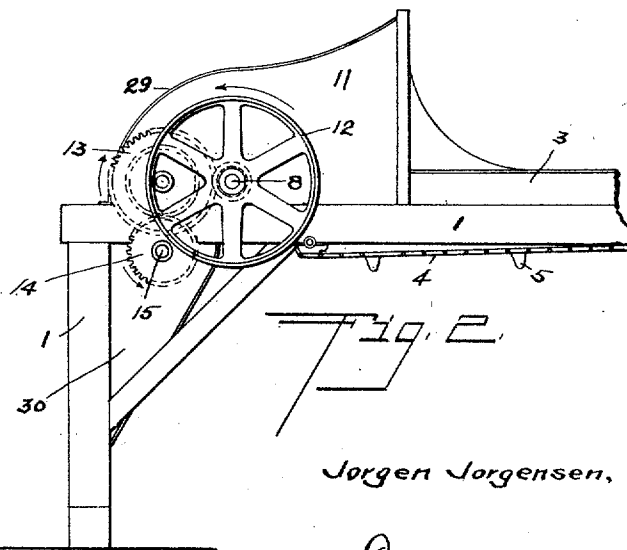
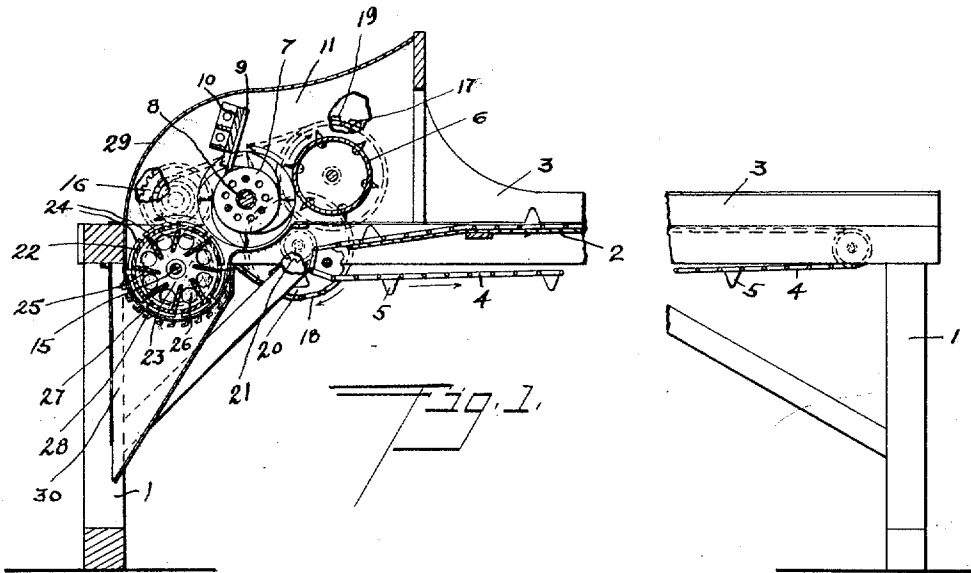


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ALFALFA MILL.
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989,525.

Patented Apr. 11, 1911.

2 SHEETS—SHEET 1



Jorgen Jorgensen, Inventor.

Witnesses:

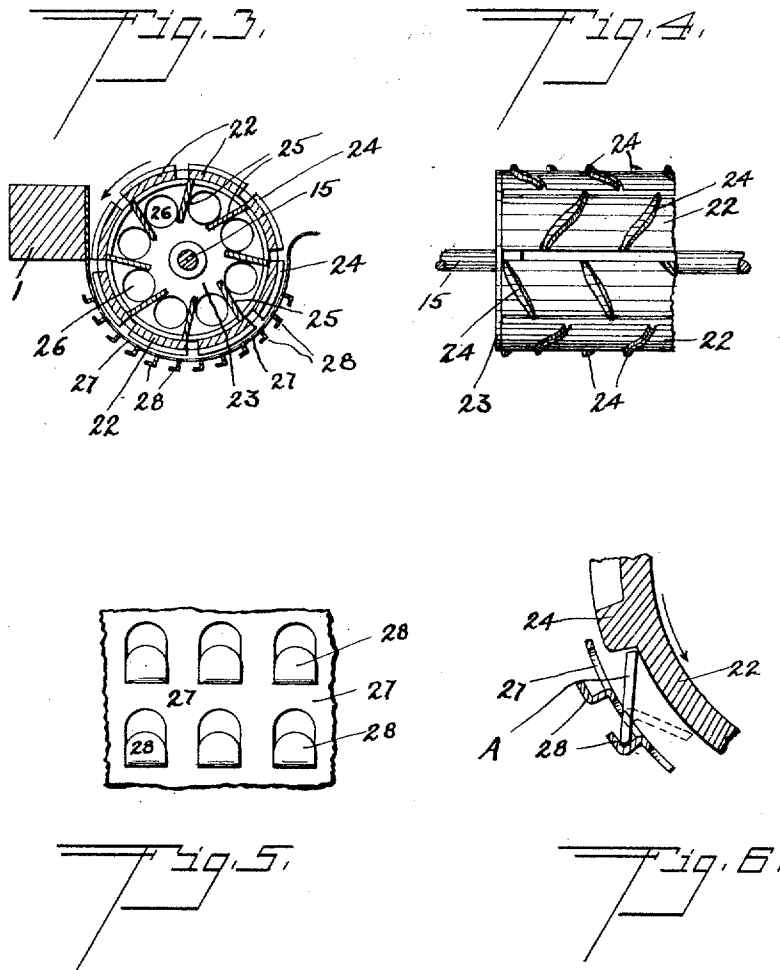
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2 SHEETS-SHEET 2.



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UNITED STATES PATENT OFFICE.

JORGEN JORGENSEN, OF SOUTH OMAHA, NEBRASKA.

ALFALFA-MILL.

989,525.

Specification of Letters Patent.

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Application filed June 27, 1910. Serial No. 569,373.

To all whom it may concern:

Be it known that I, JORGEN JORGENSEN, a citizen of the United States, and a resident of South Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Alfalfa-Mills, of which the following is a specification.

My invention relates to the general class of vegetable cutters and crushers, and more particularly to machines of the type shown in United States Letters Patent No. 943,308, issued to me December 14, 1909.

My present invention relates mainly to the structure and arrangement of the screening devices which prevent the discharge of the material from the machine until it has been reduced to particles of the desired size, and which insure the delivery of the material from the machine as soon as it is properly reduced.

A machine embodying my invention is shown in the accompanying drawings, in which—

Figure 1 is a longitudinal section thereof, the central part of the feed table and frame being broken away and the rearward portion of the frame being shown in elevation, Fig. 2 is a side elevation of the head portion of the machine, Fig. 3 is a detail section of the screen and drag-cylinder, Fig. 4 is a detail elevation of a portion of the drag-cylinder, Fig. 5 is a detail elevation of a portion of the screen, and Fig. 6 is a detail section of a portion of the screen, showing the manner in which long straws are prevented from passing through the same.

The general construction and arrangement of the feeding and cutting devices are the same as is shown in my former Patent, No. 943,308, above referred to, and may be briefly described as follows:

A suitable frame 1 is provided, at the front end of which are carried the cutting and screening devices. The rearward and intermediate portions of the frame support a feed-table 2, provided with side-boards 3, and over which are passed a number of chains 4 having teeth 5 which extend above the surface of the feed-table to engage the materials thereon and carry them back into engagement with the toothed feed-cylinder 6. The teeth of the feed-cylinder are ar-

ranged to extend in between the teeth of the cutting-cylinder 7, which is built up from toothed plates secured upon the cylinder-shaft 8. The teeth of the cutting-cylinder have a slight forward rake, are disposed in non-aligned relation to each other longitudinally of the cylinder, and pass in shearing relation to the ends of the ledger-blades 9 which are secured upon the cross-bar 10 carried by the side-frames 11. The driving-pulley 12 is carried at one end of the cylinder-shaft 8, which is driven in the direction indicated and at a relatively high speed by means of a belt applied to said pulley.

A pinion mounted on the shaft 8 engages a gear 13, as indicated in Fig. 2, and said gear carries a second pinion which meshes with the gear 14 on the transverse shaft 15. On the opposite end of said shaft is a gear which meshes with the gear 16. The said gear 16 carries at the sides thereof two sprocket wheels. A chain 17 passes around one of said sprocket wheels and extends therefrom to the sprocket wheel 19 so as to drive the same, while from the other of said sprocket wheels a chain 18 extends around and drives the sprocket wheel 20. The sprocket 19 is mounted on the feed-cylinder shaft and drives the same at a relatively slow speed. The sprocket 20 has secured at the side thereof a pinion 21 which meshes with and actuates the driving pinion for the feed-table conveyer-chains 4, which are thus driven at a speed approximately the same as the peripheral speed of the feed-cylinder.

The shaft 15 carries upon the central part thereof a drag-cylinder made up of peripheral longitudinally extending plates mounted upon end-plates 23. The plates 22 have open spaces left between the adjoining edges thereof, and upon their outer faces are helically extending ribs 24 which are inclined in opposite directions on the adjoining plates. At the forward edges of the plates are inwardly extending blades 25 which, as the cylinder is revolved, act as fan-blades to force currents of air out through the slots between the longitudinal edges of the plates 22. Suitable openings 26 are made in the end-plates 23 to permit air to be drawn into the ends of the cylinder. Around the lower part of the drag-cylinder is disposed a perforate sheet-metal screen

27 of which the material displaced in perforating the same is formed into outwardly extending L-shaped lips 28, as shown in detail in Figs. 5 and 6. A cover-plate 29 is disposed over the feed-cylinder and cutting-cylinder, and extends down over the front thereof to the upper front edge of the screen-plate 27. A hopper 30 is disposed below the screen to receive the materials which pass through the same.

In the operation of the machine the materials placed upon the feed-table are carried back over the same and into engagement with the toothed feed-cylinder 6 by means of the toothed chains 4. The feed-cylinder, revolving in the direction indicated, carries the material into engagement with the cutting-cylinder 7 and the teeth of said cylinder carry the material into engagement with the ledger-blades 9 so that it is rapidly cut into small particles. The cut material is thrown by the cutting-cylinder onto the upper part of the drag-cylinder and by said cylinder is carried around between the same and the screen, being directed back and forth longitudinally of the cylinder by the oppositely inclined helical ribs thereon, and the lighter and more fragile portions of the material, such as leaves and small stems, being assisted in passing through the screen by the currents of air which are directed out through the longitudinal slots in the cylinder by the fan-blades 25 therein. The material which by its first engagement with the cutting devices is not sufficiently reduced to pass through the screen is carried around by the drag-cylinder and again thrown up into engagement with the cutting-cylinder, and such action is repeated until all of the material has been reduced to particles small enough to pass through the screen. Long stems are prevented from passing endwise through the screen by means of the lips 28 thereon. As shown in Fig. 6, a stem A starting to pass endwise through one of the perforations of the screen strikes the inner angular corner of the lip and is stopped thereby. The ribs of the drag-cylinder then coming into engagement with the inner portion of the stem, it is either bent as shown by the dotted lines in Fig. 6, broken off, or carried on around with the cylinder and again thrown into engagement with the cutting-cylinder to be received and further reduced thereby.

Now, having described my invention, what I claim and desire to secure by Letters Patent is:

1. In a machine of the class described, the combination with cutting devices, and means for feeding materials to said cutting devices, of a cylinder arranged to receive the material after it is cut, a screen arranged around a portion of said cylinder, and means for actuating the cylinder to carry the cut ma-

terial around between the same and the screen and to discharge in proximity to the cutting-cylinder the material which does not pass through the screen.

2. In a machine of the class described, the combination with rotary cutting devices, of a drag-cylinder arranged adjacent to said cutting devices so as to receive upon its surface the cut materials, said drag-cylinder having oppositely inclined ribs on its surface, a screen arranged around a portion of the drag-cylinder, and means for revolving said cylinder so that the cut materials will be dragged over the screen and discharged at a position such that they will be again engaged by the rotary cutting devices.

3. In a machine of the class described, the combination with rotary cutting devices, of a drag-cylinder arranged below and in close proximity to said rotary cutting devices, said cylinder having peripheral openings therein, means arranged inside the cylinder for directing air outwardly through said openings, a screen arranged around said cylinder on the side thereof opposite to the cutting devices, and means for actuating said cylinder so as to carry the materials received from the cutting devices around between the cylinder and screen and to discharge into the cutting devices the materials which do not pass through the screen.

4. In a machine of the class described, the combination with rotary cutting devices, comprising a toothed cylinder and ledger-blades extending into shearing relation with the teeth of the cylinder, and means for feeding materials into said cutting devices so as to be engaged by the teeth of the cylinder and carried past the ledger-blades, of a revoluble drag-cylinder arranged below the cutting-cylinder, a screen arranged around the lower side of the drag-cylinder, means arranged inside the drag-cylinder for directing air outwardly through peripheral openings therein, and driving means connecting the cutting-cylinder and drag-cylinder.

5. In a machine of the class described, the combination with rotary cutting devices, of a drag-cylinder arranged adjacent to said cutting devices and having ribs thereon, a screen arranged around the side of said cylinder substantially opposite the cutting devices, angular lips formed on the outside of the screen at the sides of the openings therein, and means for revolving the cylinder toward the sides of the openings to which the said lips are attached.

6. In a machine of the class described, the combination with rotary cutting devices, of a drag-cylinder arranged adjacent to said cutting devices so as to receive upon its surface the cut materials, inclined ribs formed on the periphery of the cylinder, means disposed inside the cylinder for directing air out through peripheral openings therein, a

screen arranged around a portion of the cylinder on the side thereof opposite the cutting devices, L-shaped lips formed on the outer side of said screen at the sides of the
5 openings therein, and means for revolving the cylinder toward the sides of the openings to which the lips are attached.

In testimony whereof I have hereunto subscribed my name in the presence of two witnesses.

JORGEN JORGENSEN.

Witnesses:

ROY G. KRATZ,
D. O. BARNELL.

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