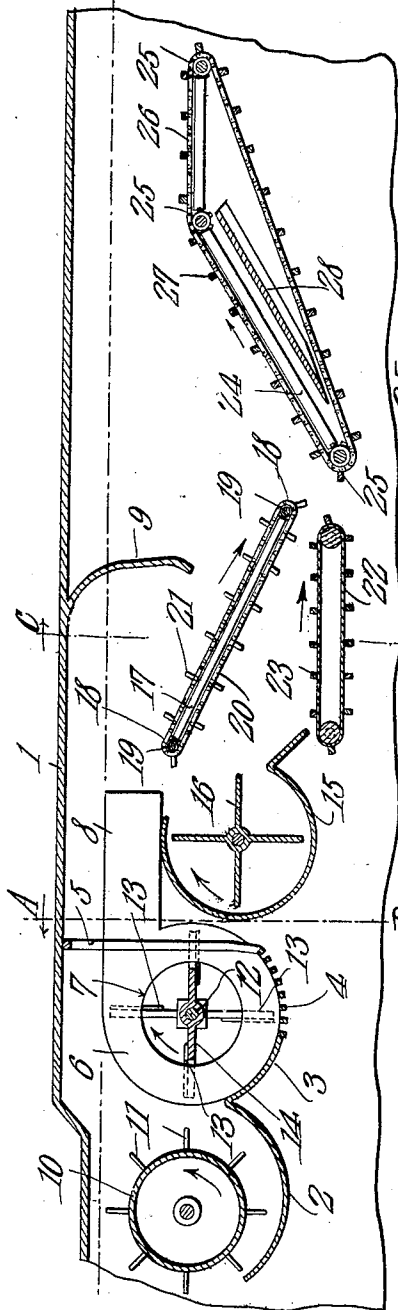


925,002.

Patented June 15, 1909.

2 SHEETS—SHEET 1.



Witnesses  
*E. J. Stewart*  
*Robert Lawson*  
 FIG. 1.

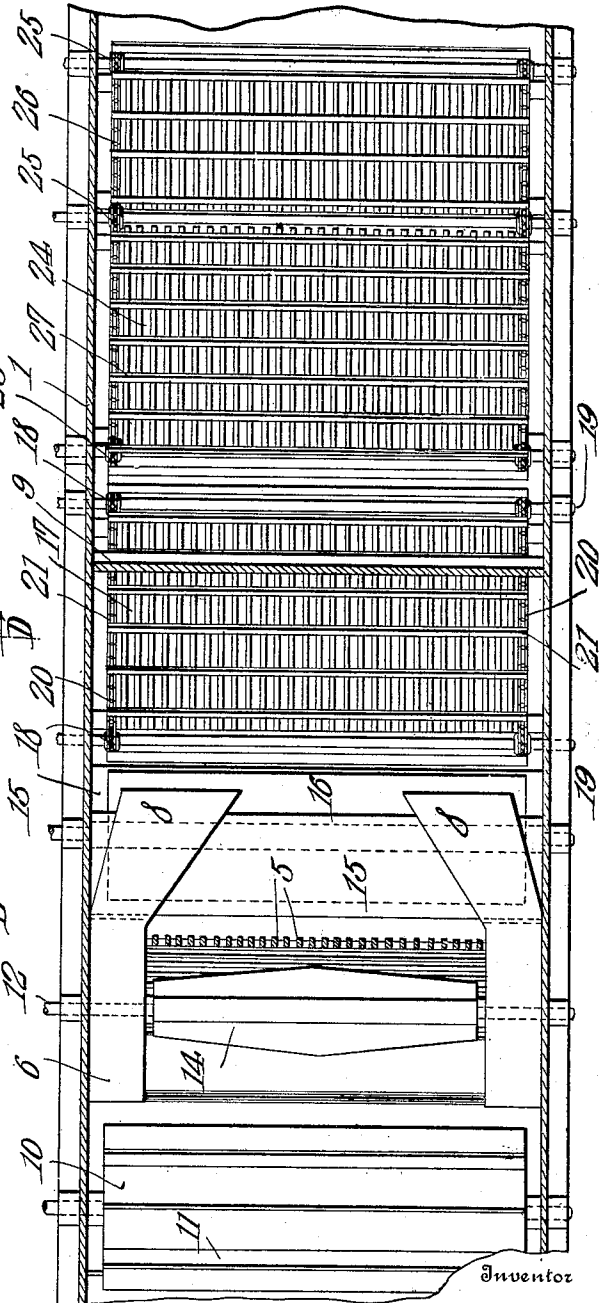


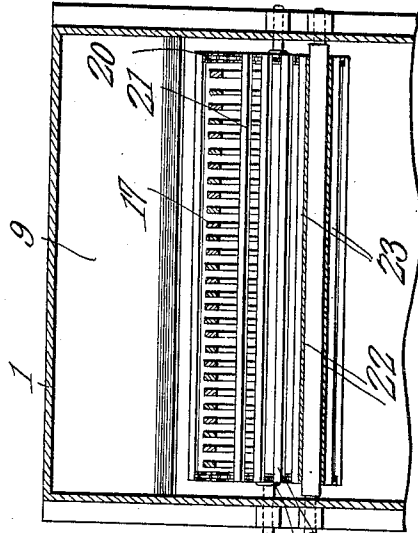
FIG. 2.  
 Inventor  
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 By *C. Snow & Co.*  
 Attorneys

925,002.

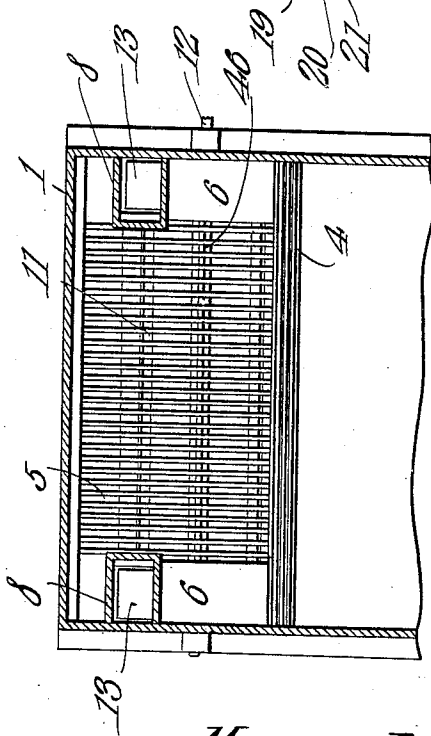
Patented June 15, 1909.

2 SHEETS—SHEET 2.

*Fig. 4.*



*Fig. 3.*



Witnesses

*E. J. Stewart*  
*Robert D. Lawson*

Inventor  
*Marcus Leonard.*

By *C. A. Snow & Co.*  
 Attorneys

# UNITED STATES PATENT OFFICE.

MARCUS LEONARD, OF SALINA, KANSAS, ASSIGNOR OF ONE-THIRD TO JOHN GIEBLER & SON,  
OF HAYS, KANSAS.

## GRAIN-SEPARATOR.

No. 925,002.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed January 6, 1909. Serial No. 470,977.

*To all whom it may concern:*

Be it known that I, MARCUS LEONARD, a citizen of the United States, residing at Salina, in the county of Salina and State of Kansas, have invented a new and useful Grain-Separator, of which the following is a specification.

This invention relates to grain separators of that type utilizing pneumatic means for effecting the complete separation of the grain.

The invention is more particularly an improvement upon the structure disclosed in Patent No. 881,422, granted to me on March 10th, 1908.

The object of the invention is to subject the grain to an intermediate separation between the application of centrifugal force thereto and the impact of the grain against the raddle and baffle plate utilized in the patented construction heretofore referred to.

A further object is to provide a baffle plate for deflecting the grain on to a raddle extending into the path of an air blast produced by an intermediate fan, said blast being utilized for removing the chaff and other lighter particles from the grain, means being provided for collecting the cleaned grain at this point and discharging it in the desired direction.

A further object is to provide a grating for limiting the movement of straw directed between the centrifugal fans, said grating permitting air to be sucked into the space between the fans and thence with the steam etc. with the fan casings.

With these and other objects in view the invention consists in certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a central vertical longitudinal section through the separating mechanism constituting the present improvements, the casing of the separator being broken away. Fig. 2 is a plan view of the mechanism shown in Fig. 1. Fig. 3 is a section on line A—B of Fig. 1. Fig. 4 is a section on line C—D of Fig. 1.

Referring to the figures by characters of

reference 1 designates a casing, in the feed end of which are arranged two concaves 2 and 3 respectively, connected at their adjoining edges and the inner concave 3 being formed partly of transversely extending bars 4 from one of the end ones of which extend bars 5 forming a grate connecting said bar 4 with the top of the casing 1. Fan casings 6 are mounted within the casing 1 at opposite sides of the concave 3 and the grate bars 5, said casing having a central inlet opening 7 within its inner walls and opening into the space above the concave 3. An outlet spout 8 extends from each of the casings 6, said spouts increasing in width toward their discharge ends, so as to direct air blasts along converging lines and against a downwardly extending curved deflecting or baffle plate 9, supported within the upper portion of the casing and in front of the grate 5. A cylinder 10 is mounted to rotate above the outer concave 2, and has teeth 11 radiating therefrom for the purpose of engaging the grain and directing it into the concave 3.

A shaft 12 is journaled in the sides of casing 1 and is arranged centrally within the two casings 6, there being fan blades 13 secured to the end portions of the shaft and mounted to rotate within the casings 6 while an elongated beater 14 is secured to that portion of the shaft located above the concave 3 and between the casings 6.

Arranged in front of the lower portion of grate 5 and extending under the spouts 8 and throughout the width of the casing 1 is a fan casing 15 in which a fan 16 is mounted to rotate, said fan being adapted to direct a blast of air under an inclined raddle 17 composed of longitudinally extending bars as indicated in Fig. 4. Sprockets 18 are mounted on shafts 19 extending along the upper and lower portions of the raddle and arranged on these sprockets are chains 20 carrying slats 21. Spaces are formed between the slats to permit the passage of grain etc., past the slats and through the raddle, suitable mechanism being provided whereby the chains and the slats thereon may be actuated in the direction of the arrows shown in Fig. 1 for the purpose of loosening or agitating the material discharged onto the raddle,

this being particularly desirable during the treatment of wet grain. An endless conveyer 22 is arranged below the casing 15 and extends close to the lower end of the raddle 5 17, said conveyer being preferably provided with transverse slats 23. A second raddle 24 is arranged in front of the raddle 17 and conveyer 22, the lower portion of said raddle 24 being disposed substantially in horizontal 10 alinement with the conveyer 22, and said raddle preferably consisting of longitudinally extending upwardly inclined bars as clearly indicated in Fig. 2, and a series of substantially horizontal longitudinally extending 15 bars arranged adjacent the upper ends of said inclined bars. Sprockets 25 are suitably located at the ends and at the intermediate angle of the raddle, and on the sprockets are arranged endless chains 26, 20 carrying slats 27, constituting agitating means. A baffle plate 28 is arranged under the inclined portion of the raddle 24 and constitutes means for deflecting the grain etc., through the raddle in the manner hereinafter 25 set forth.

It is of course to be understood that any suitable mechanism may be provided for actuating the various parts herein described, it merely being necessary for said parts to rotate or travel in the directions indicated by 30 the arrows in Fig. 1. After the various parts have been set in motion the grain to be separated is supplied to the concave 2 and the cylinder 10 operates to throw it into the concave 3. The grain is thus thrown against 35 the grate bars 5 and agitated by the beater 14, the fans 13 at the same time sucking air between the bars 4 and 5 and into the casings 6, drawing the broken straw and grain into 40 the said casings, it being understood of course that the beater 14 tears up the straw to a certain extent prior to its leaving the concave 3. Material is discharged from the spouts 8 and scattered over the deflecting 45 plate 9 which operates to direct said material downwardly on to the raddle 17, through which the grain will fall, together with chaff and other light particles, into the air blast produced by the fan 16. This blast will direct 50 the chaff and particles outwardly toward the raddle 24, while the cleaned grain will be deposited on the conveyer 22 and carried thereby to a suitable receptacle provided for it. The material discharged beyond the conveyer 22 by the air blast produced by the 55 fans 16 will be directed against the raddle 24 and baffle 28 where the separation of the material will be completed. The slats 21 and 27 travel over the raddles to keep them clear 60 and prevent the machine from clogging. Although the part 3 has been referred to as concave, it is to be understood of course that the same is, as a matter of fact, nothing more than a transverse partition on which the

grain is designed to rest prior to being drawn 65 into the casing 6.

It is of course to be understood that various changes may be made in the construction and arrangement of the parts without departing from the spirit or sacrificing the ad- 70 vantages of the invention.

What is claimed is:—

1. In a machine of the class described downwardly converging raddles, a baffle plate disposed above one of said raddles, 75 pneumatic means for scattering material over said baffle plate, said plate constituting means for deflecting the material onto one of the raddles, a conveyer disposed below said raddle, and pneumatic means for direct- 80 ing against the other raddle a portion of the material discharged through the first mentioned raddle and in the direction of the conveyer.

2. In a grain separator downwardly con- 85 verging raddles, a baffle plate disposed above one of the raddles, a grate, pneumatic means for removing material from the grate and scattering it upon the baffle plate, said plate constituting means for deflecting said ma- 90 terial against the raddle thereunder, a conveyer below said raddle, and pneumatic means for separating material passing through said raddle and the conveyer and directing a portion of said material against the other 95 raddle.

3. In a grain separator a grate, a beater cooperating therewith, a baffle, means for sucking material from the grate and away from the beater and directing it with force 100 against the baffle, a series of inclined bars below and disposed to receive material from the baffle, said bars constituting a raddle and extending in the direction of the air currents, and means for directing an air cur- 105 rent below the raddle and in the direction of the length thereof.

4. In a grain separator a grate, a beater cooperating therewith, a baffle, means for sucking material from the grate and away 110 from the beater and directing it with force against the baffle, downwardly converging raddles having bars extending in the direction of their length, one of said raddles being positioned to receive material from the 115 baffle, and means for directing a current of air under said raddles in the direction of the length thereof.

5. In a grain separator a grate, a beater cooperating therewith, a baffle, means for 120 sucking material from the grate and away from the beater and directing it with force against the baffle, downwardly converging raddles, each consisting of bars extending in the direction of the length of the raddle, 125 cleaning means movably mounted upon each of the raddles, a conveyer below one of said raddles and the baffle, and means for direct-

ing a current of air between the conveyer and the raddle there-above and in the direction of the other raddle.

6. A grain separator comprising downwardly converging raddles, each consisting of bars extending in the direction of the length of the raddle, means for directing material on to one of said raddles, cleaning means movably mounted upon each of the raddles, a conveyer below one of said raddles, and means for directing a current of air be-

tween the conveyer and the raddle there-above and in the direction of the other raddle.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

MARCUS LEONARD.

Witnesses:

GEO. P. SHULER,  
R. L. BANICK.