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T. M. EVANS
MIXING APPARATUS
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2,288,440

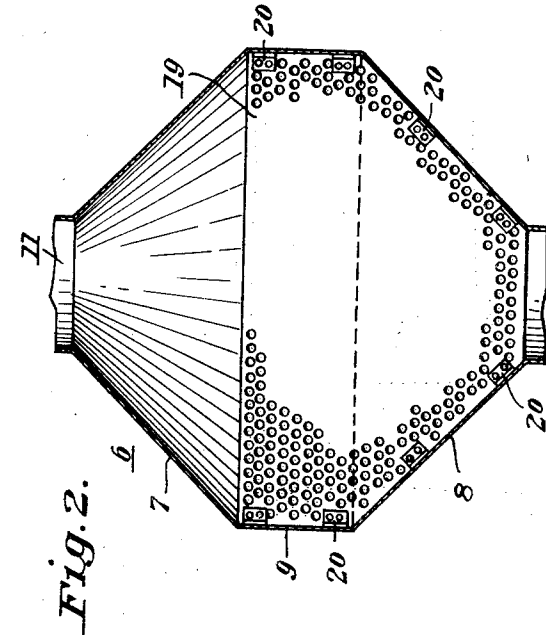
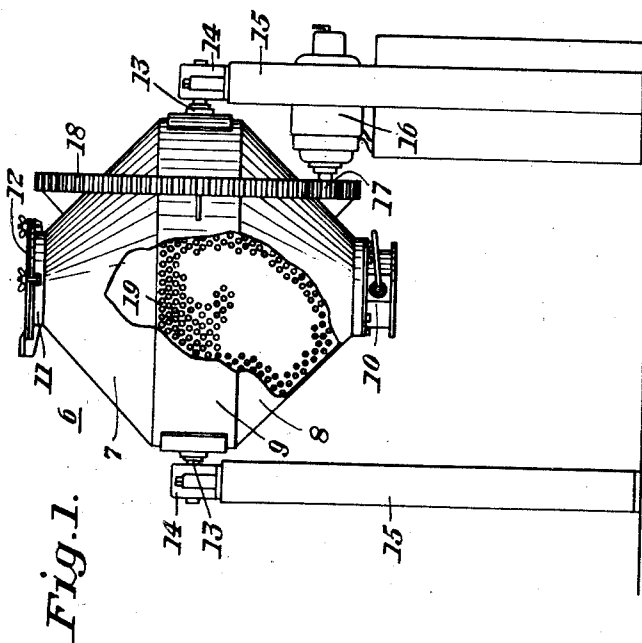


Fig. 4.

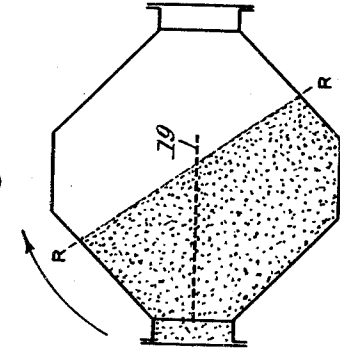
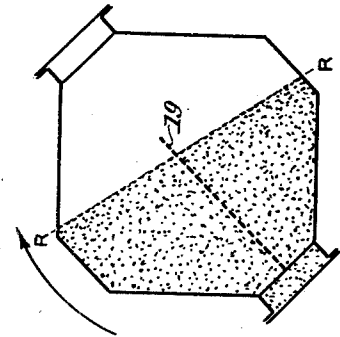
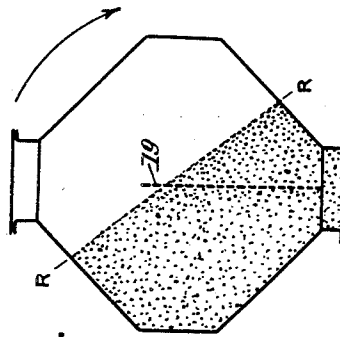


Fig. 3.

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2,288,440

MIXING APPARATUS

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2 Claims. (Cl. 259—81)

This application relates to mixing apparatus, particularly apparatus designed for mixing together or blending dry powders. Specifically, it is an improvement in mixing apparatus known as a "double cone blender." Heretofore, in using double cone blenders, great difficulty has been had in properly and completely mixing some dry powders together particularly where a small amount of one powdered material was to be mixed with a relatively large amount of another powdered material. It has been found that grains of the material forming the smaller portion of the final mixture tended to agglomerate. Consequently, the material was not evenly distributed throughout the mixture.

I have devised an improved mixing apparatus by which the above described difficulty has been largely eliminated. In accordance with my invention I provide in a double cone blender a foraminous partition which is centrally located and divides approximately one-half of the space within the receptacle. If the double cone blender is then rotated about a transverse axis at the proper speed, the partition acts upon the materials being mixed to prevent agglomeration.

In the accompanying drawing I have described a present preferred embodiment of my invention in which

Figure 1 is an elevation of my mixing apparatus with a portion broken away to show the interior of the mixing receptacle, and

Figure 2 is a longitudinal section of the mixing receptacle with portions broken away, and

Figures 3, 4 and 5 are schematic diagrams showing the function of the partition within the receptacle.

My mixing apparatus comprises a receptacle generally designated by the reference numeral 6 which holds the materials which are to be mixed. This receptacle is in the shape of two cones 7 and 8 joined at their bases by a short cylinder 9. The apices of the cones are truncated to provide a discharge valve 10 and a charging opening 11. The charging opening may be closed by a hinged cover 12.

Trunnions 13 are secured to opposite sides of the cylinder 9 so that the receptacle may be rotated about a transverse axis. The trunnions 13 turn in bearings 14 which are mounted on stands 15. The receptacle is rotated by an electric motor 16 which turns a pinion gear 17. The gear 17 meshes with a ring gear 18 secured to the periphery of the receptacle. Other power transmission systems can be used for rotating the receptacle as a chain drive, direct drive, etc.

Figure 2 shows the foraminous partition 19 which is positioned within the receptacle 6. It is held firmly in place by angles 20 secured to the inside of the receptacle or by any other suitable means. The partition may be made of any suitable material such as wire mesh, flattened expanded metal, perforated plates, etc. The size of the openings in the partition will depend upon the nature of the materials being blended. It is centrally positioned within the receptacle so as to divide a portion of the space within the receptacle into two spaces. The partition extends from one side to the other of the receptacle but does not extend the entire length of the receptacle; that is, the entire distance between the apices of the cones forming the receptacle. Preferably, the partition divides one of the cones and the cylinder 9 into two equal spaces and lies in a plane parallel to the axis of rotation.

Figures 3, 4 and 5 are schematic diagrams showing the function of the partition 19 in assisting the mixing of materials within the receptacle. After the materials to be mixed are placed in the receptacle and the receptacle is rotated one complete revolution, the materials will assume the position shown in Figure 3 with an angle of repose indicated at R—R. The receptacle 6 is rotated at such a speed that the materials being mixed will not be held against the sides of the receptacle by centrifugal force. Therefore, as the receptacle is rotated the materials will assume the position shown in Figures 4 and 5, the angle of repose R—R remaining the same throughout. Reference to the figures will show that as the receptacle is rotated all of the materials will pass through the partition 19 or will be forced across the surface of the partition to cascade over the open edge of the partition. Agglomerations of particles are broken up in passing across the partition and will pass through it on the next revolution of the receptacle. In this manner, agglomeration of the particles is prevented and complete blending is accomplished.

While I have disclosed only a present preferred embodiment of my invention, it is to be distinctly understood that it may otherwise be variously embodied and practiced within the scope of the following claims:

I claim:

1. A mixing apparatus comprising a receptacle having generally frusto-conical terminal portions joined at their bases by an intermediate generally cylindrical portion, the axes of the terminal and intermediate portions being aligned, means for

mounting said receptacle for rotation about an axis transverse to said aligned axes, and a partition member within said receptacle and disposed in a plane substantially parallel to the plane defined by said aligned axes and said axis of rotation, said partition extending from the small end of one of said frusto-conical terminal portions towards the other frusto-conical portion and having a free terminal edge within the region of the receptacle enclosed by said cylindrical intermediate portion, said partition engaging throughout its length the walls of the receptacle.

2. A mixing apparatus comprising a receptacle having generally frusto-conical terminal portions joined at their bases by an intermediate generally cylindrical portion, the axes of the terminal

and intermediate portions being aligned, means for mounting said receptacle for rotation about an axis transverse to said aligned axes, and a perforated partition member within said receptacle and disposed in the plane defined by said aligned axes and said axis of rotation, said partition extending from one remote end of one of said frusto-conical terminal portions towards the other frusto-conical portion, and having a free terminal edge within the region of the receptacle enclosed by said cylindrical intermediate portion, said partition being of a length equal to at least one-half of the longitudinal dimension of the receptacle, and engaging throughout its length the walls of the receptacle.

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