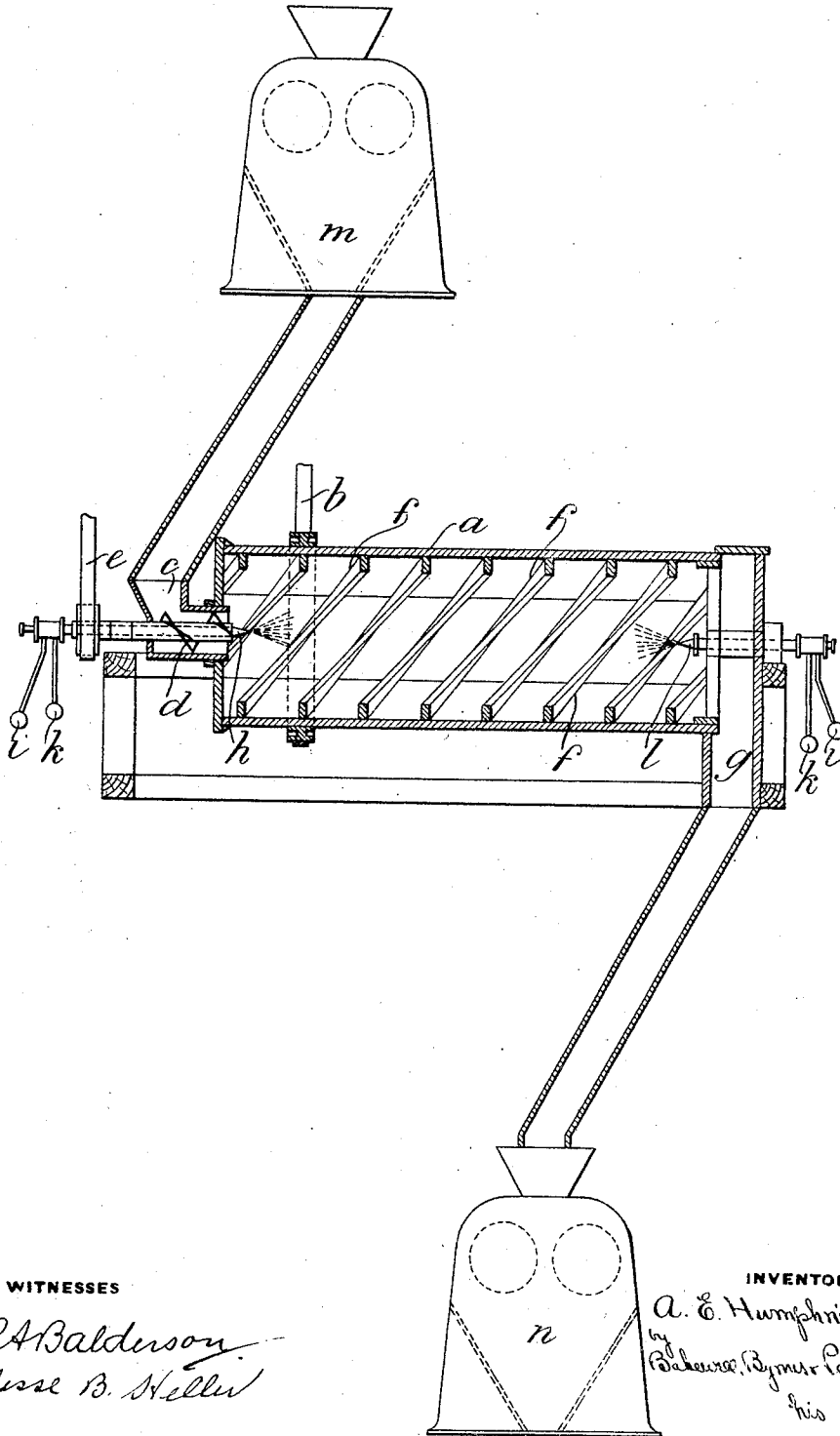


A. E. HUMPHRIES.
MILLING FLOUR.
APPLICATION FILED OCT. 12, 1909.

983,720.

Patented Feb. 7, 1911.



WITNESSES

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UNITED STATES PATENT OFFICE.

ALBERT EDWARD HUMPHRIES, OF WEYBRIDGE, ENGLAND.

MILLING FLOUR.

983,720.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed October 12, 1909. Serial No. 522,353.

To all whom it may concern:

Be it known that I, ALBERT EDWARD HUMPHRIES, a subject of Great Britain, residing at Coxes Lock Mills, Weybridge, in the county of Surrey, England, miller, have invented certain new and useful Improvements in or Relating to the Milling of Flour, of which the following is a specification.

This invention which originally formed a part of my application for Letters Patent Serial No. 500918, dated 8th June 1909, relates to an improvement in the process of producing flour by milling wheat, having for its object to improve certain qualities of the flour and to avoid certain difficulties in the milling operations.

It is known that flour can be improved in respect of its baking properties by subjecting it to the action of air carrying water vapor or moisture.

According to my invention a greater improvement is obtained, and that more easily, by subjecting the stock (which term connotes partly milled grain in any of the intermediate stages of the flour milling process subsequent to the first break) to the action of a very finely divided spray of water. By operating in this manner the water becomes very intimately mixed with the flour during the finishing milling operations and the color of the flour is improved. This last result is due to the better separation of flour from offal which can be attained when the succeeding milling operations are applied to the slightly damp stock. Another, most unexpected advantage accrues from the spraying of the stock, namely that the sweating of the rolls and the pasting up of the silks is considerably diminished. To explain this effect more fully, it may be said that owing to the friction caused by the grinding action of the rolls on the grain or partly ground grain, much heat is developed and much of the moisture in the stock becomes vapor which condenses again inside the frames of the roller mills and in the sifting or separating machines causing a sticky and evil smelling accumulation of wet matter in the interiors of the machines and destroying or diminishing the separating capacity of the silk covers (that is, gages) used for the sifting processes by pasting their surfaces. Now as a result of the

slight softening of the stock due to spraying in accord with my invention and the consequent diminution of friction in grinding, the sweating in the roller mills and the pasting up of the silks covers is considerably diminished.

The mode of operation consists in agitating the stock in any well known form of reel or the like between any two breaks or reductions of the milling operation, while spraying it with water by means of a nozzle affording a very finely divided spray.

As an example of the proportion of water which may be added, I have found that when a stock containing from 14 to 15 per cent. of water is subjected in the manner aforesaid to a spray of water, between 1 and 2 per cent. on the weight of the finished flour may be added without harm to the flour and in many cases with good effect on the baking value of the flour. In other cases, however, as is already known, such an addition does not affect the baking value; experiment on a sample of the stock which it is proposed to treat can alone decide whether this improvement can be realized.

In the accompanying drawing, which shows diagrammatically a longitudinal section through a reel adapted for carrying out the process according to this invention, and two roller mills one feeding the spraying reel with partly milled stock and the other receiving sprayed stock or flour from the reel, the reel is shown out of scale in relation to the roller mills in order to more clearly show some details.

a is the reel rotated on its axle through a belt *b*; the stock or flour is fed from the mills *m* into the hopper *c* and is passed into the reel by worm *d* rotated on its axis through the belt *e*. The reel contains lifters or beaters *f* which carry forward the flour to the discharge chute *g* and at the same time toss it so that it forms a fine spray in the reel. The shaft of the worm *d* is hollow for passage of a pipe terminating in a nozzle *h* through which air and water are fed under pressure, the air being introduced through pipe *i* and the water through pipe *k*. A like nozzle *l* similarly fed with air and water extends into the discharge end of the reel. Thus at each end water in a highly atomized state is introduced into the reel by means of the said nozzles. The chute

g communicates with the feed hopper on the second roller mill n.

Having thus described my invention and the best means I know of carrying the same into practical effect, I claim:—

5 The process of producing flour by the milling of wheat, which consists in passing the stock through a set of rolls, then subjecting the stock coming from these rolls to

a spray of water, and then passing the stock 10 while still moist through another set of rolls.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALBERT E. HUMPHRIES.

Witnesses:

WALTER J. SKERTEN,
T. J. OSMAN.