Sept. 14, 1926.

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1,599,751

DUST PREVENTING EMPTYING DEVICE FOR DUST BINS

Filed Jan. 9, 1925

3 Sheets-Sheet 1

Fig.1.

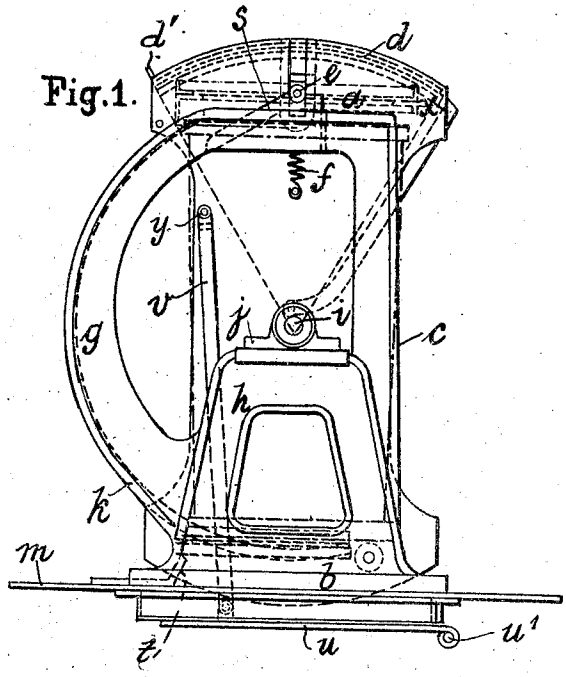
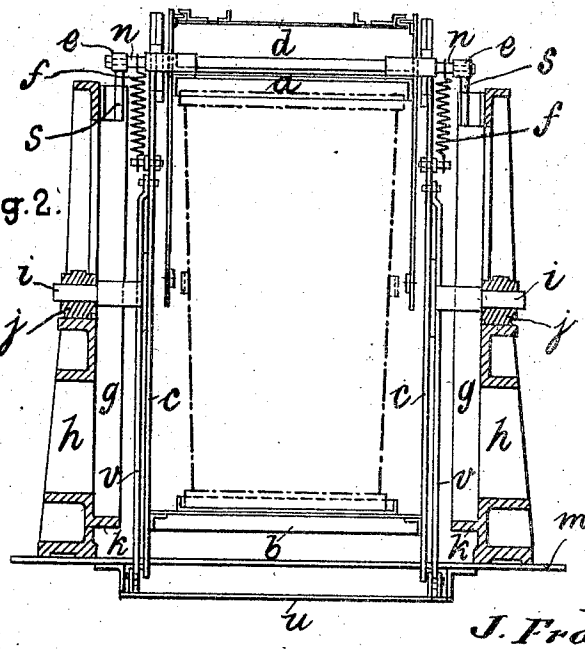


Fig.2.



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3 Sheets-Sheet 2

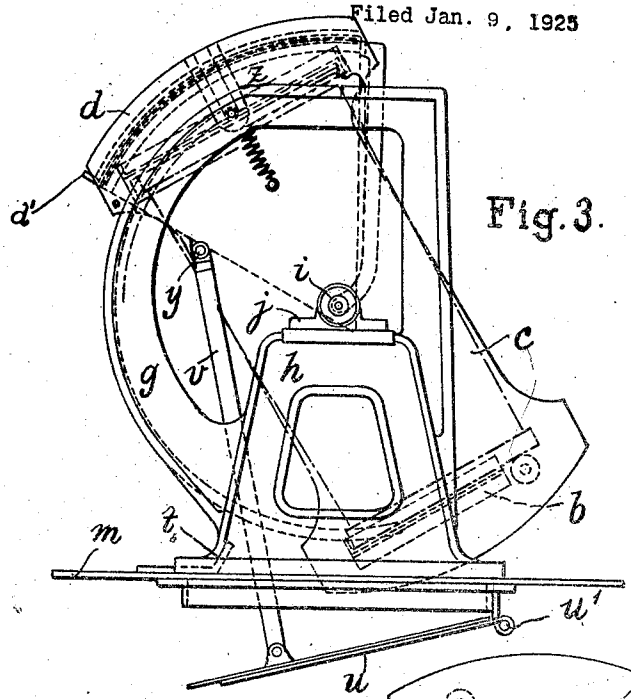

Fig. 3.

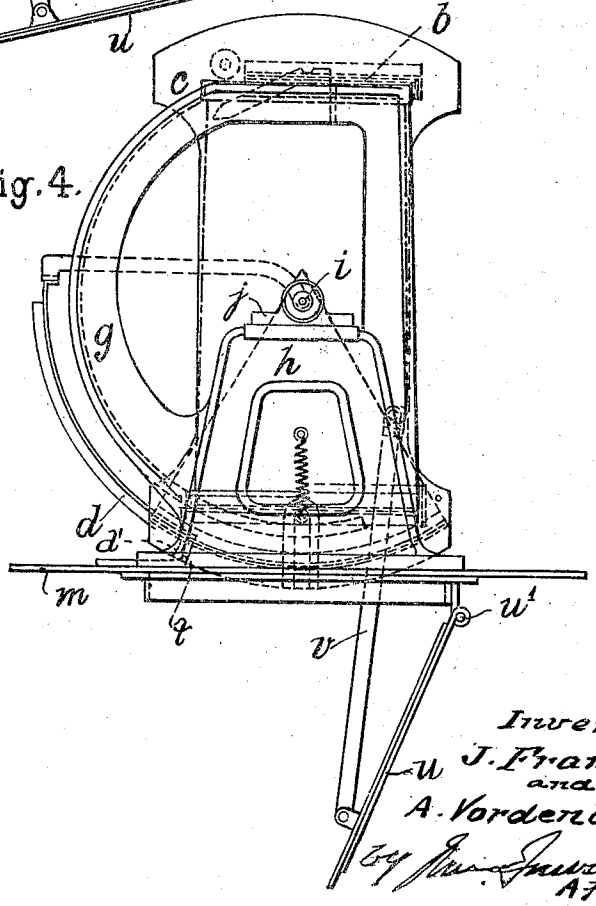

Fig. 4.

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Fig.5.

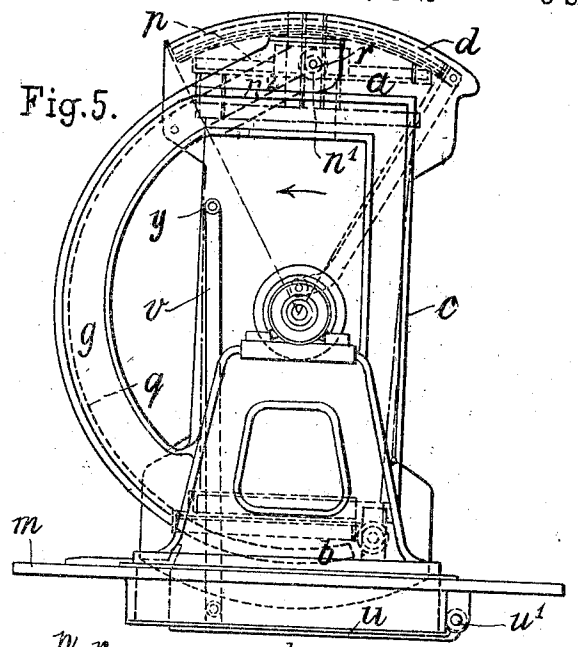


Fig.6.

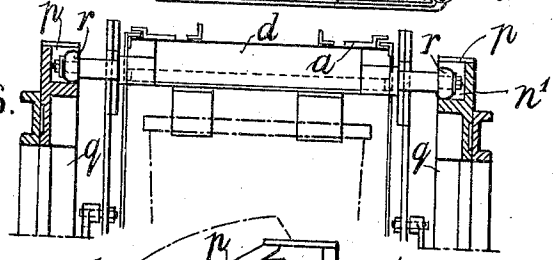
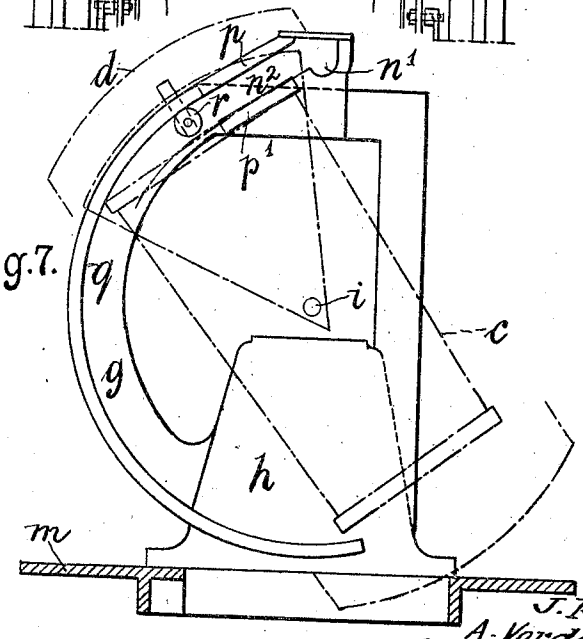


Fig.7.



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UNITED STATES PATENT OFFICE.

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DUST-PREVENTING EMPTYING DEVICE FOR DUSTBINS.

Application filed January 9, 1925, Serial No. 1,426, and in Germany June 11, 1924.

This device relates to an emptying device for use in connection with dust-bins. We are aware of the existence of dust-bin emptying devices in which the bin to be emptied is put on a frame that can be turned on or around a horizontal axle and by means of which the bin can be turned upside down. In this known device this latter or the bin is provided with a sliding cover which is coupled with the filled bin prior to its being emptied and must be uncoupled from the emptied bin in order to be able to remove it from the emptying device. The coupling means, or the means for actuating the coupling-members, are arranged, with said known device, below the frame thereof. In our improved construction the cover or lid of or for the bin is connected with levers in such a manner that the closing and the opening of the bin takes place automatically, there being no separate lifting device and no handle or the like for operating a coupling, as is all fully described hereinafter.

Our invention is illustrated by way of exemple in the accompanying drawing in which Figure 1 is a side view of one form of the improved dust-bin, the filled bin standing upright in the emptying device. Figure 2 is a view taken at right angles with respect to Fig. 1. Figure 3 is a view similar to Fig. 1, the bin being somewhat tilted. Figure 4 shows the bin completely tilted, i. e. turned upside down. Fig. 5 is also a view similar to Fig. 1 and shows another constructional form of the device; Figure 6 is a view similar to the uppermost part of Fig. 2, but relating to said modified form. And Fig. 7 is a view similar to Fig. 3 (dust-bin partly tilted) and relates also to the modification.

The frame of the device (Figs. 1–4) consists of two standards *h h* carrying each a bearing *j* and being each provided with an upwardly extending curved arm *g*. Between the standards *h h* the cage-like tilting frame is supported by means of pivots *i i* the sides of said cage are denoted with *c c*. These side-frames are connected with each other near their lower ends by a bottom-plate *b* intended to receive the dust-bin (Fig. 2).

Above the dust-bin a hood *a* connected with, and carrying, the cover or lid *d* is so arranged as to be shiftable vertically in guide-ways provided in or at the side-members *c c* of the tiltable frame. The hood *a* is provided with laterally projecting pivots *n* carrying each a roll *e* and being also connected with the upper ends of helical springs *f*, the lower ends of which are secured to the frame members *c c* (Fig. 2).

Opposite the curved arms *g g* rectangular arms *c c* extend upwardly from the standards *h h* and are connected at the ends of their uppermost horizontal parts with the ends of the curved arms *g g*. These are provided at their inner sides with correspondingly curved guide-ribs *k k*.

Supposing, the movable parts of the device be in the position shown in Fig. 1, the filled dust-bin which is to be emptied is placed on the bottom *b*. In this position of the dust-bin an annular space or gap of about 2 or 3 cm. width remains between the upper edge of the bin and the lower edge *w* (Fig. 1) of the annular frame *a* of the hood. This frame consists of two superposed rings of angle-iron, as shown in dotted lines in the top portion of Fig. 1. The distance of said hood parts (*a*) from the bottom *b* is, therefore, such that the dust-bin can be placed easily upon this bottom.

The rolls *e* of the pivots *n* run on projections *s* affixed to the inner sides of the horizontal members of the rectangular arms or standards *c c*. The helical springs *f f* are under tension when the parts in question are in the position shown in Fig. 2. The shape of the projections *s s* is such that the hood is raised a little when the tilting of the frame *c b c* commences, but immediately thereafter the hood is drawn down upon the bin by the springs *f f*. When the pivots *n n* have arrived at the point *z*, Fig. 3, the dust-bin is completely closed.

When the rolls *e e* have left the projections *s s*, they contact with the inner surfaces of the guide-ribs *k k* whereby the springs *f f* are relieved from the weight of the hood.

The tilting of the dust-bin is continued until this latter arrives in the position Fig. 4, but prior thereto the hood with the cover or lid is retained at a place located so much remote from the opening receiving the contents of the bin that the emptying of the bin into that opening is not impeded. The cover

d has a projection d' and the base is provided with a projection t, so that as the projection d' engages the projection t, further movement of the cover will be prevented.

When then the dust-bin is turned rearwardly into its former or initial position, first the hood with the cover or lid reassumes its place on the bin, then these parts together rise while being turned on and around the pivots i i, and shortly before arriving in the proper vertical position, the hood with the cover or lid is again raised a little so that the above mentioned gap between the upper edge of the dust-bin and the lower edge x (Fig. 1) is again formed, permitting the removal of the emptied bin from the bottom-plate b. The various movements of the hood with the cover or lid are again caused (although in the reverse sequence) by the guide-ribs k k, the projections s s, the rolls e which co-operate with these projections, and the springs f f which hold the parts s and e in contact with one another. In the normal position of the parts (Fig. 1) the springs are again under a certain tension, and the device is ready to receive another filled dust-bin.

The device is mounted on a floor or bottom m having below the device the above-mentioned opening through which the garbage is discharged. This opening is normally closed by a plate u hinged at u' to said floor or bottom and being connected by bars v with certain suitable points of the tiltable frame c c which is hinged by pivots y to this frame, the arrangement being such that the discharge opening is opened automatically when the frame c c with the filled dust-bin is tilted or inverted, and is closed automatically when the reverse takes place.

It appears from the foregoing description that the dust-bin is closed automatically when the tilting commences, opened automatically shortly before the emptying, again closed automatically when it is turned into its former or normal position, and finally, again opened automatically when arriving in this position, no other movement of the device being necessary than turning the frame c b c now in one direction, so as to invert the dust-bin, and then in the reverse direction so as to re-erect it.

While in the constructional form illustrated in Figs. 1–4 springs form parts of the mechanism, such members are obviated in the modified form shown in Figs. 5–7. The stationary and the movable parts of the frame are practically the same as in said other form, but additional members or guide-ledges p p with which co-operate the rolls r r that are equivalents to the rolls e e of the first described constructional form of the device, and the ribs q are, practically, equivalents to the ribs k of said form. The guide ledges p p are continuations of the ribs q q and below each of these ledges is a ledge p', the two ledges p p' on either side of the device forming an oblique passage n^2 (Fig. 7) through which the appertaining roll r must pass. At the upper end of each of these passages is a shallow cavity n' which forms a rest for the respective roll r. The rolls r r are located in these rests n' n' when the parts are in their normal position, as in Fig. 5. When the tilting commences, the rolls r r are caused positively to make first a short upward movement so as to get into the sloping passages n^2 n^2 and are then guided by these latter in such a manner that the cover or lid of the dust-bin is moved positively onto the bin in order to close it tightly. Closing the bin positively in this way is to be preferred over springs which are liable to lose their tension by and by.

In the normal position of the parts, before the filled bin is placed into the device, or upon the bottom b respectively the hood with the cover or lid is raised (Fig. 5), as in Fig. 1, in order to permit inserting the filled dust-bin thereinto. When then the tilting commences, the cover or lid is caused, by the means described, to move down upon the dust-bin so as to close it, and remains in this position until shortly prior to the frame c b c arriving in its inverted position, all as has been described with respect to Figs. 1–4. The dust-bin remains coupled with the frame c b c until it re-arrives in its normal position in which it can be taken off the bottom b which then can receive another filled dust-bin.

We claim:—

1. A dust preventing receptacle emptying device, comprising a supporting frame, a member mounted for swinging movement therein and provided at one end with a support for the receptacle, a cover carried by the opposite end of said frame, said cover being normally spaced from the upper end of the receptacle when the latter is on the support, and means for moving the cover into dust excluding relation with the top of the receptacle in the initial movement of the member in the frame.

2. A dust preventing receptacle emptying device, comprising a supporting frame, a member mounted for swinging movement therein and provided at one end with a support for the receptacle, a cover carried by the opposite end of said frame, said covering being normally spaced from the upper end of the receptacle when the latter is on the support, and means for moving the cover into dust excluding relation with the top of the receptacle in the initial movement of the member in the frame, and means for arresting the movement of the cover prior to the operative emptying position of the member.

3. A dust preventing emptying device for dust bins, comprising a stationary frame, a tiltable frame carried thereby to receive and move a dust bin to an emptying position, a

dust bin cover movably connected with the tiltable frame, means whereby said cover is automatically moved to closing relation to a dust bin in said tiltable frame simultaneously with the initial movement of said tiltable frame, means for interrupting the movement of the cover with the tiltable frame as the latter approaches inverted position, to thereby uncover the dust bin, and means to permit the tiltable frame to again cooperate with the cover in the rear movement of such frame.

In testimony whereof we affix our signatures.

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