W. G. SCHRÖDER.

MECHANISM FOR GRINDING OR MIXING EMULSIONS.

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976,699. Patented Nov. 22, 1910.

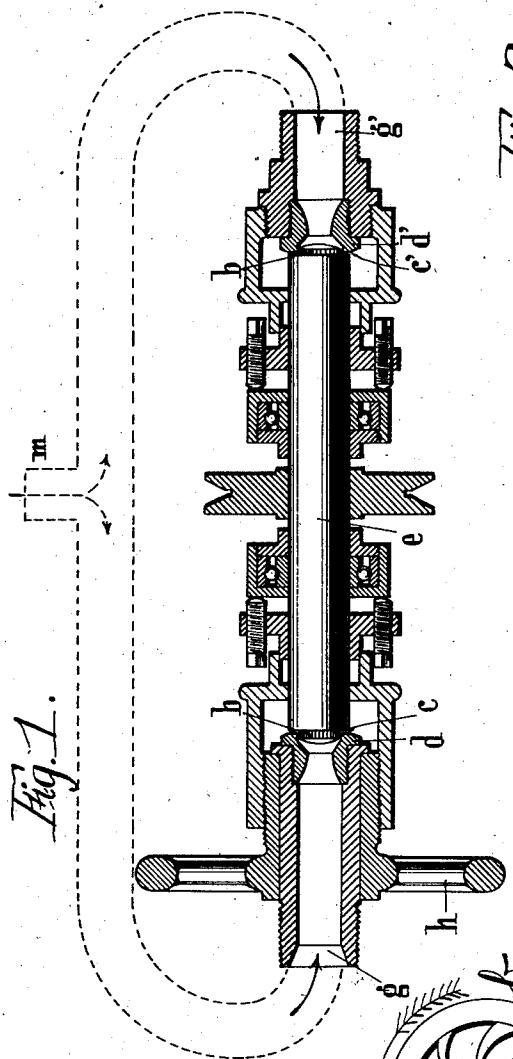


Fig. 1.

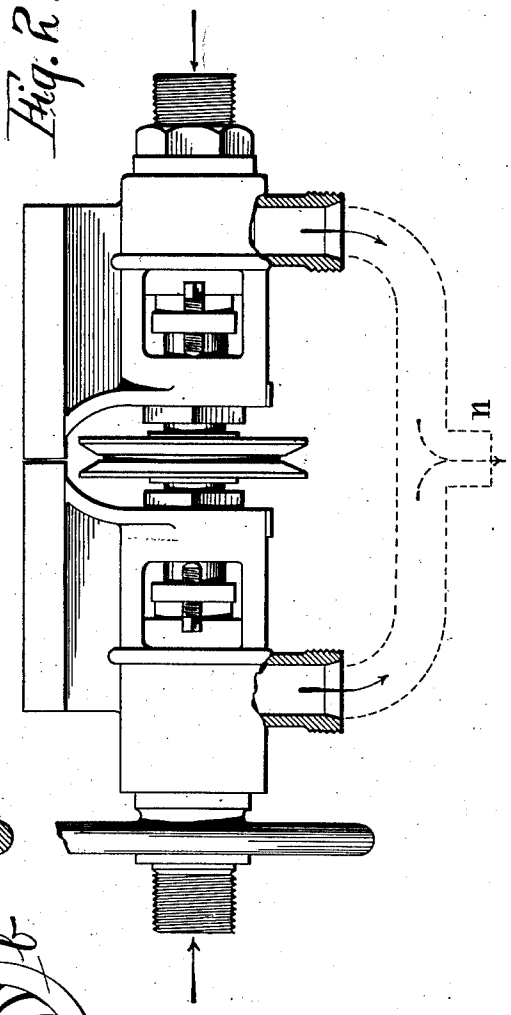


Fig. 2.

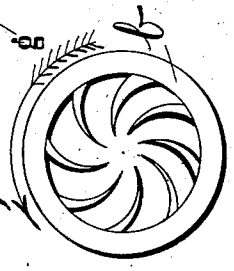


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

WILHELM G. SCHRÖDER, OF LÜBECK, GERMANY, ASSIGNOR TO ALTONAER MARGARINE WERKE MOHR & CO. GESELLSCHAFT MIT BESCHRÄNKTER HAFTUNG, OF ALTONA-OTTENSEN, GERMANY, A CORPORATION OF GERMANY.

MECHANISM FOR GRINDING OR MIXING EMULSIONS.

976,699. Specification of Letters Patent. Patented Nov. 22, 1910.

Application filed February 1, 1910. Serial No. 541,367.

To all whom it may concern:

Be it known that I, WILHELM G. SCHRÖDER, manufacturer, a citizen of the free town of Lübeck, in the Empire of Germany, and resident of 41 Luisenstrasse, Lübeck, Germany, have invented new and useful Improvements in or Relating to Mechanism for Grinding or Mixing Emulsions, of which the following is a specification.

This invention relates to an apparatus for grinding emulsions, of that kind in which the liquid, for instance milk, is driven through a circular slot which is formed on the one hand by an annular surface of a stationary grinding member, and on the other hand by a continuously rotating friction disk pressed against the said annular surface.

The liquid introduced exercises on the spindle carrying the grinding member, a longitudinal pressure which has to be taken up by an adjustable bearing. Owing to that arrangement, the spindle in the bearing easily becomes hot, and moreover a great deal of power is wasted in the bearing.

One form of my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of my improved apparatus. Fig. 2 is a plan view of the same. Fig. 3 is a view, on a larger scale, of the end of the spindle.

e represents the spindle, which carries a grinding part at each end which coöperates with a stationary but adjustable grinding member. The spindle *e* is driven by a pulley, mounted in its center. The regulation of the size of the passage through which the material undergoing the grinding operation passes, is effected by shifting the stationary grinding member in the frame of the machine. The spindle *e* is provided on its end with a reduced portion *b*, having thereon turbine blades, and rotates within a tube having a grinding surface *d*. The grinding member is adjustable in the machine frame longitudinally of the spindle *e* by means of a hand wheel *h*, which bears against part of the grinding member. The other grinding member *d'* coöperating with the end of the spindle *e*, need not be made adjustable, as the corresponding grinding surface *d' c'* are adjusted by the hand wheel *h* when adjusting the grinding surfaces *d* cooperating with each other. The spindle is freely suspended in bearings and provided with stuffing boxes. The liquid to be ground or converted into an emulsion, is admitted at *m* and is first divided into two portions, one of which is ground by the grinding surfaces *c d*, and the other by the grinding surfaces *c' d'*. The ground liquids join again in the discharge pipe *n*.

As the liquid to be rendered homogeneous or to be converted into an emulsion passes in through the turbines and presses in a uniform manner from both sides against the spindle *e*, the spindle takes up the two pressures whereby the bearing is relieved from pressure. Thus, a much smaller power is required for rotating the spindle *e* as it is necessary merely to overcome the friction between the grinding surfaces proper.

Another advantage consists in the apparatus having twice the usual output. The turbine-like devices which are arranged in well known manner in the rotating part *b*, are preferably built in such manner that their blades are curved in opposite direction, so that both liquids have a rotary action on the spindle *e* in one and the same direction.

I claim:—

1. In an apparatus for grinding emulsions, the combination of a spindle provided with a grinding part at each end, a grinding member at each end coöperating therewith, and means for feeding the material from both sides toward said spindle, whereby a balancing movement is obtained, substantially as described.

2. In an apparatus for grinding emulsions, the combination of a spindle provided with grinding parts at each end, having curved turbine blades, these blades being curved in opposite directions on opposite ends of the spindle, grinding members coöperating with the grinding part of said spindle, means for adjusting said grinding members, and means for delivering the material to be ground against both ends of the spindle, substantially as described.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this fifteenth day of January 1910.

WILHELM G. SCHRÖDER.

Witnesses:

JOHS. WOLF,

JACOB BIELFELDS.