No. 753,931. PATENTED MAR. 8, 1904.

J. H. STEVENSON.

SHREDDER FOR WHEAT AND OTHER GRAIN.

APPLICATION FILED JUNE 17, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

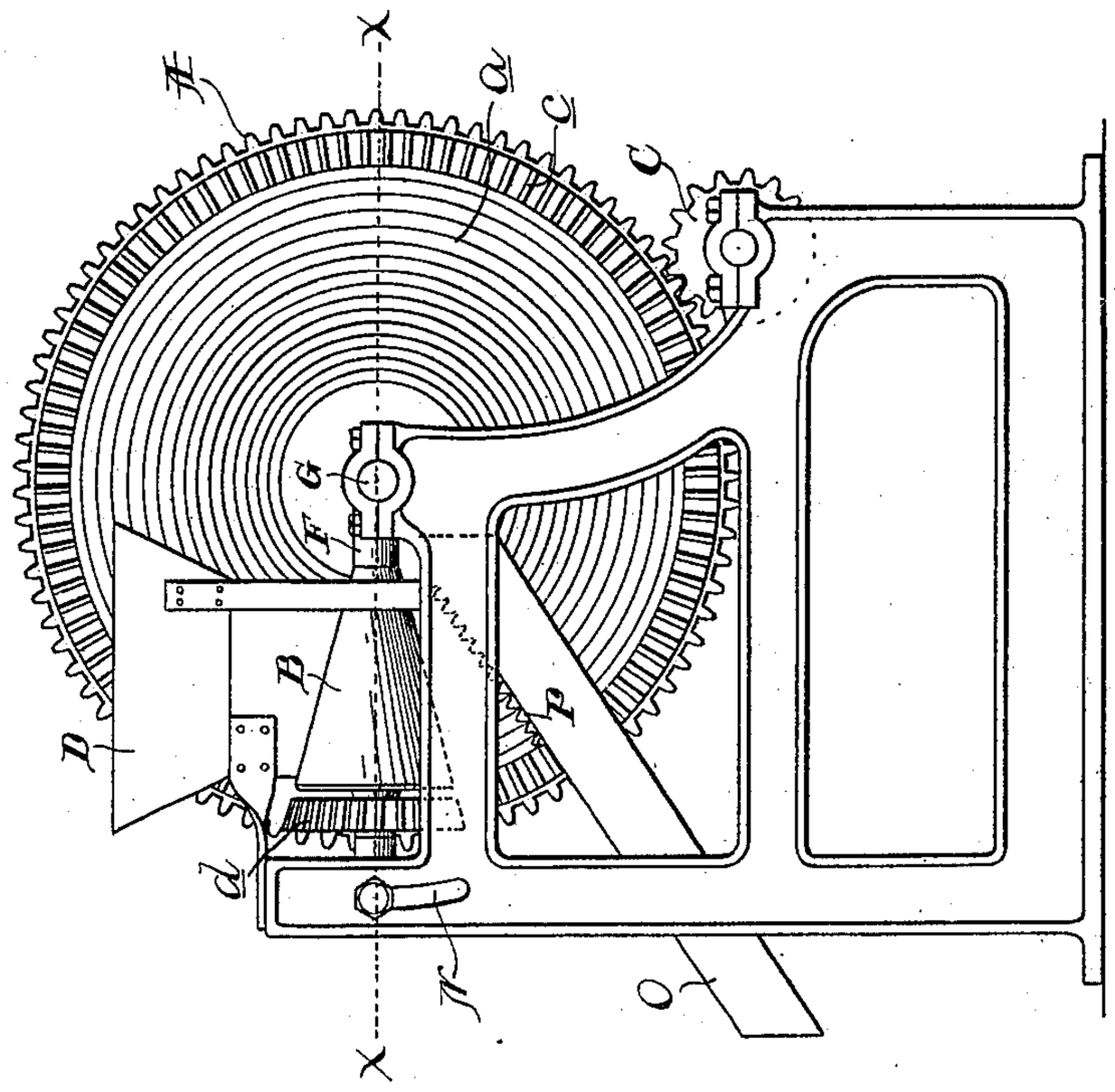
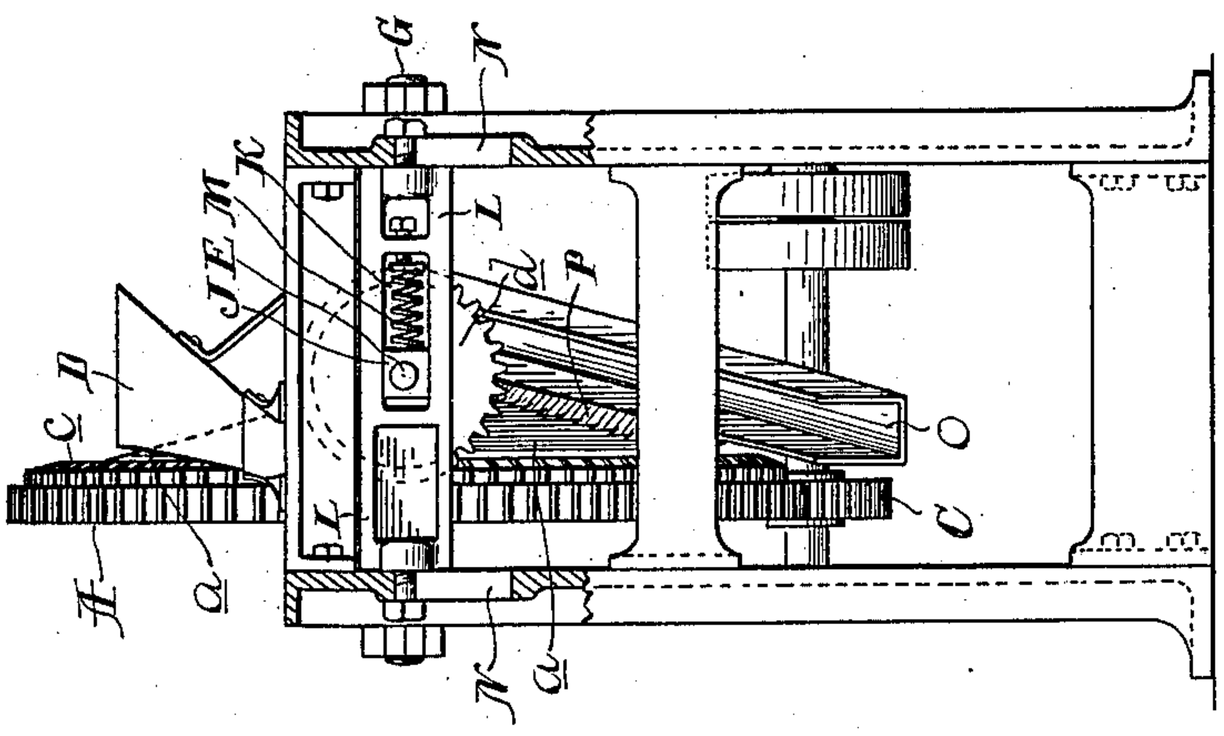


Fig. 2.



WITNESSES.

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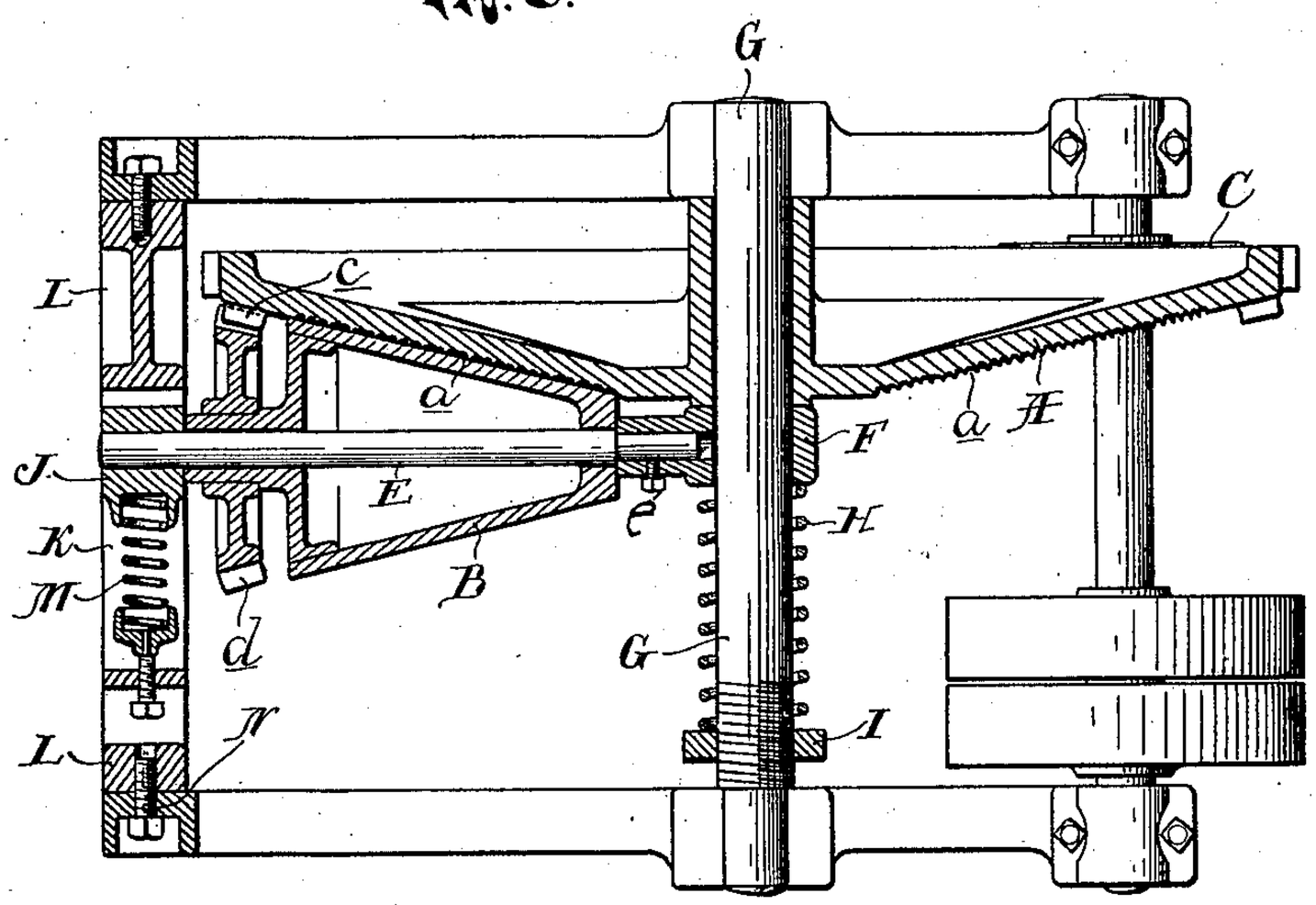
NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN H. STEVENSON, OF ANN ARBOR, MICHIGAN, ASSIGNOR OF ONE-HALF TO G. FRANK ALLMENDINGER, OF ANN ARBOR, MICHIGAN.

SHREDDER FOR WHEAT OR OTHER GRAIN.

SPECIFICATION forming part of Letters Patent No. 753,931, dated March 8, 1904.

Application filed June 17, 1903. Serial No. 161,776. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. STEVENSON, a citizen of the United States of America, residing at Ann Arbor, in the county of Washtenaw and State of Michigan, have invented certain new and useful Improvements in Shredders for Wheat or other Grain, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has particular reference to the preparation of cereal foods from wheat or other grain and in which suitable machinery is employed to fashion the crushed grain particles while they are in a moistened condition into elongated strips or threads, which operation is commonly termed "shredding;" and the object of my invention is to produce a machine of this character.

To this end my invention consists of a machine characterized by having a relatively large cone-disk revolving upon a horizontal axis and bearing upon its face a series of annular corrugations or grooves and a relatively small cone revolving also upon a substantially horizontal axis against the face of the cone-disk, all as more fully hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved machine; Fig. 2, a front elevation thereof with parts in section to show the construction, and Fig. 3 is an enlarged vertical cross-section substantially on the line *x x* of Fig. 1.

A is a cone-shaped disk journaled free to revolve upon a horizontal axis, and B is a cone journaled free to revolve upon an axis at right angles to the axis of the cone-disk and intersecting therewith. As shown in the drawings, the cone-disk is provided with peripheral gear-teeth which mesh with a gear-wheel C, to which motion is transmitted from the source of power, and the cone receives its motion directly from the cone-disk by means of intermeshing bevel-gears *c d*, carried at the base of said cone-disk and cone, respectively, the cone being free to revolve on the shaft E, which latter is held in place by a set-screw *e*. By this means the cone and cone-disk revolve at equal speed at their respective points of contact. Any other means for actuating the parts in the desired manner may be used, however. The cone-disk upon that portion of its surface which coöperates with the surface of the cone is provided with a series of grooves *a*, which may be formed in any convenient or desired manner. As shown in the drawings, these grooves are formed by suitably corrugating the face of the disk; but it is obvious that in order to vary the appearance and conditions of the product the grooves may be variously constructed to obtain any desired result. A converse construction may also be used—that is, the cone may be provided with the corrugations or grooves and the cone-disk may have a smooth surface.

D is an elevated feed-hopper placed in suitable position to direct the grain through its discharge-spout directly into the pocket formed between the adjacent faces of the cone-disk and cone, and this hopper may be provided with any of the known means (not shown) for agitating the grain and regulating the feed.

The cone is provided with any of the known means for adjusting it and holding it yieldingly against the face of the cone-disk. As shown in the drawings, this is obtained by journaling the cone upon a shaft E, which at the inner end is supported by a collar F upon the shaft G of the cone-disk, the collar being pressed by a spring H, the tension of which can be adjusted by a nut I. Likewise the other end of the shaft E engages into a box J, which is adjustable within a slot K of the cross-bar L and is pressed by a spring M, the tension of which may also be adjusted. The cross-bar L is adjustable vertically in concentric slots N in the supporting-frame, and thereby permits of the radial adjustment of the cone on the face of the cone-disk to regulate the feed, whereby a greater quantity of the grain is fed to the outer edge of the disk as the cone is lowered.

A suitable chute O is provided below the cone-disk, and a scraper P, which has suitable prongs to enter into the corrugation of the cone-disk, is placed in advance of it and scrapes the material adhering to the cone-disk into the

chute. A suitable scraper may also be provided for the cone, and the product may be removed by a belt instead of by a chute.

The practical operation of my device will be well understood by those skilled in the art. It has several advantages over the use of similar devices employing cylindrical rollers in that the working parts are better exposed, the product can be much more readily removed, and that on account of the difference in the form of the shredding members a distinctive product is obtained.

Having thus fully described my invention, what I claim is—

1. In a machine for the purpose described, the combination of a cone-disk revolving upon a horizontal axis and provided upon its conical face with a series of concentric grooves or corrugations and a cone having a smooth face revolving upon a substantially horizontal axis intersecting the axis of the conical disk at right angles thereto and adapted to travel with its face in rolling contact with that of the disk and means for yieldingly holding said cone in contact with the disk, substantially as described.

2. In a machine for the purpose described, the combination of a cone-disk revolving upon a horizontal axis and provided upon its conical face with a series of concentric grooves or corrugations, a cone revolving upon a substantially horizontal axis intersecting the axis of the disk at right angles and having its face adapted to coöperate with that of the disk, and means for radially adjusting the cone in relation to the face of the disk.

3. In a machine for the purpose described, the combination of a cone-disk revolving upon a horizontal axis and provided upon its conical face with a concentrically-arranged series of annular grooves or corrugations, a cone revolving upon a substantially horizontal axis intersecting the axis of the disk at substantially right angles and radially adjustable in relation thereto, shafts one secured in fixed and the other in movable bearings upon which said disk and cone are journaled respectively, a peripheral gear on the disk, a gear-wheel meshing therewith and imparting rotary motion to the disk and intermeshing gear-teeth carried by said disk and cone respectively for imparting motion to said cone substantially as described.

4. In a machine for the purpose described the combination with a feed-hopper, of a cone-disk having its conical face provided with concentrically-arranged grooves or corrugations, a cone in rolling contact with the conical face of said disk, shafts fixedly secured in bearings upon which said disk and cone are journaled, means for revolving said disk and cone together, springs applied to the shaft of the cone for pressing said cone against the face of the disk, said shaft being supported in sliding bearings, means for radially adjusting the cone on the face of the disk and a scraper device for removing the material from the disk and cone.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. STEVENSON.

Witnesses:

OTTO F. BARTHEL,

LEWIS E. FLANDERS.