

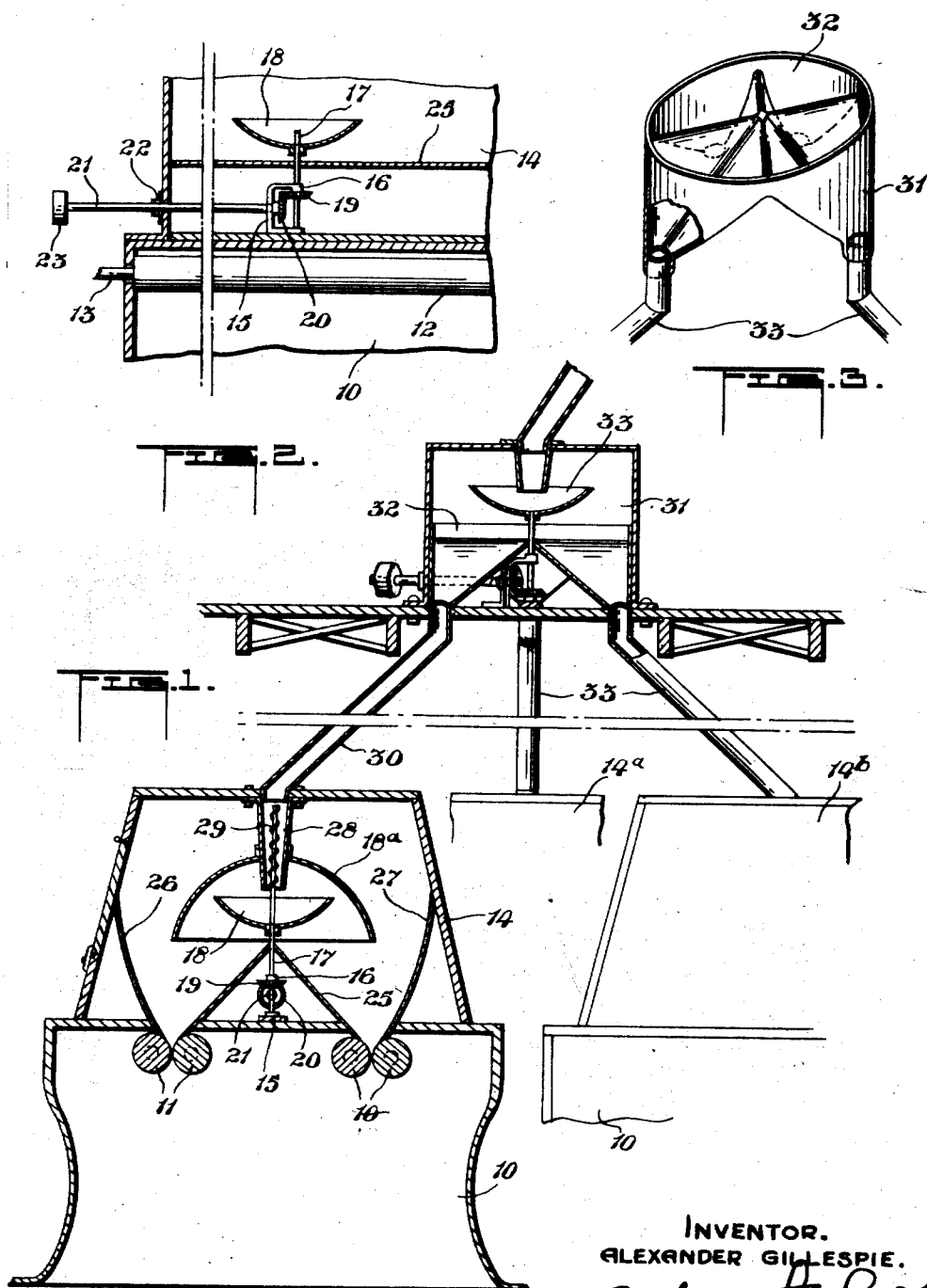
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CENTRIFUGAL FEEDING DEVICE

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CENTRIFUGAL FEEDING DEVICE.

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This invention relates to improvements in centrifugal feeding devices to feed flour mill stock to rollers.

The objects of the invention are to improve the feeding of flour mill stock to rollers by a simple and durably constructed mechanism hereinafter more fully described.

Further objects are to provide means for feeding all kinds of grain or grain products of whatever size, nature or condition in a perfect manner to grinding rollers for the conversion of all kinds of grain to finished products.

Another object of the invention is to provide means of this character adapted to divide a main stream of stock between two or more machines other than rollers.

With the foregoing and other objects in view, hereafter more fully described, the invention consists in the combination, construction and arrangement of parts as described in the present specification and claim and illustrated in the accompanying drawings which form part of the same.

Before proceeding further, without reference to the drawing, it would be well to mention that a double stand of grinding rollers, as understood in flour milling, consists of two separate pairs of rollers carried by the same frame and enclosed within the same housing and driven by the same belts. Usually these two pairs of rollers grind the same class of stock. The division of the stock is always made by means of a splitter valve enclosed attached to the top of a housing or forming part of a roller housing. The stock thus divided falls into separate hoppers just above each separate pair of rollers, each of these hoppers being supplied with a stock feeder of the small diameter feed roll type whereby the stock is fed from the hoppers to each pair of rollers. Such types of stock feeders must be provided with feed gates adapted to regulate the thickness of the stock and also to spread the stock the full length of the rollers.

Flour mill stocks are variable as to moisture content, volume, and degree of granulation, which always changes the position of the stock flowing through the spouts continually requiring the resetting of splitter valve and feed gates described above. The human element so necessary in adjusting and regulating the device obviously cannot be compared with mechanical regulation for exactness of division.

It will therefore be seen that manually there can be no proper division and regulation of stock thus fed to rollers, which contributes materially to the loss of capacity, lack of uniformity of grinding, higher ash content and therefore an inferior quality at a high productive cost.

Referring now to the drawings, in which like characters of reference indicate corresponding parts in each figure:

Figure 1 is a cross sectional elevation of my improved machine with stock feeder attached;

Figure 2 is a longitudinal sectional elevation taken through the centre of the machine;

Figure 3 is a perspective view of the distributing hopper.

Referring more particularly to the drawings, in which a preferred form of my invention is disclosed, 10 designates a cast iron frame adapted to carry two pairs of grinding rollers 11 and 12 of well known construction. The drive for these rollers is also well known in the art, the fast revolving roller of both pairs being driven by the one belt from one end and the slow revolving roller of both pairs being driven by another belt from opposite end of the frame as indicated at 13. The roller housing is indicated by the numeral 14 resting upon the frame 10 enclosing a centrifugal feeding device comprising a bridge tree 15 provided with a step bearing 16 in which revolves a short vertical shaft 17 to which is fastened a concave or plain disc 18 of suitable diameter above which is a deflecting hood 18^a. Secured to the vertical shaft 17 is a bevel drive gear 19 with which is adapted to mesh a gear 20 on a horizontal shaft 21 rotatably mounted in a suitable bearing as at 22 in the housing 14. This shaft 21 extends beyond the housing and is provided at its outer end with a step pulley 23 adapted to be belt driven from a step pulley mounted on one of the roller shafts.

It will be noted that the horizontal shaft 21 at its inner end is supported in the bridge tree 15 which also supports the vertical shaft 17 and forms a bearing for it.

For dividing the stock discharge from the concave feeder disc 18 into two equal parts, I provide a saddle board 25 which also deflects the stock so fed to each of the rollers 11 and 12. Outer deflecting boards are designated by the numerals 26 and 27 and are designed to conduct the stock discharged by

the member 18 to the respective pair of rollers. These deflecting boards may be circular and fluted or of other convenient formation. For feeding material to the disc I provide an adjustable spout 28 fastened to the top side of the housing 14 and designed to conduct the main stream of stock to the centre of the disc 18. Within this spout and mounted on the shaft 17 is a spiral member 29, the purpose of which is to agitate any accumulation in the spout 28 and cause it to feed out. For conducting the stock to the spout 28 I provide a pipe 30 leading from any suitable or convenient source of supply and, as in the present instance, from a distributor 31 where-
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In feeding a series of machines other than rollers from one main stream of stock and making a perfect division of same depending upon the division required and the perfect spacing of the circle between these divisions, I provide a stock distributing device 31 as illustrated in Figures 1 and 3. This comprises a divided hopper 32 with a disc member 33 similar in construction and operation to the disc 18 and communicating with a series of conduits 33, to feed the different machines, whereby each machine, for example 14, 14^a and 14^b, are fed equally.
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When the centrifugal feeding device is in position it should be in exact centre as between each pair of rollers and also midway of their length and elevated above the saddle board 25. To have perfect division of the stock the comb of the saddle board must be in the exact centre and parallel to the roller axis.
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The mode of operation is then as follows:—
 When the device is in action and stock is delivered to the centre of the disc 18, the centrifugal action distributes stock in a thin uniformly circular sheet out against the deflecting hood 18^a and the deflecting boards 26 and 27. The comb of the saddle board will make a perfect mechanical division of said stock and the deflecting hood and boards will conduct the stock so divided to the respective pairs of rollers to which they are inclined. Thus perfect division and feeding of stock to two pairs of rollers is accomplished in a most simple manner by one and the same device.
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By means of the step pulleys the speed of the concave disc can be regulated to feed stock perfectly the full length of all lengths
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of rollers, the diameter of the delivery circle being always equal to the length of rollers used. So when this stock feeding device is once adjusted it requires no further attention, because any change in quantity, granulation or moisture content of the stock cannot affect its circle of delivery.
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The area occupied by a stream of broken wheat flowing to the two pairs of rollers each 30 inches long (a total of 60 inches) through a spout having a pitch of 70 degrees is about two square inches, and as this feeding device discharges the stock as received there can be no accumulation, hence said area of two square inches of stock is distributed a length of 60 inches. It must be evident then that if an area of two square inches of stock is spread along 60 inches it will be thinned out so there will be no over-lapping of stock in grinding, a feature that is practically impossible with any other type of feeder. Hence the product is greatly improved.
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Although the device is illustrated as feeding two pairs of rollers, one pair may be fed just as effectively.
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As many changes could be made in the above construction and many apparently widely different embodiments of my invention, within the scope of the claim, constructed without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specification and drawings shall be interpreted as illustrative and not in a limiting sense.
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What I claim as my invention is:
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A centrifugal feeding device for feeding flour mill stock, comprising a housing provided with an inwardly extending cone-shaped feed spout in the top and discharge openings in the bottom, a rotatably mounted vertical shaft in the housing, a spirally wound portion integral with said shaft and extending into the cone-shaped feed spout, a feeder disc rigidly mounted on the shaft beneath the spout, a deflecting hood above the disc, a substantially triangular saddle board beneath the disc, deflector plates co-operating with the sides of the housing and with the saddle board to direct the grain to the discharge openings, mechanism for driving the vertical shaft, and means for delivering stock to the feed spout.
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In witness whereof I have hereunto set my hand.

ALEXANDER GILLESPIE.