comprising a frame, a trough mounted on said frame and having its lower side open,

a brush rotatably mounted on said frame adjacent to the open side of said trough and so arranged relatively thereto as to leave a continuous open space between said brush and one side of said trough, and means for moving an ear of corn longitudinally of said trough.

4. In a machine of the character described, the combination, with a frame, and a trough mounted on said frame and having its lower side open, of a brush mounted on said frame adjacent to the open side of said trough and comprising a plurality of rows of fibers separated by partitions terminating near the outer ends of said fibers.

5. In a machine of the character described, the combination, with a frame, and a trough mounted on said frame and having its lower side open, of a brush mounted on said frame adjacent to the open side of said trough and comprising a plurality of rings of fibers separated by disks of less diameter than the diameter of said rings.

6. In a machine of the character described, the combination, with a frame, and a rotary brush mounted on said frame, of an ear support mounted on said frame to support ears of corn in contact with said brush, means independent of said support for retaining said ears of corn therein, and means for moving said ears of corn longitudinally of said brush.

7. In a machine of the character described, the combination, with a frame, and a brush mounted on said frame and comprising a plurality of rows of fibers separated by partitions terminating near the outer ends of said fibers, of an ear support mounted on said frame to support ears of corn in contact with said brush, and means for moving ears of corn longitudinally of said brush.

8. In a machine of the character described, the combination, with a frame, and a brush mounted on said frame and comprising a plurality of rings of fibers separated by disks of less diameter than the diameter of said rings, of an ear support mounted on said frame to support ears of corn in contact with said brush, and means for moving ears of corn longitudinally of said brush.

9. In a machine of the character described, the combination, with a frame, and a brush mounted on said frame, of an ear support or holder mounted on said frame to hold ears of corn in contact with said brush, a feed trough mounted on said frame, and a single endless belt adapted to move ears of corn longitudinally of said trough and said brush.

In testimony whereof we affix our signatures in the presence of two witnesses.

SAMUEL E. MORRAL.
WILLIAM W. MORRAL.
JOHN MORRAL.

Witnesses:
C. J. SCHULTZ,
JESSIE SCHULTZ.