(No Model.) 2 Sheets—Sheet 1.

F. M. LYNETT.

GRAIN CLEANER.

No. 315,523. Patented Apr. 14, 1885.

Fig. 1.

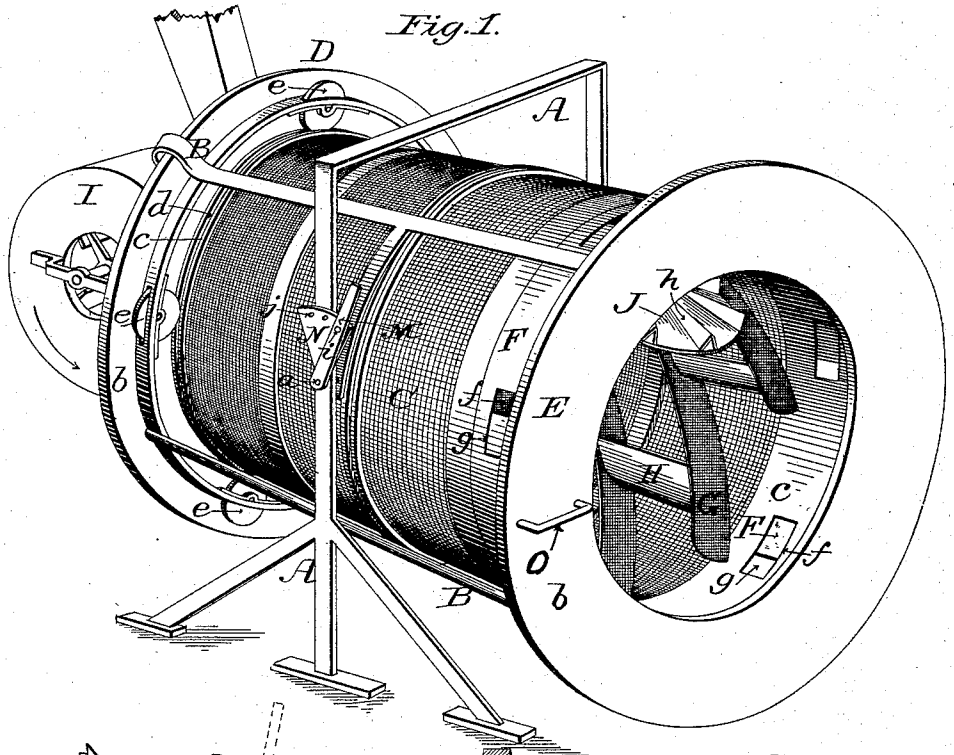
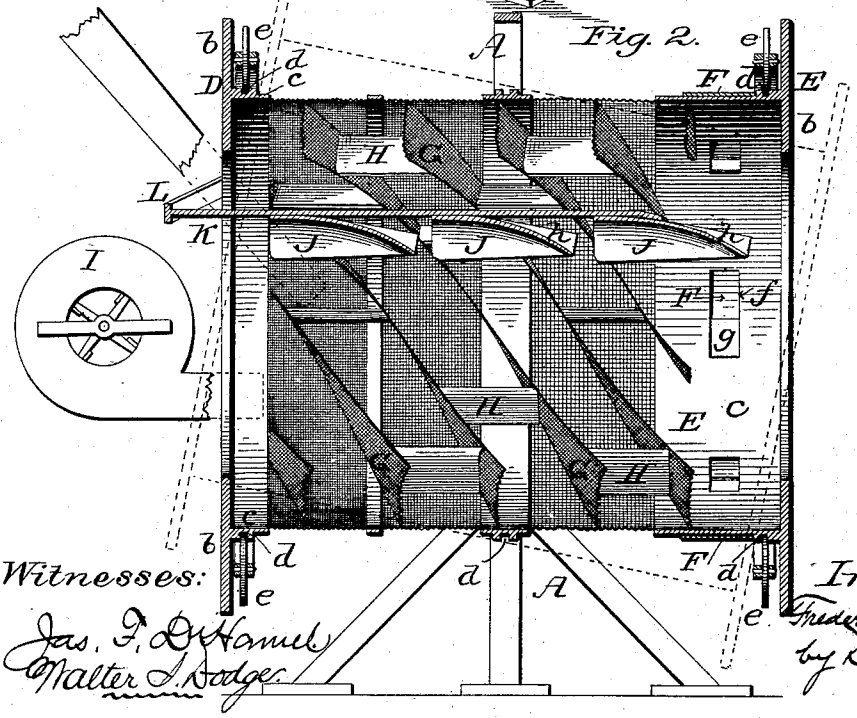


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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No. 315,523. Patented Apr. 14, 1885.

Fig. 3.

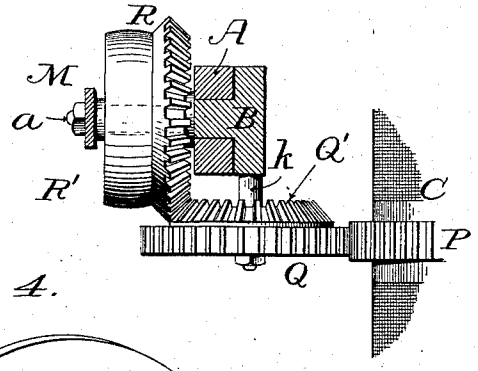


Fig. 4.

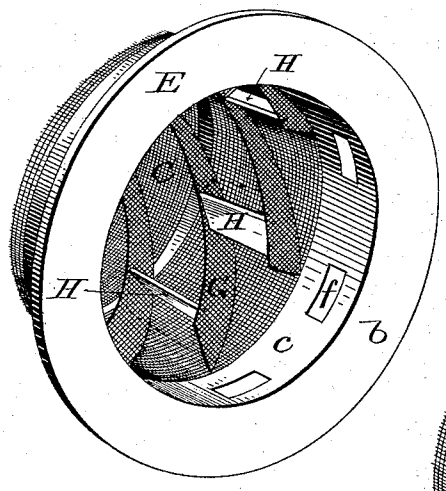
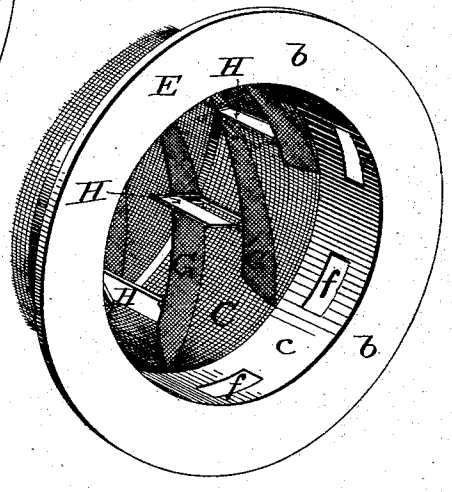


Fig. 5.



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UNITED STATES PATENT OFFICE.

FREDERICK M. LYNETT, OF TORONTO, ONTARIO, CANADA.

GRAIN-CLEANER.

SPECIFICATION forming part of Letters Patent No. 315,523, dated April 14, 1885.

Application filed August 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK M. LYNETT, of Toronto, in the county of York and Dominion of Canada, have invented certain new and useful Improvements in Grain-Cleaners, of which the following is a specification.

My invention relates to grain-cleaning machinery; and it consists in various features and details of construction, hereinafter fully set forth and claimed.

In the annexed drawings, Figure 1 is a perspective view of my improved machine; Fig. 2, a longitudinal vertical section of the same; Figs. 3, 4, and 5, views illustrating details.

This apparatus is more especially intended for use in connection with other cleaning or separating machinery, and may form the shoe of a winnower, thrasher, or like machine, or may be used alone, as found expedient.

In the drawings I have represented it as a separate and independent machine.

The general construction may be briefly stated as follows: A hollow drum or cylinder is formed of wire-screen material, perforated sheet metal, or any other suitable material of which screens and sieves are commonly made, said cylinder being provided at each end with a strong hook or band to give form to and preserve the shape of the cylindrical body, and to travel upon supporting-rollers, by which the drum or cylinder is sustained, the bands being grooved to receive the peripheries of the rollers. The rollers are journaled in a frame which encompasses the cylinder, and which is provided with trunnions mounted in a fixed frame in such manner that the first frame may be rocked or tipped to give the drum any desired inclination to hasten or retard the passage of materials through it. One of the trunnions is furnished with a hand-lever by which to rock the frame, and said lever is in turn provided with a locking stud or bolt, by which to hold the frame at any desired adjustment. The inner wall of the cylinder is provided with spiral flights or wings, which form a conveyer to regulate the travel of the material through the cylinder, with buckets to lift the material to the upper side and drop it, and with deflectors to spread the material thus dropped, the better to expose it to the action of the air, for the production of which a fan is provided, blowing preferably into the receiving end of the cylinder. This construction, together with the further details, may be more fully understood upon referring to the drawings, in which A indicates a frame of any suitable and convenient construction, and which may be a part or extension of the frame of a thrasher or other grain cleaning, separating, or grading apparatus; B, a frame provided with trunnions *a*, which turn in bearings in frame A, and C the rotary drum or screening-cylinder. This drum is provided at its receiving end with a head, D, consisting of an annular plate, *b*, perpendicular to the axis of the cylinder, and extending both inward and outward from the circumference of cylinder C, and a circumferential hoop, *c*, joined to and forming a continuation of said cylinder, as shown in Fig. 2. The lateral portion or hoop *c* of head D is formed with a circumferential groove, *d*, to receive the edges of carrying or supporting rollers *e*, journaled in the pivoted frame B, which rollers sustain the cylinder, maintain it in proper position, and enable it to rotate freely and with very slight friction. The annular plate *b* gives stiffness to the hoop *c* and maintains the cylindrical form thereof, and consequently that of the drum or cylinder C. At its lower or discharge end the cylinder C is furnished with a head, E, similar to head D, but having its hoop *c* made wider and furnished at intervals with openings *f* for the discharge of such matters as are too large to pass through the meshes or perforations of the cylinder-body, as shown in Fig. 2. That portion of the hoop *c* of head E in which the openings *f* are made is encircled by a band, F, having corresponding openings, *g*, said band fitting sufficiently close to be held by friction in any position to which it may be adjusted. By moving the band around the drum or cylinder the openings *g* may be made to register with openings *f*, or the band may be caused to cover more or less of each of said openings *f*, so as to regulate the rate of discharge of the drum or cylinder, the annular plate *b* of the head E preventing the material from tailing off, as it does in a common bolting reel or cylinder.

As shown in Fig. 2, head E has its hoop *c* provided with a circumferential groove, *d*, in the same manner exactly as head D, to receive the supporting or carrying rollers *e*, journaled or mounted on axles in adjustable frame B.

The drum or cylinder may be formed of or covered with material of uniform or of graded mesh, as required, it being represented in the drawings as graded, the finest material being of course at the receiving end.

Within the cylinder, and secured to its inner walls, as shown in Figs. 1 and 2, are spiral flights or wings G, which form a conveyer or conveyers to insure the proper travel of the material through the cylinder from end to end, even when the cylinder is not inclined downward toward the discharge end. At suitable points buckets H, Figs. 1 and 2, are extended from one flight to the next, projecting inwardly from the inner wall of the cylinder, and serving to lift the material under treatment from time to time and drop it from the upper side of the cylinder, in order that it may fall through an air-current produced by a fan, I, or its equivalent, blowing preferably into the receiving end of the cylinder.

As shown in Figs. 1 and 2, I provide within and near the upper side of the cylinder one or more spreading or scattering plates, J, which are supported by a rod or bar, K, projecting into the cylinder from a cross-bar, L, at one end of the swinging or adjustable frame B. The plate or plates J are inclined downward to shed the grain or material freely, and are formed with radial ribs *h*, which divide the falling mass into smaller bodies and scatter it in different directions, so that every particle may be effectively acted upon by the air-current.

For the purpose of adjusting the cylinder to any desired inclination, one of the trunnions *a* is extended outward beyond the frame A, and is provided with a hand-lever, M, by which it may be easily tipped, said lever being either furnished with a locking dog or bolt to engage with a fixed rack.

I prefer, however, to make the lever itself elastic and capable of springing in a direction to and from the segment N, the lever in such case being furnished with a stud, *i*, to enter holes or notches *j* in the segment N.

The lever M may be used simply as a locking device, and the cylinder tipped or adjusted from the end, a suitable bail, O, being provided for that purpose.

Motion may be imparted to the cylinder in any convenient manner, as by belt passing around one of the hoops *c*, or a like hoop projecting from plate *b* of either band D or E. The plan illustrated in Fig. 3 is, however, preferred. This arrangement includes a toothed ring or band, P, encircling the cylinder near its mid-length, and meshing with a pinion, Q, having a miter-pinion, Q′, formed upon it, the whole turning upon an axle, *k*, on the swinging-frame B, and receiving motion from a gear or pinion, R, mounted and turning freely upon one of the trunnions *a*, which is extended for the purpose of carrying said gear or pinion, as seen in Fig. 3. The gear R is formed or provided with a band-pulley, R′, which is driven by belt from any convenient source.

The fan may be fixed or carried by the swinging frame B.

The material to be screened, graded, or cleaned enters by a spout or otherwise at the head of the cylinder, and passes from the head to the discharge end at a rate controlled by the conveyer-blades and the inclination of the cylinder, the inclination being increased or diminished according to the condition and quantity of the material.

In some cases it may be found desirable to dispense with the lifting action of the blades or buckets H, and these may therefore be hinged to swing away from the inner wall of the cylinder, as shown in Fig. 4, or made removable, as in Fig. 5, being made to slide in grooves and to fit the same closely enough to prevent accidental displacement, or held by any convenient fastening, if desired.

I am aware that rotary screens have before been mounted upon supporting-rollers, and that spiral blades and buckets have been used within rotary screens, hence I make no general claim to such features.

I am aware of Patent No. 282,790, granted to Lewis T. Smith, August 7, 1883, and I make no claim to anything therein.

Having thus described my invention, what I claim is—

1. In combination with main frame A, having notched plate N, rocking-frame B, provided with spring-lever M, having stud *i* to enter the notches of the plate, and screen C, supported and adapted to rotate within frame B.

2. In combination with a rotary cylindrical screen, spiral conveyer-blades secured to the interior walls thereof, buckets extending from one blade to another, stationary scattering-plates located within the cylinder and adapted to spread the material raised and deposited upon them by the buckets, and a fan arranged, substantially as described and shown, to produce a current of air through the cylinder.

3. In a screening apparatus, such as described, the combination of a rotary screening-cylinder having end plate, *b*, partially closing the discharge end of the cylinder, hoop *c*, provided with outlets *f*, encircling-band F, provided with outlets *g*, and fan I, said parts being constructed and arranged substantially as shown and described, whereby the material operated upon may be held for any desired length of time under the action of the fan.

4. In combination with a stationary frame, A, a rocking frame, B, provided with a lat-

eral axle, *k*, and having trunnions *a* journaled in said stationary frame, a driving-wheel, R R′, journaled upon one of the trunnions *a*, a rotary cylindrical screen, C, provided with gear-ring P, and gear-wheel Q Q′, mounted upon axle *k*, and serving to transmit motion from the driving-wheel R R′ to the screen, the parts being arranged substantially as described and shown, whereby the adjustment of the screen may be varied without changing the position of the driving-wheel.

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M. J. CONWAY.