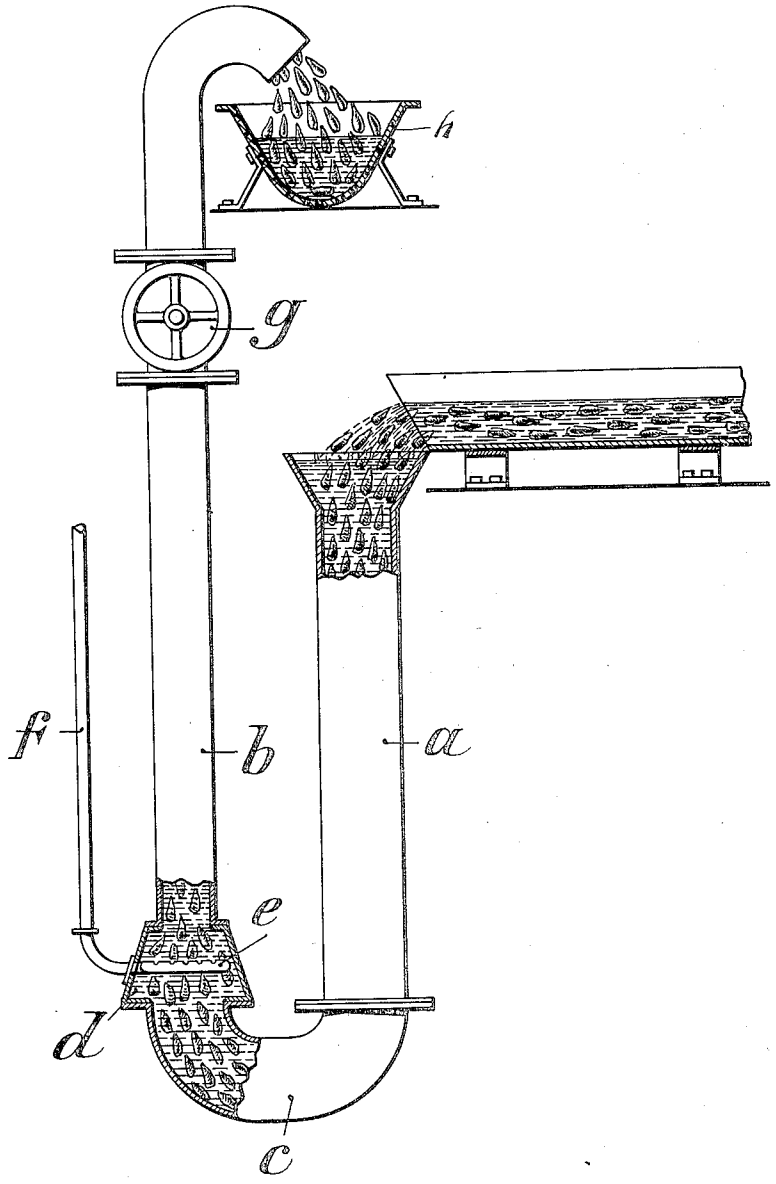
F. BEDUWÉ.

APPARATUS FOR ELEVATING AND CLEANING MATERIAL OF A GRANULAR NATURE.

APPLICATION FILED MAY 6, 1907.

914,475. Patented Mar. 9, 1909.



WITNESSES

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APPARATUS FOR ELEVATING AND CLEANING MATERIAL OF A GRANULAR NATURE.

No. 914,475. Specification of Letters Patent. Patented March 9, 1909.

Application filed May 6, 1907. Serial No. 372,082.

To all whom it may concern:

Be it known that I, FRANZ BEDUWÉ, engineer, a subject of the King of Belgium, residing at 21 Rue Paradis, Lüttich, Belgium, have invented certain new and useful Improvements in Apparatus for Elevating and Cleaning Material of a Granular Nature; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to apparatus for elevating and at the same time cleaning material in a form which may come under the generic term "granular" though it must be understood that its application is not limited to grain and particles of a similar size, since it may equally well be used for the treatment of beets, or a quantity of bodies of comparatively large size.

According to this invention the beets or other material mixed with water are conveyed, together with the water, into the shorter pipe of a reversed siphon and compressed air is introduced at the lower end of the longer pipe whereby an intimate mixture of air, water and beetroot is produced. In this way the density of the mixture of granular material, water and air in the longer pipe is reduced, and the mixture rises in the same, while the beets and water in the shorter pipe move downward. By this movement at the same time a washing of the beets is obtained, the dirt being removed from them by their mutual friction, so that after their upward movement very little if any additional washing is required.

One construction of apparatus according to this invention is illustrated by way of example in the accompanying drawing.

This apparatus comprises a communicating or siphon pipe having two members of unequal length *a* and *b* connected together by a bent member *c*. The shorter pipe *a* is preferably larger in diameter than the pipe *b*. The difference in the height of the two branches represents the total height to which the beetroot is to be raised. The proportion is preferably selected in such a manner that the said difference or actual height of raising is smaller than the height of the shorter pipe. At the lower end of the pipe *b* is inserted a vessel the interior of which is provided with a perforated cylindrical pipe *e*, which is connected to the air supply pipe *f*. The mixture of beets and water is conveyed, say, direct from the washing trough into the shorter pipe *a*, while compressed air is introduced from below into the pipe *b*. The mixture of air, water and beets is less dense than the liquid in the descending pipe *a* and the level which is at first the same in the two pipes, increases in the pipe *b* in proportion to the quantity of air introduced, so that finally the beets are discharged at the top of the pipe together with the water.

Owing to the speed of the current induced by the air which is maintained the beets in the pipe *a* cannot rise upward but are forced to move downward in the same. The speed at which the beets are raised is greater and their cleansing is the more perfect the longer the descending pipe *a* is made and consequently the greater the charge on the siphon. It can be modified by the regulation of the quantity of air supplied to the apparatus. The beets conveyed upward are preferably discharged into a perforated vessel *h* from which the dirty water is allowed to escape.

When the lifting device is not in use the beets, mud, and broken fragments settle at the bottom of the apparatus. The removal of the beets from the apparatus can be effected in various ways. For instance, air at a high pressure can be suddenly introduced whereby the beets are forced upward in the pipe *b* or the pipe *b* can be provided at the top with a slide valve *g*. After the closing of the latter the air introduced will expel the beets from the pipe *a*.

The use of the apparatus according to this invention has considerable advantages over well known apparatus.

The pumps for raising water, the hoisting devices for beets such as wheels and worm conveyers are no longer necessary and no mechanically operated parts come into contact with the material during the raising and washing.

All the broken fragments are conveyed with the beetroot and at once extracted, while hitherto it was necessary to use special devices for the purpose.

In washing other materials, such as, for instance, grain, there is the special advantage that, owing to the friction set up between the individual particles the product is at the same time polished, which otherwise has to be done with some special apparatus.

Having now particularly described and ascertained the nature of my said invention

and in what manner the same is to be performed, I declare that what I claim is:

1. In apparatus for elevating and cleaning granular material the combination of a conduit having an upwardly and a downwardly directed portion, means for introducing the granular material after admixture with a liquid into the downwardly directed portion of the conduit, a compressed air distributing device in the lower end of the upwardly directed portion of the conduit and a receiver adjacent to the upper end of this conduit for the material and liquid as they are discharged therefrom by the air lift as set forth.

2. In apparatus for elevating and cleaning granular material the combination of a conduit having a downwardly directed portion and an upwardly directed portion of greater length than the downwardly directed portion the whole constituting an inverted siphon, means for introducing the granular material after admixture with a liquid into the upper end of the downwardly directed portion of the conduit, a chamber in the lower end of the upwardly directed portion of the conduit a compressed air distributing device within this chamber and a receiver adjacent to the upper end of this conduit for the material and liquid as they are discharged therefrom by the air lift as set forth.

3. In apparatus for elevating and cleaning granular material the combination of a conduit having a downwardly directed portion and an upwardly directed portion of greater length than the downwardly directed portion the whole constituting an inverted siphon, means for introducing the granular material after admixture with a liquid into the upper end of the downwardly directed portion of the conduit, a chamber in the lower end of the upwardly directed portion of the conduit a compressed air distributing device within this chamber a valve in the upper portion of the upwardly directed conduit and a receiver adjacent to the upper end of this conduit for the material and liquid as they are discharged therefrom by the air lift as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

FRANZ BEDUWÉ.

Witnesses:
L. MOINEAU,
P. QOUBAN.