To all whom it may concern:

Be it known that I, GEORGE OMAR LANGENBERG, of St. Louis, Missouri, have invented a new and useful Vacuum Conveying Apparatus, of which the following is a specification.

This invention relates to vacuum conveying apparatus.

An object of the invention is to provide a vacuum conveying apparatus including a receiving conduit, a conduit in which a partial vacuum is established by an exhauster, and receiving chambers interposed between the conduits from which the material passing thereinto will be discharged automatically.

Another object of the invention is to provide in an apparatus of the class described a plurality of receiving chambers in the vacuum line, the contents of which chambers will be automatically discharged, and the next successive receiving chamber automatically be brought into communication with the vacuum line for the reception of additional material, as each preceding chamber discharges its contents.

Additional advantages attainable from the construction will be readily recognized from the following detailed disclosure taken in connection with the drawings in which Figure 1, is a front elevation of the apparatus. Figure 2 is an end elevation. Figure 3 is a cross section through the receiving chambers and associated parts taken substantially on the line 3—3 of Figure 1.

In the embodiment of the invention illustrated in the drawings, a revoluble casing comprising end plates 1 and side members 2 is divided into four receiving chambers by partition walls 3 and 4 secured within the casing and intersecting each other at right angles so that the four chambers are of equal cubic capacity. The casing is axially supported in a frame 5 so that it may be revolved, the revoluble support comprising trunnions 6 attached to each of the end plates 1, said trunnions being in axial alignment and fitting in bearing brackets 7 secured to each of the side members of the frame 5. The joints between the side members 2 and the partition plates 3 and 4 are tight, so that when the chambers are sealed by the cover plate they will be air-tight. The side members 2 are in the form of open frames, there being elongated openings 8 in the outer wall of each of the chambers. The edges of the side members 2 surrounding the openings 8 are surfaced or ground so that when the cover plate is brought into place over the openings an air-tight joint will be formed between the cover plate and the matching surfaces of the side members.

A cover plate 9 is offset at 10 at its upper edge, the outer edge of the extension 10 being hinged to the upper member of the frame by hinged construction 11. The mounting of the cover plate is such that it will seek to close the opening of the forward upper chamber when the casing is turned to the position best shown in Figure 3. It will be observed that when the casing is in this position the bottom wall, comprising one section of the partition wall 4, will be in horizontal position.

The cover plate is provided with an opening near each end thereof, an air-receiving pipe connection 12 fitted over one of said openings and an air-discharging pipe connection 13 being fitted over the other of said openings. The pipe connections are in angular form and are provided with flanges 14 and 15 respectively riveted to the cover plate around the openings. A flexible section 16 of the receiving conduit of the vacuum line is connected over the end of the pipe connection 12, and a flexible conduit 17 connected over the pipe connection 13, leads to the intake opening of an exhauster 18 which is mounted upon a bracket 19 at the side of the frame 5.

The operation of the device is as follows: The material to be conveyed is drawn into the receiving conduit of the vacuum line and passes into the receiving chamber beneath the cover plate, through the flexible conduit 16 and the pipe connection 12. As the area of the receiving chamber is relatively so much larger than the area of the receiving passage, the material will drop into the chamber, accumulating on the bottom wall. The cover plate is held in position to close the chamber therebeneath by the suction in the vacuum creating passage, which contact between the cover plate and the edges of the opening in the chamber will hold the plate.
in position and prevent the casing from revolving until the weight of material in the chamber overcomes the retaining pressure, whereupon the casing will revolve in the direction of the arrows 20. The cover plate will be lifted a slight distance over the separating webs between the chambers, the weight of the cover plate causing a quarter revolution of the casing, until the successive chamber is brought into position below the cover plate, when the suction in the succeeding chamber is established causing the cover plate to fit over the opening in the chamber, and the contents of the receiving conduit of the vacuum line will be discharged therein.

As soon as the weight of the material in the successive chambers overcomes the retaining force against the cover plate the seal will be broken between the cover plate and the edges of the chamber, and the weight of the material in the chamber together with the pressure of the cover plate will readily revolve the casing, until it is brought to a position where the cover can again seat to seal the chamber.

It is contemplated that the apparatus may be used for conveying and discharging materials having a relatively large weight, such as crushed coal, rock, sand, gravel, grain, or like materials, and that the principle is also applicable in all classes of vacuum cleaning apparatus, as the apparatus may be constructed by varying the suction so that a greater or less weight of the material in the receiving chambers will accomplish the function of breaking the seal between the cover plate and the edges of the operating receiving chamber.

Inasmuch as the apparatus may be adjusted so that a predetermined weight of material in the receiving chamber will be required to break the seal to cause the casing to revolve and the contents of the chamber to discharge, the apparatus will operate with a sufficient degree of accuracy so that it will discharge measured quantities of material.

I am aware that modifications in construction may be made without departing from the spirit and scope of the invention. I do not limit myself therefore to the exact construction shown and described, but what I claim and desire to secure by Letters Patent, is:

1. A vacuum conveying apparatus, comprising a receiving passage, a plurality of receiving chambers arranged in a revolvable drum, a cover mounted to seat successively to close the chambers in said drum, said cover having an opening therethrough into which the receiving passage is connected and a second opening therein, and a suction passage connected into said second opening.

2. In a vacuum conveying apparatus, a revolvable casing having a plurality of receiving chambers therein, a hinged cover plate arranged to seat over the edge of the receiving chambers in said casing, a receiving passage extending through said cover and communicating with the receiving chamber, and a suction passage connected through said cover and also communicating with said receiving chambers.

3. In a vacuum conveying apparatus, a revolvable casing having a plurality of receiving chambers therein, a hinged cover plate arranged to seat over the edge of the receiving chambers in said casing, a receiving passage extending through said cover and communicating with the receiving chamber, a suction passage connected through said cover and also communicating with said receiving chambers, and means for establishing a suction of air in said suction passage.

4. In a vacuum conveying apparatus, a revolvably mounted casing having radial walls and end plates thereby forming a plurality of receiving chambers open at the periphery of the casing, a pivoted cover plate adapted to successively seat upon the edges of the chambers and thereby close the same, a receiving passage entering through said cover plate, said receiving passage having a flexible portion adjacent to the cover plate, and a suction passage passing through the opposite end of the cover plate, said suction passage also having a flexible portion adjacent to the cover plate.

In witness whereof, I have signed this specification.

GEORGE OMAR LANGENBERG.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."