

(No Model.)

2 Sheets—Sheet 1.

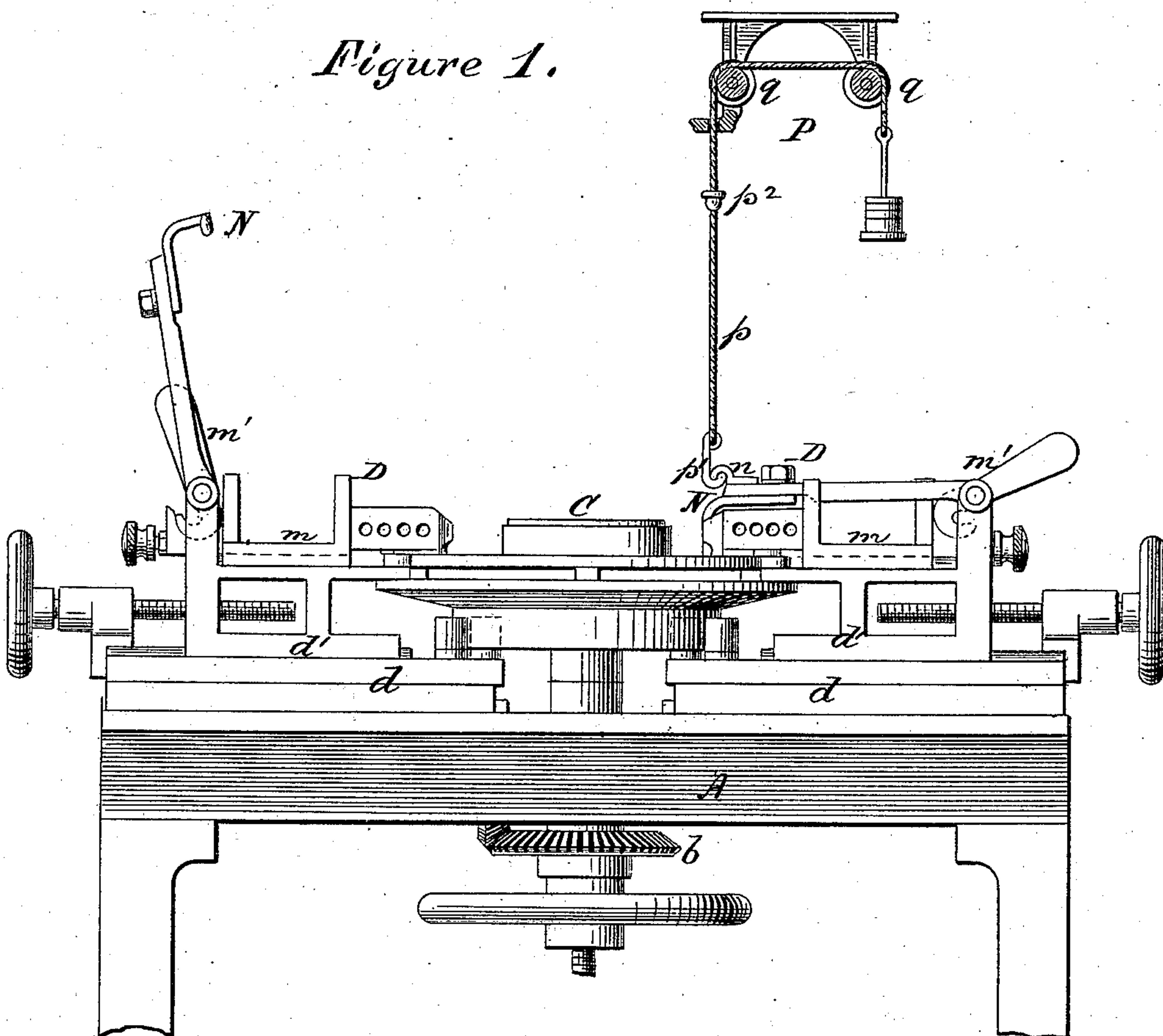
F. COCKER.

HAT BRIM CURLING MACHINE.

No. 286,907

Patented Oct. 16, 1883.

Figure 1.



Witnesses:  
Bern. J. Vetterlein.  
Anton J. Lehman.

Inventor:  
Frederick Cocker,  
By his attorney,  
Henry L. Brown.

(No Model.)

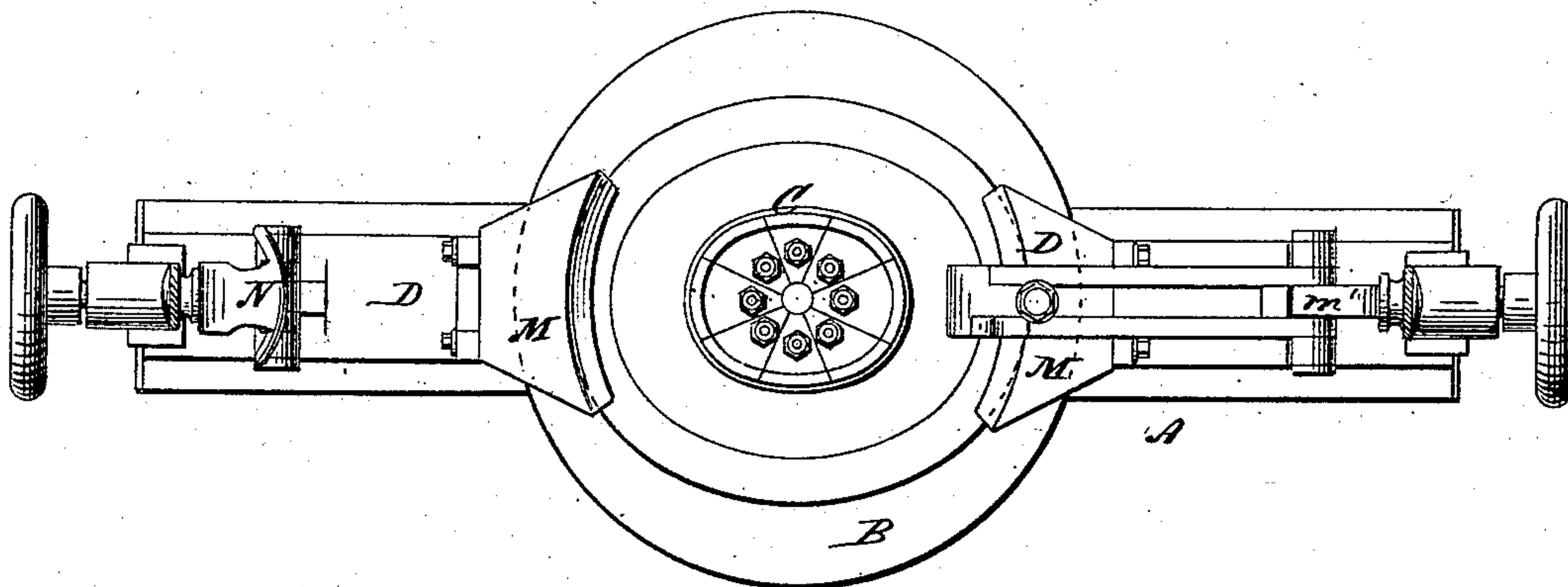
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F. COCKER.  
HAT BRIM CURLING MACHINE.

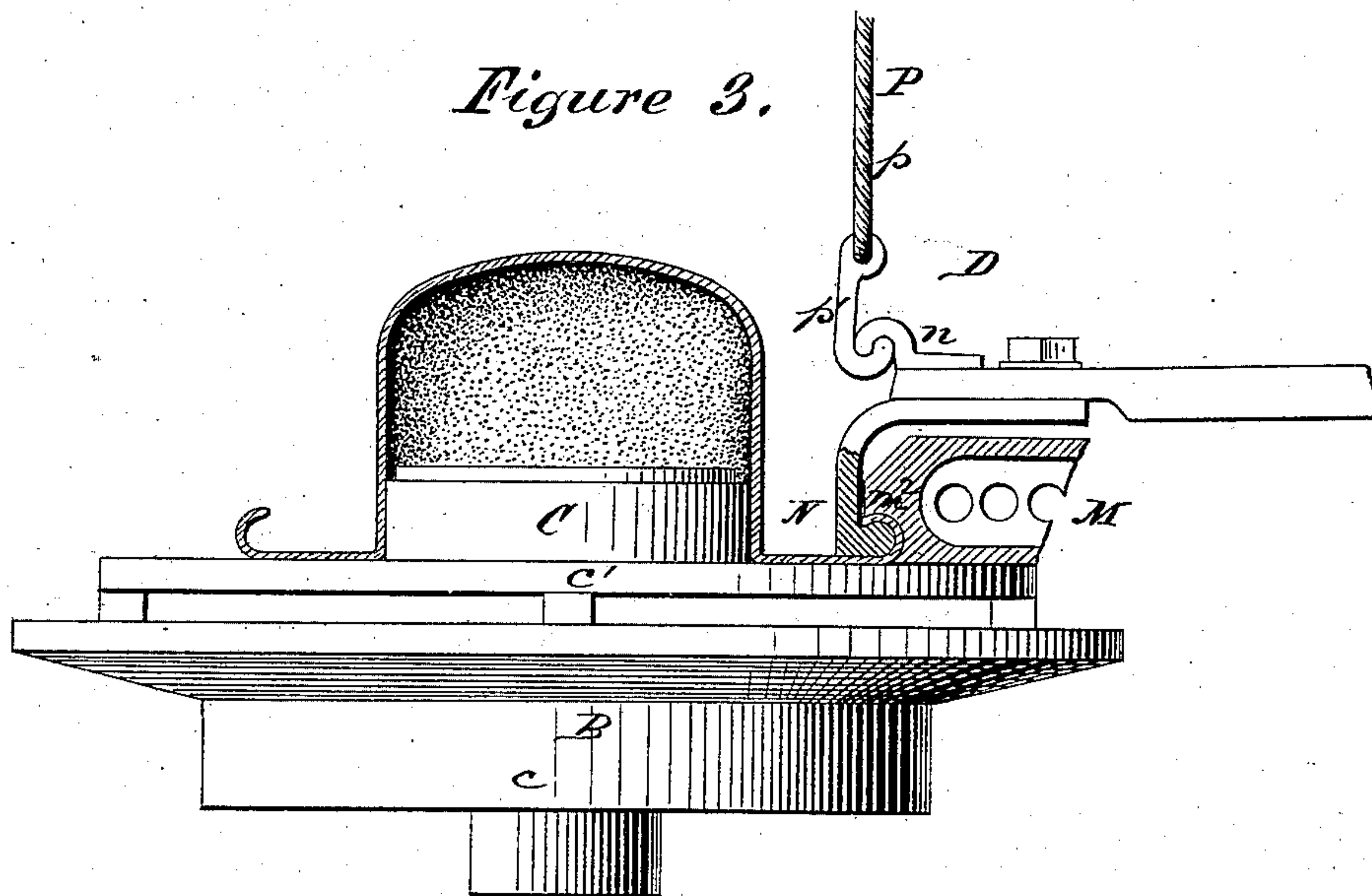
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*Figure 2.*



*Figure 3.*



Witnesses:  
Bern. J. Vetterlein.  
Anton. J. Lehman.

Inventor:  
Frederick Cocker,  
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Henry L. Brown.



# UNITED STATES PATENT OFFICE.

FREDERICK COCKER, OF DANBURY, CONNECTICUT, ASSIGNOR TO THE HAT CURLING MACHINE COMPANY, OF SAME PLACE.

## HAT-BRIM-CURLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 286,907, dated October 16, 1883.

Application filed August 16, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK COCKER, a subject of the Queen of Great Britain, and a resident of Danbury, in the county of Fairfield, in the State of Connecticut, have invented a certain new and useful Improvement in Hat-Brim-Curling Machines, of which the following is a specification.

My invention relates to that class of apparatus in which the extreme outer edge of the hat-brim, in a moist state, is subjected to the action of one or more heated irons acting upon one side of the edge or rim, in conjunction with suitable "heels" or forming-irons, which act upon the other side of the edge or rim. In this class of apparatus the hat-body is usually mounted upon a revolving bed or table which presents the edge of the hat-brim continuously to the curling mechanism, and I have therefore, for convenience, shown my invention as applied to a well-known and ordinary form of apparatus constructed upon such plan; but the principle may be adapted and applied to other forms of hat-rim-curling machines.

I also show and describe my invention as used in conjunction with peculiar form of curling devices, for which I have applied for a patent, and which consists of a heating-iron, the ironing-surface of which is constructed in the form of a semicircular matrix, and of a correspondingly-formed convex heel or forming-iron, which forces the rim into and sustains it against the action of the opposed matrix, the formation, ironing, and stiffening of the curl or rim of the hat being effected exclusively by and between the said irons.

Although my improvement may be employed advantageously in connection with the older forms of curling devices, it is especially appropriate when used with the form of device named, since the forming-iron in the latter entirely supports the inner side of the curl while it is being subjected to pressure, and also since the said device forms a curve which is curvilinear in cross-section—a form which is more liable to cause unevenness and puckering at the extreme edge of the brim than the older form of angular or flat curl.

The object of my invention is to effectually counteract or correct the tendency of the moist-

ened edge of the brim to pucker or wrinkle during the operation of curling, and to produce a curled brim that will be stiffer and smoother, especially at its extreme outer edge, than could be produced by the old curling devices.

The invention consists, in conjunction with a suitable heating-iron, of a forming-iron engaging therewith, which is provided with a device by which it may be made to exert an auxiliary pressure against the edge of the hat-brim confined between it and the heating-iron while undergoing the operation of curling; also, in means for making this auxiliary pressure variable, to adapt it to the material under treatment. The auxiliary pressure thus provided for is utilized upon the hat-brim after the edge of the latter has been first "broken" or bent into the form of the curl by the combined action of the heating and forming irons during one or more preliminary revolutions of the hat-body, and its use is substantially a new operation in itself, which may be designated as "finishing" the curl.

In the accompanying drawings, Figure 1 is a side elevation of the main parts of the hat-rim-curling machine provided with my improvement. Fig. 2 is a plan of the revolving hat-plate and curling mechanism shown in Fig. 1; and Fig. 3 is an enlarged view of the revolving hat-plate and brow-block, showing a vertical section of a hat-body secured thereto, and having its brim operated upon by one set of curling-irons, which are also shown partly in vertical section.

In the drawings, A represents the frame of the machine, upon which is mounted, centrally, a revolving hat-plate or support, B, which is actuated, through the medium of suitable gearing, *b*, by the driving-shaft of the machine. The revolving hat-plate B is provided with an expansible brow-block, C, by which the hat-body is secured in the required position. The curling devices D D, situated upon opposite sides of the revolving hat-plate B, are mounted upon slides *d d' d' d'*, which are reciprocated by cam-surfaces *c c'* upon the revolving hat-support B in the usual manner, the cam-surfaces corresponding to and causing the curling-tools to follow the shape of the hat-brim.



In general construction the matrix-irons M are substantially the same as those heretofore used, being made hollow, and provided with openings to facilitate their being heated by a gas-jet in the usual way. They are secured to slides  $mm$ , which are in turn mounted upon the slides  $d'd'$ , actuated directly by the tappet  $c'$  of the revolving hat-plate B. The heel-pieces or formers N are also mounted independently upon the slides  $d'd'$ , their outer or back ends being pivoted thereto in such manner that their inner or working ends may be lowered to or raised from the revolving hat-plate B, as shown on opposite sides in Figs. 1 and 2. The matrix-irons may also be correspondingly advanced or retracted horizontally by means of eccentrics  $m'm'$ , for the purpose of bringing them into position to operate upon the hat-brim or to allow the hat to be removed. The matrix  $m^2$ , or portion of the heating-iron M which acts directly upon the hat-brim, is formed in the lower front edge of the iron in a longitudinally concave curve, and is preferably semicircular in cross-section, although any other form may be given to it, according to the style or variety of curl to be imparted to the hat-brim.

The forming-iron N, which is in the shape of a convex curve, is of semicircular or other form in cross-section, to correspond with the cross-section of the matrix  $m^2$ , with the inner surface of which its surface is concentric or parallel, when the two irons are brought into their proper relative positions for operation upon the edge of the hat-brim, as will be seen by reference to Fig. 3.

The construction of the device P for affording the auxiliary pressure to be exerted by the forming-iron N, and its mode of connection with the latter, may be varied, according to circumstances, that shown in the drawings consisting simply of a cord,  $p$ , weighted at one end, suspended over suitable pulleys,  $q q$ , above the forming-iron N, and provided with a hook,  $p'$ , or other form of coupling at its other extremity, by which it may be quickly and conveniently attached to the forming-iron N, which is furnished with a corresponding coupling hook or catch,  $n$ . When thus constructed the device may also be provided with a stop,  $p^2$ , which, when the parts are uncoupled, will prevent the coupling-hook  $p$  from receding beyond the reach of the operator. The weighted end may also be adapted, as indicated in the drawings, to receive a greater or less number of movable weights, so that the degree of power to be exerted by the device may be varied at pleasure, to conform to the nature of the work to be done. It is obvious that the same result may be accomplished in a variety of ways—as by the employment of one or more weighted levers, or by substituting a spring for the weighted cord shown—and I do not, therefore, confine myself to the special construction shown and described, since the essential feature of the invention consists in an

auxiliary device capable of being temporarily coupled to the forming-iron, and when so coupled, of causing the latter to exert a positive upward pressure of greater or less degree against any material intervening between it and the ironing-surface of the matrix or heating-iron.

The operation is as follows: The expansible brow-block B is contracted, and the hat-body placed in position upon the revolving hat-plate, and secured thereto by the re-expansion of the brow-block. The hat-plate is usually set so as to present the front and rear portions of the hat-brim, at which points there is little or no curl, to be turned to the curling devices D D. The heel or forming-iron N is then lowered, so that it rests upon the horizontal portion of the hat-brim, and the heating-iron M is then forced forward into position by means of the eccentric  $m'$ , bringing the former and matrix  $m^2$  into the relative positions shown in Fig. 3. The hat-plate B is then caused to revolve, gradually bringing the side brims of the hat under the action of the curling-irons, which are made to advance toward or recede from the center, to conform to the shape of the hat by means of the cams  $c c'$ , acting upon the slides  $d d'$ . As the edge of the side rim advances it is received by the enlarged entrance or mouth of the heated iron M, which gradually raises its edge and guides it into and between the matrix  $m^2$  and the former N, which latter, by its convergence toward the center, forces the brim uniformly and evenly into the matrix, and sustains the inner side of the curl thus formed during its subjection to the maximum of heat and pressure. After a sufficient number of revolutions of the hat-plate B have been made to allow the curling devices to fully break the brim and shape the curl, the auxiliary device P is coupled to the forming-iron, over which it is arranged, causing the bearing-surface of the said iron to press upward with sufficient force against the upper portion and edge of the curl, as the latter passes between it and the heated iron, to effectually compress and obliterate all inequalities or wrinkles created during the operation of breaking or turning the rim, and at the same time impart a hard, stiff, and smooth finish to the extreme edge of the curl.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a curling-iron and heel or former for curling hat-brims, of a supplemental pressure device to cause the iron and the said heel or former to compress the extreme edge of the curled brim, for the purpose described, substantially as herein described.

2. The combination of the curling-iron and heel or former for curling hat-brims with a supplemental adjustable pressure device to cause the irons to compress the extreme edge of the curled brim, substantially as herein described.



3. The combination of the curling-iron and heel or former for curling hat-brims with a supplemental pressure device to cause the irons to compress the extreme edge of the  
5 curled brim, and devices for connecting and disconnecting the supplemental pressure devices at will for the purpose described, substantially as herein specified.

having a curled brim the extreme edge of which is compressed, by means of an organized machine, more than the rest of the curled portion, substantially as herein described, and substantially as herein specified.

FREDERICK COCKER.

Witnesses:

ALLAN W. PAIGE,  
DAVID B. BOOTH.

4. As a new article of manufacture, a hat