

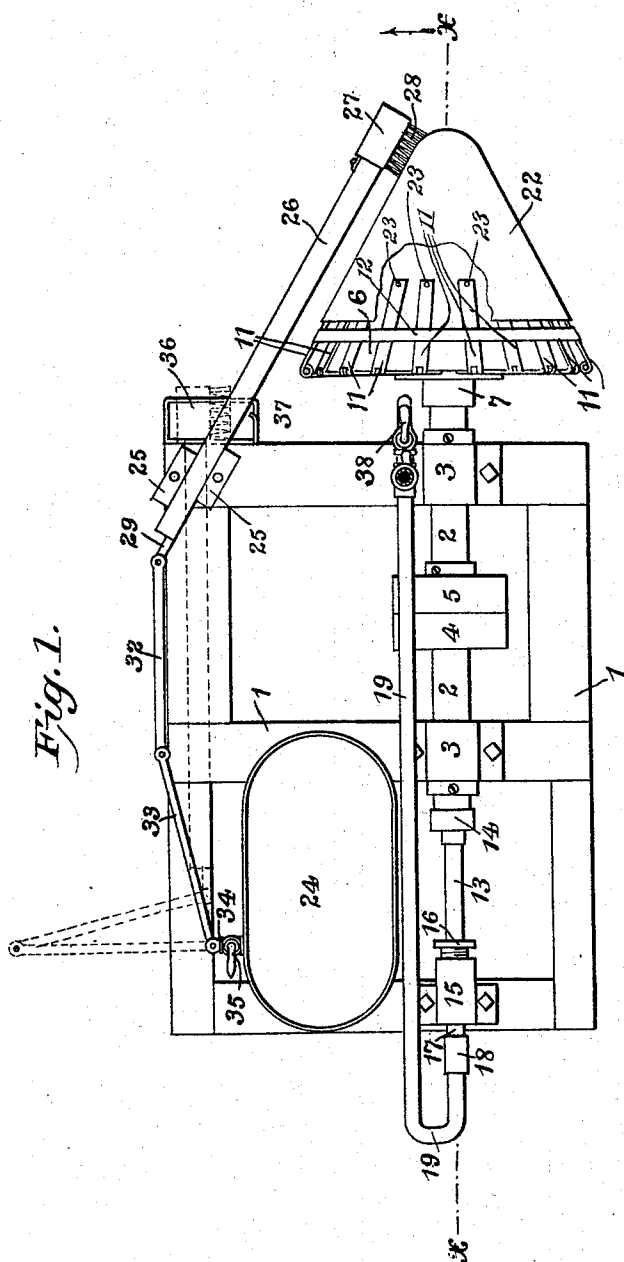
(No Model.)

2 Sheets—Sheet 1.

L. R. HEIM.
HAT STIFFENING MACHINE.

No. 573,876.

Patented Dec. 29, 1896.



WITNESSES:

J. F. Smith
M. L. Ludden

INVENTOR

L. R. Heim

BY *W. H. Smith* ATTY

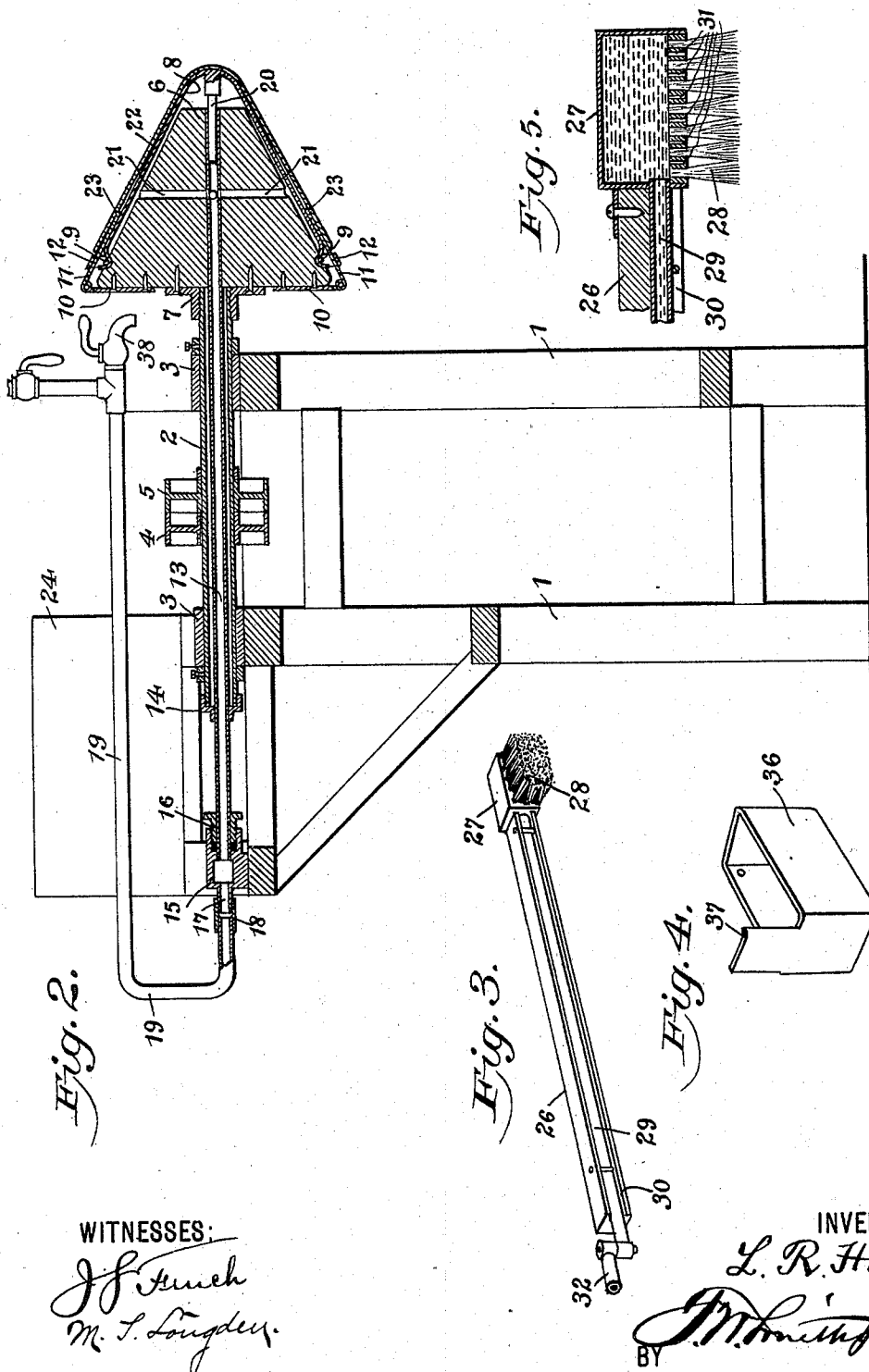
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HAT STIFFENING MACHINE.

No. 573,876.

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WITNESSES:

J. F. Kueh
M. L. Longley.

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UNITED STATES PATENT OFFICE.

LEWIS R. HEIM, OF DANBURY, CONNECTICUT.

HAT-STIFFENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 573,876, dated December 29, 1896.

Application filed January 8, 1896. Serial No. 574,726. (No model.)

To all whom it may concern:

Be it known that I, LEWIS R. HEIM, a citizen of the United States, residing at Danbury, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Hat - Stiffening Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain improvements in machines for applying stiffening to hats, and has for its objects to apply the stiffening uniformly and thoroughly and to provide a means for holding the hat which shall be exceedingly efficient and at the same time will enable the hat to yield with a resilient action.

In the accompanying drawings, which form a part of this application, Figure 1 is a plan view of my improved machine; Fig. 2, a section at the line *x x* of Fig. 1; Fig. 3, a detail perspective showing the brush-arm; Fig. 4, a detail perspective of the waste-bucket, and Fig. 5 a detail broken sectional elevation of the brush-head.

Similar numbers of reference denote like parts in the several figures of the drawings.

1 is the frame of the machine; 2, a hollow shaft journaled within suitable bearings 3 in the frame, and 4 5 are loose and tight pulleys, respectively, on said shaft.

6 is a wooden block having the general shape of a hat-cone and secured to the forward end of the shaft 2 by means of an angle-collar 7 in any suitable manner. Around this block 6 is a cone 8, of rubber, whose tip projects slightly beyond the tip of the block and whose rear extremity is secured to the block by means of a wire strap 9.

10 are small pieces, or, more properly speaking, leaves, made from metal and secured in radial disposition to the rear of the block, so as to extend slightly beyond the periphery of the latter, and 11 are fingers hinged to the projecting portions of said leaves so as to be capable of lying substantially flat against the conical surface of the block at the rear end thereof. 12 is a rubber band which surrounds these fingers and normally keeps them depressed against the block, at the same time,

of course, permitting them to rise with a resilient movement.

13 is a pipe which extends through the shaft 2 and block 6. This pipe revolves in harmony with the shaft and block, and at the rear end of the shaft I have provided a collar 14, which is screwed to said shaft and affords a proper support for the pipe.

In the drawings I have shown the inside diameter of the shaft greater than the exterior diameter of the pipe and have provided the collar 14, above mentioned, for the support of the pipe; but this is done merely to save the trouble and expense of fitting the pipe closely within the shaft, and it will of course be evident that the pipe may fit the shaft and said collar be dispensed with, and I therefore do not wish to be understood as limiting my invention in this respect.

15 is a hollow block which is secured upon the frame, and in the forward end of this block is an ordinary gland 16, through which the rear extremity of the pipe 13 extends and communicates with the chamber within the block. The pipe is free, of course, to turn freely in the gland in the usual manner. Extending from the rear of the block 15 is a hollow nipple 17, which communicates with the opening in said block, and secured to this nipple by an ordinary coupling-nut 18 is a pipe 19, which leads from any suitable reservoir (not shown) containing compressed air.

20 is a pin which extends within the forward extremity of the pipe 13 and has a free sliding movement therein, the outer end of said pin being cemented or otherwise secured to the inner wall of the tip of the rubber cone 8. The object of this pin is to reinforce this rubber tip, so that it will not break down or collapse or become distorted when supporting the tip of the hat during the stiffening operation.

21 are ducts which extend radially through the block 6 and communicate with the pipe 13. There may be any desired number of these ducts, and they may extend in any suitable direction as long as they establish communication between the pipe 13 and points without the hat-block.

The operation of the parts which I have above described is as follows: A hat 22 is placed over the rubber cone 8, the rear of the

hat overlapping and lying upon the fingers 11, the extremities of which latter are provided with small sharp upwardly-projecting spurs 23. Compressed air is then introduced through the pipe 19 to expand the rubber cone 8, whereby the little spurs 23 are driven through the hat, so as to firmly hold the same. The rubber cone affords a firm but at the same time a flexible support for the hat, and this is of great advantage not only when the hat is to undergo the stiffening process, but also during the ironing or pouncing of the hat, since the irregularities as to thickness of a hat are better followed by an ironing or pouncing device than would be the case if such devices were worked against a firm and unyielding surface.

It will thus be seen that my improved means for holding the hat may be utilized not only in connection with stiffening machines, but also in connection with machines for ironing or pouncing hats, and I therefore do not wish to be limited in this respect to machines adapted for applying any stiffening compound.

I will now describe that part of my invention which refers to the means employed for applying the stiffening compound.

24 is a tank containing the stiffening compound and supported on the frame so as to be elevated considerably above the shaft 2.

25 are blocks which are pivoted upon the frame a short distance apart, so as to be capable of turning around on their pivotal points, and 26 is an arm between said blocks and capable of free lengthwise movements. This arm 26 can both slide and be guided between the blocks 25 and is also capable of a swinging movement, owing to the fact that said blocks are pivoted. On the outer extremity of the arm 26 is fixed a hollow head 27, from the bottom of which project bristles to form a brush 28.

29 is a pipe which is contained within a suitable groove 30 in the arm, and which leads into the hollow head 27. The bottom of this head, from which the bristles project, is perforated, as seen at 31, (see Fig. 5,) and it will be readily understood that any liquid introduced through the pipe 29 into the head 27 will pass through these perforations and saturate the bristles.

The rear end of the pipe 29 may be connected with the tank 24 by means of any suitable flexible connections, but I have shown in the drawings two sections 32 33 of pipe pivotally connected, the free extremities of these sections being pivoted, respectively, to the pipe 29 and to a nozzle 34, which latter extends from the bottom of the tank 24. The pivotal connections above referred to with respect to these pipes are quite ordinary, being the same as are commonly found in gas-fitting, and a continuous length of pipe is thus formed from the brush-head to the tank, while at the same time the connecting-sections 32 33 are flexible.

35 is a cock in the nozzle 34, by means of which the supply of stiffening material is regulated.

The position of the brush when not in use is as is shown at Fig. 1 in dotted lines, and secured to the frame immediately beneath the brush when in this position is a waste-bucket 36, which has a scraper 37 projecting therefrom, against which the bristles of the brush may be wiped to take off all surplus stiffening or hard particles or congealed stiffening which may adhere to the bristles.

In applying the stiffening to a hat, the latter being clamped upon the rubber cone in the manner hereinbefore specified, the operator, having previously regulated the desired supply of stiffening by means of the cock 35, takes hold of the head of the brush, pulls it forward, and swings it inward against the hat, and as the latter revolves he drags this brush across the hat from brim to tip, or vice versa. The bristles of the brush will open up the nap or fiber of the hat and better prepare the same for the reception of the stiffening, and also the latter will be by the bristles thoroughly and uniformly forced into the hat, and there will be no patches or clots of the stiffening here and there over the area of the hat.

When only a portion of the hat is to be stiffened, as, for instance, the brim, or when some parts are to be stiffened more than others, this may be readily accomplished by means of my improvement.

The action of the bristles is materially assisted by the flexible and yielding rubber cone which supports the hat, and I am enabled thereby to turn out very superior work by my improved machine.

When the hat has been properly stiffened, the operator opens the cock 38 to allow the compressed air to escape, whereupon the rubber cone collapses, the fingers 11 are drawn inwardly by the action of the rubber band 12, thereby withdrawing the spurs 23 from the hat, and the latter is then readily removed.

I am aware that hats have been brushed and finished by means of a fountain-brush in which liquid has been supplied automatically to the bristles, and I therefore do not wish to be understood as laying any broad claim to the use of such brush in connection with a hat-stiffening machine. Moreover, I am enabled to use any sort of brush construction to apply the stiffening compound, or, in fact, the latter may be applied in any suitable manner, since the gist of my invention relates to the means which I employ for holding the hat rather than to any particular manner of applying the stiffening.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the frame, the hollow shaft journaled in suitable bearings therein, the conical-shaped block secured to the outer end of said shaft, the pipe extending through said shaft and block and capable

of revolving in harmony therewith, ducts in said block leading from said pipe to the exterior of the block, the rubber cone around said block and secured to the latter at its rear edge, the pivoted fingers carried by said block and provided with spurs at their extremities, and means for introducing compressed air within said pipe whereby the rubber cone is inflated and the fingers elevated, substantially as set forth.

2. The combination of the frame, the hollow shaft suitably journaled therein, the conical-shaped block secured to the outer end of said shaft, the pipe extending through said shaft and block and capable of revolving therewith, the ducts pierced from the outside of said block and leading into the tube, the rubber cone around said block and secured circumferentially to the latter at the rear end of said cone, the pin extending within the tube and having its head secured to the inner wall of the tip of said rubber cone, the pivoted fingers which normally rest upon said cone and are provided with small sharp spurs, resiliently-acting means for preserving this normal position of the fingers, and means for introducing compressed air through the tube after a hat has been placed over said cone, whereby the latter is expanded firmly against such hat and said spurs driven into the hat, substantially as set forth.

3. In a hat-stiffening machine, the com-

bination of the rotary support for the hat, the elevated tank which contains the stiffening compound, the blocks pivoted to the frame of the machine a short distance apart, the arm between said blocks and capable of an independent sliding movement and a swinging movement in harmony with said blocks, the hollow perforated head provided with bristles and secured to the outer extremity of said arm, and the flexible pipe having its extremities respectively connected with said tank and head, substantially as set forth.

4. The combination of the rotary block, the passages and ducts in said block and leading to the exterior thereof, the rubber cone around said block and secured thereto at its rear end, the pivoted fingers carried by the block at its rear and normally resting against said cone and provided at their extremities with upwardly-projecting spurs, means for resiliently preserving this normal position of the fingers, and means--as compressed air forced through passages and ducts in said block--for expanding said rubber cone whereby a superimposed hat may be firmly held thereon, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

LEWIS R. HEIM.

Witnesses:

JOHN S. ROTH,
ALFRED HEIM.