

No. 632,831.

Patented Sept. 12, 1899.

C. H. BIDWELL.
GRAIN SCOURING MACHINE.

(Application filed Nov. 7, 1898.)

(No Model.)

Figure 1.

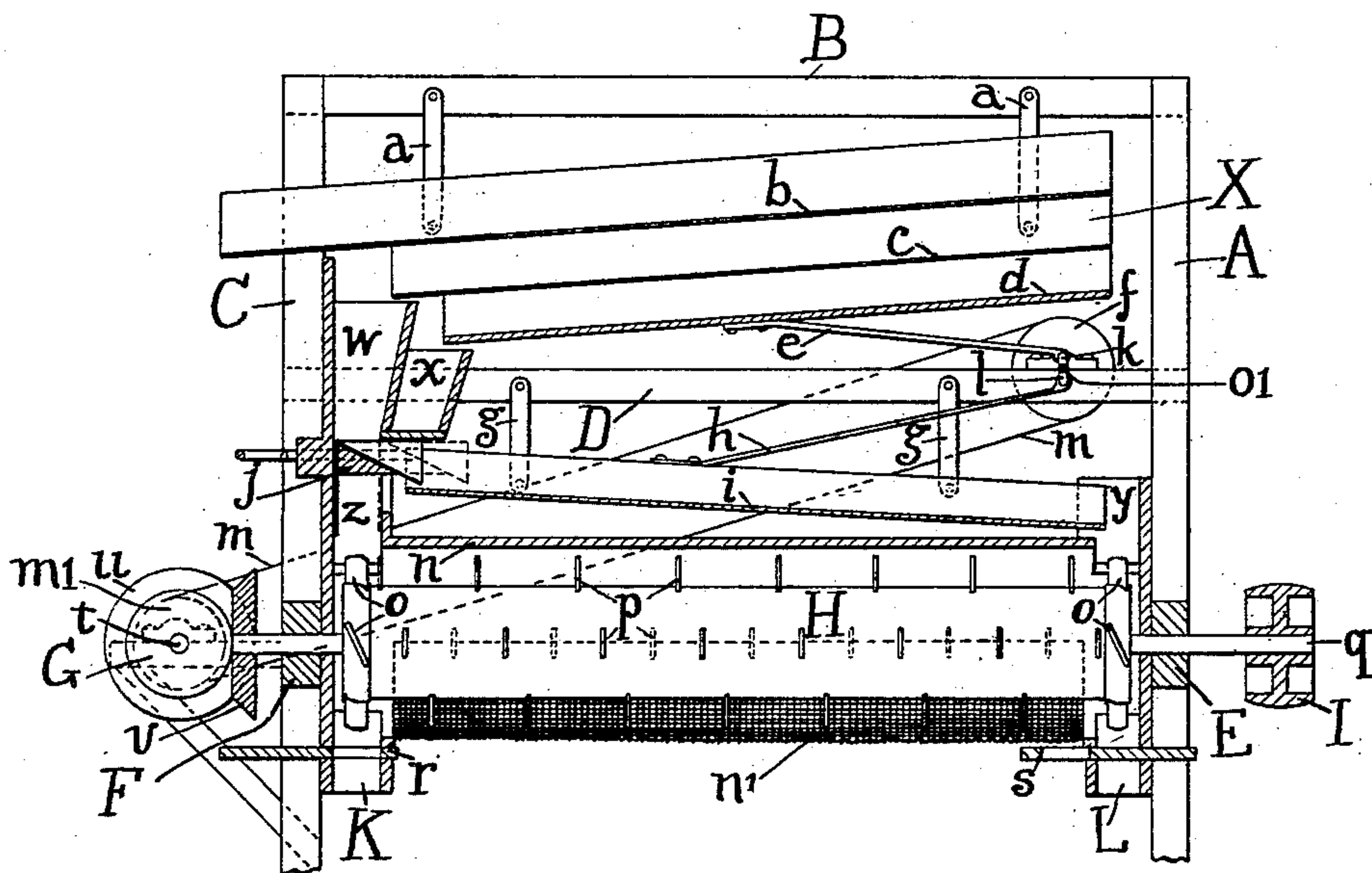
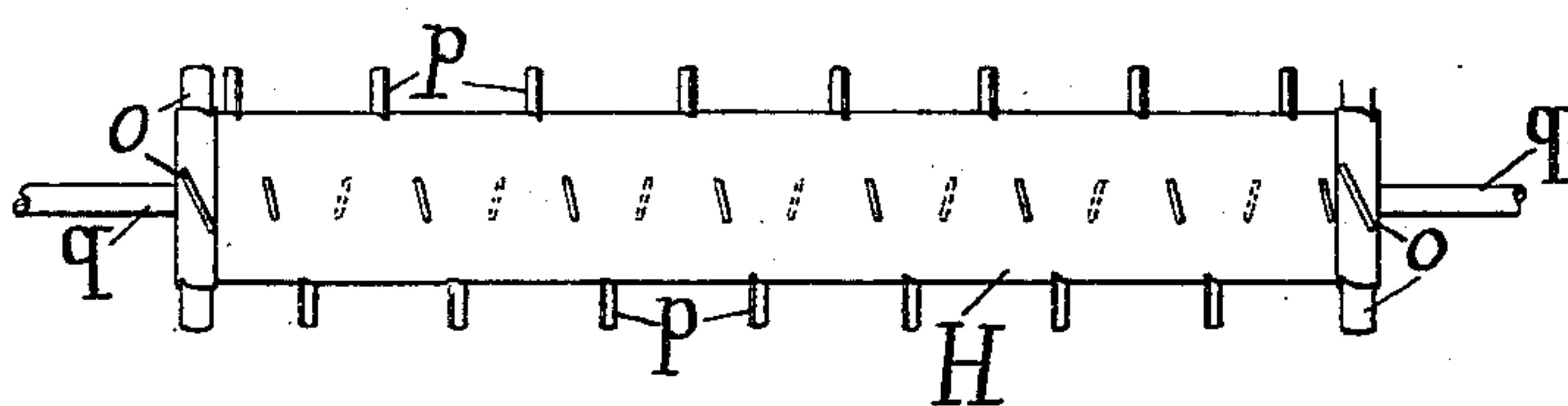


Fig. 2.



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UNITED STATES PATENT OFFICE.

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GRAIN-SCOURING MACHINE.

SPECIFICATION forming part of Letters Patent No. 632,831, dated September 12, 1899.

Application filed November 7, 1898. Serial No. 695,694. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. BIDWELL, a citizen of the United States, residing at Medina, in the county of Orleans and State of New York, have invented a new and Improved Grain-Scouring Machine, of which the following is a specification.

The object of my invention is the construction of a new and improved grain-scourer in which the scouring-blades shall be caused to act upon the grain under pressure without the use of a vertical column of grain to secure such pressure.

A further object of my invention is the construction of such a machine that the grain may be delivered to and from either end of the scouring apparatus and of course fed through the apparatus in either direction, because such a machine is more readily adapted to use with the usual grain-separator.

The accompanying drawings, illustrating my invention, are as follows:

Figure 1 is a vertical section through the center of my grain-scourer, while Fig. 2 shows a modified construction of the drum H, carrying the scouring or beating arms *p*.

Similar letters refer to similar parts in each figure.

Referring to the drawings, A and C are two vertical posts to which are secured the cross-pieces B and D. Between these posts A and C are also secured the cross-bars E and F, in which are located the bearings for the shaft *g*, carrying the drum H, from the surface of which project the scouring-arms *p*. In addition to these scouring-arms *p* I also locate upon the drum H, at each end thereof, the feed-irons *o*. This drum H, with the arms and feed-irons thereon, revolves within the cylindrical case *n*, the lower half of which consists of the screen portion *n'*, which may be open to the ground beneath. At each end of the cylindrical case *n* are located delivery-spouts K and L, located within which are seen the valves *r* and *s*, respectively, and by means of which either delivery-spout may be closed, as desired.

Upon the right-hand end of the shaft *g* is seen a pulley I, by means of which the drum H is rotated. On the left-hand end of this same shaft *g* is seen the beveled friction-gear *v*, engaging a similar gear *u*, located upon the

shaft *t*, having bearings in the projecting arms G, only one of which is indicated in dotted lines. On the farther end of the shaft *t* is located a pulley *m'*, (indicated in dotted lines,) carrying the belt *m*, which passes over the pulley *f*, located upon the farther end of the shaft *o'*. This shaft *o'* is bent in the middle to form the double crank-arms *l* and *k*, from which, respectively, by means of the connecting rods or pitmen *h* and *e*, a reciprocating motion is imparted to the vibrating pan *i* and the screen case or shoe X. This screen case or shoe X carries the riddle *b*, screen *c*, and a plain pan or chute *d*. The screen-case X is suspended from the cross-pieces B by means of the links *a*, as indicated, while the plain pan *i* is similarly suspended from the cross-pieces D by means of the links *g*, as indicated. The holes in the riddle *b* are of such a size that the grain which it is desired to scour will readily pass through them, while the chaff and stones will be caused to pass off over the left-hand end of the riddle *b* by the reciprocating motion of the case or shoe X. The holes in the screen *c* are such as to allow the passage therethrough of the seeds and particles of dirt smaller in size than the grain to be treated. The bottom of the screen-case X is a plain sheet-iron or wooden delivery pan or chute *d*, which is arranged to deliver the dirt and finer seeds into the spout *x*. This spout *x* may be arranged to deliver these smaller seeds and particles of dirt to the ground in any suitable manner and by means of any of the devices already well known in the art, and hence not indicated.

The screen *c* is arranged to deliver the grain therefrom into the spout *w*. At the bottom of this spout *w* is seen a valve *j*, which when it occupies the position indicated in full lines in the drawings causes the grain delivered from the screen *c* into the spout *w* to be delivered upon the plain pan *i*. From this pan or chute *i* the grain passes into the receiving-spout *y* and therethrough into the right-hand end of the scouring-cylinder *n*; but when the valve *j* is moved to the right to the position indicated in dotted lines then the grain falling from the screen *c* into the spout *w* enters the left-hand end of the scouring-cylinder *n* through the receiving-spout *z*.

The beating or scouring arms p on the drum H may be arranged without pitch, as indicated in Fig. 1, or they may be arranged with a slight pitch, as indicated in Fig. 2. In either case it is desirable that the pitch, if any, which is given to the scouring or beating blades p shall be considerably less than that given to the feed-irons o , located at either end of the cylinder H .

The operation of my scourer is as follows: The grain to be treated is delivered in any suitable manner and by means of any suitable device (not indicated) upon the riddle b . The power being applied to the pulley I the drum H is revolved, and at the same time the screen-case X and the plain pan or chute i are reciprocated to and fro in the manner clearly indicated in Fig. 1 and already described. This reciprocating action thus imparted to the screen-case X causes the grain delivered on the riddle b to fall through the meshes thereof, while the chaff and larger particles are caused to move to the left over the riddle b and off from the left-hand end thereof. The grain falling through upon the screen c is also caused to pass over the left-hand end of the screen c into the spout w , while the finer particles of dirt and seeds fall through the meshes of the screen c and onto the plain pan d . These finer seeds and particles of dirt are delivered from the pan d into the spout x , and from thence, by means of suitable mechanism, (not shown,) are delivered onto the ground, preferably by having either end of the spout x inclined, so as to secure such a delivery. When the valve j is in the position indicated in full lines, then the grain delivered into the spout w is caused by this valve j to be delivered upon the plain pan i , the reciprocating motion of which causes the grain delivered thereon to pass to the right and into the receiving-spout y at the right-hand end of the scouring-cylinder n . In this case the direction of rotation of the drum H should be such as to cause the feeding-irons o at the right-hand end of the scouring-cylinder to force the grain into the cylinder n and to the left; but when the valve j is moved to the right to the position indicated in dotted lines then the grain delivered into the spout w passes down into and through the receiving-spout z and therethrough into the left-hand end of the scouring-cylinder n . In this case the direction of the rotation imparted to the drum H should be the reverse of that just above described and such as to cause the feeding-irons o at the left-hand end of the scouring-cylinder to force the grain into the scouring-cylinder and to the right.

The valves r and s will one of them be opened and the other closed, according to the direction in which the grain passes through the

scouring-cylinder n . The action of these feeding-irons o is such as to force the grain into the cylinder n , with the screen-section n' thereto, more rapidly than the pitch, if any, which is given to the beating-arms p , will pass it on through such cylinder. The result of this action is that the grain accumulates in the middle of the cylinder n and the beating-arms p are caused to act upon it under a considerable pressure, which may be regulated by varying the pitch given to the feed-irons o . The pitch given to the feed-irons o should also be regulated according to the rate at which the grain is delivered upon the riddle b . By regulating the relation between the pitch given to the feed-irons o and any pitch that is given to the beating-arms p the arms p may be caused to act upon the grain in the scouring-cylinder n under any desired degree of pressure.

What I claim is—

1. A scouring-cylinder arranged to receive or discharge the grain at either end thereof according to the direction of rotation of the scouring-blades therein, a vibrating screen and a chute, such vibrating screen arranged to deliver the grain therefrom into one end of such scouring-cylinder, such chute arranged to deliver the grain supplied thereto to the other end of such scouring-cylinder, and a valve arranged when in its operative position to direct the grain from such vibrating screen into such chute.
2. In combination with a scouring-cylinder, a series of beating-arms arranged to revolve therein, feed-irons arranged to revolve with such beating-arms at each end of such scouring-cylinder, means whereby the grain to be operated upon in such scouring-cylinder may be fed to or delivered from either end thereof, as desired, according to the direction of the rotation of the beating-arms in such cylinder, such feed-irons arranged to feed the grain at a rate greater than that of the beating-arms, whereby the grain to be treated is caused to gather and pack at or near the middle of such scouring-cylinder.
3. In combination with a scouring-cylinder having beating-arms revolving therein, means whereby the grain may be fed to or delivered from either end of such scouring-cylinder as desired according to the direction of the rotation of the beating-arms in such cylinder, such feeding mechanism operating to feed the grain at a rate faster than the beating-arms tend to carry it through such cylinder, whereby the grain is caused to pack in such cylinder.

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