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A. A. HASKELL ET AL

2,848,144

SPLITTER DEVICE

Filed March 18, 1954

3 Sheets-Sheet 1

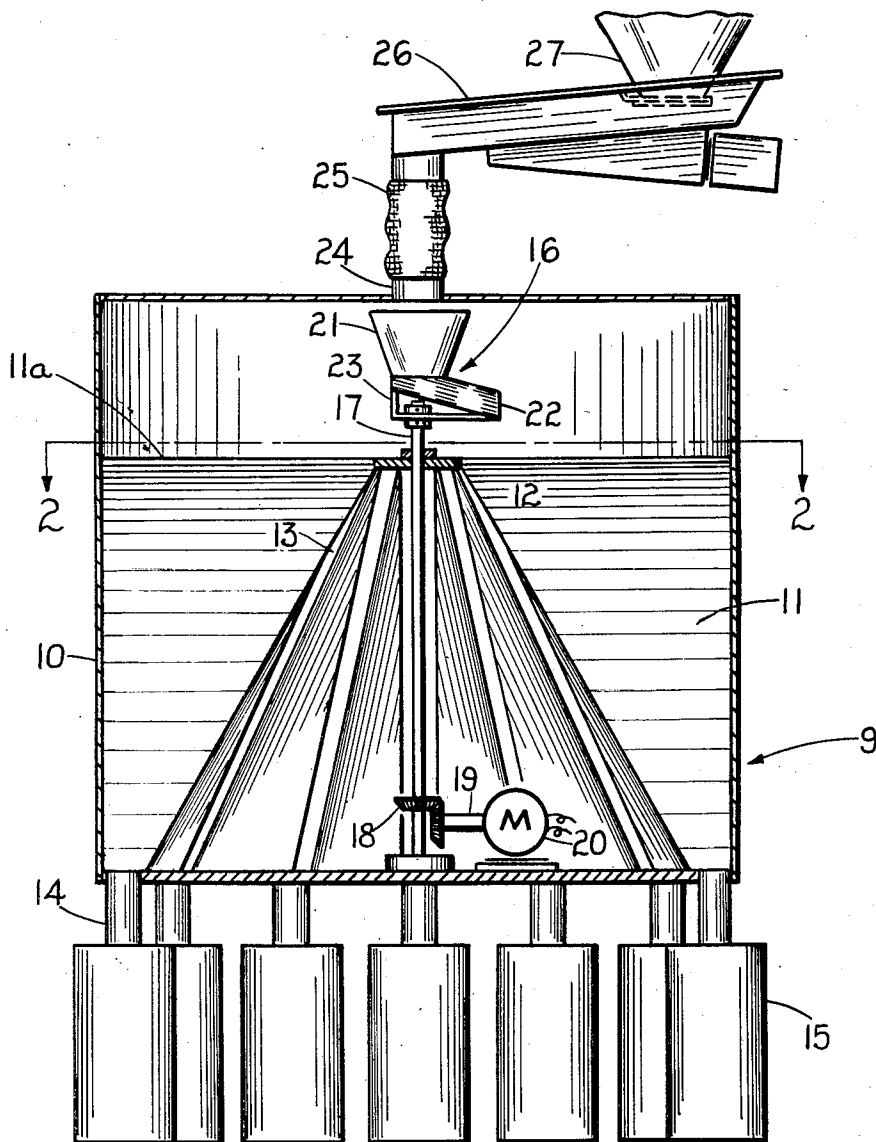


Fig. 1

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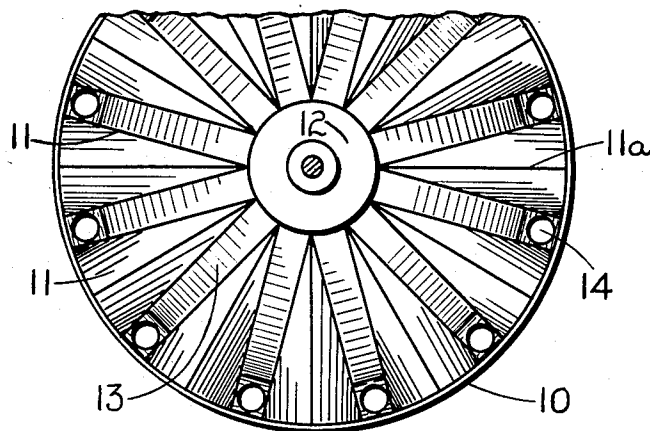


Fig. 2

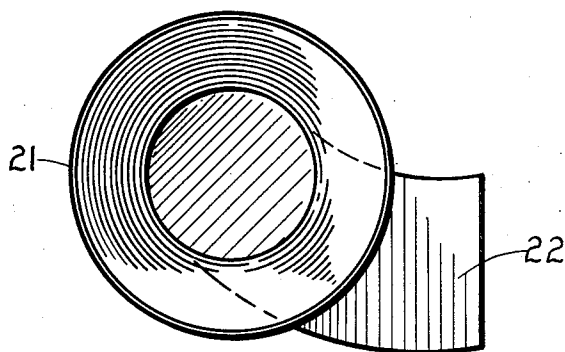


Fig. 3

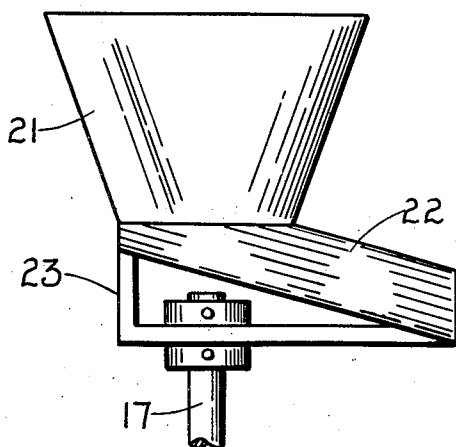


Fig. 4

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3 Sheets-Sheet 3

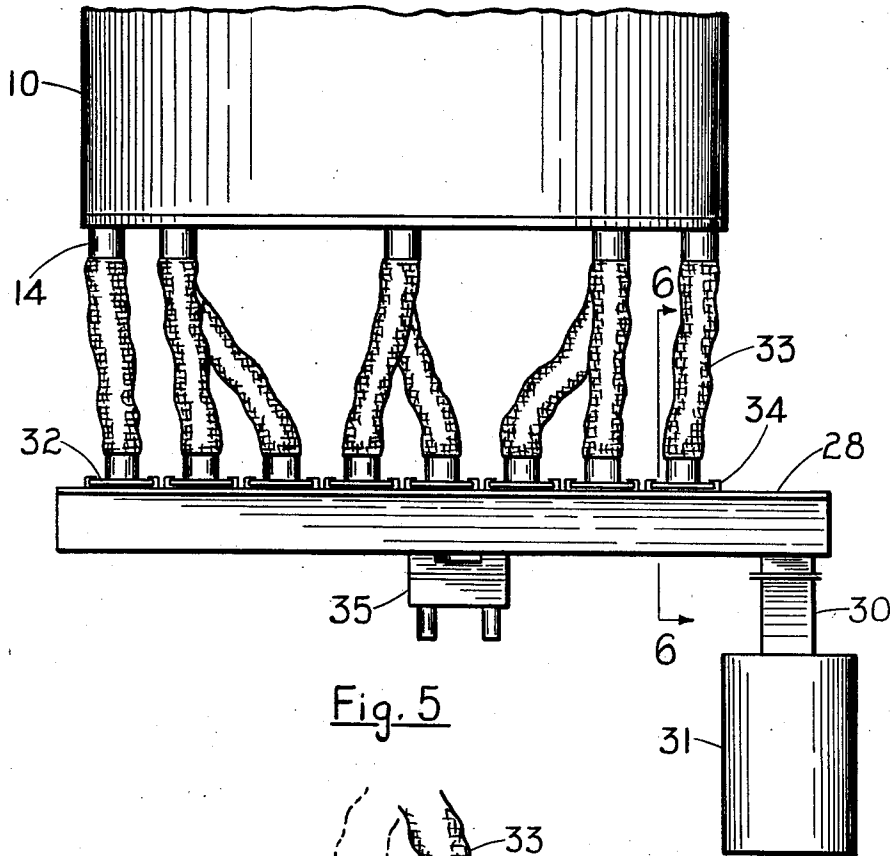


Fig. 5

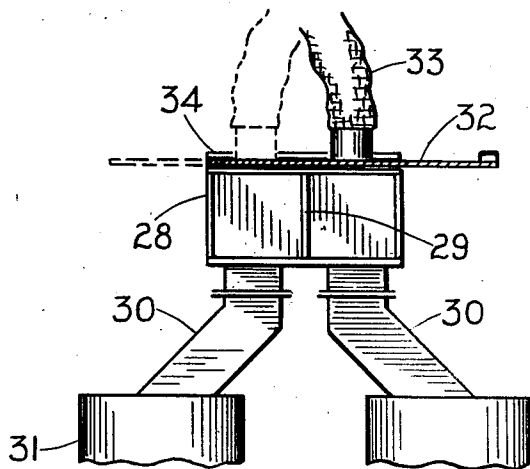


Fig. 6

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2,848,144

SPLITTER DEVICE

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4 Claims. (Cl. 222—330)

This invention relates to a splitting device particularly adapted to produce a plurality of uniform portions from a larger batch of comminuted or subdivided solid material.

Manufacturing processes often involve the splitting of large batches of subdivided materials into a plurality of uniform smaller batches. Such splitting operations are often difficult to accomplish particularly if the material being split includes particles of widely varying particle size or composition. Mechanical splitting devices, patterned after the familiar riffle sampler have been employed but these are difficult to construct for large scale operation and do not ordinarily yield a plurality of uniform split batches with any degree of accuracy. Furthermore such devices do not produce split batches of uniform weight as well as composition.

It is therefore the object of this invention to provide a splitting device which will split a batch of subdivided solid material into a plurality of uniform smaller batches. Another object of this invention is to provide a device for splitting a batch of subdivided solid material into uniform smaller batches of equal size. Another object of this invention is to provide a mechanically simple device for splitting a batch of subdivided solid material into uniform smaller batches. Still another object of this invention is to provide a device which will produce various sized uniform portions from an original large batch of subdivided solid material. These and other objects of this invention will be apparent from the following detailed description thereof and from the annexed drawings in which:

Fig. 1 is a general sectional view of a splitting device embodying features of this invention taken centrally across the device and particularly showing the compartments in section.

Fig. 2 is a section of the device of Fig. 1 taken along the line 2—2.

Fig. 3 is a top view of the distributing device employed in the splitter.

Fig. 4 is a more detailed side view of the distributor of Fig. 3.

Fig. 5 is a view in side elevation of another embodiment of a splitter device which will split the original batch into various sized portions of uniform material.

Fig. 6 illustrates a sectional view of the conveyor of the embodiment of this invention illustrated in Fig. 5, taken along the line 6—6.

Referring particularly to Fig. 1, this invention is illustrated by reference to the device shown generally at 9 which embodies features of this invention. The device 9 comprises a cylindrical shell 10 which interiorly is divided into a number of open top compartments by side walls 11. These compartments radiate from a central level platform 12 located near the top at the vertical axis of the shell and are each provided with downwardly and outwardly sloping inner end walls 13. The side walls 11 of the compartments, where they meet the end walls 13 are roughly parallel but they slope as they ex-

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tend upwards so that adjoining walls of separate compartments converge and meet at the top to form sharp radial edges 11a. The lowermost portion of each compartment communicates with outlet means such as a delivery pipe 14 which may lead directly to a container 15 disposed below but in communication with an associated individual pipe to receive the split batches.

Mounted on platform 12 is the distributor generally indicated at 16 and which is shown in more detail in Fig. 3. Vertical drive shaft 17 passes through the platform 12 and is suitably rotated by conventional driving means such as gears 18 and horizontal shaft 19 which is connected to motor 20. Mounted on the upper end of shaft 17 is a frusto-conical open top hollow body 21 provided on one side of its base with extending delivery spout 22. Preferably the spout 22 is curvate and declined as more particularly illustrated in Fig. 4 to insure free flow of material down through the conical portion and out through the spout. Spout 22 is supported by angle bracket 23 which also serves as bearing hanger for shaft 17. Directly above the open mouth of the distributor 16 is feed inlet 24 which may be in the form of a chute as shown. This may be connected by any suitable means to a receptacle for the original large batch of subdivided solid material which is to be split. In the embodiment illustrated the feed inlet 24 is connected by means of a flexible or resilient chute 25 formed of canvas or elastomer to the outlet end of vibrating conveyor 26. Hopper 27 is so arranged that material flowing out through the bottom will be fed onto the vibrating conveyor 26 at any desired rate and from there will flow down through the chute 25 and the connecting feed inlet 24.

The compartments are arranged so that each is identical in size and location with respect to the center and outside edge of the shell. In operation subdivided material fed down through the feed inlet 24 enters the distributor which is rotated at a relatively high speed. Centrifugal force throws the material out through the distributor spout 22 in a more or less horizontal spray and it flows evenly and uniformly over the top of the various compartments being separated into each compartment by the sharp edges 11a, and down through outlets 14 into the material receiving containers below.

Referring now more particularly to Figs. 5 and 6 a modified splitter device is contemplated which is designed to split a larger batch of subdivided solid material into smaller batches of varying proportions. In this embodiment, the compartmented drum and distributing arrangement are substantially the same as those previously described. The compartment outlet pipes 14, however, in this case lead downwardly into a common conveyor 28. This conveyor is provided centrally with a longitudinally extending septum 29 thus dividing the conveyor into two separate elongated compartments each of which leads at one end to an associated collecting spout 30, each of which in turn can deliver uniform split material to an associated container 31 disposed beneath its outlet end. The top closure of conveyor 28 is provided with a series of laterally extending perforated slide members 32, one of which is more clearly shown in Fig. 6 through which each individual compartment pipe 14 may deliver material, a suitable connection being accomplished by means of canvas sleeve 33. Each slide is movable transversely across the conveyor riding in tracks formed by angle members 34 so that the outlet from each compartment of the shell may be fed into either compartment in the conveyor 28 and thus be transferred by the conveyor actuated by conventional vibrating mechanism 35, to either of the receiving containers below. By suitable adjustment of the slide members, the original batch may be divided into two small batches each containing $\frac{1}{2}$ for

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instance, of the original batch, or any other proportions thereof depending on the number of compartments in the drum and the number of outlet pipes connected individually to each side of the conveyor.

The rapid rotation of the distributor throws solid, subdivided material fed into the device evenly over the series of compartments, the sharp edges formed by the converging side walls of adjacent compartments providing accurate apportionment into smaller batches. The split batches will be uniform as to composition and of equal weight when the embodiment of the invention illustrated in Figs. 1 and 2 is employed. When the modification illustrated in Figs. 5 and 6 is employed an accurate splitting into desired portions is obtained, the split batches also being characterized by uniform composition.

We claim:

1. A splitting device comprising a cylindrical shell, material feed inlet means in the center of the top of said shell, upwardly converging side walls defining a series of radial vertical open top compartments in said shell, the inner end walls of said shell compartments sloping downwardly and outwardly toward the periphery of said shell, material outlet means in the bottom of each of said shell compartments communicating with a generally horizontal conveyor, said conveyor being divided longitudinally by a septum into two conveyor compartments, means for adjusting the communication of said outlet means with either of said conveyor compartments and rotatable distributing means inside said shell adapted to receive solid subdivided material from said feed inlet means and to distribute it into said shell compartments.

2. A splitting device comprising a cylindrical shell, material feed inlet means in the center of the top of said shell, upwardly converging side walls defining a series of radial vertical open top compartments in said shell, the inner end walls of said shell compartments sloping downwardly and outwardly toward the periphery of said shell, material outlet means in the bottom of each of said shell compartments communicating with a generally horizontal conveyor through slide members on the top thereof, said conveyor being divided longitudinally by a septum into

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two conveyor compartments whereby adjustment of said slide members will adjust the communication of said outlet means with either of said conveyor compartments and rotatable distributing means inside said shell adapted to receive solid subdivided material from said feed inlet means and to distribute it into said compartments.

3. A splitting device comprising a cylindrical shell, material feed inlet means in the center of the top of said shell, upwardly converging side walls defining a series of radial vertical open top compartments in said shell, the inner walls of said compartments sloping downwardly and outwardly toward the periphery of said shell, material outlet means in the bottom of each of said compartments, and rotatable distributing means inside said shell comprising a frusto-conical open top body axially aligned with said feed inlet means and adapted to receive solid subdivided material therefrom, and having an extending, side opening spout at the base thereof adapted to distribute said material into said compartments.

4. A splitting device comprising a cylindrical shell, material feed inlet means in the center of the top of said shell, upwardly converging side walls defining a series of radial vertical open top compartments in said shell, the inner walls of said compartments sloping downwardly and outwardly toward the periphery of said shell, material outlet means in the bottom of each of said compartments, and rotatable distributing means inside said shell comprising a frusto-conical open top body axially aligned with said feed inlet means and adapted to receive solid subdivided material therefrom and having a curvate, extending, side-opening spout at the base thereof adapted to distribute said material into said compartments.

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