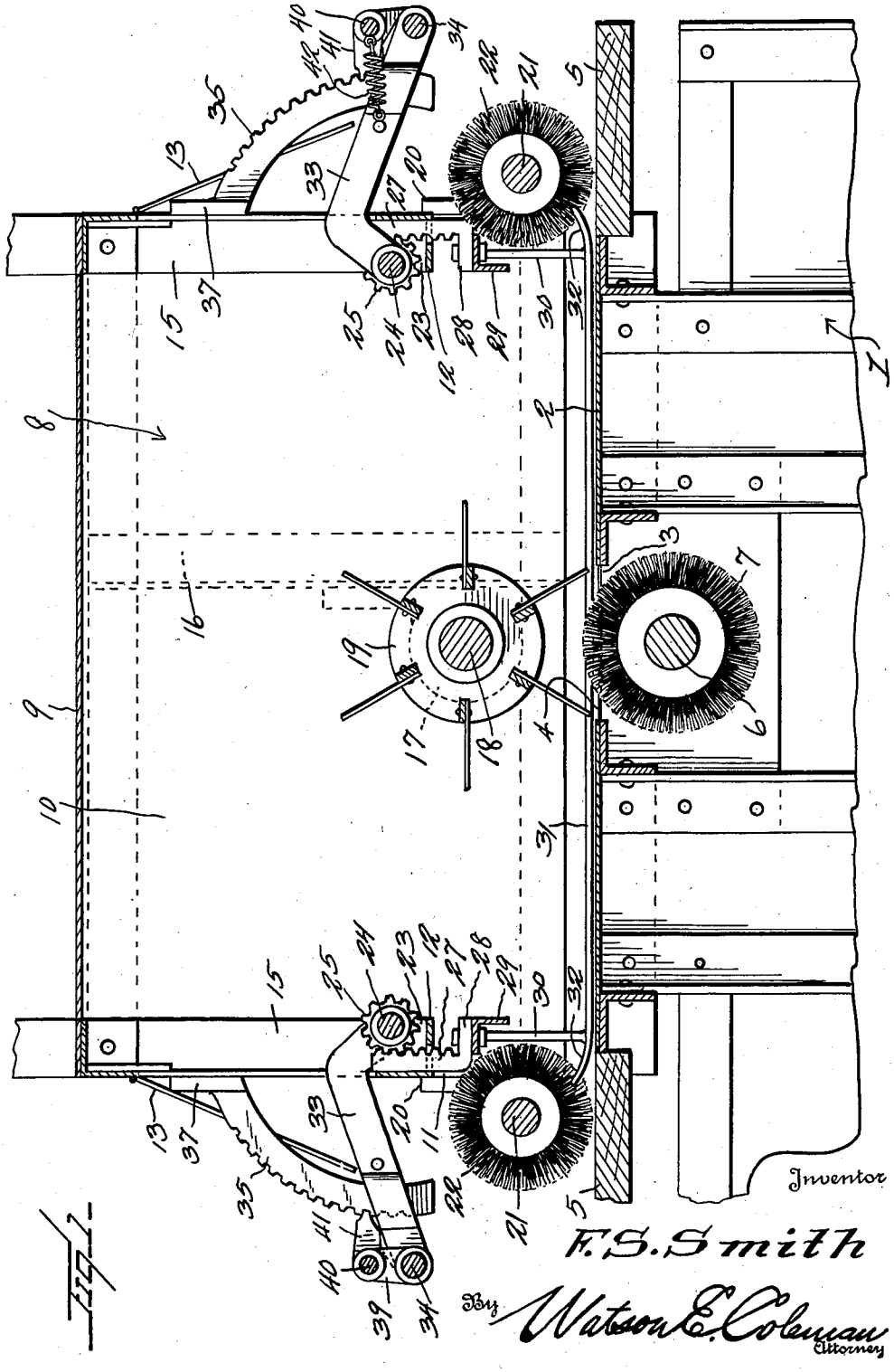
May 13, 1941. F. S. SMITH 2,242,152

RUG BEATER

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RUG BEATER

Filed May 4, 1940 2 Sheets-Sheet 2

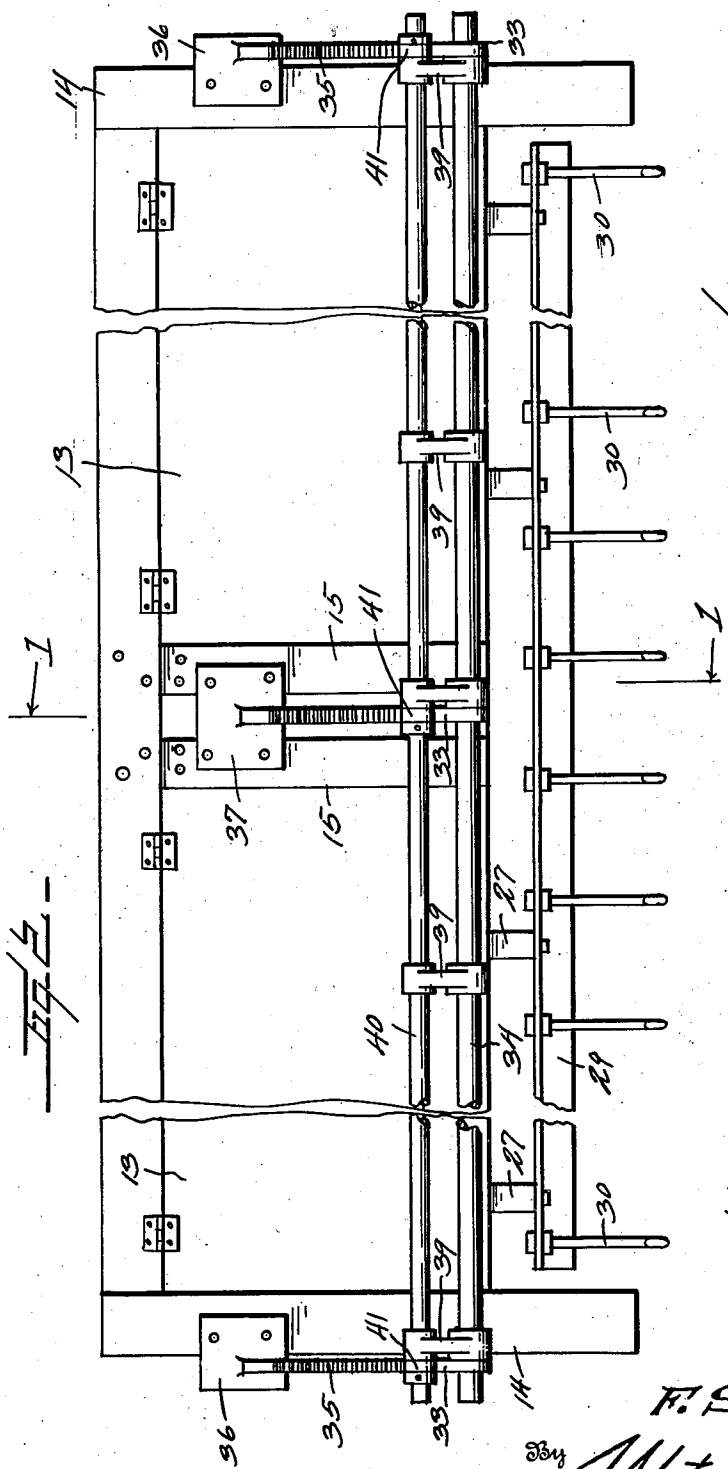


Fig. 2.

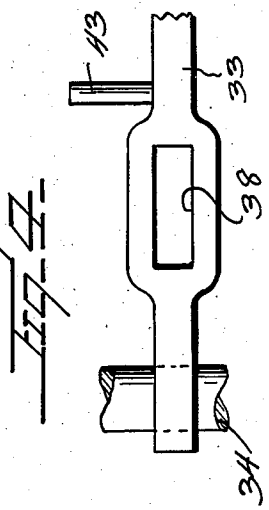


Fig. 3.

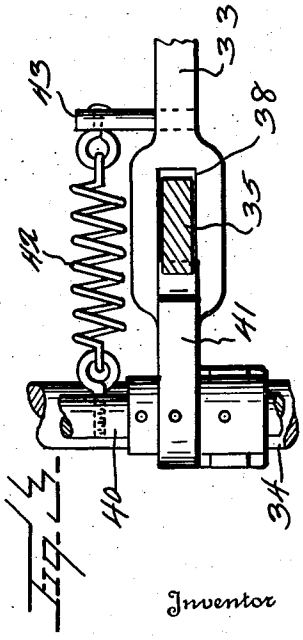


Fig. 4.

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RUG BEATER

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10 Claims. (Cl. 15—5)

This invention relates to improvements in carpet or rug beating and cleaning machines and pertains particularly to mechanism for controlling the movement of rugs through the same.

In the operation of cleaning or beating rugs where such rugs are passed beneath a beater roll, considerable difficulty is encountered in controlling the smooth passage of rugs of light construction past the feed rolls and under the beater roll, as there is a tendency for the lighter and more delicately constructed rugs to pile up within the beater machine with the consequent danger of becoming damaged.

The primary object of the present invention is to provide an improved rug cleaning or beating machine having associated therewith a novel mechanism by which the operator may adjust the machine for the handling of rugs of different weight or type so as to make it possible to run through the beater all types of rugs without danger of injuring the lightest and most delicate ones.

Another object of the invention is to provide in a rug cleaning or beating machine, a mechanism for maintaining a rug flat on a beating table or bed and for smoothing out the rug as it enters the machine past a feed-in roller and preventing the rug from piling up against the inner side of an out-feeding roller as it leaves the beater roll and is moving out of the machine, such means being constructed and arranged whereby an operator of the machine may easily and quickly make desired adjustments to accommodate rugs of different thickness and different degrees of weight.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming part of this specification, with the understanding, however, that the invention is not to be confined to any strict conformity with the showing of the drawings but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Fig. 1 is a view in transverse section of the beater housing, taken on the line 1—1 of Fig. 2, and showing the structure embodying the present invention associated therewith together with the feed brushes and an underlying table structure.

Fig. 2 is a view in side elevation of the beater housing per se from which the feed rollers have been removed.

Fig. 3 is a fragmentary view in top plan of a portion of an arm showing the connection of the same with a rack segment, the latter being in horizontal section, the section being substantially on the line 3—3 of Fig. 1.

Fig. 4 is a view in plan of the outer end of an arm showing the connection of the same with the hand rail.

Referring now more particularly to the drawings, the numeral 1 generally indicates a base structure for the present machine, which includes a rug supporting bed or table 2 at the central part of which an opening 3 is formed, which is covered by a grid 4 of wire or other suitable material for carrying a rug across the opening. The table or bed 2 is perfectly smooth on top and flat as shown, and is bordered upon its two sides by the boards 5 on one of which the rug is placed for starting through the machine and over the other one of which the rug passes when coming out of the machine.

Disposed in a plane below the bed 2 and directly beneath the grill covered opening 3 is a shaft 6 which is suitably rotatably supported and which extends transversely of the path of travel of the rug over the bed. On this shaft is supported a cleaning brush 7, the bristles of which project through the grid 4 to extend slightly above the plane of the top surface of the bed.

Disposed above the bed 2 is a housing 8 which has the top wall 9, end walls 10, and side walls 11. The under side of the housing 8 is open and is spaced from the bed 2 a sufficient distance to permit rugs of the thickest texture to pass under beneath the open side and the bed 2.

The sides of the housing each comprises a transversely extending angle bar 12 which is spaced above the bottom of the housing and above each of these bars are two hingedly mounted doors 13 which close the area between the bars and the top of the housing, as shown.

At each end of the housing a corner post 14 is disposed and at the transverse center are two vertically arranged spaced posts 15 between each of which and a corner post, a door 13 is positioned.

At the center of each end wall of the housing, a suitable supporting structure in the form of a vertical post 16 is arranged upon which is mounted a bearing or pillow block 17, and between these pillow blocks there extends longitudinally through the housing and transversely

of the bed 2, the beater roll supporting shaft 18 which carries the beater roll 19. This shaft 18 is parallel with and disposed directly above the shaft 6 for the cleaning brush and the beater roll supported upon the shaft 18 is of standard design.

At each end of the housing 8 and upon each side thereof there is secured to the lower end of a corner post 14, a bearing or pillow block 20 and the pair of bearing blocks at each side of the housing supports a feed brush shaft 21 on which is supported the feed brush 22. The feed brushes extend lengthwise of the housing and are adjusted so that the bristles thereof come into close relation with the top surface of the adjacent board 5 which forms a part of or borders the bed 2. The feed brushes 22 are disposed below the longitudinal bars 12.

Upon the inner side of each of the bars 12, suitable bearings 23 are mounted which support a gear shaft 24 which extends lengthwise of the housing. Upon each shaft 24 are gears 25.

Each of the horizontal bars 12 is formed to provide a vertical guide for a vertically arranged rack 27 adjacent and having toothed connection with each gear 25 and the lower end of each rack has the inwardly turned foot or angled portion 28, which is connected with a bar 29, preferably of angle iron, as shown.

Each of the bars 29 has connected therewith the upper ends of a series of vertically disposed rods 30 and the lower ends of these vertical rods 30 are connected with horizontal rods 31 which extend in spaced parallel relation with the bed 2 from one side of the housing to the other. The rods 31, which are in spaced parallel relation, cooperate to form a presser unit or grill which engages the top surface of a rug passed between the housing and the bed, the rods extending in the direction of travel of the rug over the bed and thus functioning to hold the rug down and at the same time permitting it to travel smoothly from one feed brush to the other. Each end of each horizontal rod or presser rod is turned or curved upwardly slightly, as indicated at 32, and extends into the bristles of the adjacent feed brush 22.

Each gear shaft 24 has secured thereto arms 33, preferably three in number, there being one at each end of the shaft and one intermediate the ends of the shaft in line with the area 26, lying between the center vertical posts 15. These arms 33 extend outwardly and downwardly with respect to the shaft 24 and they have their outer ends connected by a hand bar or rail 34.

Adjacent to each arm 33 there is secured the outwardly and downwardly extending quadrant rack 35, the upper end of each of the racks at the end of the housing being secured by means of a plate 36 to a vertical end post 14 while the rack intermediate the ends of the housing may be secured as shown by means of a plate 37 to the central vertical posts 15.

Each of the arms 33 adjacent its outer end is formed to provide a guide 38 through which a rack 35 passes, so that as the arms are swung upwardly and downwardly, they will ride over their respective racks.

Each rail or bar 34 has secured thereto a plurality of upwardly extending links 39 and the group of links 39 associated with each bar 34 supports a dog bar 40 which extends longitudinally of the adjacent rail 34.

Each dog rail 40 has secured thereto adjacent each rack 35, a dog 41 which is directed inwardly toward the adjacent rack and has a suitable finger or fingers upon its inner end for engaging the teeth of the rack.

The dogs 41 are maintained constantly in engagement with the racks by springs 42 which are connected at one end with the dog rail 40 and extend inwardly along a side of the adjacent arm 33 for connection at their other ends with the arm through the medium of a pin 43 carried by and extending laterally from the arm, or by any other suitable means.

In the process of cleaning or beating rugs, many variations of texture in rugs are found, that is, some rugs have a thick heavy filling or face with a stiff back as, for example, a good grade Axminster, while others are thin-faced with a stiff backing. A chenille rig offers still another problem as this particular type of rug has a deep soft filling or face and the backing is also soft and pliable. Such a rug might be described as being similar to a heavy woolen blanket.

In the cleaning or beating of these various types of rugs in a machine such as is herein described, the heavier or stiffer types of rugs may be passed through from one side of the bed, and from one feed brush, to the other without difficulty, the rug being carried along by the positively driven feed or bristle brush over the grilled opening 3 to be acted upon by the beater, and it will then be moved along under the action of the beater, since the beater rotates in a direction to keep the rug moving through the machine, toward the opposite or out-feed roller. In the case of a soft rug being passed through the machine or a rug having a tasseled fringe, there is some tendency for it to follow the feed brush and wrap around the brush. Also when such a rug has passed or is passing beneath the beater roll, there is a tendency for it to pile up against the inner side of the out-feed brush.

By the provision of the rug pressing grill, this tendency of the lighter rugs to pile up or to fail to move smoothly across the bed is entirely eliminated. When the rug is started beneath the first feed brush, the turned up ends of the rods 31, because of their extension into the bristles of the feed brush, will prevent the rug from following the brush but cause it to maintain its position upon the bed as it moves forward toward the opposite side of the housing. The rug now is moved along under the action of the feed brush and along beneath the grill rods 31 and over the grilled opening 3 at the center of the beater bed where it comes into contact with or is engaged by the beater straps of the beater roller or cylinder 19. The movement of the straps of the beater cylinder is in the same direction as that of the rug and due to the speed and impact of the straps striking the rug, there is a tendency for a frictional drag to be set up which, however, does not interfere with the movement of the rug until the end of the rug leaves the first or in-feed brush 22. If no grill or presser rods 31 were present, under these circumstances, the rugs would pile up in a bundle and the beater straps could not do their work and there would be a possibility of the rug becoming damaged. However, by the provision of the presser grill, the correct amount of pressure may be applied to the rug according to the type and texture of the same so as to hold the rug against the beater bed 2 in a smooth and even manner and thus greatly augment the efficiency of the beating or cleaning process.

Should it become necessary for the presser

grill to be applied with greater or less force to the rug, the adjustment of the grill may be easily and quickly made. This is accomplished by the operator grasping a hand rail or bar and while firmly gripping the same pulling out thereon or imparting thereto a turning movement so as to oscillate the rail and thus swing the links 39 outwardly. This will pull the dogs 41 away from their respective racks and will at the same time increase the tension of the springs 42, and as soon as the dogs have been freed from the racks, the hand rail may be raised or lowered as may be desired, for the purpose of turning the gear shaft 24 to turn the gears thereon and to raise and lower the adjacent racks 27 and consequently the adjacent ends of the presser grill rods 31. As soon as the hand rail is released by the operator, the springs 42 will function to reversely oscillate them and move the dogs back into locking engagement with the adjacent racks.

It will be readily apparent that with the constructure herein described, not only may the various types of rugs which may be passed through the machine be held flat and smooth upon the beater bed so as to be properly beaten without danger of being damaged, but such holding means can be easily and quickly moved or adjusted for increasing or decreasing the holding pressure by the performance of a single movement by the machine operator at either side of the machine. Obviously if the rods or presser grill unit are to be raised at both sides of the housing or in such manner as to maintain a parallel relation with the beater bed, two operators might be employed although one operator could make the necessary adjustment by first adjusting one side and then moving around and adjusting the other side.

What is claimed is:

1. In a beater of the character described including a beater bed, feed brushes disposed at opposite sides of the bed and a beater above the bed and between the brushes, a presser unit extending across the bed from one feed brush to the other and lying between the bed and the beater, suspension means for the presser unit at each side of the bed, and means connected with the suspension means for facilitating vertically moving the sides of the unit independently or together.

2. In a beater of the character described including a beater bed, feed brushes disposed at opposite sides of the bed and a beater disposed over the bed between the brushes, a presser unit extending across the bed from one feed roller to the other and disposed between the bed and the beater and supported for vertical movement relative to the bed, said presser unit comprising a plurality of spaced parallel bars extending in the direction of movement of a body to be cleaned over the bed, each of said bars having its two ends curving upwardly toward and terminating in the bristles of the adjacent brushes.

3. In a rug beater including a beater bed, feed brushes disposed at opposite sides of the bed and a beater disposed over the bed between the brushes, a presser unit extending across the bed from one feed brush to the other and disposed between the bed and the beater, said presser unit comprising a plurality of spaced parallel bars extending in the direction of movement of a rug over the bed, a housing overlying the unit and the beater, vertically shiftable supports for said unit carried by the housing adjacent opposite sides thereof, and means facilitating the vertical movement of said supports from outside the housing.

4. In a rug beater including a beater bed, feed brushes disposed at opposite sides of the bed and a beater disposed over the bed between the brushes, a presser unit extending across the bed from one feed brush to the other and disposed between the bed and the beater, said presser unit comprising a plurality of spaced parallel bars extending in the direction of movement of a rug over the bed, vertically movable suspension means connected with said unit at opposite sides thereof, means carrying the suspension means by which the latter are permitted vertical movement, said suspension means including vertically disposed racks, a shaft rotatably supported at each side of the unit adjacent said racks, gears carried by the shafts and engaging the adjacent racks, and an actuating arm coupled with each shaft facilitating turning of the same for the raising and lowering of the adjacent side of the unit.

5. In a rug beater including a beater bed, feed brushes disposed at opposite sides of the bed and a beater disposed over the bed between the brushes, a presser unit extending across the bed from one feed brush to the other and disposed between the bed and the beater, said presser unit comprising a plurality of spaced parallel bars extending in the direction of movement of a rug over the bed, a supporting body disposed over the unit at each side thereof, an arm pivotally supported at one end adjacent each of said bodies and extending outwardly away from the unit, the outer end of the arm being raised and lowered on the pivotal support therefor, and means coupling each arm with the adjacent side of the unit whereby vertical movement of the outer end of the arm will effect corresponding movement of the adjacent side of the unit.

6. In a rug beater including a beater bed, feed brushes disposed at opposite sides of the bed and a beater disposed over the bed between the brushes, a presser unit extending across the bed from one feed brush to the other and disposed between the bed and the beater, said presser unit comprising a plurality of spaced parallel bars extending in the direction of movement of a rug over the bed, a supporting body disposed over the unit at each side thereof, an arm pivotally supported at one end adjacent each of said bodies and extending outwardly away from the unit, the outer end of the arm being raised and lowered on the pivotal support therefor, means coupling each arm with the adjacent side of the unit whereby vertical movement of the outer end of the arm will effect corresponding movement of the adjacent side of the unit, and means for securing said arms against movement.

7. In a rug beater including a beater bed, a housing disposed over and spaced from the bed, a feed brush at each side of the housing and a beater within the housing between the brushes, a pressing unit disposed within the housing between the brushes and between the beater and beater bed and including a plurality of members spaced apart in a direction transversely to the direction of travel of a rug through the beater, a shaft extending lengthwise of the housing adjacent and above each feed brush, gears carried by each shaft, a vertically shiftable rack supported adjacent to and connected with each gear, connecting means between the racks and the adjacent sides of the presser unit, a plurality

of arms carried by each shaft and extending outwardly beyond the adjacent side of the housing, a rack segment secured to the housing at each side and extending outwardly and downwardly therefrom adjacent to an arm, a reel connecting the outer ends of the arms at each side of the housing and being rockable on its long axis, a dog carried by each rail and engaging the adjacent rack, and spring means normally urging the oscillation of each rail in a direction to couple the dog with the rack.

8. In a rug beater including a beater bed, a housing disposed over and spaced from the bed, a feed brush at each side of the housing and a beater within the housing between the brushes, a pressing unit disposed within the housing between the brushes and between the beater and beater bed and including a plurality of members spaced apart in a direction transversely to the direction of travel of a rug through the beater, a a shaft extending lengthwise of the housing adjacent and above each feed brush, gears carried by each shaft, a vertically shiftable rack supported adjacent to and connected with each gear, connecting means between the racks and the adjacent sides of the presser unit, a plurality of arms carried by each shaft and extending outwardly beyond the adjacent side of the housing, a rack segment secured to the housing at each side and extending outwardly and downwardly therefrom adjacent to an arm, a reel connecting the outer ends of the arms at each side of the housing and being rockable on its long axis, a plurality of links secured to each rail, a rod connecting the links of each rail and paralleling the adjacent rail, a dog secured to each rod and extending toward and engaging the adjacent rack segment, and a contractile spring connecting each rod with the adjacent arm and normally urging oscillation of the adjacent rail in a direction to engage the dog with the rack.

9. In a beater of the character described, including a beater bed, rotary means at opposite sides of the bed for effecting the movement across the bed of a body to be cleaned, beater means over the bed between said rotary means, a presser unit over the bed and comprising a plurality of straight members disposed entirely in the space bordered by the centers of rotation of said rotary means and extending from one rotary means to the other, and a vertically movable suspension means for each of the sides of the unit adjacent the rotary means.

10. In a beater of the character described, including a beater bed, rotary means at opposite sides of the bed for effecting the movement across the bed of a body to be cleaned, beater means over the bed between said rotary means, a presser unit over the bed and comprising a plurality of straight members disposed entirely in the space bordered by the centers of rotation of said rotary means and extending from one rotary means to the other, vertical suspension members connected to said unit upon the inner sides of the rotary means, and means connected with said suspension members operable from a position outside of the said space for effecting the vertical shifting of the unit.

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