United States Patent

[11] 3,590,995

[72] Inventor **Lyle F. Truckenbrod**
Rural Route 1, Mendota, Ill. 61342

[21] Appl. No. **848,889**
[22] Filed **Aug. 11, 1969**
[45] Patented **July 6, 1971**

[54] **GRAIN CLEANER**
3 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** ..... **209/140,** 209/148, 209/154, 34/57 D
[51] **Int. Cl.** **B07b 4/08**
[50] **Field of Search** ..... 34/57 D, 58, 59, 181, 10; 209/140, 141, 138, 148, 154

[56] **References Cited**

UNITED STATES PATENTS

1,075,942	10/1913	Rice	209/148 UX
1,564,508	12/1925	Bauermeister	209/148 X
2,178,750	11/1939	Garland	34/59
2,693,876	11/1954	Ostman	209/140

FOREIGN PATENTS

492,240	3/1919	France	209/148

Primary Examiner—Frederick L. Matteson
Assistant Examiner—Robert A. Dua

ABSTRACT: A machine for cleaning grain, the machine comprising a rotating, perforated cone into which uncleaned grain is placed; air blown upwardly through the perforations cause chaff and foreign particles to be blown upward through a fan, while the relatively heavier grain is thrown by centrifugal force sideward out of the cone in a clean condition.

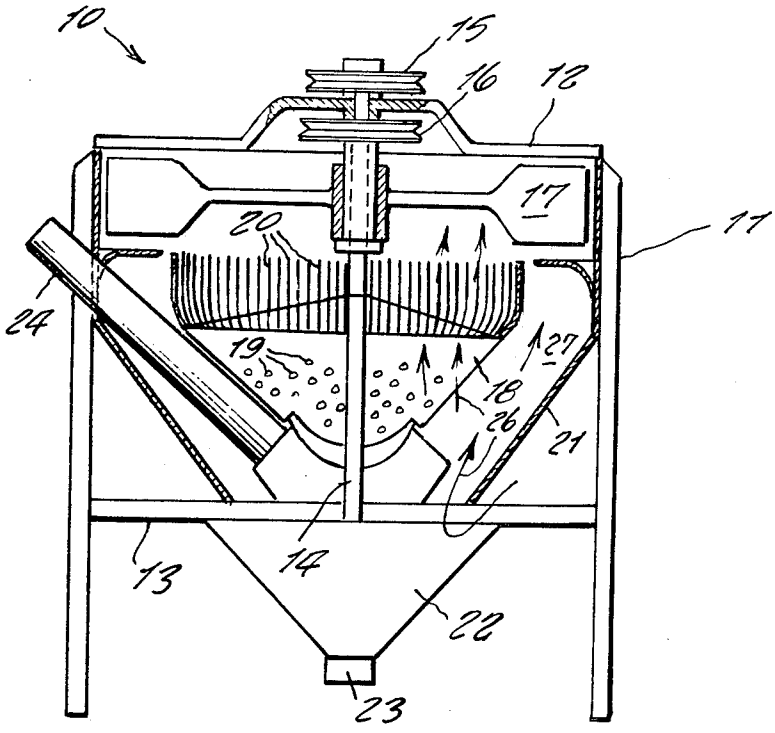


Fig. 1

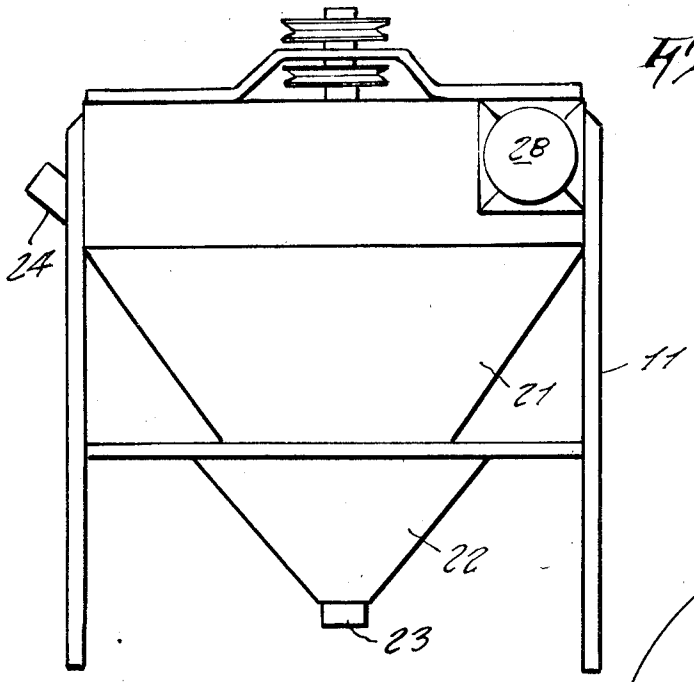
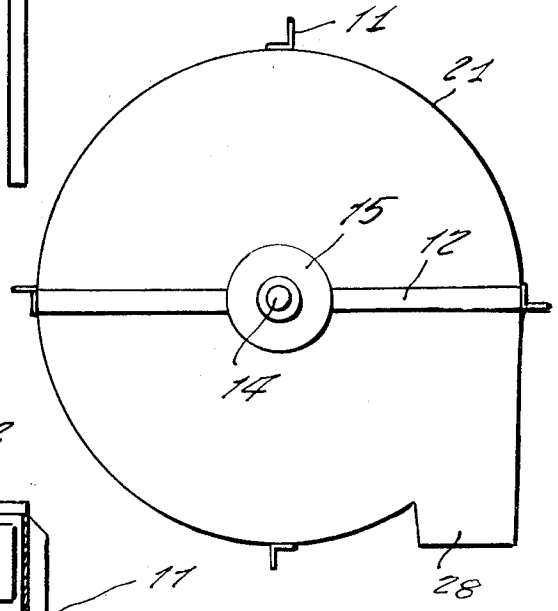


Fig. 2



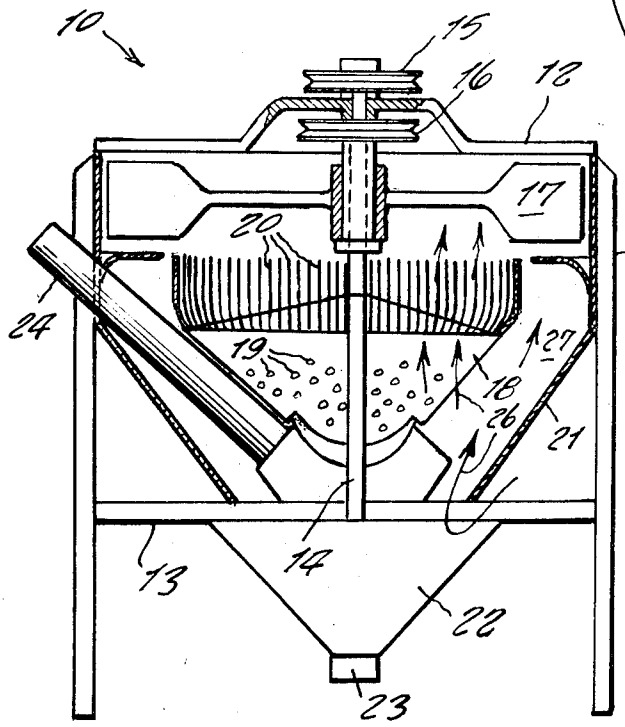
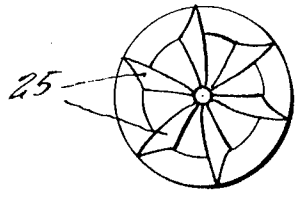


Fig. 3

Fig. 4



INVENTOR
LYLE F. TRUCKENBROD

GRAIN CLEANER

This invention relates generally to grain cleaning apparatus.

A principal object of the present invention is to provide an improved grain cleaner which will separate chaff and foreign particles from grain kernels.

Another object is to provide a grain cleaner which utilizes air, centrifugal force and screens so to achieve separation of the chaff and grain kernels.

Yet another object is to provide a grain cleaner that gives trouble free operation.

Yet a further object is to provide a grain cleaner that employs only two moving parts, a separating cone and a fan, thus decreasing wear of component parts.

Other objects are to provide a grain cleaner which is simple in design, inexpensive to manufacture, rugged in construction, easy to use and efficient in operation.

These and other objects will be readily evident upon a study of the following specification and the accompanying drawing wherein:

FIG. 1 is a side view of the invention.

FIG. 2 is a top plan view thereof.

FIG. 3 is a side view of the machine shown partly in cross section.

FIG. 4 is a top view of an internal component of FIG. 3.

Referring now to the drawing in detail, the reference numeral **10** represents a grain cleaner according to the present invention, wherein there is a stationary frame **11**. The frame includes an upper cross bar **12** and lower cross bar **13**, each of which includes bearings for supporting freely a rotatable vertical shaft **14** upon which there are rigidly secured a pair of pulleys **15** and **16** which receive an endless belt, not shown, the belts being driven from a power source.

A fan blade **17** is also secured on the shaft **14**, below the pulleys.

Additionally a rotatable cone **18** is also secured on shaft **14**, the cone including an upwardly diverging sidewall that is perforated by openings **19**. A plurality of upwardly extending tines **20** are formed on the upper periphery of the cone, the tines being spaced apart to form a cylindrical comb, the space between the tines being of a size so to allow only the grain kernels to pass therebetween.

The frame **11** carries a sheet metal housing **21** within which the fan blade and cone **18** are contained. A stationary cone **22** secured below the housing, the lower end of the cone **22** being provided with an outlet spout **23** through which cleaned grain is discharged outwardly of the machine. An intake pipe **24** extending sidewardly outwardly of the housing provides access for placing uncleaned grain to the apex area of the rotatable cone. It is to be noted that the openings **19** in the rotary cone are each of smaller size than an individual grain so to prevent the same from falling outwardly therethrough.

It is to be noted that separate bearings and V-belt pulleys **15** and **16** are provided for operating the fan **17** and the cone **18**. Thus the fan and rotating cone may rotate independently of each other and are driven from an outside power source through a device by which the rotational speed may be varied. This variable speed provides a means of regulating the amount of air and centrifugal force required for various conditions of the grain.

In operative use, unclean grain is deposited through intake pipe **24**, the grain dropping into the apex of the rotatable cone **18**. Fins and blades **25** in the apex of the cone pick up the grain kernels and throw them upward into the region of the cone containing the perforated openings **19**. It is understood that the cone **18** and fan blade **17** are in rotative movement during this time, air current moving upwardly, as indicated by arrows **26** passes through the openings **19** from within the housing area **27**, the air current picking up the chaff and foreign debris and delivering it to the fan blade **17** and then outwardly of the machine through a discharge duct **28**. Centrifugal force developed by the rotating cone **18** causes the remaining grain kernels to be thrown outward, the grain passing through the spaces between the tines and then falling into the housing area **27** where it drops down into the stationary cone from where it is collected through the discharge spout **23**.

While various changes may be made in the detail construction, it is understood that such changes will be within the spirit and scope of the present invention.

I claim as follows:

1. In a grain cleaner, the combination of a frame, a stationary sheet metal housing carried on said frame, a stationary cone at the lower end of said housing, an apex at the lower end of said cone being provided with an outlet spout, an intake pipe through a side of said housing, said pipe communicating with a grain cleaning mechanism comprising a horizontal upper and lower bar providing bearing means for a vertical shaft, a pair of pulleys secured to said shaft for providing rotational drive to said shaft, a fan blade and a rotatable cone also secured to said shaft, said blade being positioned over said rotatable cone, the apex of said rotatable cone being positioned downward, a fin and blade structure at the apex of said rotatable cone and a discharge end of said intake pipe communicating with said cone apex.

2. The combination as set forth in claim **1**, wherein said rotatable cone includes a conical sidewall perforated by openings smaller than the size of grain kernels, and an upper edge of said conical sidewall being surmounted by upstanding fins spaced apart to allow said grain kernels to pass therethrough and into a space between the rotatable cone and said housing and then down to said spout.

3. The combination as set forth in claim **2** wherein a first V-belt pulley is provided between a power source and said fan, and a separate second V-belt pulley is provided between a power source and said rotatable cone, whereby said fan and cone are rotatable independent of each other through a variable speed mechanism so as to regulate the amount of air and centrifugal force.