(No Model.) 2 Sheets—Sheet 1.

W. MATTHIAS & C. E. RUDOLPH.

OAT HULLING MACHINE.

No. 346,933. Patented Aug. 10, 1886.

Fig. 2

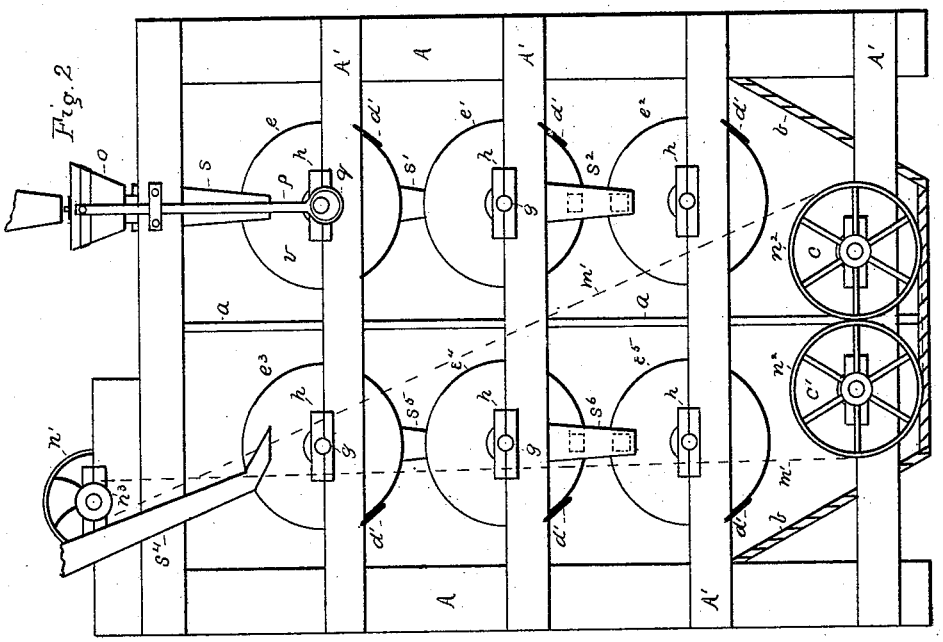
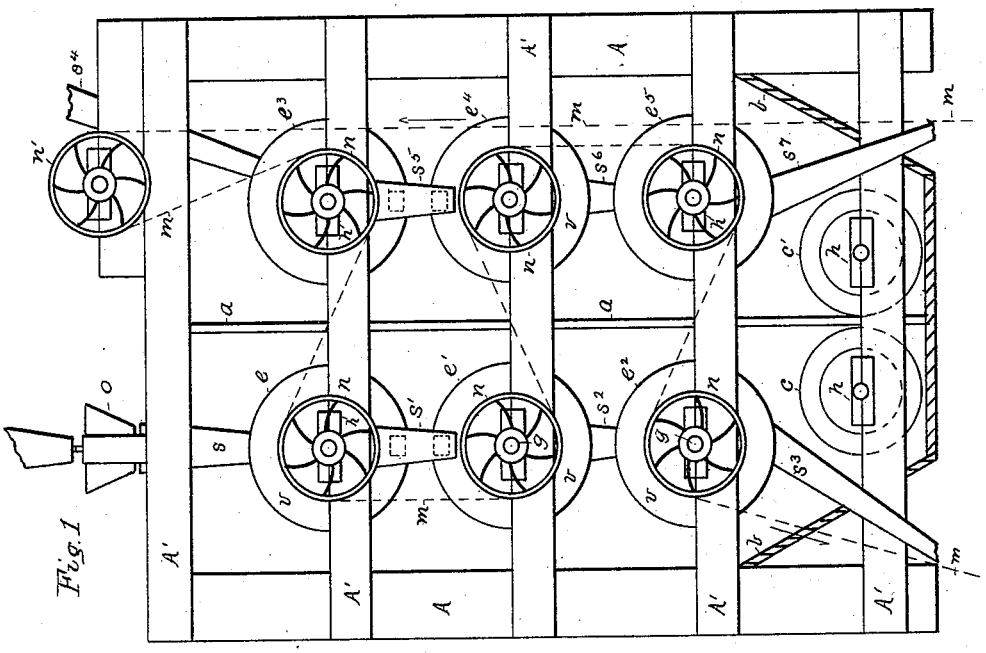


Fig. 1



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

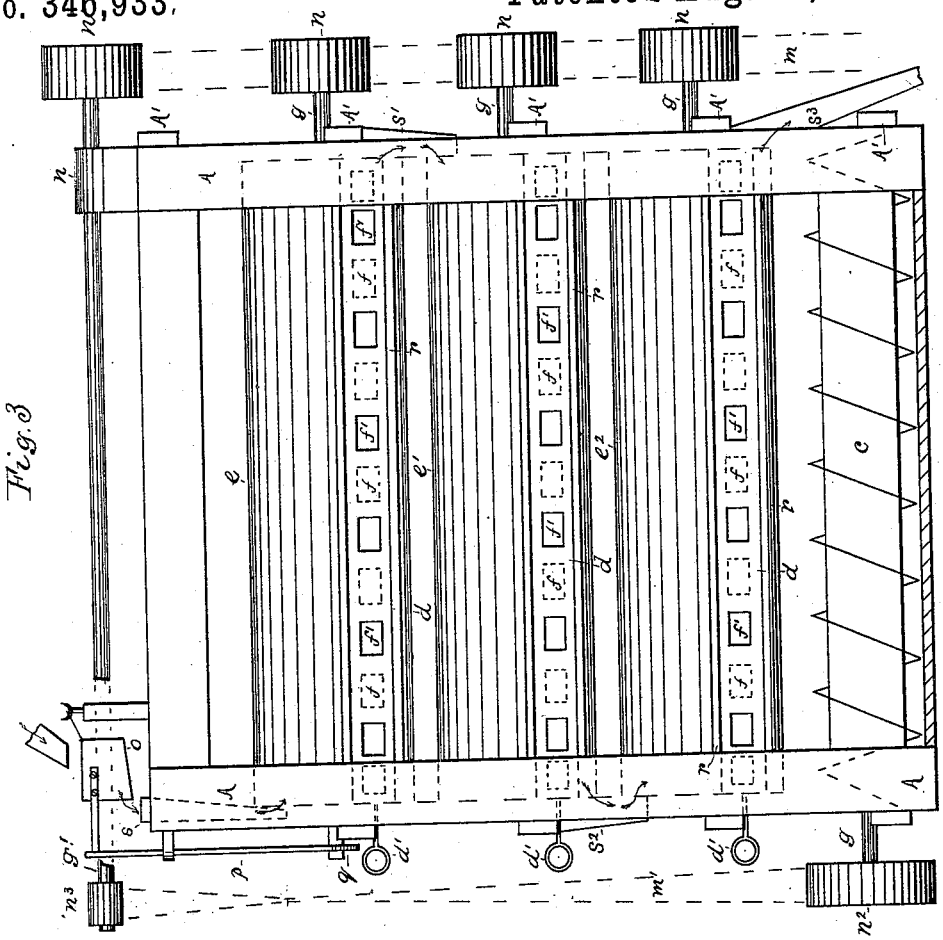


Fig. 4

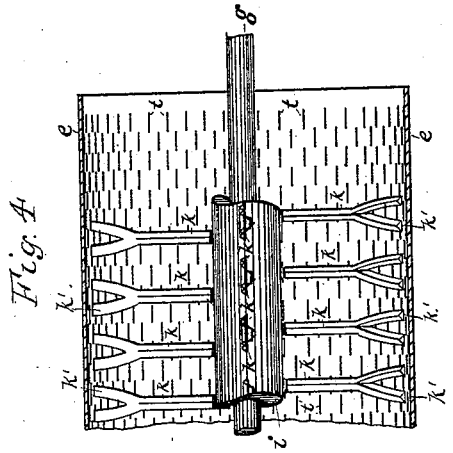
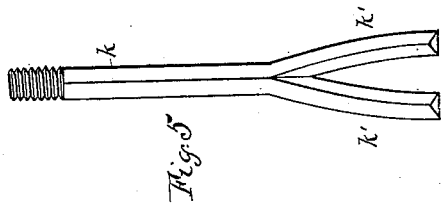


Fig. 6

Fig. 5



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UNITED STATES PATENT OFFICE.

WILLIAM MATTHIAS AND CHARLES E. RUDOLPH, OF COLFAX, DAKOTA TERRITORY.

OAT-HULLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 346,933, dated August 10, 1886.

Application filed November 9, 1885. Serial No. 182,172. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM MATTHIAS and CHARLES E. RUDOLPH, citizens of the United States, residing at Colfax, in the county of Richland and Territory of Dakota, have invented certain new and useful Improvements in Oat-Hulling Machines, of which the following is a specification.

Our invention relates to machines for removing the hulls from oats; and the object of the invention is the production of mechanism which will effectually remove from the oat-kernels both the outer hulls and the inner coverings or skins, together with the fuzz. This object is accomplished by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of the front of the machine; Fig. 2, an elevation of the rear of the machine; Fig. 3, a side elevation; Fig. 4, a sectional view of a portion of one of the cylinders, showing the beaters within. Fig. 5 is a detached view of one of the beaters, and Fig. 6 is a transverse sectional view of the same.

A represents the posts, and A′ the cross-pieces, of the frame-work of the machine.

a is a vertical partition extending lengthwise through the frame.

b is a trough or other suitable receptacle for the particles which pass through the sides of the cylinders and fall below, and the trough is divided by the partition *a* into two compartments.

c c′ are worm-conveyers for carrying away the matter which falls into the trough.

e e′ e² and *e³ e⁴ e⁵* are two sets of hulling cylinders or jackets, placed lengthwise in the frame, and arranged in vertical series on opposite sides of the partition *a*. These cylinders are of sheet metal, inclosed by wooden heads *v*, which are lined with sheet metal, and the heads are secured to the ends of the frame-work. The jackets are perforated with indented slots *t*, in size about one-half by one-thirty-second of an inch, and the perforations run longitudinally with the jackets and are made at short intervals. The inner surface of the jackets are thus made rough. At the side of each jacket, toward the outside of the machine, are a number of openings, *f*, of suitable size to admit a hand, and over these openings is a slide, *d*, having openings *f′*, the same distance apart as the openings *f*. The slide has a handle, *d′*, at one end of the machine, and works in grooves formed by strips *r*, of metal, riveted to the jackets, and may be adjusted to open or close the holes *f*. By opening the holes access can be had to the interior of the jacket for adjusting the beaters or for removing foreign substances. Through the jackets extend shafts *g*, whose bearings are in boxes *h* on the cross-pieces A′. The portions of these shafts within the jackets are covered with wood, *i*, for securing the beaters. The beaters *k* are set in rows parallel with the shafts, and the teeth of each row are placed slightly—about a half-inch—in advance of those of the preceding row, for the purpose of conducting the grain toward one end of the jacket. The beaters in the first series, *e e′ e²*, of cylinders are set to rotate within about one-fourth inch of the inner surfaces of the cylinders, and those of the second series, *e³ e⁴ e⁵*, are set to rotate within about one-half inch of the cylinders.

The beaters consist of square shanks threaded at one side for inserting and adjusting them in the wood *i* of the shafts, and the other ends are forked, and the arms of the forks *k′* are made triangular in cross-section. The angular edges of the forks are placed in the direction of the shafts' rotations.

To cause the grain to be conducted more speedily through the jackets, the beaters may be slightly turned by means of the threaded ends in the wood, so as to present more of the flat surfaces of the forks, and thus carry the grain along faster, and in this manner the length of time the grain is subjected to the beater action is reduced.

The shafts *g* may be driven by a belt (shown by dotted lines *m*) running over pulleys *n* and tightening-pulley *n′*, in the manner shown.

The conveyers *c c′* are operated by a belt, *m′*, (shown by dotted lines,) running over pulleys *n²* on the conveyer-shafts and *n³* on a shaft, *g′*, run by the pulley *n′*.

In operating the machine the oats are fed into the rear head of the jacket *e* through a spout, *s*. The feed is made regular by means of a feeding-shoe, *o*, suspended above the

spout *s*, and shaken by a pitman-rod, *p*, operated by an eccentric, *q*, on the beater-shaft of the jacket *e*. The oats, being conducted through the jacket *e* by the action of the beaters, pass out of the head *v* through an opening into the spout *s'*, which conducts them into an opening in the head of the jacket *e'*. After passing through the jacket *e'*, they are directed into the head of the jacket e^2 by a spout, s^2. When they have been passed through the jacket e^2, they fall into a spout, s^3, and are elevated to the top of the machine by an ordinary elevator, (not shown in the drawings,) which may be run by the shaft *g'*. The beaters of the first three jackets remove the dirt and most of the hulls from the kernels, and the portions removed are forced through the slots *t*, and fall into the conveyer-box, to be carried away by the conveyer *c*. The oats, after being elevated to the top of the machine, are spouted through a spout, s^4, into the rear head of the jacket e^3, for a less severe treatment than that given by the first series of beaters. Passing through the jacket e^3, the oats enter through the spouts s^5 into the front end of the jacket e^4, thence from its rear end through the spout s^6 into the jacket e^5, and from the front end of this jacket the cleaned kernels are discharged from the machine through the spout s^7. The last set of beaters remove the skins and fuzz from the kernels, and the particles removed pass out of the slots *t* and fall into the conveyer-box beneath, to be carried away by conveyer *c'*.

Having fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In an oat-hulling machine, the combination of a frame, a cylinder perforated with indented slots, a shaft through said cylinder, and beaters on said shaft, said beaters having straight shanks and forked angular extremities, substantially as set forth.

2. In an oat-hulling machine, the combination, with a frame and a horizontal cylinder perforated with indented slots, of a shaft extending through said cylinder and beaters mounted on said shaft, said beaters having one end threaded and screwed into said shaft and the other provided with forks of angular form in cross-section, and arranged to conduct the grain from one end of the cylinder to the other, substantially as set forth.

3. The combination, in a machine for hulling grain, of a frame, a succession of horizontal cylinders perforated with indented slots, shafts through said cylinders, beaters having straight shanks and forked angular extremities, mounted on said shafts to conduct the grain from one end of the cylinders to the other, and spouts for conducting the grain from one cylinder to another, substantially as set forth.

4. In a hulling-machine, the combination of a horizontal cylinder having indented perforations, openings *f* in its side, the slide *d*, the shaft *g*, having casing *i*, and the beaters *k*, provided with angular forks *k'*, substantially as set forth.

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