March 2, 1965 H. N. CLARK 3,171,658

SCATTERING DISTRIBUTOR FOR WET SOLID MIXES

Filed Dec. 18, 1962

FIG. 1

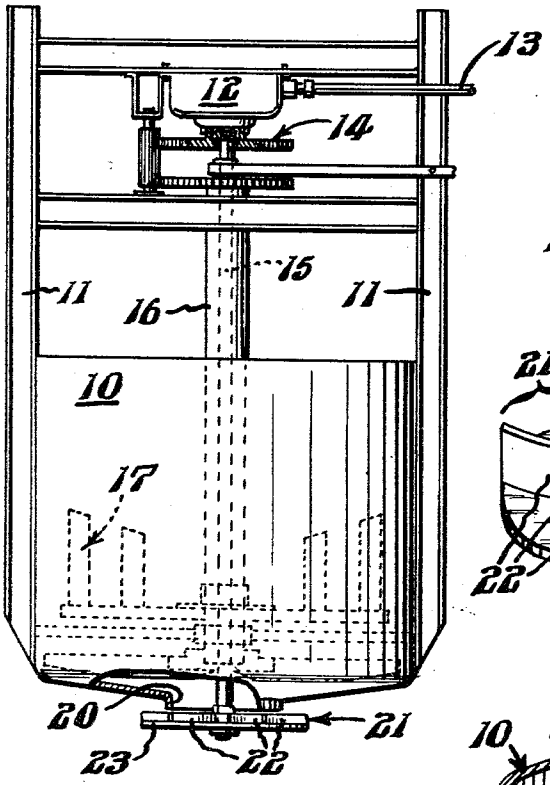


FIG. 2

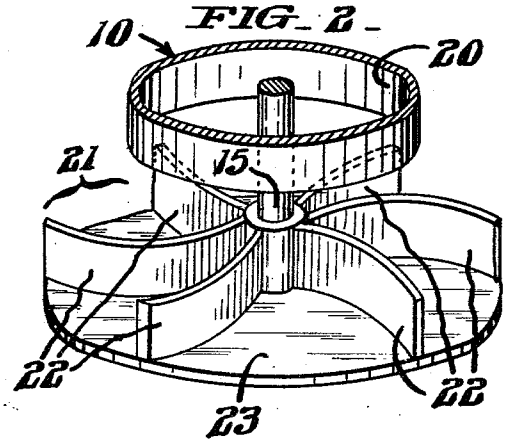


FIG. 3

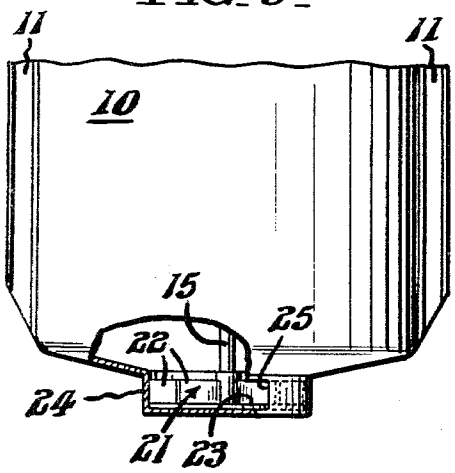
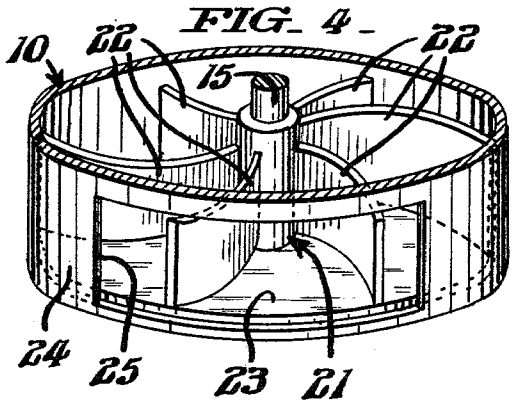


FIG. 4



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SCATTERING DISTRIBUTOR FOR WET SOLID MIXES

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2 Claims. (Cl. 275—15)

This invention relates to a gun for distributing wet solid mixes, such as mixes containing finely divided refractory compounds, for example. An object of this invention is to provide an apparatus which can be suspended in a closed space such as a refractory lined furnace for example, and which has the ability to distribute wet particulate mixes of the type above referred to, to all exposed surfaces within the furnace with rapidity and uniformity. Other objects and advantages of this invention will further become apparent hereinafter.

Referring to the drawing,

FIG. 1 is a view in side elevation, partly in section, showing a specific form of gun constructed in accordance with this invention.

FIG. 2 is an enlarged perspective view showing details of the distributing apparatus at the base of the gun.

FIG. 3 is a view similar to FIG. 1 showing the bottom portion of a modified form of gun in accordance with this invention, and

FIG. 4 is an enlarged perspective view somewhat like that of FIG. 2, showing the modified form of the distributing apparatus at the base of the gun which appears in FIG. 3.

Referring now to the specific forms of the invention selected for illustration in the drawings, the number **10** designates a generally cylindrical container mounted on frames **11**, comprising a container for the wet mix of solid material. At the upper end of the container **10**, mounted on the frames **11**, is an air motor **12** receiving pressurized air through a pipe **13** and connected by a train of gears generally designated **14** to an inner shaft **15** and an outer drive tube **16** both of which extend along the elongated axis of the container **10**.

Outer tube **16** is drivingly connected to an agitator or mixer element **17** located just above the bottom of the container, which maintains uniformity of the wet mixture in the location just above the center and bottom portion of the container **10**.

Just below the mixer **17**, the container **10** is provided with an opening **20** constituting an outlet for the wet solids. Just below the outlet opening **20** is a distributor generally designated **21**, the details of which are shown more clearly in FIG. 2. As will be seen, the distributor **21** is driven by the inner shaft **15** from the motor **12**, and comprises a plurality of curved rib members **22** all of which are mounted on a common base plate **23**. The ribbed plate formed at the members **22** and **23** catches and supports the wet solid material which is discharged through the opening **20** and throws such material radially outwardly utilizing centrifugal force, thus distributing the material throughout the enclosure, such as a refractory furnace or the like, in which the apparatus is contained.

It will be observed that the apparatus shown in FIGS. 1 and 2 throws the material throughout a 360° spread.

The apparatus shown in FIGS. 3 and 4 is specially constructed to limit the angular scope of coverage of the throw. In accordance with FIGS. 3 and 4, the ribbed plate **23** and the ribs **22** are surrounded by a generally cylindrical guard **24** having an opening **25** therein. As shown, the opening is a generally rectangular portion of the cylinder **24**, and it will be seen that as the blades **22** rotate the cylinder **24** serves as a guard, thus focusing or limiting the throw of material to that of the open area **25**.

It will be seen that, with the independent drive of the impeller **17** relative ot the blades **22**, and with the provision of facility for controlling the speeds thereof, the wet mix of solid particles can be fed downwardly through the opening **20** at a controlled rate and can be distributed uniformly throughout virtually any enclosure into which the mixing equipment according to this invention can be introduced.

While this invention has been described with reference to one embodiment thereof, it will be apparent to those skilled in the art that various changes other than those referred to above may be made in the form of the device, that equivalent elements may be substituted for those illustrated in the drawings, that parts may be reversed, and that certain features of the invention may be used to advantage independently of the use of other features, all within the spirit of the invention as defined in the appended claims.

It is claimed:

1. A gun for distributing wet solid mixes containing finely divided particles to the wall of a refractory lined furnace and the like, said gun comprising a suspendable cylindrical container for the mix; a shaft mounted for rotation on the vertical axis of said container and protruding through the bottom thereof; a centrifugal distributor affixed to the lower end of said shaft below said container, said distributor comprising a circular plate having curved radial ribs on the upper surface thereof; a hollow cylindrical sleeve mounted for rotation on the vertical axis of said container and surrounding said shaft; an impeller in the lower portion of said container affixed to said sleeve; motor drive means for driving said shaft and said sleeve independently; and a discharge opening in the bottom of said container for discharging mix to said distributor.

2. A gun as claimed in claim 1 characterized in that said distributor is provided with a peripheral wall having a discharge opening therein for controlling the area of distribution of said mix.

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