

W. SIMMONDS & C. LINEGAR.
HAT SIZING MACHINE.

No. 463,339.

Patented Nov. 17, 1891.

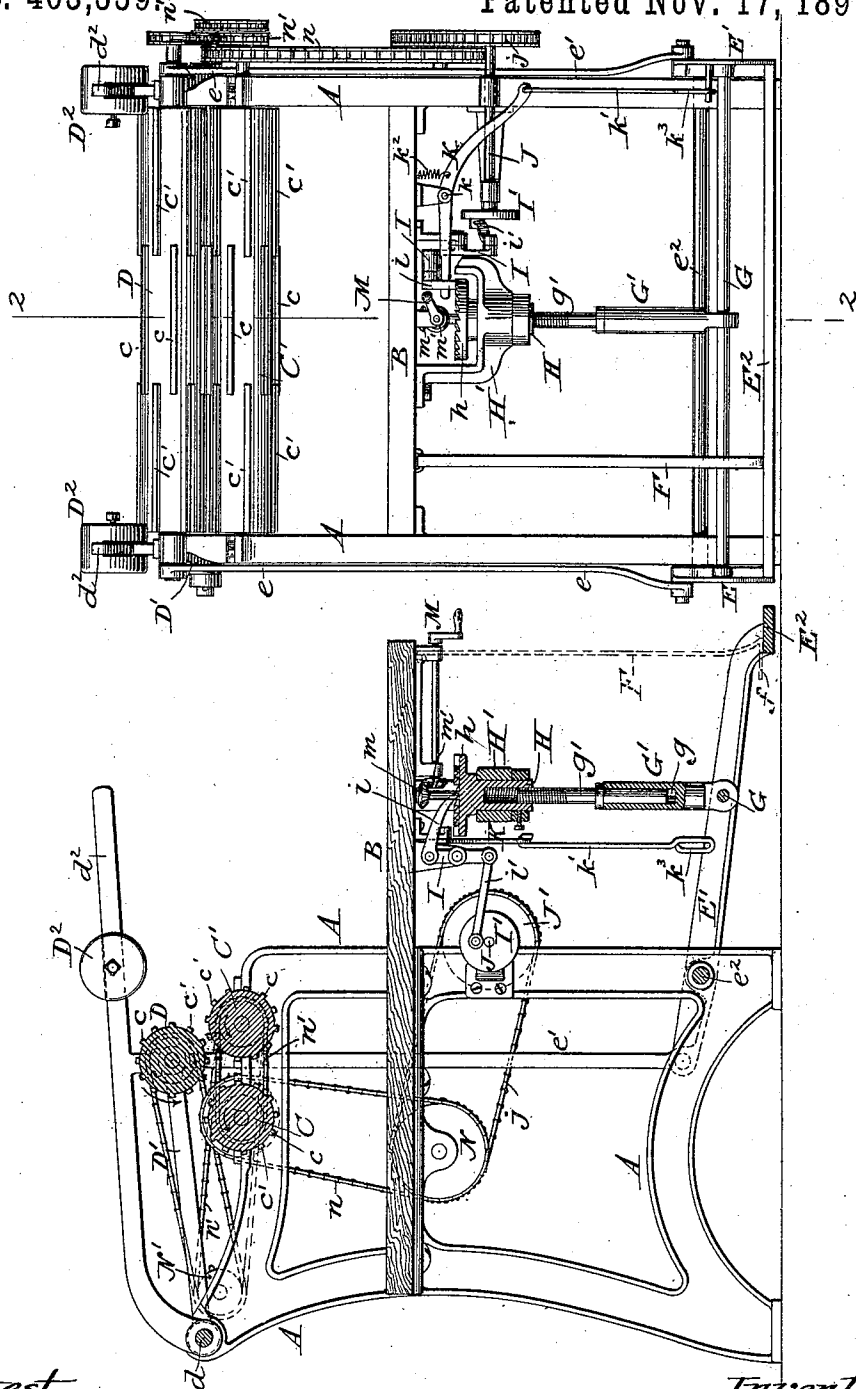


Fig. 1.

Attest.

Sidney P. Hollingsworth
Baltus & Long.

Inventors

WILLIAM SIMMONDS
CHARLES LINEGAR
by their attorneys.
Baldwin Davidson & Wright

UNITED STATES PATENT OFFICE.

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

HAT-SIZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 463,339, dated November 17, 1891.

Application filed January 17, 1891. Serial No. 378,096. (No model.)

To all whom it may concern:

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

Our invention relates to that class of machines in which a number of hats in a soft condition and before the formation of their brims are wrapped in a cloth and passed between rolls, all revolving in the same direction, to size or full the felt. In such machines it is customary to make one or more of the rolls movable laterally relatively to the others to vary the distance between the rolls as the work progresses and to regulate their pressure on the work by springs or weights adjustable by hand.

One of the principal objects of our invention is to start with an adjustable normal pressure, the rolls being at a definite distance apart, and gradually automatically to diminish such distance as the operation progresses.

Our improvements consist in certain novel constructions, organizations, and combinations of instrumentalities hereinafter claimed, which not only enable us to attain this object, but to produce a cheap, simple, and effective machine.

The accompanying drawings show so much of a "three-roll" hat-sizing machine embodying all our improvements as is necessary to illustrate their subject-matter. Some of these improvements may, however, be used without the others and in machines differing within certain limits in their details of construction from those herein shown. Unless otherwise indicated, the parts are of usual construction.

Figure 1 represents a vertical central longitudinal section through the machine on the line 2 2 of Fig. 2, which is a front elevation.

That end of the machine at which the operator stands we term the "feed" or "front" end, and the opposite the "rear" end. That side on the right of the operator facing the machine we call the "right" side, and the opposite the "left."

A main frame A supports a table B projecting in front thereof. Sizing-rolls C C' turn in fixed bearings in the frame near its forward end. A pressure-roll D is mounted in bearings in a frame D', swinging in a vertical plane around a rock-shaft or pivot *d* on the rear of the main frame. The pressure-roll D is shown as lying above and between the sizing-rolls C C'. This pressure-roll D, being mounted in the yielding frame D', is free to rise and fall relatively to the fixed rolls. The normal pressure of this yielding roll D is regulated by an adjustable tension device, such as a spring or weight. The drawings show this device as consisting of an arm *d*², projecting from the rear of the frame, on which arm an adjustable weight D² slides, the pressure it exerts thus depending on its distance from its pivot *d*. The rolls may be provided with fins, lags, or ribs of various forms properly to work the hats. We prefer short, straight, central ribs *c*, parallel with the axis, as shown, the ends of each of these ribs being overlapped by ribs *c'*, also parallel to the axes of the rolls. Links *ee'* are shown on each side of the machine as pivoted to the swinging pressure-roll frame D' at their upper ends, their opposite ones being linked to corresponding side bars E E', rocking on pivots *e*² on the frame and connected by a cross-bar E², thus constituting a pressure-frame which may be controlled by the foot of the operator. A rod F is pivoted to the table and has a forwardly-projecting arm *f*, which automatically engages with the cross-piece E² when the pressure-frame is fully depressed. This rod constitutes a stop to hold the roll D in its elevated position and also to hold the automatic stop mechanism or roll-lowering devices out of operation, as will be hereinafter described.

An intermediate cross-rod G on the pressure-frame carries a swinging arm G', having a polygonal socket *g*, in which the correspondingly-shaped lower end of a screw-spindle *g'* fits. The rounded screw part of this rod works in a corresponding socket in a hub H, turning in bearings in a bracket H', screwed to the under side of the table and carrying a ratchet-wheel *h* on its upper end, which ratchet-wheel is actuated by a pawl *i* on a

rocking lever I, actuated by a pitman i' and crank-wheel I' on a shaft J. A latch-lever K, rocking on a pivot k and connected by a link k' with the pressure-frame, serves to free the
 5 pawl from the ratchet-wheel at the proper time. When thus free, the screw spindle g' can be raised or lowered by turning it in its bearings by means of gears $m m'$, actuated by a hand-crank M. A spring k^2 normally
 10 holds the latch-lever out of contact with the pawl, and a loop k^3 on the link k' allows the pressure-frame to rise without affecting the latch, which only operates when the pressure-frame is depressed to its full extent. The
 15 organization, it will be observed, is such that when the cross-piece E^2 is not held down by the foot of the operator or by the stop F the weight of the presser-roll frame is sufficient to overcome that of the side bars E E' and to
 20 cause the presser-roll to fall, and that when the spindle g is screwed up it merely removes the pressure that holds these side bars down and permits them to rise when actuated by the weight of the supplementary or presser
 25 frame.

The various parts may be driven in well-known ways. A belt or chain j from a pulley N is shown as driving a corresponding pulley J' on the crank-shaft J. The roll C is
 30 also driven from the pulley N by a belt n in a similar way, and another belt n' from this roll drives its companion roll C'. The pulley C', by means of a chain n' , drives an idler N', and a chain from this pulley drives the yielding or pressure roll D. The rolls are caused
 35 to revolve in the direction indicated by the arrows.

The operation of our improved apparatus will readily be understood from the foregoing
 40 description.

The hats in usual condition are fed in between the fixed rolls C C' and the pressure-roll D, the adjacent surfaces of which rolls all turn in the same direction from front to rear,
 45 as shown by the arrows, Fig. 1, and the hats are felted or fulled, as usual. The ratchet-wheel turns the hub step by step correspondingly with the revolution of the rolls, and thus screws the spindle g' up into the hub. This
 50 permits the front part of the pressure-frame E to rise and allows the pressure-roll D to descend accordingly. When the spindle g' has risen to its full extent, the pawl is lifted by depressing the front part of the pressure-frame and the stop F allowed to engage with
 55 the cross-bar E'. The ratchet-wheel and hub are then turned backward by the gears $m m'$ and hand-crank M. The depression of the pressure-frame also lifts the pressure-roll D for the insertion of a new batch of hats to be treated. When ready to start the machine again, the stop F is disengaged by the foot of the operator. When the attendant leaves the machine, he depresses the pressure-frame, and
 60 allows the stop F to engage with the bar E^2 , and the descent of the roll D is delayed until he

returns. By forcing the stop F out of engagement with the pressure-frame the gradual descent of the roll D again takes place.

Our improved organization enables the
 70 pressure-roll to operate with an adjustable definite pressure and gradually to approximate the fixed rolls as the operation progresses, the stop restraining this approximation being gradually retracted automatically,
 75 as above explained. Meanwhile the pressure-roll is free to yield to inequalities in the hats operated upon, which it obviously could not do were the stop mechanism rigidly connected with it.

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

1. The combination, substantially as hereinbefore set forth, of sizing-rolls, a presser-roll movable laterally relatively to said sizing-rolls, stop mechanism connected with the presser-roll, and means for actuating this
 85 mechanism to permit the presser-roll to move gradually toward the sizing-rolls.

2. The combination, substantially as hereinbefore set forth, in a hat-sizing machine, of sizing-rolls, a presser-roll movable laterally
 90 relatively to said sizing-rolls and free at all times to rise to accommodate inequalities of pressure between the rolls, stop mechanism connected with the pressure-roll for permitting it to move toward the sizing-roll, but
 95 which allows the pressure-roll to move freely away from the sizing-rolls, and means for actuating the stop mechanism to permit the presser-roll to move gradually toward the sizing-rolls.

3. The combination, substantially as hereinbefore set forth, of sizing-rolls, a presser-roll, stop mechanism connected with the presser-roll, power-driven mechanism for actuating the rolls, and power-driven mechanism for actuating the stop mechanism to permit the presser-roll to move gradually toward the sizing-rolls.

4. The combination, substantially as hereinbefore set forth, of hat-sizing rolls mounted
 105 in fixed bearings, a presser-roll movable relatively to the sizing-rolls, and automatic power-driven stop mechanism connected with the presser-roll and which permits it to gradually approximate the sizing-roll as the operation
 110 progresses.

5. The combination, substantially as hereinbefore set forth, of an arm provided with a socket, an interlocking screw-spindle movable endwise therein, a rotating hub provided with
 115 a screwed socket engaging with the screw-spindle, a ratchet-wheel on the hub, a pawl acting on the ratchet, mechanism automatically actuating the pawl to vary the relation of the hub and spindle, and a locking-stop to hold the pressure-frame in its desired position.

6. The combination, substantially as here-

inbefore set forth, of hat-sizing rolls, a pressure-frame, a screw-spindle carried by the frame, a hub rotating in fixed bearings and engaging with the screw-spindle, mechanism for automatically rotating this hub in one direction, and separate devices for rotating it in the other.

7. The combination, substantially as here-
inbefore set forth, of hat-sizing rolls, a pressure-frame, a screw-spindle on this frame, a ratchet-wheel actuating the spindle, a pawl actuating the wheel, a latch for releasing the pawl, and link connections between the latch and pressure-frame.

8. The combination, substantially as here-
inbefore set forth, of hat-sizing rolls, a pressure-frame, a ratchet-wheel, a screw-spindle intermediate the pressure-frame and ratchet-wheel and constituting a stop, a pawl for actuating the ratchet, a latch for releasing the pawl, and mechanism for reversing the rota-

tion of the ratchet-wheel to return the stop to its normal position.

9. The combination, substantially as here-
inbefore set forth, of fixed hat-sizing rolls, a pressure-roll, a pressure-frame, stop mechanism controlling the position of this frame, and mechanism simultaneously actuating the rolls and stop mechanism.

10. The combination, substantially as here-
inbefore set forth, of hat-sizing rolls, a pressure-frame, automatic stop mechanism controlling the position of the pressure-frame relatively to the sizing-rolls, and a stop to lock the pressure-frame in position.

In testimony whereof we have hereunto subscribed our names.

WILLIAM SIMMONDS.
CHARLES LINEGAR.

Witnesses:

HYATT L. GARRISON,
JERE. S. CLARK.