Nov. 19, 1968 L. HALE 3,411,757

LOADER

Filed March 28, 1966 2 Sheets-Sheet 1

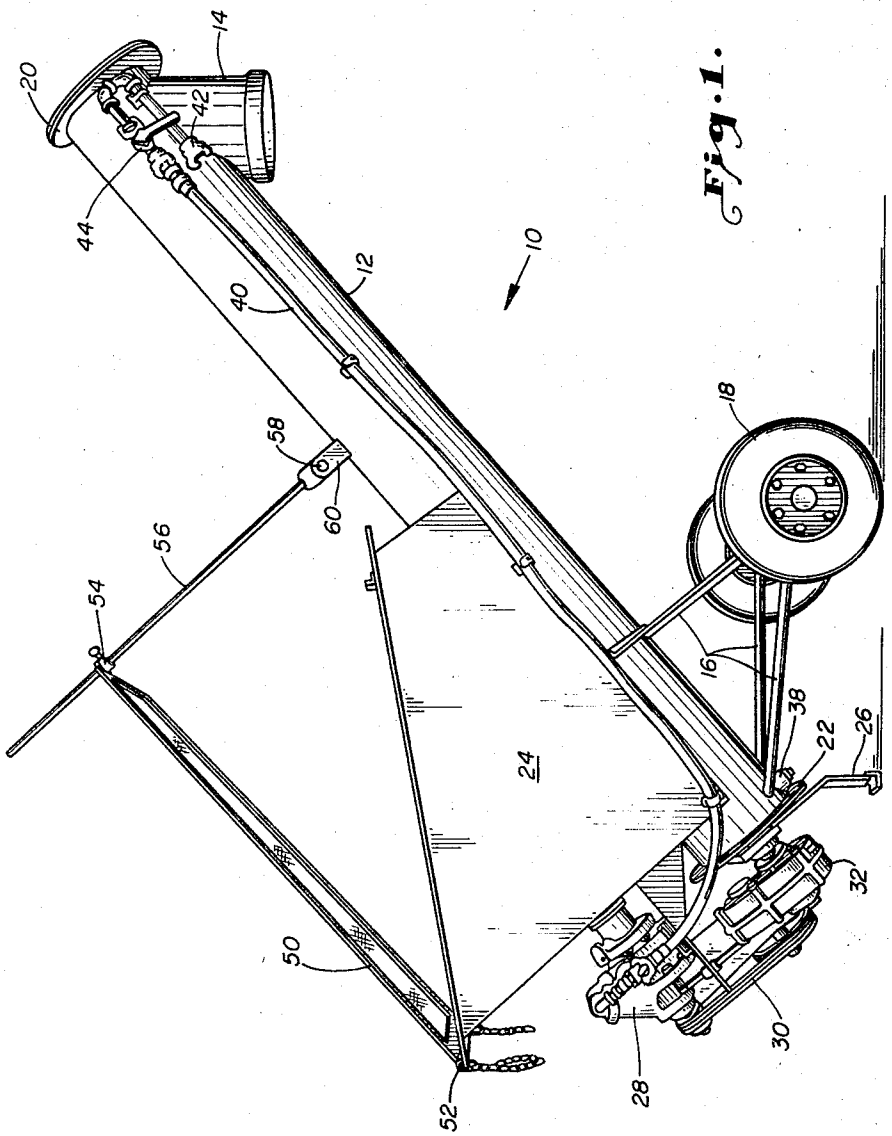


Fig. 1.

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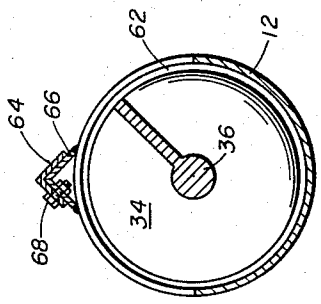


Fig. 5.

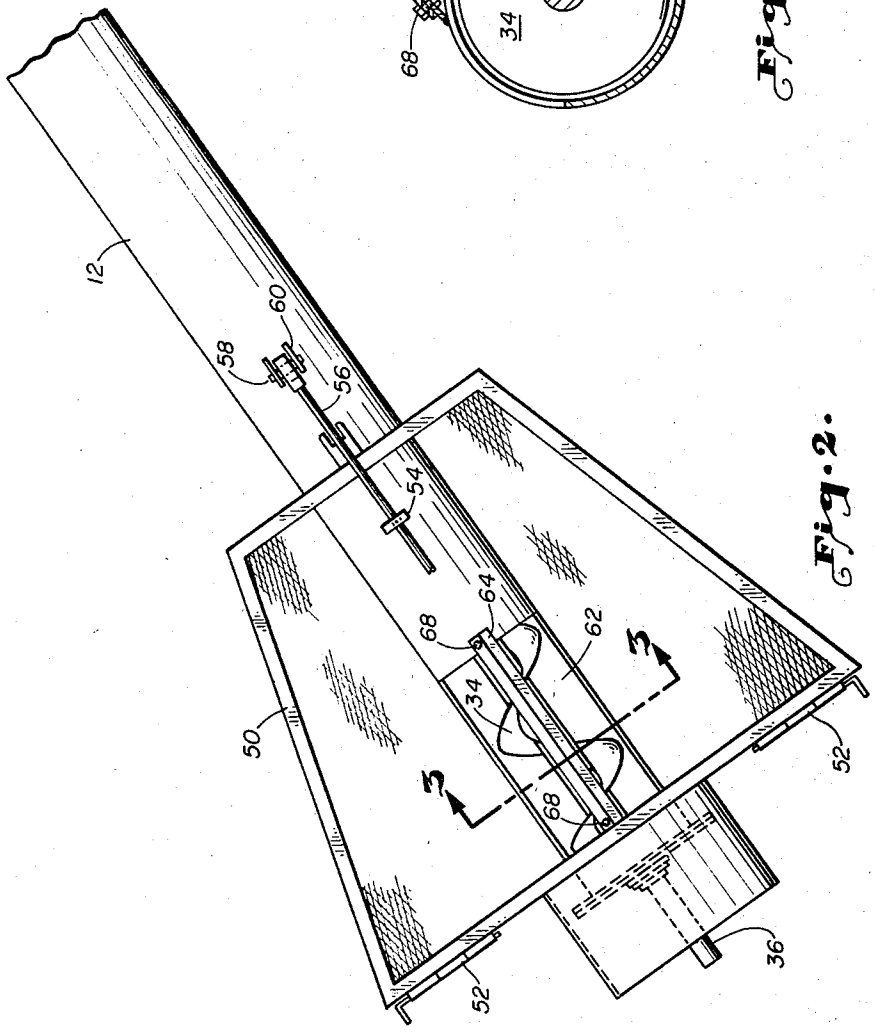


Fig. 2.

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3,411,757

LOADER

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3 Claims. (Cl. 259—161)

This invention relates to a loader for precision mixing of cement and sand mixtures or other related mixing operation including refractory castables, insulation materials, masonry coatings, asphalt sand, plaster, pressure grounding mixes, and the like.

It has been known that the pressure spraying of cement like materials is affected by the climatic conditions existing and by the conditions of the materials prior to mixing.

It is the object of this invention to provide a loader for particular use with wet-mix type of pressure spraying of cement or the like which permits precise loading while separating foreign material therefrom and which will permit utilization of wet-mix type of operations as herein defined, no matter what the climatic conditions or the state of the materials prior to mixing may be.

These and other objects of this invention will become more apparent from further reading of the specification and claims when taken in conjunction with the following drawings of which:

FIGURE 1 is a side elevational view of the loader of this invention.

FIGURE 2 is a partial top elevational view of the apparatus of the invention.

FIGURE 3 is a sectional view taken along the line 3—3 of FIGURE 2.

Referring specifically to the drawings the loader generally indicated by the numeral **10** is designed for, although not limited to, the usage and application with respect to the apparatus related to a mixing and dispensing apparatus as disclosed in applicant's prior U.S. Patents 2,858,116 and 2,965,312, which relate to apparatus for pressure mixing and spraying and/or shooting refractory materials, insulation material, cement motors, plastics and other related materials.

The loader of this invention specifically includes a conveyor tube **12** at the upper end of which is a downwardly directed discharge tube **14**. The tube **12** is supported to the ground by a frame **16** to which an axle and wheeled system **18** is attached, to permit movement and roadability. The feed tube **12** includes an upper end closure **20** and a lower end closure **22**. Vertically supported above the lower end of the feed tube **12** is a hopper **24**. An adjustable tripod-like support leg **26** is adjustably attached to the lower end closure **22** and provides ready means for adjusting the vertical height relationship of the discharge tube **14** with respect to the inlet opening of apparatus such as is described in the above referred to patents. An air motor **28** is positioned above the lower end of the feed tube on suitable supports attached thereto and includes a drive sheave means **30** to a gear reduction box **32** which is adapted to drive the rotatable auger **34** positioned within the feed tube. The auger is supported by a shaft **36** which is rotatably supported by the end closure members **20** and **22**, respectively. A closable drain opening **38** is provided at the lower end of the feed tube **12** to drain water or other materials or to assist in flushing the feed tube for cleaning or otherwise. A pressure fluid (such as air) supply conduit **40** is suitably affixed along the side of the feed tube **12** as shown and is connected to the air motor **28**. The inlet **42** includes means for adaptation to a source of compressed air or other pressure fluid, not shown. A valve **44** is provided for control of the air supply for varying the speed of the air motor **28** as the operator desires. Pivotally supported above the hopper **24** is a mesh screen **50** which is pivoted

about shaft **52** for various angular positions with respect to the position of a stop sleeve **54** which can be locked in any position with respect to rod **56**. The rod **56** is pivotally supported about shaft **58** as a part of bracket **60** which in turn is rigidly attached to the feed tube **12**.

As shown in FIGURES 2 and 3 an opening **62** is provided in the lower portion of the feed tube **12** which is in communication with that space enclosed by the hopper **24** such that material therein is directed thereinto and thence upwardly by the rotating auger **34** to the discharge tube. Centrally located across the opening is an angular bracket **64** which is retained to support members **66** by bolts **68**. Bracket **64** forms an important feature of this invention as it was found that finely divided materials will not substantially fill the opening space between the auger **34** and the feed tube interior. Thus a lower starting torque is required upon motor **28**.

In operation, the loader is positioned relative to the opening of a wet-mix pressure dispensing apparatus as disclosed in the aforementioned patents with the lower end of discharge tube **14** about two feet above. This provides sufficient drop into the charge opening to prevent conglomeration of the particles upon the grate therein. Ordinarily the dispensing apparatus is precharged with cement and water while the loader is utilized for sand charging. In utilizing the loader, screen **50** is positioned at the desired angular relationship whereby a given opening size is regulated to screen out desired size particles such as trash, rocks or other foreign matter. If larger particles are being loaded the screen **50** is lowered toward the horizontal relative to the top of hopper **24**.

An important aspect of this invention is the ability to load and utilize wet-sand in conjunction with the dispensing and mixing apparatus of the prior patents above mentioned. It is found that ordinary shoveling operations into the opening tends to pack and clog the grate whereas utilizing the loader of this invention prevents this.

The invention has been described with reference to specific and preferred embodiments. It will be apparent, however, that other modifications can be made without departing from the spirit and scope of the invention. For example, it has been found that the loader, utilizing a pneumatic motor, can act as a pre-mixing device by reversing the pressure fluid supply and exhaust to the same motor **28**. That is, a batch of cement and sand is charged into the hopper **24** in the proper ratio. The motor **28** is then reversed to prevent any discharge through tube **14**. Accordingly, this invention should be construed not to be limited to the embodiment herein described but should be limited only by the scope of the appended claims.

What is claimed:

1. A loader comprising:

a substantially closed feed tube including:

(a) a closure at each end thereof

(b) a downwardly directed discharge tube at the upper end

(c) a material receiving opening at the top half of said feed tube adjacent the lower end

(d) a rotatable auger supported by said closures, means to rotate said auger;

a hopper extending upwardly adjacent the lower end of said tube from said material receiving opening to cause said material to converge thereinto said feed tube;

a mesh cover for said hopper pivotal along the rear edge of said hopper and means to raise the free end to an angular position with respect to horizontal;

a dual wheeled support for said tube;

an adjustable tripod support leg at the lower end of said feed tube to position said discharge tube at a desired height; and

an angular bracket supported atop and across said material receiving opening acting as a bridge to prevent jamming of the auger at the opening.

2. A loader of the type described in claim 1 including a rod member pivotally supported to said feed tube to extend vertically therefrom, and an adjustable stop sleeve movable on said rod to support said free end of said mesh cover at a desired angular relationship to the hopper, said rod pivotal to a position atop said mesh screen when said screen is resting atop said hopper.

3. A loader as described in claim 2 wherein said means to rotate said auger is a controllable pneumatic motor.

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