Feb. 1, 1927. 1,616,240

E. B. SYMONS

DISK CRUSHER

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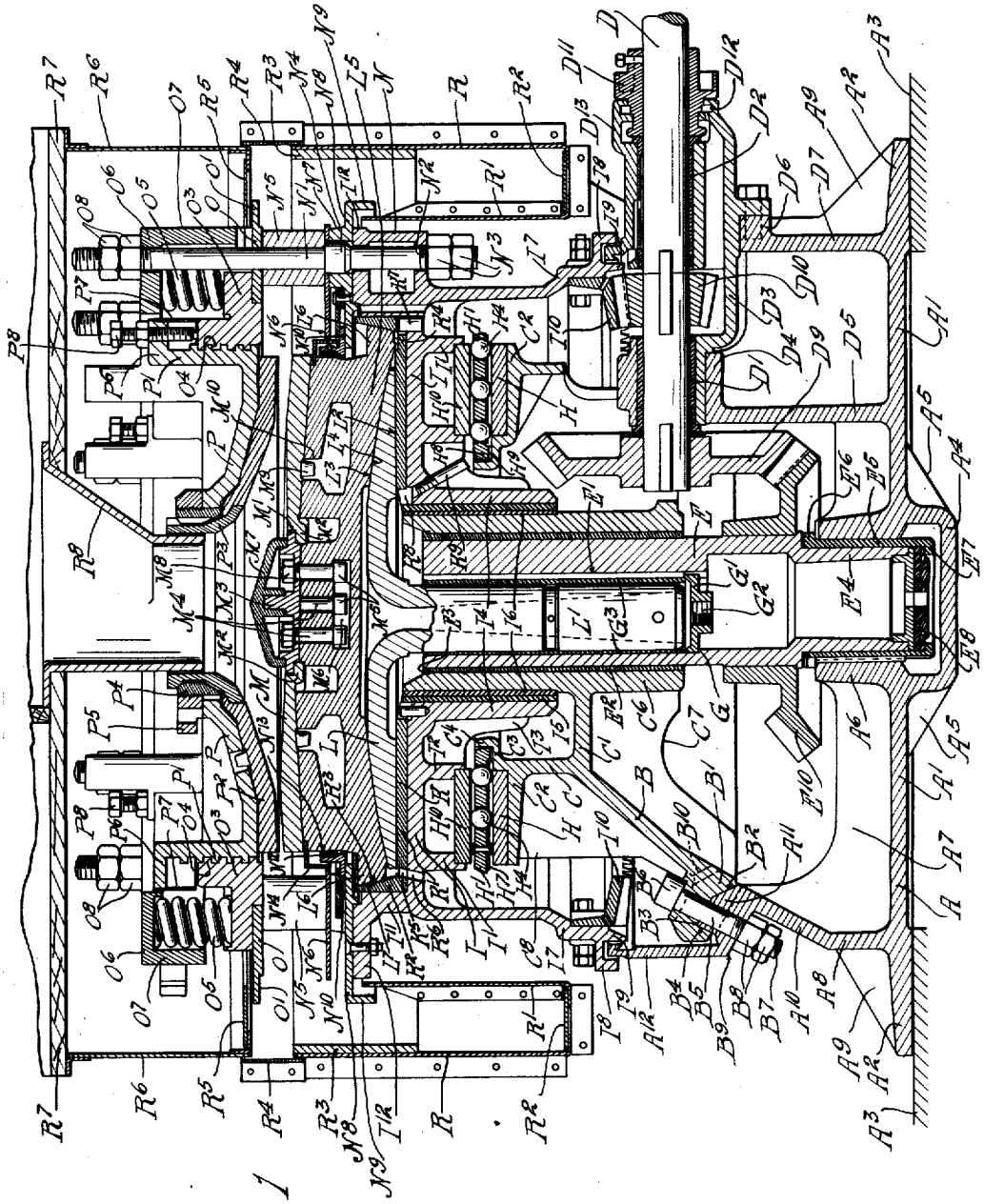


Fig. 1

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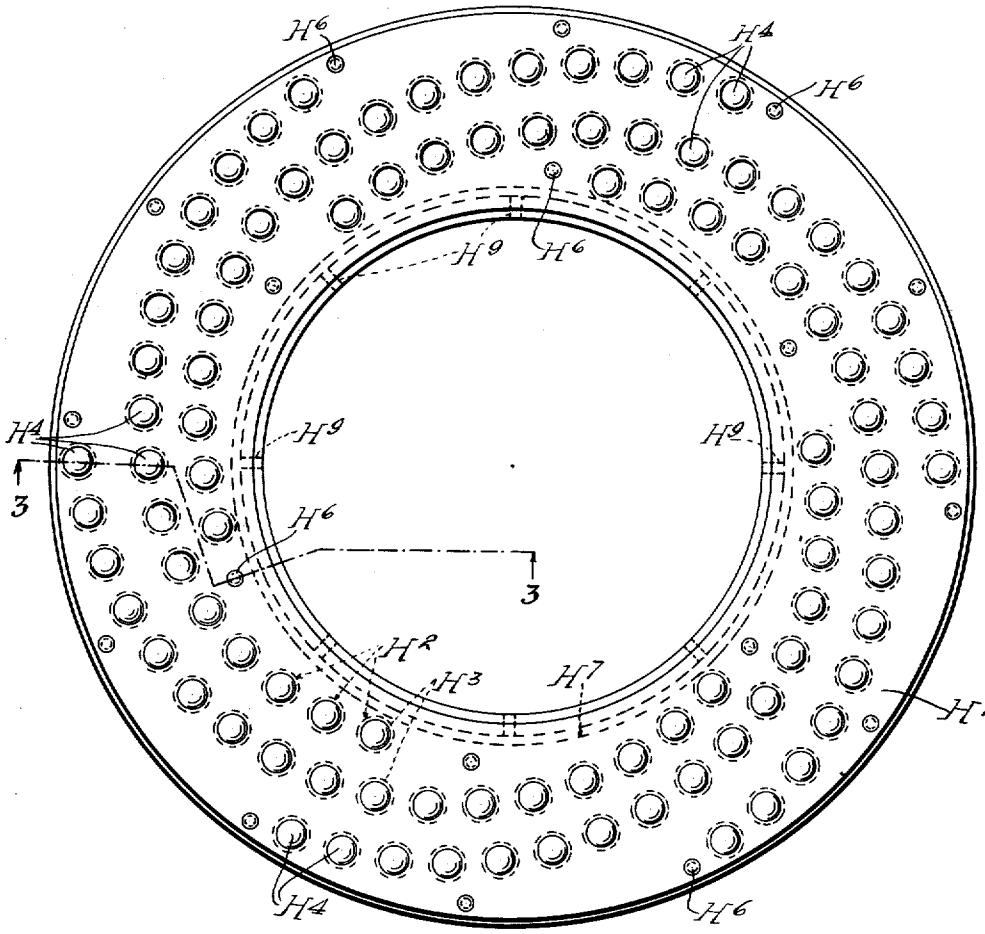



Fig. 2

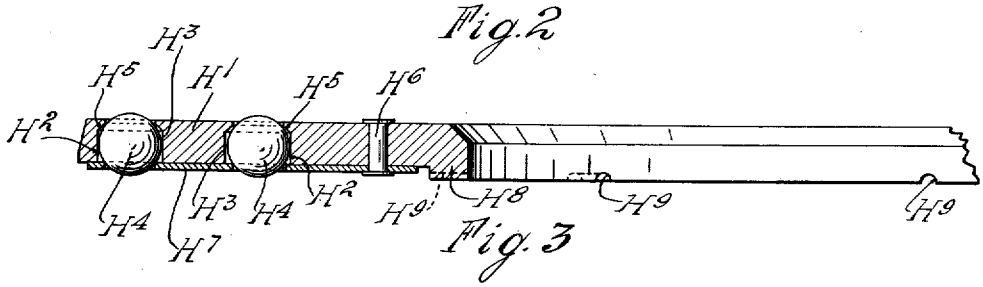



Fig. 3

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# UNITED STATES PATENT OFFICE.

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## DISK CRUSHER.

Application filed December 9, 1925. Serial No. 74,275.

My invention relates to an improvement in disk crushers and relates particularly to a vertical disk crusher wherein a pair of opposed crushing disks are rotated in unison about a generally vertical axis. One object of my invention is the provision of an improved supporting frame for such crushers. Another object is the provision of a supporting frame in which the main attaching members are exterior to frame and may be tightened or loosened from without the frame or housing structure. Another object is the provision of an improved supporting bearing mechanism for the opposed crushing disks and their supporting members. Another object is the provision of improved bearing and supporting means for the rotating parts. Other objects will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a vertical section along the axis of my machine;

Figure 2 is a plan view of the bearing or supporting track mechanism; and

Figure 3 is a section along the line 3—3 of Figure 2.

Like parts are indicated by like symbols throughout the specification and drawings.

A generally indicates a base member which includes a bottom wedge or base plate $A^1$ and a circumferential ground engaging flange $A^2$ adapted to engage any suitable supporting surface $A^3$. $A^4$ is a downwardly depending centrally located hollow boss provided with the reinforcing webs $A^5$. Vertically aligned with it is the upwardly projecting sleeve $A^6$ the purpose of which will later appear. $A^7$ are radial reinforcing webs extending outwardly from the sleeve $A^6$ and associated with or integral with the base plate $A^1$. $A^8$ is a circumferential wall member upwardly projecting from the outer edge of the base plate $A^1$ and connected, by means of the outwardly projecting reinforcing webs $A^9$ with the circumferential ground engaging flange or rim $A^2$. The wall member $A^8$ is inwardly turned or coned as at $A^{10}$ and is provided above such coned portion with a thickened outwardly inclined seat $A^{11}$ above which continues the generally cylindrical outer wall $A^{12}$.

B indicates a conic frame member provided at its lower edge with an enlarged seat $B^1$ adapted to conform to and seat upon the seat member $A^{11}$ preferably for example along a plurality of inclined faces $B^2$ $B^3$ and $B^4$. $B^5$ is any suitable bolt headed as at $B^6$ and screw threaded as at $B^7$ to receive the exterior nuts $B^8$ which seat against the downwardly and inwardly inclined face $B^9$ of the seat member $A^{11}$. $B^{10}$ is an oil duct or passage.

The conic frame member B at its inner upper edge branches as at C $C^1$. The branch C supports the outwardly extended shelf member $C^2$, the intermediate upwardly projecting portion $C^3$ and the inner upwardly projecting flange member $C^4$, the purpose of which will later appear. The inwardly projecting branch $C^1$ supports the cylindrically apertured bearing member $C^6$. $C^7$ $C^8$ are reinforcing webs.

The general housing or frame structure is broken away at one point to admit the drive shaft D which is supported in the bushings $D^1$ $D^2$ mounted in the bearing sleeve structure generally indicated as $D^3$ which in turn penetrates the sleeve $D^4$ associated with the wall $D^5$ upwardly projecting from the plate $A^1$ and which rests upon the outwardly expanded member $D^6$ of the wall $D^7$ which is a continuation of the prior described wall $A^8$. The drive shaft D has keyed to it at its inner end the gear $D^9$ and at its intermediate portion the smaller gear or pinion $D^{10}$. $D^{11}$ generally indicates any suitable oil containing means secured to the shaft and penetrating the portion $D^{12}$ of the bearing sleeve $D^3$ and held in position by the upper split bearing portion $D^{13}$.

Mounted for rotation within the sleeve $C^6$ is the eccentric E eccentrically apertured as at $E^1$. $E^2$ is a bearing sleeve or bushing, which may be of bronze, which is seated within the sleeve $C^6$, being upwardly enlarged as at $E^3$ to limit its downward movement, and directly engaging with its inner cylindrical surface the outer surface of the eccentric E. The eccentric is reduced in diameter at its lower end as at $E^4$ to conform to the diameter of the bearing bushing $E^5$, which is upwardly flanged as at $E^6$ and is thus supported within the sleeve $A^6$. The bearing or bushing $E^5$ is interiorly flanged as at its lower end as at $E^7$ to receive any suitable thrust bearing member $E^8$ which in turn is shaped to conform to the lower edge

of the reduced portion $E^4$ of the eccentric E. $E^{10}$ is a miter gear secured to the eccentric E and in mesh with the gear $D^9$ at the inner end of the drive shaft D.

The walls of the eccentric aperture $E^1$ are formed with a ledge G adapted to receive a disk $G^1$ which fits loosely within the aperture, and is provided with a screw threaded central aperture $G^2$. Resting upon the top of the disk $G^1$ is the interior bushing $G^3$.

Supported upon the outwardly projecting flange or shelf $C^2$ and abutting against the vertical member $C^3$ is a flat surface bearing ring H. Positioned above it is the ball spacing and holding ring $H^1$ having a plurality of apertures $H^2$ herein shown as arranged in spirals. Each such aperture consists of a central portion $H^3$ of a diameter sufficiently great to receive a ball $H^4$. $H^5$ is an upper rim about each aperture adapted to rest upon the ball and to support the ring $H^1$. $H^6$ are securing pins adapted to secure in place the lower plate member $H^7$ whereby the balls are confined within the apertures $H^3$. $H^8$ is an inward extension of the ring adapted to engage the horizontal portion of the member $C^3$ whereby the weight of the ring is taken off the balls. This horizontal portion is provided with transverse or radial oil ducts $H^9$ whereby oil is washed across the lower bearing surface of the portion $H^8$. $H^{10}$ is an upper flat surface ring herein shown as identical with the ring H and adapted to rest upon the balls $H^4$.

I is a rotating supporting plate having downwardly depending circular flanges $I^1$ $I^2$ adapted to engage the ring $H^{10}$. $I^3$ are reinforcing flanges. $I^4$ is a sleeve extending downwardly from the rotating plate and provided for example with a cylindrical facing or bushing $I^5$. $I^6$ is an opposed bushing or antifriction member positioned about the upper portion of the sleeve $C^6$. $I^7$ is an annular flange extending downwardly from the outer periphery of the plate I terminating in the inner and outer flanges $I^8$ $I^9$ downwardly depending on either side of the upper edge of the wall $A^{12}$. $I^{10}$ is a gear secured to the flange $I^7$ and in mesh with the miter pinion $D^{10}$ on the shaft D. $I^{11}$ is a circumferential flange upwardly projecting about the outer edge of the plate I and continued in an outwardly extending flat surface flange $I^{12}$.

Resting upon the plate I and abutting against the flange $I^{11}$ is the removable bearing member generally indicated as K which includes a flat central apertured bottom plate $K^1$ and a circumferential upwardly turned flange $K^2$ having an inner spherical bearing surface $K^3$. $K^4$ is a circumferential oil passage formed in the upper surface thereof adjacent its outer edge and $K^5$ is an oil aperture herein shown as in register with the oil duct $K^6$ through the plate I. $K^7$ is a pin or other suitable securing means herein shown as integral with the member I and adapted to pass through the plate K and to prevent relative rotation of the two parts. $K^8$ is a circular oil groove in the plate I and has the short pipe $K^9$ leading therefrom to discharge onto the ball plate $H^1$.

L generally indicates a ball wedge member having a centrally depending shaft or stem $L^1$ penetrating the bushing $G^3$ of the eccentric E. The ball wedge is provided with a lower plane bearing surface $L^2$ opposed to the upper plane bearing surface $K^1$ of the plate K. Its upper surface $L^3$ is spherically formed to conform to the lower spherical bearing surface $L^4$ of the tilting plate $L^5$. The tilting plate is laterally extended as at $L^6$ and provided with a second spherical bearing surface $L^7$ in opposition to the spherical bearing surface $K^3$ of the circumferential flange $K^2$ of the plate K.

Supported upon the tilting plate $L^5$ is any suitable crushing disk M the details of which form no part of the present invention, but which is herein shown as a generally flat plate centrally apertured as at $M^1$ and having a downwardly and inwardly turned flange $M^2$ about the lower edge of such aperture. $M^3$ is any suitable clamping plate therefor apertured for the passage of holding bolts $M^4$ the heads $M^5$ of which are contained within an aperture or socket $M^6$ in the tilting plate $L^5$. $M^7$ is any suitable protecting plate adapted to overlie the nuts $M^8$ of the bolts $M^4$ and the clamping plate $M^3$. The disk M is further provided with downwardly depending pins or lugs $M^9$ adapted to penetrate apertures $M^{10}$ in the upper surface of the tilting plate $L^5$.

Formed integrally with the flanges $I^{11}$ and $I^{12}$ are a plurality of bosses N herein shown as hollow and perforated for the passage of bolts or pins $N^1$ screw threaded as at $N^2$ to receive the nuts $N^3$. They are provided, above such bosses, with shoulders $N^4$ against which abut the spacing sleeves $N^5$ about the pins $N^1$. $N^6$ is an inwardly projecting dust ring resting upon bosses $N^7$ formed in the ring $N^8$. $N^9$ is a downwardly turned flange formed about the outer edge of the ring $N^8$ the inner edge of such ring extending inwardly over the portion $L^6$ of the tilting plate $L^5$. $N^{10}$ is an angle ring positioned above the edge of the ring $N^8$ and provided with any suitable packing $N^{12}$ in engagement with an opposed spherical surface $N^{13}$ upon the tilting plate $L^5$. $N^{14}$ is an angle ring outwardly extending from the plate $L^5$ and downwardly depending about the angle member $N^{10}$. The purpose of these various overhanging and interlocking rings is the exclusion of dust and grit from the opposed

bearing surfaces of tilting plate, ball wedge and supporting plate, and in general the exclusion of dust and dirt from the moving parts housed within the interior of the crusher.

Mounted upon the spacing sleeves $N^5$ is the perforated ring O having a lip $O^1$ extending outwardly away from the sleeves $N^5$. $O^3$ is a spring compressed heavy annular collar resting upon the ring O, its inner wall being screwed as at $O^4$. Springs $O^5$ rest upon the collar $O^3$ and contact at their upper ends the ring $O^6$, which ring is also mounted on the pins $N^1$. It has a downwardly extending annular wall $O^7$. The nuts $O^8$ upon the pins $N^1$ serve to hold this collar rigidly in position so that the collar $O^3$ may rise if the springs are compressed, while the remainder of the structure remains in fixed position.

P is an adjusting disk plate having about its periphery an upwardly extending screw threaded flange $P^1$ in screw threaded engagement with the collar $O^3$. The plate P is upwardly coned and has mounted on its under side the conical crushing disk $P^2$ held in position by the collar $P^3$. The clamping member $P^4$ is in screw threaded engagement with the nut $P^5$ downwardly bearing upon the upper edge of the plate P about its central aperture. The part $P^1$ has an outwardly extending flange $P^6$ overhanging the screw threaded parts $P^1$, and an annular protecting ring $P^7$ hangs downwardly therefrom in slidable engagement with a part of the ring $O^3$ to protect the screw threads. $P^8$ are set screws in the flange $P^6$ adapted to engage the ring $O^3$ to lock the parts against rotation and to insure that the adjustment will remain fixed.

The material which is centrifugally discharged from the crushing zone between the opposed crushing disk passes outwardly beyond the spacing sleeves $N^5$ and is received within a hopper housing formed by an outer wall R and an inner wall $R^1$, the walls being connected by inclined bottoms $R^2$ whereby the material discharged into the space slides by gravity to any suitable disposal point. $R^3$ is a wear taking member on the inside of the wall R, adapted to receive the impact of the centrifugally discharged material. $R^4$ is an upper connecting ring above the hopper wall R, extending between points above the discharge from the crushing zone, where is provided an annular ring $R^5$ extending inwardly toward the ring O and overhanging the lip $O^1$ to prevent the rise of dust or other particles into the other part of the machine. Above such ring is the cylindrical wall $R^6$ which carries a floor $R^7$ in the center of which is positioned a hopper $R^8$ adapted to discharge material through the ring $P^3$ to the crushing zone.

It will be realized that whereas I have illustrated a practical and operative device that nevertheless many changes might be made in the size, shape, number and disposition of parts without departing from the spirit of my invention and that I wish my description and drawings to be taken as in a broad sense illustrative rather than as limiting me to the specific showing made.

The use and operation of my invention are as follows:

I employ a fixed base structure generally denominated as A which has an outer upwardly projecting wall member and a central bearing supporting sleeve. Upon the ledge $A^{10}$ inwardly projecting from the wall member rests the frame member B which includes a central vertical cylindrical sleeve $C^6$ and a track supporting member C $C^2$ $C^3$. The securing bolts $B^5$ are downwardly and outwardly inclined, the heads $B^6$ being enclosed in the interior of the structure and the nuts $B^8$ being exterior. Thus, in contrast to earlier crushers of this general type, the frame securing means are all external and in fact in the device as at present designed external access is had to practically all the securing means employed.

The eccentrically apertured sleeve E is centered in the fixed sleeve $C^6$ and the fixed sleeve $A^6$, its vertical downward thrust being taken by the bearing bushing $E^5$ with its outwardly projecting flange $E^6$ and its inwardly projecting flange $E^7$. The eccentric is driven through the gear $E^{10}$ and the gear $D^9$ at the end of the drive shaft D. Rotatably mounted in the eccentric aperture of the sleeve E is the downwardly depending shaft $L^1$ of the ball wedge L. This ball wedge is gyrated in response to rotation of the sleeve E its weight being supported upon the bearing plate $K^1$, the opposed bearing surfaces being plane. I prefer to employ a chrome vanadium steel or similar hard steel member as a ball wedge, the removable wear taking disk being preferably formed of a softer material, for example cast iron. The wear taking disc is provided with a circumferential annular upwardly projecting flange having a spherical bearing surface $K^3$ adapted to receive a similar opposed spherical bearing surface upon the tilting plate member $L^5$. The upper surface of the ball wedge and the lower surface of the tilting plate are spherical and concentric, the tilting plate being thus tilted in response to gyration of the ball wedge and being constrained to a tilting movement about its center by its engagement with the upwardly projecting flange of the wear taking plate.

In addition to rotating the eccentric sleeve the drive shaft, through the pinion $D^{10}$ also rotates the supporting means for both the upper and the lower disk. The crushing is effected by the alternate approach and recession of the lower disk from the upper in

response to the gyration of the ball wedge and the consequent movement of the tilting plate.

In order to provide an efficient supporting means and one which will not readily wear I employ a track ledge $C^2$ upon which rests a plane surfaced ring H of any suitable material for example steel. Preferably the upper surface of the ring H is continued by the upper surface of the ledge or step $C^3$. Resting upon the broad surface thus supplied are a plurality of balls constrained to a fixed relative position by the ball ring $H^1$. The ball ring is supported by the balls out of contact with the track or ring H but has a slightly downwardly depending inner portion $H^8$ which is in bearing engagement with the supporting member $C^2$. The ring structure is held against radial movement by the upward projecting $C^4$ of the ledge $C^3$. The upper track $H^{10}$ rests upon the balls and supports the entire superstructure of the crusher, the superstructure being centered by the sleeve $I^4$ which rotates about the upper portion of the sleeve $C^6$.

I claim:

1. A base frame member for a vertical disk crushing machine, comprising a generally horizontal, closed bottom plate, a central bearing sleeve upwardly projecting from said plate, a circumferential wall member upwardly projecting from said plate and a frame supporting abutment member inwardly projecting from said wall.

2. A base frame member for a vertical disk crushing machine, comprising a generally horizontal, closed bottom plate, a central bearing sleeve upwardly projecting from said plate, a circumferential wall member upwardly projecting from said plate and a frame supporting abutment member inwardly projecting from said wall, said abutment member being provided with holding bolt apertures.

3. A base frame member for a vertical disk crushing machine, comprising a bottom plate, a central bearing sleeve upwardly projecting from said plate, a circumferential wall member upwardly projecting from said plate and a frame supporting abutment member inwardly projecting from said wall, said abutment member being provided with holding bolt apertures, the axes of said apertures being upwardly and inwardly inclined.

4. A base frame member for a vertical disk crushing machine, comprising a generally horizontal, closed bottom plate, a central bearing sleeve upwardly projecting from said plate, a circumferential wall member upwardly projecting about said plate, a frame supporting abutment member formed intermediate the top and bottom of said wall and inwardly projecting therefrom.

5. A base frame member for a vertical disk crushing machine, comprising a bottom plate, a central bearing sleeve upwardly projecting from said plate, a circumferential wall member upwardly projecting about said plate, a frame supporting abutment member formed intermediate the top and bottom of said wall and inwardly projecting therefrom, said abutment member being provided with holding bolt apertures upwardly and inwardly inclined and being formed with an outward seat downwardly and inwardly inclined from the general spherical outer face of the circumferential wall member.

6. A base frame member for a vertical disk crushing machine, comprising a generally horizontal, closed bottom plate, a central bearing sleeve upwardly projecting from said plate, a circumferential wall member upwardly projecting from said plate, a frame supporting abutment member inwardly projecting from said wall, and a downwardly depending housing member aligned with and continuing said central bearing sleeve.

7. An integral track supporting and bearing member for a vertical disk crushing machine which comprises a central sleeve portion formed with an interior cylindrical bearing surface, a portion of said sleeve being formed with a cylindrical outer bearing surface, a downwardly and outwardly inclined supporting member for said sleeve and a track supporting ledge positioned upon said supporting member.

8. An integral track supporting and bearing member for a vertical disk crushing machine which comprises a central sleeve portion formed with an interior cylindrical bearing surface, a portion of said sleeve being formed with a cylindrical outer bearing surface, a downwardly and outwardly inclined supporting member for said sleeve and a track supporting ledge positioned upon said supporting member, said supporting member terminating in a laterally extended inclined abutment member provided with a plurality of inclined axised bolt hole apertures.

9. A track supporting and bearing member for a vertical disk crushing machine which comprises a central sleeve portion formed with an interior cylindrical bearing surface, a portion of said sleeve being formed with a cylindrical outer bearing surface, a downwardly and outwardly extending supporting member for said sleeve and a track supporting ledge positioned upon said supporting member, said supporting member terminating in a laterally extended abutment member provided with a plurality of bolt hole apertures, the axes of said apertures being downwardly and outwardly inclined.

10. A track supporting and bearing member for a vertical disk crushing machine

which comprises a central sleeve portion formed with an interior cylindrical bearing surface, a portion of said sleeve being formed with a cylindrical outer bearing surface, a downwardly and outwardly extending supporting member for said sleeve and a track supporting ledge positioned upon said supporting member, said supporting member terminating in a laterally extended abutment member provided with a plurality of bolt hole apertures, the axes of said apertures being downwardly and outwardly inclined, said supporting member being penetrated, adjacent said laterally extending abutment member, by an oil duct.

11. A track supporting and bearing member for a vertical disk crushing machine which comprises a central sleeve portion formed with an interior cylindrical bearing surface, a portion of said sleeve being formed with a cylindrical outer bearing surface, a downwardly and outwardly extending supporting member for said sleeve and a track supporting ledge positioned upon said supporting member, said ledge having about its inner periphery an upwardly and inwardly extending two-stepped centering flange.

12. In a gyratory sleeve for a vertical disk crusher, a generally cylindrical eccentrically apertured sleeve body, a ledge formed in the wall of said eccentric aperture, a disk seated on said ledge, the center of said disk being penetrated by a screw threaded aperture and a bearing bushing seated in said aperture and resting upon said disk.

13. In a gyratory sleeve for a vertical disk crusher, a generally cylindrical eccentrically apertured sleeve body, a ledge formed in the wall of said eccentric aperture, a disk seated on said ledge, and a bearing bushing seated in said aperture and resting upon said disk, and means adapted to be secured to the disk and adapted axially to withdraw disk and bushing.

14. In a gyratory sleeve for a vertical disk crusher, a generally cylindrical eccentrically apertured sleeve body, a ledge formed in the wall of said eccentric aperture, a disk seated on said ledge, the center of said disk being penetrated by a screw threaded aperture, a bearing bushing seated in said aperture and resting upon said disk, and means for withdrawing disk and bushing comprising in part a member adapted to engage the upper portion of the sleeve, a screw threaded stem in rotatable relation therewith and adapted to penetrate the screw threaded aperture of the disk, and means for rotating said stem.

15. A unit bearing plate for use with a vertical disk crusher and adapted to support the ball wedge and tilting plate thereof, comprising a central flat plate portion and an upwardly extending circumferential flange thereabout, the inner face of said flange being spherically formed.

16. A unit bearing plate for use with a vertical disk crusher and adapted to support the ball wedge and tilting plate thereof, comprising a central flat plate portion and an upwardly extending circumferential flange thereabout, the inner face of said flange being spherically formed, said plate being apertured with a circumferential oil duct thereabout and being penetrated by an oil passage associated therewith.

17. A unit bearing plate for use with a vertical disk crusher and adapted to support the ball wedge and tilting plate thereof, comprising a central flat plate portion and an upwardly extending circumferential flange thereabout, the inner face of said flange being spherically formed, said plate being apertured with a circumferential oil duct thereabout and being penetrated by an oil passage associated therewith, said oil duct and passage being situated adjacent the junction of the flat plate portion and the upwardly extending circumferential flange.

18. A unit bearing plate for use with a vertical disk crusher and adapted to support the ball wedge and tilting plate thereof, comprising a central flat plate portion and an upwardly extending circumferential flange thereabout, the inner face of said flange being spherically formed, and a securing lug downwardly projecting from said plate.

19. In a gyratory sleeve for a vertical disk crusher, a generally cylindrical eccentrically apertured sleeve body, a reduced concentric cylindrical portion at the bottom thereof and an anti-frictional end thrust bearing associated with such reduced bottom.

20. In a gyratory sleeve for a vertical disk crusher, a generally cylindrical eccentrically apertured sleeve body, a reduced concentric hollow cylindrical portion at the bottom thereof, and an anti-frictional end thrust bearing member associated with such reduced bottom and penetrating the hollow thereof.

21. The association with a track supporting member for vertical disk crushers, of a lower fixed annular track member, a ball ring positioned thereabove, a plurality of balls therein, means, independent of the balls, for supporting said ring, and a moving track overlaying said first mentioned track member and resting upon said balls and adapted to support the moving portion of the crusher.

22. The association with a track supporting member for vertical disk crushers, of a lower fixed annular track member, a ball ring positioned thereabove, a plurality of balls therein, the ring being provided with a downwardly depending bearing portion adapted to engage said track supporting member and to support the rest of the ring out of contact with the track member.

23. The association with a track supporting member for vertical disk crushers, of a lower fixed annular track member, a ball ring positioned thereabove, a plurality of balls therein, the ring being provided with a downwardly depending bearing portion adapted to engage said track supporting member and to support the rest of the ring out of contact with the track member, the lower surface of said bearing portion being broken by outwardly extending oil ducts.

24. The association with a track supporting member for vertical disk crushers, of a lower fixed annular track member, a ball ring positioned thereabove, a plurality of balls therein, the ring being provided with a downwardly depending bearing portion adapted to engage said track supporting member and to support the rest of the ring out of contact with the track member, the lower surface of said bearing portion being broken by outwardly extending oil ducts, and means for delivering oil to a point adjacent the inner periphery of the ball ring.

25. An integral track supporting member, for use with a vertical disk crusher having a base member and an upwardly extending circumferential housing wall, and adapted to be positioned on such wall, which includes an annular web, an outwardly extending flange about the lower edge of said web, such flange terminating in an abutment member adapted to engage and seat upon said housing wall, and a track receiving flange about the top of said web.

26. An integral track supporting member, for use with a vertical disk crusher having a base member and an upwardly extending circumferential housing wall, and adapted to be positioned on such wall, which includes an annular web, an outwardly extending flange about the lower edge of said web, such flange terminating in an abutment member adapted to engage and seat upon said housing wall, and a track receiving flange about the top of said web, said track receiving flange terminating interiorly in an upwardly extending track centering flange.

27. A track supporting member for use with a vertical disk crusher having a base member, and an upwardly extending circumferential housing wall, which includes an annular web, an outwardly extending flange about the lower edge of said web and a track receiving flange about the top of said web, said last mentioned flange terminating interiorly in a double step upwardly extending flange.

28. A track supporting member for use with a vertical disk crusher having a base member, and an upwardly extending circumferential housing wall, which includes an annular web, an outwardly extending flange about the lower edge of said web, a track receiving flange about the top of said web, said last mentioned flange terminating interiorly in a double step upwardly extending flange, and a track ring adapted to rest upon said inwardly and outwardly extending flange, the upper surface of said ring and the surface of one step of said interior flange being continuous.

Signed at Hollywood, county of Los Angeles and State of California, this 24th day of November, 1925.

EDGAR B. SYMONS.