

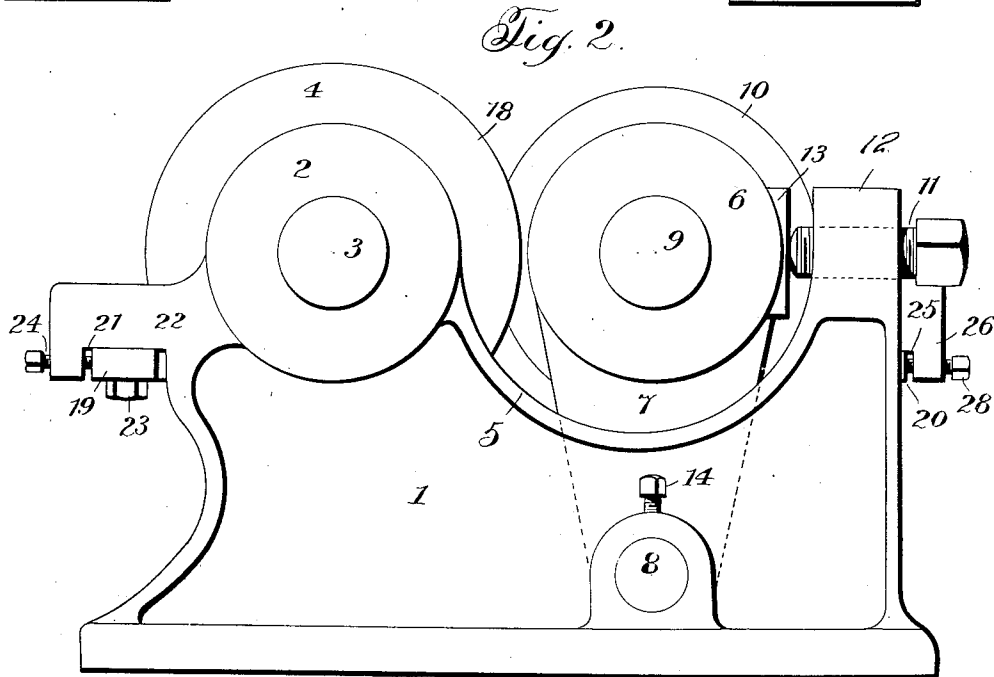
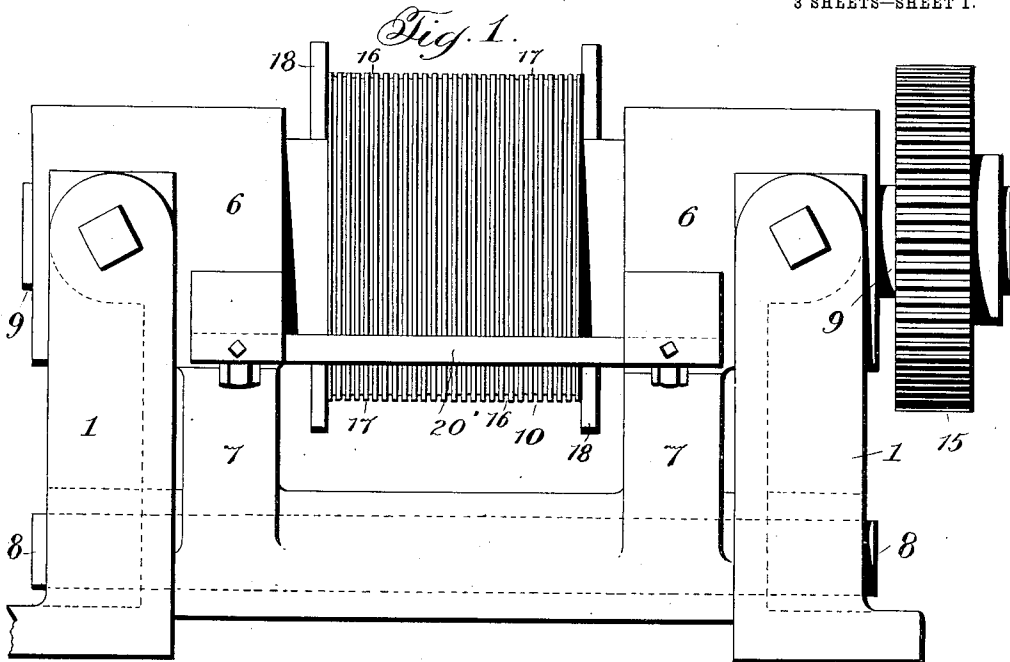
No. 831,909.

PATENTED SEPT. 25, 1906.

R. E. VALENTINE.
MACHINE FOR PREPARATION OF CEREALS.

APPLICATION FILED JUNE 28, 1905.

3 SHEETS—SHEET 1.



Witnesses:
James Hutchinson.
J. R. Pitts

Inventor:
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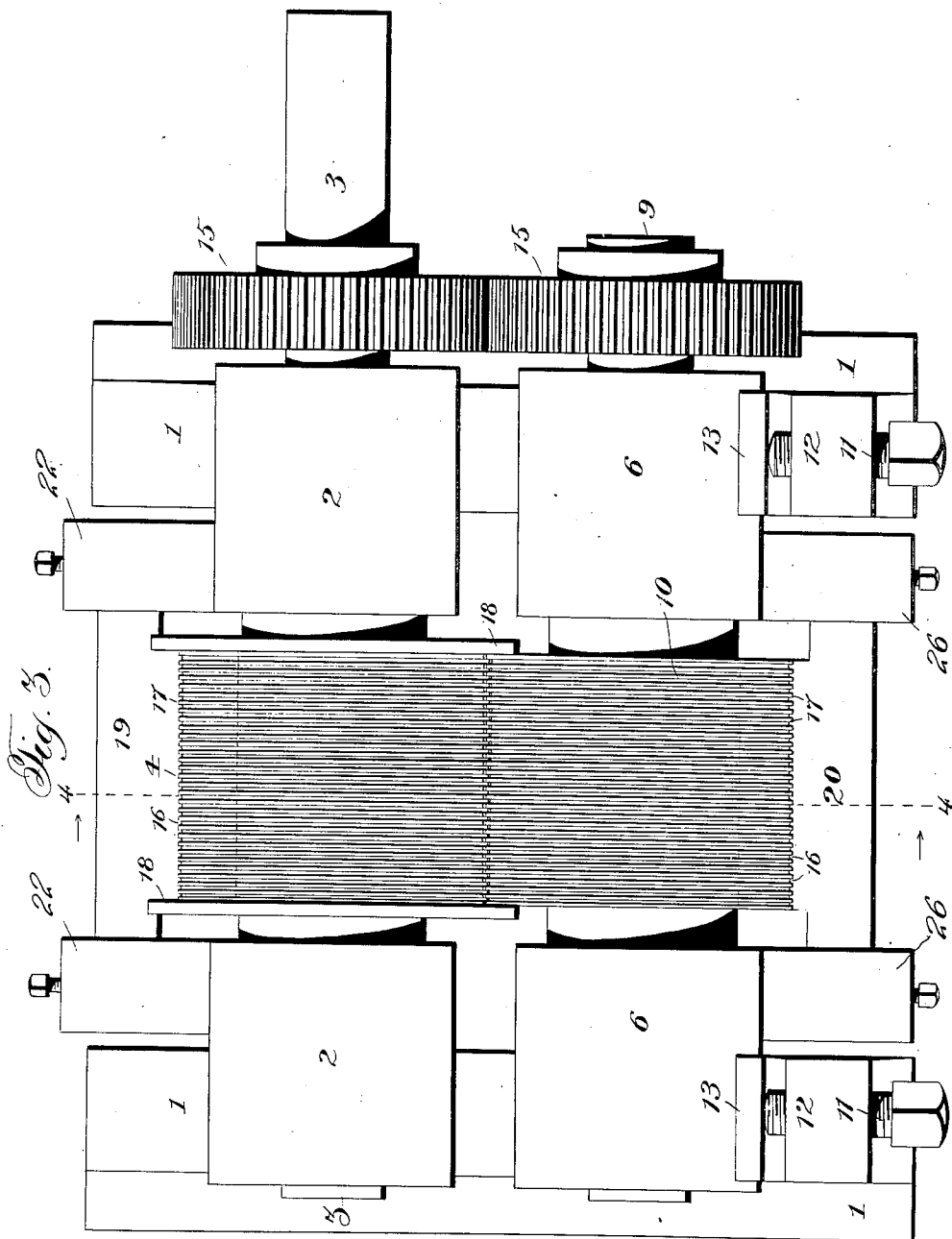
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3 SHEETS--SHEET 2.



Witnesses:
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3 SHEETS—SHEET 3.

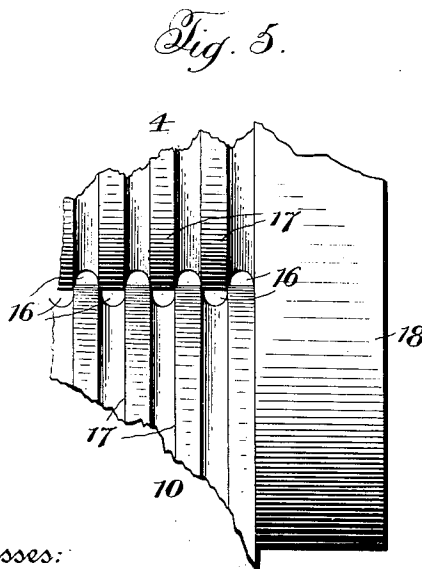
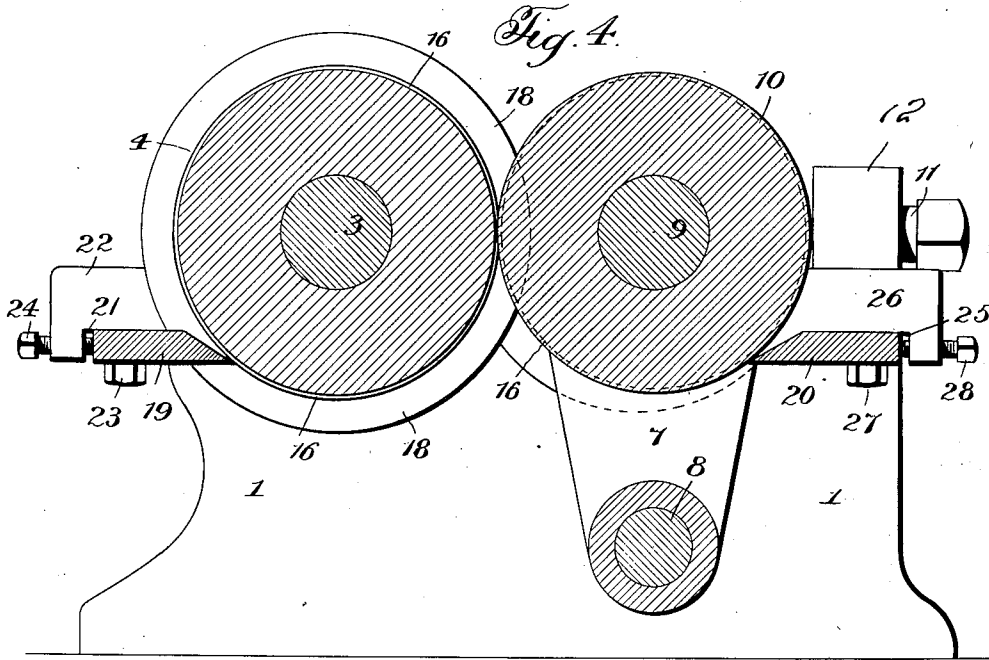
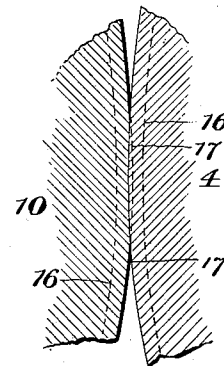


Fig. 6.



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UNITED STATES PATENT OFFICE.

RALPH E. VALENTINE, OF WORCESTER, MASSACHUSETTS.

MACHINE FOR PREPARATION OF CEREALS.

No. 831,908.

Specification of Letters Patent.

Patented Sept. 25, 1906.

Application filed June 28, 1905. Serial No. 267,392.

To all whom it may concern:

Be it known that I, RALPH E. VALENTINE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Machines for the Preparation of Cereals; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in machines for the preparation of cereals, and is more especially related to machines of that type designed for shredding the cereals.

The main and primary object of the present invention is to provide a machine of the character referred to the construction of which shall be much more effectual in reducing the cereals to a shredded state than the machines now commonly employed, one whereby the capacity of the machine shall be increased, and one wherein the shredding-rolls may be quickly and easily adjusted in their operative relation to compensate for wear, and to also regulate the character of the output of the machine.

The invention further contemplates the provision of a novel form of shredding-rolls designed to effect a saving in the cereals operated upon, thus enabling the machine to be used with the highest degree of economy and with but a minimum loss of the cereals.

Having these general objects in view and others, which will appear as the nature of the improvements is better understood, the invention consists, substantially, in the novel construction, combination, and arrangement of parts, as will be hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings, Figure 1 is an end elevation of a machine constructed in accordance with and embodying the herein-described invention. Fig. 2 is a side elevation thereof. Fig. 3 is a top plan view of the machine. Fig. 4 is a longitudinal sectional view on the line 4 4, Fig. 3. Fig. 5 is a fragmentary plan view, on an enlarged scale, of the shredding-rolls. Fig. 6 is a transverse sectional view of one of said rolls.

Referring in detail to the drawings, the numeral 1 designates the supporting-standards of the herein-described machine, which standards may be arranged upon any suitable sup-

porting-base to give solidity to the machine, and said standards may also be formed of any suitable material adapted for the purpose. Adjacent one end of each of the standards 1 is a bearing 2, in which is journaled a shaft 3, and said shaft carries a roll 4 for acting upon the cereal to be treated. By reason of the bearings 2 being formed as a part of the standards 1 it will be seen that the roll 4 is stationary and immovable except by rotation in relation to said standards. The ends of the standards 1 opposite to the bearings 2 are recessed, as at 5, and arranged in said recesses is a pair of bearings 6, which bearings are formed upon a substantially U-shaped support 7, the lower end of which receives a fixed shaft 8, arranged in the lower portions of the standards 1, and upon which shaft the support 7 is adapted to swing, and thereby enable the bearings 6 to approach or recede from the bearings 2. It will also be seen that the bearings 6 are not connected to the standards 1 except through the medium of the shaft 8, and hence said bearings are freely movable for a purpose to be presently stated.

Mounted in the bearings 6 is a shaft 9, which shaft carries a roll 10, which coöperates with the roll 4 for reducing the cereal, and it will therefore be seen that the roll 10 lies in parallelism with the roll 4 and that the edges of said rolls will contact for effectually reducing the cereals fed thereto. The degree of contact of the roll 10 with the roll 4 may be varied in accordance with the character of the cereal operated upon and also in accordance with the character of the output of the machine. To vary the degree of contact, the roll 10 is swung toward or away from the roll 4, and for effecting this adjustment of the roll 10 a pair of adjusting-screws 11 is arranged at the end of the machine contiguous to the bearings 6, said screws being mounted in threaded bosses 12 and having their inner ends impinging against contact-faces 13, formed upon the outer sides of the bearings 6. Upon proper rotation of the screws 11 the same will force the bearings 6 toward the bearings 2, thus bringing the contiguous faces of the rolls 10 and 4 into closer relationship with each other, and by reversely rotating the screws 11 the space between said rolls may be increased. For locking the shaft 8 in fixed position within the standards 1 a set-screw 14 or its equivalent may be employed.

The shaft 3 of the roll 4 is preferably elongated to provide for the application of power

for driving the machine, and mounted upon said shaft and the shaft of the roll 10 is a pair of intermeshing gears 15, whereby motion is communicated from the shaft 3 to the shaft 9 and the rolls 4 and 10 rotated in opposite directions. It will of course be understood that the direction of rotation of the rolls is such that the cereals fed upon the top thereof and opposite to the meeting edges of the rolls will be drawn inwardly between the latter for action thereon by the meeting faces of the rolls.

As before premised, it is one of the objects of the present invention to provide a novel form of shredding-rolls, whereby it is possible to effect saving in the cereals operated upon, and thus enable the machine to be used with the highest degree of economy and with but a minimum loss of the cereals. Referring, therefore, to Figs. 5 and 6, the construction of the shredding-rolls will be very clearly seen, and it will be noted that each of these rolls is provided with a series of circumferential grooves 16 and that between the grooves of the respective rolls a series of plain surfaces or projecting ribs 17 is formed. The ribs 17 alternate with the grooves 16; but the relation of the respective rolls to each other is such that the ribs 17 of each fit within the grooves 16 of the other. It will also be noted that the bottoms of the grooves are shown as substantially semicircular. This is but a preferred form, however, and any configuration desired may be given to the bottoms of the grooves; but it is requisite that the extreme outer edges of the sides of the grooves shall be perfectly straight and at right angles to the axes of the rolls for a slight distance below the face of the projecting ribs 17 and that the width of the grooves must always equal the width of the projecting ribs or be slightly greater than such width. The purpose of this construction is to enable the projecting ribs 17 to enter to a slight extent the grooves 16, whereby the shredding is effected by a shearing or cutting action rather than by crushing or mashing. The interfitting of the ribs of the respective rolls doubles the capacity of the rolls and also decreases the power required for operating the same.

In order to prevent loss of the cereals, one of the rolls, preferably the roll 4, is provided at each of its ends with an annular flange 18, the diameter of said flanges being greater than the diameter of the roll, and consequently when the rolls 4 and 10 are in operative relation the latter roll fits between the flanges 18, which act as guides for the rolls and effectually prevent the diverting of the cereals at the ends of the rolls. To strip cereal from the faces of the rolls after the same has passed between the latter, a pair of scrapers 19 and 20 is employed. The scraper 19 is arranged in recesses 21, formed at the under side of outwardly-projecting lugs 22, which lugs are formed upon the ends of the

standards 1 adjacent to the bearings 2, the scraper 19 being held in position through the medium of bolts 23 or their equivalent, which bolts have a slotted connection with the scraper 19, and in order to adjust the position of the latter to vary the position of the teeth thereof in relation to the grooves of the roll 4 a pair of adjusting-screws 24 is employed, said screws being threaded in the free ends of the lugs 22 and bearing against the outer edge of the scraper 19. The scraper 20 is arranged in notches 25, formed at the under side of outwardly-projecting lugs 26, which lugs are carried by the bearings 6, said scraper being held in position within the notches 25 through the medium of bolts 27, having a slotted connection with the lugs 26, and by reason of the lugs 26 being carried by the bearings 6 it is obvious that the position of the scraper 20 in relation to the roll 10 will always remain the same, irrespective of the adjustment of said roll relative to the roll 4. To adjust the position of the scraper 20 in relation to the roll 10, adjusting-screws 28 are employed, said screws being threaded in the outer ends of the lugs 26 and impinging against the scraper 20. The adjustment of the scraper through the medium of these screws is obvious.

In the operation of the herein-described machine the cereal after being properly prepared by boiling, steaming, or soaking and brought to the proper constituency, which latter is determined by the results at the machine, is fed into the rolls through the medium of a tube or hopper or by any other suitable form of feeding device. The rolls 4 and 10, rotating toward each other, receive the cereals so fed, and by reason of their upper surfaces converging it is obvious that the cereal will pass in between the rolls. In the passage of the cereal the same is pressed into the grooves of the respective rolls, where it is formed into filaments, and in such form the cereal is delivered from the rolls. These filaments will be formed and delivered continuously, as the kernels of the grain will adhere to each other, and they are acted upon by the pressure due to the convergence of the roll-surfaces. The flanges 18 effectually act as guides for the rolls, so that there is no loss of cereal at the ends of the rolls. In the passage of the cereal through the rolls the ribs 17 shear or cut the same in contradistinction to crushing or mashing the cereal, and consequently but a minimum of power is required for operating the rolls. After leaving the rolls the product may be taken up by any suitable form of conveyer or deposited in suitable receptacles for the purpose. The roll 10 may be readily adjusted toward or away from the roll 4, thus decreasing or increasing the space in said rolls, which adjustment is effected by varying the position of the swinging support 7.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a machine for preparing cereals, a frame, a stationary roll mounted in said frame, a scraper carried by the frame and co-operating with the stationary roll to strip the cereal therefrom, a support pivoted in the frame, a roll journaled in said support and co-operating with the fixed roll, a scraper carried by said support and co-operating with the movable roll to strip the cereal therefrom, and means for adjusting the position of the movable roll relatively to the stationary roll.
2. In a machine for preparing cereals, a frame, a stationary roll mounted in said frame, a scraper carried by the frame and co-operating with the stationary roll to strip the cereal therefrom, a support pivoted in the frame, a roll journaled in said support and co-operating with the fixed roll, a scraper carried by said support and co-operating with the movable roll to strip the cereal therefrom, and screws carried by the frame for adjusting the position of the movable roll relatively to the stationary roll.
3. In a machine for preparing cereals, a frame, a roll mounted in stationary bearings in said frame, outwardly-projecting lugs carried by the frame, a scraper carried by said lugs and co-operating with said roll to strip the cereal therefrom, means for adjusting the scraper on said lugs relatively to said roll, a support pivoted in the frame, a roll journaled in said support and co-operating with the first-mentioned roll, outwardly-projecting lugs carried by said support, a scraper carried by said lugs and co-operating with the movable roll to strip the cereal therefrom, and means for adjusting the scraper on said lugs relatively to said movable roll.

4. In a machine for preparing cereals, a frame, a roll mounted in stationary bearings in said frame, outwardly-projecting lugs carried by the frame, a scraper carried by said lugs and co-operating with said roll to strip the cereal therefrom, screws carried by said lugs for adjusting the scraper thereon relatively to said roll, a support pivoted in the frame, a roll journaled in said support and co-operating with the first-mentioned roll, outwardly-projecting lugs carried by said support, a scraper carried by said lugs and co-operating with the movable roll to strip the cereal therefrom, and screws carried by said lugs for adjusting the scraper thereon relatively to said movable roll.

5. In a machine for preparing cereals, a frame, a roll mounted in stationary bearings in said frame, outwardly-projecting lugs carried by the frame, a scraper carried by said lugs and co-operating with said roll to strip the cereal therefrom, screws carried by said lugs for adjusting the scraper thereon relatively to said roll, a support pivoted in the frame, a roll journaled in said support and co-operating with the first-mentioned roll, outwardly-projecting lugs carried by said support, a scraper carried by said lugs and co-operating with the movable roll to strip the cereal therefrom, screws carried by said lugs for adjusting the scraper thereon relatively to said movable roll, and means for adjusting the position of the movable roll relatively to the stationary roll.

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

RALPH E. VALENTINE.

Witnesses:

HENRY E. COOPER,
FANNIE R. FITTON.