April 24, 1928. 1,667,648

R. T. ANDERSON

PRESS

Filed June 28, 1926

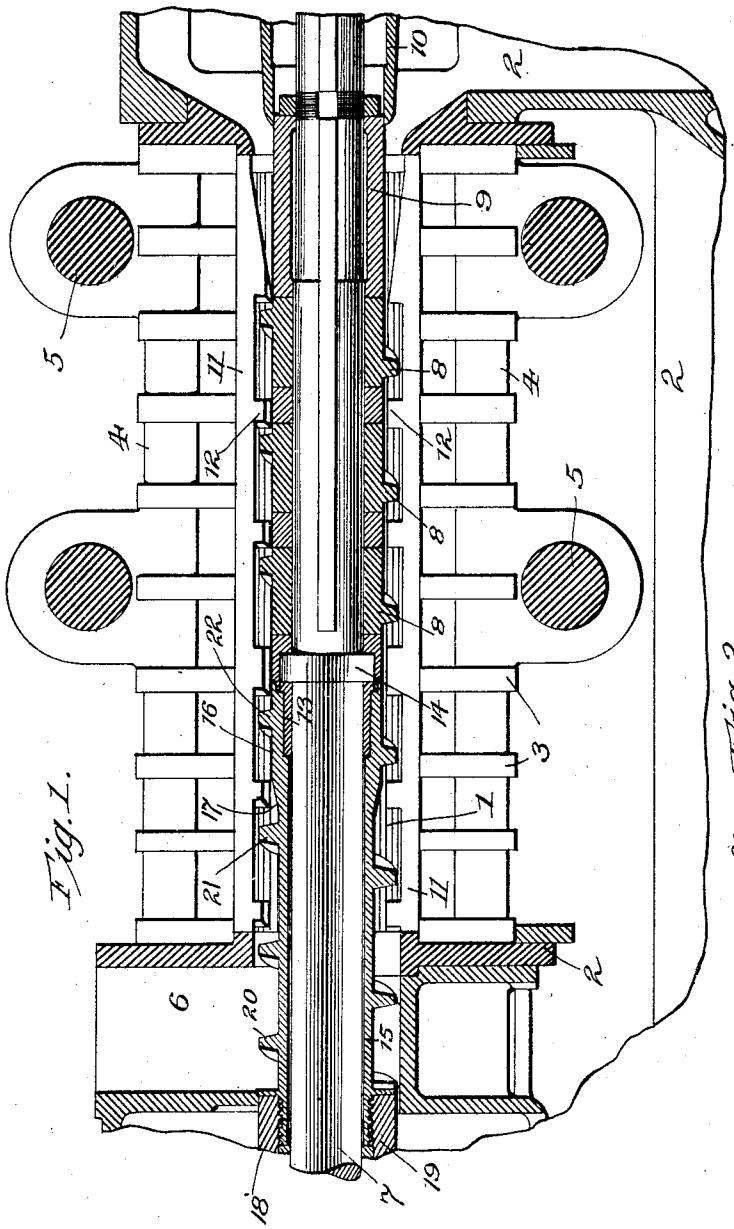


Fig. 1.

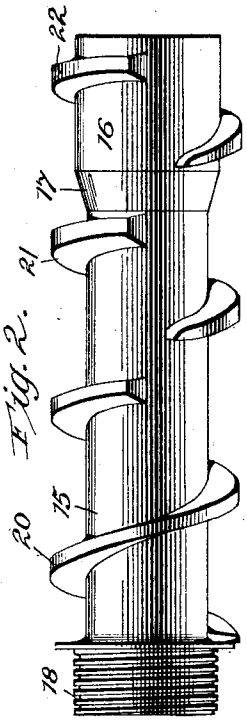


Fig. 2.

INVENTOR
Ramond T. Anderson
BY Dodge and Dodge
ATTORNEYS

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UNITED STATES PATENT OFFICE.

RAYMOND T. ANDERSON, OF CLEVELAND, OHIO, ASSIGNOR TO THE V. D. ANDERSON COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

PRESS.

Application filed June 28, 1926. Serial No. 119,184.

This invention pertains to improvements in presses and relates more particularly to that type such as shown and described in Letters Patent to Anderson No. 731,737 dated June 23, 1903.

As will be seen upon reference to that patent the press, stated generally, may be said to comprise a shell composed of a series of bars arranged in circular series with the inner edges slightly spaced apart and held in such relation by a series of transversely arranged sustaining members. Extending through the shell is a shaft having mounted thereon and for rotation therewith a series of separated pressing worms, the shaft at the intake end being surrounded by a quill or sleeve having a plurality of worms formed thereon, for the purpose of feeding the material inwardly of the press and likewise imparting an initial pressure thereto. Means is provided as in the present case, to drive the quill at a higher speed than that imparted to the shaft.

While the press, as above outlined, has been highly efficient in extended use, the last or initial compression flight or worm has been found to wear away faster than the others, including the main compression worm, necessitating replacement of the quill as a whole.

Added to the labor cost of withdrawal and replacement the substitution of a new quill is quite an item of cost.

The present case has for its object the production of a quill in which the wear is substantially equalized throughout. Incidentally the new construction and formation produces a more effective feeding of the materials and further, does away with the formation of an oil mass at the intake end of the press, a condition which has heretofore existed when certain materials were undergoing treatment.

In the annexed drawings,

Figure 1 is a longitudinal vertical sectional view of a press of the type above outlined illustrating the new quill formation, and

Figure 2 is a side elevation of the quill.

In said drawings, 1 denotes the shell which may be of any approved formation, supported by a suitable frame 2, a portion only of which is shown. The shell elements are held in position by transverse members or heavy plates 3, arranged to either side of the elements and these in turn are secured in position by longitudinally arranged pressure bars 4, the bars upon opposite sides of the press being drawn together by heavy bolts 5, shown in section in Figure 1.

Located at the head or intake end of the press is a feed hopper 6 and extending therethrough and through the shell is a shaft 7 driven by any suitable mechanism (not shown). Said shaft carries a series of separated worms designated by 8 which worms, as in the patent above referred to, tend to compress the material and advance it toward the discharge end of the press where the compressed material passes over a sleeve 9 and is forced against a cone-shaped member 10 which tends to disrupt the cake which is forced outwardly by the worms.

Bars 11 carrying knives 12 which extend inwardly between the worms, tend to prevent rotation of the material within the shell and thus permit the worms to build up pressure against the material passing through the press.

The quill which is located at the intake end of the machine is shown in detail in Figure 2. It is of tubular form and is held out of contact with the shaft by a sleeve 13, of bronze or the like, located adjacent a collar 14 formed upon the shaft 7.

The quill may be said to comprise an infeed section 15 of a diameter somewhat smaller than the opposite end denoted by 16 which sections or portions have arranged between them an inclined section 17. The inner end of the quill is, as will be seen upon reference to Figure 1, counterbored to receive the sleeve 13. The opposite end of the quill is provided with a threaded section 18 which is threaded into a driving element 19 which receives its motion from any suitable mechanism (not shown).

In practice the quill and shaft will be driven at different speeds, the speed of the quill being substantially 66% faster than that of the shaft 7 and consequently faster than that of the pressing worms carried by the shaft.

The quill, at its intake end, is provided with a worm or flight 20 which underlies the hopper 6 and extends at its inner end slightly beyond the hopper toward the intake end of the shell. A compressing worm or flight 21 is arranged next to the feeding flight 20 and stops short of the inclined face

17 of the quill. A pressing worm 22 is formed upon the enlarged section 16 and tends to force the material forwardly through the shell as well as subjecting it to compression.

In presses of the type herein described and as heretofore used, the inclined face on the quill, where such face was used, was located intermediate the first pressing worm, carried by the shaft, and the end worm of the quill, or, in another form, this incline was located well forward or immediately adjacent to the entrance from the hopper to the press. It has been found in actual practice that by locating the inclined face 17 in the position shown in the present case, that is to say, between the pressing worm 22 and the pressing worm 21 carried by the quill, that the quill and the worms carried thereby wear away evenly. Furthermore, it has been found that while the old type of worm, first described, takes the material into the barrel or shell of the press equally as well as the new type, or that herein set forth, does, there has been an excessive wear on its end due to the reduction in area, at the point noted, while the second old form, above referred to, does not feed the materials into the barrel readily due to reduction of area at the entrance of the barrel or shell. This latter form of feeding worm or quill moreover, will not work on some materials at all for this reason. It has been found with the new form that non-fibrous materials such as roasted peanuts, cocoa beans, etc. will be fed into the expeller or press better than with either of the old forms; the first old form tending to break the material up into an oily pulp, whereas the second old form, while it may not produce this pulpy mass, does not feed the material as efficiently to the press as does the form herein set forth and claimed.

As above noted, the present form of quill shows an even wear throughout whereas with the older forms the end or inner flight was found to wear away even before the pressing worms are worn out. With the older form wherein the incline is just in advance of the feeding flight and adjacent the hopper, difficulty is experienced in forcing the material up such inclined face. With the other older construction the incline is located at the inner end of the quill and the quill diameter is smaller than that of the pressing worms—hence the innermost flight of the quill has considerably more work imposed upon it owing to the fact that said flight has to press the material into a smaller area and is also operating under high speed. As will be seen upon reference to Figure 1, the external diameter of the section 16 is substantially the same as that of the hubs or elements from which the pressing worms 8 extend outwardly.

Having thus described my invention what I claim is:

1. In a press of the character specified, the combination of a shell; a feed hopper located at one end thereof; a shaft extending through the hopper and the shell; a series of spaced pressing worms mounted upon the shaft adjacent the discharge end of the press and rotatable therewith; and a quill encircling the shaft adjacent the intake end of the press, said quill having a feed flight formed upon its outer face adjacent the hopper, then a combined feeding and pressing flight, and, at its inner end, which latter is enlarged in diameter over the remainder of the quill, a pressing worm or flight, said feeding flight, feeding and pressing flight, and pressing worm being likewise spaced apart.

2. In a press of the character specified, the combination of a shell; a feed hopper located at one end thereof; a shaft extending through the hopper and the shell; a series of spaced pressing worms mounted upon the shaft adjacent the discharge end of the press and rotatable therewith; a quill encircling the shaft adjacent the intake end of the press, said quill at its inner end being enlarged in external diameter and connected to the forward portion by an inclined face; a feed worm formed upon the exterior of the quill adjacent the intake end of the press; a combined feeding and pressing worm located between the last named flight or worm and the inclined face, aforesaid; and a pressing worm mounted upon the quill at its inner end where its external diameter is enlarged, said feeding flight, feeding and pressing flight, and pressing worm being likewise spaced apart.

In testimony whereof I have signed my name to this specification.

RAYMOND T. ANDERSON.