J. S. KIRK.

Machine for Making Hay-Meal.

No. 208,826. Patented Oct. 8, 1878.

Fig. 1

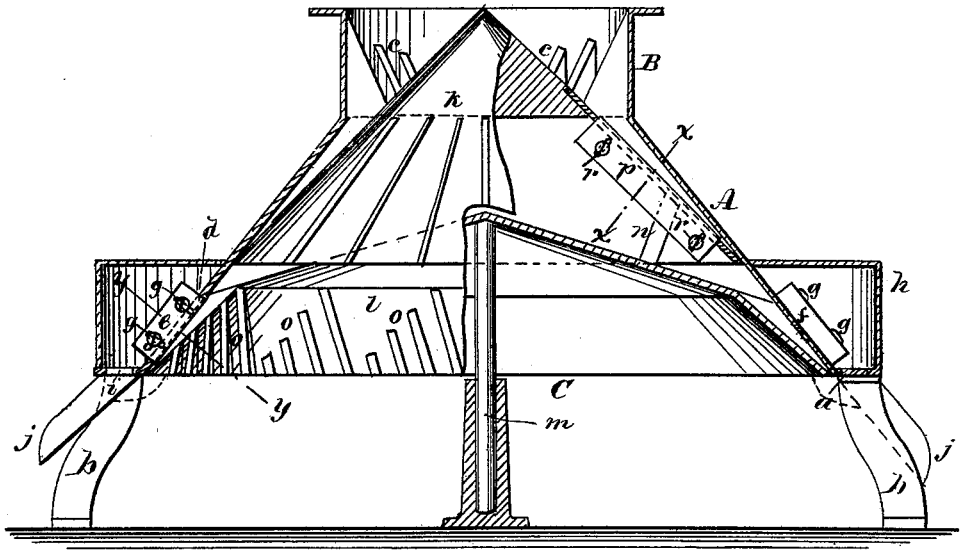

Fig. 4

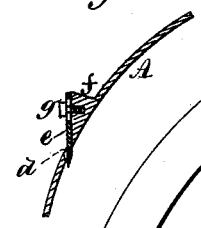

Fig. 2

Fig. 3

WITNESSES:

C. Neveux

C. Sedgwick

INVENTOR:

J. S. Kirk

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOSEPH S. KIRK, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND GUSTAVUS RICKER, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR MAKING HAY-MEAL.

Specification forming part of Letters Patent No. **208,826**, dated October 8, 1878; application filed December 21, 1877.

To all whom it may concern:

Be it known that I, JOSEPH S. KIRK, of the city, county, and State of New York, have invented a new and Improved Machine for Making Hay-Meal, of which the following is a specification:

Figure 1 is a sectional elevation of my improved machine. Fig. 2 is an inverted plan view of the outer or stationary cone. Figs. 3 and 4 are detail sectional views, taken respectively on lines *x x* and *y y* in Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of my invention is to construct a machine which will rapidly and economically reduce hay or other similar substances to small particles or meal.

The invention consists in a stationary hollow cone containing ribs and cutters and in a movable cone placed in the stationary cone, mounted on a driving-shaft, and carrying ribs and cutters, the whole being constructed and arranged to cut the hay into small particles or meal, as hereinafter more fully described.

Referring to the drawing, A is a hollow truncated cone, having a flange, *a*, around its base, and is supported on legs *b*. A cylindrical portion, B, extends upward from the cone, and several tapering ribs, *c*, project from its inner surface, and are arranged at an angle of about twenty degrees with the axis of the cone. These ribs occupy about two-thirds of the vertical height of the cone, and below them there are slots *d*, through which adjustable knives *e* project from the outside of the cone, the said knives being secured to beveled projections *f* on the cone by the screws *g*.

An annular jacket, *h*, rests upon the flange *a* of the cone A for receiving the finely-cut hay that issues from the slots *d* and confining it so that it is delivered through the apertures *i* in the flange *a* and the spouts *j* under the said apertures.

In the cone A a double cone, C, consisting of the cones *k l*, is placed on a vertical shaft, *m*. The cone *l* is secured to the shaft *m*, and the cone *k* is connected with the cone *l* by arms *n*. The cone *l* is of two different angles. The lower portion is more conical than the upper portion, and carries diagonal ribs *o*, which project toward the knives *e*.

The space between the cone *l* and the inner surface of the cone A diminishes toward the base of the machine, so that at the base of the cone A they are so nearly in contact that only the finer particles of hay can escape.

The cone *k* is supported at a short distance above the cone *l*, and is slotted to receive knives *p*, which are secured to beveled projections *q* on the inner surface of the cone by screws *r*. When the cone *k* is rotated the knives *p* make a drawing cut along the edges of the ribs *c*. The base of the cone *k* runs close to the inner surface of the cone A, so that only the finer particles of hay can pass.

The operation of my improved machine is as follows: Motion is imparted to the shaft *m* in any convenient manner, and hay is supplied at the top of the stationary cone A. As it falls between the ribs *c* it is held by them until it is cut by the knives *p*, and passes through the slots in the cone *k* and is received upon the top of the cone *l*, whence it is thrown by centrifugal force to the periphery of the cone and carried by the ribs *o* until it is cut by the knives *f*. From the knives *f* it passes into the annular jacket *h*, and is delivered in bags or in heaps through the spouts *j*.

I do not limit or confine myself to any particular number of ribs or knives, nor to any special arrangement of ribs or knives, as they may be placed either diagonally or radially on the cones.

The hay-meal made by my improved machine is compressed into compact packages and used for feeding animals.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a machine for making hay-meal, the cone A B, having the ribs C, and the cone *k*, having knives *p*, the said cones gradually converging until they come nearly together, and the knives *p* being arranged to make a drawing cut across the ribs *c*, as shown and described.

2. The combination, in a machine for making hay-meal, of two cones, A C, the former

having hopper B, with ribs *e*, and the latter having knives, *p*, as and for the purpose described.

3. The combination of the ribs *o* and knives *f* on the cones C A, as and for the purpose set forth.

4. The combination of the cone A, having ribs *e* and knives *f*, with the cone C, having ribs *o* and knives *p*, as and for the purpose specified.

5. The combination of the annular jacket *h* with the cone A, for receiving the meal, as described.

6. In a machine for making hay-meal, the double cone C, composed of the part carrying knives *p*, and the part *l*, carrying ribs *o*, the said parts being separated by a short distance and connected by arms, as shown and described.

JOSEPH S. KIRK.

Witnesses:
C. SEDGWICK,
ALEX. F. ROBERTS.