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C. E. DOUGAN

ROTARY DISINTEGRATOR APPARATUS

Filed May 19, 1927

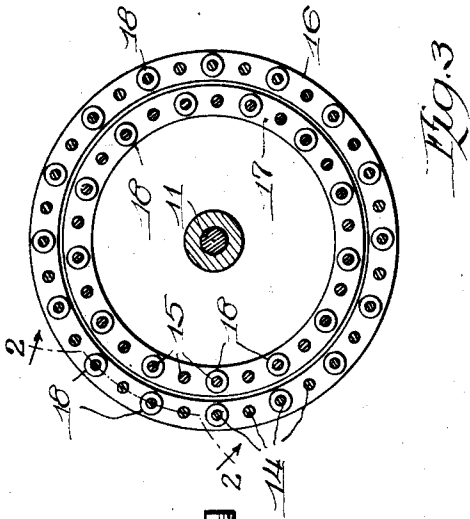


Fig. 3

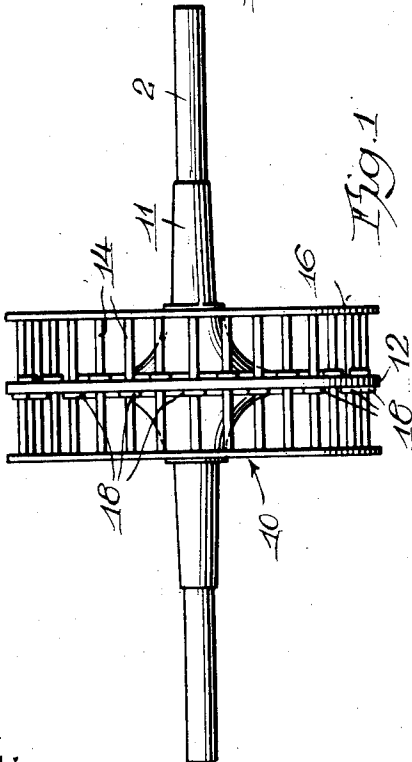


Fig. 1

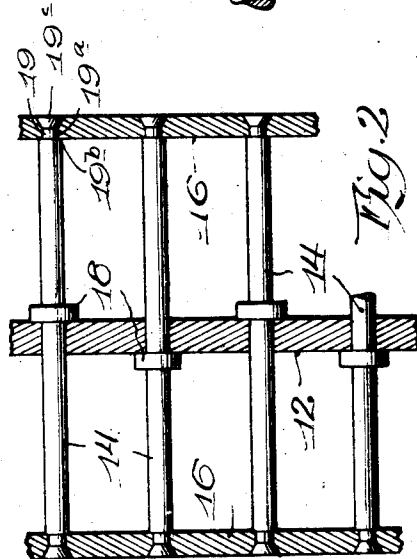


Fig. 2

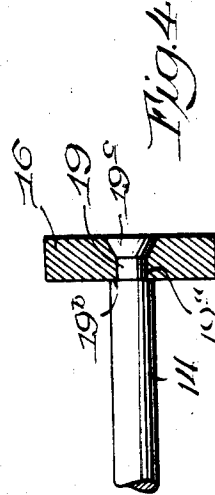


Fig. 4

Witness:
Chas. F. Kinsler

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UNITED STATES PATENT OFFICE.

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ROTARY DISINTEGRATOR APPARATUS.

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This invention relates to improvements in the rotor member of a rotary disintegrating apparatus and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The invention relates to that type of disintegrating apparatus of familiar use in gas washing apparatus, in which the disintegrator elements consist of circular rows of fixed rods or bars alternating and interlaced with like rows of similar bars carried by a rotary disc interposed between the supports of the fixed bars.

The object of the invention is to provide a novel and improved construction of the rotor member including the disintegrating rods or bars carried thereby, which is capable of withstanding the severe bending stresses and vibratory strains resulting from the high speed of rotation (as much as 18,000 feet or more per minute in the arcuate path of the outer row) of the disintegrator rods or bars.

Another object of the invention is to provide a construction having the advantages described, which is cheap and economical to manufacture and which is capable of ready and easy assembly.

These and other advantages of the invention will appear more clearly as I proceed with my specification.

In the drawings:—

Figure 1 is a side elevation of the rotor member of a rotary disintegrating apparatus of the kind referred to made in accordance with my invention.

Figure 2 is a section of the same in a plane indicated by the line 2—2 of Figure 1.

Figure 3 is a sectional view in a plane indicated by the line 3—3 of Figure 2.

Figure 4 is a fragmentary, sectional view on an enlarged scale showing the connection of one of the disintegrator elements to a ring included in the assembly of the rotor.

Referring now to that embodiment of the invention illustrated in the drawings:—10 indicates the rotor member of a rotary disintegrating apparatus, such, for example, as that used for washing gas, wherein my invention is of special value on account of the high speeds attained by said rotor member. Said rotor consists of a shaft 11; of a disc 12 concentric therewith and rigidly fixed

thereon between hubs 13, 13; of radially spaced circular rows of disintegrator elements 14, 15 extending to either side of the disc 12 carried near the periphery thereof; and of rings 16, 17 carried by the ends of said disintegrating elements.

Each disintegrator element 14, 15, which is preferably a round rod, is provided with a radial boss 18 near its middle adapted for flat engagement on one side with the proximate face of the disc 12, said rod on one side of the boss being of a length to extend to and through the one of the rings 16, 17 with which it is associated on that side of the disc with which the boss is engaged, and the other side being of a length in addition equal to the thickness of the disc. The rods are placed with the bosses 18 of alternate rods in engagement with opposite sides of the disc 12, as clearly shown in the drawings. Each rod has reduced ends 19 engaged in holes 19^a in the ring with shoulders 19^b engaged against the proximate face of the ring (16 or 17) with which it is associated. The outside ends of the said holes 19^a have conical recesses into which the ends of the rods are riveted to provide conical heads 19^c.

By the construction described, each rod 14 or 15 in a row rigidly connects the associated pair of rings 16 or 17 against lateral movement in either direction and each pair of adjacent rods, by means of their opposed integral bosses 18 engaged with opposite faces of the disc 12 hold the disc against relative lateral movement. The flat engagement of the shoulders 19^b with the rings and of the bosses 18 with the disc 12 present effective resistance to bending stress in each rod intermediate its supports, under the centrifugal force due to rapid revolution of the rod about the center of the shaft and obviates any strains which might otherwise occur due to the vibration of the rod.

Manifestly, the rods 14, 15 are all of identical construction, with the bosses 18 preferably integral therewith, so that they may be made at comparatively small cost. When assembled in the disc 12 and rings 16 and 17 as described, they provide a rigid, cage-like structure which will act as a unit.

While in describing the invention I have

referred to several details of mechanical construction and arrangement of parts, it will be understood that the invention is in no way limited thereto except as may be pointed out in the appended claims.

I claim as my invention:

1. A rotor member for a disintegrating apparatus comprising a shaft, a disc fixed thereon, a circular row of disintegrator elements carried by said disc, rings carried by the ends of said disintegrator elements, each disintegrating element consisting of a bar extending through said disc provided with a boss intermediate its ends, the bosses of alternate bars engaging opposite faces of said disc.

2. A rotor member for a disintegrating apparatus, comprising a shaft, a disc fixed thereon, a circular row of disintegrator elements carried by said disc and extending parallel to said shaft through said disc and to each side thereof and rings carried at the ends of said disintegrator elements, each disintegrator element consisting of a bar having a fixed annular shoulder in its mid-

dle, the shoulders of alternate bars engaging opposite faces of said disc, and the ends of said bars each being reduced in diameter to provide a radial shoulder engaged with the associated ring.

3. A rotor member for a disintegrator apparatus, comprising a shaft, a disc fixed thereon, a circular row of disintegrator bars carried by said disc and extending parallel to said shaft to each side of said disc, and rings carried by the ends of said bars, the disc and rings having holes in which said bars are engaged, the bars having integral bosses near their middle with the bosses of alternate bars engaged with opposite faces of said disc, and said bars having reduced ends engaged in the holes in the rings with the radial shoulders on the rods thus provided engaged with the inner faces of said rings.

In testimony that I claim the foregoing as my invention, I affix my signature this 13th day of May, A. D. 1927.

CHARLES E. DOUGAN.