E. KRANTZ.

CLEANER.

APPLICATION FILED OCT. 15, 1913.

1,098,507.

Patented June 2, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

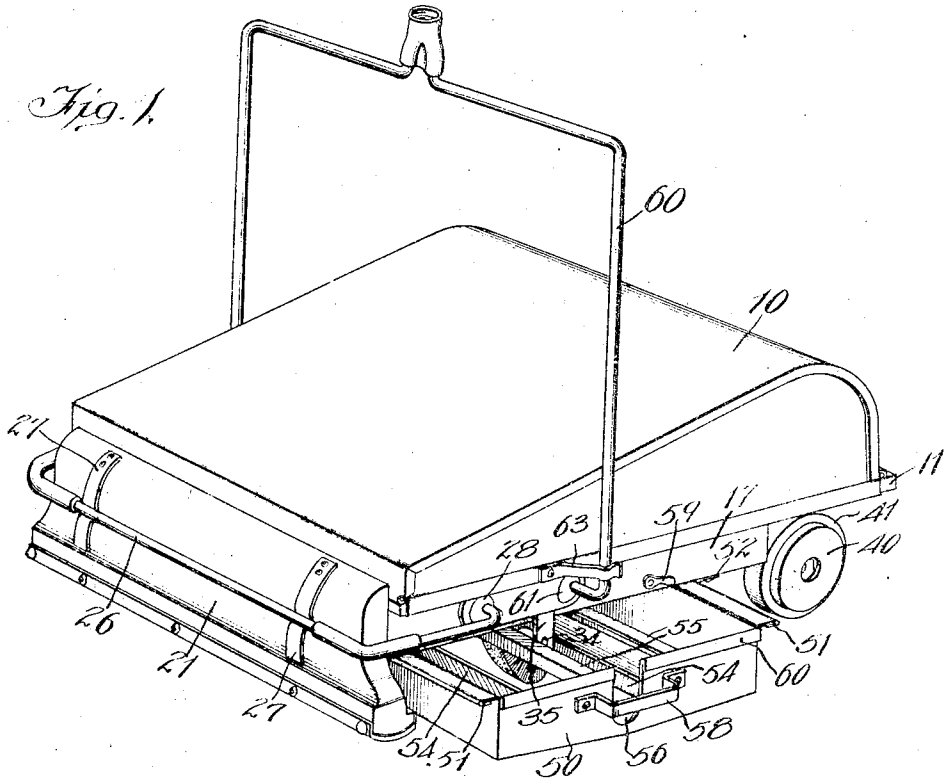
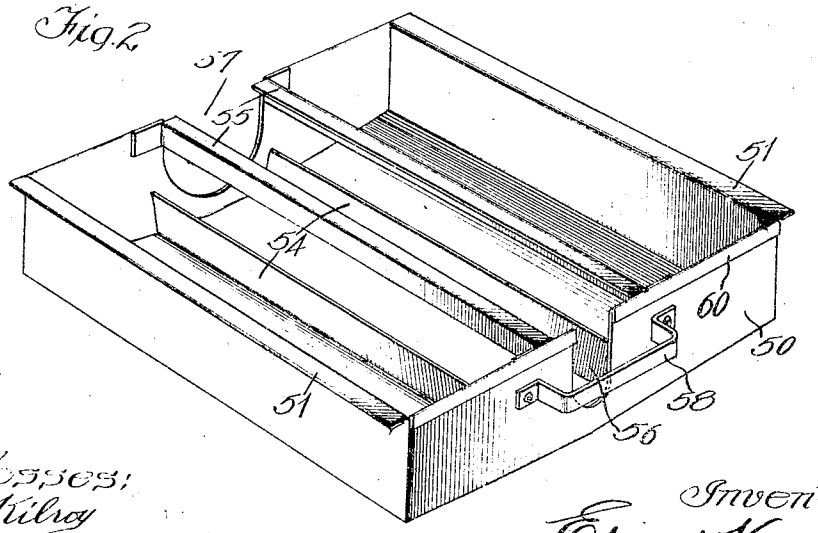


Fig. 2



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2 SHEETS—SHEET 2.

Fig. 3.

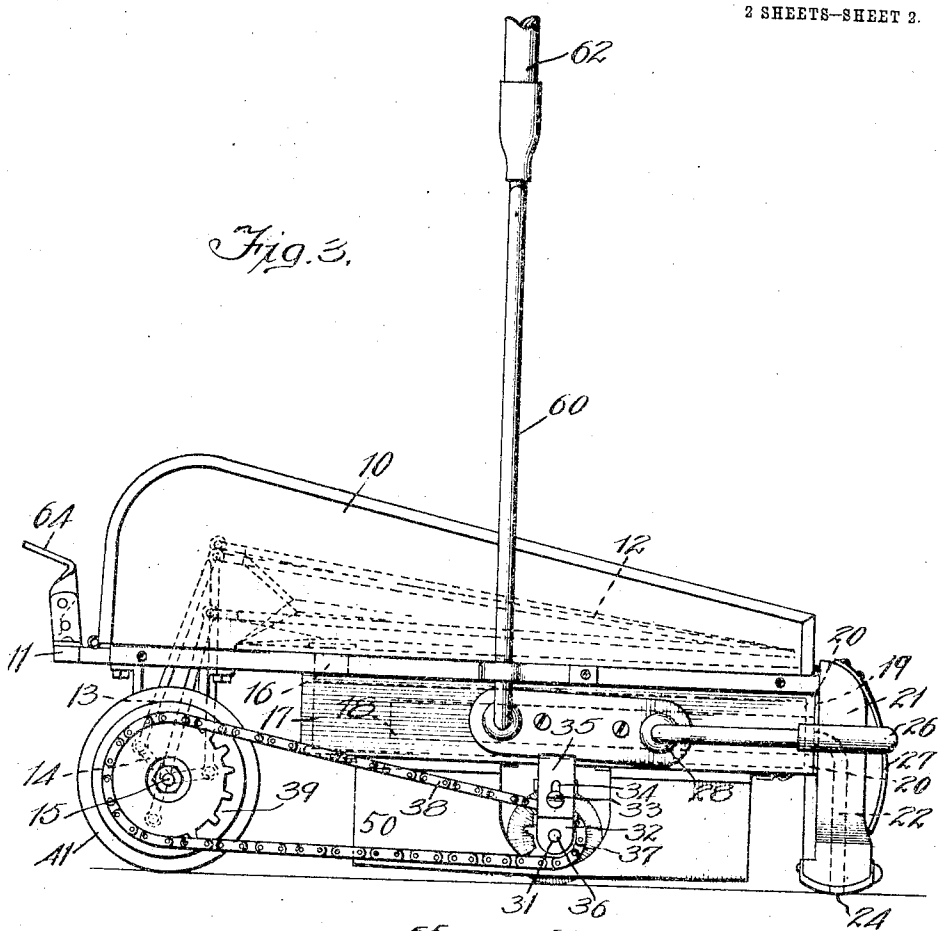
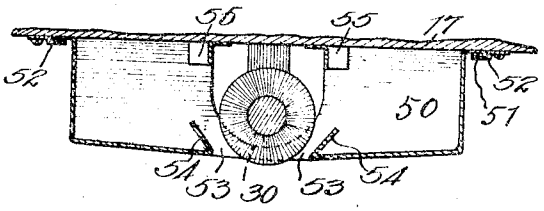


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD KRANTZ, OF CHICAGO, ILLINOIS.

CLEANER.

1,098,507. Specification of Letters Patent. Patented June 2, 1914.

Application filed October 15, 1913. Serial No. 795,238.

To all whom it may concern:

Be it known that I, EDWARD KRANTZ, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cleaners, of which the following is a specification.

My invention relates to cleaners particularly adapted to remove dust and dirt from plane surfaces, such as floors, and has more particular reference to cleaners of the type known as carpet cleaners which are propelled and operated by hand.

The principal objects of these improvements are to provide a cleaner in which the collection of dust and dirt may be rendered more certain and complete; whereby the wear of cleaning parts may be compensated for by easily made adjustments; whereby the cleaning may be begun and continued effectively without the failure of certain of the cleaning elements to operate; whereby the use of such a cleaner may call for a minimum expenditure of labor on the part of the operator; whereby such common mishaps as spilling the collected dust upon the cleaned surface may be easily avoided, and whereby the machine itself may be readily cleaned and kept sanitary.

Further objects will appear hereinafter.

In the accompanying drawings which form a part of this specification I have illustrated in preferred form an embodiment of these improvements, Figure 1 being a perspective showing the dust pan partially withdrawn; Fig. 2 is an enlarged perspective of the dust pan or receptacle; Fig. 3 is a side view of the cleaner, some of the hidden parts being shown in dotted lines; Fig. 4 is a medial longitudinal section through the dust pan, brush, and a fragment of the dust pan supporting member.

In the preferred construction the cleaner comprises a bellows casing 10, which may suitably be formed of sheet metal and secured to the base board 11 in any well known way, as by nails or screws. Within this casing I preferably arrange side by side three bellows as 12, each connected by a pitman, as 13, to respective crank levers, as 14, formed in spaced apart relation in the wheel shaft or axle 15, the arrangement being such that as this shaft rotates, the bellows will be operated to draw in and discharge air, as is well understood in the art. Each of the bellows has a flap-valve covered opening as 16 leading to the interior of the suction box 17, which suction box is open at the front end permitting the insertion therein from the front of the dust receptacle 18, the gasket-like plate 19 of which abuts a suitable support 20 of the suction box and is adapted to form a substantially air tight connection between the nozzle 21 and the suction box. This nozzle 21 has an elongated channel 22, substantially of the shape and dimensions of the opening 23 in the gasket 19, from which it will readily appear that suction produced by the bellows will draw air, and also particles of dust and dirt, through the elongated opening 24 of the nozzle and into the dust receptacle 18. This receptacle or bag 18 is preferably formed of fabric or similar foraminous material which will act as a strainer, retaining the dust and dirt, but permitting the air to pass into the suction chamber surrounding it. The nozzle 21 is conveniently held in position by a bail 26 coacting with springs 27 suitably bent or indented to hold the bail, the bail being pivoted in suitable supports 28 in each side of the machine.

A rotatable brush 30 is provided, preferably between the front and rear ends of the device, which brush is mounted to rotate in bearings 31 in supports 32 adjustably secured by means of a screw or bolt, as 33, to a support 35 rigidly secured to the dust box 17 or to any other suitable part of the device. The parts 32 and 35 are adapted to slide adjustably upon each other and be clamped together by the bolt or screw 33, the slot 34 in the part 35 permitting the parts to move relative to each other. By this arrangement it will be seen that as the brush wears away, or at any time, in order suitably to adapt the pressure of the brush to the surface to be cleaned it is only necessary to loosen the screw 33 at each side of the machine, let the brush descend upon the floor as desired, and again tighten the screws.

On the brush shaft or mandrel 36 is rigidly secured a spur wheel or sprocket 37, the teeth of which are adapted to interfit with the openings in the chain 38, a coöperating spur wheel 39 being secured upon the driving axle 15. From this construction it will be seen that as the cleaner is moved over the carpet or other surface the rotary brush 30 will be positively driven by means of the chain 38. I have found it desirable that the rotary brush shall have a periph-

eral sweeping travel of considerable speed. In practice I desire the brush 30 to rotate at least three times to each rotation of the main driving axle 15. The cleaner is provided with two driving wheels 40, which may suitably have a tread of rubber or other cushioning material 41 in order that the wheels will have a better frictional contact with the floor for driving the suction and brush mechanism.

A very important feature of these improvements is in the provision of a slidingly removable drawer-like dust pan or receptacle 50, which may simply be drawn out and removed bodily from the machine and the dust therein emptied without disturbance of any other part. This receptacle 50 is preferably made of light sheet metal and preferably has turned portions or extensions 51 adapted to interfit with guides 52 on the underside of the suction box 17, constituting a supporting member for the dust pan 50. An opening 53 is provided at the bottom of the receptacle by cutting the bottom and turning back the cut edges 54 in the manner shown in Fig. 4, these slanting edges 54 acting as baffles to prevent dust at any time within the pan from coming out while the machine is being used.

As the device is moved forward and back upon the floor, and as the brush rotates alternately in one direction and the other, dirt and dust, and notably the larger particles, such as sticks, shavings, small stones, etc., are swept from the floor into the two sides of the dust pan 50. The pan is provided with cut-away portions 56 and 57, the former being adapted to accommodate the support 35 (Fig. 1) of the rotary brush, and the latter being of such size and shape as to permit the insertion and withdrawal of the pan without interference by or with the brush. A handle 58 is provided for drawing the pan from the machine and for carrying the same. When the pan is in position and ready for use it may be secured against accidental withdrawal by the latch 59 adapted to be turned into a vertical position so as to engage the reinforced edge 60 of the pan. The pan may be suitably braced, as by light rods or angle irons 55. It will be seen that the pan may easily be withdrawn from the machine, carried outside, or emptied as desired.

The device is propelled upon the floor by hand preferably by means of a bail, as 60, having its inwardly projecting ends pivoted in suitable supports 61 at the sides of the machine. A handle 62 of suitable length permits the operator to work with effectiveness and ease. The bail is so pivoted that the downward and forward pressure upon the handle causes the nozzle 21 suitably to contact the floor as well as adding to the frictional contact of the wheels 42 therewith. Heretofore much difficulty and annoyance have been experienced by reason of the fact that when all commercially known cleaners of this general type have been lifted by the handle or bail, as 60, they have invariably tilted and very frequently discharged quantities of collected dust from the dust box or out of the suction dust bag through the nozzle upon the floor. To obviate this difficulty I have devised the positive stop and spring catch 63, and it will be seen that this device not only acts as a stop to prevent the cleaner from tilting when it is lifted suddenly and also to prevent the heavier rear end of the cleaner from tilting the device rearwardly when it is being carried, but that owing to the slight bend in the catch the handle may be maintained in an upright position, should the operator desire to leave the machine momentarily, thus avoiding the necessity of stooping down and picking up the handle. The pivoted rest 64 at the rear of the machine is also adapted to hold the handle off the floor, but in a more horizontal direction, when not actually in use.

As already indicated, the cleaner is used by moving the same to and fro upon the surface to be cleaned, the rotation of the driving wheels causing suction at the opening 24 of the nozzle whereby dust and dirt are drawn into the dust bag 18, from which it may at any time be removed by lifting the spring-held bail 26, laying aside the nozzle and drawing out the bag. Other dust and dirt is collected in the dust pan 50 from which it may be removed by simply withdrawing the pan and emptying the same.

Where the construction has not been specifically pointed out herein the parts may be made of the usual materials now employed in making devices of this kind and according to methods well understood in the art.

While I have illustrated and described preferred and modified constructions of these improvements, various changes may be made therein all within the spirit of the disclosures here made, and all such changes and variations are contemplated by me as fall within the scope of the appended claims.

I claim:

1. In a cleaner of the character described, the combination of a supporting frame, a rotatably mounted brush, a dust pan, guides on said frame substantially parallel with said brush, said dust pan having portions thereof formed to interfit with said guides, said interfitting elements being adapted to maintain said dust pan in operative position when the cleaner is in use and to permit the sliding drawer-like withdrawal of the pan from the device in the direction of the axis of said brush.

2. In a cleaner of the character described, the combination of a rotatable brush, an

open top dust pan having side and bottom walls, said dust pan having an opening in the bottom wall thereof adapted to permit said brush, in operative association with said pan, to contact the floor, a pan supporting member having suitable guides thereon substantially parallel with said brush, said dust pan having lateral edge portions formed to coöperate with said guides in maintaining said dust pan in operative position in the cleaner when in use and to permit the pan to be removed slidingly from the cleaner in the direction of the axis of said brush.

3. In a cleaner of the character described, the combination of a rotatably mounted brush, a dust pan in operative association therewith, said dust pan having an opening in the bottom thereof adapted to permit said brush to contact the floor therethrough, means adapted to hold said pan in operative association with said brush when the cleaner is in use, said means being adapted to permit said pan to be withdrawn from the cleaner in the direction of the axis of said brush, a side wall of said pan being formed with a clearance to avoid interference with said brush when the pan is thus removed.

4. In a cleaner of the character described, the combination of a body portion normally horizontally disposed when the cleaner is in operative position, said body portion having a receptacle for dust and dirt, a driving bail pivotally mounted on said body portion in advance of the center of gravity of the cleaner, a positive stop mounted on said body portion and adapted to contact said bail when the cleaner is in normal cleaning position and the bail is in substantially vertical position, said positive stop being in the form of a projection from said body in the path of said bail, and provided with spring means to hold said bail in contact with said stop or to permit the bail to move out of contact in one direction only.

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