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GYRATORY CRUSHER

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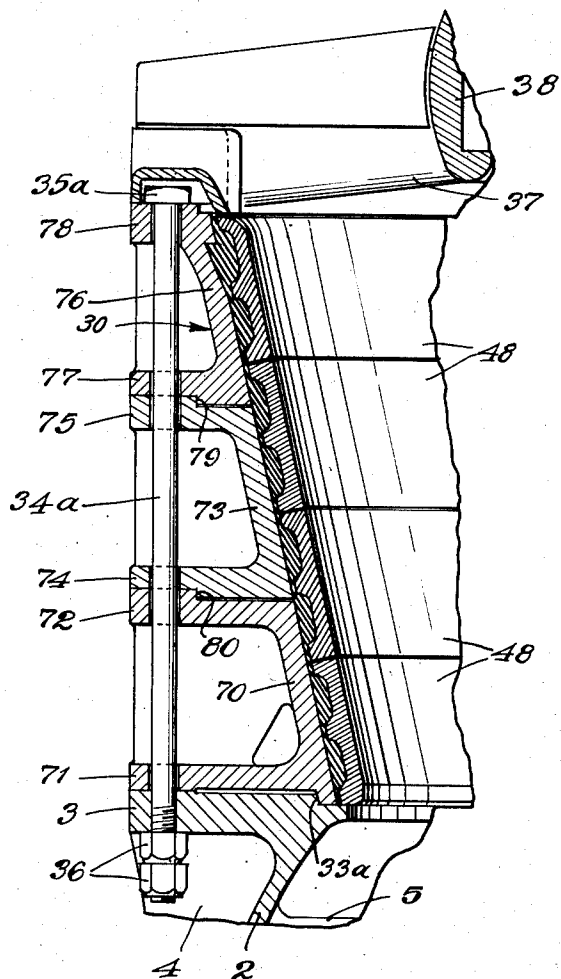


Fig. 1

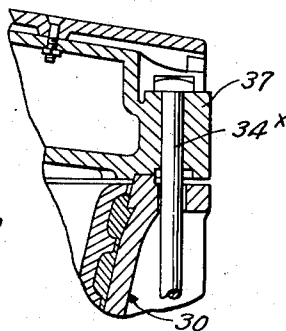


Fig. 2

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UNITED STATES PATENT OFFICE

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GYRATORY CRUSHER

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1 Claim. (Cl. 241—299)

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My invention relates to an improvement in gyratory crushers and has for one purpose to provide a gyratory crusher of simple and efficient structure.

Another purpose is to provide an improved crusher frame or shell structure, and means for securing it.

Other purposes will appear from time to time in the course of the specification and claim.

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

Figure 1 is a partial vertical axial section; and Figure 2 is a fragmentary vertical section illustrating a variant form.

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

Referring to the drawings, 2 indicates the lower shell, shown as including a circumferential wall which may, for convenience, be in the form of a truncated dome. It is provided with an upper outwardly extending flange 3 and outwardly extending reinforcing ribs 4. 5 indicates any suitable rib structure adapted to center and support the usual eccentric (not shown).

Positioned upon and above the lower shell 2 is an upper shell structure generally indicated as 30 superimposed by a suitable spider structure, not herein shown in detail but indicated at 37, carrying a central knuckle or hub 33 to support the upper end of the eccentric.

The upper or top shell structure 30 is separated into a plurality of superimposed annular shell elements. The lower shell element 70 has a bottom flange 71. It also has an upper flange 72 abutting against the lower flange 74 of the shell element 73. The intermediate member 73 has an upper flange 75 abutting against the lower flange 77 of the upper shell element 76. The upper shell member has a top flange 78. Preferably I employ generally radially extending reinforcing webs 100 in all of the shell elements. These webs or radial reinforcements are preferably formed integrally with the flanges and frustoconic inner portion of the shell elements. Thus a structure of great strength is provided. Tension rods or bolts 34a, pass through the entire series of flanges. It will be noted, however, that the members 34a pass through cored out apertures in the various shell flanges, the centering of the shell structure being obtained by the direct interlocks or interpenetrations 33a between the lower section and the top of the lower shell and corresponding interlocks 79 and 80 between adjacent shell elements. It will be understood that most of the tension members or tie rods or bolts 34a have their heads 35a abutting against the top flange 78. However, the spider structure 37 may be held in position by upwardly

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extending bolts 34x, of extra length, as illustrated in Figure 2.

Within the shell structure 30 are positioned a plurality of suitable bowl concaves 48 which, in the form shown herein, have their abutting edges offset from or in staggered relation to the abutting edges of the several shell portions 70, 73 and 76.

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

I claim:

In a gyratory crusher structure, a base having a circumferential upper outer flange, a multipiece top shell formed of individual annular shell elements, each shell element having superposed, outwardly projecting top and bottom flanges, connecting radial generally upright reinforcements and a frustoconic inner body portion formed unitary with the flanges and the reinforcements, the flanges abutting directly the opposed flanges of the base or of the adjacent shell elements, all the flanges being of substantially the same diameter, unitary means for securing the shell elements together and to the base including tie rods extending upwardly through the flange of the base and through the superposed upper and lower flanges of all the shells, the tie rods being radially out of line with the radial reinforcements, and a conical liner within the shell and formed of a plurality of superposed annular sections the joints of which are staggered vertically in relation to the joints between the annular shell elements, and a spider member having arms supported upon the upper flange of the uppermost shell section, said arms including portions overlying the upper edge of the uppermost annular liner section, and other portions overlying the upper ends of certain of said tie rods, others of said tie rods passing through certain of said spider arms and securing the spider member and said shell sections together and to the base member.

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REFERENCES CITED

The following references are of record in the file of this patent:

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