July 15, 1924. 1,501,455

O. A. INGERSOLL

THRASHING MACHINE AND PARTS THEREOF

Filed Aug. 25, 1921 3 Sheets-Sheet 1

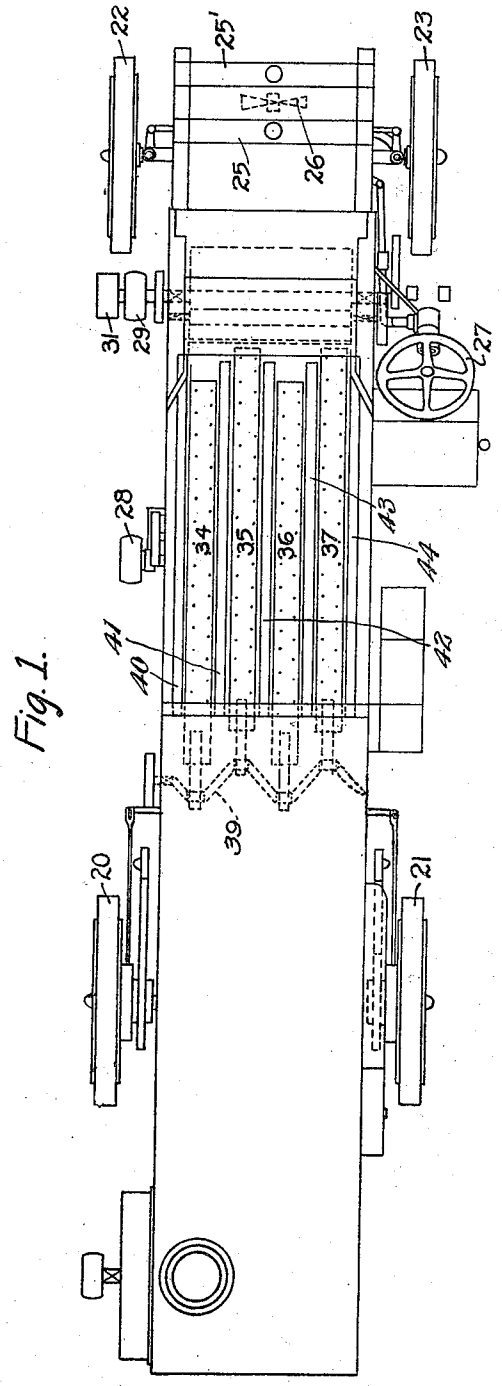


Fig. 1.

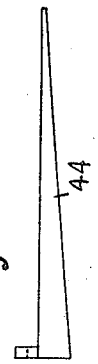


Fig. 3.

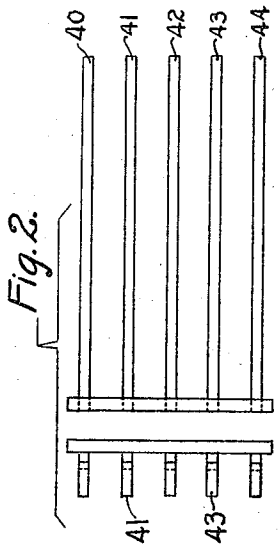


Fig. 2.

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July 15, 1924. 1,501,455

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THRASHING MACHINE AND PARTS THEREOF

Filed Aug. 25, 1921 3 Sheets-Sheet 2

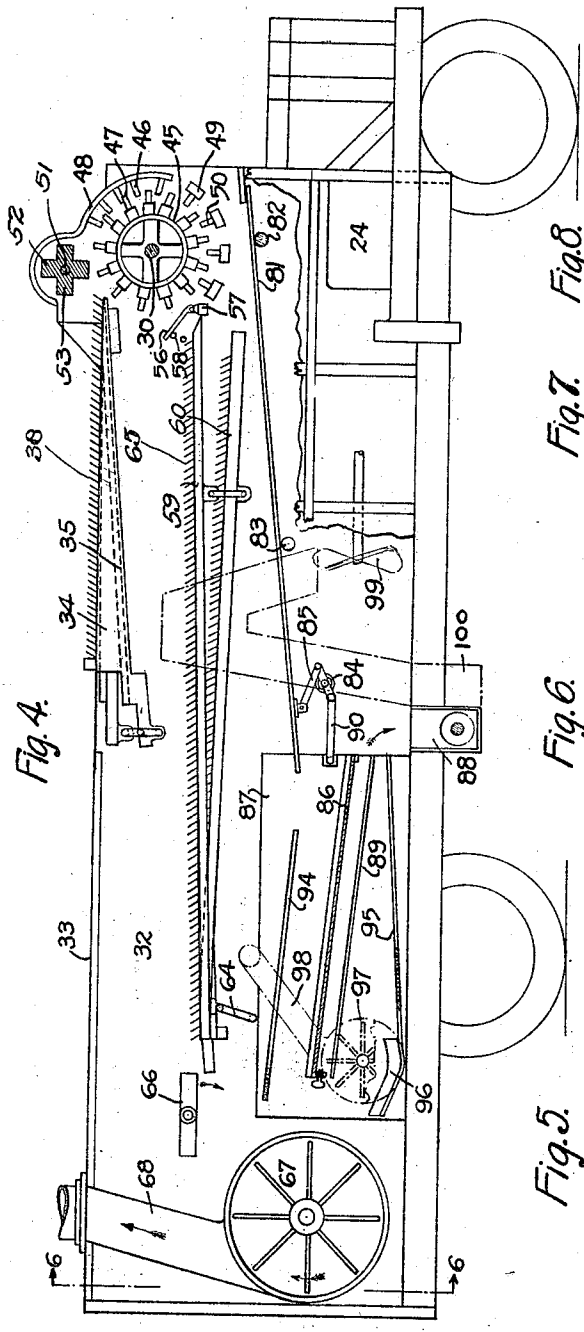


Fig. 4.

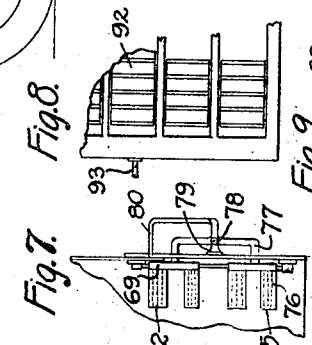


Fig. 7.

Fig. 8.

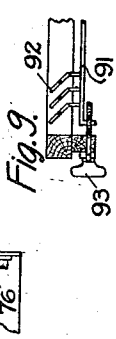


Fig. 9.

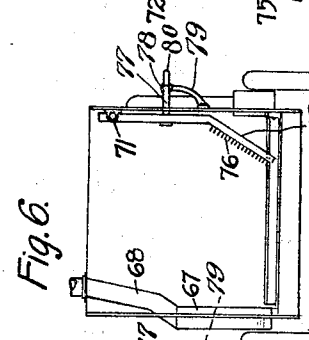


Fig. 6.

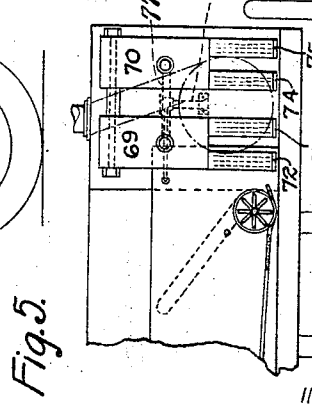


Fig. 5.

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THRASHING MACHINE AND PARTS THEREOF

Filed Aug. 25, 1921 3 Sheets-Sheet 3

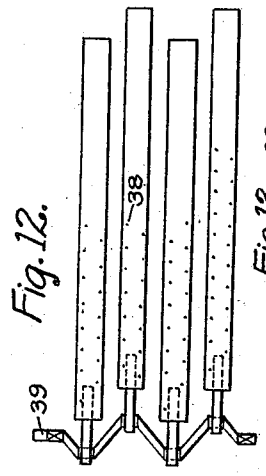


Fig. 12.



Fig. 13.



Fig. 18.

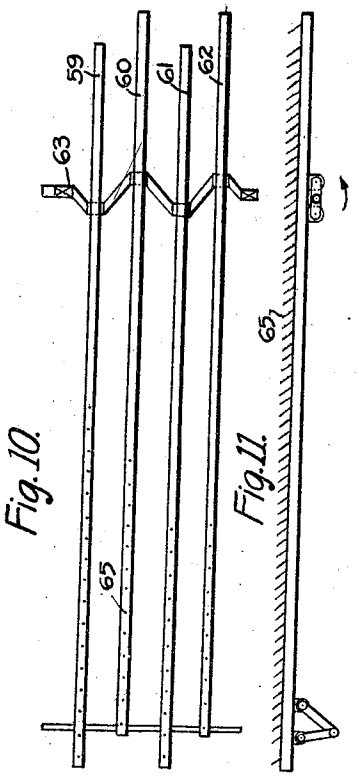


Fig. 10.

Fig. 11.

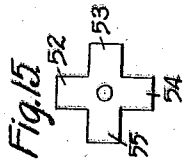


Fig. 15.

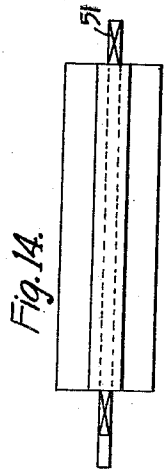


Fig. 14.

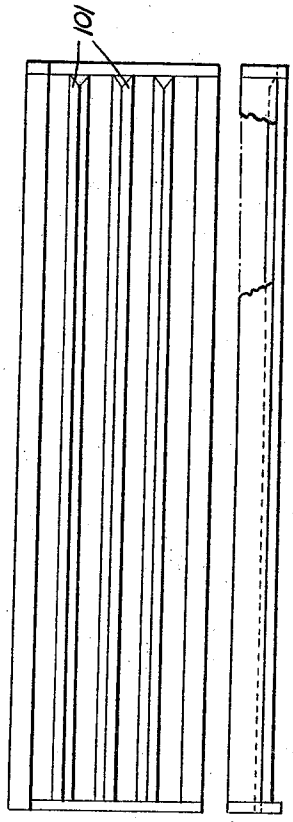


Fig. 16.

Fig. 17.

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Patented July 15, 1924. 1,501,455

UNITED STATES PATENT OFFICE.

OTIS A. INGERSOLL, OF MARTINSBURG, NEW YORK.

THRASHING MACHINE AND PARTS THEREOF.

Application filed August 25, 1921. Serial No. 495,378.

To all whom it may concern:

Be it known that I, OTIS AARON INGERSOLL, a citizen of the United States, and resident of the town of Martinsburg, county of Lewis, State of New York, have invented certain new and useful Improvements in Thrashing Machines and Parts Thereof.

In a co-pending application August 25, 1921, Serial No. 495,377 I have described a thrashing machine, the means for operating and transporting it from place to place.

In this application I will describe the construction of the thrashing, feeding, straw removing and grain separating mechanisms.

The objects of this invention are to provide an extremely efficient readily transportable self-contained thrashing machine, a machine that can be operated continuously, that will receive the grain or other material to be thrashed, regularly or irregularly, that will control the feed and delivery so efficiently that the machine cannot be choked or rendered inoperative nor can material be passed through wastefully, improperly thrashed, improperly separated or in such quantities as to prevent the discharge of the thrashed straw at the rate of speed less than that at which the thrashing is accomplished.

Another important object of the invention is to increase the effective thrashing area of a rotary or drum type thrashing machine and to control the feed thereto so that the thrashing mechanism cannot be choked, to control the ejection of the straw from the thrashing device assuring that it be retained a suitable length of time therein, to control the passage of grain in bundles into the thrasher to assure that all bands or binders will be cut prior to the entry of the straw into the thrasher, to transfer and to sift and separate the chaff from the grain, removing the chaff with the straw and delivering the clean grain to the bagging mechanism.

These and other objects to be later described in the specification are fully accomplished in the manner and by the mechanism hereinafter referred to in detail and the accompanying drawings should be considered for a complete understanding of the following specification.

In the drawings:

Fig. 1 is the top plan view of the completed machine.

Fig. 2 is a plan view of a part removed.

Fig. 3 a side elevation thereof.

Fig. 4 a longitudinal sectional view of the complete machine looking from what might be considered the right hand side.

Fig. 5 is a fractional sectional view from what might be considered the left hand side.

Fig. 6 is a sectional view through 6—6 in Fig. 4.

Figs. 7, 8 and 9 are fractional views of parts removed.

Fig. 10 is a plan view of the straw removing means.

Fig. 11 an elevation thereof.

Fig. 12 a plan view of the feeding mechanism.

Fig. 13 an elevation thereof.

Fig. 14 is a plan view of the feed controlling device.

Fig. 15 an elevation thereof.

Fig. 16 shows a railed platform in which the removing mechanism operates.

Fig. 17 is a side elevation thereof, and

Fig. 18 an end view of the railed platform.

Similar reference numerals indicate like parts in all the figures where they appear.

My thrashing machine is an integral unit adapted to be transported from place to place wherever its services may be required and is therefore provided with traction wheels 20 and 21, 22 and 23 and an engine 24 which serves the double purpose of driving the machine and the parts thereof or operating the traction wheels. To obtain efficient cooling of the engine I provide a plurality of radiators 25′ and 25 and a fan 26 and I also provide a steering wheel 27 and all necessary brake, clutch and transmission levers and transmissions and differential as have been found necessary in an efficient motor driven vehicle.

Operated from the engine shaft or the longitudinal shaft extending through the vehicle is a pulley 28 adapted to receive a belt not shown but which will engage the pulley 29 on the thrashing drum shaft 30 and an additional pulley 31 on this shaft may receive a belt which will operate the other portions of my device which will be later described.

For the most part the operable and operative mechanisms are contained in an oblong cabinet or body member 32 which may be formed of wood, metal or other suitable material and which should support a platform 33 which may be employed as a loading platform or upon which the attendant may

stand who is supervising the feeding of the thrashing cylinder. This platform 33 extends approximately one-half the full length of the body or cabinet. The other half of the top is open except for the arrangement therein of a grain moving device and supporting means therefor.

This grain moving device consists of a plurality of bars 34, 35, 36 and 37 each provided with upwardly projecting pins 38. These bars may be of wood or metal and are each connected to a crank shaft 39 which is rotatable and which reciprocates the bars forward and backward alternately and it will be noted that the pins 38 are angularly in the bars their free ends extending forwardly so that when moved backward the projections 38 will not engage the material on the bar but will engage when moving forward thus insuring a feed in one direction only.

The bars 34 to 37 inclusive are supported between rails 40 to 44 inclusive which assure the proper alignment and spacing of the bars 34 to 37 and the forward end of these bars terminate within the housing of the thrashing machanism.

I call particular attention to the construction and location of the thrashing mechanism arranging it as I do approximately at the top and in the forward end of the cabinet 32 and feeding and discharging from the same side of the thrashing mechanism increases the efficiency of this mechanism by practically doubling the thrashing area thereof.

The thrashing device consists of a thrashing drum 45 upon which I arrange a plurality of bars 49 into each of which is introduced teeth 47. The drum is rotated by the means previously described and at any determined rate of speed.

Arranged in the housing 48 and in bars 49 are stationary teeth 50 which may also be adjustable. The bars 49 are spaced apart to allow the passage therethrough of loose grain. The teeth 47 and 50 are in staggered relation, the teeth 47 passing between annular rows of teeth 50 and it will of course be understood that the entire length of the thrashing drum no matter what that may be is provided with rows of teeth similar to the row shown and it will be noted that the stationary teeth also arranged in rows extend more than one-half of the periphery of the thrashing drum.

Arranged adjacent to the thrashing drum and over the drum and of a length approximately equal to the drum is a paddle wheel or cross-shaped member shown in detail in Figs. 14 and 15. This member should be of wood mounted upon a shaft 51 having extending arms 52, 53, 54 and 55 rotatable from a chain and sprocket not shown arranged upon the shaft 30 of the thrashing drum. This paddle member should be rotated at a speed slower than the speed of the thrashing drum and serves as a rotary barrier for the inwardly fed grain preventing the thrashing drum engaging or taking up a complete bundle and also causing the teeth of the drum to sever the bands or binders used to retain the grain in bundles, thus it will be seen that bundled grain as such may be fed to the thrasher, it not being required that the binders be cut or removed by hand.

Adjacent to the delivery point in the thrashing drum is an apron 56 receiving the straw and causing it to be discharged over the end of a straw removing or transfer mechanism. This apron may be of wood hinged as indicated at 57 and a pin 58 or a plurality of pins may be employed to change the angle of this discharge apron.

When discharged from the thrashing drum the straw will be received upon a carrier shown in detail in Figs. 10 and 11 and consisting of the relatively narrow rails or bars 59, 60, 61 and 62 connected to and operable by a crank shaft 63 and having one end supported upon a link or hinge shown at 64. Each of these rails or bars 59 to 62 inclusive are provided with upwardly and rearwardly depending pins 65 and it will be noted that the angle of the pins 65 is diametrically opposite the pins 38 and therefore while the pins 38 move grain received by them toward the front of the machine and toward the thrashing drum the pins 65 move straw received by them rearwardly or away from the thrashing drum. Guide rails for the bars 59 to 62 inclusive are of less width than the space between the bars and I consider the width of such rails an advantage as it allows free grain which may be retained by the straw to be separated out and to drop through onto the devices arranged to receive it.

Adjacent to the rearmost end of the bars 59 to 62 inclusive is a rotatable member 66 which I may term a straw breaker the object of which is to break the straw off from the end of the rails and to forcibly discharge it into the chamber wherein is arranged the straw exhaust fan 67.

The fan 67 will receive the now grain free or thoroughly thrashed straw, chaff and dust and discharge it outward through the pipe 68. As straw may be received in the chamber or portion of the cabinet wherein the fan 67 is located and yet at such a distance from the fan as to make it impossible for the fan to pick it up, I provide a straw kicker consisting of a plurality of arms arranged in pairs. These arms and the operation thereof are shown in Figs. 5 to 7 inclusive wherein at 69 and 70 I show relatively wide boards or wooden members suspended and partially rotatable

upon a bar 71 and attached thereto are angularly arranged projections 72, 73, 74 and 75 which may or may not be provided with pins 76. The members 69 and 70 are connected by means of a cross-arm 77 secured upon a shaft 78 which shaft is supported in suitable brackets 79. A lever 80 also connected to the shaft 78 partially rotates the shaft rocking the cross-arm 78 and causing the members 72 and 73 and 74 and 75 to be alternately urged toward the fan 67, thus moving toward the fan the straw that might fall out of the area of suction induced by the fan.

The grain that has been thrashed out from the straw will for the most part pass between the blocks 49 onto the movable extension 81. This extension 81 is a solid platform of boards or metal supported upon pins or rollers 82 and 83 and reciprocated by a shaft 84 and lever 85. This platform or extension is movable only for the purpose of causing the grain to travel down the incline of the extension 81 to be deposited upon a screen 86 arranged in the box 87. One end of the box 87 may be open as may be the top of the box and when the grain is received upon the screen 86 it will pass therethrough to the second screen 89 from there to be discharged into the grain receiving chamber 88.

The box 87 may be mounted upon skids or rollers, if desired, and is movable from the shaft 84 and link or lever 90. The movement of this box need not be great it being only sufficient to agitate the grain received upon the screens to expedite the sifting thereof.

The screen 86 is of peculiar construction as shown in detail in Figs. 8 and 9 and consists of a plurality of series of louvers adjustable in independent series by means of a rod 91 hingedly engaging each slat 92. This rod 91 is movable by a thumb screw 93 so that the angle of the louvers may be changed at will. While in the construction shown I have indicated four sets of louvers the number may be changed at will.

Arranged in the box 87 is a second extension 94 which may or may not be a screen and which will receive grain that might travel downward with the straw to be separated out of the straw by the action of the breaker 66.

The screen 89 will separate out the larger and more perfect grain, but I provide a fine screen 95 arranged under the screen 89 which will retain the smaller or imperfect grain discharging mustard seed or other smaller grain directly through the body of the cabinet 33 onto the ground, this screen 95 will also retain the overrun of the other screens if any, and will deposit all grain that it receives into the trough or catch-basin 96 from whence it will be transferred by the small fan 97 over the top of the box through the delivery tube 98 and upon the extension 94.

For the purpose of removing the chaff and dust from the grain I provide a propeller type of blast fan 99 which will cause a current of air to pass through the grain discharged from the extension 81 and also through the grain passing through the louvers 92 and screen 89. This propeller moving the air in the same direction as does the exhaust fan 67 will blow the chaff over into the chamber wherein the fan 67 is arranged.

The clean grain received in the receptacle 88 may be discharged therefrom or may be transferred into the bagging chute 100. The straw discharge pipe 68 may be extended to convey the straw to any desired point.

Parts may be employed without the whole and parts may be omitted with their loss of function, though I prefer the whole as shown and described but modifications may be made within the scope of the appended claims without departing from the principle or sacrificing the advantages of the invention.

Having carefully and fully described my invention what I claim and desire to secure by Letters Patent is:

1. A thrashing machine having a thrashing cylinder, a reciprocating means for feeding said cylinder, a reciprocating means for removing the thrashed material from said cylinder and rotatable means for controlling the admission of the material to said cylinder, said controlling means comprising a cross shaped paddle having elongated, axially parallel blades arranged over the thrashing means and one end of the feeding means.

2. A thrashing machine comprising a thrashing cylinder and feeding means therefor, said means consisting of a plurality of reciprocating bars and means for reciprocating them and angularly disposed teeth in said bars in combination with rotatable means arranged over said thrashing means for controlling the delivery from said bars.

3. A thrashing machine comprising a thrashing means, feeding means therefor, means for removing the residue of thrashing from the thrashing means, said means comprising a transferring means, a blower and a vertically disposed, alternately reciprocating means for urging the residue to said blower.

Signed at Martinsburg, county of Lewis, State of New York this 22 day of August 1921.

OTIS A. INGERSOLL.