Jan. 21, 1930. R. B. HITCHCOCK 1,744,471

PLATE MOUNTING FOR FEED GRINDERS

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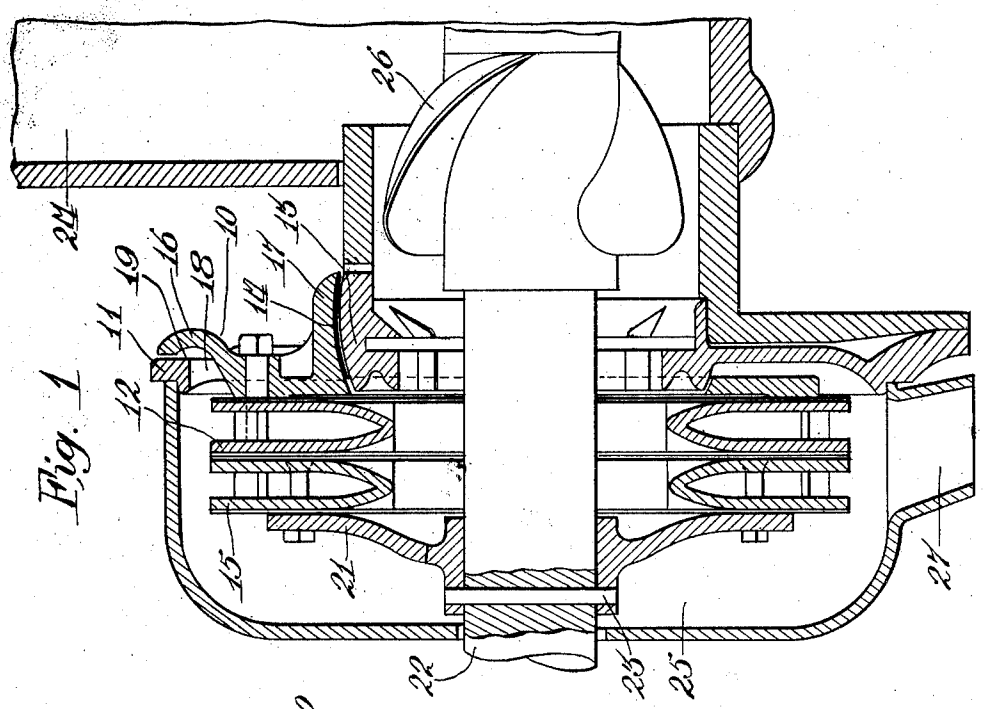


Fig. 1

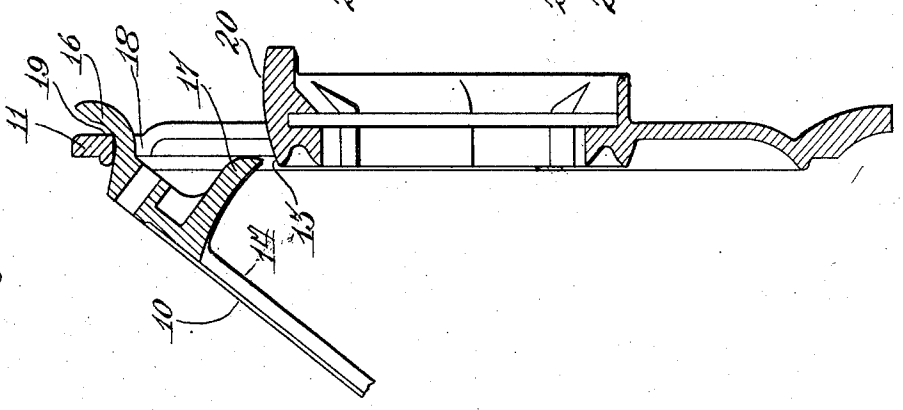


Fig. 3.

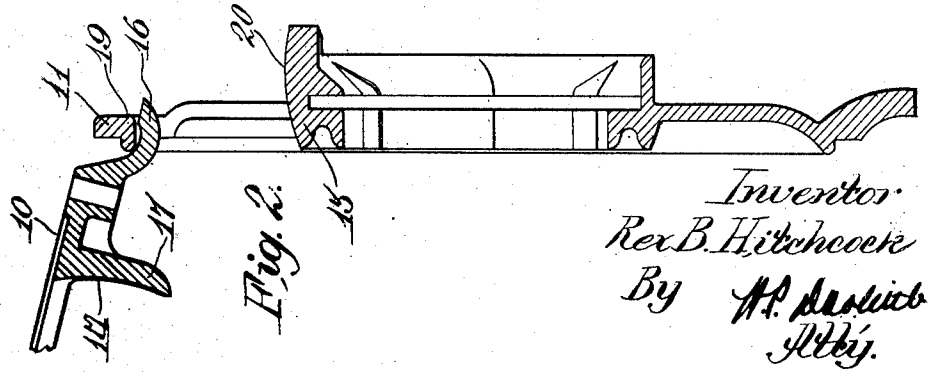


Fig. 2.

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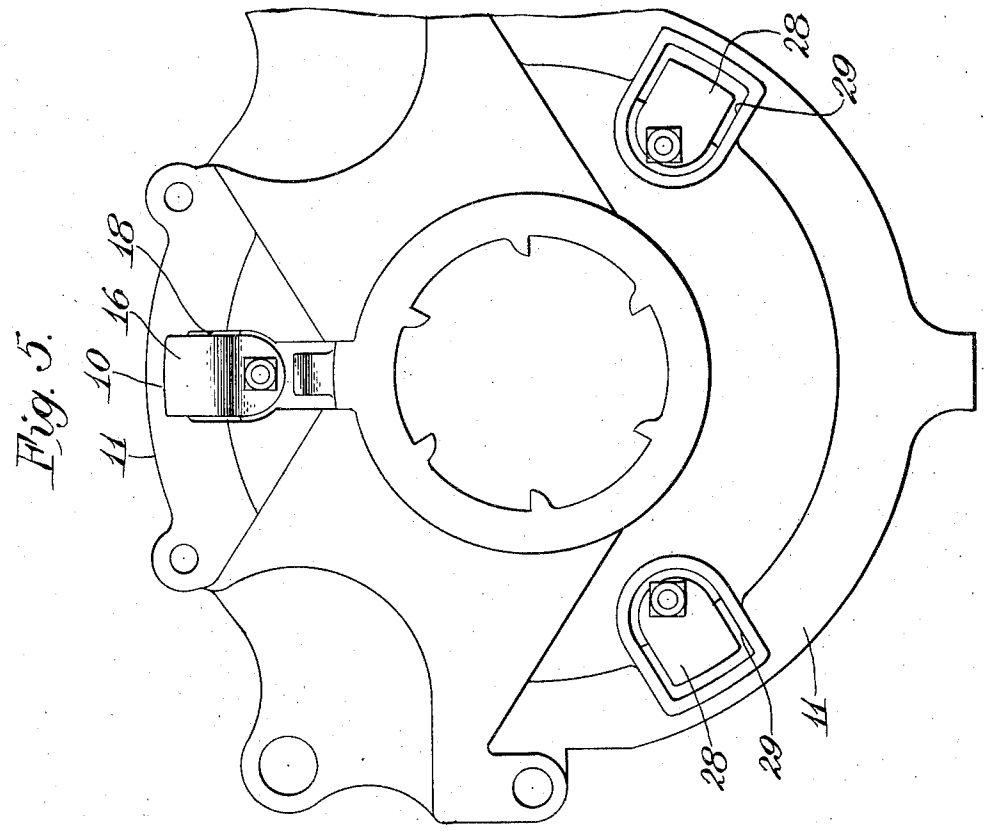


Fig. 5.

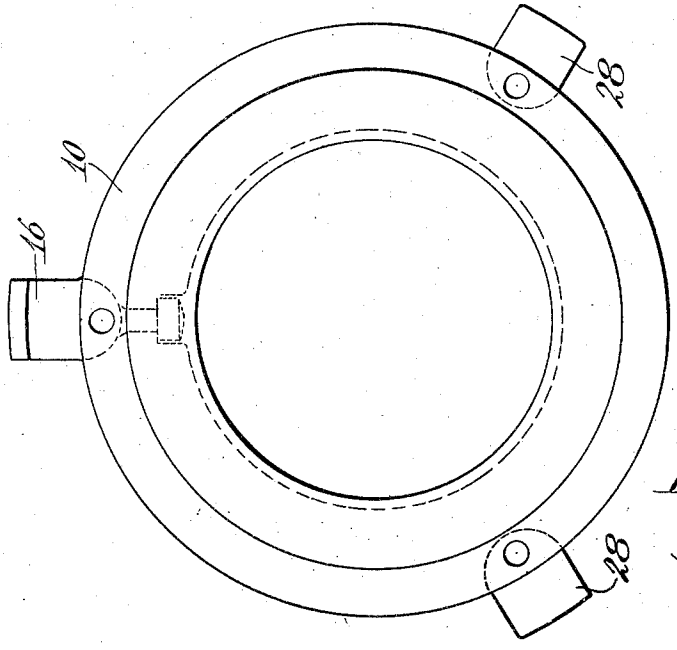


Fig. 4.

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UNITED STATES PATENT OFFICE

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PLATE MOUNTING FOR FEED GRINDERS

Application filed August 3, 1928. Serial No. 297,274.

This invention relates to feed grinders, and more particularly to feed grinders in which grinding disks rotate upon a horizontal axis.

An object of the invention is to provide a feed grinder in which the non-rotatable grinding plate is mounted on a support by novel mechanism permitting that plate to accommodate itself to variations in the amount of material passing between the grinding plates.

Other objects of the invention will appear as the description proceeds.

An illustrative embodiment of the invention is shown in the accompanying drawings in which:

Figure 1 is substantially a vertical longitudinal section showing the grinding plates and the plate holder in their operative positions;

Figure 2 is a detail section illustrating the first step in the insertion of the plate holder in its support so that it may become locked in operative position;

Figure 3 is a view similar to Figure 2, but showing the plate holder in an intermediate position relative to its support;

Figure 4 is a plan view of the plate holder; and

Figure 5 is a plan view of the plate holder support showing the plate holder in position upon a side of the support not shown.

The illustrative machine comprises the plate holder 10 held in position upon a support 11 and movable as a unit with the non-rotatable grinding plate 12.

Rocking movements of the plate 12 and the holder 10 are permitted by reason of the parti-spherical surfaces 13 and 14 on the support and the plate holder, respectively. As the unit comprising the plate 12 on the holder 10 moves on the surface 13 relative to the support 11 proper operative relationship between the plate 12 and the other parts of the device is maintained, and breakage of parts is prevented by the fact that the rotatable grinding plate 15 may make a complete rotation with an abnormal amount of material between grinding plates at one position.

In the drawings the plate holder 10 and its support 11 are shown as having cooperating lock formations, which permit the removal of the plate holder when it is tilted relative to its support. These formations include a hook 16 and a lug 17 formed on the plate holder. When the plate holder is to be placed in position on its support, the hook 16 is inserted through an opening 18 in the support 11, so that it engages an abutment 19, as indicated in Figure 2 of the drawings. Thereafter the plate holder is moved downwardly so that the lug 17 may also pass through the opening 18. When the plate holder reaches its vertical position, the lug 17 is in position to engage a similarly curved lug 20 preferably formed on the support 11 and having a curved surface forming a continuation of the surface 13. When the plate holder is released so that its weight rests upon the lug 20, it is locked in position by the hook 16 until such time as the holder is tilted from its vertical position to the position in which it is shown in Figure 2.

The rotating grinding plate 15 is secured upon a collar 21 fixed to the driving shaft 22 by a pin 23. This driving shaft extends through a hopper 24 and a grinder casing 25 and has fixed thereon a feed screw 26, which moves material from the hopper 24 to the grinding plates, as is well understood in the art. The material is moved through the central opening in the plate 12 and passes between the grinding plates into the casing 25, discharging therefrom through the outlet chute 27.

Besides the lock formations above mentioned, the plate holder is also formed with extensions 28 which are insertable in openings 29 in the support 11, as indicated in Figure 5 of the drawings. When the parts are positioned as here shown, the grinding plate 12 and the holder 10 are prevented from having rotation relative to the support, but they are allowed rocking movement relative to the support by reason of the fact that the extensions 28 may move through the openings 29 in directions substantially parallel to the axis of the shaft 22.

While the invention has been described

with reference to one particular machine, it is to be appreciated that it is not limited thereto, but is of a scope commensurate with the scope of the subjoined claims.

What is claimed as new is:

1. A feed grinder comprising, in combination, a rotatable grinding plate, a non-rotatable grinding plate, a plate holder rockable as a unit with one of the grinding plates, a fixed support, co-operating curved bearing surfaces on the holder and the support to guide the holder in its rocking movements, and co-operating lock formations on the holder and the support releasable by tilting the holder.

2. A mill comprising, in combination, a rotatable grinding plate, a non-rotatable grinding plate having a grinding surface closely adjacent to a grinding surface on the rotatable plate, a plate holder rockable as a unit with the non-rotatable plate, a relatively fixed support about which the holder is rockable, cooperating curved bearing surfaces on said holder and on said support to permit the holder to rock relative to the support, and co-operating lock formations on the holder and the support adapted to lock the holder against rotation when it is in contact with the support.

3. A feed grinder comprising, in combination, a rotatable grinding plate, a non-rotatable grinding plate, a plate holder rockable as a unit with the non-rotatable plate, a relatively fixed support, co-operating curved bearing surfaces on the holder and the support to permit the holder to rock relative to the support, co-acting lock formations on the holder and the support to normally lock the holder in operative position on the support but permit the removal of the holder from the support when the former is tilted, and co-operating formations on the holder and the support to lock the holder against rotation when it is in contact with the support.

4. A feed grinder comprising, in combination, a rotatable grinding plate, a non-rotatable grinding plate co-operating with the rotatable plate, a plate holder rockable as a unit with the non-rotatable plate, a relatively fixed support having a curved bearing surface, a co-operating curved surface on the holder to maintain proper relation between the two plates and to permit the holder to rock relative to the support on a horizontal axis, co-acting lock formations on the holder and the support to normally lock the holder in operative position on the support to permit the removal of the holder from the support by tilting of the holder, and co-operating drive connections on the holder and the support to lock the holder against rotation with the rotatable plate, said lock formations including projections rigid with the holder and movable through an opening in the support.

5. A feed grinder comprising, in combination, a rotatable plate, a second plate fixed against rotation, a relatively fixed support, a plate holder rockable as a unit with the second plate and having rigid therewith co-operating lock formations adapted to be projected through an opening in the support to normally lock the holder in operative position on the support to permit the removal of the holder and the second plate by tilting of the holder with respect to the support, and means on the holder and the support for preventing rotation of the second plate with respect to the first plate, one of said projections on the holder being upwardly bowed or curved in such a manner that a chord joining the ends of the arc of the curve lies substantially horizontal.

In testimony whereof I affix my signature.

REX B. HITCHCOCK.