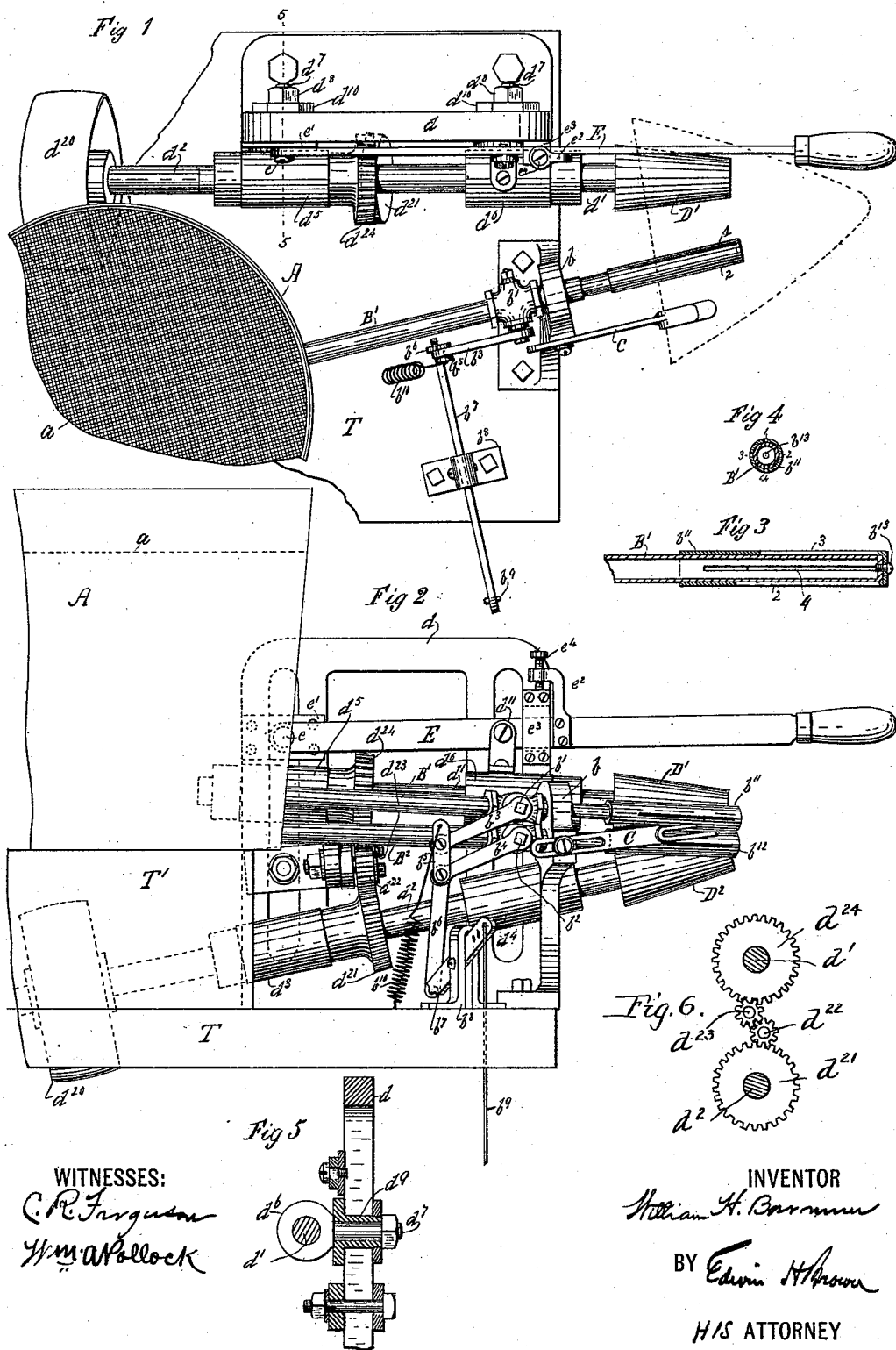


(No Model.)

W. H. BARNUM.
MACHINE FOR STIFFENING HATS.

No. 485,601.

Patented Nov. 8, 1892.



UNITED STATES PATENT OFFICE.

WILLIAM H. BARNUM, OF DANBURY, CONNECTICUT, ASSIGNOR TO CHARLES H. MERRITT, OF SAME PLACE.

MACHINE FOR STIFFENING HATS.

SPECIFICATION forming part of Letters Patent No. 485,601, dated November 8, 1892.

Application filed November 7, 1891. Serial No. 411,192. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. BARNUM, of Danbury, in the county of Fairfield and State of Connecticut, have invented a certain
5 new and useful Improvement in Machines for Stiffening Hats, of which the following is a specification.

This improvement is particularly intended for stiffening the brims of hats.

10 I will describe a machine embodying the improvement, and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a top view of a machine embodying my improvement. Fig. 2 is a side elevation of the
15 same. Fig. 3 is a longitudinal section of a tube used to apply the stiffening material to a hat. Fig. 4 is a transverse section of the tube shown in Fig. 3. Fig. 5 is a vertical section on the plane of the dotted lines 5 5, Fig. 1. Fig. 6 is a detail showing a certain gearing
20 improvement.

Similar letters and figures of reference designate corresponding parts in all the figures.

25 A designates a vat or reservoir containing stiffening material, such as a solution of shellac. In its upper part is a strainer *a*. The solution is introduced above the strainer, and such portion of it as is suitable for use
30 passes through the strainer into the lower part of the vat or reservoir. The vat or reservoir A is supported by a bed or table T, but, as here shown, is elevated above the latter by an intermediate block T'.

35 B' B² designate tubes extending from the lower portion of the vat or reservoir. They are shown as supported at the inner end by the vat or reservoir and at the outer end by extending into a bracket *b*, erected on the
40 bed or table T. Preferably these tubes are slightly inclined downwardly toward their outer ends, so that the stiffening material will flow from the vat or reservoir into them. Near their outer ends they are provided with
45 oscillating valves or cocks *b'* *b*², whose stems have affixed to them arms *b*³ *b*⁴. The outer ends of these arms *b*³ *b*⁴ are pivotally connected to a link *b*⁵, and the arm *b*⁴ is pivotally connected to one end of a link *b*⁶, whose
50 other end is pivotally connected to a lever *b*⁷,

fulcrumed in a bracket or stand *b*⁸, erected on the bed or table T. This lever is connected by a rod *b*⁹ with a treadle of any suitable construction, so that the attendant of the machine may by means of his foot raise
55 the arms *b*³ *b*⁴ to open the valves or cocks *b'* *b*². On the release of the treadle the valves or cocks will be closed by means of a spring *b*¹⁰, here shown as fastened to the link *b*⁵ and to the bed or table T in such a way that it
60 will pull the arms *b*³ *b*⁴ downward.

On the outer ends of the tubes B' B² are tubular sleeves *b*¹¹ *b*¹², constituting distributing-tubes. Portions of the tubes B' B² within these sleeves *b*¹¹ *b*¹² are slotted. A single slot
65 in the under part of the tube B' and a single slot in the upper part of the tube B² will suffice. The sleeves *b*¹¹ *b*¹² will preferably be provided with a number of longitudinal slots. In the present instance each sleeve has four
70 of these slots 1 2 3 4, either of which may, by rotating the sleeve, be brought into line with the slot formed in the contiguous tube B' or B². The sleeves are fitted to the tubes, so as to be capable of rotation around the same.
75 They may be simply retained by friction or by a screw *b*¹³, passing through the end of each sleeve and engaging with a tapped hole in the end of the contiguous tube. The slots of each sleeve are of different length, but
80 none is longer than the slot of the tube with which it is to coact. Obviously by turning the sleeve upon its tube any one of the slots in the sleeve may be brought into line with the slot in the tube, and according to the
85 length of the slot in the sleeve so will the flow of stiffening material be regulated. The length of the slot of the sleeve from which the stiffening material will flow also determines the width of material upon which the
90 stiffening material will be deposited. It will be seen that the sleeves *b*¹¹ *b*¹² are close together. It is intended that there shall be only sufficient space for the passage of the material—as, for instance, a hat upon which
95 the stiffening substance is to be deposited. There will be spring enough in the tubes beyond the bracket *b* to allow them to yield somewhat for the accommodation of different thicknesses of material. Of course it is not
100

intended in this example of my improvement that the tubes or their sleeves shall rotate during the application of the stiffening material.

5 I preferably employ a guide for directing the material which is to receive stiffening material between the sleeves b^{11} b^{12} , and I have shown for this purpose an arm C, having a forked outer end, which will be substantially on the same level as the space between the sleeves. As here shown, this arm C is supported by the bracket b , the connection being made by slotting the arm longitudinally and passing through it a screw that engages with a tapped hole in the bracket b . This connection not only allows of the longitudinal adjustment of the arm, but also permits of tilting it to different angles.

D' D² designate two rollers, here shown as made of conical form and mounted on shafts d' d^2 , which converge toward their outer ends. Owing to this manner of forming the supports of the rollers their opposite surfaces will be parallel, or substantially so. The shaft d^2 is supported in journal-boxes d^3 d^4 , which are clamped to an upright frame or bracket d , which is erected upon the bed or table T of the machine. The clamping devices pass through vertical slots in this frame or bracket d . Hence by slackening the clamping devices the journal-boxes may be adjusted suitably to change the elevation or angle of inclination of the shaft d^2 and its roller D². The clamping devices may be of any suitable form. The shaft d' is supported at one end in a journal-box d^5 , fastened to the upright frame or bracket d and near the outer end in a journal-box d^6 , which is also fastened to the frame or bracket d . Each of the journal-boxes d^5 d^6 has a shank d^7 , which extends through a slot in the frame or bracket d and at the rear end is screw-threaded to receive a nut d^8 . The shank d^7 is surrounded by a sleeve d^9 , which fills the slot that is substantially the same size in diameter as the transverse dimension or width of the slot of the frame or bracket d through which the shank passes. The front end of the sleeve is provided with a flange or head, which is too large to pass through the slot of the frame or bracket d . The rear end of the sleeve is screw-threaded and has applied to it a nut d^{10} in rear of the frame or bracket d . The nut d^8 bears against the rear end of the sleeve d^9 . By tightening the nut d^{10} of the sleeve d^9 the sleeve may be fastened in position upon the frame or bracket d . If then the nut d^8 is loosened, the journal-box, whose shank is engaged with the nut, will be free to oscillate. The sleeve d^9 , belonging to the journal-box d^5 , will be fixed in position by tightening its nut d^{10} ; but the shank of its journal-box will be left free to oscillate in its sleeve. The shank of the journal-box d^6 will be left loose in its sleeve d^9 , and the latter will also be left loose in its slot of the frame or bracket d . The shaft d' can slide lengthwise in the journal-box d^6 . Owing to

this the shaft d' , with its roller D', may be oscillated up and down upon the shank of the journal-box d^6 as a center of oscillation, so as to allow the roller D' to move bodily toward and away from the roller D².

The clamping devices described in connection with the journal-boxes d^5 d^6 will answer for the journal-boxes d^3 d^4 ; but when used for the latter all parts will be tightened.

The journal-box d^6 is provided with an upwardly-extending arm or link d^{11} , with the upper end of which is pivotally connected a lever E, that is fulcrumed by a pin e to a plate e' , fastened to the frame or bracket d . This lever E is provided with a hook-shaped arm e^2 , whose upper end extends over a block or projection e^3 , located upon one side of the frame or bracket d . A screw e^4 passes vertically through the upper extremity of this hook-shaped arm e^2 and is adapted to rest upon the upper end of the block or projection e^3 , thus forming an adjustable support for the shaft d' of the roller D'. The lever E may pass through the block or projection e^3 and be guided thereby.

The rollers D' D² will preferably be rotated continuously. As here shown, rotary motion may be imparted to the roller D² through a belt applied to a pulley d^{20} on the shaft d^2 . Rotary motion is transmitted from the shaft d^2 through a gear d^{21} to a gear d^{22} and from the latter through a gear d^{23} to a gear d^{24} , affixed to the shaft d' . Two gears d^{22} d^{23} are employed for transmitting motion, so as to cause the rollers D' D² to be so rotated that their adjacent surfaces will be moving in the same direction. The attendant may at any time elevate the roller D' by raising the lever E.

The hat to be stiffened is passed between the rollers D' D². It thus receives a film of stiffening material and afterward is subjected to pressure between the rollers. It is only intended that the supply of stiffening material shall be momentary. Hence the operation of the treadle will be periodical. It may be necessary to pass the hat several times between the sleeves and rollers in order to properly apply the stiffening material to the desired surface. Obviously the lever E might be operated by a treadle, if desired. It is clear that one roller serves as a support for the hat and that the pressure with which the roller D' acts may be varied by force exerted through the lever E, assuming that the screw e^4 shall be so adjusted that it will not touch the block or projection e^3 while a hat is passing beneath the roller D'.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for applying stiffening material to hats, the combination of a tube provided with a slot and adapted to engage and directly impinge at its portion which contains said slot upon a hat-brim to deposit stiffening material thereon, a support, and a roller adjacent said support for applying pressure to

the material after it has been deposited, substantially as specified.

2. In a machine for applying stiffening material, the combination of a tube for depositing the material, provided with a longitudinal slot, a sleeve having a series of slots of different lengths fitted to the portion of the tube where the slot is located, a roller for applying pressure to the material after it has been deposited, and a support adjacent said roller, substantially as specified.

3. In a machine for applying stiffening material to hats, the combination of a slotted tube adapted to engage and directly impinge at its portion which contains the slot upon a hat-brim to deposit stiffening material thereon, a valve for controlling the passage of the material through the tube, a roller for applying pressure to the material after it has been deposited, and a support adjacent said roller, substantially as specified.

4. In a machine for applying stiffening material to hats, the combination of a slotted tube adapted to engage and directly impinge at its portion which contains the slot upon a hat-brim to deposit stiffening material thereon, a valve for controlling the passage of the material through the tube, a treadle for op-

erating the valve, a support, and a roller for applying pressure to the material after it has been deposited, substantially as specified.

5. In a machine for applying stiffening material to hats, the combination, with feed-pressure rollers, of longitudinally-slotted tubes for simultaneously applying stiffening material to both sides of a hat-brim, and a vat or reservoir communicating with said tubes, substantially as specified.

6. In a machine for applying stiffening material to hats, the combination of a tube provided with a slot and adapted to engage and directly impinge at its portion which contains said slot upon a hat-brim to deposit stiffening material thereon, a guide for directing the article to be stiffened toward the said tube, a support, and a roller for applying pressure to the material after it has been deposited, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM H. BARNUM.

Witnesses:

G. W. MERRITT,
E. T. HOYT.