No. 669,048. Patented Feb. 26, 1901.

C. R. SPENCER.

MILL FOR GRANULATING CORN, CORNCOBS, &c.

(Application filed Sept. 6, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

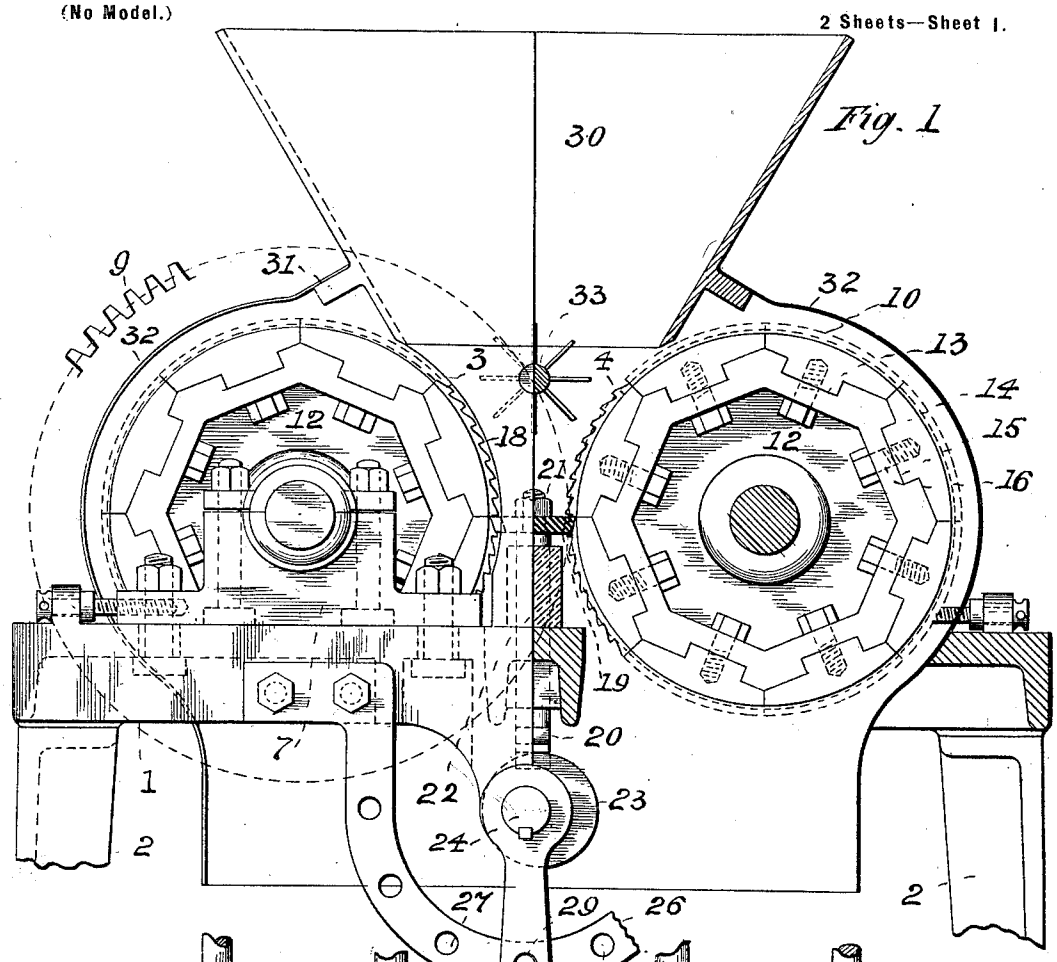


Fig. 2.

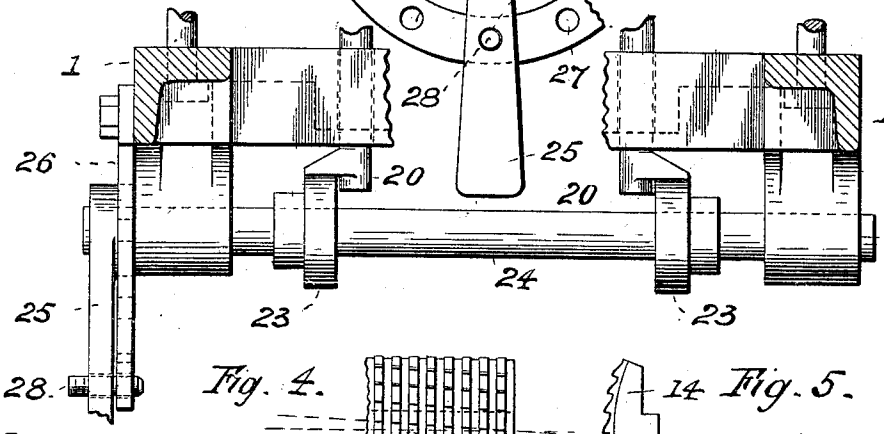


Fig. 4.

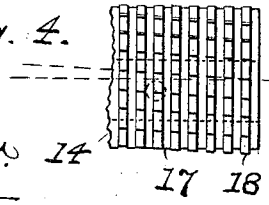


Fig. 5.



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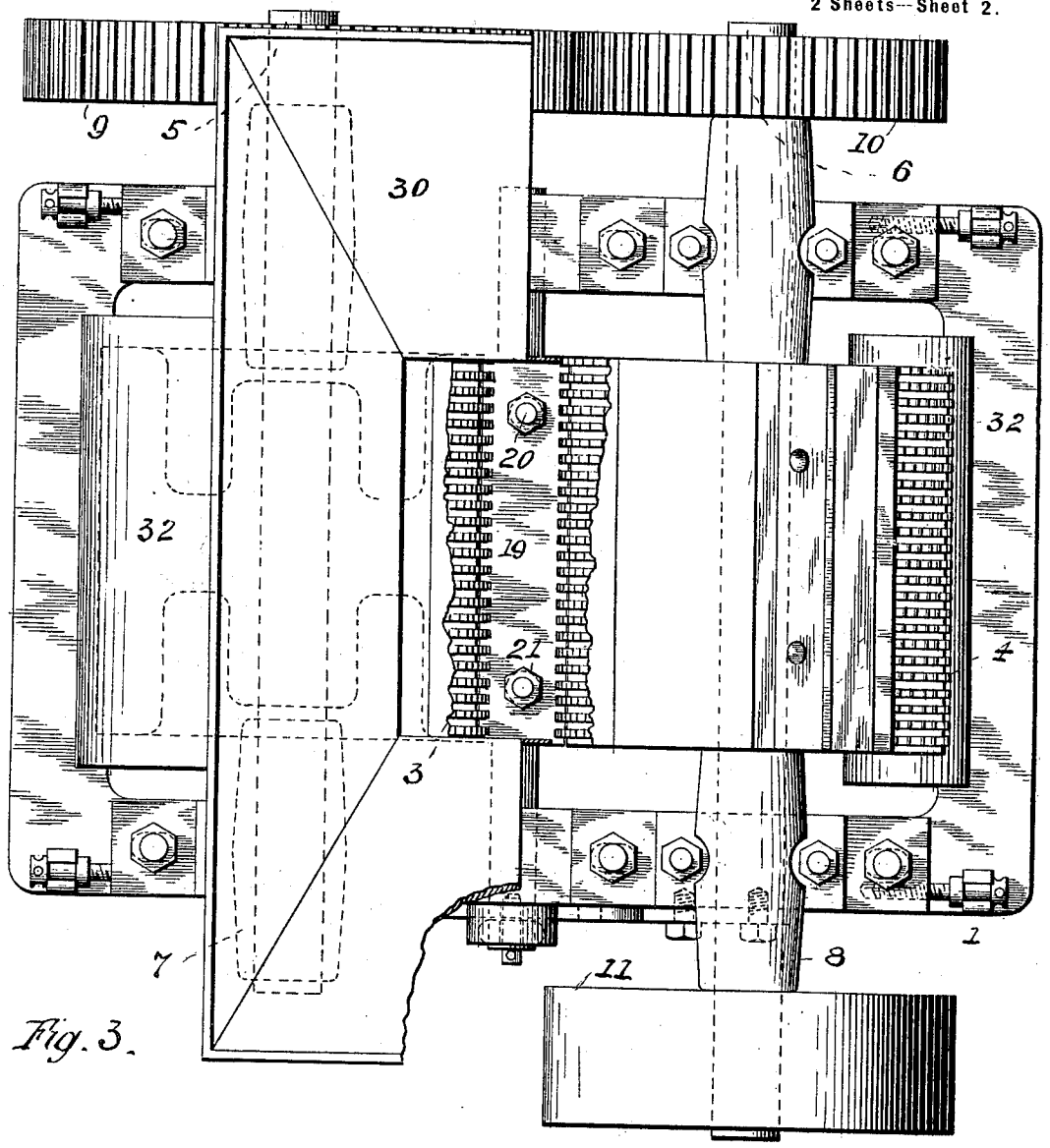


Fig. 3.

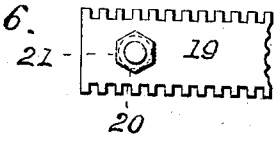


Fig. 6.

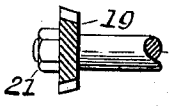


Fig. 7.

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UNITED STATES PATENT OFFICE.

CHARLES R. SPENCER, OF BALTIMORE, MARYLAND, ASSIGNOR TO WILLIAM D. COLT, OF WASHINGTON, DISTRICT OF COLUMBIA.

MILL FOR GRANULATING CORN, CORNCOBS, &c.

SPECIFICATION forming part of Letters Patent No. 669,048, dated February 26, 1901.

Application filed September 6, 1900. Serial No. 29,123. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. SPENCER, of the city of Baltimore, in the State of Maryland, have invented certain Improvements in Mills for Granulating Corn, Corncobs, Fodder, &c., of which the following is a specification.

This invention relates to certain improvements in a granulating-mill for reducing corn, cobs, husks, feathers, and a variety of other materials to a practically uniform size, as will hereinafter fully appear.

In the description of the improved mill which follows reference is made to the accompanying drawings, forming a part hereof, in which—

Figure 1 is a half-sectional end view of the improved granulating-mill. Fig. 2 is a partly-sectional side view of certain parts of the same. Fig. 3 is a half-sectional plan or top view of Fig. 1. Figs. 4, 5, 6, and 7 are detached views of parts of the mill hereinafter described.

Referring now to the drawings, 1 represents the frame of the mill, and 2 the legs of the same, which are shown as broken off.

3 and 4 are granulating-cylinders situated side by side and secured, respectively, to the shafts 5 and 6. These shafts are supported in suitable laterally-adjustable bearing-boxes 7 and 8, erected on the frame 1. The shafts 5 and 6 are connected by the meshed gear-wheels 9 and 10, and the shaft 6 is provided with a driving-pulley 11.

By reference to Fig. 3 of the drawings it will be seen that the gear-wheel 9 is of a greater diameter than the one 10. Consequently in the operation of the mill the cylinder 4 will be rotated at a greater speed than the one 3.

In Fig. 1 the gear-wheel 9 is represented by a few teeth and a dotted circle and the one 10 by a dotted circle only.

The cylinders 3 and 4 consist each of a head 12, of polygonal shape when seen from either end thereof and whose sides have grooves 13, extending their entire length, and the plates 14, having tongues 15, which fit in the grooves 13. (See Figs. 1 and 5, the latter being an end view of one of the said plates.) The said plates are segmental in shape, and their longitudinal edges abut, so as to effect a continuous cylindrical covering for the heads 12, as seen in Fig. 1. The plates 14 are held in position by the tap-bolts 16, inserted through the flange of the heads from the inside. The cylinders, formed as described, are circumferentially grooved, the grooves 17 being separated by projections of preferably the same width. These circular projections are grooved diagonally and longitudinally of the plates to form teeth 18, some of which are seen in Figs. 1, 4, and 5. It will be understood that the cylinders rotate in opposite directions, their movement, as seen from the top of the mill, being toward each other, and they are sufficiently separated to admit of the insertion between them of the comb 19. (Shown in Figs. 6 and 7, the former being a top view of a part of the comb and the latter a cross-section of it.)

The lateral edges of the comb 19 are notched, (see Fig. 6,) and the width of the notches corresponds to that of the teeth of the cylinders, which teeth in the operation of the mill pass through them.

By reference to Figs. 1, 6, and 7 it will be seen that the comb 19 is provided with two stems 20, held thereto by the nuts 21, and that these stems pass down through the guiding-bar 22 and the frame 1 and have lateral projections which rest on the cams or eccentrics 23. (See particularly Fig. 2.) These eccentrics are fastened to a shaft 24, supported in bearings formed as a part of the frame 1, and the eccentric-shaft at one end is furnished with a handle 25, whereby the shaft and the eccentrics may be given a half-rotation for a purpose hereinafter described.

26 is a curved bar secured to the frame 1, having holes 27, into any one of which a pin 28 may be inserted through a corresponding hole 29 in the handle to hold the cams or eccentrics in a desired position and the comb at a desired height. In Fig. 1 the comb is shown as in its central position, or that which is half-way between its highest and lowest points.

30 is a hopper to receive the materials to be granulated. It is situated over the two cyl-

inders 3 and 4 and provided with flanges 31, to which the two sections of a casing 32 are secured.

33 is a rotary agitator within the hopper 30. This device is driven in any appropriate manner, and while it may be an advantage to the mill in granulating certain materials it is not deemed essential and forms no part of the present invention.

Materials thrown into the hopper are caught by the teeth of the cylinders, which, in connection with the comb, reduce them to a uniform size, and the granulated substance falls below the frame.

In granulating comparatively heavy bodies, such as corn and corncobs, the comb is elevated somewhat above the horizontal center line of the cylinders, the weight of the materials serving to keep them in proper contact with the toothed cylinders; but with lighter material, such as fodder and feathers, the comb is lowered to below the said central line, when the teeth of the cylinders have a tendency to draw in the materials toward themselves.

The cam arrangement, whereby the comb may be elevated above or brought below the horizontal center line of the cylinders, admits of the adjustment of the comb to suit a great variety of substances differing in weight and other peculiarities, thus increasing the general usefulness of the mill.

By rotating the granulating-cylinders at different speeds the packing of the materials in the lower portion of the hopper and in contact with the said cylinders is effectually prevented.

I claim as my invention—

1. In a granulating-mill, the combination of two cylinders of uniform diameter with peripheral teeth of a common size and shape, means to rotate the said cylinders in opposite directions and at different speeds, a horizontally-placed comb situated between the said cylinders having notches which are of the same size as the teeth of the cylinders, and means to vertically adjust the said comb, substantially as, and for the purpose specified.

2. In a granulating-mill, the combination of two granulating-cylinders with means to drive them in opposite directions, vertical stems situated between the granulating-cylinders, cams or eccentrics placed below the stems whereby the same may be adjusted in height, and a granulating-comb secured to the upper ends of the said stems having notches through which the teeth of the granulating-cylinders pass in the operation of the mill, substantially as, and for the purpose specified.

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Witnesses:
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