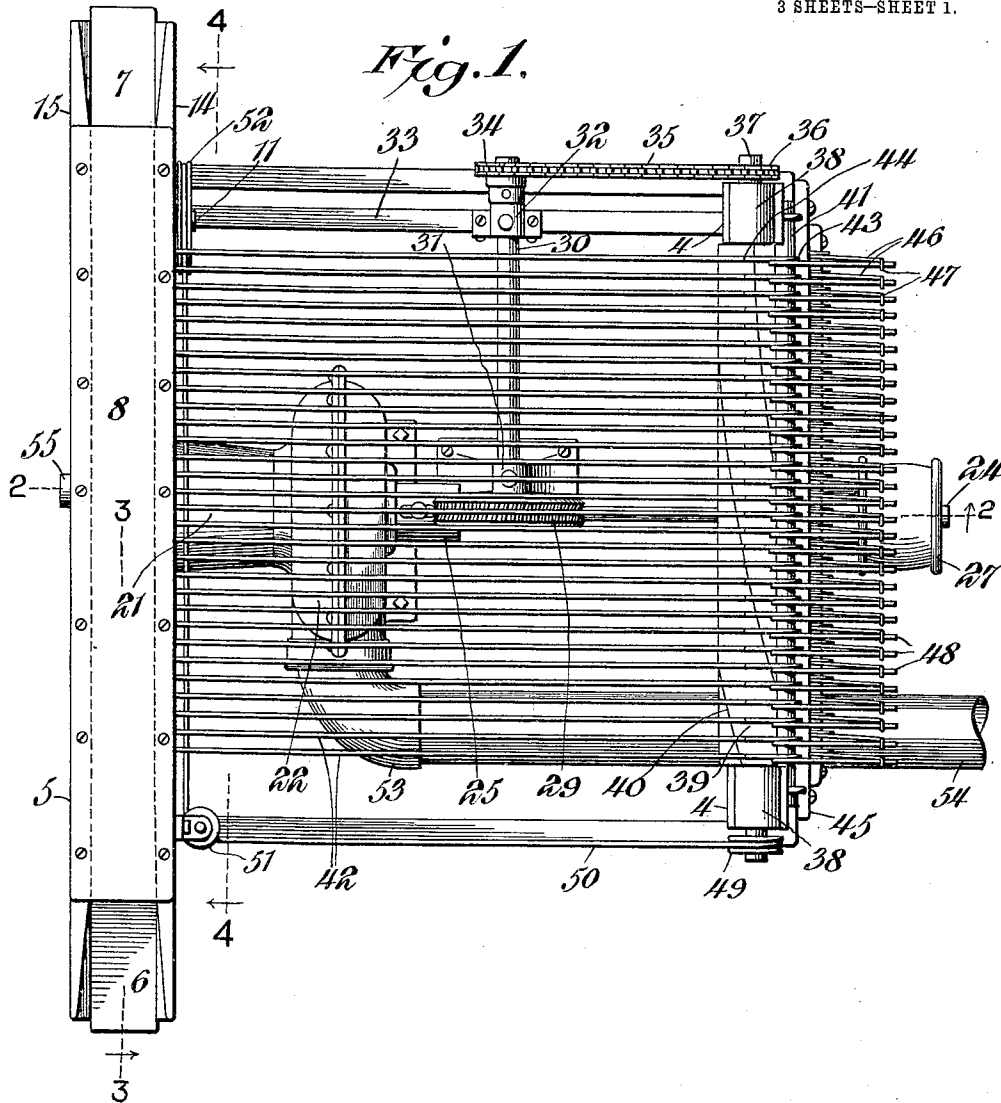


K. F. W. JAENECKE
DUST REMOVING MACHINE.
APPLICATION FILED MAY 24, 1912.

1,050,027.

Patented Jan. 7, 1913.

3 SHEETS—SHEET 1.



WITNESSES

Howard D. Orr.
H. T. Chapman.

K. F. W. Jaenecke, INVENTOR,

BY

E. G. Siggers.

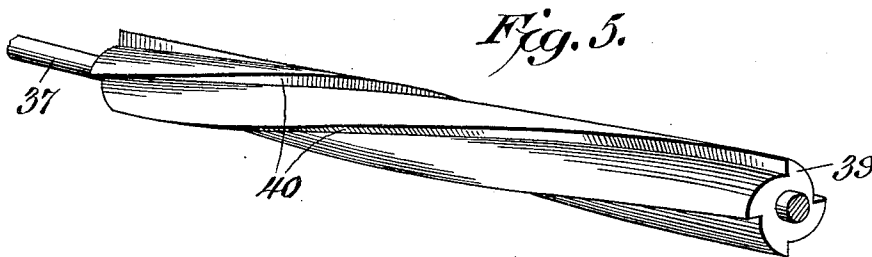
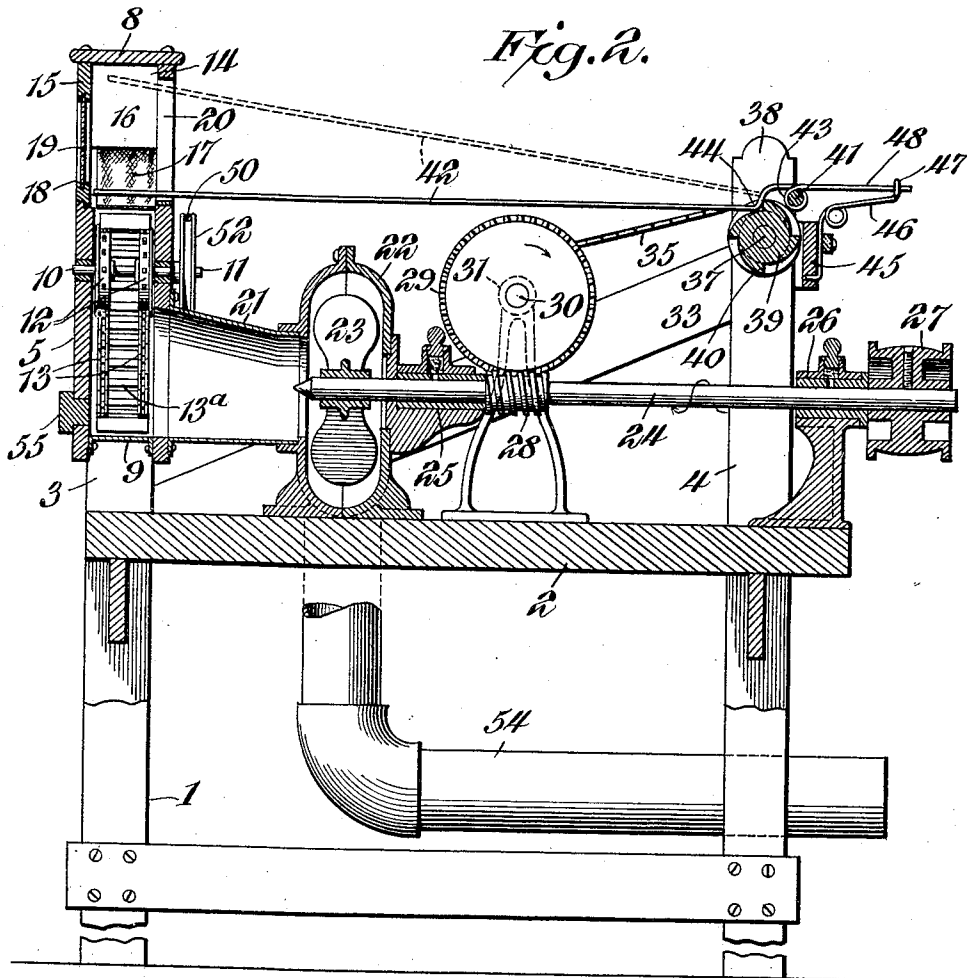
ATTORNEY

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3 SHEETS—SHEET 2.



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3 SHEETS-SHEET 3.

Fig. 3.

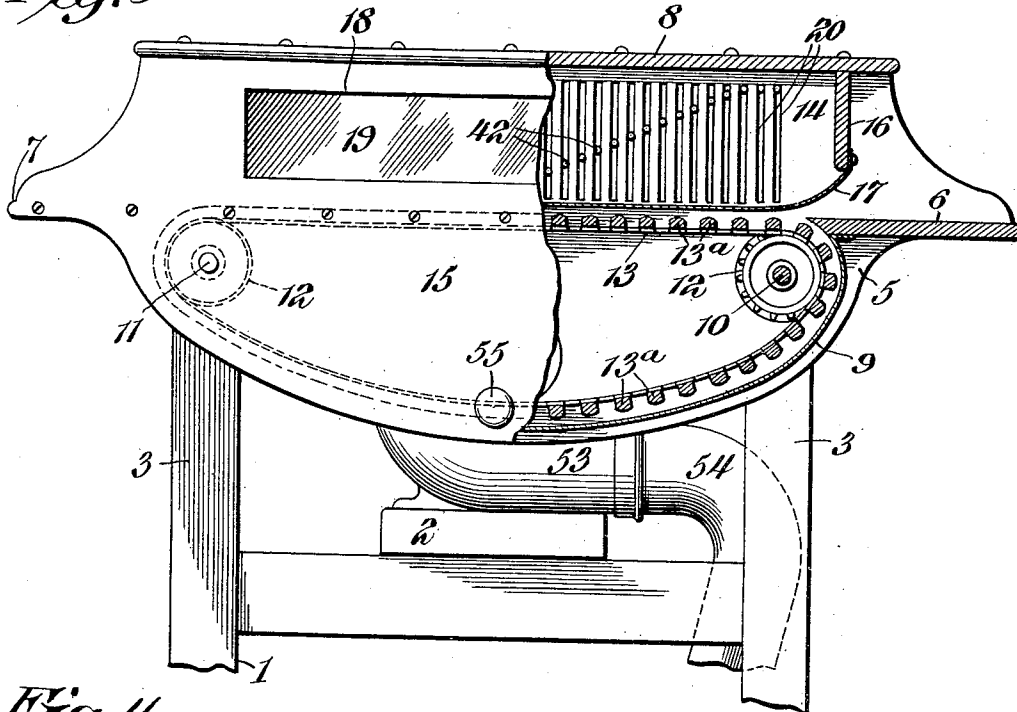
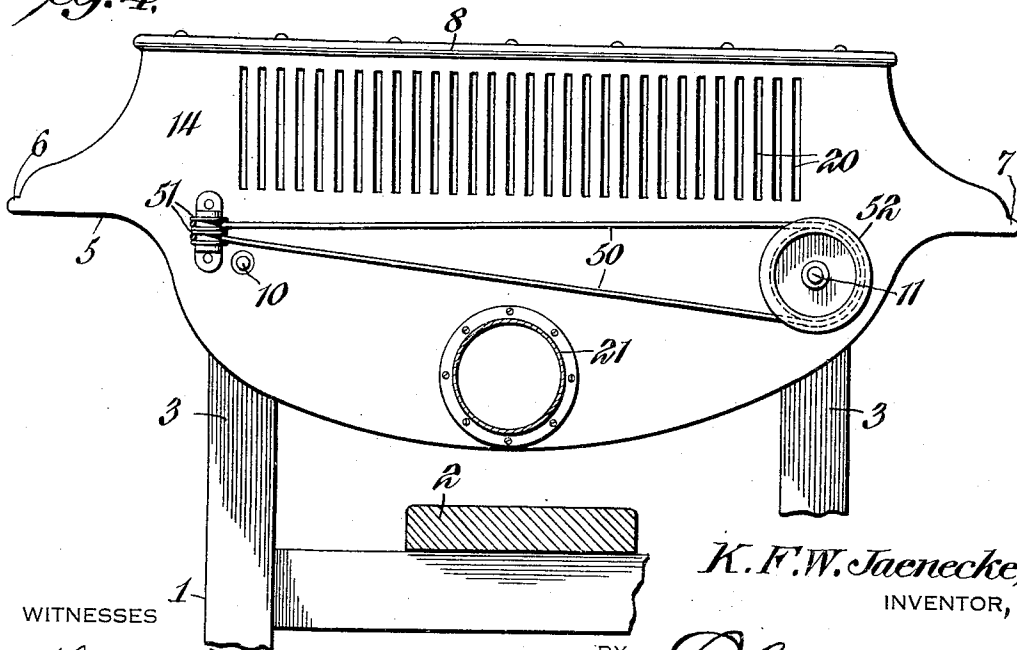


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

KARL FRIDRICH WILHELM JAENECKE, OF NORTH TONAWANDA, NEW YORK.

DUST-REMOVING MACHINE.

1,050,027.

Specification of Letters Patent.

Patented Jan. 7, 1913.

Application filed May 24, 1912. Serial No. 699,516.

To all whom it may concern:

Be it known that I, KARL FRIDRICH WILHELM JAENECKE, citizen of the United States, residing at North Tonawanda, in the county of Niagara and State of New York, have invented a new and useful Dust-Removing Machine, of which the following is a specification.

This invention has reference to improvements in dust removing machines, and while more particularly designed for removing chalk dust from blackboard erasers, may be employed for removing dust from other articles.

In accordance with the present invention there is provided a feed device capable of carrying a succession of blackboard erasers or other devices, and such erasers are during their travel through the machine subjected to the action of beaters which serve to disturb the lodged dust, while a strong draft of air is caused to traverse the part of the machine through which the erasers are traveling, so as to remove the dust from the erasers as rapidly as it is beaten out of the erasers.

In order that the invention may be fully understood reference is had to the accompanying drawings forming a part of this specification, but while the drawings show a practical embodiment of the invention it is susceptible of other practical embodiments which may differ in details from the showing of the drawings without, however, departing from the salient features of the invention, wherefore the invention is not limited to any exact conformity with the showing of the drawings but may be changed and modified within such limits as do not mark any material departure from the scope of the invention.

In the drawings:—Figure 1 is a plan view of a machine embodying the present invention. Fig. 2 is a section of the upper portion of the machine on the line 2—2 of Fig. 1 with some parts shown in elevation and with the lower portion of the machine shown in side elevation. Fig. 3 is an elevation of that end of the machine constituting the left hand end of Fig. 1 with a portion in section on the line 3—3 of Fig. 1. Fig. 4 is a section on the line 4—4 of Fig. 1 with some parts omitted. Fig. 5 is a perspective view of an actuating member for the beaters.

Referring to the drawings, there is shown

a frame 1 which at an appropriate point carries a cross piece 2. The sides of the frame are carried above the cross piece 2, as indicated at 3 and 4, respectively, for the purpose of supporting certain operative members. The upwardly extended members 3 support a casing 5 of a width somewhat greater than the width of a blackboard eraser or other article to be treated, and at the ends this casing terminates in ledges 6, 7, respectively, at an appropriate distance below a top member 8. The ledges 6 and 7 extend from the respective outer ends of the casing toward the uprights or extensions 3 and terminate adjacent these parts, while between the ledges and supported thereby is a wall 9 having a drop toward the center, while the side portions of the casing 5 connected by the wall 9 have a like shape to the wall.

Traversing the side members of the casing adjacent the ends of the wall 9 and within its limits are shafts 10, 11, respectively, which within the limits of the wall 9 and casing 5 carry spaced sprocket wheels 12 supporting sprocket chains 13 constituting members of a conveyer provided with slats or flights 13^a so arranged that the upper run of the conveyer is approximately in line with the upper surfaces of the ledges 6 and 7, which when the machine is in operation are approximately level.

Above the ledges 6 and 7 the casing 5 is provided with upstanding portions 14, 15, respectively, connected at the upper ends by the cover member 8, and positioned close to the inner ends of the ledges 6 and 7 there are within the upper portion of the casing depending webs 16 having their lower ends spaced from the respective ledges 6 and 7, and extending from the lower end of one of these webs to the lower end of the other is a flexible band 17 in overriding relation to the upper run of the conveyer made up of the members 13 and 13^a. The upstanding portion 15 of the casing is provided with an elongated opening 18 closed by a transparent member 19 which may be made of glass, so that the interior of the casing above the conveyer may be at all times visible. The upright wall 14 of the conveyer is between the webs 16 provided with a series of substantially parallel upright elongated slots 20 for a purpose which will presently appear.

Leading from a portion of the casing 5

occupied by the conveyer is a conduit 21 connected at the end remote from the casing to the intake throat of a fan casing 22 in which is housed a suction fan 23 on one end of a drive shaft 24 having a bearing 25 in line with the axis of the casing 22 and at the other end having a bearing 26 mounted on that end of the cross piece or shelf 2 remote from the casing 5, the fan casing 22 being also mounted on the shelf 2. That end of the shaft 24 remote from the fan 23 is provided with a drive pulley 27 to which power may be applied in any appropriate manner as by a belt, the drive pulley 27 being indicative of any suitable means for imparting motion to the shaft 24.

At an appropriate point on the shaft 24 there is mounted a worm 28 engaging a worm gear 29 mounted on one end of a shaft 30 having a bearing 31 supported from the shelf 2 and another bearing 32 on a brace 33 serving to stiffen the corresponding upright 4. The shaft 30 is located in a plane cutting the axis of the shaft 24 at substantially right angles and the end of the shaft 30 remote from the worm gear 29 carries a sprocket wheel 34 connected by a sprocket chain 35 to another sprocket wheel 36 on one end of a shaft or spindle 37 having journal bearings 38 on the uprights 4 near the upper ends thereof, while between these journal bearings 38 the shaft 37 has formed thereon or secured thereto a series of elongated cams 39 each terminating in an abrupt radial shoulder 40, these cams all being alike and having a pitch with reference to the axis of rotation of the shaft 37. The several cams are substantially coextensive with the distance between the bearings 38.

Extending from one upright 4 to the other is a bar 41 forming a pivot support for a series of beater rods 42, each beater rod where engaging the bar 41 being formed into a loop 43 in encircling relation to the bar 41. Each rod 42 is in overriding relation to the cams 39 and is there formed with a somewhat abrupt bend constituting a shoulder 44 so disposed as to be in the path of the cams 39, and to drop from the highest point of a cam over the abrupt portion thereof onto a lower point of the next succeeding cam as the several cams 39 rotate, wherefore that end of each rod 40 remote from the pivot support 41 is caused to rise by the action of the cams and will then drop when escaping from one cam to the next succeeding cam. Those ends of the rods 42 remote from the bar 41 pass through respective slots 20 into the interior of the casing 5 as defined by the upper extensions 14 and 15 thereof, these rods being located above the band 17. Extending from one upright 4 to the other is a strip 45 carrying a series of springs 46, each of which is

formed at the free end into a loop 47 in embracing relation to an extension 48 of the corresponding rod 42 on that side of the pivot support 41 remote from the cams 39. The springs 46 are so related to the rods 42 that they tend to force the free ends of the rods downwardly, wherefore when a shoulder 44 of a rod 42 escapes from the high portion of the cam 39, the rod 42 is vigorously impelled in a direction to bring its free end toward the band 17.

That end of the shaft 37 remote from the sprocket wheel 36 carries a pulley 49 around which there is passed a belt 50 carried to direction changing idlers 51 on the casing 5, and from them the belt passes to and around a pulley 52 on the outer end of the shaft 10, which latter extends through the corresponding wall of the casing 5.

The fan casing 22 is provided with a discharge throat 53 from which there leads a conduit 54 to any suitable point of disposal.

In the particular showing of the drawings the arrangement is such that the upper run of the conveyer as viewed in Fig. 3 will travel from right to left, and consequently the shelf 6 defines the feed end of the device. Blackboard erasers or other articles to be cleansed are placed upon the ledge 6 and pushed under the band 17 which readily yields to the passage of the erasers and these erasers ultimately reach the conveyer and are carried thereby beneath the band 17 toward the other end of the machine to be ultimately discharged upon the ledge 7, from which they may be removed in any suitable manner. While the erasers are being carried through the casing 5 by the conveyer they are given a series of blows by the free ends of the rods 42, which are lifted in succession, and then forcibly moved toward the eraser by the action of the cams 39 and springs 46, wherefore each eraser on passing through the machine receives a series of vigorous blows delivered within the upper portion of the casing 5 as defined by the upper walls 14 and 15, and whatever dust may be within the erasers is thoroughly loosened. At the same time the fan 23 is in operation and causes a strong draft of air to enter the upper portion of the casing where the beating has occurred, passing about the erasers and through the conveyer to the conduit 21. This strong air stream readily picks up the fine dust particles and the latter are removed from the erasers and the neighborhood of the erasers and are ultimately conveyed to the discharge conduit 54, wherefore by the time the erasers reach the ledge 7 they are thoroughly cleansed from all contained dust which is usually chalk dust.

The band 17 of flexible material is interposed between the erasers and the beaters and not only protects the erasers from direct

contact with the beaters but prevents the erasers from getting above the beaters on their passage through the machine.

It is evident, of course, that the machine of the present invention is adaptable to the removal of dust from other articles than blackboard erasers, even though for some articles it may be necessary to slightly modify the structure to accommodate such articles, but this may be done without in any way departing from the principles upon which the invention is based.

To facilitate the cleansing of the lower portion of the casing 5 where occupied by the conveyer, the outer wall of the casing is provided with an orifice normally closed by a plug 55.

What is claimed is:—

1. In a machine for removing dust from articles, a casing, a conveyer for the articles wholly housed in the casing, and a series of beaters having their terminal portions extending into the casing and there movable toward and from the conveyer to strike blows upon articles carried by the conveyer, said casing having slots elongated in the direction of movement of the beaters and traversed by said beaters, the walls of the slots serving as guides for the active ends of the beaters.

2. In a machine for removing dust from articles, a casing provided with entrance and exit portions and between said portions with a series of upright slots, a conveyer wholly housed in the casing at a lower level than the slots, a series of beaters entering the casing through the slots and guided thereby, and means for causing reciprocation of the beaters into and out of active relation to articles carried upon the conveyer through the machine.

3. In a machine for removing dust from articles, a casing provided with entrance and exit portions, and between said portions with a series of upright slots, a conveyer wholly housed in the casing at a lower level than the slots, a series of beaters entering the casing through the slots, and means for causing reciprocation of the beaters into and out of active relation to the articles carried upon the conveyer through the machine, said casing being provided with a stationary flexible band in overriding relation to the conveyer and between the same and the beaters.

4. In a machine for removing dust from articles, a casing having a drop portion, entrance and exit portions at opposite ends of the drop portion, a conveyer wholly housed in the drop portion of the casing and having a run on substantially a level with the entrance and exit portions of the casing and constituting supporting and conveying means for the articles to be treated, a series of beaters entering and guided by the casing above the conveyer in operative

relation to articles on the conveyer, and means for exhausting air from the casing to cause currents of air to flow through the casing to convey dust therefrom.

5. In a machine for removing dust from articles, a casing having a drop portion, entrance and exit portions at opposite ends of the drop portion, a conveyer housed in the drop portion of the casing and having a run on substantially a level with the entrance and exit portions of the casing and constituting supporting and conveying means for the articles to be treated, a series of beaters entering the casing above the conveyer in operative relation to articles on the conveyer, and means for exhausting air from the casing to cause currents of air to flow through the casing to convey dust therefrom, said casing being provided with a stationary flexible band interposed between the conveyer and the beaters.

6. In a machine for removing dust from articles, a casing provided with a drop portion and with entrance and exit ledges at the ends of the drop portion and above the ledges and drop portion having a longitudinal series of upright slots through one wall, said casing also having a sight opening in the wall opposite the slotted wall, a conveyer within the drop portion of the casing and having a run on substantially the level of the ledges, pendent members adjacent the entrance and exit ends of the upper portion of the casing, a band of flexible material carried by the pendent members in overriding relation to the conveyer, a series of beater rods having free ends entering the casing through the slots in overriding relation to the band, an exhaust fan connected to the drop portion of the casing, and operating means for the beater rods for causing them to move from and toward the conveyer.

7. In a machine for removing dust from articles, a casing, means within the casing for causing a progressive movement of the articles to be treated therethrough, a series of beaters entering the casing in operative relation to articles passing therethrough, and means for preventing the articles being treated from moving into overriding relation to the beaters, said last-named means having means for preventing it from moving progressively with the articles being treated.

8. In a machine for removing dust from articles, a casing having means therein for directing articles through the casing, pivoted rods having free ends entering the casing and there guided, springs for the rods tending to move them toward the means for directing articles through the casing, and means engaging the rods on the sides of their pivots toward the casing for imparting progressively to the series of rods

movements in opposition to the action of the springs.

9. In a machine for removing dust from articles, a casing having means therein for directing articles through the casing, pivoted rods having free ends entering the casing and there guided, springs for the rods tending to move them toward the means for directing articles through the casing, and means engaging the rods on the sides of their pivots toward the casing for imparting progressively to the series of rods movements in opposition to the action of the springs, said last-named means comprising a circular series of cams each axially extended to include the entire series of rods and having a progressive pitch from one end to the other to engage the beater rods in succession.

10. In a machine for removing dust from

articles, means for imparting progressive movement to the articles to be treated, beaters each comprising a rod having a loop formed near one end and adjacent the loop formed into a shoulder, a common pivot support for the rods traversing the loops therein, a rotatable series of elongated cams each having a pitch with relation to the axis of rotation and related to the rods to engage the shoulders thereon, and springs engaging those ends of the rods remote from the ends acted upon by the cams.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

KARL FRIDRICH WILHELM JAENECKE.

Witnesses:

CHARLES GLAWF,
EDWARD JAENECKE.

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