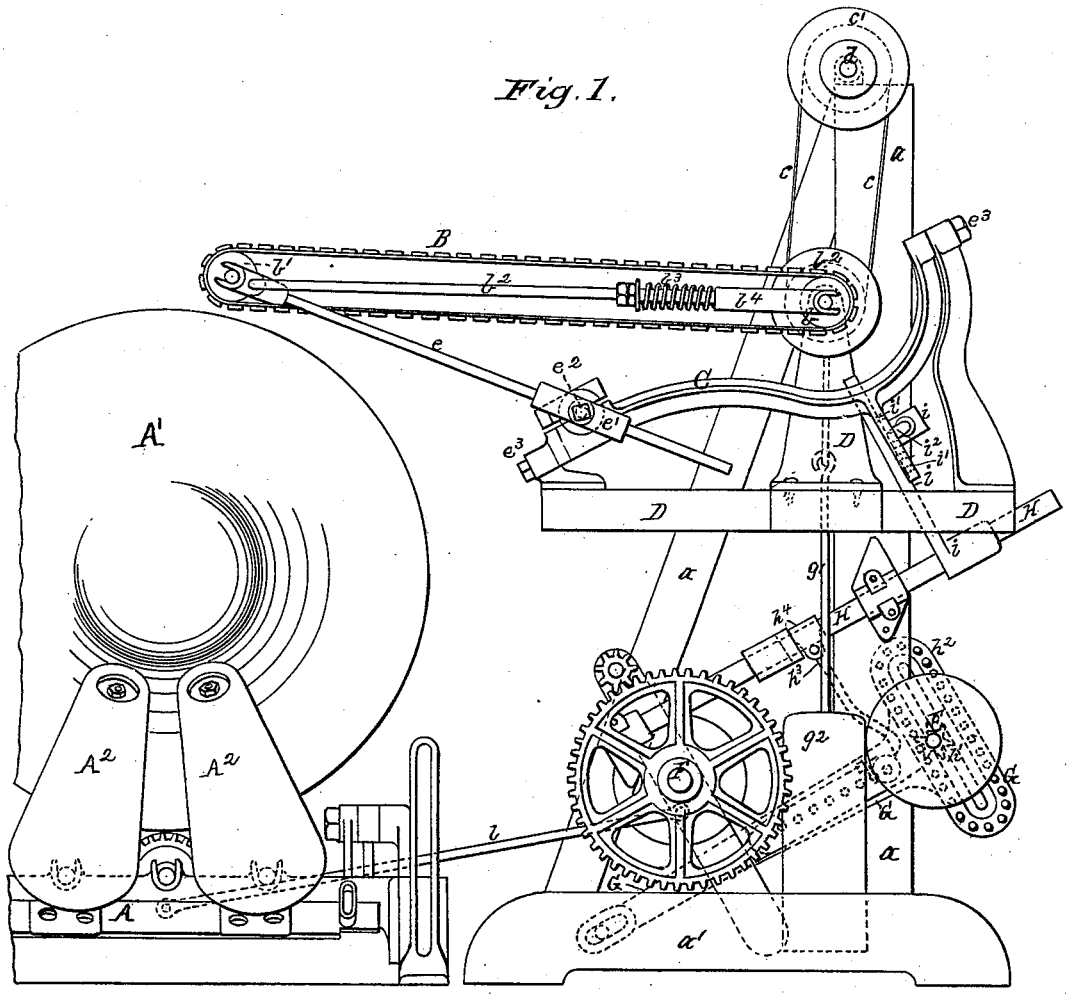
2 Sheets—Sheet 1.

R. EICKEMEYER.

Web-Tender for Hat-Forming Machines.

No. 212,450. **Patented Feb. 18, 1879.**

Fig. 1.



Witnesses:
Philip F. Garner
H. Bartle

Inventor
Rudolf Eickemeyer
By Wm. C. Wood
Attorney

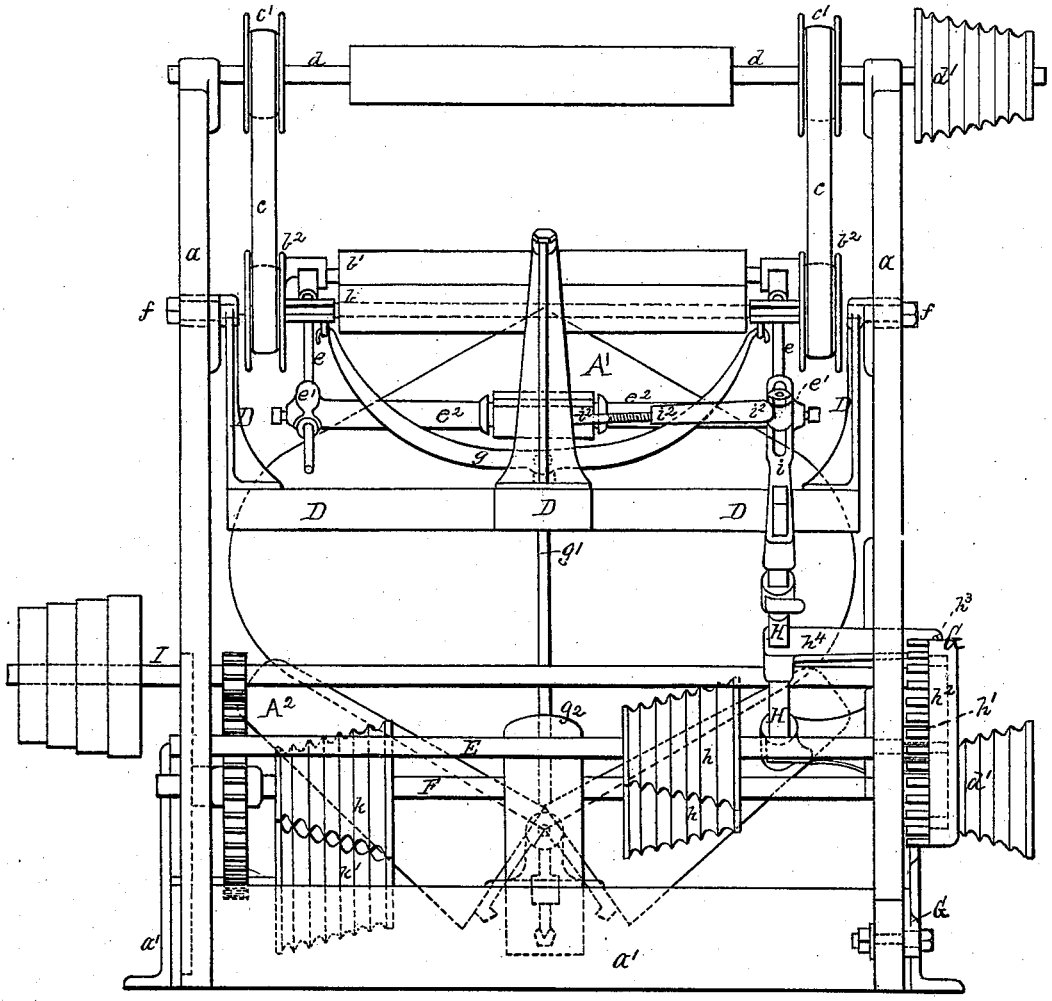
2 Sheets—Sheet 2.

R. EICKEMEYER.

Web-Tender for Hat-Forming Machines.

No. 212,450. Patented Feb. 18, 1879.

Fig. 2.



Witnesses
Philip F. Larner
A. Bartle.

Inventor
Rudolf Eickemeyer
By Munn & Co
Attorneys

UNITED STATES PATENT OFFICE.

RUDOLF EICKEMEYER, OF YONKERS, NEW YORK.

IMPROVEMENT IN WEB-TENDERS FOR HAT-FORMING MACHINES.

Specification forming part of Letters Patent No. **212,450**, dated February 18, 1879; application filed January 10, 1879; patented in England, July 25, 1873.

To all whom it may concern:

Be it known that I, RUDOLF EICKEMEYER, of Yonkers, in the county of Westchester and State of New York, have invented a certain new and useful Web-Tender for Hat-Forming Machines; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part thereof, is a full, clear, and exact description of my invention.

It is well known that hat-bodies composed of felted wool are formed from a carded web, usually applied directly to double blocks, which, when clad with the web, afford two conical hat-bodies, which are joined together at their bases. A central circumferential cutting of the web thus laid separates the two bodies, and admits of their removal from the block.

This invention constitutes, in part, the subject of English Letters Patent No. 487 of A. D. 1873, the same having been issued upon a communication from me, and, so far as my knowledge extends, no one prior thereto had devised any mechanism practically adapted to automatically tend a wool-hat-forming machine.

The main feature of my invention consists in the combination, with a hat-forming machine having a conical block and tapering bed-rolls, of a web-tender provided with a supporting bed which has its delivery end located above the forming-block, and delivers the web downward thereto.

The web-tender necessarily contains a supporting-bed for the web; and, for crossing the web upon a double-cone block, my invention further consists in a web-supporting bed which, at its outer end, vibrates laterally adjacent to and above the block.

For smoothly delivering the web at different angles corresponding to the outline of the block, my invention further consists of a web-supporting bed which is rocked at its outer end.

For crossing the web on the block, and at the same time varying the angles at which the web is delivered to the block, my invention further consists of a web-supporting bed which vibrates laterally and rocks at its outer end.

For enabling the web-tender to properly co-operate with forming-blocks of different shapes and sizes, my invention further consists in the combination, with a laterally-vibrating web-supporting bed, of mechanism for varying the number of vibrations within a given time; and in the same connection my invention further consists in the combination, with the vibrating bed, of mechanism for varying the extent of the vibratory movement thereof; and in the same connection my invention further consists in a supporting-bed which, at its outer end, adjacent to the block, is capable of vertical adjustment, so that it may be located at the same height above the block, whether the latter be one of the maximum diameter or a smaller one.

For delivering the web to the block without undue tensile strain, my invention further consists in a supporting-bed provided with a moving surface, and extended adjacent to and above the forming-block.

For securing the delivery of the web to the block at a speed which shall correspond with the web-delivering capacity of the carding-engine, my invention further consists in a web-supporting bed provided with a moving supporting-surface, in combination with mechanism for varying the speed of said surface.

To more particularly describe my invention, I will refer to the accompanying drawings, of which there are two sheets.

Figure 1, Sheet 1, is a side elevation of my web-tender in proper position with relation to a hat-forming machine on the left. The carding-engine (not shown) would, in service therewith, occupy a position on the right of the tender. Fig. 2, Sheet 2, is a rear elevation, that being the side of the tender which in service is adjacent to the carding-engine.

The hat-forming machine A has a conical forming-block, A^1, and tapering bed-rolls A^2, substantially as heretofore.

The frame *a* of the web-tender is shown to be composed of two counterparts, triangular in form, provided with suitable bed-pieces *a'* and the requisite bearings for the mechanism.

The web-supporting bed B is here shown to be composed of endless belts and lateral cross-bars, constituting an apron, which extends from the frame to a point near, but above, the

forming-block. In Fig. 2 the bed is not shown, in order to more clearly illustrate the adjacent parts.

The apron is mounted upon bed-rolls b b^1. Its inner bed-roll, b, has an axis and flanged pulleys b^2, by means of which and the belts c it is suspended from a combined conducting-roll and apron-driving shaft, d, also provided with similar pulleys c'. The outer bed-roll of the apron, at b^1, is mounted in journals at the ends of rods e, which are supported in sleeves e^1, provided with set-screws mounted on a cross-bar, e^2, which in turn is mounted centrally upon a curved frame, C, pivoted at each end e^3 in brackets projecting upward from a pendent frame, D, which is pivoted at each side to the frame of the machine at f.

The apron or bed B is maintained at proper tension by means of two rods, b^2, provided with springs b^3, which press the rods longitudinally from housings b^4, which abut against the axis of roller b.

For attaining desirable tension on the belts c, and maintaining the rear end of the apron in proper position, a pendent yoke, g, is secured to the shaft of the rear roller, b, near each end, and from this yoke is suspended, by a rod, g^1, (which passes through a slot in the pendent frame C,) the balance-weight g^2.

With the parts described thus constructed it will be seen that the outer end of the bed or apron may be raised or lowered, because of the pivoted pendent frame D, on which it is mounted, and this frame may be set and secured in any desirable position by any suitable means. It will also be seen that the outer end of the apron is capable of being vibrated to and fro laterally, because that end of the bed is supported by the curved pivoted frame C, which, when rocked on its pivots, imparts this vibratory movement, and also a rocking motion. This complex motion is attained by means of a counter-shaft, E, connected with the main shaft F by means of belts and cone-pulleys h.

A pinion, h^1, on the end of the counter-shaft engages with an endless rack-gear, h^2, on the end of a lever, G, which is connected to an inclined rock-shaft, H, by a link, h^3, and an arm, h^4, so that the vibration of the lever G imparts to the rock-shaft a reciprocating rotary movement.

At the upper and rear end of the rock-shaft is an arm, i, which is connected with a pendent arm, i^1, on the pivoted curved frame C by a link, i^2, so that the bed B is vibrated and at its outer end rocked simultaneously, and it makes one-half its movement during the single upward or downward movement of the rack-gear lever. The speed of these movements is rendered variable by means of the cone-pulleys h. The extent of the vibration of the bed is provided for by constructing the rock-shaft arm i with a slot, as shown in Fig. 2, for variably connecting the link i^2 therewith, and said link is threaded to its housing, as shown, by means of which it may be extended longitudinally.

The arm i^1 on the frame C has several link-holes, as indicated in dotted lines, Fig. 1, arranged in line for receiving the end of the link, and thereby practically lengthening or shortening the arm for increasing or lessening the extent of vibration.

The speed at which the web is delivered to the block is varied to correspond with the delivery of the carding-engine by means of the cone-pulleys d', one of which is on the shaft d of the upper conducting-roll, from which the rear end of the bed B is suspended, and by which the rear roller, b, thereof is driven. The main shaft F is also provided with a cone-pulley, d', which is connected by a belt with the cone-pulley on the apron-driving shaft d.

I have referred to the shaft F as the main driving-shaft of the machine, although, in order to retain the required slow speed, I prefer to employ therewith a pulley-shaft, I, which is geared to the shaft F, as shown; and for the general purpose of speed adjustment this driving-shaft is also provided with a cone-pulley, as shown, and it is usually belted to some revolving shaft of the carding-engine. The bed or apron B, having a moving surface toward the forming-block, relieves the web of all tensile strain, and therefore a web of minimum weakness and composed of short wool may be delivered intact to the block; and should a break occur therein, the web will nevertheless be properly delivered to the block.

The rolls of the forming-machine are preferably driven from the web-tender shafting, and cone-pulleys for driving the same are shown in Fig. 2 at k and k'. The frames of the web-tender and forming-machine are connected by links l, pivoted at each end.

It will be seen that my web-tender delivers the web without liability of its being plaited or folded, strained or weakened, and that it obviates the necessity of an operator at each forming-machine, because of its automatic operation.

I do not limit myself to the precise construction and arrangement of parts shown and described, for it is obvious that they can be largely varied mechanically without departing from my invention.

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

1. The combination, with a hat-forming machine having a conical forming-block and tapering bed-rolls, of a web-tender provided with a supporting-bed which has its delivery end located above the forming-block, and delivers the web downward thereto, substantially as described.

2. The combination, with a hat-forming machine, of a web-tender which vibrates laterally at its outer end adjacent to and above the forming-block, substantially as described.

3. In a web-tender for hat-forming machines, a web-supporting bed which is rocked at its end adjacent to the forming-block of the machine, substantially as described.

4. In a web-tender for hat-forming machines, a web-supporting bed which is vibrated laterally, and also rocked at its outer end, substantially as described.

5. The combination, with the vibrating supporting-bed, of mechanism for varying the number of its vibrations within a given time, substantially as described.

6. The combination, with the vibrating web-supporting bed, of mechanism for varying the extent of the vibrating movement, substantially as described.

7. In a web-tender for hat-forming machines, a web-supporting bed which, at its delivery end, adjacent to the forming-block, is vertically adjustable, substantially as described.

8. The combination, with a hat-forming machine, of a web-supporting bed which has a moving surface, and is extended adjacent to and above the forming-block, substantially as described.

9. The combination, in a web-tender for hat-forming machines, of a supporting-bed which has a moving surface, and mechanism for varying the speed of said surface, substantially as described.

RUDOLF EICKEMEYER.

Witnesses:

J. GEORGE NARR,

GEORGE OSTERHELDT.