

No. 858,595.

PATENTED JULY 2, 1907.

W. R. GRACE & J. J. COLWELL.

FOOD CUTTER.

APPLICATION FILED FEB. 26, 1906.

2 SHEETS—SHEET 1.

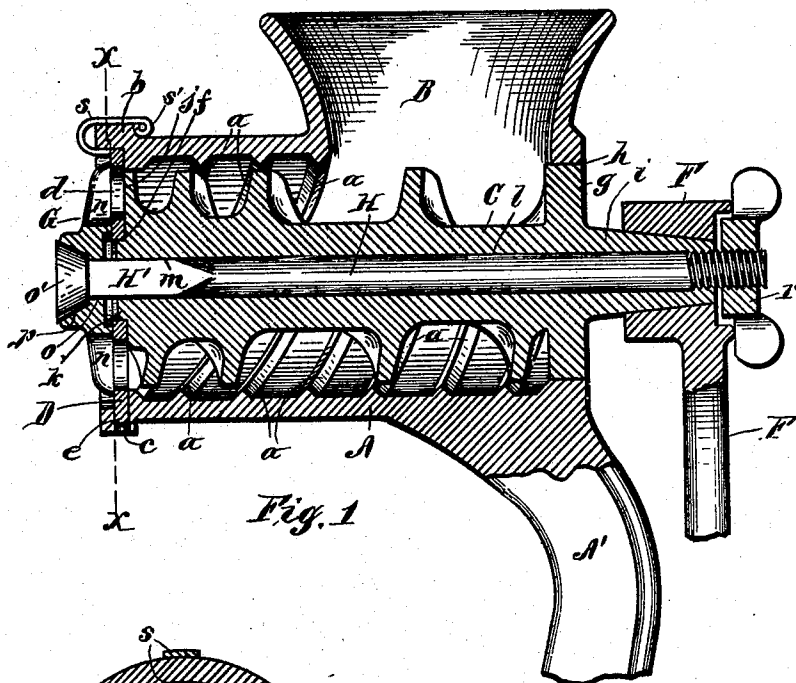


Fig. 1

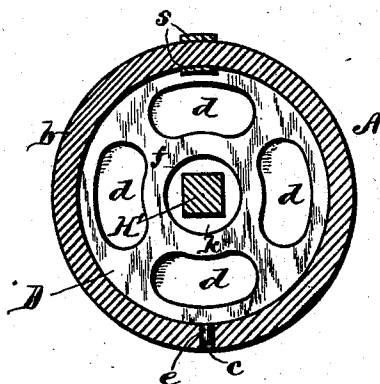


Fig. 2

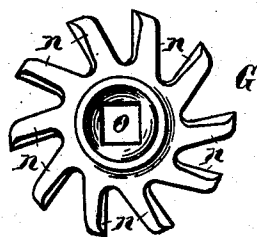


Fig. 3

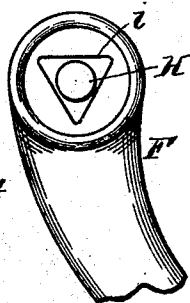


Fig. 4

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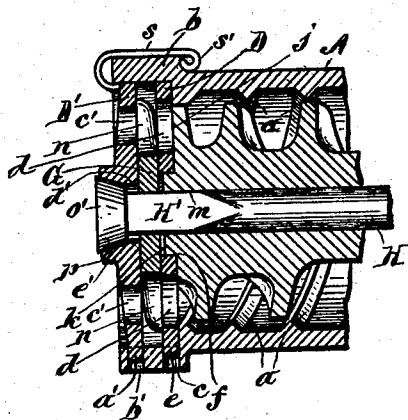


Fig. 5

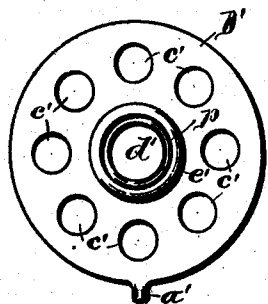


Fig. 6

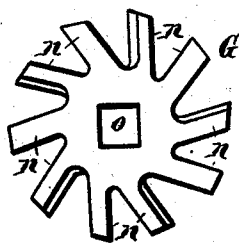
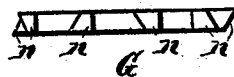


Fig. 7

Fig. 8



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UNITED STATES PATENT OFFICE.

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FOOD-CUTTER.

No. 858,595.

Specification of Letters Patent.

Patented July 2, 1907.

Application filed February 26, 1906. Serial No. 302,898.

To all whom it may concern:

Be it known that we, WILLIAM R. GRACE, of Fayetteville, in the county of Onondaga and State of New York, and JOHN J. COLWELL, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Food-Cutters, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

10 This invention relates to the class of food-cutters comprising a casing into which the substance to be cut is introduced and which casing is provided with a stationary disk in one end formed with discharge-openings having cutting-edges, a rotary cutter disposed in contact
15 with and cooperating with said disk, and a feed-screw journaled within the casing and cooperating with an internal spiral rib or ribs formed on the casing for forcing the substance through the said openings, the feed-screw being connected to and imparting motion to the
20 rotary cutter and provided with a handle for operating the same. In machines of this character, the cutters, feed-screw and handle are usually sustained in their relative positions by means of an ordinary nut applied to a screw-threaded extension or stud formed on the rear
25 end of the feed-screw and engaging the handle, and a tensioning thumb-nut applied to a similar part on the opposite end of the feed-screw and engaging the outer cutter. It is well known to persons familiar with this class of food-cutters, that the parts frequently require
30 adjustment during the operation of the machine for the purpose of regulating the bearing of the rotary cutter on the stationary cutter, and also the pressure of the feed-screw on the latter cutter, which adjustment is effected by the tightening and loosening of the thumb-nut. Inasmuch as this thumb-nut is disposed at the
35 cutting end of the machine, as aforesaid, there is a liability of a person's hand coming into contact with the discharged food, and the said nut tends to clog and thereby prevent a free discharge of the said food, therefore such arrangement is objectionable. Another objectionable feature in most cutting machines of this class is, that in order to remove the feed-screw from the casing, it is necessary to detach the cutters, such removal of the screw being sometimes desirable for the
40 purpose of cleaning the screw or for other reasons.

The main object of the present invention is to produce a food-cutter of the aforesaid class in which these objections shall be obviated, and at the same time permit of quick and convenient adjustment of the cutters and feed-screw when required.

Another object of this invention is to produce a food-cutter which shall be simple, strong and rigid in construction, and also very efficient in its operation.

Other objects will be apparent by the novel arrangement and combination of the component parts of the

food-cutter hereinafter fully described and set forth in the claims.

In the accompanying drawings Figure 1 is a vertical longitudinal section of a portion of a food-cutter embodying our improvements; Fig. 2 is a transverse section on the line —X—X— in Fig. 1; Fig. 3 is a detail outer face view of the rotary cutter employed in the form of machine illustrated in Fig. 1; Fig. 4 is a detail view showing the attachment of the handle to the feed-screw; Fig. 5 is a longitudinal section of the cutting end of a machine illustrating modifications of our invention; Fig. 6 is a detail outer face view of the outer stationary cutting-disk employed in the modified form of machine, Fig. 7 is a detail face view of the rotary cutter of the latter form of machine; and, Fig. 8 is an edge view of said cutter.

Similar letters of reference indicate corresponding parts:

—A— represents a cylindrical casing which is open at its ends and is formed at one end with the usual hopper
75 —B— through which the substance is introduced, and also formed with the usual bracket or standard —A¹— for supporting the same. This casing —A— is provided with the usual internal spiral rib or ribs, indicated at —a—, which, as is well known, assist the usual feed-screw —C— in forcing the substance to be cut through the casing, which feed-screw will be shortly referred to. The forward end of the casing is formed with an external peripheral flange —b— which is provided in its lower portion with an aperture or socket —c—. 85

—D— denotes a stationary cutter consisting of a disk which is seated in the flange —b— and is provided with a series of discharge-openings —d—d— having cutting edges. This disk is formed at its edge with a lug —e— which engages the aforesaid aperture or socket —c—, 90 thereby locking the disk to the casing, and in the center of the said disk is provided an opening —f—.

The feed-screw —C— may be of any suitable form and is provided at one end with a collar —g— which is journaled in the rear opening of the casing —A—, 95 as indicated at —h—, and formed with an axial stud —i— extending from said collar, which stud is angular in cross-section for the reception of the usual handle —F— for operating the said feed-screw as shown in Figs. 1 and 4 of the drawings. The said feed-screw is 100 provided with a smooth bearing-face —j— at its forward end by which it abuts against the rear face of the aforesaid stationary cutting-disk —D— and is formed thereat with a hub —k— journaled in the central opening —f— of said disk as shown in Figs. 1 and 2 of the 105 drawings. This feed-screw is also provided with an axial bore —l— extending through the stud —i— and hub —k—, which bore is formed square in cross-section at its forward end portion as indicated at —m—.

—G— denotes a rotary cutter which is disposed in 110

contact with the outer face of the cutting-disk —D— and may be of any suitable form, but preferably of the style shown in Fig. 3 of the drawings in which it embodies a plurality of knives or blades —n—n—. This rotary cutter is provided with a central square opening —o— corresponding with the forward end of the bore —l— of the feed-screw, and in the outer face of this cutter is provided a tapered recess —p— surrounding the opening —o—.

10 —H— denotes a bolt which extends through the feed-screw and rotary cutter and has its forward end portion formed square in cross-section, indicated at —H¹—, which corresponds with like portions of the bore —l— and opening —o—, whereby said cutter is locked to and receives motion from the feed-screw. This end of the bolt is formed with a tapered head —o¹— which is seated in the aforesaid recess —p— of the outer cutter, and the opposite or screw-threaded end of the bolt is provided with a thumb-nut —r— engaging the handle 20 —F—, whereby the cutters, feed-screw and handle are securely sustained in their positions.

It will be apparent that by the described arrangement of parts, the cutters and feed-screw can be easily and conveniently adjusted when required, and can be 25 quickly removed from the casing for the purpose of cleaning the parts and readily assembled.

To permit the feed-screw to be removed from the casing and at the same time retain the cutting-disk —D— therein, we provide a suitable spring-clip —s— which 30 is sprung onto the aforesaid flange —b— of said casing and has one end bent to form an enlargement —s¹— engaging the rear edge of the flange and the opposite end bearing against the outer face of the said cutting-disk at the edge thereof as clearly shown in Fig. 1 of the drawings. This spring-clip —s— can be readily 35 detached from the flange —b— when it is desired to remove the cutting-disk from the casing.

When the machine is required to cut certain kinds of substances, it has been found that it is rendered more 40 efficient by providing an additional cutting-disk —D¹— illustrated in Figs. 5 and 6 of the drawings. In this instance, the rotary cutter —G— is placed between the disks —D—D¹—, with the disk —D¹— disposed at the outer face of the said rotary cutter. In this modified 45 construction, the inner cutting-disk —D— is seated in the flange —b— of the casing —A— and locked therein in the manner hereinbefore described, and the outer cutting-disk —D¹— is provided at its edge with a lug —a¹— engaging an aperture or socket —b— in the flange to 50 lock the said disk against rotation, which latter disk is provided with a series of discharge-apertures —c¹—c¹— having cutting-edges and which are smaller than the apertures of the inner disk —D—. The said disk —D¹— is provided with a central annular opening 55 —d¹— through which the square portion of the bolt —H— freely passes, and it is preferably formed on its outer face with a hub —e¹—. In this case the hereinbefore mentioned tapered recess —p— is formed in the hub —e¹— in which recess the tapered head —o¹— of

the bolt is seated. It is obvious that in this modified 60 construction, it is necessary to provide the rotary cutter —G— with two cutting portions to coöperate with the respective disks —D—D¹—. We therefore prefer to employ the style of cutter shown in Figs. 7 and 8 of the drawings, which consists of a plain annular plate 65 formed with a plurality of knives or blades —n—n— beveled alternately at opposite sides and disposed in contact with said disks. However, this cutter may be otherwise formed to produce the two cutting portions. The aforesaid spring-clip —s— in this modified con- 70 struction is applied to the flange —b— of the casing in the manner aforesaid and engages the outer face of the disk —D¹—. This arrangement of the spring-clip serves to retain the three cutters in the casing when it is desired to remove the bolt and feed-screw therefrom 75 for any purpose. It will be understood that the interposed rotary cutter is locked to the feed-screw by the engagement of the square portion of the bolt with the correspondingly shaped central opening in said cutter and bore of said feed-screw as aforesaid. By employ- 80 ing these two stationary disks —D—D¹— and interposed rotary cutter —G—, and provided the outer disk with discharge-apertures smaller than those of the inner disk, it is obvious that the substance forced through the cutters by the feed-screw and coöperating spiral 85 rib of the casing, will be primarily subjected to a coarse cutting by the rotary cutter and coacting inner disk —D—, and secondarily cut into fine particles by said rotary cutter and coacting outer disk —D¹—, thus rendering the machine more efficient for certain kinds 90 of substances.

What we claim as our invention is:—

A food-cutter comprising a cylindrical casing provided with a hopper and having both of its ends open, a stationary disk disposed in the forward end of the casing and 95 adapted to be removed therethrough, and provided with a central annular opening and with a series of discharge-openings having cutting-edges, a feed-screw formed at its rear end with a collar journaled in the corresponding opening of the case and formed on its forward end with a 100 hub journaled in the central opening of the cutting-disk and terminating thereat, said feed-screw being provided on its rear with an axially projecting stud formed tapering and angular in cross-section and also provided with an axial bore extending through the stud and hub, the por- 105 tion of the bore at said hub formed angular in cross-section, a rotary cutter disposed in contact with the outer face of the cutting-disk and independent of said hub and provided with a central opening angular in cross-section and a tapered recess surrounding the opening, a bolt extend- 110 ing through the bore and through the opening of the rotary cutter and formed with a tapered head seated in said recess, said bolt having a portion thereof formed angular in cross-section to lock the rotary cutter to the feed-screw, a handle on the tapered stud of the feed-screw, and a nut 115 applied to the rear end of the bolt and bearing against the handle and serving to hold the rotary cutter and feed-screw adjustably in operative relation with the cutting-disk as set forth and shown.

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