June 28, 1932. A. J. MANXI 1,865,197

HAT CLEANING MACHINE

Filed Oct. 17, 1928 3 Sheets-Sheet 1

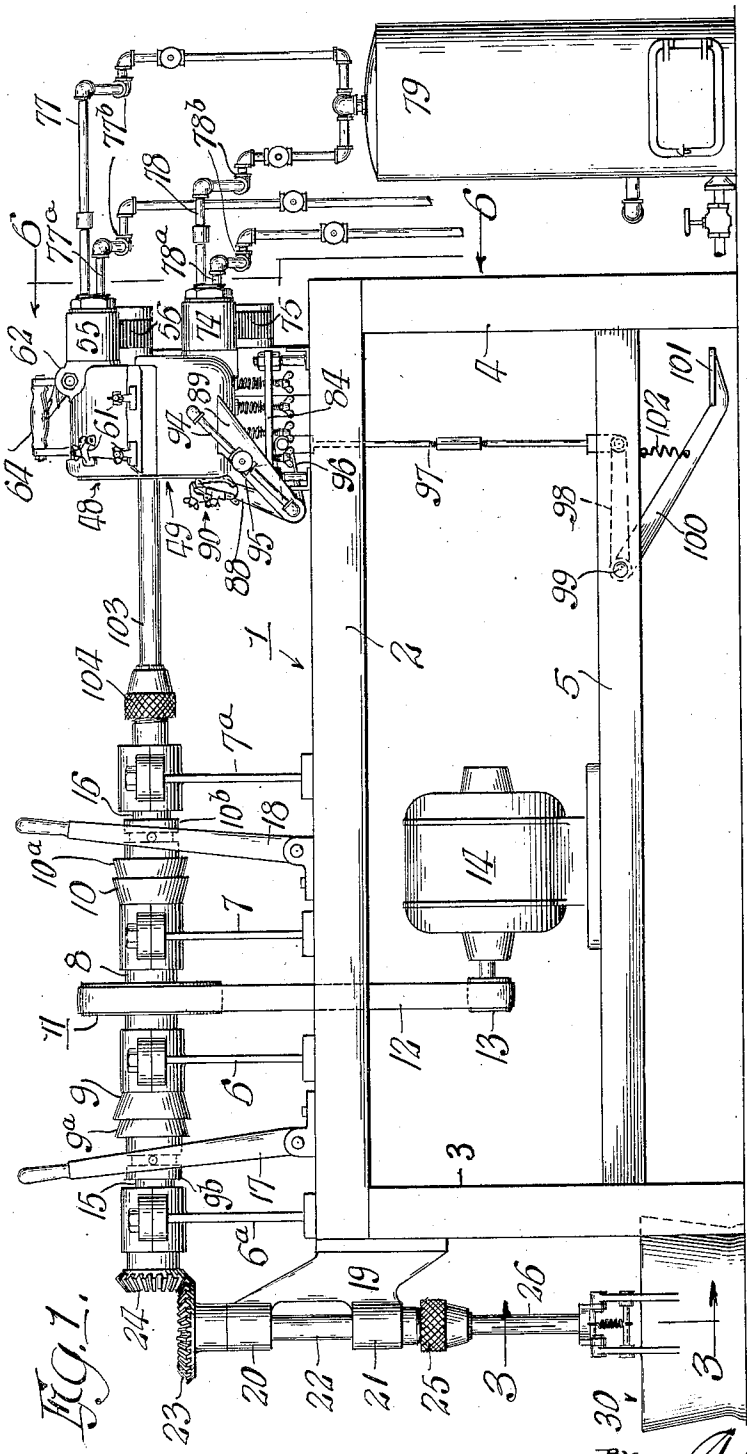


FIG. 1.

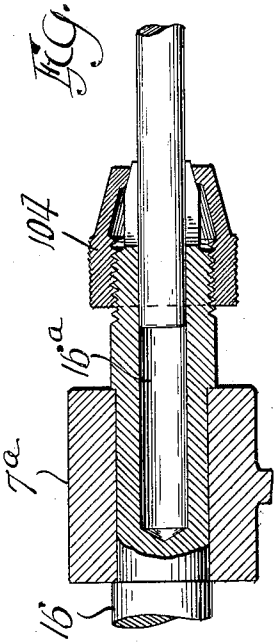


FIG. 2.

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HAT CLEANING MACHINE

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Fig. 3.

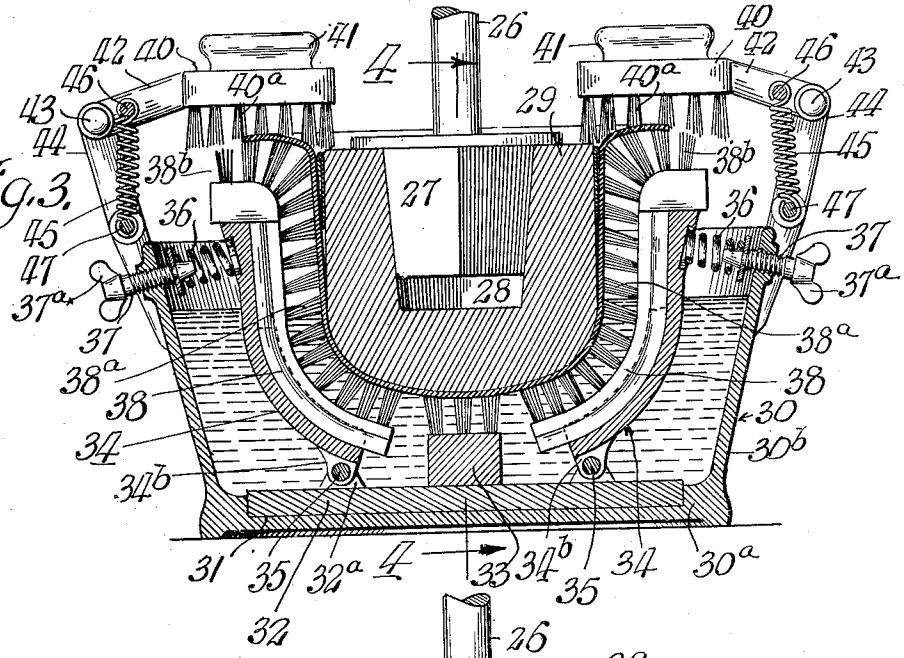


Fig. 4.

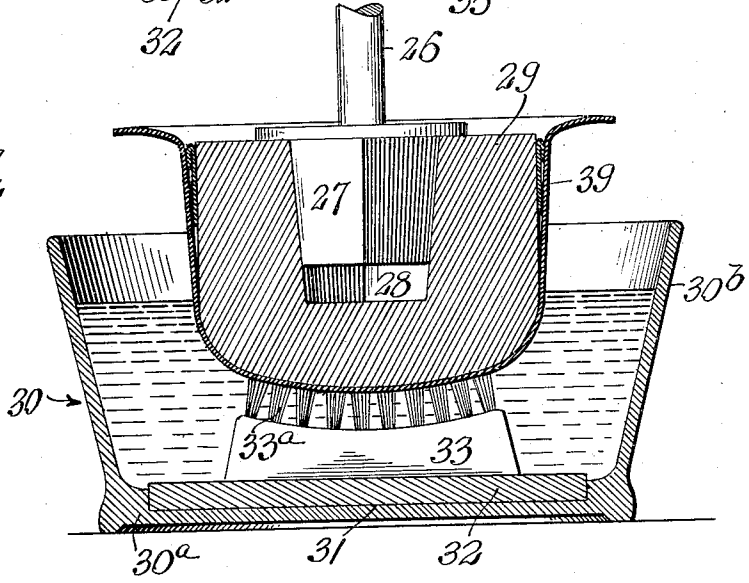
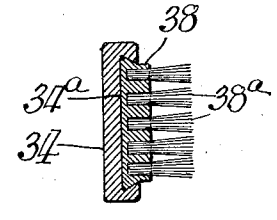


Fig. 5.



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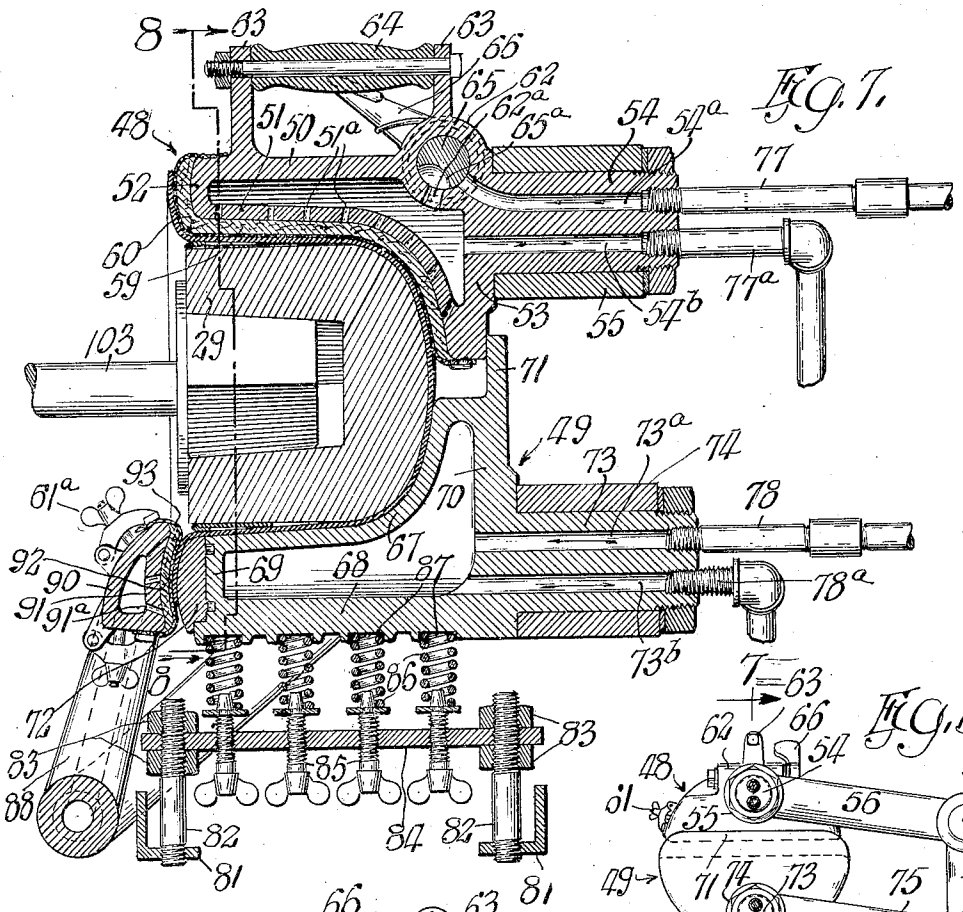


FIG. 7.

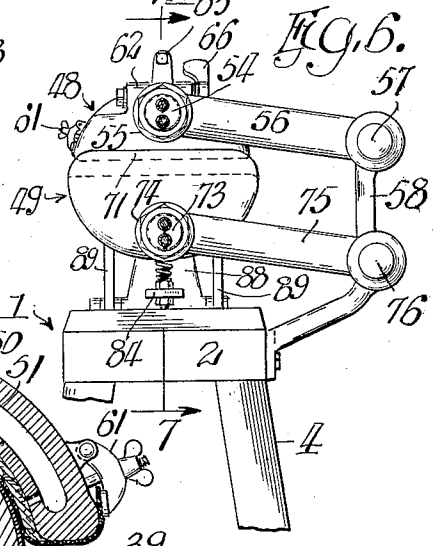


FIG. 6.

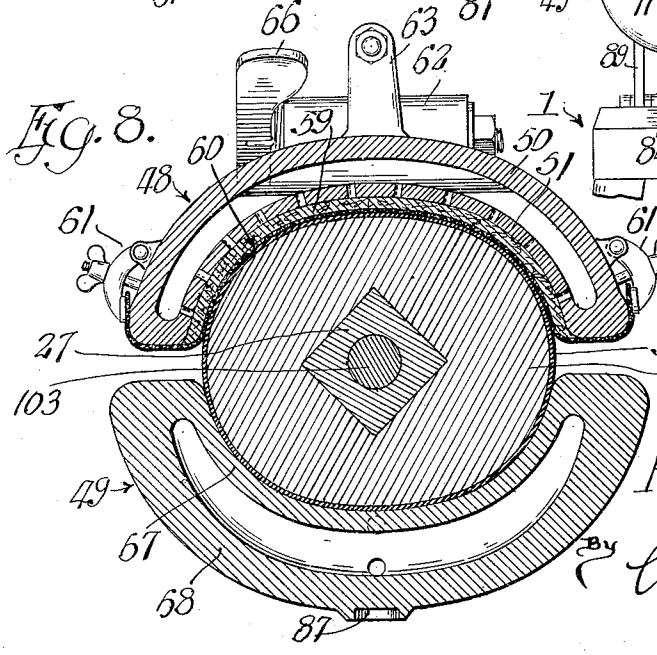


FIG. 8.

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Patented June 28, 1932 1,865,197

UNITED STATES PATENT OFFICE

ADAM J. MANXI, OF CHICAGO, ILLINOIS

HAT CLEANING MACHINE

Application filed October 17, 1928. Serial No. 312,948.

This invention relates to improvements in hat cleaning machines and it consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The primary object of the invention is to provide a machine by which the necessary steps of cleaning, blocking and ironing may be readily carried out upon a worn hat, to recondition and restore it to a first class condition.

Another object of the invention is to provide a machine of this kind, wherein the various steps of reconditioning may be successively carried out on different hats at one time, whereby much time is saved and the output of work is greatly increased.

Still another object of the invention is to provide a machine of this kind wherein work on the brim of the hat as well as on the crown thereof may be simultaneously performed.

Still a further object of the invention is to provide in a machine of this kind, novel steaming and pressing members adapted to operate upon a hat when upon a form block, which members are capable of a relative separation for the insertion and removal of the form block and hat.

These objects of the invention, as well as others, together with the many advantages thereof, will more fully appear as I proceed with my specification.

In the drawings:—

Fig. 1 is a view in side elevation of a hat cleaning machine, embodying my invention.

Fig. 2 is a longitudinal sectional view on an enlarged scale through a certain chuck embodied in my improved machine and which will be more fully referred to later.

Fig. 3 is a vertical sectional view on an enlarged scale through parts of the machine, as taken on the line 3—3 of Fig. 1.

Fig. 4 is a vertical sectional view through parts of the machine shown in Fig. 3, the plane of the section being indicated by the line 4—4 on said Fig. 3.

Fig. 5 is a detail horizontal sectional view through one of the brush holding blocks and brushes shown in Fig. 3.

Fig. 6 is a transverse vertical sectional view as taken on the line 6—6 of Fig. 1.

Fig. 7 is a longitudinal vertical sectional view on an enlarged scale as taken on the line 7—7 of Fig. 6.

Fig. 8 is a transverse vertical sectional view as taken on the line 8—8 of Fig. 7.

In general my improved machine includes a suitable frame of the desired height and upon one end thereof is a horizontally disposed longitudinally extending power shaft, driven at a point between its ends by a belt from a motor preferably on the frame itself below said shaft. Associated with each end of the power shaft and in line therewith are operating shafts which may be connected to and disconnected from the power shaft by suitable lever operated clutches. One power shaft terminates at said end of the frame where it is operatively connected to a vertically depending shaft, suitably journalled and carrying a chuck by which a hat block carrying shaft section may be removably attached to said vertically depending shaft. The bottom end of the hat block carrying shaft, when connnected to said depending shaft extends into a cleaning fluid container in which are located certain hat brim and crown engaging brushes.

On the other end of the frame is provided a pair of coacting opposed concaved hat brim and crown steaming and ironing members between which a hat block with a hat thereon may be engaged while upon one end of a shaft section, the other end of which may be detachably connected to the end of the other operating shaft.

Referring now in detail to that embodiment of the invention illustrated in the accompanying drawings, 1 indicates as a whole the frame of the apparatus which includes a horizontally disposed bed 2 suitably supported at its ends by pairs of upright front and rear legs 3 and 4 respectively. In this instance, "front" and "rear" are purely arbitrary and are employed merely as a distinguishing convenience.

To rigidify the frame as a whole, said pairs of legs are further connected together by a brace 5 disposed parallel with and below the bed.

Rising from the bed a suitable distance

from the front end legs 3 is a pair of longitudinally spaced bearing standards 6 and 7 respectively in which is journalled a shaft 8 and on each end of said shaft beyond said standards is a female clutch member 9 and 10 respectively. Secured to said shaft between said standards is a pulley 11 driven by a belt 12 from a smaller pulley 13 on the armature shaft of an electric motor 14 mounted on the brace 5.

6^a and 7^a indicate respectively bearing standards rising from the bed in spaced relation with the similar bearing standards 6 and 7 before mentioned, the standard 6^a being disposed at the front end of the bed above the legs 3 and the standard 7^a being disposed on said bed about midway between the front and rear ends thereof as best shown in Fig. 1. Journalled in the bearing standard 6^a is a shaft section 15 and journalled in the bearing standard 7^a is a shaft section 16. The shaft 8 constitutes the power or driving shaft and the shaft sections 15 and 16 which are axially disposed with respect to the shaft 8 constitute the driven or operating shaft sections.

The inner end of the shaft 5 carries a male clutch member 9^a to be engaged with its associated clutch member 9 and the inner end of the shaft 16 carries a male cutch member 10^a to be engaged with its associated clutch member 10. The clutch members 9^a and 10^a respectively are keyed to their associated shaft section and include grooved collars 9^b and 10^b respectively adapted to be engaged by coacting shifting levers 17 and 18 respectively. By means of said levers which are pivoted to the bed 2, it is apparent that the desired clutch member may be engaged and disengaged so that the shaft sections 15 and 16 may be driven independently or together, just as desired.

Fixed to the front end of the frame is a bracket 19 having vertically spaced bearing ears 20 and 21 respectively in which is journalled a shaft 22. On the top end of said shaft above the bearing ear 20 is secured a bevel gear 23 which meshes with a bevel pinion 24 on the outer end of the shaft section 15. On the bottom end of the shaft 22 is carried a suitable chuck 25 by which one end of a shaft section 26 may be detachably connected to and disconnected from the shaft 22. The other end of the shaft section 22 carries a tapered rectangular plug 27 to be detachably engaged within a socket 28 in a hat block 29. This hat block is of such a cross sectional shape as to have a major axis and a minor axis as is usual in such blocks.

Disposed on the floor or other support adjacent the front end of frame is an open top vessel or other container 30 for a suitable cleaning fluid 31 such as "cleaner's naptha". Said vessel or container which is preferably circular in plan has a flat base or bottom 30^a and an upwardly and outwardly tapering side wall 30^b. In the top surface of said flat bottom is an annular recess 31 in which is removably seated a base 32 for a brush block 33. Said block which has a contour corresponding to the rounded bottom of the hat block 29 carries substantially radially disposed tufts of brush bristles 33^a as best shown in Fig. 4.

Pivotally mounted on said base, one on each side of said block 32 are brush block carriers 34—34. Said carriers each of which is of a contour corresponding to a part of the bottom and to the sides of the hat block, have an undercut groove 34^a in the top surface and have an ear 34^b at the curved bottom end which is disposed between and is pivotally connected to spaced ears 32^a on the base 32 by means of a pin 35, as best shown in Fig. 3. The other or top end of each brush carrier is substantially vertically disposed and is engaged by a spring 36 carried on one end of a screw 37 threaded in the adjacent part of the container wall part 30^b. Thus said carrier is yieldingly supported at its top end to rock about its pivot 35 when necessary, the spring normally urging the carrier to swing inwardly. The screw 37 has a winged head 37^a without the container so that the tension of the associated spring 36 may be regulated. In connection with each brush carrier is a brush block 38 which has tufts of bristles 38^a and 38^b so disposed as to engage not only the outside of the crown but also one side of the brim of a hat 39 on the block 29. In this instance the brush block 38 is of a cross sectional contour fitting the groove 34^a in the carrier 34 whereby said brush block is securely positioned in the associated carrier.

Associated with each brush carrier and brush is a coacting brush 40 the bristles 40^a of which are so disposed as to engage the other side of the brim of the hat 39. In this instance each brush has a handle 41 and is mounted on one end of a pair of arms 42 the other end of which is pivoted on a horizontally disposed pivot pin 43, supported in the top ends of a pair of upwardly extending standards 44 made integral with the container 30 with one standard disposed on each side of a screw 37. A spring 45 connected at one end to a pin 46 between the arms 42 and at its other end to a pin 47 between the standards normally urges the brush into engagement with the hat brim. As is apparent the brushes 40 and arms 42 may be swung out of the way about the pins 43 when it is desired to insert or remove the hat and block from the container.

Assume that a hat 39 is disposed upon the block 29 which in turn is mounted on the shaft section 26. With the brushes 40 swung back and out of the way, the blocked hat may be inserted into the container between the brush blocks 38 in the carrier 34. The top

end of the shaft section may then be inserted into the chuck 25 to connect the shaft section to the shaft 22. The brushes 40—40 are then swung back into place to engage the hat brim. Thus the crown of the hat is disposed in the cleaning fluid in the container and such fluid from a pouring can may be applied to the brim. By manipulating the clutch lever 17 the shaft section 26 is caused to rotate, a like movement being imparted to the blocked hat. As the block and hat crown are of an oval cross section it is apparent that both sets of brushes will rock to come and go to maintain constant engagement with the entire hat which in this manner is thoroughly cleaned. The hat and block may then be removed from the container and as the cleaning fluid is highly volatile the hat will quickly dry out for subsequent operation thereon by structure now to be described.

At the rear end of the machine is located a steaming and pressing mechanism whereby that hat is pressed or ironed to shape while being steamed so that it is returned to its normal shape ready for application of the usual hat band, when it is ready to wear.

Said mechanism comprises a concave hollow top steaming member 48 and a hollow bottom pressing or ironing member 49 concaved in opposition to the member 48 so as to substantially embrace or enclose a hat 39 when on a block 29. Each member 48—49 is substantially semi-elliptical or oval in cross section and the steaming member comprises top and bottom walls 50 and 51 respectively which are joined at the front end by a wall 52 of substantially narrow depth and are joined at their rear ends by a wall 53 of greater depth. Integral with the rear wall is a trunnion 54 having inlet and outlet passages 54^a and 54^b respectively therein. Said trunnion is embraced by and has bearing in the hub 55 on one end of a lever 56, the other end of which is journalled as at 57 in the top end of an arm 58 rising from the bed 2 as best shown in Fig. 7.

On the exposed surface of the inner wall 51 which is perforated as at 51^a for the passage of steam therethrough, is secured a pad or cushion 59 by means of a presssing cloth 60. The pad or cushion and said pressing cloth extend about the front wall 52 of the steaming member and the pressing cloth is removably attached to the outer wall of said steaming member by means of clamps 61—61 as best shown in Fig. 8. At the junction of the top wall 50 and rear wall 53 of said member on the median line thereof is provided a transversely extending, tubular boss 62 into which the inlet passage 54^a opens, there being a port 62^a connecting said boss with the hollow interior of said member 48. Rising from said boss and from the front end of the top wall respectively are arms 63—63 between which a handle 64 extends and by which pressure may be manually imposed upon said steaming member.

In the bore of the boss 62 is located a rotatable valve plug 65 to one end of which in position convenient for thumb manipulation with respect to the handle 64 is a spring pressed lever arm 66. In the valve plug is a recess 65^a which when the plug is turned in one direction by thumb pressure on the arm 66 operatively connects the inner end of the passage 54^a with the port 62^a so that steam may enter the interior of the member 48 and pass out not only through the openings 51^a into the pad 59 but may also pass out through the passage 54^b to exhaust as will later appear.

The pressing or ironing member 49 comprises top and bottom walls 67 and 68 respectively which are joined at their front ends by a front wall 69 of comparatively narrow depth and are joined at their rear ends by a wall 70 of greater depth, the top end of said rear wall terminating in an upright flange 71 to provide a guide or the like of rear wall 53 of the member 48. To the front wall 69 of said member 49 is removably attached a brim ironing block 72 of such a contour as to give the desired shape to the hat brim. Integral with the rear wall is a trunnion 73 having inlet and outlet passages 73^a and 73^b respectively therein. Said trunnion is embraced by and has bearing in the hub 74 on one end of a lever 75 similar to the lever 56 and which lever 75 is journalled as at 76 to the arm 58 before mentioned.

The passage 54^a of the member 48 and the passage 73^a of the member 49 are connected by pipes 77 and 78 respectively with a suitable steam generating means 79 while the passage 54^b of the member 48 and the passage 73^b of the member 49 are connected by pipes 77^a and 78^a respectively which may lead to any suitable place of exhaust. Thus the pipes 77 and 78 constitute the inlets for live steam to the members 48 and 49 while the pipes 77^a and 78^a constitute the exhaust therefor. In said pipes 77 and 77^a are swing joint fittings 77^b disposed substantially in the plane of the axis of the pivot 57 and in said pipes 78 and 78^a are similar swing joint fittings 78^b disposed substantially in the plane of the axis of the pivot 76. In said pipes any make of well known valves may be employed to control the passage of steam therethrough as best shown in Fig. 1. It is apparent from the above that both members 48 and 49 are capable of a swinging movement about its associated pivot without disturbing the pipe connections between them and the steam generating means.

The member 49 is yieldingly supported from the bed 2 so that it may rock about its pivot 76 to come and go with the movement imparted to it by the blocked hat to be steamed and ironed or pressed as will soon

appear. To this end I provide a pair of transverse angle bars 81—81 on the bed frame below the member 49. Rising from each angle bar is a threaded post 82, each carrying a pair of nuts 83 at its top between which are engaged the ends of a longitudinally extending bar 84. In said bar is threaded a plurality of winged bolts 85 and suitably mounted on the top end of each bolt is a spring 86. The bottom surface of the bottom wall 68 of the member 49 is provided with a plurality of recesses 87 to engage the top ends of said springs all as best shown in Fig. 7. By means of the various screw threaded elements mentioned, it is apparent that the position and tension of the springs may be accurately determined.

Associated with the member 49 is a brim pressing member in the form of a hollow or tubular arm 88 which is pivoted at its bottom ends between a pair of downwardly and forwardly extending brackets 89 made integral with the member 49 as best shown in Fig. 1. The top end of this arm has a hollow head 90 one wall 91 of which is curved in accordance with the block 72 on said member 49. To one surface of said wall which is perforated at 91ª is secured a pad or cushion 92 held in place by a pressing cloth 93 said cloth being detachably fixed to the head by clamps 61ª similar to the clamps 61 before mentioned. A pipe 94 (see Fig. 1) opens at one end through the wall 68 of the member 49 and opens at its other end axially into the pivotal connection between the arm 88 and brackets 94. In said pipe is a valve 95 to control the passage of steam from the interior of the member 49 to the interior of the head 90.

The arm 88 is normally so disposed as to space the head 90 away from the block 72 and may be brought into engagement therewith by a foot actuated means now to be described.

Fixed to the arm 88 at a point coincident with its axis with respect to the brackets 94 is a lever 96 (see Fig. 1) which is connected by an adjustable link 97 to the rear end of a lever 98. The front end of said lever 98 is secured to a cross shaft 99 journalled in the frame brace 5 and also fixed to said shaft is a foot treadle 100 which has a step portion 101 extending laterally beyond one side of the frame in a position convenient for the operator. A spring 102 normally acts to lift upwardly on the treadle 100 so that the head 90 of the arm 88 is normally spaced away from the block 72. To bring the head into engagement with the block, the treadle is depressed.

After the hat 39 on the block 29 has been cleaned and dried as before described, it is of course necessary to steam and iron it so that it will not only have the "new" appearance desired but will also be shaped and will retain said shape. In applying the hat to the steaming and ironing means, the member 48 is swung up out of the way about the pivot or axis 57 to expose the interior of the member 49. The block 29 with the hat upon it is then placed upon one end of a shaft section 103, the other end of which is inserted into an axial bore 16ª in the shaft 16 after which a chuck 104 on the shaft 16 is tightened up to operatively connect the shaft section 103 thereto. The steaming member 48 is then swung down toward the pressing or ironing member 49 and the lever 18 is then actuated to drive the shaft 16 and shaft section 103. As the hat block is of an oval or elliptical cross section when considered transversely, it is, of course, apparent that in the rotation thereof its major axis and then its minor axis are brought in succession into first a vertical plane and then a horizontal plane. This, of course, will cause a relative movement of the steaming member 48 and ironing member 49 toward and away from each other. However in operating this mechanism the operator bears down on the handle 64 and at the same time holds the lever 66 downward so that steam enters the interior of the member 48. At the same time the operator bears downward with his foot upon the treadle 101 so that the ironing head 90 irons the brim against the block. Under such conditions the members 48 and 49 will have a relative floating action so that as the blocked hat is rotated, it is simultaneously steamed and ironed, the members 48 and 49 always being in contact or engagement with the crown of the hat.

In this connection it might be stated that as the brim ironing head 90 is movable with the member 94 it is always in engagement with the hat brim in the relative movement between the members 48 and 49.

After the hat has thus been steamed and ironed the lever 18 is actuated to stop the shaft 16 and then the member 48 is swung up out of the way. The chuck 104 is loosened up and the shaft section 103 is removed after which the hat is taken off the block and such handwork as sewing on the band and the like is then performed.

The invention described provides a compact yet complete machine which cleans, steams and irons the hats and fulfills a long felt want in hat cleaning establishments. It automatically takes care of different sizes of hats with but minor adjustments if at all, and is so constructed that successive steps in the rejuvenation of old hats may be carried out upon different hats at one and the same time.

The parts are strong and rigid and the mechanism is so simple as to make it practical to employ unskilled labor in the operation thereof.

While in describing my invention I have

referred in detail to the form, arrangement and construction of the various parts thereof, the same is to be considered merely as illustrative so that I do not wish to be limited thereto except as may be specifically pointed out in the appended claims.

I claim as my invention:—

1. A machine of the kind described embodying therein a concaved steaming member, an ironing member, concaved in opposition thereto and means supporting said members providing a guided floating movement of one member with respect to the other member.

2. A machine of the kind described embodying therein a hollow concaved steaming member, a hollow ironing member concaved in opposition thereto, means for supplying and controlling the inlet and outlet of steam to each of said members, and means supporting said members, providing a guided floating movement of one member with respect to the other member.

3. A machine of the kind described embodying therein, a hollow concaved steaming member, an ironing member concaved in opposition thereto, means providing a guided relative movement between said members, and a means providing a yielding support upon which one of said members is normally engaged.

4. A machine of the kind described embodying therein a hollow concaved steaming member, an ironing member concaved in opposition thereto, a trunnion on the same end of each member, a supporting bracket, levers each pivoted at one end to one of said trunnions and pivoted at its other end to said bracket, whereby said members are capable of a relative floating movement and means providing a yielding support for one of said members.

5. A machine of the kind described embodying therein a hollow concaved steaming member, a hollow ironing member concaved in opposition thereto, a trunnion on the same end of each hollow member, having an inlet and outlet passage for the steam therethrough, a supporting bracket, means each pivotally engaged at one end with said bracket and at the other end each with a trunnion and means providing a yielding support for one of said members.

6. A machine of the kind described embodying therein a hollow concaved steaming member, a hollow ironing member concaved in opposition thereto, means providing a pivotal swinging connection for each of said members so that said members are capable of a relative floating movement and means providing a yielding support upon which said ironing member engages.

7. A machine of the kind described embodying therein a hollow concaved steaming member, a hollow ironing member concaved in opposition thereto, means providing an inlet and outlet for steam for each hollow member, means providing a pivotal swinging connection for each of said members so that said members are capable of a relative floating movement, means providing a yielding support upon which the ironing member engages, a handle on the steaming member for manually urging it toward said ironing member and valve actuating means positioned adjacent the handle for controlling the flow of steam through the inlet to said steaming member.

8. A machine of the kind described embodying therein a hollow concaved steaming member, a hollow ironing member concaved in opposition thereto, a trunnion on the same end of each hollow member, each trunnion having an inlet and outlet for steam for each of said hollow members, means connected to each trunnion providing a swinging movement of each member toward and away from each other, a yielding support for the ironing member, a handle on the steaming member for manually urging it toward the ironing member, and a valve actuating member positioned adjacent the handle for controlling the flow of steam through said inlet to said steaming member.

9. A machine of the kind described embodying therein, a hollow concaved steaming member, an ironing member concaved in opposition thereto, means providing a guided relative movement between said members toward and away from each other, and a brim ironing member movable toward and away from one end of said first mentioned ironing member.

10. A machine of the kind described embodying therein a hollow concaved steaming member, an ironing member concaved in opposition thereto, means providing a guided relative movement between said members toward and away from each other, and a brim ironing member, supported by said first mentioned ironing member and movable toward and away from one end thereof.

11. A machine of the kind described embodying therein a hollow concaved steaming member, a hollow steam heated ironing member concaved in opposition thereto, a trunnion on the same end of each hollow member, each trunnion having a steam inlet and outlet, a supporting bracket, means pivotally engaged at one end with said bracket and at its other end, each with a trunnion, and a brim ironing member swingable toward and away from the other end of said first mentioned ironing member about an axis disposed at an angle to said trunnions.

12. A machine of the kind described embodying therein a hollow concaved steaming member, a hollow steam heated ironing member concaved in opposition thereto, a trunnion on the same end of each hollow member,

each trunnion having a steam inlet and outlet, a supporting bracket, means pivotally engaged at one end with said bracket and at its other end, each with a trunnion, a brim ironing member swingable toward and away from the other end of said first mentioned ironing member about an axis disposed at an angle to said trunnions and means for conducting steam from said first mentioned ironing member to said brim ironing member.

13. A machine of the kind described embodying therein a hollow concaved steaming member, a hollow steam heated ironing member concaved in opposition thereto, a trunnion on the same end of each hollow member, each trunnion having a steam inlet and outlet, a supporting bracket, means pivotally engaged at one end with said bracket and at its other end, each with a trunnion, a brim ironing member, means providing a pivotal supporting bearing of said brim ironing member from said first mentioned ironing member and means for conducting steam from said first mentioned ironing member to said brim ironing member.

14. In a machine of the kind described, a frame, coacting hollow steaming and ironing members disposed at one end of the frame and concaved in opposition to each other, means providing a relative separating movement between said members, a power shaft on said frame, a hat block supporting shaft section adapted to be entered at one end between said steaming and ironing members and means for detachably connecting the other end of said hat block supporting shaft section to said power shaft.

In testimony whereof, I have hereunto set my hand, this 9th day of October, 1928.

ADAM J. MANXI.