

No. 708,133.

Patented Sept. 2, 1902.

F. FRANKE.

MACHINE FOR CRUSHING FEATHERS AND PULVERIZING.

(Application filed Nov. 25, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

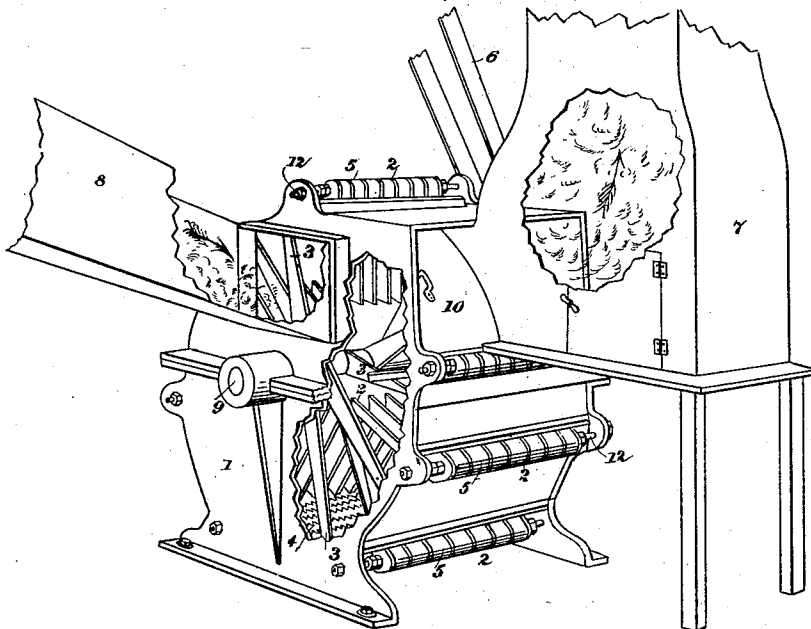
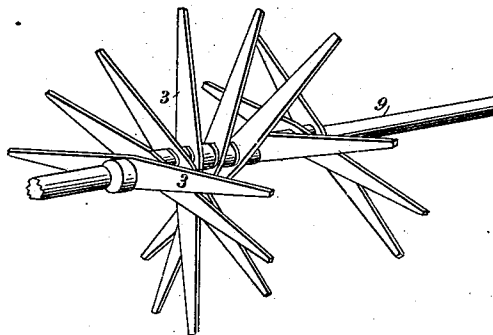


Fig. 2.



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Fig. 3.

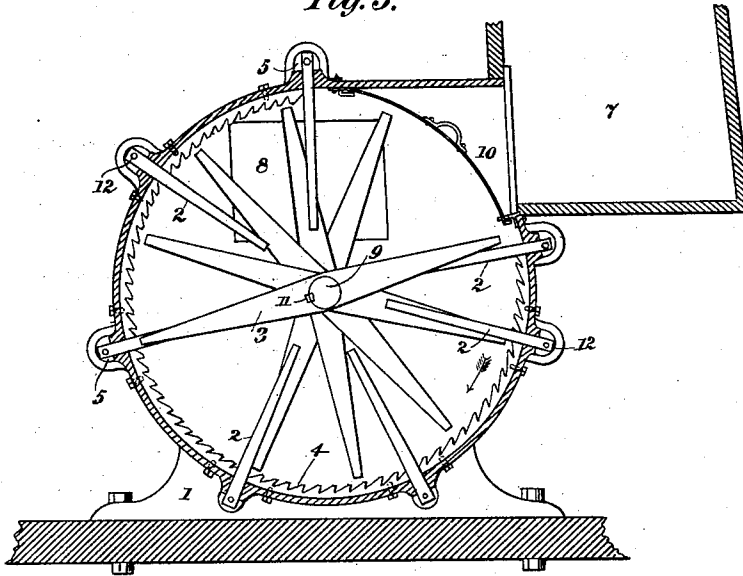


Fig. 4.

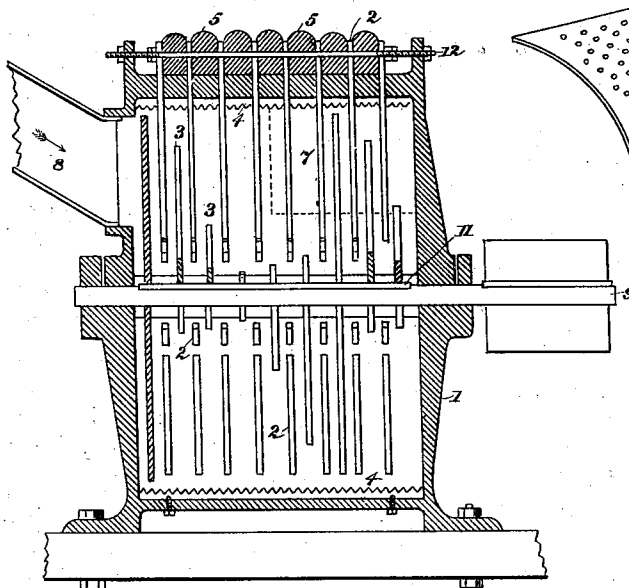
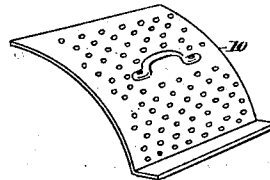


Fig. 5.



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FREDERICK FRANKE, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO S. D. CRUSE, OF LOUISVILLE, KENTUCKY.

MACHINE FOR CRUSHING FEATHERS AND PULVERIZING.

SPECIFICATION forming part of Letters Patent No. 708,133, dated September 2, 1902.

Application filed November 25, 1901. Serial No. 83,537. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK FRANKE, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Machine for Crushing Feathers and for Pulverizing, of which the following is a specification.

My invention relates to machines for crushing and tearing feathers and for pulverizing; and the objects of my improvements are, first, to render fluffy and downy those kinds of feathers which heretofore have been regarded as useless for bedding; second, to tear the down from the quills of large feathers and to tear the vanes from the quills and so crush and crimp them as to render them soft and fluffy; third, to thoroughly mix different kinds and qualities of feathers together; fourth, the adjustment of the machine for any desired fineness of the product; fifth, to produce a machine of the class named that is not liable to injury by scraps of iron, old shoes, &c., but will stop before breaking; sixth, durability; seventh, saving of power in producing the desired results; eighth, saving of floor-space; ninth, rapidity of production, and, tenth, to produce a machine which will thoroughly pulverize tobacco and tobacco-stems, &c. I attain these objects by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the entire machine with portions of the casing broken away to show the internal working parts. Fig. 2 is a perspective view of the driving-shaft and the revolving arms attached thereto. Fig. 3 is a vertical section of the entire machine at right angles to the shaft, showing the rear portion opposite the feed-opening, the section being just beyond the middle. Fig. 4 is a vertical longitudinal section through the axis of the shaft. Fig. 5 is a perspective view of a modification of the shutter 10, perforated for use when the machine is used as a pulverizer.

Similar numerals refer to similar parts throughout the several views.

The casing 1 and the revolving spider, comprising the shaft 9 and the radial arms 3, constitute the body of the machine.

2 represents the steel stationary arms, which project from the casing inward toward the central shaft.

3 represents the steel radial arms, attached firmly to the shaft.

4 is the toothed lining, attached to the periphery of the casing.

5 represents blocks of wood or other material of a yielding nature placed between the outer ends of arms 2.

6 is the driving-belt.

7 is the conveyer, into which the product of the machine is blown.

8 is the conveyer or hopper, through which the machine is fed.

9 is the driving-shaft.

10 is the shutter over the outlet, which determines the fineness of the product.

11 is the key for securing radial arms 3 to shaft 9.

12 represents bolts which pass through perforations in the outer ends of the stationary arms 2, the blocks 5, and the lugs on the frame.

The casing 1 is separable into halves at the bearings of the shaft 9 and bolted through the flange at the parting of the halves. At intervals about the periphery of the casing it is pierced by rows of slots, through which the stationary radial arms 2 are inserted. The stationary radial arms 2 are solid bars of the best tool-steel of rectangular cross-section, extend inward nearly to the shaft, and are firmly held in place by the sides of the slots through the casing and by bolts 12 and blocks 5. The revoluble radial arms 3 are also made of solid bars of best tool-steel, each bar extending across the machine and being pierced at its middle for the shaft 9 and splined for the key 11. These bars are of rectangular cross-section and have their edges tapered from the middle toward each end. The ends are truncated and extended almost to the toothed lining 4. These arms 3 are not arranged on the shaft in straight lines, but spirally, so as to produce the effect of a screw conveyer and avoid shocks in the machine. The toothed lining 4 is made in sections and screwed firmly to the periphery of the casing, and the teeth slant opposite to the direction of motion of the revolving arms 3. The opening which

communicates with the conveyer 7 extends half across the periphery of the cylindrical casing and is controlled by the sliding shutter 10. The feed-opening 8 is in the side of the casing and is placed on the side opposite the outlet, so that the material must pass across and receive the action of the machine before escaping to the conveyer.

The working of the machine will now be fully understood. The raw material is introduced at 8 and is drawn in by the centrifugal action of the revolving arms 3. It is caught by arms 3 and beaten between arms 2. The action of the square edges of the arms 2 and 3 is not to cut, but to tear and crimp. As the action is continued the spirally-arranged arms 3 convey the material across. At the same time the centrifugal action of arms 3 forces it against the toothed lining 4, where the truncated ends of arms 3 give it a thorough crushing and rubbing until it finally escapes through the outlet. If the product is to be very fine, the shutter 10 is pushed over so as to almost close the outlet, thus requiring the material to traverse the entire machine. When tobacco or other material is to be pulverized, a perforated or wire-cloth shutter of the required fineness is used to cover the entire outlet.

Having now described my improvement, so that any one skilled in the art pertaining thereto may make and operate it, I desire not to be limited to the particular construction shown and described, and I do not desire to claim all the parts mentioned, broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In a feather crusher and pulverizer, the

combination of a separable cylindrical casing, transverse rows of rectangular perforations through the periphery of said casing, bars of rectangular cross-section, having one end pierced, passing through the said rectangular perforations in the casing, blocks of yielding material perforated and placed between the perforated outer ends of aforesaid bars, a bolt passing through the perforations of each row of blocks and bars, a sectional lining on the periphery of the casing consisting of blunt teeth cast integral with curved plates, a shaft passing axially through the casing and revoluble in boxes on the sides of the casing, a row of diametral bars keyed on said shaft and so spaced as to pass between the stationary bars and so disposed as to form a spiral, substantially as and for the purposes specified.

2. In a feather crusher and pulverizer, the combination of a cylindrical casing 1, transverse rows of arms 2 of rectangular cross-section, rigidly fastened in the periphery of said casing, a revoluble shaft 9 passing axially through said casing, a spiral row of tapered diametral arms 3 rigidly fastened to said revoluble shaft, a toothed peripheral lining 4 with teeth slanting opposite to the direction of motion of the revolving arms 3, an inlet-opening 8 in one side of the casing 1, and an outlet-opening in the periphery of the casing 1 on the side of said casing opposite to that having the inlet-opening, and a sliding shutter 10 to control the outlet-opening, substantially as and for the purpose specified.

FREDERICK FRANKE.

Witnesses:

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