

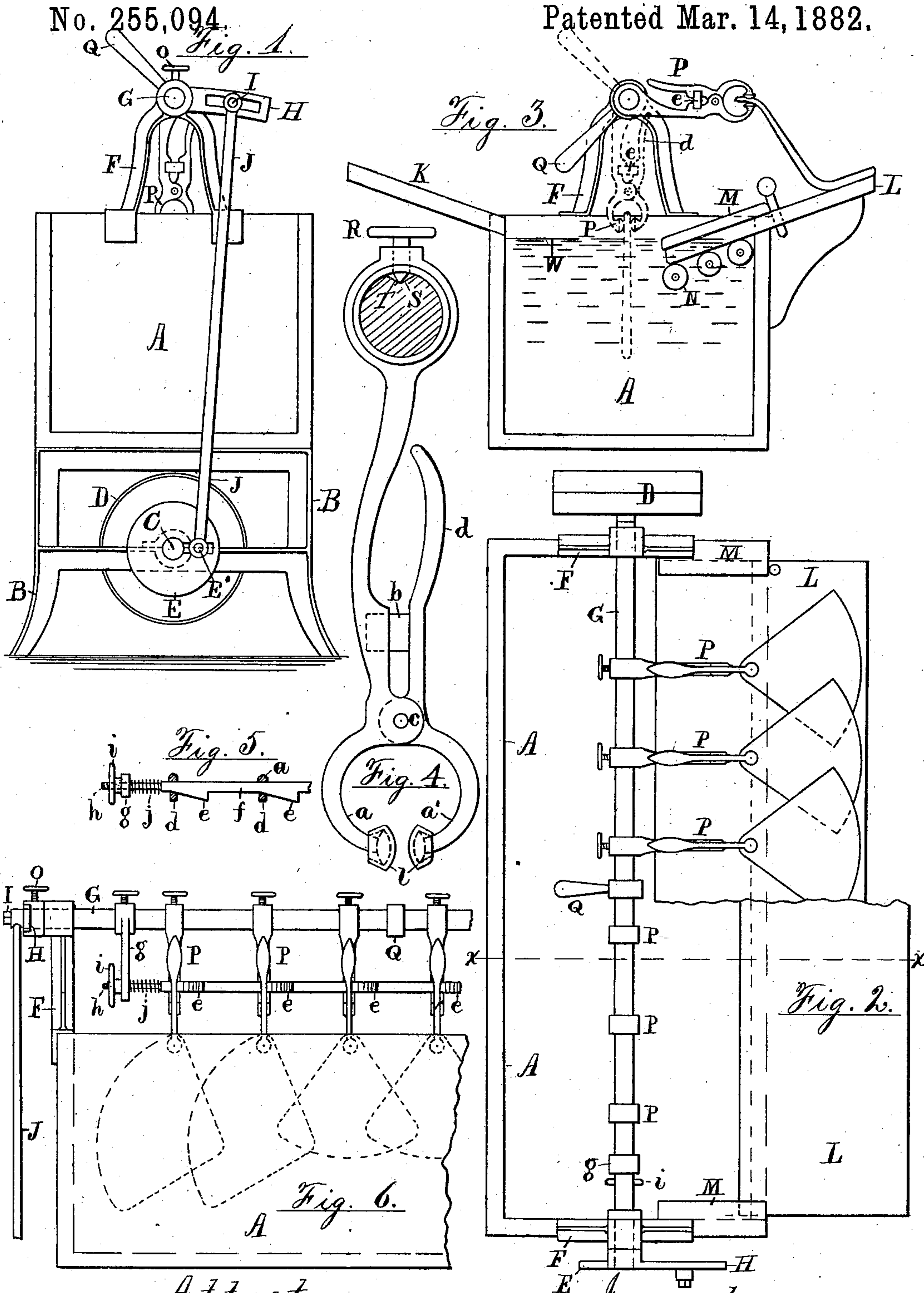
(No Model.)

G. YULE.

METHOD OF AND APPARATUS FOR SHAKING THE COTTON FROM  
NAPPED HATS.

No. 255,094

Patented Mar. 14, 1882.



Attest:

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# UNITED STATES PATENT OFFICE.

GEORGE YULE, OF NEWARK, NEW JERSEY.

METHOD OF AND APPARATUS FOR SHAKING THE COTTON FROM NAPPED HATS.

SPECIFICATION forming part of Letters Patent No. 255,094, dated March 14, 1882.

Application filed December 21, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, GEO. YULE, a citizen of the United States, residing in the city of Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Method of and Apparatus for Shaking the Cotton from Napped Hats, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

My invention relates to an improvement in processes and apparatus for removing cotton from the naps of hats; and it consists, first, in an improved method of removing the cotton deposited between the fur fibers by shaking the same in hot water automatically; secondly, in the combination, with a vibrating shaft, of a series of clamps for shaking a number of hat-bodies simultaneously; thirdly, in a spring-clamp; fourthly, in a special arrangement of the plank for removing the hat-bodies from the clamps; fifthly, in mechanism for closing the series of clamps simultaneously; and, sixthly, in means for vibrating the shaft carrying the clamps.

My invention will be understood by reference to the annexed drawings, in which Figure 1 is an end elevation of the machine. Fig. 2 is a plan of the same with the plank broken to show it in two positions; Fig. 3, a section on line *xx* in Fig. 2; Fig. 4, an enlarged view of one spring clamp; Fig. 5, a plan of the locking-wedge with sections of the levers and screw-brace, and Fig. 6 an elevation of the left-hand end of the entire machine above the tank.

A is the tank of hot water, which may be heated by steam or other means, as desired. B B are legs beneath the same; C, a driving-shaft, shown provided with pulleys D at one end and a crank-disk, E, with adjustable pin E' at the other end.

F F are standards, secured to the ends of the tank on top for carrying the vibrating shaft G.

H is a slotted arm, secured to the end of the shaft over the disk E and provided with a pin, I.

J is a connection between the pins E' and I, whereby the rotary motion of the former is transmitted to the latter, which, by reason of its greater radius, merely vibrates in proportion to the distance of the pin I from the shaft G.

K is a fixed plank at one side of the tank, and L a plank fitted to slides M and rollers N,

upon the inside of the tank at each end, upon the other side. By this means the plank L is adapted to slide toward the center of the tank at pleasure, to support the hat-bodies when lifted from the hot water, as described herein.

O is a screw for securing the arm H to the shaft G, and Q a handle fastened to the shaft, for turning the same around to lift the hats from the hot water when the screw O is loosened.

P P P are the clamps, secured at intervals upon the shaft G, and constructed with jaws *a* *a'* for holding the hat-bodies pendent in the water W in the tank. The shaft G and the clamps are so arranged that when the tip of the hat is held in the jaws the body of the hat is immersed in the water, while the clamp is above the surface and accessible to be opened and closed, as desired.

In Fig. 4 is shown a spring, *b*, applied to the jaws for closing them automatically and clamping the tip of the hat until released. A pivot, *c*, is formed on the main part of the clamp above the jaw *a*, and a hand-lever, *d*, is pivoted thereto, so as to open the jaw *a'* when said lever is pressed by the hand. The spring *b* is shown inserted in a socket in the levers above the pivot, and may be made of india-rubber, as shown, or of coiled wire, or a metallic leaf-spring may be substituted. With such a spring-clamp the hat-bodies can be removed and replaced with new ones by the operator pressing upon them one at a time; and three clamps thus constructed are shown in the upper part of Fig. 2, turned to one side of the shaft G to permit the hats to lie upon the plank L. That the operator may be enabled readily to turn the clamps into such a position one at a time, each clamp may be provided with a set-screw, as shown in Fig. 4, and the shaft G formed with a V-shaped groove to guide the point of the screw to its proper position upon the shaft when turned downward.

S is the set-screw; R, the handle formed on it to turn it without the aid of a wrench; and T, the V-shaped groove in the shaft G, as shown by a section of the shaft in Fig. 4.

The ends of the jaws are preferably formed with knobs, and may be covered with india-rubber bottle-stoppers, as shown in Fig. 4, to secure an elastic and gripping surface. To facilitate the removal of the entire number of



bodies from the series of clamps at once I have devised the means illustrated in the other figures.

In Fig. 3 is shown, at *e*, a section of a wedge (shown in plan in Fig. 5) inserted between the lever *d* and the body of the clamp, in place of the spring *b*. (Shown in Fig. 4.) This wedge is formed upon a bar, *f*, extended through all the clamps in similar manner, and provided with a wedge to close each jaw *a'*, in lieu of the spring *b*.

A brace, *g*, is secured to the shaft *G*, near one end of the machine, for supporting the end of the bar *f*, and the end of the bar is provided with a screw-thread, *h*, and hand-wheel *i*, by means of which it can be drawn endwise at pleasure and the jaws all locked simultaneously by the action of the wedges *e e*.

A spring, *j*, is applied to the bar, opposed to the action of the hand-wheel *i*, and the wedges are therefore simultaneously drawn backward to release the hat-bodies when the movement of the hand-wheel is reversed for that purpose. When thus released the hat-bodies would, if unsupported, all fall into the scalding-water in the tank, and it is to support the bodies at such time that the plank *L* is arranged to slide toward the center of the tank. When provided with the wedges *e* the clamps are permanently secured to the shaft *G* by their screws *S*, so as to be raised and lowered together by the handle *Q*.

The operation of the plank is shown in Fig. 3, where the clamps *P* and handle *Q* are shown in dotted lines in the position required for shaking the hats in the water, while in black lines the clamps are represented turned partly toward the movable plank, so that the hat-bodies lie upon the latter. While in this position the jaws may all be unclamped and the bodies released. New hat-bodies may then be laid upon the plank with their tips inserted between the jaws, and the whole of them be clamped simultaneously by turning the hand-wheel *i*. During the removal of the bodies and insertion of new ones the clamps are all held in the required position by the pressure of the screw *O* upon the end of the shaft; but when the jaws are all tightened upon the new bodies and the plank withdrawn to the edge of the tank the clamps may all be restored to their initial position by loosening the screw *O* and turning the shaft by its handle the required amount. When the screw is again pressed upon the shaft the arm *H* becomes fixed to it, and the new lot of bodies may be shaken by setting the driving-shaft in motion in the usual way. By this arrangement the hands of the operator are preserved from immersion in the scalding-water, as well as from any continued handling of the hot goods in changing one set of bodies for another in the jaws. After being held by the tip and shaken for some time in the water the hat-bodies may be placed in the jaws in some other position, as by the brim, and the body shaken again to

discharge the cotton from the tip. Two hats held in this position are shown at the left side of Fig. 6.

By the above-described method the cotton deposited between the fur fibers in the formation of the nap can be as effectually and much more economically removed than by dipping and beating with rods upon a plank in the usual mode.

It is obvious that the shaft *G* would produce substantially the same effect in shaking the hat-bodies, if vibrated endwise, as if rocked to and fro by the arm *H* in the manner shown. It is also plain that a flat bar or slide of any kind having a vibratory motion could be provided with clamps of any kind to hold the hat-bodies and shake them while immersed in the water.

I do not therefore limit myself to any particular kind of vibration for the shaft or its attached clamps, nor to mechanism adapted to vibrate the shaft only in the manner shown in the drawings, as a crank-motion could be as readily applied to push the shaft to and fro endwise, the essential feature of the mechanism being the combination, with the clamp, of any device adapted to shake the same and agitate the hat-body in the water. In like manner I do not limit myself to any particular construction for the clamp, as many can be devised to hold the hat-body while being shaken. The clamp provided with a spring, as shown in Fig. 4, could be replaced by an eccentric cam controlled by a spring and adapted to pinch the hat tip against the fixed jaw *a*. A series of clamps thus constructed could be opened and closed simultaneously by connecting all the cams to one shaft and rotating the shaft, when desired, by a wheel or worm at one end.

Having thus fully shown the nature of my invention, I claim the same as follows:

1. The method herein described for removing the cotton from the fur of a bat after the same has been stuck and scalded upon a hat-body, consisting in hanging the same in hot water, without any interior cone or other support, and subjecting them to a continued shaking or other alternating movement to and fro, substantially as set forth.

2. The combination, in a machine for shaking napped hats, of a tank of hot water, a vibrating shaft or bar carrying a series of clamps for holding the hat-bodies, and mechanism, substantially as described, for shaking the shaft and clamps, as and for the purpose set forth.

3. The combination, in a hat-shaking clamp, of a pair of jaws pivoted together, and provided with a spring for automatically closing and a handle for voluntarily opening the jaws, substantially as herein described.

4. The combination, with a hot-water tank, of a series of clamps secured to a shaft, arranged to vibrate and to turn for lifting the hat-bodies from the water, and a movable plank arranged to slide under and support the hats



when thus lifted, substantially as and for the purpose set forth.

5 5. The combination, with a series of clamps arranged to operate as herein described, of a series of connected wedges, cams, or equivalent devices for opening or closing the jaws of the clamps simultaneously, substantially as herein set forth.

10 6. In combination with a shaft mounted upon a hot-water tank and carrying a series of clamps for the purpose set forth, an adjusta-

ble crank, as E', and suitable connection to vibrate the shaft radially or longitudinally by the rotations of the crank, substantially as herein set forth.

15 In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE YULE.

Witnesses:

THOS. S. CRANE,

CHAS. A. MACLARTY.