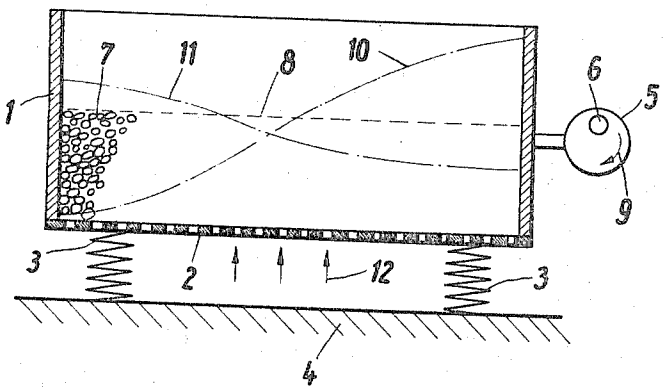
Sept. 12, 1967 W. BERZ 3,341,365

METHOD OF CLEANING GRANULAR FILTER MATERIAL

Filed Jan. 31, 1964



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United States Patent Office 3,341,365
Patented Sept. 12, 1967

3,341,365
METHOD OF CLEANING GRANULAR FILTER MATERIAL

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Filed Jan. 31, 1964, Ser. No. 341,652
2 Claims. (Cl. 134—25)

The invention relates to a method for cleaning granular filter material which has been spread on at least one grid surface in a freely movable box, preferably for freeing the filter material from dust with the aid of an air current.

It is known to place the granular filter material in a freely movable box between an upper and a lower grid surface. The cleaning of the filter material is effected in the box by a shaking or swinging process.

It is unavoidable that the individual grains during the filtering process become coated more or less, according to the substance they are to hold back, that is according to the nature of the dust. They therefore become larger in volume in the course of time. As the space for the filter material is limited by the two grid surfaces, the increase in volume deprives the grains of the freedom of movement which is absolutely necessary for the cleaning operation. Consequently the cleaning of the grains is rendered more difficult.

According to the invention the upper grid surface can be omitted. For the cleaning operation the box is subjected to a shaking movement in an at least approximately vertical plane alternately first in one and then in the other direction of rotation, so that the filter material first shifts to one side of the box and is then again spread with a level surface.

This method can be carried out with several layers of filter material spread on grid surfaces arranged one above the other in a box.

The shaking in one or other direction of rotation can be repeated several times. In any case, however, it is carried out so that finally the filter material is spread with a more or less level surface in the box.

When the method according to the invention is being carried out the grains move in a circular path or a portion of a circular path the plane of which is about vertical. (It is evident that the term "circular path" as employed here does not refer to a circle in the geometrical sense.) Furthermore the individual grains rotate at the same time about their own axes. An exceptionally good cleaning effect is obtained.

The drawing shows an apparatus for carrying out the method according to the invention.

A box **1** with a sieve bottom **2** is supported by springs **3** in any desired manner in relation to the stationary structural parts **4**. On the box **1** a motor **5** is mounted in which an unbalance **6** rotates in an at least approximately

vertical plane. The upper surface of the filter material **7** in the box **1** is at first about horizontal. If the unbalance rotates in the direction of the arrow **9**, the filter material **7** will shift in the box in such a way that its upper surface is finally in accordance with the line **10**. If this direction of rotation of the unbalance **6** is now reversed, the surface of the filter material will in the course of time assume the shape indicated by the line **11**. If the unbalance **6** is then allowed to rotate several times in the direction of the arrow **9**, the upper surface of the filter material will again become horizontal as indicated by the line **8**. During this shaking operation air is blown through the grid **2** from below in the direction of the arrow **12** in known manner and carries off the dust collected by the filter material.

The motor **5** is preferably equipped with an automatically adjustable reversing device so that the motor can be reversed after a predetermined number of rotations in one direction. In this manner it is possible to carry out the cleaning method in such a way that the filter material commences with a horizontal upper surface and again has a horizontal upper surface at the end of the cleaning operation.

What is claimed is:

1. Method of cleaning dust from granular filter material spread on at least one grid surface in a movable box, comprising shaking the box by rotating an unbalanced weight attached to said box in one direction in a substantially vertical plane to shift and pile up said material against one side of the box, then reversing the direction of rotation of said weight to shift and level said material, and simultaneously with said shaking blowing air through said material to remove dust loosened by the shifting of said material in said box.

2. In the method of claim **1**, said unbalanced weight comprising an unbalanced motor.

References Cited

UNITED STATES PATENTS

2,222,776 11/1940 Linke et al. ---------- 134—25 X

FOREIGN PATENTS

554,192 6/1943 Great Britain.

OTHER REFERENCES

Wilson, P. J., Jr. and Well, J. H., Coal Coke and Coal Chemicals, first edition, McGraw-Hill Book Co., Inc., New York, 1950, TP336W54CoP. 2, (pp. 111, and 125–127 relied on).

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