

(No Model.)

3 Sheets—Sheet 1.

E. E. MENDENHALL.
GRAIN SEPARATOR.

No. 541,051.

Patented June 11, 1895.

Fig. 2

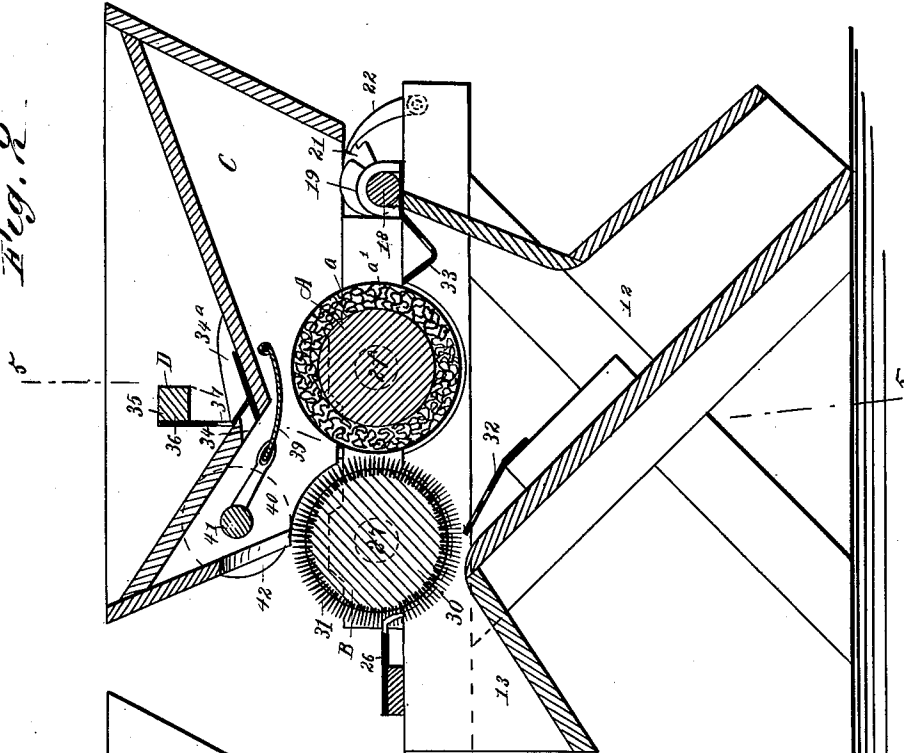
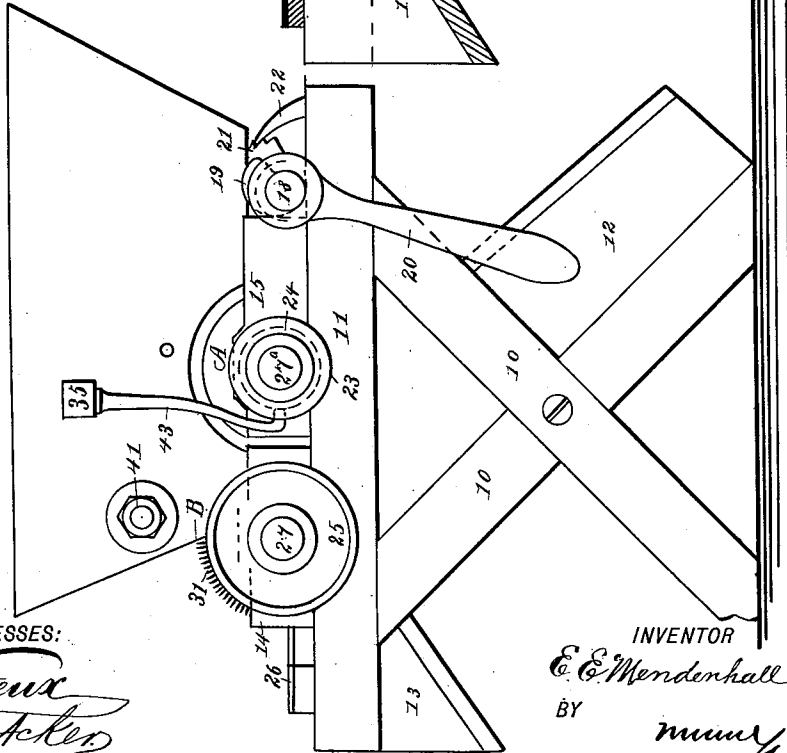


Fig. 1



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ATTORNEYS.

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Fig. 13

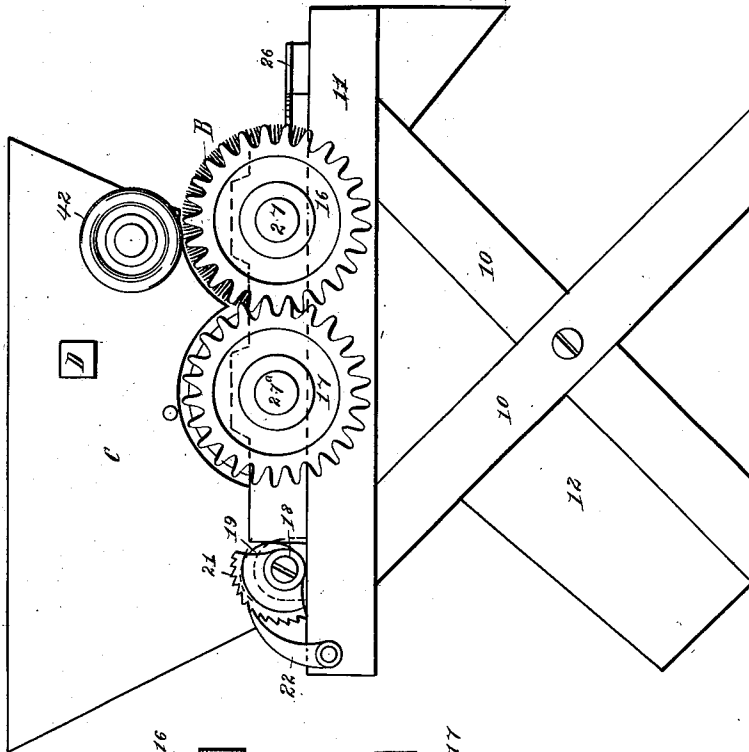
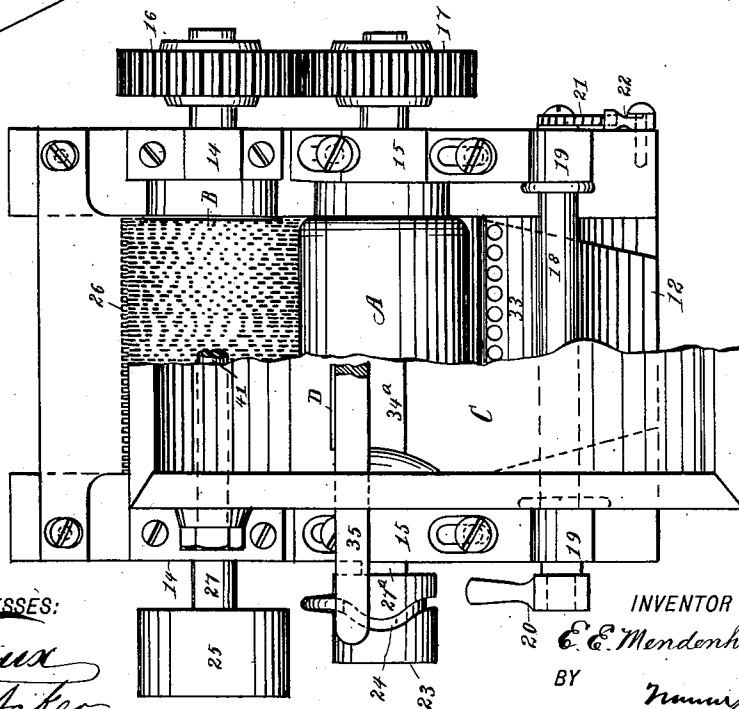


Fig. 4



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Fig. 5

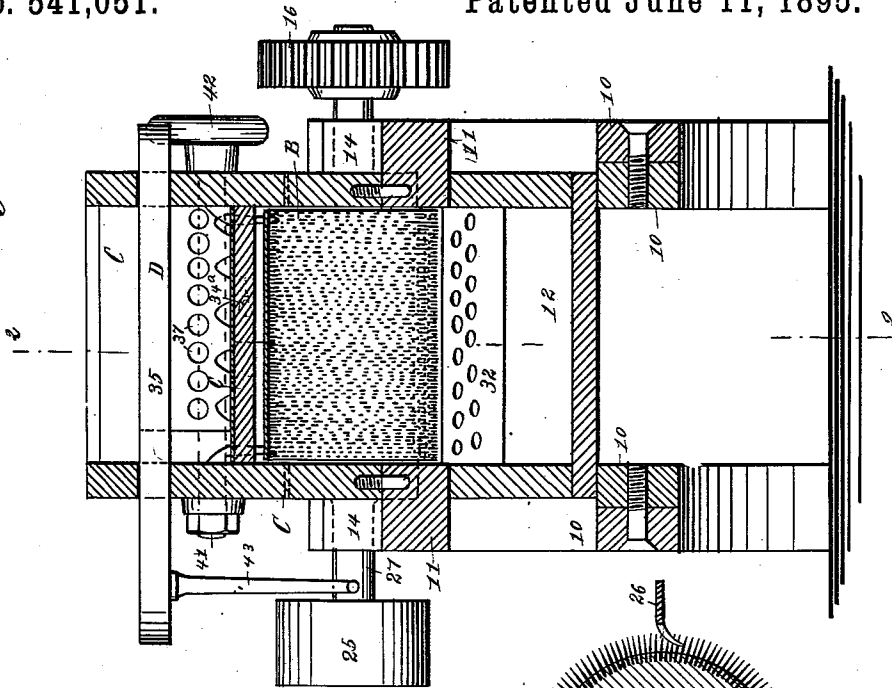


Fig. 6

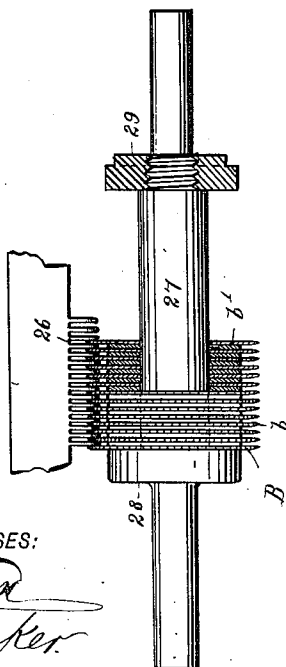
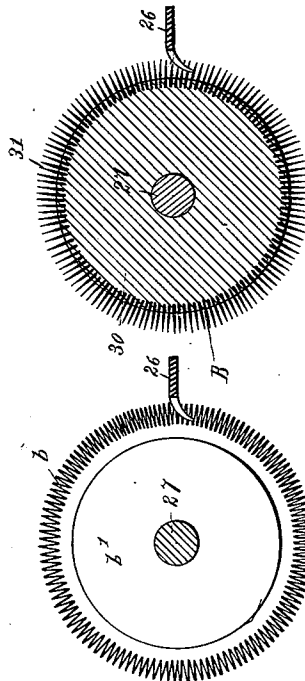


Fig. 7

Fig. 8



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UNITED STATES PATENT OFFICE.

ERASTUS E. MENDENHALL, OF THOMASVILLE, NORTH CAROLINA, ASSIGNOR
OF ONE-FOURTH TO JULIAN E. SUMNER, OF SAME PLACE.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 541,051, dated June 11, 1895.

Application filed September 5, 1894. Serial No. 522,164. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS EMERY MENDENHALL, of Thomasville, in the county of Davidson and State of North Carolina, have invented a new and Improved Grain-Separator, of which the following is a full, clear, and exact description.

My invention relates to a grain separator, and it has for its object to provide a machine especially adapted for separating wild onions, or particles of wild onions, which occasionally grow among the wheat, from the wheat kernels, since in process of thrashing the two often become mixed, and it is necessary that such foreign matter should be removed from the wheat prior to its being crushed.

Another object of the invention is to provide a machine capable of accomplishing such a result which will be exceedingly simple, durable and economic.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the machine. Fig. 2 is a vertical transverse section taken essentially on the line 2 2 of Fig. 5. Fig. 3 is an elevation of the side of the machine opposite that shown in Fig. 1. Fig. 4 is a plan view of the machine, a portion of the hopper being broken away. Fig. 5 is a transverse section taken practically on the line 5 5, of Fig. 2. Fig. 6 is a detail view of one of the separating-cylinders, together with its comb. Fig. 7 is a sectional end elevation of such a cylinder and its combination, and Fig. 8 is a transverse section of a modification of the same cylinder.

In carrying out the invention the frame of the machine may be said to consist of crossed beams 10, constituting the sides, together with horizontal bars 11, secured to the upper ends of the crossed beams, and a chute 12, which is supported by the sides of the frame, extending from side to side and downwardly

in a diagonal direction, the upper portion of the chute being flared and of sufficient length to extend practically from end to end of the upper or horizontal bars 11. At its upper end the chute 12 meets a short chute 13, which is inclined downward in an opposite direction. Two boxes 14 and 15, are mounted upon each horizontal bar 11 of the frame, the boxes 14 being securely fastened to the bars, while the boxes 15 are adjustable to and from the said boxes 14.

In the boxes 14, the shaft 27 of a separating cylinder B is mounted, while in the boxes 15, the shaft of a second and parallel cylinder A is mounted to turn. At one side of the machine the shaft 27 is provided with a gear 16, while the shaft 27^a of the cylinder A, is provided with a gear 17, preferably of the same diameter, and the teeth of these gears are made quite deep, in order that one cylinder may be adjusted from the other some distance without the gears being out of mesh.

A rock shaft 18 is mounted to turn upon one end of the frame opposite the outer ends of the adjustable boxes 15. The rock shaft is provided with cams 19, adapted for engagement with the boxes 15, and through the medium of these cams said boxes are carried inward to bring the cylinder A in desired relation with the cylinder B, the boxes being held in their adjusted position by means of a pawl 22, engaging with a rack 21, secured preferably to one extremity of the rock shaft, the other extremity being provided with a handle 20.

Upon the opposite end of the shaft 27^a to that carrying the gear 17, a pulley 23 is secured, provided with a serpentine peripheral groove 24, and upon the corresponding end of the shaft 27 a driving pulley 25, is located, the two cylinders being revolved in direction of each other.

With reference to the construction of the cylinder A, said cylinder is provided with a suitable core, preferably of a hard material, and a covering of leather, or a suitable soft material, a filling or packing of rubber, sponge, or a like material being interposed between the covering and the core, as shown in Fig. 2, in which the covering is designated as *a* and

the filling as a' . Under this construction the said cylinder A presents a spongy, soft, or pliable surface.

The opposing cylinder B, is preferably constructed as shown in Figs. 6 and 7, in which the shaft 27 is enlarged for a portion of its length, for example at its center, being provided at one end of the enlargement with a fixed collar 28, and at its opposite end with a removable collar 29. Between these collars a series of circular toothed disks are mounted upon the shaft, spaced by interposed washers b' , the teeth b of the said disks being exceedingly thin, as is likewise the body of the disks, and the said teeth are longitudinally beveled, and the teeth of opposing disks are very close together, for example, one twenty-eighth of an inch apart. The space between these disks is quite narrow, but is sufficiently wide to receive the teeth of a comb 26, secured upon the end of the machine at which the short trough or chute 13 is placed, the teeth of the comb at their outer extremities being downwardly curved, as illustrated in Figs. 2, 7 and 8.

In the operation of this machine, the wheat kernels being hard and the onions or particles of onions mixed therewith soft, the teeth of the cylinder B will simply press the wheat kernels into the yielding surface of the cylinder A, but as the teeth come in contact with the softer foreign matter, the said foreign matter will be taken up by the teeth, or remain in contact therewith, and will be carried down and be brushed off from the teeth by the teeth of the comb 26, and dropping into the chute 13 will fall out therefrom to the ground, while the kernels of wheat adhering to the soft surface of the cylinder A, will drop therefrom as said cylinder revolves, and will fall into the wheat chute 12. If, however, in practice it is found desirable, the cylinder B may be made as illustrated in Fig. 8, in which the cylinder consists of a solid body and is of wood or other material, in which spikes or teeth are driven or inserted in annular rows, the body being designated as 30 and the teeth as 31. Should any grain adhere to the cylinder B, it will be removed therefrom through the medium of a plate 32, preferably of a spring material, secured at one end to a suitable support in the chute 12, the free end of the plate being placed sufficiently near the teeth of said cylinder to contact with the grain, but not with any soft material embedded in the teeth. The said plate is preferably perforated, as shown in Fig. 5, so that the grain may readily pass through, and any grain that may continue to adhere to the ascending side of the soft surface of the cylinder A, will be removed through the medium of a plate 33, placed at the rear of the said cylinder and contacting with its periphery, as shown also in Fig. 2. This plate is preferably angular, or V-shaped, and is provided with perforations. Therefore, should any wheat kernels pass out, and subsequently

drop, they will pass through the perforations into the chute 12.

A hopper C is located at the top of the main frame, and the hopper extends entirely over the flexible cylinder A and partially over the toothed cylinder B. The hopper is provided with an inclined bottom, the bottom being inclined from the ends of the hopper in direction of the center, and where the two inclined surfaces meet is practically over the space between the two cylinders.

One of the inclined surfaces is preferably made longer than the other, and in the shorter inclined surface a series of openings 34, is produced, and a slide cut-off D, is located over the said openings. This cut-off consists of a bar 35, which extends through the sides of the hopper, having sliding movement therein, and an angled plate 36 projected downward from the slide, the vertical member whereof substantially touches the upper face of the shorter inclined surface, while the other member is made to follow the inclination of the hopper over the apertures or openings 34, and upon the upper face of the longer inclined surface of the hopper a wear plate 34^a, is located, over which the inclined member of the sliding cut-off has movement. The said inclined member of the sliding cut-off is provided with a series of recesses 38, capable of registering with the openings 34 in the bottom of the hopper, and with openings 37 in its vertical member, which permit the grain to pass from the shorter inclined portion of the hopper to the outlet, namely, the openings 34, as shown in Fig. 5.

An apron 39, is located beneath the outlet of the hopper, being pivoted at one of its sides in the hopper below the bottom thereof, and over the cylinders A and B. This apron extends practically from side to side of the hopper, and is provided with a concave upper or receiving surface. The free edge of the apron is supported in the forked extremities of arms 40, the said arms being secured to a rock shaft 41, operated from the outside of the hopper by a knob 42, or the equivalent thereof. Thus, through the medium of the slide D the grain is regularly and slowly fed to the outlet of the hopper, being received by the apron 39, and the feed of the grain from the apron is regulated by the degree of inclination given to the same; but in any event, the grains will pass over the delivery edge of the apron singly, thereby not crowding the cylinders.

The sliding cut-off is manipulated through the medium of a finger 43, carried downward from the bar 35 at one side of the hopper and made to enter the irregular or zig-zag slot 24 in the pulley 23, as shown in Figs. 1 and 4. By this arrangement the sliding cut-off is given a laterally reciprocating movement.

In the operation of this machine, the wheat and foreign matter mingled with it are fed from the hopper to the apron 39, and deliv-

ered by said apron between the cylinders A and B, and as said rollers or cylinders revolve, the hard kernels of wheat will be received in the elastic or flexible surface of the cylinder A, while the soft foreign matter will be taken up by the teeth of the separating roller or cylinder B, and the said soft or foreign particles will be carried to the chute 13 and removed from the teeth by the comb 26, the wheat dropping from the roller A into the chute 12.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with the toothed and yielding-surfaced separating cylinders, and the off take chutes therebelow, of a trough-like scraper 33 the upper inner edge of which extends adjacent to the said yielding surface, the bottom of the trough having apertures discharging into the grain off-take, substantially as described.

2. The combination in a separator of the

class described, with the toothed cylinder and its off-take, of a transverse foraminated scraper spaced above the bottom of the off-take with its upper edge extending adjacent to the cylinder teeth, substantially as described.

3. The combination with the separating mechanism of a feed hopper having angular bottom pieces one of which is provided with outlet openings 34, a transversely reciprocating bar 35, having a depending angular plate 36, the vertical member of which is provided with apertures 37 to permit the grain to flow down therethrough to the outlet openings, and the lower edge of the inclined member being provided with notches or recesses to register with the said outlet openings, substantially as described.

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Witnesses:

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