(No Model.) 3 Sheets—Sheet 1.

R. EICKEMEYER.

PROCESS OF SETTING THE FOLDED OR CURLED EDGES OF HAT BRIMS.

No. 332,599. Patented Dec. 15, 1885.

Fig. 1.

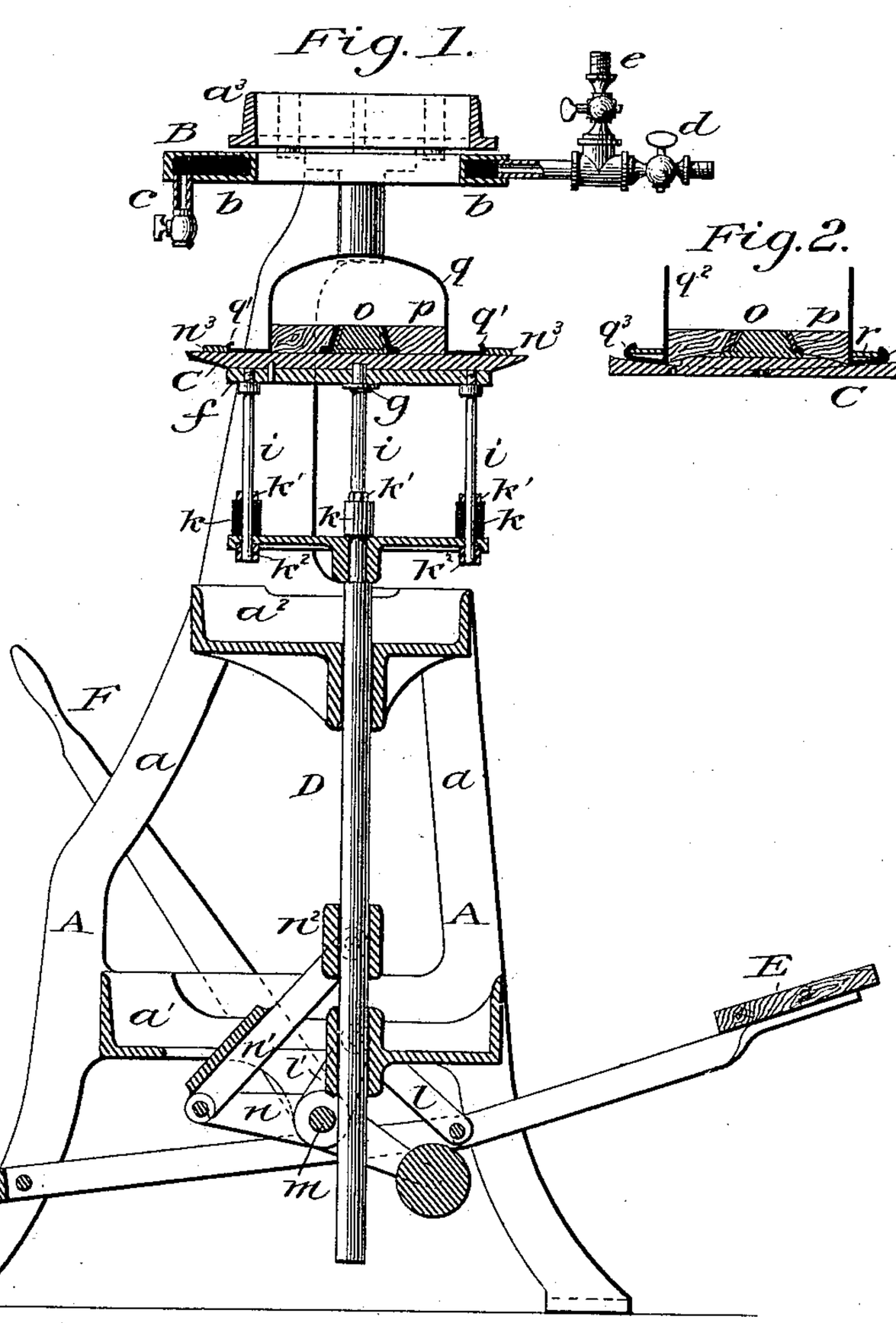
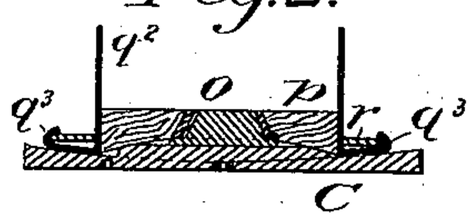


Fig. 2.



Witnesses:
Philip F. Larner.
Lobell Bartle

Inventor:
Rudolf Eickemeyer
By Wm. C. Wood
Attorney.

(No Model.) 3 Sheets—Sheet 2.

R. EICKEMEYER.

PROCESS OF SETTING THE FOLDED OR CURLED EDGES OF HAT BRIMS.

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Fig. 3.

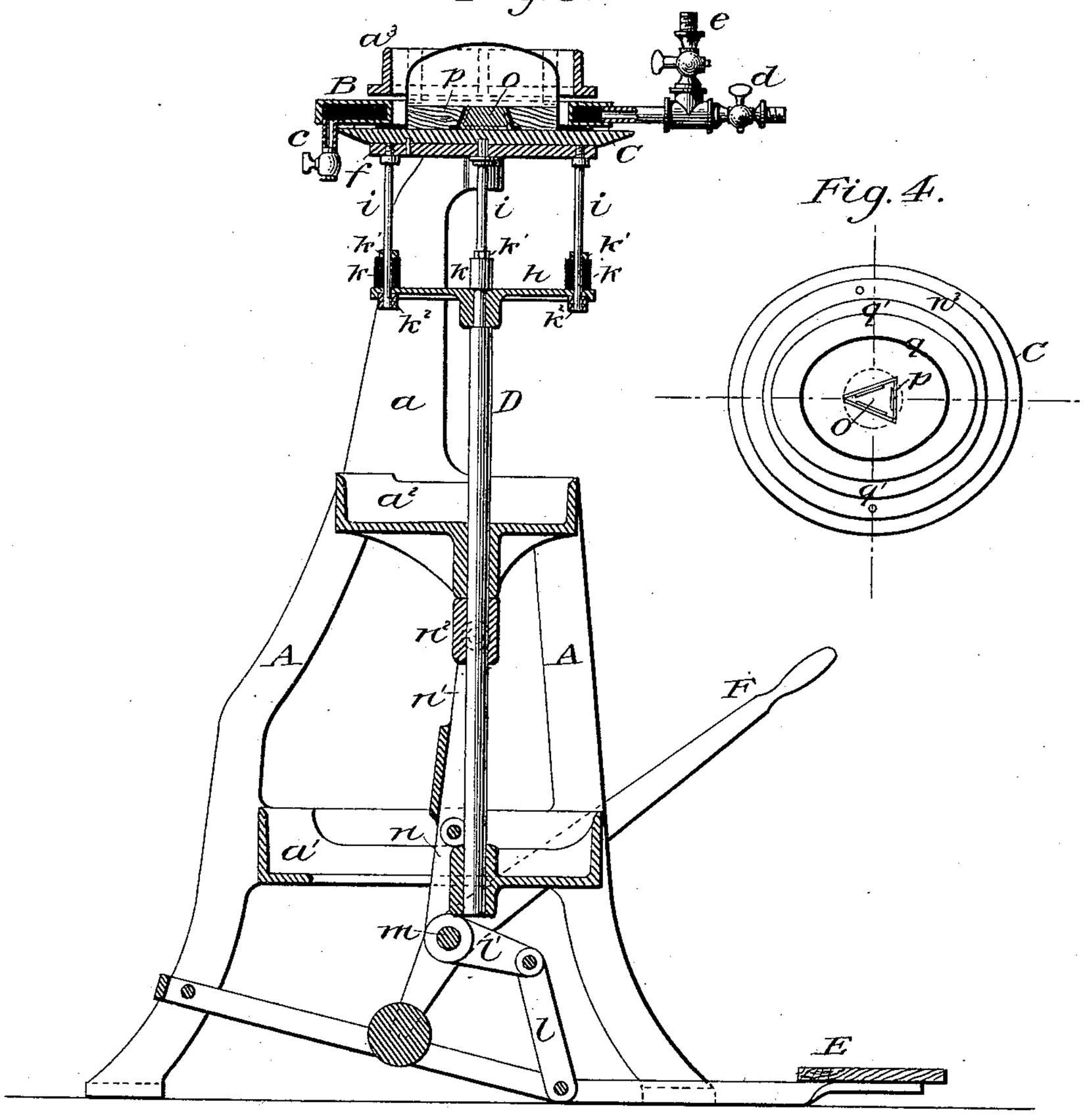

Fig. 4.

Witnesses:
Philip F. Larner.
Howell Battle

Inventor.
Rudolf Eickemeyer.
By Wm. C. Hoyt
Attorney.

(No Model.)

3 Sheets—Sheet 3.

R. EICKEMEYER.

PROCESS OF SETTING THE FOLDED OR CURLED EDGES OF HAT BRIMS.

No. 332,599. Patented Dec. 15, 1885.

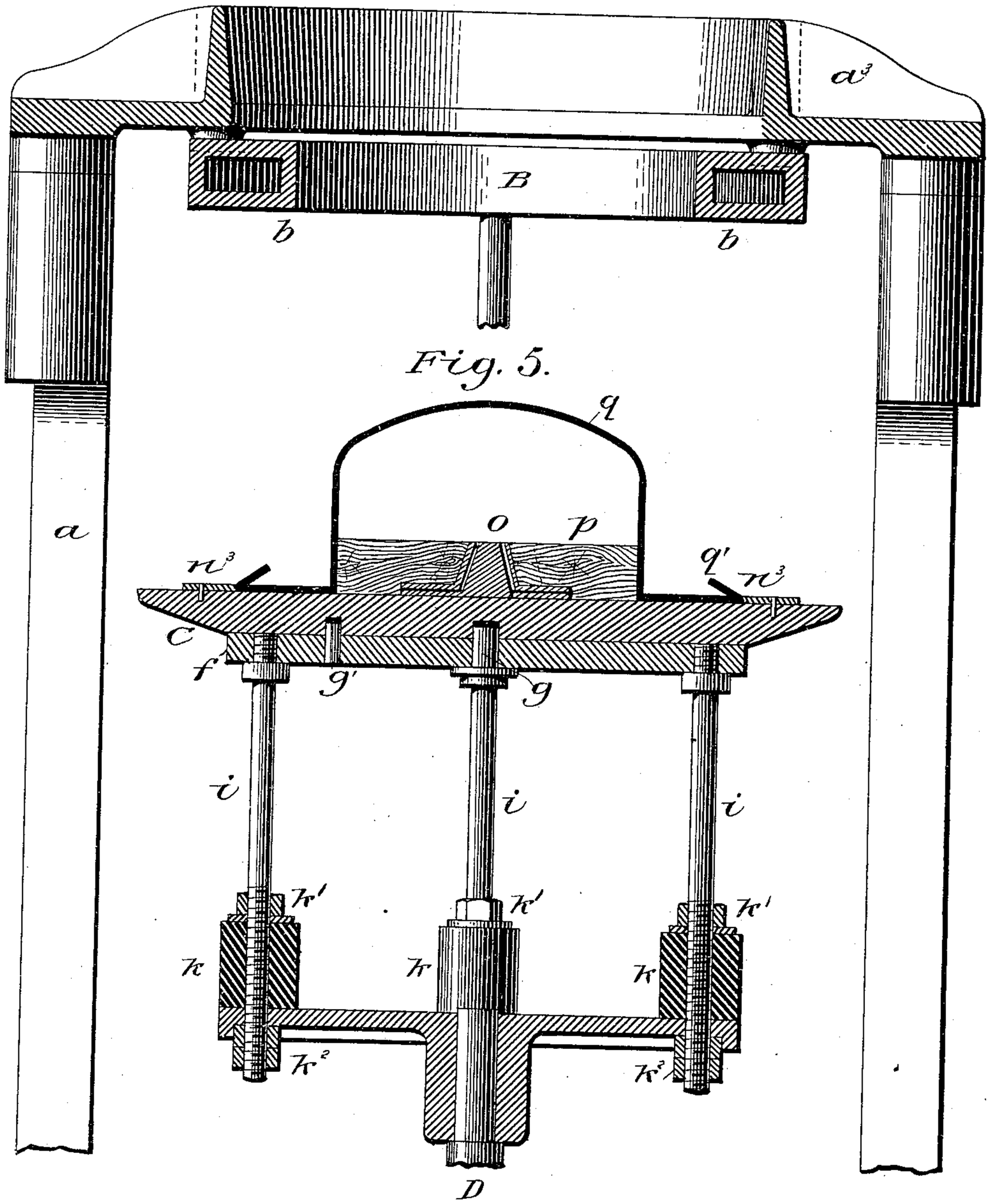

Fig. 5.

Witnesses:
Philip F. Larner.
Lowell Battle.

Inventor:
Rudolf Eickemeyer.
By Wm. C. Mead
Attorney.

UNITED STATES PATENT OFFICE.

RUDOLF EICKEMEYER, OF YONKERS, NEW YORK.

PROCESS OF SETTING THE FOLDED OR CURLED EDGES OF HAT-BRIMS.

SPECIFICATION forming part of Letters Patent No. 332,599, dated December 15, 1885.

Application filed May 12, 1885. Serial No. 165,213. (No model.)

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 Method or Process of Setting the Folded or Curled Edges of Hat-Brims; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention.

In the operation of curling hat-brims the edges are first turned over toward the crown, and that operation must first be completed before the hats are ready for procedure in accordance with my present invention, the object of which is to economically and effectually set such folded edges so that they will be as permanent as possible, and thoroughly capable of maintaining their form at the edge during and after such subsequent operations as may be involved in brim-curling. It is wholly immaterial in what manner or by what means the preliminary folding of the brim-edges may have been accomplished, although I have heretofore devised and patented certain machines well suited for the purpose, and I have also devised a machine for satisfactorily working my present invention, as described and claimed in my application for Letters Patent filed July 16, 1884, Serial No. 137,352; and said last-named machine, together with those heretofore patented by me, constitute a series of machines which are consecutively employed for curling brims in a manner not practiced prior to my invention.

My present invention consists, first, in compressing a folded brim-edge while in a cold condition, thus thoroughly breaking down the body of the felt at the edge; second, while under pressure thoroughly heating the folded edge, thus softening the stiffening-matter therein and enabling the felt to adjust itself to its changed conditions as to its form; and, third, or finally, the thus heated and compressed edge is thoroughly cooled while still under pressure, thus hardening the stiffening-matter and thoroughly setting the folded edge into the form desired.

In the practice of my invention it is immaterial in what manner the compression is applied to the folded edges, or in what manner said edges are heated and thereafter cooled while under compression, and it is equally immaterial what appliances may be employed. As the crudest means, a common press with a non-heated or non-heatable head and bed would serve for cold-pressing a folded edge as the first step in my process, and all that would be necessary in the way of special construction would be that the head or the bed of the press should have an annular opening to accommodate the crown of a hat while its brim was being compressed.

For the second step in my process, a press would serve differing from the first only in that its head or its bed was hollow or otherwise adapted to be heated, either by dry heat or by steam, and to this press a hat would be promptly transferred from the press with which the first step in the process was concluded.

For the third and final step, the first press would serve, it being only necessary to transfer the hat from the hot press back to the cold press.

As it will generally be desirable to perform the three steps of the process in one setting-machine, I have devised one, which is fully described in my before-mentioned application, of which this is a division, although two of such machines can be used precisely as described in connection with such common presses as are hereinbefore referred to, although as a rule, for obtaining the best results, the successive steps of cold pressing, hot pressing, and the final cold pressing should be performed without changing the hat from one press to another. The said machine devised by me is illustrated in the accompanying drawings, in which—

Figure 1, Sheet 1, is a vertical central section of one of my machines in what I deem its best form, and with the hat-bed lowered, and a hat with a folded, turned, or curled brim thereon, as if ready to commence operations for flatly compressing and setting the edge of the brim. Fig. 2, Sheet 1, is a vertical central section of the hat-bed, a block, a hat thereon having a rounded or half-curled edge, and a guide-plate by which said edge is maintained in its rounded condition during compression. Fig. 3, Sheet

2, is a section corresponding to Fig. 1, but with the parts thereof in position as if applying maximum compression to the brim of the hat. Fig. 4, Sheet 2, is a top view of the hat-bed, with a guide-plate and a hat on a block, the hat being shown in horizontal section through the crown and with its folded brim compressed. Fig. 5, Sheet 3, is an enlarged vertical central sectional view of the hat-block, guide-ring, and hat-bed, and also its supporting devices, together with the upper portion of the press, showing the same on a line at right angles to the sectional lines of Figs. 1 and 2.

The frame A of the machine may be largely varied in construction; but, as here shown, it consists of two side plates, *a*, a lateral bottom plate, *a'*, a middle plate, a^2, and an annular top plate, a^3. The press-head B is oval in its outline, has a working-face, *b*, on its lower side, and is bolted to and below the annular top plate, a^3. This press-head may be of solid metal when used solely as a cold press, or when to be so used it may be chambered or cup-shaped for the reception of water and also ice, if need be, or it may be hollow and provided with pipes for securing the circulation of cold water therein; or, it being thus hollow, steam-tight, and constructed of metal which will safely endure the expansion and construction incident to alternate heating and cooling, it may be provided with pipes and suitable cocks whereby steam and cold water may be alternately supplied thereto. As here shown, said press-head B is annular, to freely receive the crown of a hat, and it is hollow, and has a discharge-pipe, *c*, cold-water pipe and cock *d*, and a steam pipe and cock, *e*. Said head may be composed of cast-iron; but for durably sustaining the strains incident to expansion, steam pressure, and contraction, it is best to rely upon brass or bronze. The lower surface or brim-pressing face of the press-head is flat and smooth. The hat-supporting bed C is detachably mounted upon an oval or other shaped bed-plate, *f*, which is mounted on top of a vertically-reciprocating spindle, D. A central stud, *g*, and a dowel-pin, *g'*, serve as means for properly mounting the hat-bed on said plate. Said spindle, below the bed-plate, has a cross-head, *h*, through which four vertical posts, *i*, extend and serve as supports for the hat-bed and its bed-plate. This portion of the machine is best shown in Fig. 5, wherein it will be seen that each post at its lower end is encircled by a spring, *k*, which is surmounted by a washer and a nut, *k'*, which is tapped to the threaded lower portion of the post; also, that at the extreme lower end of each post there are set-nuts k^2. As thus constructed it will be seen that an accurate leveling-adjustment of the bed with reference to the face *b* of the press-head B can be readily made by these nuts and that the compressing force of the springs can be readily adjusted by the nuts *k'*. The spindle D is moved upwardly by the treadle-lever E, pivoted at its rear end to the frame of the machine, and by one or more links, *l* and arm *l'*, to a rock-shaft, *m*, which in turn is connected to the spindle D by arms *n*, links *n'*, and cross-head n^2. For readily relieving the pressure, a hand-lever, F, is employed by which the rock-shaft *m* is so rotated as to throw the arms *n* and links *n'* out of line with each other.

The only parts of the machine to be now described are a hat-block chuck and the gage or guide-plate n^3, which is mounted on the upper surface of the hat-bed. This plate is provided with dowel-pins, is oval, annular, of less thickness than twice the average thickness of a hat-brim, and is one of a series varying in internal dimensions, to correspond with the various sizes of hat-brims. It is not absolutely essential in this machine, but it contributes to rapidity in operations so far as it enables a hat to be promptly located in a desirable position on the bed, and it also serves, when used with a block-chuck or without, to prevent the tendency of the folded edge to flatten outside of its proper edge line whenever the felt chances to be scant at any one or more points at the periphery of the brim. The hat-block chuck *o* is mounted centrally on the bed, and occupies a central aperture in the hat-block *p*. As here shown, said chuck has an irregular outline, so that it can receive the block in but one way, thus obviating the use of dowel pins and holes, although these latter may be used in this machine in lieu thereof. Said chuck *o* is of novel construction, and constitutes the subject of a separate application for Letters Patent.

Referring now to Figs. 1 and 2, it will be seen that the hat *q* of Fig. 1 has its brim folded or turned inwardly, as at *q'*, and that the hat q^2 in Fig. 2 has its brim also folded, turned, or curled inwardly at q^3, but with a more fully rounded edge than the brim *q'* of the hat *q* of Fig. 1. In compressing the fold *q'* of the hat *q* the overturned portion is pressed down flatly upon the upper surface of the brim; but in compressing the partially-rounded curl q^3 of the hat q^2 it is essential that the brim-plate *r*, Fig. 2, be employed, having a rounded drooping edge at its sides. When such a brim-plate is employed, the hat-bed C is slightly concave from end to end, as indicated in Fig. 2, instead of flat, as in Fig. 1, and said brim-plate *r* is convex from side to side, because it is used for hats in which a partial curl has already been formed in the brim, and this is afterward developed into a full curl by drooping the ends of the brim, as set forth in a separate application for Letters Patent filed by me. The object of using this machine on such brims is to thoroughly set that portion of the edge of the brim which has been turned inwardly toward the crown of the hat.

Now, as hereinbefore stated, it is to be remembered that, so far as relates to the features of invention herein described, it is wholly im-

material in what manner or by what means hats like q and q^2 may have had their brims turned, folded, or partially curled, as shown at q' and q^3, and that having them in either of those forms I proceed substantially as follows: Whether on or off a block, they are placed centrally upon the hat-bed, the latter being with or without the gage-plate n^3, and the bed being lowered, as in Fig. 1. If the press-head B is filled with cold water or is empty and cold, the hat-bed is lifted fully by the treadle, thereby forcing the folded edge against the press-face b and compressing said edge, so as to break it down, but without rupturing the felt. While thus compressed, steam is admitted to the press-head, and the folded portion of the brim is fully heated. As the softening of the brim proceeds and the glue or other size yields to the heat, the compressed portion of the felt readily readjusts itself to the new conditions, and the springs K being compressed follow up every advantage by further forcing the bed toward the press-head face so long as the felt is disposed to yield. Then the steam is cut off, and while the brim is still under compression cold water is admitted and the temperature of the folded felt so far reduced as to fully harden the size therein, whereupon the hat is removed, its folded edge being set in the best manner known to me. If, however, before the cold hat is lifted to the press-head, the latter be heated, and then, while the hat is still under pressure, the steam be cut off and cold water supplied to the head for cooling the felt, approximately desirable results will accrue.

About one minute and a half is all that is required for either operation, the time being mostly occupied in changing temperatures, and therefore it will be seen why I prefer, as before stated, to place at least two of such machines under one workman, so that while one machine is at work the other can be supplied with or relieved from a hat. With block-centering devices on the bed and the gage-plate and operating on hats mounted on blocks, it will be seen that the shifting of a cold-pressed hat to a hot press and from the latter back to the same cold press or to a third machine operating as a cold press can be effected by a mere boy with great rapidity, and therefore, as hereinbefore indicated, two or three of these machines may be profitably employed in one set, so that changes in temperature in any one machine can be avoided, if desired. When to be used as last described, it is obvious that a cold press can be cooled in various ways, and that the hot press can be heated by gas-jets or other form of dry heat in lieu of steam.

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

The method or process of setting the folded edges of hat-brims, substantially as hereinbefore described, which consists in compressing the inwardly-folded edge of a brim while in a cold condition, then, while under pressure, heating said folded portion of said brim, and, finally, while still under pressure, cooling said folded edge.

RUDOLF EICKEMEYER.

Witnesses:

SAMUEL WALTERS,

JAMES S. FITCH.