

(No Model.)

2 Sheets—Sheet 1.

G. L. MERRELL.

MACHINE FOR SEPARATING SILKS, &c., FROM GREEN CORN.

No. 419,696.

Patented Jan. 21, 1890.

Fig. 2.

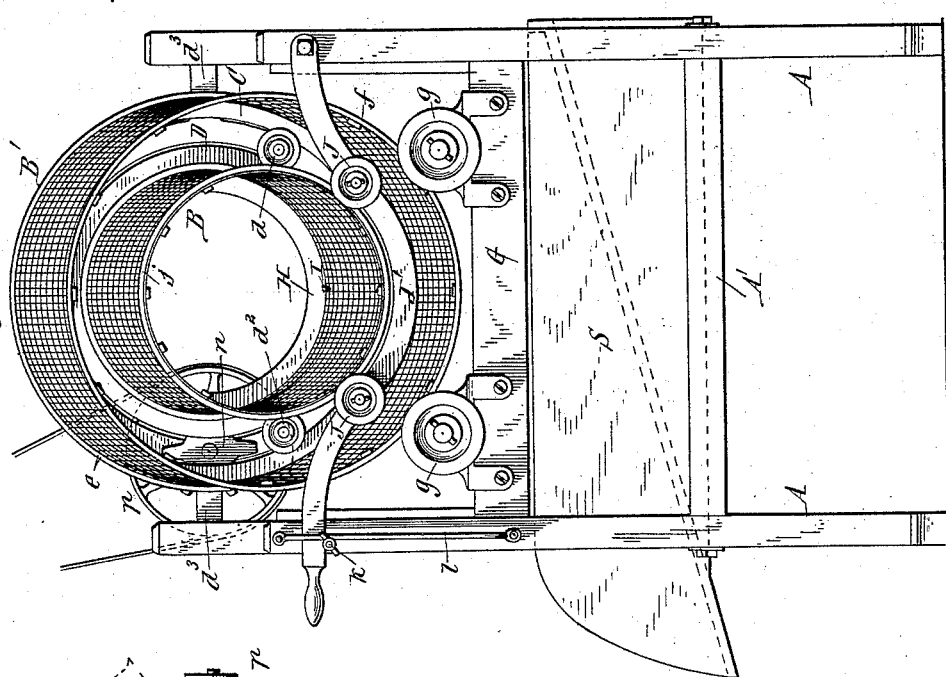
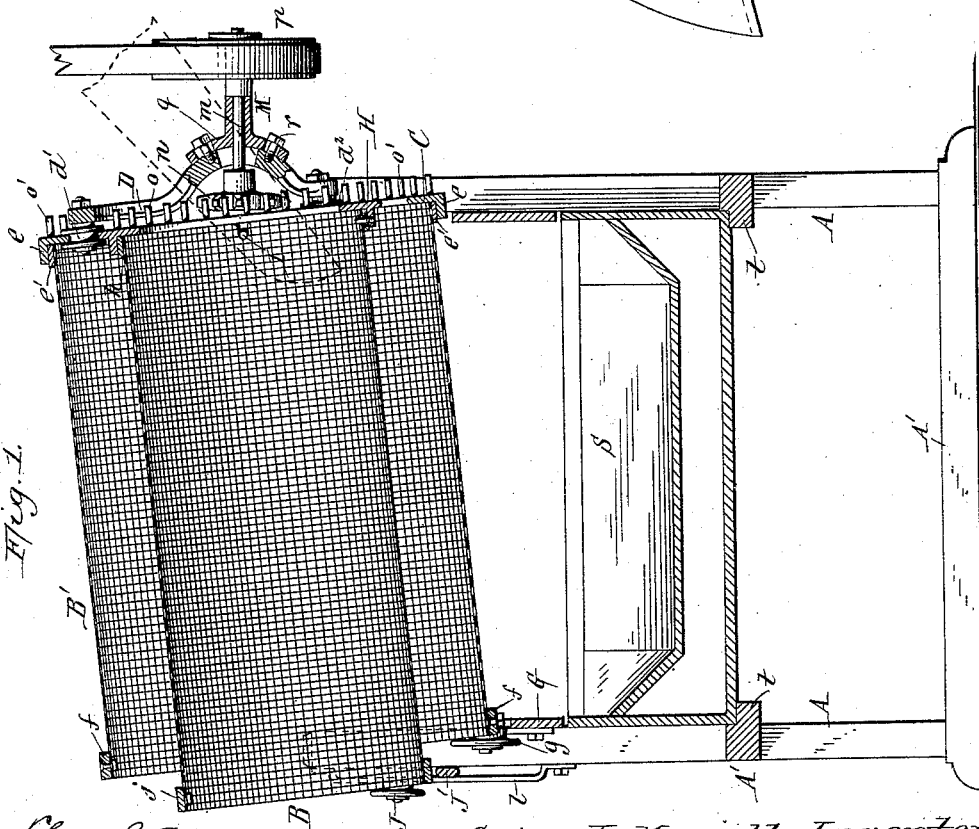


Fig. 1.



Theo. L. Popp  
C. F. Geyer.

} Witnesses.

Gaius L. Merrell, Inventor.  
By Edward Wilhelm,  
Attorney.

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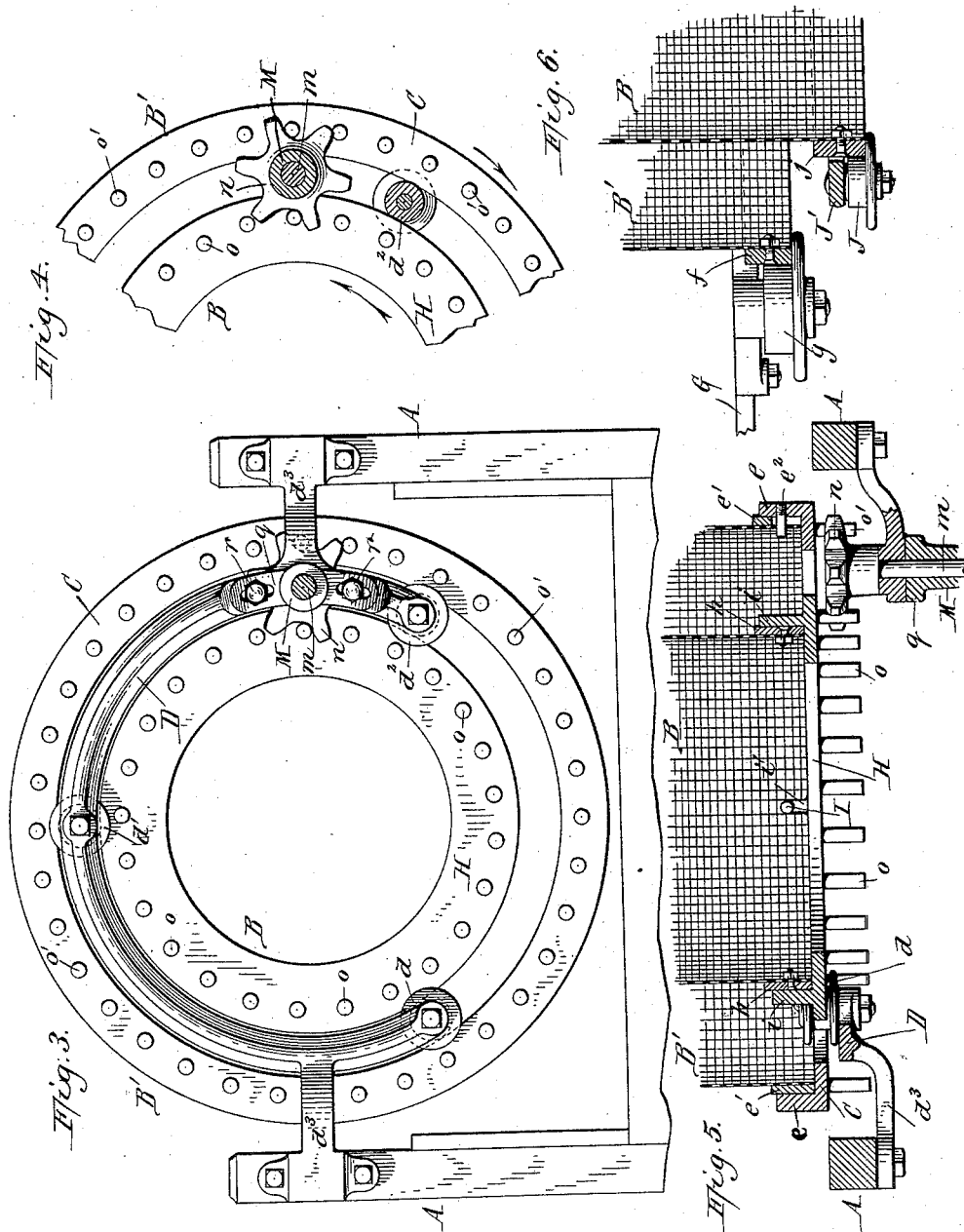
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By Edward Wilhelm  
Attorney.

# UNITED STATES PATENT OFFICE.

GAIUS L. MERRELL, OF SYRACUSE, NEW YORK.

## MACHINE FOR SEPARATING SILKS, &c., FROM GREEN CORN.

SPECIFICATION forming part of Letters Patent No. 419,696, dated January 21, 1890.

Application filed July 23, 1889. Serial No. 318,390. (No model.)

*To all whom it may concern:*

Be it known that I, GAIUS L. MERRELL, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented a new and useful Improvement in Machines for Separating Silks, &c., from Green Corn, of which the following is a specification.

This invention has the object to produce a simple separating-machine for separating green corn cut from the cob, preparatory to preserving or canning, from the silks which adhere to the kernels and are commingled therewith and from other large impurities.

My invention has reference to a separating-machine in which rotary screens are employed, and relates more particularly to the means whereby the screens are actuated and whereby they are rendered removable for cleaning.

In the accompanying drawings, consisting of two sheets, Figure 1 is a longitudinal sectional elevation of my improved machine. Fig. 2 is an elevation of the tail end of the machine. Fig. 3 is a fragmentary elevation of the front end of the machine on an enlarged scale. Fig. 4 is a fragmentary end view of the separating-screens, showing the means for driving the same in opposite directions. Fig. 5 is a horizontal section of the front portion of the machine. Fig. 6 is a similar view of the rear portion of the machine.

Like letters of reference refer to like parts in the several figures.

A represents the uprights, and A' the horizontal connecting-pieces, of the stationary supporting-frame of the machine.

B B' represent two cylindrical separating-screens arranged concentrically one within the other and constructed of wire-cloth having meshes of sufficient size to permit the kernels of corn to pass through the same, while retaining the fragments of silk and other large impurities.

C represents the driving-ring or annular head of the outer screen B', arranged at the front end of this screen and supported upon rollers  $d$   $d'$   $d^2$ , running in contact with the inner edge of the ring. These rollers are journaled equidistant from each other in an inverted crescent or horseshoe shaped frame D, the rollers  $d$   $d^2$  being arranged at the lower

ends of the frame and the roller  $d'$  at the top thereof. This frame is supported by brackets or arms  $d^3$ , formed on the frame secured to the adjacent uprights A. The supporting-rollers  $d'$   $d^2$  are provided with marginal flanges, between which the ring C is confined. The ring or head C is provided on its rear side with a cylindrical rim or flange  $e$  for the reception of the front end of the outer screen. The latter is provided at its front end with a ring or cylindrical band  $e'$ , in which the end of the wire-cloth cylinder is secured, and which stiffens it and forms a snug joint with the flange  $e$ , in which latter the front end of the screen is inserted.

$e^2$  represents a pin or projection secured to the inner side of the rim or flange  $e$  and projecting into a notch or recess formed in the end band  $e'$  of the outer separating-screen, whereby the screen is compelled to turn with the ring or head.

The outer screen is provided at its tail end with a ring or cylindrical band  $f$ , which runs with its outer side upon supporting-rollers  $g$ , mounted in bearings secured to a cross-piece G of the main frame. These supporting-rollers are provided at their rear sides with marginal flanges which retain the tail end of the screen upon the rollers and prevent the screen from moving lengthwise, so as to retain its front end in the flange of the front head or ring C.

H represents the driving-ring or annular head of the inner screen B, similar in construction to the ring C of the outer screen and arranged concentric therewith at the front end of the machine. The driving-ring H runs with its outer edge upon the inner sides of the supporting-rollers  $d$   $d'$   $d^2$ , so that the latter serve to support both driving-rings. The inner screen is provided at its front end with a cylindrical stiffening-band  $h$ , which fits snugly into a cylindrical flange  $i$ , formed on the rear side of the ring H. The flange  $i$  is provided with a pin I, like the head of the outer screen, which enters a notch  $i'$  in the ring  $h$  and compels the screen to turn with its head.

The inner screen is provided at its rear end with a cylindrical band  $j$ , which runs upon supporting-rollers J J, journaled on a vertically-movable arm J'. The latter is pivoted

at one end to the main frame of the machine, and rests with its free end upon a pin or projection *k*, inserted in an opening in the adjacent upright A. The free end of the movable supporting-arm is held against this upright by a strap or guide *l*, secured to the same. The supporting-rollers J J are provided at their rear edges with flanges similar to those of the rear rollers of the outer screen, so as to confine the inner screen in place. Upon raising the rear end of the inner screen above the flanges of its rear supporting-rollers J J the front end of the screen can be drawn out of its driving-head H and the screen be withdrawn rearwardly from the machine for cleaning the screen or for other purposes. Upon withdrawing the supporting-pin *k* and lowering the supporting-arm J' below the rear end of the outer screen, the rear end of the latter can be lifted above the flanges of its rear supporting-rollers and its front end be withdrawn from its driving-head C to remove the screen. In replacing the screens the outer screen is first put in place, the movable supporting-arm is then raised to its proper position, and the inner screen is then inserted.

*m* represents the horizontal driving-shaft, arranged at the front end of the machine and turning in a bearing M, which is adjustably secured to the branch *d*<sup>3</sup> of the crescent-shaped frame D.

*n* represents a gear-wheel secured to the inner end of the driving-shaft and extending partially across the inner and outer driving-heads C and H.

*o* represents an annular row of pins or projections secured to the front side of the inner driving-head, and *o'* is a similar row of pins secured to the outer head C. The two rows of pins are so arranged that the gear-wheel engages simultaneously on opposite sides with both rows of pins, so that the revolving gear-wheel causes the two heads and their screens to turn in opposite directions.

*p* is the driving-pulley, mounted on the driving-shaft.

The separating-screens are inclined toward the tail of the machine, so as to cause the material to move toward the tail ends of the screens.

In case the speed of the shaft from which the machine is driven is so high as to cause the material to flow too rapidly through the screens, the tail end of the machine is raised to reduce the inclination of the screens and cause the material to flow through the screens more slowly. The bearing of the driving-shaft is made adjustable on the frame D, so that the bearing and shaft can always be adjusted to a horizontal position when the inclination of the machine is changed in order to prevent the driving-belt from running off the pulley. The bearing is provided with a concave plate or flange *g*, and the contiguous branch *d*<sup>3</sup> of the frame D, against which said plate bears, is made convex, as represented

in Fig. 1, so as to permit the bearing to be freely adjusted on the frame. The bearing is adjustably secured to the frame by clamping-bolts *r*, passing through slots in the flange of the bearing.

The pins on the heads of the screens are made of sufficient length to remain in engagement with the actuating sprocket-wheel in the various positions of the screens.

S represents a receiving-hopper arranged transversely underneath the separating-screens and resting upon horizontal ways or ledges *t*, secured between the uprights A. The receiving-hopper is provided with a bottom which is inclined transversely of the machine and is removable and reversible, so that the material may be discharged on either side of the machine.

The corn which is cut from the cobs, preparatory to canning or preserving, it is commingled with or attached to shreds of the silk from which it is to be separated by my improved machine. The corn containing these shreds or fragments of silk and other large impurities is fed by a feed-spout or other suitable means into the front end of the inner rotating screen. The kernels with the silks are elevated on the ascending side of the screen, and in rolling back over the inner surface of the screen the kernels are detached from the silk, which latter adheres to the wire-cloth, while the separated kernels of corn pass through the meshes of the cloth and fall upon the surrounding outer screen. A portion of the silk, owing to its stringy nature, is formed into lumps or balls by being constantly turned over and escapes over the open tail end of the inner screen into a suitable receptacle or falls upon the floor. Any silk which may adhere to the kernels passing through the inner screen is detached by being subjected to a secondary separating operation in the outer screen, the principal portion of such remaining silk adhering to the inner surface of the outer screen, while a portion thereof is tailed off. The separated kernels passing through the outer screen drop into the receiving-hopper below. The two screens are preferably rotated in opposite directions, because by this method the material is elevated in the two screens on opposite sides, whereby the material passing through the inner screen falls upon a clear unobstructed portion of the outer screen, which renders the outer screen less liable to clog and requires less frequent cleaning of the screens. The strings or films of silk adhering to the inner surfaces of the screens hang partly through the meshes thereof while they lie in the lower portions of the screens, but in being elevated they again fall back into the screens before they have an opportunity to work wholly through the meshes. The screens are removed from time to time for cleaning them from the adhering silks. By rendering the screens removable in the manner described a fresh set of screens can be

placed in the machine while a used set is being cleaned, thereby avoiding long delays.

A single separating-screen may be employed, if desired; but I prefer to use two, so as to obtain a thorough separation. Both screens may have meshes of the same size; but, if desired, the inner screen may be of coarser mesh than the outer screen.

I claim as my invention—

1. The combination, with the driving-ring and its supporting devices, of a hollow screen detachably connected with the driving-ring, substantially as set forth.

2. The combination, with the driving-ring and its supporting devices, of a pin or projection secured to the driving-ring and a detachable hollow screen provided with a notch engaging with said projection, substantially as set forth.

3. The combination, with the driving-ring, of rollers whereby the driving-ring is supported, a hollow screen detachably connected at one end with the driving-ring, and rollers whereby the opposite end of the screen is supported, substantially as set forth.

4. The combination, with the driving-ring provided on its rear side with a cylindrical flange, of flanged rollers supporting the ring, a hollow screen provided at both ends with encircling bands, one of said bands fitting into the flange of the driving-ring, and rollers engaging against the other band of the screen and supporting the latter, substantially as set forth.

5. The combination, with the driving-ring, of flanged rollers whereby the ring is held against movement in the axis of the machine, a detachable hollow screen capable of movement in the axis of the machine when released, and flanged rollers supporting the rear end of the screen and holding the latter against the rear side of the driving-ring, substantially as set forth.

6. The combination, with two concentric

screens and their driving-rings, of supporting-rollers arranged between both driving-rings and supporting both rings, substantially as set forth.

7. The combination, with two concentric screens, their driving-rings, and rollers upon which said rings are supported, of rollers supporting the rear end of the outer screen, and a vertically-movable bar provided with rollers which support the rear end of the inner screen, substantially as set forth.

8. The combination, with two concentric screens, of two concentric gear-rings secured to the ends of said screens and a driving-wheel arranged between said gear-rings and meshing with both, substantially as set forth.

9. The combination, with two concentric screens and their driving-rings provided on their front sides with annular rows of pins, of a driving-wheel meshing with both rows of pins, substantially as set forth.

10. The combination, with the inclined screen and its driving-ring, of a driving-shaft provided with a gear-wheel meshing with the driving-ring, a bearing in which said shaft is journaled, and a vertical curved support for said bearing on which the latter can be adjusted to retain the shaft in a horizontal position when the inclination of the screen is changed, substantially as set forth.

11. The combination, with two concentric screens and their driving-rings, of a frame carrying the supporting-rollers of said rings and provided with a curved portion, a bearing adjustably secured to said curved portion, and a driving-shaft journaled in said bearing and carrying a gear-wheel meshing with the driving-rings, substantially as set forth.

Witness my hand this 6th day of July, 1889.

GAIUS L. MERRELL.

Witnesses:

THEO. L. POPP,  
C. F. GEYER.