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J. AGAR.

SAFETY DEVICE FOR HAT BRIMS IN CURLING MACHINES.

APPLICATION FILED JULY 26, 1907.

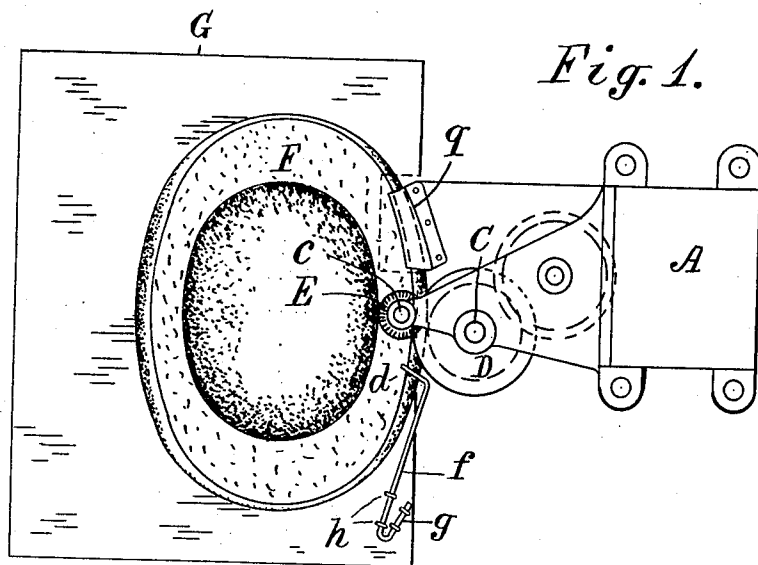


Fig. 1.

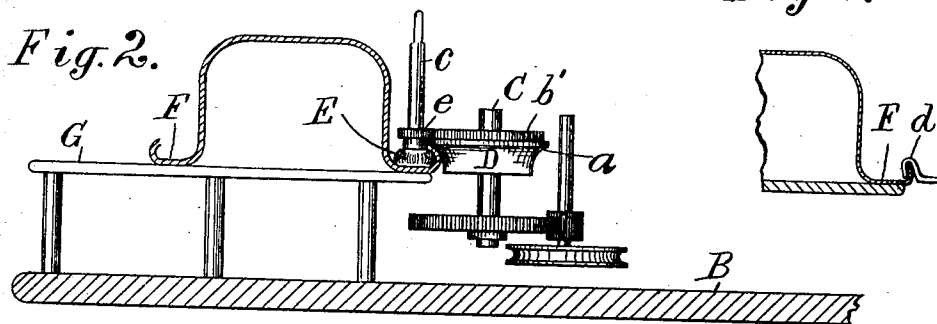


Fig. 2.

Fig. 3.

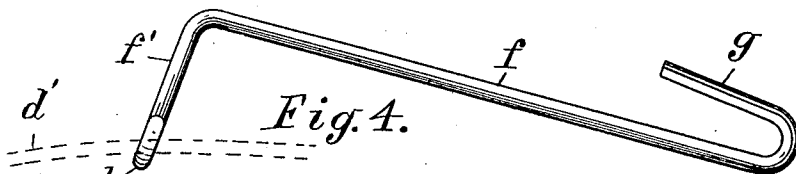
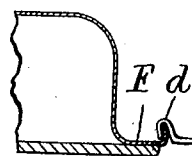


Fig. 4.



Fig. 6.

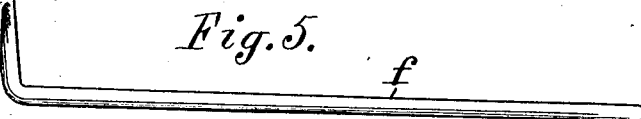


Fig. 5.

Witnesses.
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UNITED STATES PATENT OFFICE.

JOHN AGAR, OF EAST ORANGE, NEW JERSEY.

SAFETY DEVICE FOR HAT-BRIMS IN CURLING-MACHINES.

No. 895,609.

Specification of Letters Patent.

Patented Aug. 11, 1908.

Application filed July 26, 1907. Serial No. 385,642.

To all whom it may concern:

Be it known that I, JOHN AGAR, a citizen of the United States, of East Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Safety Devices for Hat-Brims in Curling-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention is designed particularly as an attachment for hat brim curling machines constructed in accordance with my Patent No. 603,719 issued May 10, 1898, for hat brim curling machine, to protect the edge of the hat brim from injury.

In the said machine, the brim feeding device consists of a wheel with a concave flange at the edge, and a so-called "presser-wheel" which clamps the felt against the concave flange, so as to bend it upward, and propel it through an adjacent curling tool.

The flanged wheel and the presser-wheel are preferably connected by cog-wheels having their teeth adjacent to their feeding faces, and in the use of my machine, as thus constructed, I have found the necessity for some safety device to keep the edge of the hat brim from penetrating to the cog-teeth and being injured thereby, and some means of holding the up-turned edge of the felt elastically at the point where it enters the feeding device; and I have therefore devised a loop which overlies the edge of the felt and prevents it from rising above the table in an undesirable degree, the loop having an elastic shank which permits it to move laterally, as required by the varying curvature of the hat brim.

Heretofore, in using my machine, the operator has held his fingers over the edge of the felt to control its movements, and moved his finger laterally when required by the varying curves of the hat brim, and the purpose of my invention is to furnish a substitute for the operator's fingers.

The loop with elastic shank is made of a spring wire, and is unrestrained when in operation, being proportioned to yield in a certain degree during the movement of the felt, so as to automatically adapt itself to the variations in the position of the curl which are caused by the differing curvatures of the brim's edge at the front and the sides of the brim. Such yielding is necessitated positively in the use of my patented

machine by the employment of two curling tools or agencies, both of which grasp the felt firmly and thus control the path or movement of the hat brim in a positive manner, and thereby require the loop with elastic shank to yield, as the side and end of the hat brim move successively through the curling tools. The first of these curling agencies consists of the wheels D and E shown in Figure 1 herein, while the other agency consists of the curler *g*, and these grasp the curl at different points, which forces all other parts of the hat brim to conform to their action, so that no safety device can be used to hold the brim down, that is not capable of yielding laterally.

Prior to my invention, vertically adjustable guides have been used to embrace the edge of the hat brim, but held rigidly when in operation, and having a narrow channel of sufficient length to effectively control the path of the felt in its movement through such guide; but my brim protector is formed of a wire having an inverted loop to embrace the edge of the hat brim, and contacting with the brim on such a narrow line that it does not prevent the curl from passing through it at any angle which may be required by the curvature and position of the brim; the shank of the loop being elastic, which also permits it to yield laterally, as required.

The invention will be fully understood by reference to the annexed drawing, in which

Fig. 1 is a plan of one of my hat curling machines with the parts required to form the curl, and provided with my brim protector; Fig. 2 is an edge view of the parts required to form the curl, with the hat shown in section; Fig. 3 shows the loop *d* engaging the edge of the hat brim, the hat and table being shown in vertical section; Fig. 4 is a plan of the loop and elastic shank; Fig. 5 is a side view of the same, and Fig. 6 an end elevation of the same looking toward the loop, and the staples being shown upon the shank of the spring which, in practice, are used to secure it to the hat-supporting table.

The parts relating to my machine patented May 10, 1898, I have indicated by the same reference letters as are used in my prior patent, A designating the frame of the machine secured upon a work-bench B.

C is the shaft carrying the curling wheel D, the periphery of which is provided with a curved flange *a*.

E designates a presser-wheel, the periph-

ery of which is convex and serrated, mounted and rotating with shaft *c*, which is geared to the shaft *C* by cog-wheels *e* and *b'*. A curler *g* is fixed upon the frame *A* adjacent to the junction of the wheels *D* and *E*, these wheels being set so as to curl the edge of the hat brim into *C*-shape and direct it into a channel formed within the curler *g* to tighten and complete the curl.

The hat brim *F* is supported upon a table *G* just below the bottom of the presser-wheel *E* so that the block of the hat brim can pass beneath the same and be bent between the two wheels, as indicated in Fig. 2.

The parts so far named are the same as in my Patent No. 603,719.

In practice, I have found the edge of the brim liable to work upwardly between the teeth of the cog-wheels *e* and *b'* which drive the wheels *D* and *E*, and I have therefore devised the laterally yielding loop *d* to embrace the edge of the curl as close as possible to the flanged wheel *D*, and operating to hold the brim elastically downward upon the table *G*.

The loop is formed of wire, as shown in Figs. 4, 5 and 6, with an elastic shank *f* having a return bend *g* formed upon its rear end, and such return bend and the adjacent portion of the shank secured to the table *G* by staples or other suitable fastenings *h*. These fastenings leave several inches of the shank *f* entirely free to yield in any direction, so that the loop is restrained in its operation upon the hat brim, only by the elastic resistance of the shank. Such resistance is, in practice, made sufficient to prevent the felt from crowding upwardly between the cog-wheels *e* and *b'*; but the elasticity of the shank allows a yielding action of the shank to adapt the loop *d* to the varying positions of the curl, as the end and side of the hat pass through the loop and between the wheels *D* and *E*.

It is evident by reference to the brim *F* shown upon the table *G* in Fig. 1, that the curvature at the front of the brim is greater or more convex than that at the side of the brim, which is shown engaged with the wheels *D* and *E*, and when the end of the brim passes through the loop *d* it tends to draw the loop inwardly toward the center of the table in a slight degree, which is freely permitted by the elastic character of the wire shank *f*. I have found that the loop thus provided with the wire shank, and restrained only by the elasticity of the shank, is able to accommodate itself automatically to the different parts of the curl as the hat is revolved by the wheels *D* and *E*, and it thus operates automatically; and in practice takes the place of an attendant in feeding the hat brim to the curling devices.

Heretofore, an operator was required for each of such machines, first, to bend the edge of the brim upwardly as it approaches the feeding wheels, and second, to limit the up-

ward curling of the brim to prevent its rising into the teeth of their connecting cog-wheels; but with the addition of the elastically supported loop, I have found that the curl upon the hat brim can be commenced and started through the loop *d* between the feeding wheels, after which the curling will proceed automatically and the hat revolve upon the table *G* as many times as is necessary or desirable to perfectly form the curl. With such automatic operation of the hat brim and the loop, I find that one operator can run at least two machines, so that the application of the elastically supported loop *d* to this curling machine is of very great benefit in the use of the machine, and greatly economizes the labor required to operate the same.

My safety device differs from all the guides heretofore used upon a hat curling machine, in being wholly unrestrained in lateral or vertical movement, except by the elasticity of the shank *f*. It differs from all others in having such a narrow bearing upon the felt; as is indicated in Fig. 1, and in the plan of the loop *d* in Fig. 4, where a portion of the curl is indicated by the dotted lines *d'*. Such narrow bearing does not provide an extended channel through which the felt is guided in a given direction, as in the guides of other hat curling machines; but simply replaces the finger of the operator in exerting a yielding restraint upon the hat brim.

Reference to Figs. 4 and 6 shows that the loop is provided with a foot *f'* bent at an angle to the shank *f*, such foot serving to hold the loop *d* transversely across the edge of the hat; while the shank extends tangentially to the same to permit the loop to yield laterally, that is, transversely to the edge of the hat brim. The foot *f'* serves, also, by contact with the table *G*, to hold the arch of the loop *d* normally at a certain distance above the table, at a limit which will prevent the felt from rising into the cog-teeth *e* and *b'*. The shank *f* forms an elastic attachment connecting the loop *d* with the brim supporting table *G*.

Having thus set forth the nature of the invention what is claimed herein is:

1. In a hat brim curling machine, the combination, with the curling wheel *D* having a curved flange *a*, and gear *b'* upon its upper side, with the presser-wheel *E* having convex edge, and the gear *e* upon its top, of the curler *g* located at one side of the wheels *D* and *E* for tightening and finishing the curl, and the elastic shank *f* with one end secured upon the table at the opposite side of the wheels *D* and *E*, and having upon its free end the loop *d* movable laterally adjacent to the wheels *D* and *E*, by the elasticity of the shank, and operating to hold the edge of the brim from rising into the cog-wheels *b'* and *e*.

2. In a hat brim curling machine, the combination, with the curling wheel *D* hav-

ing a curved flange *a*, and gear *b'* upon its upper side, with the presser-wheel E having convex edge, and the gear *e* upon its top, of the curler *q* located at one side of the wheels D and E for tightening and finishing the curl, and the elastic wire shank *f* having the integral wire loop *d* held adjacent to the opposite side of the wheels D and E, and such shank having the integral return bend *g* secured to the table, the wire loop *d* being thus adapted to yield laterally with the varying curvature of the hat brim.

3. In a hat brim curling machine, the combination, with the curling wheel D having a curved flange *a*, and gear *b'* upon its upper side, with the presser-wheel E having convex edge, and the gear *e* upon its top, of the curler *q* located at one side of the wheels D and E

for tightening and finishing the curl, and the elastic wire shank *f* having a wire loop *d* held adjacent to the opposite side of the wheels D and E, the loop having at its lower end a foot *f'* with elastic shank *f* transverse to the foot, and means for attaching the end of the shank to the table, whereby the loop is held transversely to the edge of the hat brim, and is adapted to yield laterally with the varying curvature of the hat brim.

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

JOHN AGAR.

Witnesses:

L. LEE,

THOMAS S. CRANE