June 4, 1929. W. H. MECHLIN 1,715,772

GRINDING PLATE FOR ATTRITION MILLS

Filed Sept. 26, 1927

FIG 1

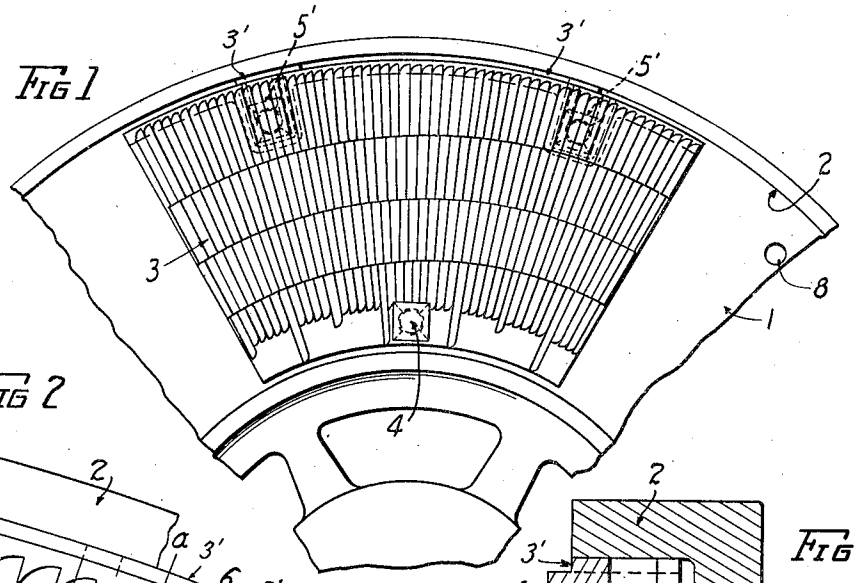


FIG 2

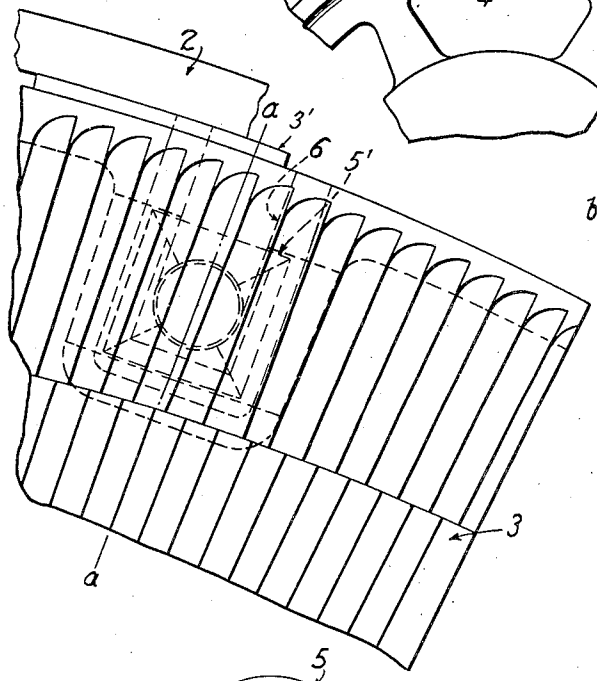


FIG 3

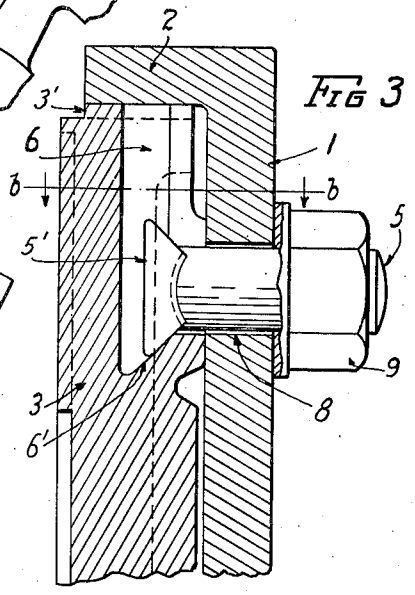
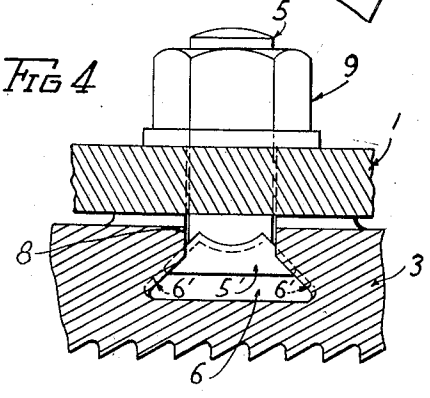


FIG 4



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UNITED STATES PATENT OFFICE.

WILLIAM H. MECHLIN, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE BAUER BROTHERS COMPANY, OF SPRINGFIELD, OHIO, A CORPORATION OF OHIO.

GRINDING PLATE FOR ATTRITION MILLS.

Application filed September 26, 1927. Serial No. 221,925.

This invention relates to attrition mills, it particularly relating to the grinding heads and plates of such mills, and especially to improved means for securing the plates to the heads.

In attrition mills it has been the usual practice to secure the grinding plates to the heads by bolts which extend entirely through openings in the plate, the openings being counter-sunk to receive the heads of the bolts. This necessitates an interruption in the ribs on the working faces of the plates, which is objectionable as it results in a lack of uniformity in the reduction of the material.

The object of the invention is to provide an improved means for securing the plates to the head whereby an uninterrupted grinding or reduction surface is provided on the working face of the plates.

In the accompanying drawings:

Fig. 1 is an elevation of a portion of a grinding head showing one of the segmental plates attached thereto by my improved means.

Fig. 2 is an elevation of a portion of the working face of one of the grinding plates and a portion of the head to which it is attached.

Fig. 3 is a section on the line *a*—*a* of Fig. 2.

Fig. 4 is a section on the line *b*—*b* of Fig. 3.

Referring to the drawings, 1 represents a portion of one of the grinding heads of an attrition mill which is of the usual form, and in the present case the head has an annular laterally-extending flange 2 about its periphery, the inner surface of which is finished. One of the segmental grinding plates is indicated at 3, the working face of this plate being provided with any suitable form of ribs or teeth for the reduction of the material. It is the usual practice to secure these segmental plates to the head by three bolts, two near the outer periphery and one adjacent the inner periphery of the plate. The inner bolt is indicated at 4 and is of the usual form heretofore employed; that is, it is placed in an opening which extends entirely through the grinding plate, counter-sunk to receive the head of the bolt, but as this bolt is not located at a point where the reduction or grinding takes place, the old form of positioning the bolt is not objectionable.

To receive the outer bolts 5, however, the plate 3 is provided with a pair of pockets 6 each open at the top and at the rear. The side walls of the inner portion of each pocket are inclined as indicated at 6′ so as to form in effect a dove-tail groove to receive the tapered head 5′ of the bolt.

To secure the plate to the head, the bolts are first placed in the pockets and then inserted through openings 8 in the head and the plate securely locked in position against lateral displacement by the nuts 9. When the plates are in position they are surrounded with a close fit by the lateral flange 2 so as to hold the plates against displacement by centrifugal force. The outer edge of the plate preferably has a pair of circumferentially-extending ribs 3′ which are finished to conform to the finished surface of the flange 2, the purpose of which are to avoid the necessity of finishing the entire outer edge of the plate.

By this arrangement, the working faces of the plates have uninterrupted surfaces so that all of the material ground or reduced thereby will be of a uniform fineness.

While the method which I have described is the preferred manner of securing the plate to the head so far as I am now aware, it is to be understood that my invention contemplates other forms of securing devices such that the plate may be secured to the head in a manner to leave its working face uninterrupted.

Having thus described my invention, I claim:

1. In an attrition mill, a grinding head, a segmental grinding plate, the rear wall of the outer portion of said grinding plate having a pocket which leads to the outer periphery of said plate, the side walls of said pocket being undercut, a bolt having a head received in said pocket and engageable with the side walls thereof, said head having an opening to receive said bolt, and means for tightening said bolt and head.

2. In an attrition mill, a grinding head, a segmental grinding plate, the outer portion of the rear wall of said grinding plate having a pocket which leads to the outer periphery of said plate, the side walls and bottom of said recess being undercut, a bolt having a head received in said pocket and engageable with the side and bottom walls thereof, said head having an opening to re-

ceive said bolt, and means for tightening said bolt and head.

3. In an attrition mill, a grinding head, a segmental grinding plate, the rear wall of said grinding plate having a plurality of pockets removed from the side edges thereof and extending to the outer periphery of said plate, the sides of each of said pockets being undercut, a bolt having a head received in each of said pockets and engageable with the side walls thereof, said head having openings to receive said bolts, and means for tightening said bolt and head.

In testimony whereof, I have hereunto set my hand this 23rd day of September, 1927.

WILLIAM H. MECHLIN.