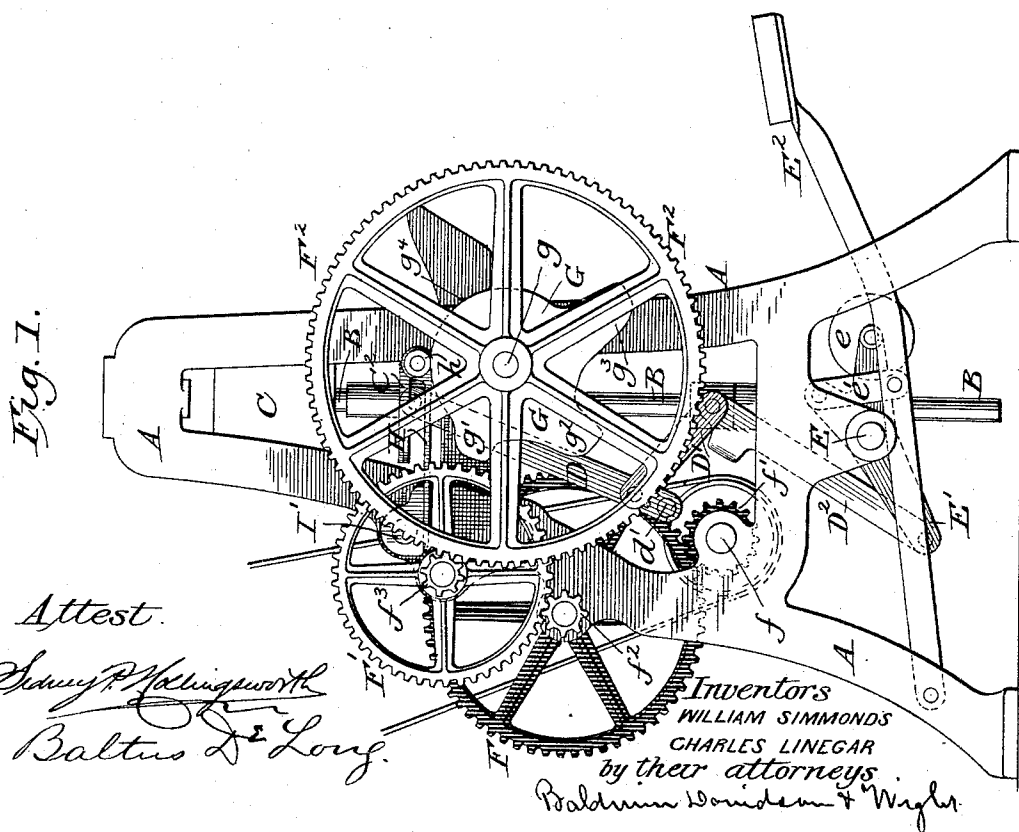
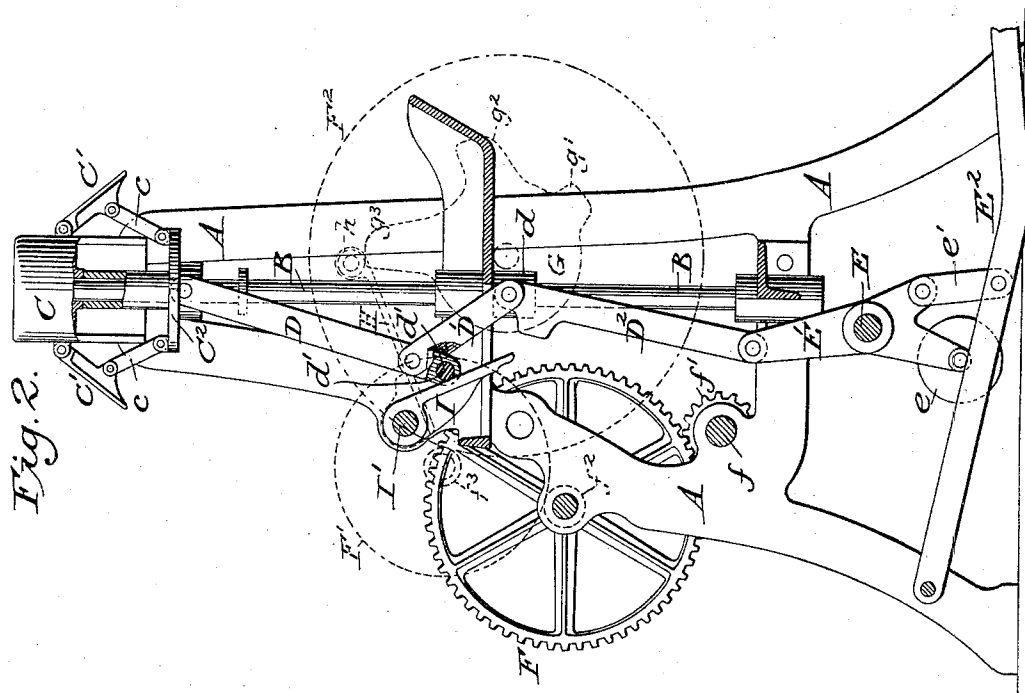


(No Model.)

W. SIMMONDS & C. LINEGAR.
HAT BRIM STRETCHING MACHINE.

No. 469,489.

Patented Feb. 23, 1892.



Attest.

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Inventors
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UNITED STATES PATENT OFFICE.

WILLIAM SIMMONDS AND CHARLES LINEGAR, OF YONKERS, NEW YORK.

HAT-BRIM-STRETCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 469,489, dated February 23, 1892.

Application filed January 22, 1891. Serial No. 378,682. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM SIMMONDS and CHARLES LINEGAR, citizens of the United States, both of Yonkers, in the county of Westchester and State of New York, have jointly
5 invented certain new and useful Improvements in Hat-Stretching Machinery, of which the following is a specification.

Our invention relates to machines of the
10 class in which hat-brims are stretched automatically. Its object is to effect this operation by automatic mechanism which traverses an increased distance at each of a series of successive impulses or strokes, so as to
15 stretch the brim more and more at each stroke. This end we attain by certain novel constructions, combinations, and organizations of instrumentalities hereinafter claimed.

In stretching hat-brims the hat-body, mounted on a former or frame, is thrust under a series of radial pendent yielding fingers pivoted on the frame, while at the same time
20 similar fingers on the hat-former are forced laterally outward to spread out the edge of the hat-body and thus form the brim. United States Letters Patent No. 375,013, granted to William Simmonds December 20, 1887, illustrate such a machine, where the stretching of the brim is controlled by mechanism operated
25 by hand. By our improvements we effect this operation automatically in the manner hereinafter described.

The accompanying drawings show so much of a machine embodying our improvements
35 as is necessary to illustrate their subject-matter. Unless otherwise indicated, the construction is well known.

Figure 1 represents a side elevation with the parts in their normal inactive or retracted
40 position, and Fig. 2 a similar view with some parts removed and the others in their advanced or working position.

A main frame A is shown as supporting a vertical central spindle B, on which the brim-stretching apparatus traverses. The only
45 parts necessary to our present purpose are shown as consisting of a former C, to which a series of radial brim-stretching fingers C' are pivoted at their upper or inner ends. These fingers are pin-jointed by their respective
50 links c to a ring C², connected by a series of links or toggles D D' D² to a crank E' on

a shaft E. This crank carries a counterpoise e and is connected by a link e' with a treadle E². The adjacent ends of the toggles D' D²
55 are connected with a collar d, fixed on the spindle B, while the corresponding ends of the toggles D D' are pivoted together and carry a bar or friction-roller d', for a purpose hereinafter explained. 60

A train of gears f' F f² F' f³ F² connect a driving-shaft f with a rotating shaft g, carrying a cam G, provided with tappets or wipers g' g² g³ of gradually-increasing length, height, or eccentricity in the direction of their rotation. These wipers, it will be observed, are
65 arranged continuously and occupy only a portion of the periphery of the cam, the remaining portion g⁴ being concentric with its axis for a purpose hereinafter explained. This cam is shown
70 as actuating a friction-roller h on a spring-arm H, secured on a rock-shaft I', carrying an eccentric arm or toe I, which at proper times bears on the bar or friction-roller d' on the toggle D, pivoted to the ring C², through
75 which the brim-stretching fingers are actuated. The arm H is made slightly elastic or yielding to prevent the material being bruised or injured in case of obstruction or abnormal strain on the brim-stretching machinery. 80

Power-driven shafts in factories usually rotate rapidly—say at about two hundred and fifty revolutions per minute. This being
85 entirely too rapid for our present purposes, it is necessary to employ reducing-gearing—such, for instance, as that shown—which will very much diminish the speed of the cam.

At the beginning of the operation the parts occupy the position shown in Fig. 1, with the former in its lowest position and the toggles
90 clear from the eccentric-arm I. A hat now being applied on the former C, the operator depresses the treadle, thereby lifting the former and hat into the position shown in Fig. 2, which brings the toggle-link D within
95 range of the slowly-vibrating eccentric-arm I. At this moment the spring-arm H, which has been traversing the concentric part g⁴ of the cam G, encounters the first wiper g' and through the eccentric-arm I and toggle D
100 forces up the ring C² and expands the radial fingers C' and partially stretches the brim. The roller on the spring-arm H then descends between the cam-wipers g' g², momentarily

relaxing the pressure on the brim, and then successively rides over the wipers g^2 g^3 , repeating the stretching of the brim, and as each of these wipers is higher or of greater eccentricity than the first one a series of impulses of successively-greater extent is imparted to the stretching-fingers, thus correspondingly stretching the brim, as will readily be understood. When this operation is completed, the treadle is raised to depress the former and move the toggles out of contact with the eccentric-arm. The stretched hat is then removed, a new hat applied, and the operation is repeated.

15 In practice the fingers C' co-operate with adjacent interlocking stretching-fingers; but these are not shown in the drawings, as they form no part of the invention herein claimed.

By employing a cam to operate the stretching-fingers instead of changing their extent of movement by a hand-lever absolute regularity in the operation of the fingers is effected and the formation of the brims is rendered uniform.

25 Having thus fully described the construction, organization, and operation of our improved hat-stretching machine, what we claim therein as new and as of our own invention is—

1. The combination, substantially as here-
30 inbefore set forth, of a former, means for raising and lowering it, hat-brim-stretching devices movable laterally relatively to the former, a power-driven cam carrying wipers gradually increasing in eccentricity or height,
35 and connections between the cam and the

hat-brim-stretching devices, whereby impulses are imparted to the hat-brim-stretching devices successively increasing in extent gradually to stretch the brim.

2. The combination, substantially as here- 40
inbefore set forth, of a hat-former, a series of vibrating radial stretching-fingers pivoted thereto and connected with toggle-links, and a cam carrying wipers of gradually-increasing eccentricity or height to impart to the 45
fingers a series of impulses of gradually-increasing strength or extent.

3. The combination, substantially as here-
inbefore set forth, of a main frame, a spindle, a hat-former movable endwise thereon, radial 50
brim-stretching fingers pivoted on this former, an actuating-treadle, toggle-links connecting the treadle and fingers, a rotating cam carrying wipers of gradually-increasing eccentricity, a crank-arm, its rock-shaft controlled by 55
this cam, and an eccentric-arm on the rock-shaft, actuating the brim-stretching fingers.

4. The combination, substantially as here-
inbefore set forth, of power-driven hat-brim- 60
stretching devices, a rotating cam, a yielding or spring arm engaging with the cam, and connections between the arm and the brim-stretching devices.

In testimony whereof we have hereunto subscribed our names.

WILLIAM SIMMONDS.
CHARLES LINEGAR.

Witnesses:

HYATT L. GARRISON,
JERE. S. CLARK.