G. A. GAYLORD & G. W. BORDER.

THRESHING MACHINE.

APPLICATION FILED MAR. 7, 1918.

1,282,408.

Patented Oct. 22, 1918.

2 SHEETS—SHEET 1.

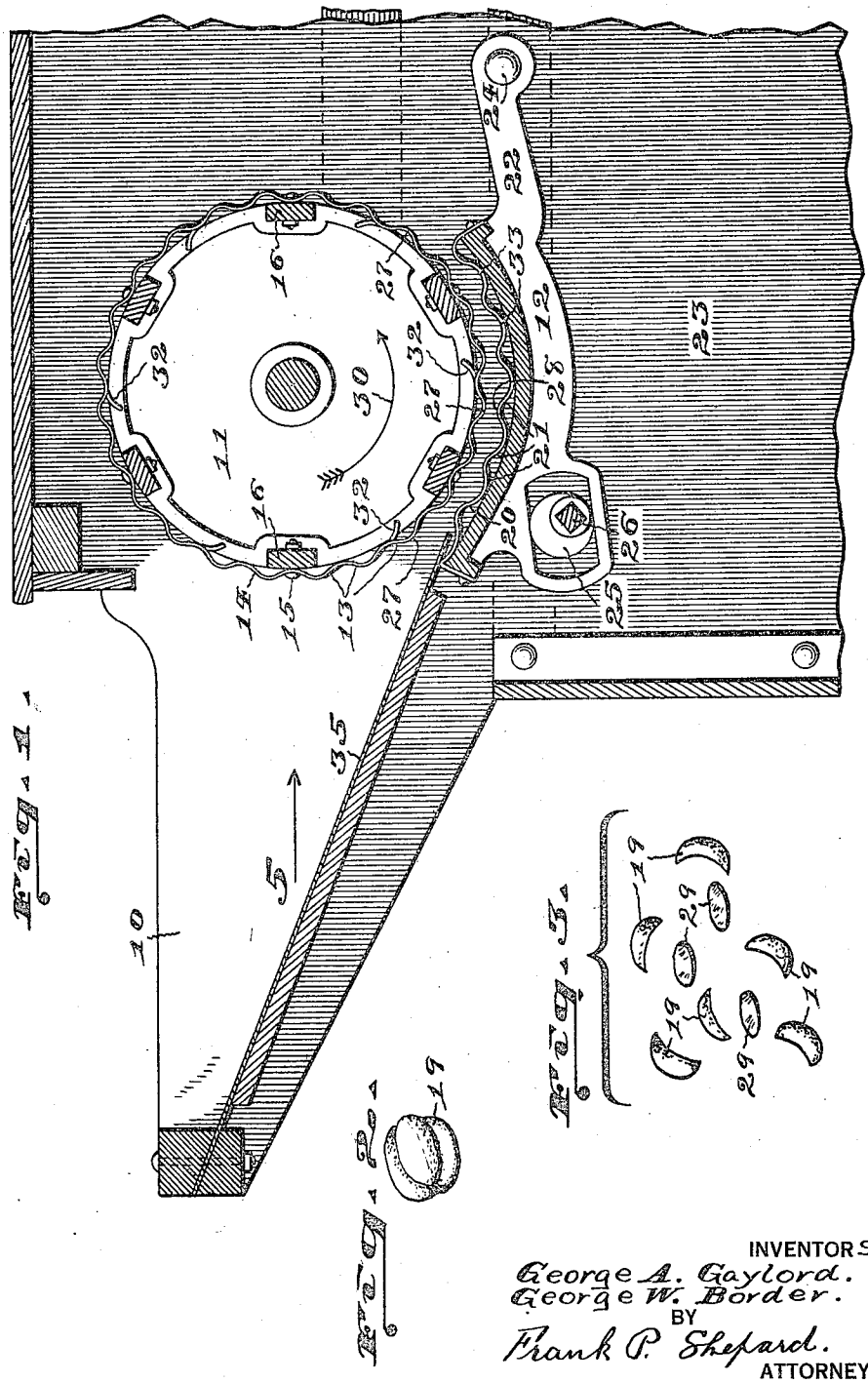


Fig. 1.

Fig. 3.

Fig. 2.

INVENTORS:
George A. Gaylord.
George W. Border.
BY
Frank P. Shepard.
ATTORNEY.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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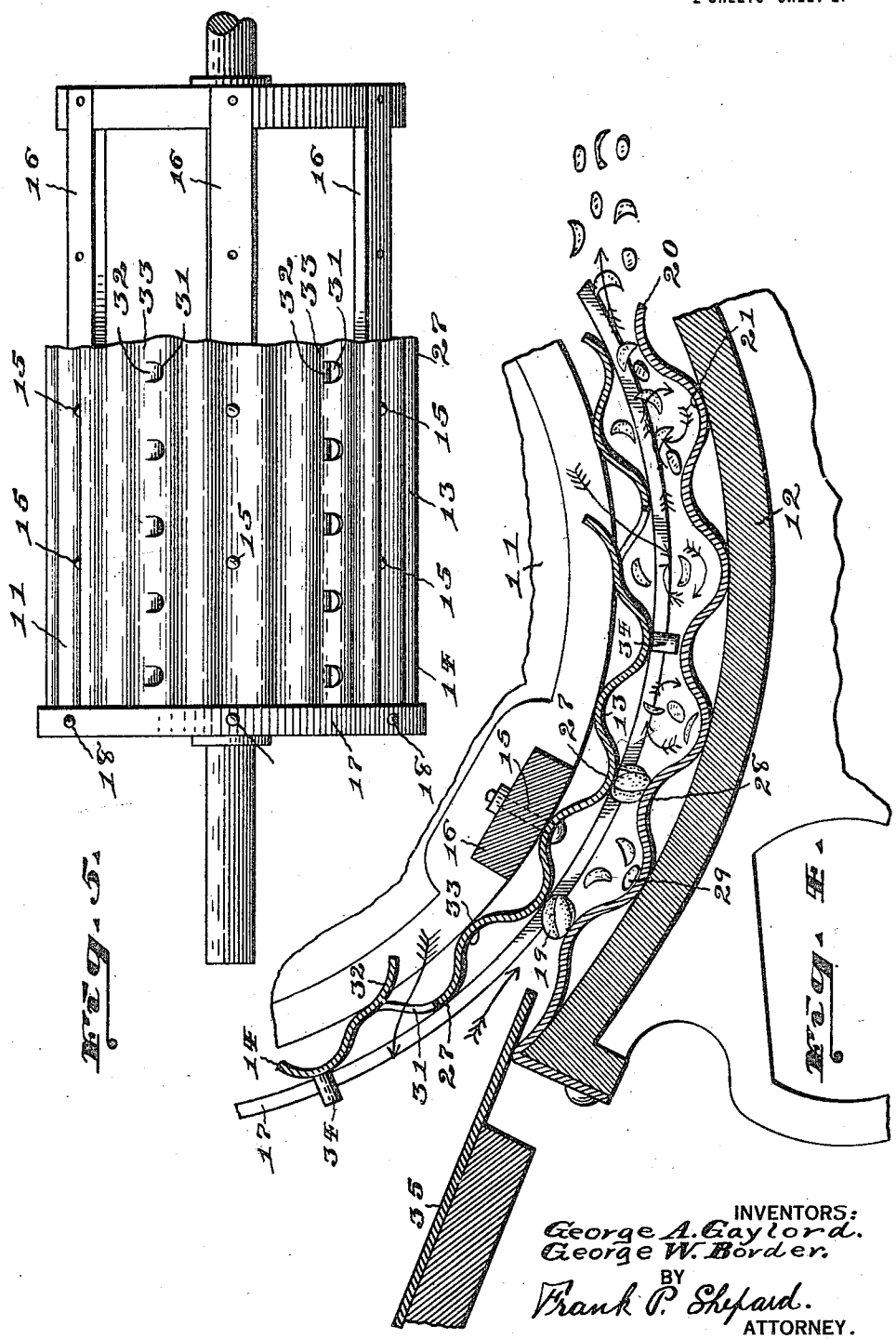


Fig. 5.

Fig. 6.

INVENTORS:
George A. Gaylord.
George W. Border.
BY
Frank P. Shepard.
ATTORNEY.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE A. GAYLORD, OF EDMOND, AND GEORGE W. BORDER, OF WELLSTON, OKLAHOMA.

THRESHING-MACHINE.

1,282,408. Specification of Letters Patent. Patented Oct. 22, 1918.

Application filed March 7, 1918. Serial No. 220,936.

To all whom it may concern:

Be it known that we, GEORGE A. GAYLORD, a citizen of the United States, residing at Edmond, in the State of Oklahoma and county of Oklahoma, and GEORGE W. BORDER, a citizen of the United States, residing at Wellston, in the county of Lincoln and State of Oklahoma, have invented certain new and useful Improvements in Threshing-Machines, of which the following is a specification, reference being had to the accompanying drawings.

The invention pertains to threshing machines, and more particularly to the cylinder and concave of such machines.

The object of the invention is to provide a machine suitable for threshing castor beans.

The drawings show one of the practical forms in which the invention may be embodied.

Figure 1 is a sectional view of that portion of the machine to which the invention pertains, the left-hand end of the figure being taken as the front of the machine for purposes of this description.

Fig. 2 is a view of an intact castor bean hull.

Fig. 3 is a similar view with the hull broken open and the beans released.

Fig. 4 is an enlarged reproduction of a portion of Fig. 1, but with a retainer added to hold parts in assemblage.

Fig. 5 is an elevation view of a cylinder on the same scale as Fig. 1, the view being taken in the direction of the arrow 5 of Fig. 1 and showing the retainer which appears in Fig. 3.

Like characters of reference designate like parts in all the figures.

The machine shown includes the usual feeding hopper 10, the revolving cylinder 11 which is journaled across the lower rear end of said hopper, and the stationary concave 12 which is mounted under the cylinder 10 and co-acts therewith in threshing.

The parts thus described do not differ materially from those found in the common threshing machine.

In carrying out the object stated, the cylinder 11 is not provided with the usual teeth or spikes, but has its peripheral surface corrugated as shown.

The corrugations 13 of the cylinder 11 may be formed in any suitable manner, such, for example, as by forming them in a sheet of metal 14 and then wrapping said sheet around the cylinder as shown.

In fastening the sheet of metal 13 to the cylinder 11, bolts 15 may be used to secure it to the longitudinal slats 16 of the cylinder frame-work; and metal bands 17, shown only in Figs. 4 and 5, may also be slipped over the sheet 14 at the ends of the cylinder, bolts 18 being employed to hold the bands in place.

This method of securing the metal sheet 14 in place holds it against centrifugal force when the cylinder is rapidly revolved.

The concave 12 is also provided with a longitudinally-concaved surface adapted to co-act with the corrugated surface of the cylinder 11 in crushing the hulls 19 of the beans; and the corrugations of said concave may be formed by corrugating a sheet of metal 20 and securely mounting it on said concave as shown.

From center to center in a circumferential direction the corrugations 13 of the cylinder 11 may be spaced any suitable distance, for example three-fourths inches as in a machine built and operated by the inventors; and the corrugations 21 of the concave 12 may be spaced the same number of degrees apart as those of the cylinder.

To support the concave 12, a rearwardly-extending arm 22 at each of its ends is pivoted to its respective side wall 23 of the machine, as at 24, and the front edge of the concave is supported by eccentric cams 25 on a revoluble shaft 26 which is journaled in said side walls 23.

By revolving the shaft 26 and cams 25, the distance between the cylinder 11 and concave 12 may be adjusted to the size of the hulls 19 to be threshed; and the arms 22 of the concave may be long enough so that an adjusting movement of the concave will not impart to it too much revolving movement and affect its concentricity with the cylinder.

In operating the machine, good results have been obtained by setting the concave 12 and cylinder 11 just close enough together so that with the crests 27 of the cylinder corrugations 13 facing the crests 28 of the concave corrugations 21 as in Figs. 1 and 4 the hulls 19 caught between said crests will be crushed just enough to fly apart and release the beans 29.

The friction of the air on the corruga-

tions 13 of the cylinder 11, together with the molecular interlock of the air in said corrugations with the air in the corrugations 21 of the concave 12, causes a draft of air through between said cylinder and concave in the feeding direction indicated by the arrow 30 in Fig. 1 and causes an eddying in the trough of each corrugation of the concave; this draft and eddying causing the hulls 19 to be drawn through between said cylinder and concave and changed in position in passing each corrugation.

The result is that the hulls 19 are opened perfectly and the beans 29 are freed without any portions of the hulls clinging to them.

The threshed mixture of hulls 19 and beans 29 is thrown rearward in the machine by the cylinder 11 and the hulls and beans are separated by parts of the machine well known in the art.

In order to produce a stronger draft of air through between the cylinder 11 and concave 12 than would be produced by friction of the air on the corrugations 13 of the cylinder, improved means are provided for forcing currents of air radially out of the cylinder.

In providing this means, the corrugated sheet-metal covering 14 of the cylinder 11 is provided at intervals with openings 31 each of which is formed by cutting loose a small forwardly-projecting wing portion 32 of the sheet material in the bottom or trough 33 of certain ones of the corrugations 13 and bending said wing portions inward as shown.

As the cylinder 11 is rapidly revolved in the direction indicated, the gathering effect of the wing portions 32 on the inert air inside the cylinder draws said air forcibly outward through the openings 31 against the concave 12, with the result that the air between said concave and cylinder is slightly compressed and the eddying movement of the air in the troughs of the corrugations 21 increased.

To aid the feeding movement of the hulls 19 through between the cylinder 11 and concave 12, the cylinder may be provided at intervals with radial pins or spikes 34 which project a short distance outward from the surface of the sheet-metal covering 14.

The front edge of the concave 12 may support the rear or lower edge of the feedboard 35, so that the latter may follow the adjusting movements of the concave.

Having thus described the invention, we claim:—

1. In a threshing machine, a cylinder having its peripheral surface longitudinally corrugated, and a concave longitudinally corrugated, the surface of the cylinder being provided with radial projections to aid in the feeding movement of the mixture to be threshed.

2. In a threshing machine, a cylinder having a longitudinally corrugated peripheral wall, said wall being provided with radially projecting spikes, and a longitudinally corrugated concave adapted to coact with the cylinder.

3. In a threshing machine, a cylinder having a longitudinally corrugated peripheral wall, said wall having outlet openings for air, means on the inner side of the wall for forcing an outward draft of air through said outlet openings as the cylinder revolves, and a concave adapted to co-act with the cylinder.

4. In a threshing machine, a cylinder having a longitudinally corrugated peripheral wall, said wall having outlet openings for air and having at each of said openings an inwardly curved gathering wing, and a concave adapted to co-act with the cylinder.

5. In a threshing machine, a cylinder arranged to be revolved, the cylinder having a longitudinally corrugated peripheral wall, said wall having outlet openings for air, each opening having at its edge a wing so shaped and arranged that as the cylinder revolves said wing gathers air from within said cylinder and forces it out through said opening, and a longitudinally corrugated concave arranged to co-act with the cylinder.

Witness our hands this 26 day of February, 1918.

GEORGE A. GAYLORD.
GEORGE W. BORDER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."