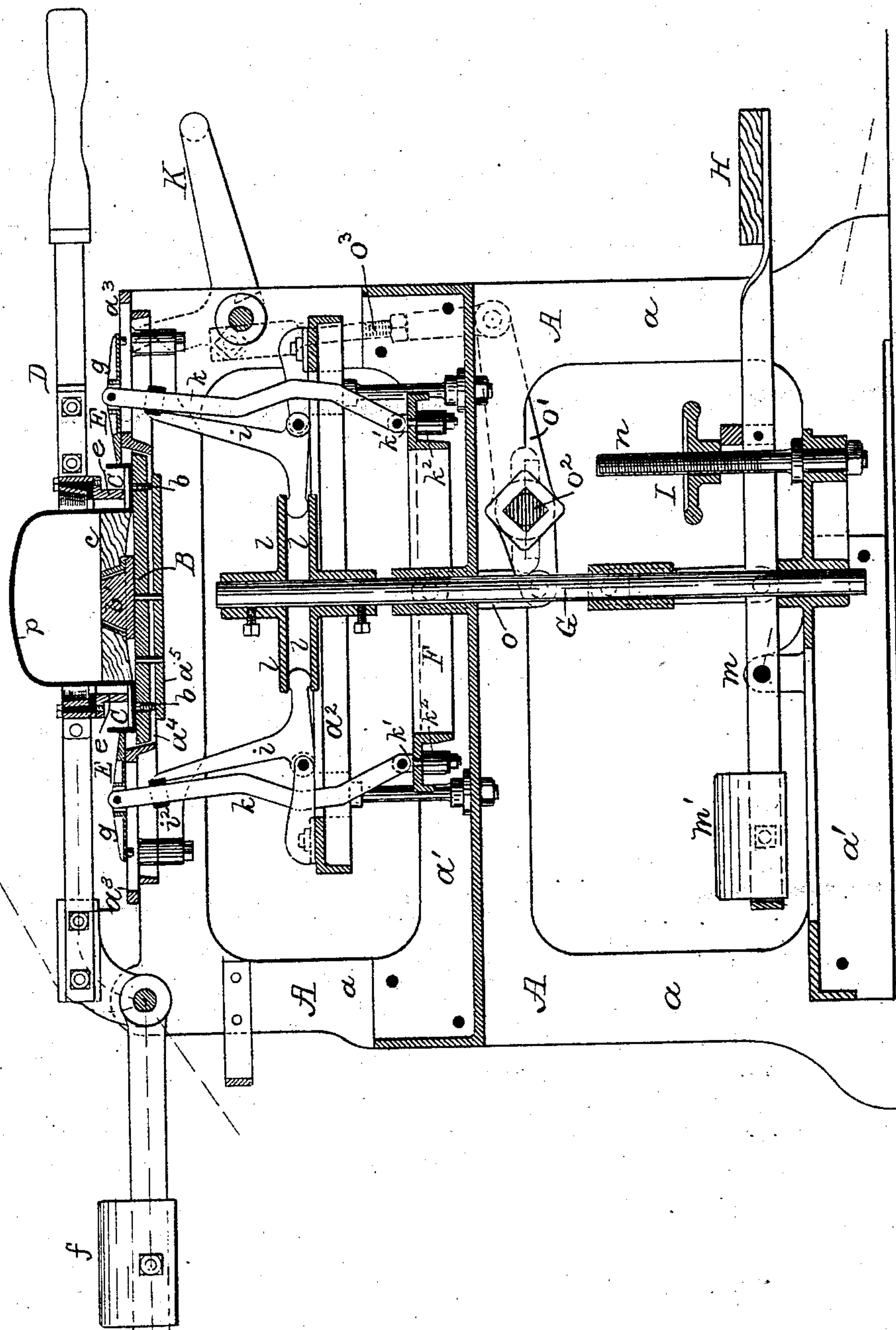


(No Model.)

6 Sheets—Sheet 1.

R. EICKEMEYER.
CURLING HAT BRIMS AND MACHINE THEREFOR.
No. 308,759. Patented Dec. 2, 1884.

Fig. 1.



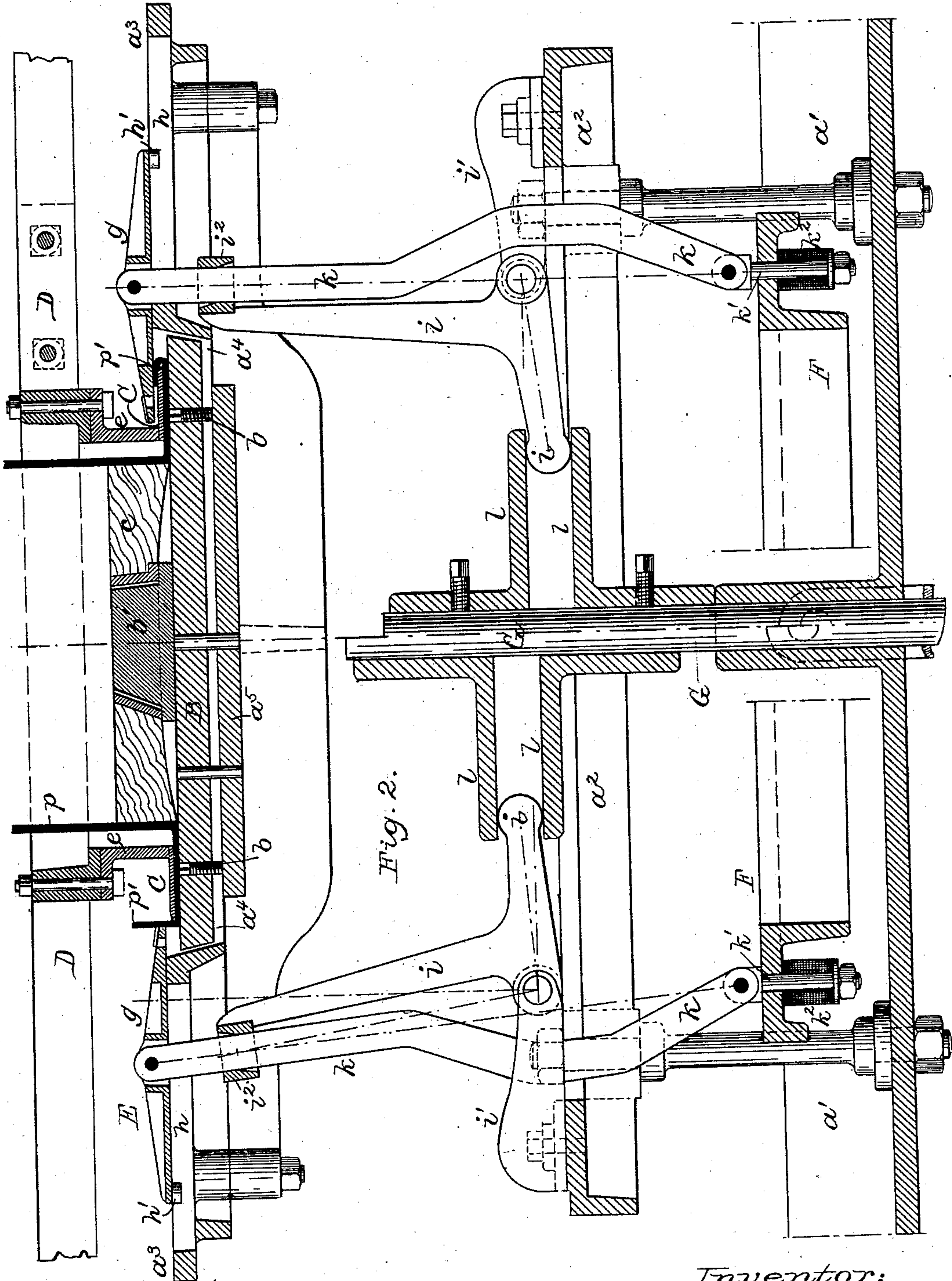
Attest:
Philip F. Larnet.
H. B. Smith

Inventor:
Rudolf Eickemeyer.
By *M. C. M. M.*
Attorney-

(No Model.)

6 Sheets—Sheet 2.

R. EICKEMEYER.
CURLING HAT BRIMS AND MACHINE THEREFOR.
No. 308,759. Patented Dec. 2, 1884.



Attest:
Philip F. Larnet.
Barrister

Inventor:
Rudolf Eickemeyer.
By *M. C. Wood*
Attorney.

(No Model.)

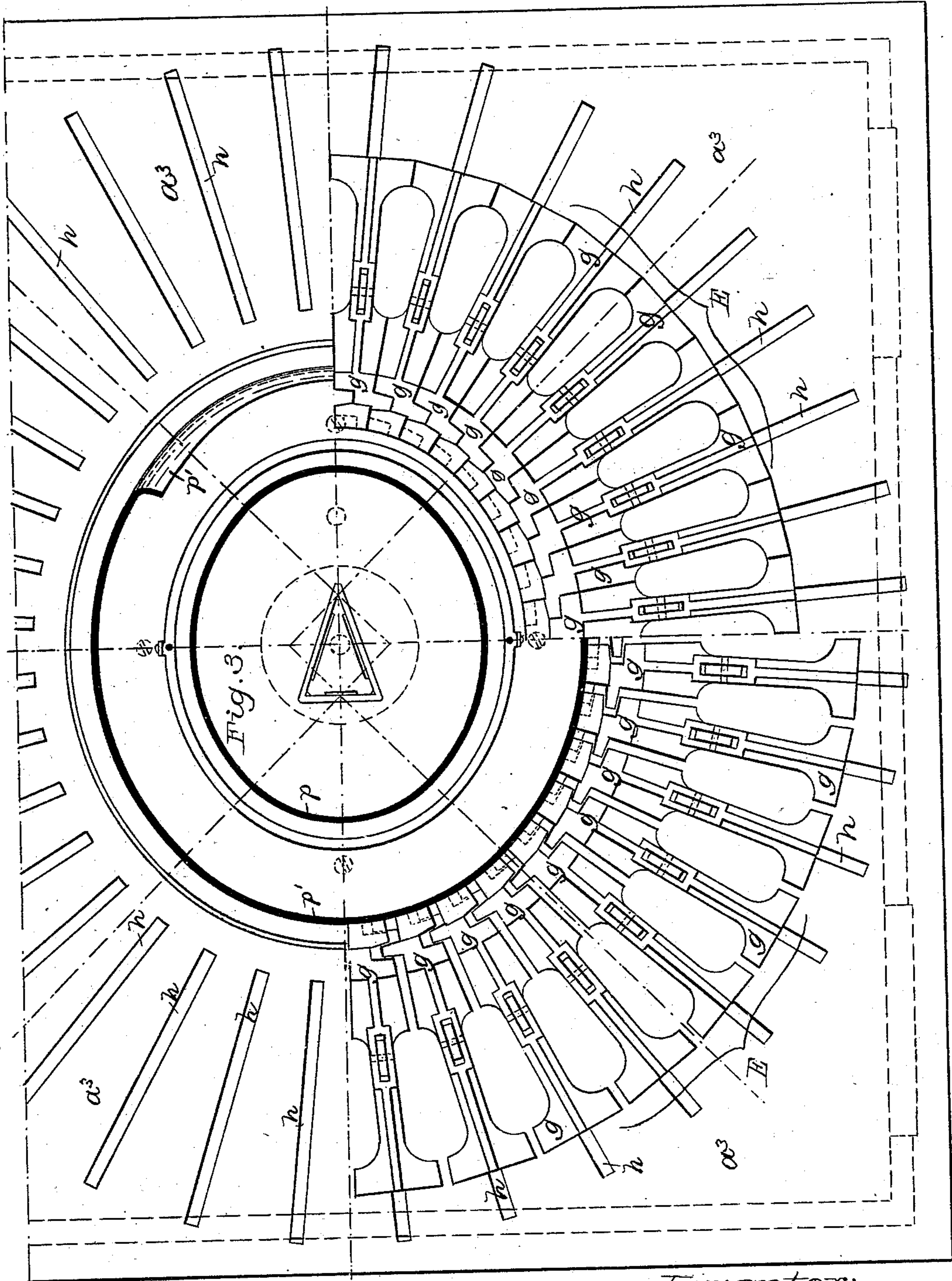
6 Sheets—Sheet 3.

R. EICKEMEYER.

CURLING HAT BRIMS AND MACHINE THEREFOR.

No. 308,759.

Patented Dec. 2, 1884.



Attest:
Philip F. Larnet.
[Signature]

Inventor:
Rudolf Eickemeyer.
By [Signature] Attorney.

(No Model.)

6 Sheets—Sheet 4.

R. EICKEMEYER.

CURLING HAT BRIMS AND MACHINE THEREFOR.

No. 308,759.

Patented Dec. 2, 1884.

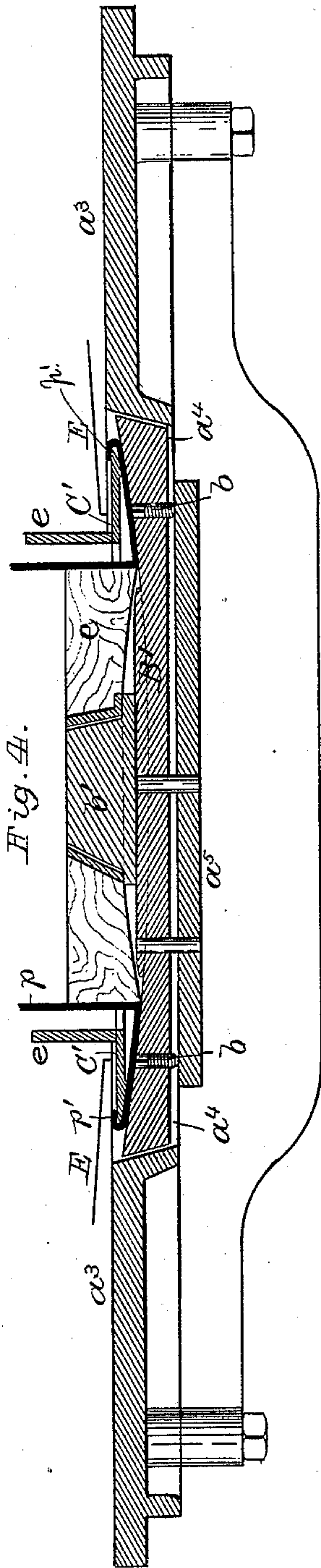


Fig. 4.

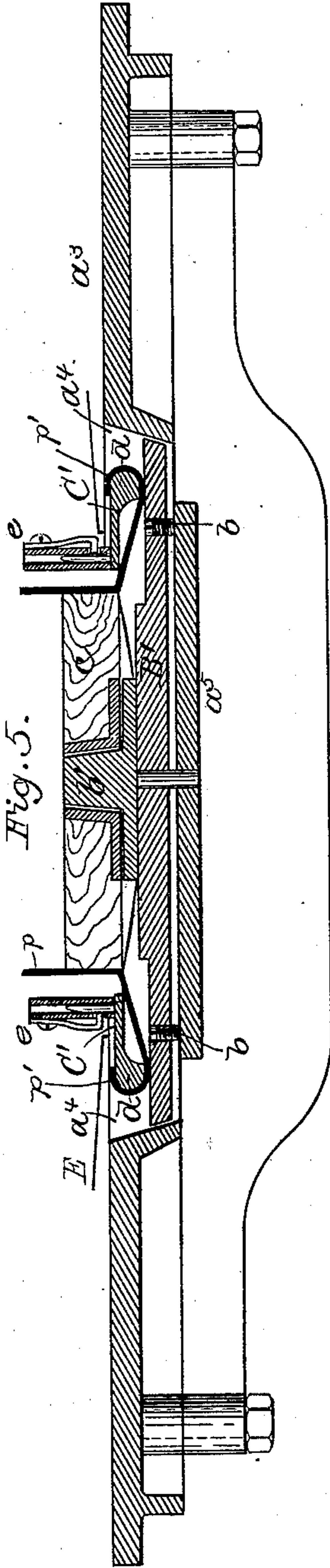


Fig. 5.

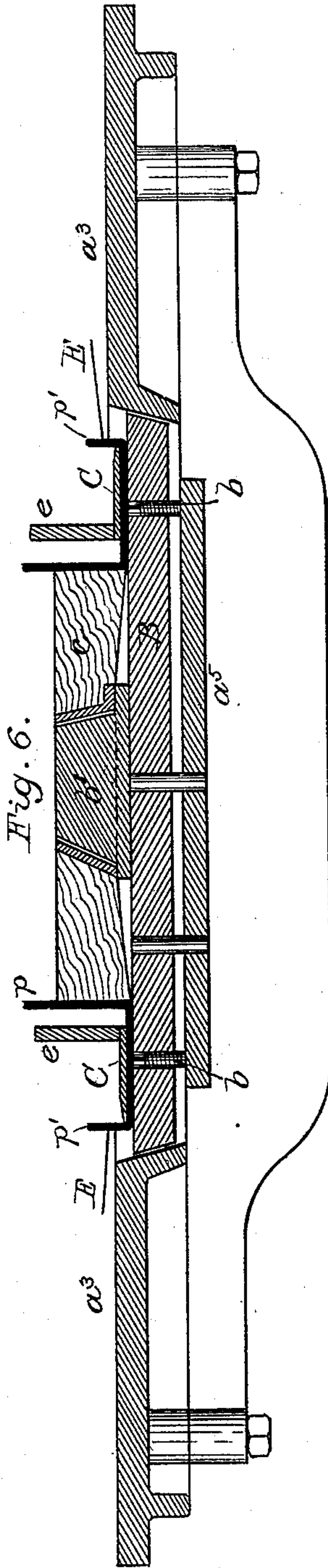


Fig. 6.

Attest:

Philip F. Larnet.
Notary

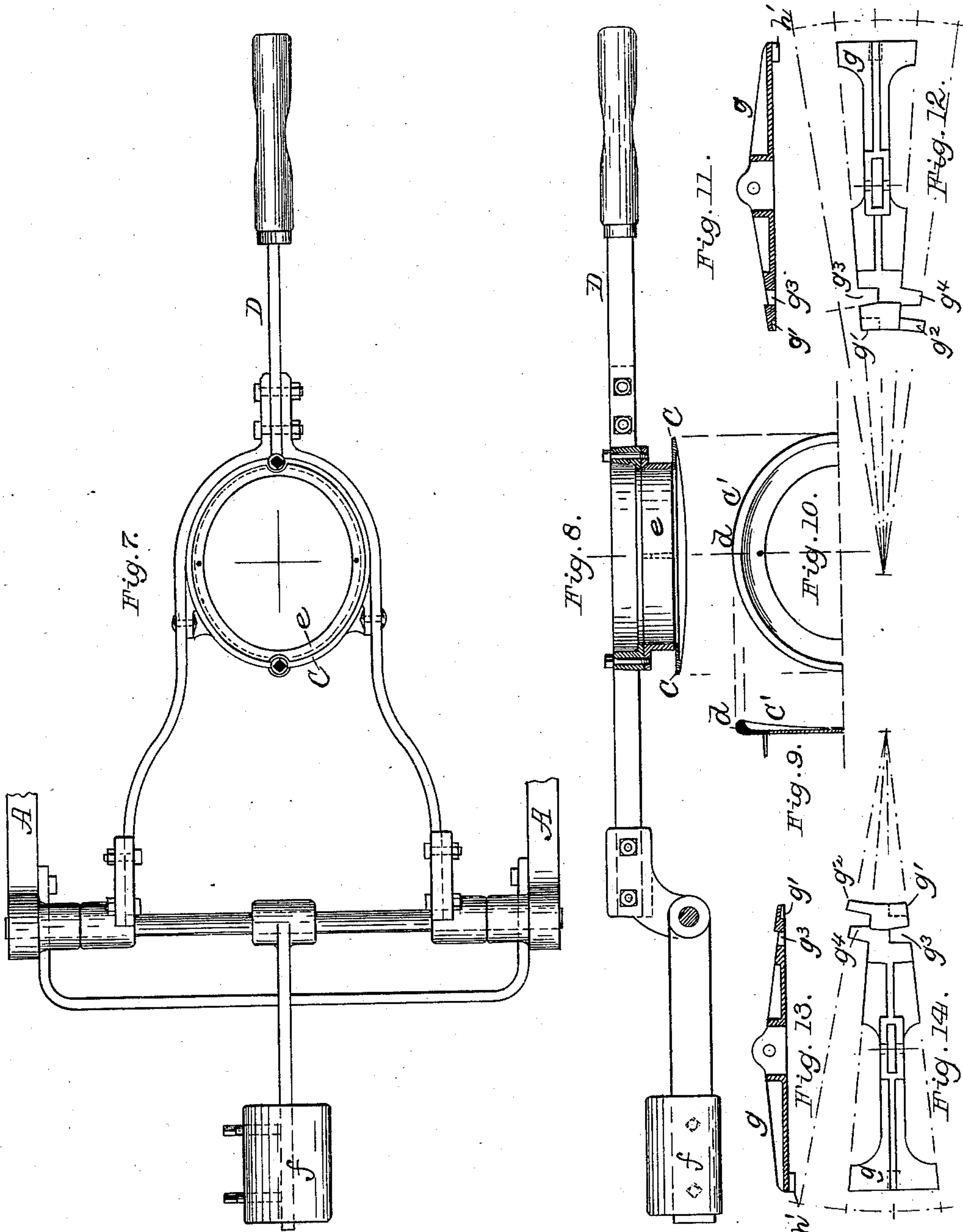
Inventor:

Rudolf Eickemeyer.
By *Wm. C. Ward*
Attorney.

(No Model.)

6 Sheets—Sheet 5.

R. EICKEMEYER.
CURLING HAT BRIMS AND MACHINE THEREFOR.
No. 308,759. Patented Dec. 2, 1884.



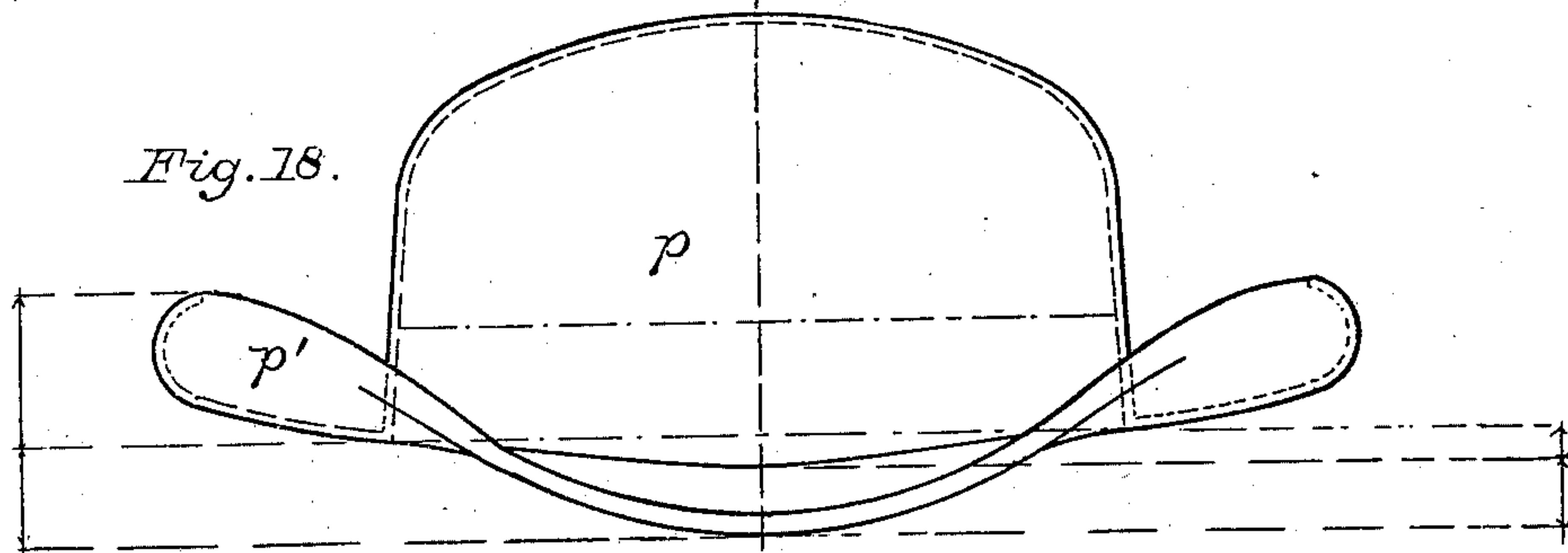
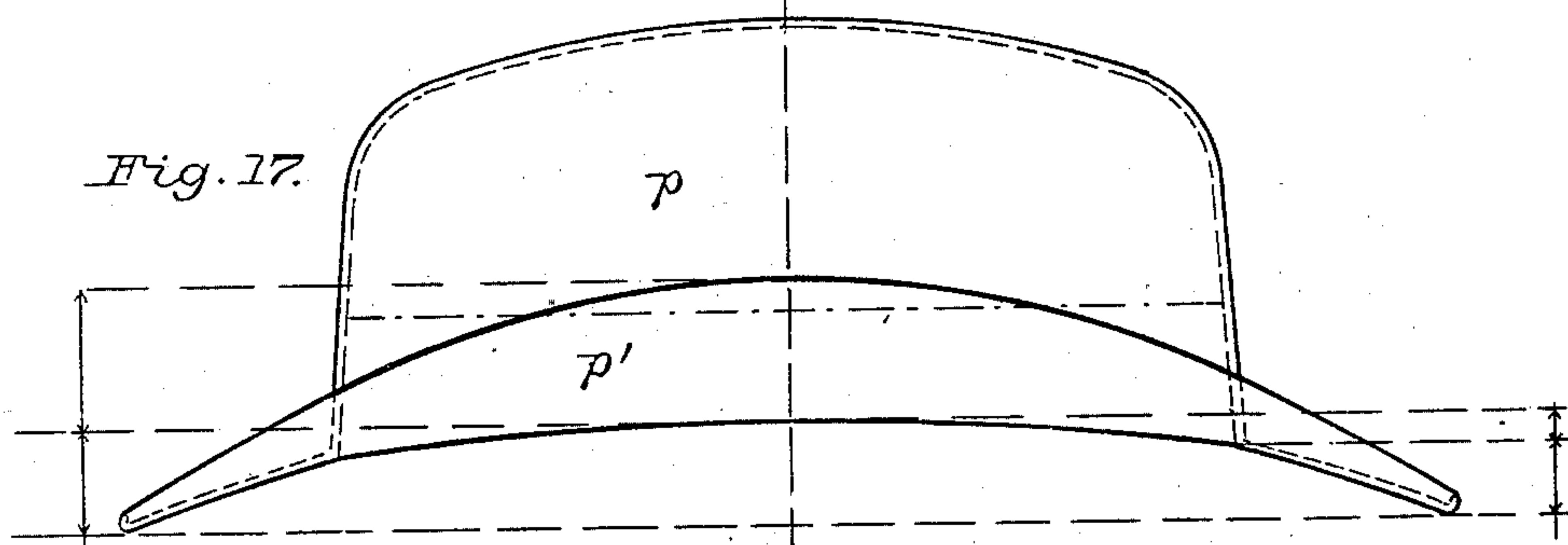
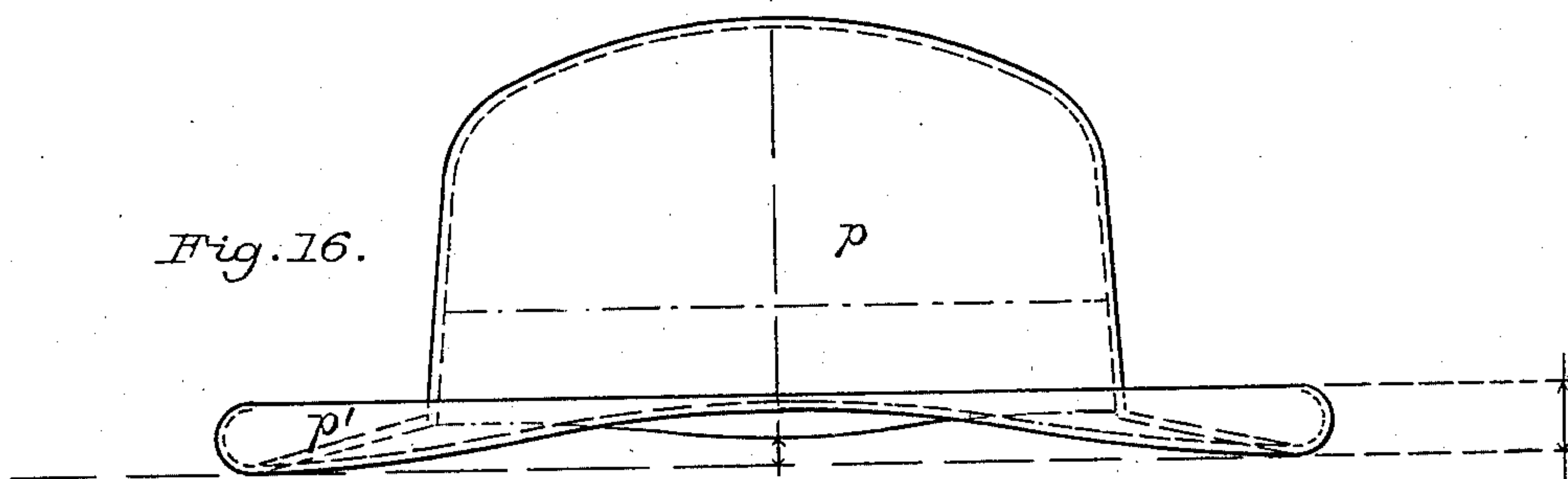
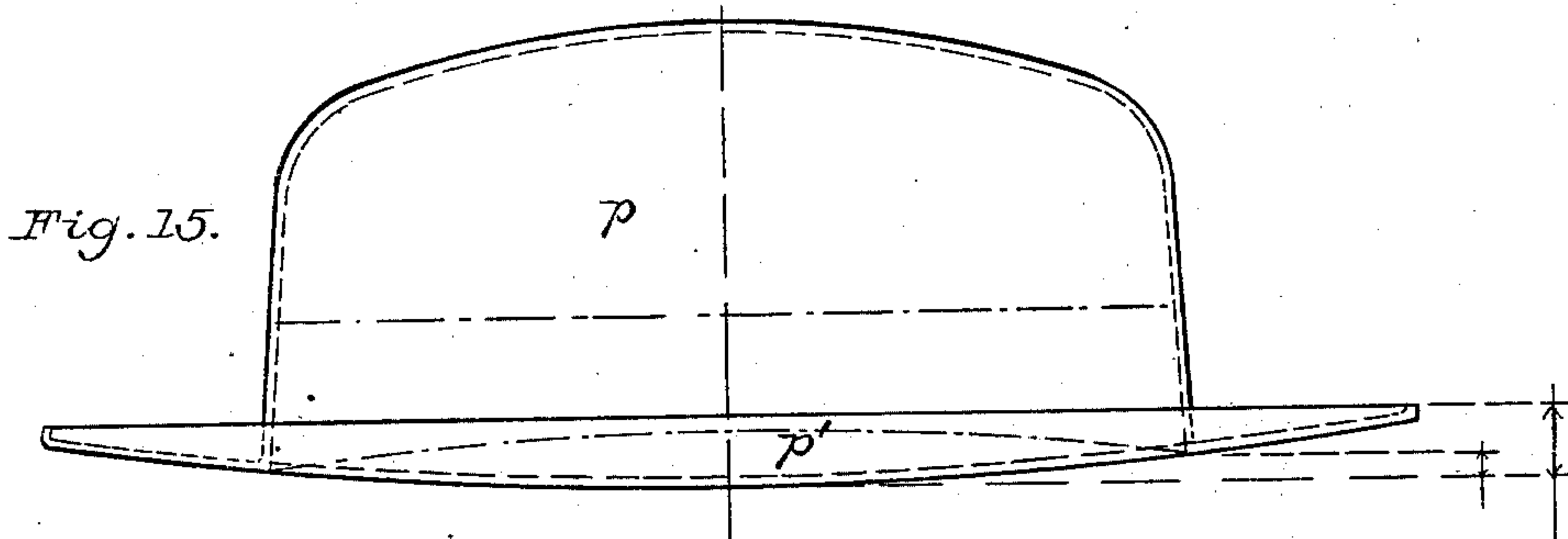
Attest:
Philip F. Larnet.
Bastle

Inventor:
Rudolf Eickemeyer.
By *M. C. Wood*
attorney.

(No Model.)

6 Sheets—Sheet 6.

R. EICKEMEYER.
CURLING HAT BRIMS AND MACHINE THEREFOR.
No. 308,759. Patented Dec. 2, 1884.



Attest:
Philip F. Larnet.
Notary

Inventor:
Rudolf Eickemeyer.
By *Wm. M. M.*
Attorney.

UNITED STATES PATENT OFFICE.

RUDOLF EICKEMEYER, OF YONKERS, NEW YORK.

CURLING HAT-BRIMS AND MACHINE THEREFOR.

SPECIFICATION forming part of Letters Patent No. 308,759, dated December 2, 1884.

Application filed July 5, 1884. (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 certain new and useful Improvements in Curling Hat-Brims, and also in Brim-Curling Machines; 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 the several features of my invention.

That portion of my present invention which constitutes an improvement in the art of curling hat-brims relates to such brims as are dropped at front and rear and have their sides fully rounded and curled, the periphery of the brim being folded more or less upon itself either at all points or with the exception of the extreme front and rear ends thereof. So far as I know, such brims have heretofore always been fully curled while drooped at front and rear, which involves much skilled hand-labor, which I seek to obviate, and thus economize in the cost of such hats.

It is obvious, where hand-labor is largely relied upon in the performance of any such service, that general uniformity in the product is practically impossible, because, however uniform any one workman may be, it would be difficult for any two workmen, even if possessing equal skill and taste, to turn out hats of a uniform character, and I also seek to economically and with uniformity produce hats with such brims.

The machine to be hereinafter described, with slight variations, is adapted to fold the edge of a hat-brim so that its sides may be only slightly curled or rounded, and also, by variations therein involving the introduction of changeable parts of proper construction, to fold the edge of a hat-brim so that its sides may be easily developed into a full rounded curl. When arranged as last described, the edge of the brim is folded and set while the front and rear ends of the brim are slightly inclined upwardly and while the sides of the brim are drooped, or, in other words, said sides and ends with the folded edge stand with relation to their angles in positions opposite to those which they occupy in the finished hat, therein differing from prior methods, wherein the brim is either folded and set while the

brim is flat or when it is drooped at front and rear. With this explanation I will be readily understood when I state that one portion of my invention consists in a novel method of imparting a fully-rounded curled edge to the sides of hat-brims, which consists in folding and setting the periphery of a brim having its front and rear ends elevated above the position they are to occupy in the finished hat, and partially curling its sides while in a drooped position, and then drooping the ends of the brim to their ultimate positions for raising the sides, and thereby developing therein a full rounded curl which is necessarily varied in its character, according to the extent of the longitudinal droop of the brim, which can obviously be readily gaged. In my present machine I employ for the first time a brim-folding ring and a brim-supporting bed having a contact-surface for the under side of the brim, which enables the sides of the brims to droop while the periphery of the brim is being folded and partially curled and set by said folding-ring, acting in conjunction with a brim-folding guide-ring which has drooping rounded sides.

In certain prior application for Letters Patent filed by me June 24, 1884, Serial No. 135,906, I show, describe, and claim many improvements in brim-curling machines, some of which, when broadly considered, are now embodied by me in my present machine; but they are so far varied in combination, construction, and arrangement as to enable them to be employed in connection with or as parts of the several features of my present invention.

As a prominent and characteristic feature of my present machine, I will state that I believe it to be the first (outside of the class of mold-machines and bag-presses) by which hat-brims can be variably curled at different parts thereof, as well as folded with uniformity at all points, this latter being the usual limit of capacity in brim-curling machines as now generally constructed.

Referring to the six sheets of drawings, Figure 1, Sheet 1, is a central vertical section of a machine embodying all of my present improvements, except such parts as specially relate to the novel method of curling brims hereinbefore referred to. Fig. 2, Sheet 2, is a

similar but enlarged view of the upper portion of the machine shown in Fig. 1, but with the brim-folding mechanism arranged in different positions on opposite sides of the machine for purposes of illustration. Fig. 3, Sheet 3, is an enlarged view of a portion of the top of the machine, with a hat partially in section, and with the brim-folding ring partially removed, partially in a contracted condition and partially in an expanded condition. Figs. 4 and 5, Sheet 4, are enlarged views of the upper portion of the machine as arranged for operating by my novel method, and they illustrate in Fig. 4 the brim-working parts as if operating upon the ends and in Fig. 5 as if operating upon the sides of a hat-brim, the sectional views being at right angles to each other. Fig. 6, Sheet 4, is a sectional view similar to that in Fig. 2, here reproduced for more convenient comparison with Fig. 4, it being understood that a sectional view on a line at right angles to that here shown in Fig. 6 would differ only in the difference in proportions corresponding to the difference between the cross-wise and lengthwise diameters of a hat, thus also enabling a convenient comparison with Fig. 5. Fig. 7, Sheet 5, is a top view of a portion of the upper part of the frame of the machine, and a lever to which the brim-folding guide-ring is connected. Fig. 8, Sheet 5, is a view of said lever, Fig. 7, partially in side view and partially in section, and showing the brim-folding ring as in Figs. 1, 2, and 6. Figs. 9 and 10, Sheet 5, are respectively sectional and plan views of one-half of a brim-folding guide-plate, as shown in Figs. 4 and 5. Figs. 11 to 14, inclusive, illustrate in longitudinal section and top view sections of the brim-folding ring, and points from which their lines of longitudinal movement radiate. Figs. 15 and 16, Sheet 6, illustrate in side and end view a hat with a brim as partially curled by the devices illustrated in Figs. 4 and 5. Figs. 17 and 18 illustrate in side and end views the hat shown in Figs. 15 and 16 after the full curl has been developed by merely drooping the brim from end to end.

The frame A of the machine may be variably constructed; but as here shown it includes the two side plates, *a*, and a lateral bottom plate, a middle plate, *a'*, annular plate *a''*, and a rectangular flat top plate, *a'''*. The top plate, *a'''*, has a central oval aperture or recess, *a⁴*, across which there is a plate, *a⁵*, supported on bars bolted to the under side of the top plate, forming a bottom for said recess. In said recess *a⁴* the oval hat-brim-supporting bed B is located. For performing certain service said bed is flat, as shown in Figs. 1, 2, and 6, and for fully curling brims by my novel method it is higher at its ends than at its sides, as illustrated at B' in Figs. 4 and 5. In either case it is provided with the adjusting-screws *b*, by which it can be accurately located at any desired distance below the surface of the top plate; and it is also provided with dowel-pins, by which the bed is not only properly cen-

tered, but also properly mounted end for end, as is necessary with all hat or "egg" ovals. Said bed is also provided on its upper surface with a centrally-located chuck, *b'*, which is of peculiar form, and is adapted to enter a socket of corresponding form in a hat-block, *c*, by which said block is not only properly centered on said bed, but also properly mounted thereon with reference to its irregular oval outline. This chuck and socket, in combination with a hat-block, were devised by me, and constitute the subject of a separate application for Letters Patent. As compared with the machine illustrated in my aforesaid prior application, this brim-bed B differs mainly from the bed in that machine in being flat at sides and ends, instead of flat at the sides and arched longitudinally, and the brim-bed B' here shown differs therefrom in being lower at its sides than at either end, and in both cases these beds are fixedly mounted or stationary, instead of being mounted upon a vertically-reciprocating spindle, as in my said prior machine.

With both forms of brim-bed here shown I employ a brim-folding guide-plate, which, broadly considered, is similar to that in the machine illustrated in my said prior application. The brim-folding guide-plates now employed by me differ from that in my prior machine in a manner corresponding to the differences in the brim-supporting bed, and two forms of guide-plates are here illustrated. The guide-plate C of Figs. 1, 2, 6, and 8 cooperates with the particular brim-bed B, and the guide-plate C' with the brim-bed B', as in Figs. 4, 5, 9, and 10. The guide-plate C is a flat oval annular plate, and compresses a brim flatly between it and the bed; but the guide-plate C', as seen in Figs. 4, 5, 9, and 10, has at its sides a drooping rounded thick edge, *d*. As in my prior machine, the guide-ring C is mounted upon an annular or oval hub, *e*, which, instead of being attached to an immovable portion of the frame, as in my prior machine, is here mounted upon a vertically-movable hand-lever, D, pivoted at its rear end to the top of the frame on a level with the bed, and provided with a counter-weight, *f*. As in my prior machine the guide-plates here shown are provided with irregularly-located dowel-pins, by which they are properly set on the hub, and are confined thereon by springs which press against the dowel-pins, as clearly shown in Fig. 5. The guide-plate hub may be otherwise organized with mechanism for moving it toward and from the brim-bed without departure from certain portions of my invention—as, for instance, by means of a screw and hand-wheel—it being understood that the hub and plate are detachably connected, as described. As in my said prior machine, these brim-folding guide-plates have an interior opening larger than the largest sized hat, so that but one set of each style of rings is required for all sizes of hats and all widths of brim, the variation in the sizes of said rings being limited to peripheral dimensions. In

my said prior machine the hat-bed required a lifting-ring for lifting the edge of a hat-brim when compressed by the guide-plate, whereas in the machine here shown the hat-beds are always ready for service with any of the guide-plates suited therefor, said beds being suitable for hats of all sizes and all widths of brim. In my said prior machine I employed an expansible and contractible brim-folding ring, which, broadly considered, is embodied in my present machine; but it is quite different in its construction and is differently organized with its co-operating elements, and possesses novel capacities, in that it now operates as a variable lifting-ring, and enables me to dispense with the series of lifting-rings employed in connection with my prior machine. Instead of forcing the hat-brim bed toward the brim-folding ring, as in my prior machine, I now force the ring toward said bed, so as to enable it after folding to heavily compress and set the folded edge of a brim. As in my prior machine, my present brim-folding ring is composed of radially-movable sections; but instead of being, as before, limited to a radial movement, they are also capable of movement in lines at right angles toward and from the brim-bed, and these two distinct movements are provided for by means of separately-operated mechanism. Certain other points of difference will be duly specified in connection with the detailed description.

Referring to Fig. 3, Sheet 3, one-quarter of the brim-folding ring E is shown in its fully-expanded condition, and one-quarter thereof in its fully-contracted condition, and one-half of said ring is removed, showing the top plate, α^3 , of the frame. As here shown, each quarter of the ring is composed of nine sections, g , or thirty-six sections in all. Each section is guided in its longitudinal movements by the slots h in the top plate, which radiate from several central points, as clearly indicated. Each section, at its under side, is substantially straight, so as to be able to lie flatly upon the surface of the top plate. It has also a broad bearing-surface at its outer end, a contracted central portion, and an inner end of peculiar construction adjacent to its working-surface. The side edges of the sections are inclined, so that each constitutes a true segment of a nearly flat ring. At its inner end each section has, as is clearly shown in Figs. 11 to 14, inclusive, at one edge two lateral recesses, g' and g^3 , the latter being an open recess and the former being covered on top and open at one side. On the opposite edge each section has two laterally-projecting studs or fingers, g^2 and g^4 , of such dimensions that they can respectively freely enter the recesses g' and g^3 of the next adjacent section on that side. The continuous interlocking of the sections at their inner ends by means of studs g^2 and recesses g' results in a practically continuous and unbroken surface at the inner or working portion of the ring, even when in its fully-expanded condition, as clearly shown in

Fig. 3, and the said studs or fingers so interlock the several sections that they constitute in substance a wide flat expansible and contractible ring, all portions of which must move radially and in harmony. The underlying of each section by the stud or finger g^2 of the section next to it at one side also so interlocks all of the sections that they also move as one during all vertical movements. On the under side of each section, near its outer or rear end, there is a guide-pin, h' , which occupies a radial slot, h , in the top plate. These brim-folding sections differ from those in my prior machine, in that with these I get an absolute continuity of working-surface with a single series of sections, whereas in said prior machine the sections were in two separate but co-operating series, one overlying the other. This brim-folding ring has, when fully expanded, a capacity to operate upon brims of the largest size, and various portions of its under surface are brought into actual service according to the size of the brim. My folding-ring, when fully contracted, as seen in Fig. 3, presents a wide surface for progressive contact with the folded felt, and as the ring is always thus contracted, whether operating on the narrow brim of a small hat or on the wide brim of a large hat, its contact-surface is smooth or continuous during the compressing action. The working edge of the folding-ring is of such thickness that the felt is not liable to be unduly torn or strained during the folding movement, and when the guide-plate is applied the edge of the brim is more readily turned upwardly and caused to assume a position more nearly vertical than would be the case if the ring had a thin or sharp working edge.

The mechanism for controlling the ring may be largely varied without departure from certain features of my invention. In my prior machine simple bell-crank levers are employed, and in certain other machines devised by me for other purposes slotted cone-plates are employed for radially moving the sections of an oval or similarly formed structure, and I am well aware that such cone-plates may be employed for radially moving these brim-folding sections. Having the best results in view, I employ the bell-crank levers i , one for each section, and each is pivoted upon the annular plate α^2 of the frame by means of intermediate brackets, i' , bolted to said plate. Instead of coupling these levers directly to the sections, each has at its upper end a collar, i^2 , which loosely embraces a link, k , which at its upper end is pivoted centrally to a ring-section, g , and at its lower end it is pivoted to an annular plate or ring, F, by means of a vertically-sliding eyebolt, k' , having a nut and washer at its lower end and an inclosing spring or cushion, k^2 , which may be a spiral spring or a rubber spring, as shown. The lower end of each bell-crank lever i is located within a space between two coincident sleeved disks, l , which are each adjustably mounted on the

vertically-sliding spindle G, which is in turn coupled by links and a cross-head, *m*, to the treadle-lever H. The two disks *l* are duplicates and serve as an annular adjustable cross-head, which is cheaply constructed and readily adjusted for compensation of wear.

In certain machines heretofore patented to me I show and describe brim-clamping sections which involve a somewhat similar arrangement of expanding and contracting devices; but I have now for the first time applied them to mechanism for folding and curling hat-brims, and have so far contrived and changed them as to make them very serviceable in this connection.

As thus far described, it will be seen that the brim-folding ring is maintained normally in its expanded condition, the spindle G being elevated by the weighted treadle-lever H, which is pivoted at *m*, and has a weight, *m'*, at its rear end. The upward movement of the front end of the treadle-lever is variably limited by an adjustable stop embodied in the hand-wheel nut I on the stationary screw *n*, Fig. 1, and therefore said screw and wheel-nut serves as an adjusting medium for the brim-folding ring, the screw-thread being so proportioned to the lever that a given number of turns of the hand-wheel will cause the ring to expand or contract to correspond to the difference between any two sizes of hats. This matter of adjusting the brim-folding ring is of consequence in this machine, because said ring also serves as a brim-edge lifting-plate, and supplants the separate plate for that purpose which is employed in my prior machine. The brim-folding ring in this machine is also the active compressing element, and operates in conjunction with a stationary bed, instead of operating as a passive element with a vertically-moving bed, as in my prior machine. The compressing action of the folding-ring is obtained by way of the links *k* and the annular plate or ring F, which is vertically reciprocated by the hand-lever K, which is connected thereto by links *o*, levers *o'*, rock-shaft *o''*, and the adjustably-elongated link *o'''*, the latter enabling said lever to variably control said ring in the matter of compression. This portion of the machine is shown only in Fig. 1 and partly in dotted lines; but it will be clearly seen that the adjustable link *o'''* is pivoted so near the axis of the lever K that when the outer end of said lever is depressed the said pivotal point and the axis will occupy the same vertical plane, and thus enable the lever to remain in that position, while the compressing strain is applied to the ring. The nuts at the lower ends of the eye-bolts *k'* enable the adjustment of the springs, so that the force exerted by way of the lever K will be imparted with uniformity to all of the brim-folding sections. This compressing capacity of the sections is important, and so also is their capacity to independently exert a yielding pressure, as described; and while I prefer and make claim to the mechanism shown

in this connection, I do not limit myself thereto, because other means may be employed without departure from certain portions of my invention—as, for instance, it is perfectly obvious that the lever D can be provided with a ring corresponding in outline and dimensions with the brim-folding ring at, say, its half-expanded condition, and smaller than the brim-supporting bed, and arranged to bear forcibly upon the inner ends of all the sections, and if such a ring be faced with heavy spring-rubber, then the same independently yielding pressure would be exerted by each section as when organized as shown. In this connection I will refer to the machines illustrated in the United States Letters Patent of Apple, Lindheim, and Baer, No. 30,791, December 4, 1860, and of Morlot, No. 99,458, February 1, 1870, wherein two and four sectors or jaws are shown as if organized for curling hat-brims, and it is to be understood that I make no claim to anything therein shown. In both instances special molds are required, and in each case the devices which were to be moved toward the hat-block for operating upon the brim, were necessarily varied in form according to the various shapes to be given to the hats, as distinguished from employing an expansible ring suited for all purposes, as in my machines. In said prior machines the jaws or sectors, when expanded, did not and could not operate as a continuous oval ring, as in my machine, and as organized by said Morlot the four sectors were slowly operated by means of screws, and therefore special steam-heating appliances were required, which are rendered unnecessary in my machine, because of the rapidity with which the expansible ring can be operated by means of the levers described. In said Morlot patent the immediate support for a hat is mounted upon spring-bearings, and by being forced below the plane of a stationary mold the edge of the brim is so far lifted as to be engaged by the sectors when moved inwardly by their screws, whereas in my machine the expansible ring serves the purpose of said prior stationary mold, and also as the means for folding the brim. In addition to these radical departures from the means heretofore proposed for curling the brims of hats, there are various other obviously novel features in my machines which greatly contribute to their practical efficiency.

Having thus described one of my machines in its best form, I will next explain its operation in folding the edge of a hat-brim while the latter is in a perfectly flat condition, and thereafter describe the operation of developing a full rounded curl in accordance with my novel method.

Referring to Fig. 1, it will be seen that the several sections *g* of the expansible ring E are held by means of the weighted treadle in a partially-expanded condition, and it will be assumed that said ring has been set to fold a brim of a certain diameter when finished. A hat, *p*, with its brim approximately trimmed

and softened by heat, and mounted on a block, is properly located on the hat-bed, so that the brim p' will equally overlie and be supported on the inner ends of the ring-sections g . The lever D is then brought down so that the guide-plate C will bear upon the upper surface of the brim and force it down upon the brim-bed B , thereby causing the edge of the brim p' to turn upwardly against the inner edge of the ring E , (or inner ends of the sections g), as shown in Figs. 1 and 6, and also in the left-hand portion of Fig. 2, thus clamping the main portion of said brim between said guide-plate and the brim-bed. The treadle-lever H is then depressed, which contracts the ring E by causing each of its sections g to move inwardly at right angles to the edge of the brim until its peripheral portion is folded evenly upon the top of the guide-plate, as shown in the right-hand portion of Fig. 2, but with the inner ends of said sections g slightly elevated by the body of felt beneath them. The lever K is then depressed, whereby the annular plate F is also depressed, which pulls downwardly upon the links k , and thus causes the several sections to compress the folded felt between them and the guide-plate, as illustrated in the right-hand portion of Fig. 2. A few seconds of rest is then required for enabling the brim to cool, whereupon the lever K is lifted, the treadle H is released, the lever D lifted and the hat removed.

Although the guide-plate is embraced by the folded felt, it can be readily removed without impairing the radical character of the fold thus produced. Hats with their brims thus far operated upon are thereafter subjected to other operations in other machines devised by me, which in no manner form any portion of the invention herein described.

Referring now to Sheet 6 of the drawings, I will describe my novel method of developing a full-curved brim such as is illustrated in Figs. 17 and 18. This method involves the use of the brim-bed B' , constructed as shown in Figs. 4 and 5, Sheet 4, and Figs. 9 and 10, Sheet 5, in connection with the guide-plate C' , provided with the drooping sides d , hereinbefore described. It will be seen that the expansible ring-sections g operate precisely as before described, and that, as they all move in the one horizontal plane, the drooping sides d of the guide-plate require that the brim-bed B' be recessed to accommodate them, and that the ends of the brim-bed are inclined so as to bring the ends of the brim into a plane closely approximating to that in which the expansible ring is located, it being understood that the top of the guide-plate C' is flat and smooth. With a hat in position and the expansible ring operated as before described, the result is a hat, as shown in Figs. 15 and 16, having its folded brim horizontal at its edge, but at its ends upwardly inclined and its sides downwardly inclined, which is exactly opposite to what is required in a finished hat. The hat-brim thus partially curled is developed into a fully-

curled brim while the hat-brim is properly heated by simply drooping the ends, or, in other words, changing their angle from an upward incline to a downward position, as seen in Fig. 17, and this change in the position of the ends of the brim causes the sides to rise and develop a full inward curl, as seen in Fig. 18. In thus developing the final droop of the brim I prefer to employ a sectional brim-mold heretofore devised by me, and shown and described in my application for Letters Patent filed June 24, 1884, Serial No. 135,906; but other more or less similar means may be employed; or it can be done by simply bending the brim downwardly by hand and holding it until cooled, although for practicable and economic results and uniformity in the product a brim-mold should be employed. It will be seen that it is immaterial as to the dimensions of the annular opening in any one guide-plate, so long as it will accommodate the largest-sized hat-crown, and therefore any one plate will serve for all sizes of hats having the same diameter of brim.

Although the working edge of the expansible ring is invariable in its contour, it is not essential that the guide-plate should correspond therewith in outline so long as the ring is sufficiently expanded to receive the plate—as, for instance, a circular guide-plate could be used, although the ring is oval, it being understood, however, that in all cases the hat-brim itself must be large enough to rest at its edge upon and be raised by the ring after the guide-plate has been forced downwardly.

It will be obvious that the thickness and shape of the edge of the folding guide-plate can be indefinitely varied so long as the brim-bed be adapted to receive it with a brim interposed between them; and although it is deemed preferable that the top of said plate should be flat and in a horizontal plane, it can be somewhat varied in that respect, because it will be seen that the inner edge of the expansible folding-ring is capable of being lifted, and the springs of each section will enable pressure to be applied to all of the sections, it being obvious that the section-springs, would operate sufficiently for those sections which were over the lower portions of said plate, and the springs of such of the sections as were over higher portions of said plate would only co-operate with a little more pressure than would be actually needed, and without any detrimental effect upon the felt.

Of the several machines which I have organized embodying more or less of the several features of my invention more or less modified in construction, I obtain the best results with a machine organized substantially as herein shown and described; and it is to be understood that I do not limit myself to the precise construction and arrangement of the several parts of the machine illustrated, as I am well aware that many of the novel features may be employed in machines otherwise organized.

In lieu of the links and levers shown for working the folding-ring sections, variously well-known and generally equivalent mechanism has been employed by me, as hereinbefore indicated, in similar connections—as, for instance, eccentrics or scroll-shaped slots or sliding wedge-blocks, all of which will be found in machines for hat-work heretofore devised by me, in which sections of cylindrical and oval structures are simultaneously moved in radial lines; and it is obvious that an expansible hat-block such, for instance, as heretofore patented to me can be employed in this machine without departure from my present invention.

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

1. The method, substantially as hereinbefore described, of developing curls in hat-brims by first folding the edge of a heated brim at its ends while extended upwardly, and partially curling the sides of the brim while drooped, and then drooping the ends of the brim, as described, for causing the drooped sides to turn upwardly and developing their partial curl into a full curl.

2. The combination, substantially as hereinbefore described, of a hat-brim bed having a brim-supporting surface higher at its ends than at its sides, a brim-folding ring, and a brim-folding guide-plate having drooping rounded sides, whereby the edge of a hat-brim is folded at its ends while inclined upwardly, and its sides partially curled and drooped, as set forth.

3. In a brim-curling machine, a brim-supporting bed inclined upwardly at its ends and depressed at its sides, substantially as described.

4. The combination, substantially as hereinbefore described, of a stationary brim-supporting bed, an expansible and contractible brim-folding ring, and means, substantially as described, for forcing the working edge of the ring downwardly toward the brim-bed and upon an interposed folded brim while said ring is in a contracted condition, as set forth.

5. The combination, with the stationary hat-brim bed, of an expansible and contractible brim-folding ring composed of continuously-interlocked sections which are movable in radial lines over said bed, and also at right an-

gles from and toward said bed, substantially as described.

6. The combination, substantially as hereinbefore described, of a stationary brim-bed, the expansible and contractible brim-folding ring composed of sections, mechanism, substantially as described, for moving said sections radially, and mechanism, substantially as described, for forcing said ring at its inner or working edge toward the brim-bed.

7. The brim-folding ring composed of radially and vertically movable sections, in combination with the links pivoted to said sections, the vertically-movable annular plate pivoted to the opposite ends of said links, the bell-crank levers loosely coupled to said links, and the vertically movable annular cross-head by which said bell-crank levers are vibrated, substantially as described.

8. The combination of the hat-brim bed, the expansible and contractible brim-folding ring, the treadle by which said ring is expanded and contracted, and the adjustable stop for variably limiting the expanding movement of the ring, substantially as described, whereby said ring can be adjusted to operate as an edge-lifting ring for brims of various sizes.

9. The combination of the radially-movable brim-folding ring-sections, their links, the annular plate to which said links are pivoted, and the hand-lever by which said ring is raised and lowered, substantially as described.

10. The combination of the brim-folding ring-sections, their links provided with adjustable springs, the annular plate on which said springs are mounted, and the hand-lever for raising and lowering said annular plate, substantially as described.

11. The combination, substantially as hereinbefore described, of the hat-brim bed, the brim-folding ring, and the guide-plate mounted on an annular hub and organized to be moved toward and from the brim-bed.

12. The combination, with the hat-brim bed and the brim-folding ring, of the guide-plate mounted on a lever having an annular hub, substantially as described.

RUDOLF EICKEMEYER.

Witnesses:

HENRY OSTERHELD,
THEODORE OSTERHELD.