

(No Model.)

2 Sheets--Sheet I.

D. S. GEISER.

COMBINED THRASHING AND SEPARATING MACHINE.

No. 516,926.

Patented Mar. 20, 1894.

Fig. 1.

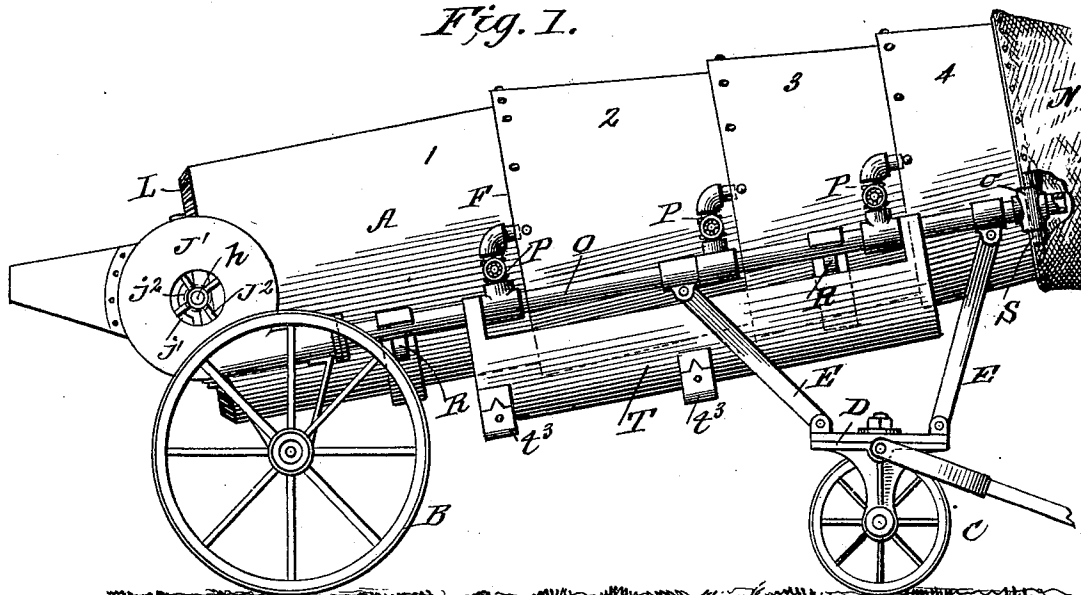


Fig. 2.

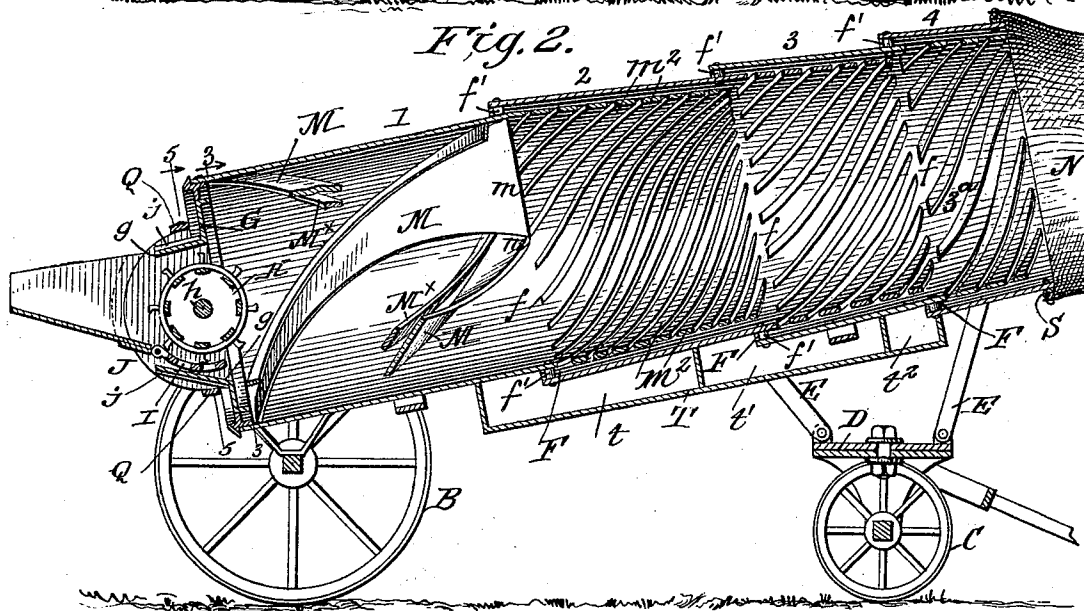
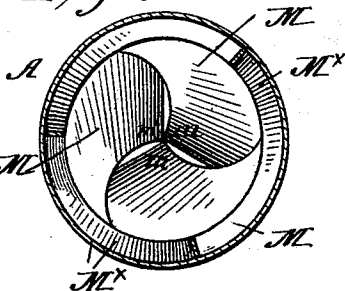


Fig. 3.



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Fig. 4.

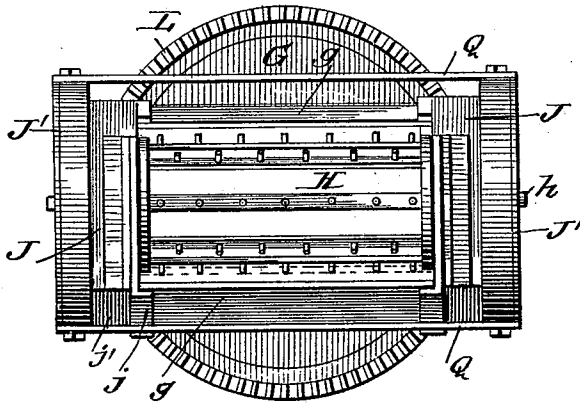


Fig. 5.

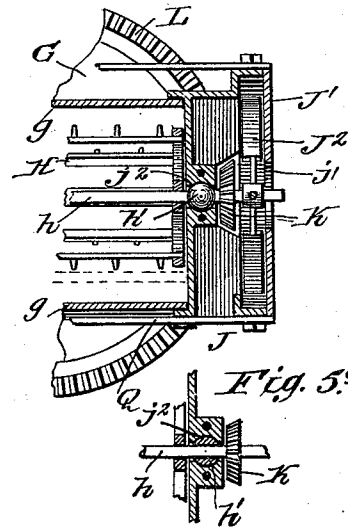


Fig. 6.

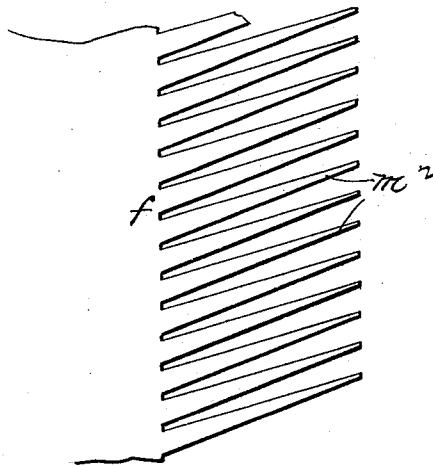
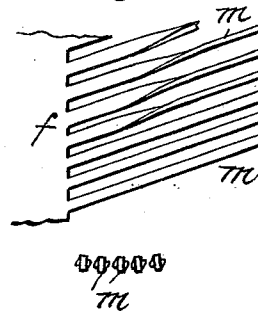


Fig. 7.



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UNITED STATES PATENT OFFICE.

DANIEL SINGER GEISER, OF WAYNESBOROUGH, PENNSYLVANIA.

COMBINED THRASHING AND SEPARATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 516,926, dated March 20, 1894.

Application filed August 17, 1893. Serial No. 483,355. (No model.)

To all whom it may concern:

Be it known that I, DANIEL SINGER GEISER, residing at Waynesborough, Franklin county, in the State of Pennsylvania, have invented certain new and useful Improvements in a Combined Thrashing and Separating Machine, of which the following is a specification.

My invention relates to that class of thrashing and separating machines, in which the straw and grain are discharged from the cylinder into revolving screening drums, and it has for its object to simplify and cheapen the construction by dispensing with a number of the cumbersome and complicated mechanisms usually hitherto employed for such purpose, and also to provide a machine of this kind which will the more effectually and economically separate the grain and straw.

With other objects in view all of which will hereinafter appear, the invention consists in such novel arrangement and combination of parts, as will be first described and then specifically pointed out in the claims, reference being had to the accompanying drawings in which—

Figure 1 is a side elevation of my improved thrashing and separating machine. Fig. 2 is a vertical longitudinal section thereof. Fig. 3 is a transverse section on the line 3—3 Fig. 2. Fig. 4 is a front end view. Fig. 5 is a detail view of the blast fan, the bearing and casing therefor. Fig. 5^a is a detail section of the bearing sleeve hereinafter referred to, and Figs. 6 and 7 are diagrammatic views hereinafter referred to.

In the practical construction of my invention I employ a revolving inclined drum formed of an open ended section provided with internal spiral edged ribs, and fingers or combs, so arranged and connected with the cylinder of the thrasher that when fed internally with mixed straw and grain, the revolving action of such drum bears up and moves the straw forwardly and on the spiral ribs, while the grain settles and passes off through the open spaces between said ribs of the inclined drum to the winnowing devices, which are provided with carrying fingers and separating combs.

Referring now to the drawings A indicates the drum, which is mounted upon a truck frame which comprises the rear truck wheels

B, and the front or caster wheel C, journaled in bearings secured to turn on a turn plate D, secured at the lower end of brace arms E as most clearly shown in Fig. 1.

The drum proper A is formed of a number of sections 1, 2, 3, and 4, which have telescopic connections with each other, as most clearly shown in Fig. 2. By reference to such figure it will be seen that sections 2, 3 and 4 are conical in shape, the smaller end of one fitting the larger end of the next one, whereby annular discharge openings F are provided for a purpose presently explained, and the several sections are inclined upward in the direction of their discharge, whereby the grain as it separates from the straw will pass down rearwardly and discharge through the openings F. The front or the receiving end of the front section 1, it will be seen is of the same diameter its entire length, and such portion has solid or closed sides, which portion terminates at a point just inside the receiving end of the next section 2, as at *f*, and is held secure thereto and spaced apart by means of the sleeves and bolts *f'*, the succeeding sections 2, 3 and 4 being similarly connected and spaced apart to form the discharge openings F as clearly shown in the drawings. The lower or receiving end of section 1 is closed by a cap plate G, which has outwardly projecting flanges *g g*, between which the cylinder H and concave I are located.

By referring now to Fig. 4 it will be noticed that the ends of the cylinder and concave are cased in by castings J, which form the inner walls of the fan chambers and such castings have flanges *j*, which lap the edges of flanges *g g* and end openings *j' j'*, which serve to admit air to the fan chambers from the inside for a purpose presently stated. *J' J'* indicate the outer or cap plates of the fan chambers and *J²* the fans. These fans are mounted on the cylinder shaft *h*, and such shaft is journaled in solid balled sleeves *h'* removably held in bearing *j²* in the castings J, by the removable cap plates *j³*.

As a convenient means for driving the drum, I prefer to gear such drum directly with the cylinder shaft and to this end a bevel gear K is removably mounted on the cylinder shaft, which gears with an annular cog rim L on the front end of the front section. While I

prefer the aforesaid means of driving the drum it is obvious that it may be driven by intermediate shafting or belting connected to the said cylinder shaft.

5 By constructing the fan chamber to take in air at both sides and on the inside in an upwardly direction and from under the machine, provides for a strong blast without danger of drawing in objectionable quantities of straw and dirt, which is usually the case when the entire supply of air is drawn from exposed points, through a single inlet.

Within the front or closed end of the front section is arranged a series of spiral conveyer webs M, three being preferably employed, which increase in width from their front to the rear ends, the rear ends *m* being practically of a width equal to the radius or one half the diameter of the drum section 1; 15 narrow ribs M^x of even width which run parallel with the conveyer ribs being also arranged in such front section as shown. By this construction it will be observed gradual inclines or spiral ways are provided which 25 will carry upward and rearward the straw and grain, while forming a complete check to the motion given it by the cylinder; and as the spiral conveyer webs are of some considerable width near the center, it follows, 30 that as the grain and straw are discharged with some force from the cylinder directly against the same, such impact force in itself will have a tendency to revolve the drum, thereby effecting a saving in the propelling 35 power.

The rear end of section 1 is formed with a continuous series of spiral comb like fingers *m*² which are spaced all uniformly apart, they in such section being arranged closely together to make as it were a fine mesh. This spiral comb or separating portion of section 1, it will be noticed projects within the solid end of section 2, which section 2 has its rear or discharge end also formed with a series of spirally arranged comb like fingers spaced somewhat wider apart than the comb fingers of the preceding section. This latter comb section projects into the solid end of section 3, which also has a spiral comb like extension 3^a, which extends within the solid end of section 4, which terminates at a stacking bag N, secured thereto and which receives the straw and conveys it to a desired stacking point.

55 O O indicate the main blast pipes which communicate with the valved branch pipes P P, which in turn discharge at the sides through the openings F, into the several separating compartments, and through the comb like fingers or screens.

In the practical operation of the machine the valves of the several branch pipes are adjusted so as to give a proportionately greater blast into the succeeding separating chambers, whereby an accumulated blast at the rear section will serve to effectually carry the separated straw out through the flexible stack-

ing bag. It will also be noticed that by forcing the blast into the several screening sections in the manner stated, an induction draft 70 is created which will serve to force all the dust and light particles through the stacker.

The fan casing and the cap plate G is mounted on suitably arranged brackets or supports Q mounted on the rear axle, and as 75 a convenient support the drum A is mounted upon friction rollers R held in saddle members hung on the blast pipes O, the front ends of which are supported in the upper ends of the bracket members E E, couplings *o* being 80 also secured on the ends of such pipes O, to which connect circular pipe members S to which the bag section is secured, and under which the discharge end of section 4 of the drum projects as shown. 85

T indicates the grain receiving box which is divided into three compartments *t t' t*², the lower one *t* of which receives the grain as it discharges through the first opening F, and which is separated or screened through the 90 first section 1, while the center one *t'* receives the screenings from section No. 2, and the upper one *t*² receives the tailings or screenings from section No. 3; and the latter compartment *t*² may in practice be connected by 95 a suitable elevating device with the cylinder, while the compartments *t* and *t'* have discharge openings *t*³ as shown.

By constructing a thrasher in the manner stated, I accomplish a threefold advantage 100 over former constructions, first, by greatly simplifying the construction, second by a great reduction of the amount of power hitherto required to operate machines of this kind, through the agitation of the grain and 105 straw, caused by the rotary motion of said drum—third, by the superior cleaning and stacking facilities afforded by the increased surface over which the grain and straw must move in connection with the operation of the 110 blast operating in a line of direction through pipes P P P, said pipes being provided with regulating valves for shifting and controlling the blast in such proportions as the cleaning of the grain and stacking of the straw 115 may require. Further I gain special advantages over former separating and thrashing means, by virtue of the internal circulation or agitation through increased space in proportion to the longitudinal distance. 120

To provide for the reduced diameter at the discharge end of each of the separating sections and the parallelism of the spiral comb fingers, the ends of the plates which form such sections are cut with < shaped slits, before they are bent up to their circular shape 125 as shown in the diagram Fig. 6. If desired such reduced ends and comb fingers may be formed by cutting parallel slits in the ends of the plate and giving the fingers an inward 130 twist, see diagrams Fig. 7.

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

1. A thrashing and separating machine comprising an upwardly inclined revolving drum having a receiving chamber at its lower end and a screening portion at its upper end a
5 cylinder and concave at the receiving end, and spiral ribs or webs located within the receiving chamber, increasing in width from their lower to their upper ends and arranged to receive the impact force of the material as it is
10 discharged from the cylinder, all substantially as and for the purposes described.

2. An improved thrashing and separating machine formed with a cylinder and concave at one end, a stacking tube or bag at the other,
15 and an upwardly inclined revolving drum between such cylinder and stacking bag, said drum consisting of sections, the forward one having internal spiral ribs and screening fingers at its upper end projected into the solid
20 portion of the next succeeding section, the succeeding sections intermediate the front and end sections having comb like teeth at the upper ends projected into the solid portions of the adjacent sections, all substantially
25 as and for the purposes set forth.

3. In a combined thrashing and separating machine, in combination, a revolving drum having a receiving chamber at its feed end formed with spiral ribs arranged to elevate
30 and feed the material rearward, a cylinder and concave at the front end of such chamber, a screening portion on the rear end of such drum formed of conical sections having a solid front portion and spiral comb like rear
35 portions, and arranged with the solid portion of one section over the screening portion of the preceding section, said conical sections held spaced apart, all substantially as shown and for the purposes described.

4. A thrashing and separating machine consisting of an inclined revolving drum formed of sections held spaced apart, whereby blast channels are formed, said sections formed with solid front portions and spiral comb like
45 rear portions, the rear portion of one section fitting in the front of the next section, spiral conveyer webs in the front section, the cylinder and the concave at the feed end of the front section, and means for forcing a blast
50 into the spaces between the several sections in the direction of the feed, all substantially as shown and described.

5. In a thrashing and separating machine, in combination, a revolving drum formed of
55 telescopic sections held spaced apart said sections formed with solid front portions and spirally arranged screening portions at their

rear ends the receiving or front section having spirally arranged ribs in its solid portion, and the cylinder and concave devices at the
60 front end of such section a stacking tube at the rear end of the rear section and air blast devices arranged at each side of the drum to force air between the sections by blast and induction, substantially as and for the pur-
65 poses described.

6. In a thrashing and separating machine, the combination with the truck or supporting frame, the fan casings mounted thereon, the cylinder shaft journaled in such casing
70 the cylinder and the concave the fans, the main blast pipes and the saddles arranged as shown, of a revolving drum formed of sections telescopically connected and held spaced apart, each section formed of a solid front
75 portion, and spirally arranged screening fingers at the rear end, the said front section having internal spiral ribs on its solid portion and the valved branch pipes connected with the main blast pipes and held to discharge
80 into the spaces between the drum sections in the direction of the feed, all substantially as shown and for the purposes specified.

7. In a thrashing machine of the class described, a revolving drum having a screening
85 portion at its discharge end, and internal spirally arranged webs in its feed end, said webs increasing in width from their front to their rear ends, substantially as described.

8. In a thrashing machine of the class described, the combination with the main frame
90 the revolving drum, the cylinder and concave, said drum formed of sections and provided with annular air spaces, of fans and an air trunk at each side of the drum said air
95 trunks having laterals projected to discharge into the said air spaces, and fan casings mounted on the main frame and formed with inlet openings at each side of the fans, all substantially as described and for the pur-
100 poses set forth.

9. In a thrashing machine of the class described, a revolving drum having a screening
portion at its discharge end, and internally spirally arranged conveyer webs on its feed
105 end increasing in width from the front to the rear, and internal ribs of uniform width arranged spirally and parallel with the conveyer webs, substantially as shown and for the purposes described.

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Witnesses:

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