

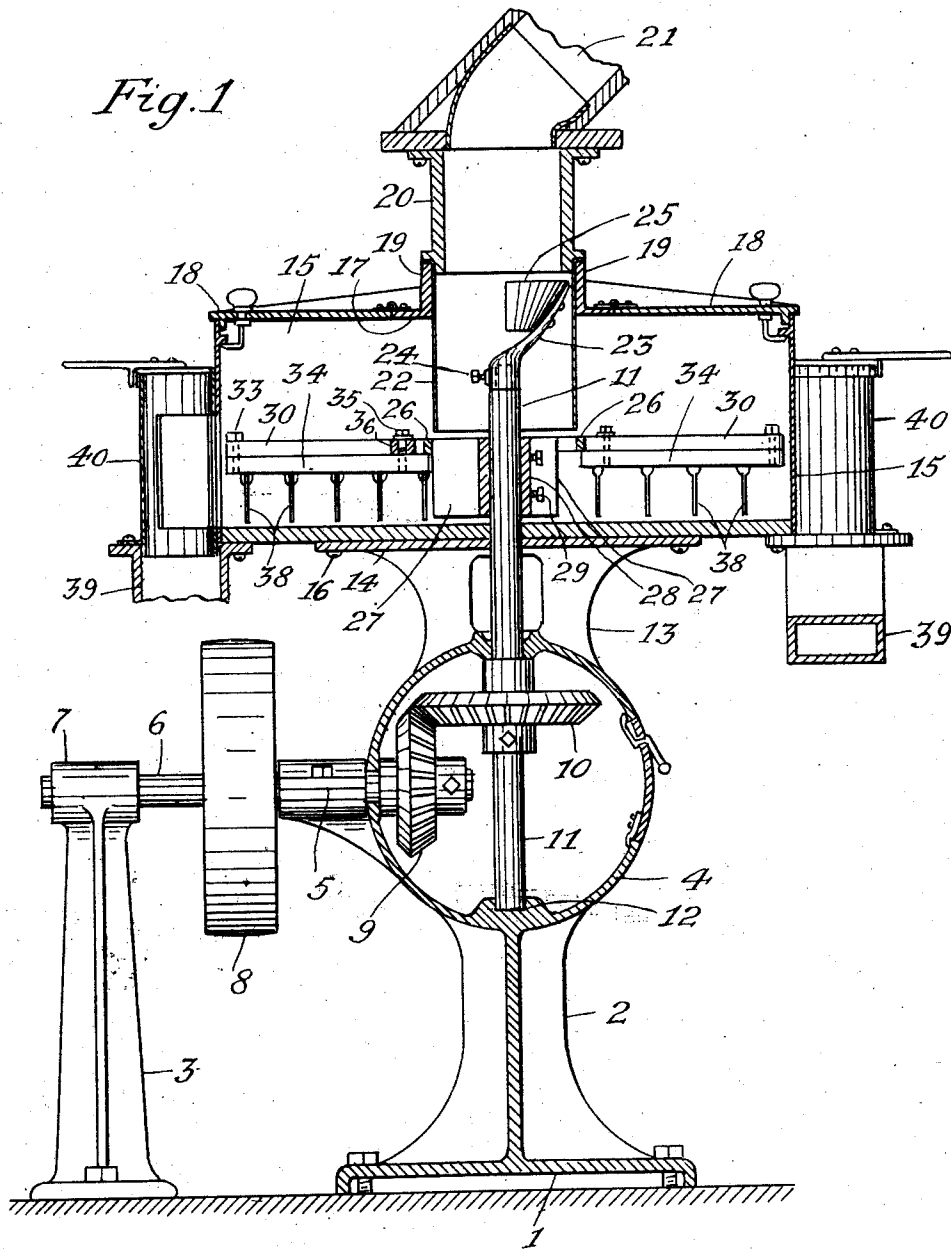
No. 882,926.

PATENTED MAR. 24, 1908.

F. C. BOYNTON.
MILL STOCK MIXER AND DISTRIBUTER.

APPLICATION FILED NOV. 25, 1907.

2 SHEETS—SHEET 1.



Witnesses:
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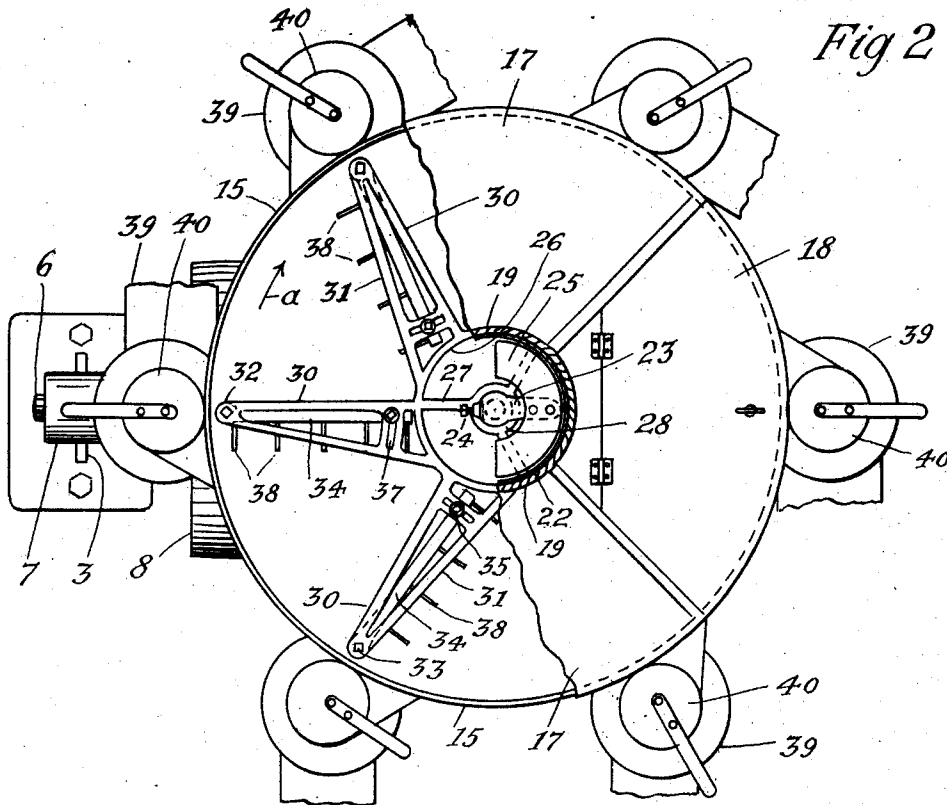


Fig 2

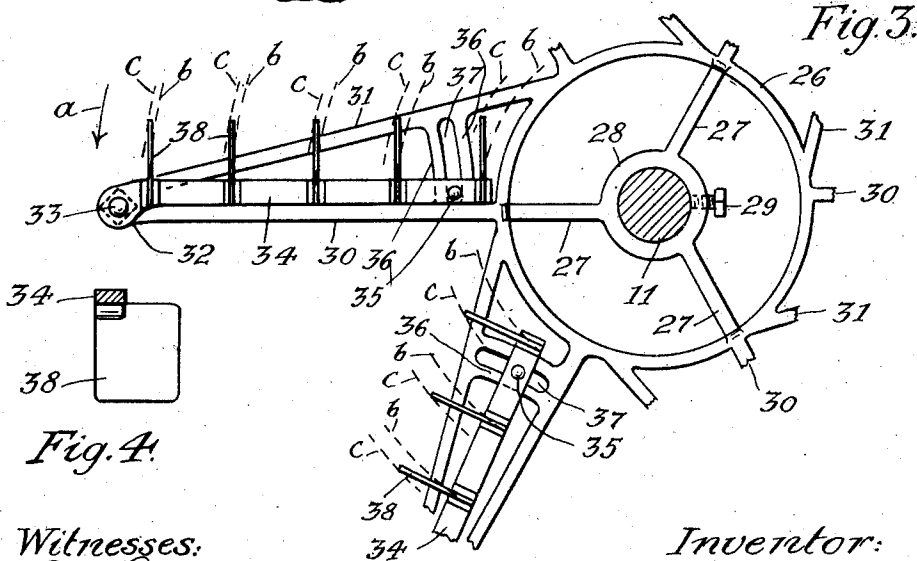


Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

FREDERICK C. BOYNTON, OF MINNEAPOLIS, MINNESOTA.

MILL-STOCK MIXER AND DISTRIBUTER.

No. 882,926.

Specification of Letters Patent.

Patented March 24, 1908.

Application filed November 25, 1907. Serial No. 403,595.

To all whom it may concern:

Be it known that I, FREDERICK C. BOYNTON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Mill-Stock Mixers and Distributers, of which the following is a specification.

My invention relates to devices for use in flour-mills for mixing and distributing or feeding stock to the various machines.

The object of my improvements is to produce an apparatus that is capable of thoroughly mixing material or stock of different kinds and discharging the mixture uniformly and in desired quantities.

My improved apparatus comprises a cylindrical casing containing series of revolving mixers or flights in radial arrangement, with means for adjusting the positions of the flights, and means for introducing material to the casing and for discharging it in regulated quantities.

Such improvements are illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical section of my improved mixing and feeding machine; Fig. 2 is a plan view, partly in section, of the machine; Fig. 3 is an enlarged view from the under side of the flight-carrier; and Fig. 4 an enlarged detail of one of the flights.

In the drawings 1 designates the base and 2 the upright body of a standard for supporting the machine; and 3 an independent standard for supporting an end of the driving shaft. On the body of the standard 2 is formed a globular shell 4 at one side of which is provided a journal-box 5 for the driving shaft 6 the outer portion of which is mounted in a journal-box 7 on the standard 3, and the shaft is driven by a belt on the pulley 8. The shaft 6 extends within the hollow body 4 and carries a bevel-gear 9 that engages a similar gear 10 on a spindle 11 that is seated in a step 12 in the base of the body 4 and extends upward into the machine proper for operating it. From the top of the body 4 extend webs 13 that support a plate 14 upon which the machine casing is seated. To the plate 14 is secured a short cylindrical casing 15 by means of bolts 16. The cover 17 of the case is provided with openings and hinged lids 18 to provide access to the interior. Around a central opening in the top of the cover is a circular upward flange 19,

on which is seated a feed-spout 20, and on the latter a supply spout 21 is arranged for introducing material to the machine. Within the flange 19 is secured a tube or short cylinder 22, that extends therefrom downward into the interior of the casing 15. The spindle 11 projects into the lower portion of the feed-tube and carries on its end an inclined arm 23 that is attached to the spindle by a set-screw 24; and on the upper end of the arm is attached an inclined semicircular plate 25 for directing material from the supply spout toward the center of the casing 15. Obviously the deflector plate 25 will be revolved by the rotation of the spindle.

Immediately beneath the feed-tube 22 is arranged a ring 26 that is formed on or attached to the upper margins of a plurality of vertical plates or wings 27 which radiate from a hub or sleeve 28, and the latter is secured to the spindle 11 by set-screws 29. The wings 27 extend from a plane near the base of the feed-tube to a plane close to the bottom of the casing 15 and serve as carriers or sweepers for moving the stock away from the center. From the ring 26 extend a plurality of spider arms, six being employed in the machine illustrated, but any desired number may be employed. These arms are by preference cast integrally with the ring, and consist of main radial arms 30 and tangential arms or braces 31, the two portions being united at their ends near the casing walls. To the under side of a head 32 formed at the point of union of the two arms is connected by a pivot 33 the outer end of a flight-carrier bar 34; and the inner portion of the bar is supported by means of an adjusting-screw 35 the head of which is above the bar and rests on a pair of webs 36 connecting the arm members and providing also a guide way 37 for the shank of the screw 35. By this arrangement the bar 34 can be adjusted by turning it on the pivot 33 and its inner end retained at the point desired by tightening the screw 35.

The flights 38 preferably are flat rectangular plates extending at right angles to the bar 34 and extending downwardly therefrom to a plane close to the bottom of the casing; and preferably the bar and flights are formed of a single casting. The number and arrangement of the flights may be as desired, but I prefer to employ an unequal number for alternate bars (five being shown on one and

four on the adjoining bars) which avoids the trailing of one set of flights by the next and effects a more thorough mixing of the stock.

By the suggested arrangement of the
5 flights the direction of their movement in operation will be that indicated by the arrows *a*; and they will travel in the circular paths indicated by the broken lines *b* and *c*. The lines *b* indicate the courses of travel of
10 the front and the lines *c* the rear edges of the flights. To increase the centrifugal effect of the flights on the stock it is only necessary to adjust the carrying bars in the manner shown in the lower portions of Figs. 2 and 3.
15 While the centrifugal effect, or tendency to work the stock away from the center, is greater with the flights nearest the center their movement is proportionately slower than that of the more remote flights, and as
20 a result the material is moved evenly and regularly outward while it is being mixed and none is thrown with force against the casing.

In the walls of the casing 15 are openings at intervals and spouts 39 are provided for
25 conducting the material to other machines for further treatment. Regulators 40 for controlling the feed from the machine through these openings to their spouts are provided.

30 The regulator shown is the same as that described in my pending application No. 387,592, filed August 8, 1907, and consists of a cylindrical body 41, which may be the upper portion of the spout 39, and having
35 a tangential flange 42. The body 41 and flange 42 are preferably soldered or otherwise attached to a curved plate 43 which may be secured to the case 15 at the sides of the openings 44 therein by screws or rivets or in
40 any desired way. A cover 45 at the top and a base at the bottom of the flange 42 inclose the space between the flange and the plate 43. An opening in the cylinder 41 is provided for the passage of material from the case opening
45 44 to the discharge spout 39. Within the body 41 is a short concentric cylinder 46 which has an opening in its side for the passage of material to the spout. The cylinder 41 is open at the bottom and closed at the
50 top by a cover 47 the rim of which seats on the upper edge of the body 41. The inner cylinder or tube 46 is adapted to be turned within the outer tube, and a handle 48 is provided on the cover 47 for that purpose, to
55 adjust the location of the tube opening with reference to the opening 44 for regulating the discharge of stock. It is desirable to have the revoluble tube fit close enough within the fixed tube to be held in positions of adjustment by frictional contact, without the employment of a holding device. Such feed-regulator furnishes convenient and efficient means for regulating, or cutting off, the feed
60 of stock from the machine to a discharge
65 spout.

Having described my invention, what I claim and desire to secure by Letters-Patent is—

1. A mill stock mixer and distributor, comprising a casing forming a circular chamber
70 having a plurality of outlets at its sides, means for introducing the stock about the center thereof, a revolving spider therein, flight-carriers adjustably connected to the spider arms, and flights connected to said
75 carriers and arranged to work the material centrifugally, substantially as set forth.

2. A mill stock mixer and distributor, comprising a casing forming a circular chamber
80 having a plurality of outlets at its sides, means for introducing the stock about the center thereof, a revolving spider therein, flight-carriers pivotally and adjustably connected to the spider arms, flights connected to said
85 carriers and arranged to work the material centrifugally, discharge spouts connected with said outlets, and valves therefor for regulating the discharge of stock, substantially as set forth.

3. A mill stock mixer and distributor, comprising a casing forming a circular chamber
90 having a plurality of outlets at its sides, means for introducing the stock about the center thereof, a revolving spider therein, flight-carriers adjustably connected to the spider arms, flights connected to said carriers
95 and arranged to work the material centrifugally, and controllable valves for regulating the discharge of stock, substantially as set forth.

4. A mill stock mixer and distributor, comprising a casing forming a circular chamber
100 having a plurality of outlets at its sides, means for introducing the stock about the center thereof, revolving sweepers for working the stock away from the center, a revolving spider therein, flight-carriers adjustably
105 connected to the spider arms, and flights connected to said carriers and arranged to work the material centrifugally, substantially as set forth.

5. A mill stock mixer and distributor, comprising a casing forming a circular chamber
110 having a plurality of outlets at its sides, means for introducing the stock about the center thereof, a revolving spider therein having radial arms, adjustable flight-carriers pivoted to the outer ends of said arms, and
115 flights arranged on planes at right angles to their carriers, substantially as set forth.

6. A mill stock mixer and distributor, comprising a casing forming a circular chamber
120 having a plurality of outlets at its sides, means for introducing the stock about the center thereof, a revolving spider therein composed of a ring provided with radial arms
125 and braces therefor, adjustable flight-carriers pivoted to the outer ends of said arms, and flights arranged on planes at right angles to their carriers, substantially as set forth.

7. A mill stock mixer and distributor, comprising a casing forming a circular chamber having a plurality of outlets at its sides, means for introducing the stock about the center thereof, a revolving spider therein composed of a ring provided with radial arms and braces therefor, sweepers revolved with said ring for working the stock away from the center, adjustable flight-carriers pivoted to the outer ends of said arms, and flights arranged on planes at right angles to their carriers, substantially as set forth.

8. In a mill stock mixer and distributor, a spider comprising a hub having wings extending radially therefrom and adapted to serve as sweepers, a ring attached to the upper margins thereof, arms extending radially from the ring, flight-carriers adjustably connected to the arms, and flights arranged on planes at right angles to their carriers, substantially as set forth.

9. In a mill stock mixer and distributor, a spider comprising a hub having wings adapted to serve as sweepers, a ring attached to the upper margins thereof, arms extending

radially from the ring, braces connecting the ring and arms, adjustable flight-carriers pivoted to outer portions of the arms, and flights arranged on planes at right angles to their carriers, substantially as set forth.

10. In a mill stock mixer and distributor, a spider comprising a hub having wings adapted to serve as sweepers, a ring attached to the upper margins thereof, arms extending radially from the ring, braces connecting the ring and arms, adjustable flight-carriers pivoted to outer portions of the arms, flights arranged on planes at right angles to their carriers, and means for adjusting and securing the inner ends of the flight-carriers, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses this 18th day of November, 1907.

FREDERICK C. BOYNTON.

Witnesses:

P. H. GUNCKEL,
H. A. BOWMAN.