April 19, 1932.

L. B. WEST

1,854,570

ADJUSTMENT FOR DRIERS

Filed Oct. 21, 1930

Fig. 1

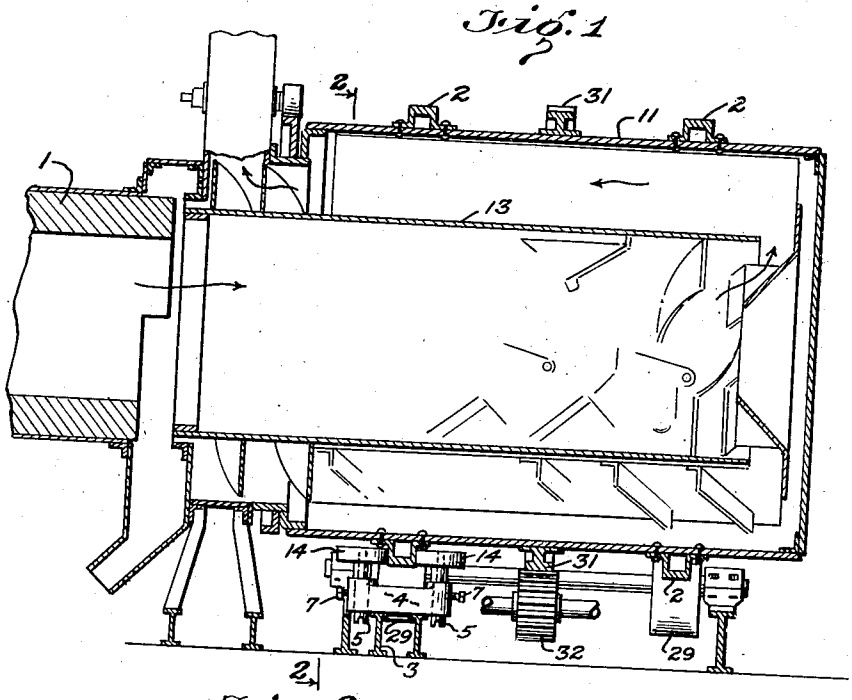


Fig. 2

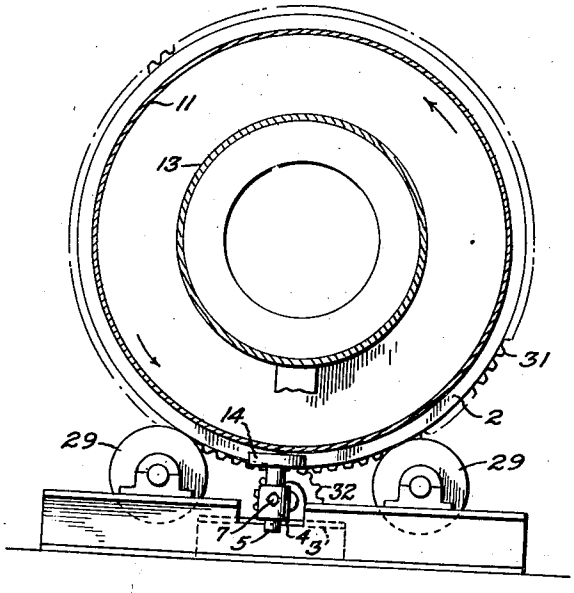


Fig. 3

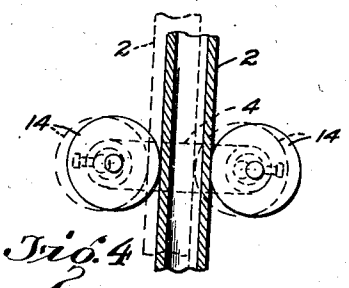
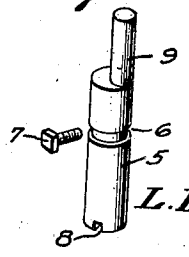


Fig. 4



Inventor

L. B. West

By

Attorney

Patented Apr. 19, 1932

1,854,570

UNITED STATES PATENT OFFICE

LAWRENCE B. WEST, OF CHATTANOOGA, TENNESSEE

ADJUSTMENT FOR DRIERS

Application filed October 21, 1930. Serial No. 490,265.

This invention relates to adjustment of driers and has for its object to provide a construction simple in parts and more efficient in operation than those heretofore proposed.

With these and other objects in view the invention resides in the novel details of construction and combinations of parts as will be disclosed more fully hereinafter and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification, in which like numerals designate like parts in all the views,—

Fig. 1 is a vertical longitudinal sectional view (somewhat diagrammatic) of a drier to which this invention has been applied;

Fig. 2 is a vertical transverse sectional view (somewhat diagrammatic as to the drier per se) taken as on the line 2—2 of Fig. 1 and looking in the direction of the arrows;

Fig. 3 is a top plan view of the adjusting device; and

Fig. 4 is a perspective view of a portion of the adjusting device.

In order that this invention may be the better understood it is said that there was issued to me U. S. Letters Patent No. 1,641,108 dated August 30, 1927 for improvements in apparatus for drying and heating material in which there was disclosed a drier of the rotating drum type, particularly illustrated in Fig. 1 of the drawings of said patent.

This drier was supported at a plurality of places upon a pair of roller guides, but difficulty was experienced in a longitudinal creeping of the drier, whereby the seal between the drum and the end of the furnace was affected. This invention resides in a device for adjusting more accurately, and maintaining the adjusted position of, such a drier as disclosed in said patent so that said seal may be retained substantially constant.

The same type of drier shown in said patent is contemplated in this disclosure. In other words, there is the flue 1 outer and inner drums 11 and 13 respectively, supporting wheels 29 in pairs, drum ring gear 31, and pinion 32 for driving said gear, which are all identical to the parts similarly numbered in Fig. 1 of said patent and fully described therein.

Externally attached to the outer drum 11 at spaced intervals are circular rails or annular flanges 2 which are preferably rolled from ingot metal but which may be of any other suitable construction and design. These rails are substantially rectangular in their main body portion so as to provide two parallel sides, which lie in transverse planes perpendicular to the longitudinal axis of the drier, and a tread portion or surface which is concentric with said axis. The tread surface, as readily understood, will bear against the surface of the wheels 29, thereby supporting the drier.

Particularly referring to Figs. 2 and 3, there is shown a suitable base, indicated at 3, for rigidly supporting a casting 4 provided in each end with a bearing for a vertical shaft generally indicated by the numeral 5, each shaft being provided with a circumferential groove 6 adapted to be engaged by a set screw 7 which latter passes through the wall of the bearing. The lower end of each shaft 5 is provided with a kerf 8 by means of which the shaft may be turned in its bearing as desired. The upper end of each shaft is provided with an integral extension constituting a pin 9 of reduced diameter which is eccentrically disposed with relation to the axis of the main portion of the shaft 5. Each eccentric 9 receives a bearing disk such as 14 which is adapted to freely turn on the eccentric forming its shaft, and the peripheral edge portion of each disk is adapted to engage a side of the rail 2. Each disk preferably is provided with an extended hub creating an ample bearing surface.

Thus it will be seen that the two disks may be brought into contact with the sides of one of the rails 2, and then the shafts 5 are turned as found necessary to move the drier longitudinally of its axis either to the left or to the right as seen in Fig. 1 to obtain the correct relationship between said drier and the flue 1. When the correct position of the drier is obtained the set screws 7 are tightened. Fig. 3 shows the displacement of the rail 2 permitted by the turning of the shafts

5. That is to say, the full lines of said figure show the rail and disks 14 in one limit of their movement, and the dotted lines show them in the other limit of movement. One set of adjusting disks is found sufficient and it may be associated with either of the rails 2.

The shafts 5 are not disposed in the central vertical longitudinal plane of the drier but are purposely off-set therefrom. As seen in Fig. 2, and with the drier rotating in the direction of the arrows, said shafts would be disposed in a plane parallel to but to the left of the central vertical plane of the drier. The reason for this displacement is to cause a downward drive on the disks 14 to prevent their climbing up on their pins 9. That is to say under certain conditions, such as for example slight misalignment of the rollers 29, a drier frequently develops in operation a strong tendency to drift endwise thereby imposing a very severe load upon the disks 14. Thus it is important that the disks shall have ample bearing surface in contact with their pins 9 to avoid undue heating and wear. Consequently, the disks are provided with extended hubs and, in order that the unrestrained disks may not possibly climb upwardly upon their pins 9, said disks are offset to the left of the vertical centerline of the drier whereby there is obtained a slight but definite downward drive upon the disks. This offset relationship makes unnecessary any mechanical confinement of the disk upon its supporting pin 9. Naturally, this adjusting and guiding device is applicable to any type of rotary cylindrical drier running upon riding rings such as rings 2 or their like, and therefore is not confined to such a drier construction as specifically disclosed in my above referred to patent.

It is obvious that those skilled in the art may vary the details of construction as well as arrangements of parts without departing from the spirit of the invention, and therefore it is not desired to be limited to the foregoing except as may be required by the claims.

What is claimed is:—

1. The combination with a rotary cylindrical body having a circular external flange, of means to adjust the longitudinal position of said body, said means comprising a disk operating against said flange, said disk mounted on a stub shaft set parallel to a plane including the longitudinal centerline of said body.

2. The combination with a rotary cylindrical body having a circular external flange, of means to adjust the longitudinal position of said body, said means comprising a disk operating against said flange, said disk mounted on a stub shaft set parallel to a straight line intersecting the longitudinal centerline of said body.

3. The combination with a rotary cylindrical body having a circular external flange, of means to adjust the longitudinal position of said body, said means comprising a disk tangentially operating against said flange, said disk mounted on a stub shaft set parallel to the vertical plane passing through the longitudinal centerline of said body.

4. The combination with a rotary cylindrical body having a circular external flange, of means to adjust the longitudinal position of said body, said means comprising a disk operating against said flange, said disk mounted on a stub shaft set parallel to a plane including the longitudinal centerline of said body, the stub shaft offset with respect to the plane opposite the direction of body rotation.

5. A rotatable drier provided with an annular external flange; and means operating against said flange to adjust the position of said drier longitudinally of its axis, said means including a disk tangentially disposed with respect to said flange, said disk eccentrically mounted upon an axis parallel to a plane including the longitudinal centerline of said drier.

6. A rotatable drier provided with an annular external flange; and means operating against said flange to adjust the position of said drier longitudinally of its axis, said means including a disk tangentially disposed with respect to said flange, said disk freely rotatable and eccentrically mounted upon an axis parallel to a plane including the longitudinal centerline of said drier.

7. A rotatable drier provided with an annular external flange; and means operating against said flange to adjust the position of said drier longitudinally of its axis, said means including a disk tangentially disposed with respect to said flange, said disk loosely and eccentrically mounted upon an axis parallel to a plane including the longitudinal centerline of said drier, whereby the rotation of said drier exerts a force on said disk preventing its longitudinal displacement with respect to said axis.

In testimony whereof I affix my signature.

LAWRENCE B. WEST.