

(No Model.)

4 Sheets—Sheet 1.

C. EICKEMEYER.
HAT BRIM CURLING MACHINE.

No. 579,744.

Patented Mar. 30, 1897.

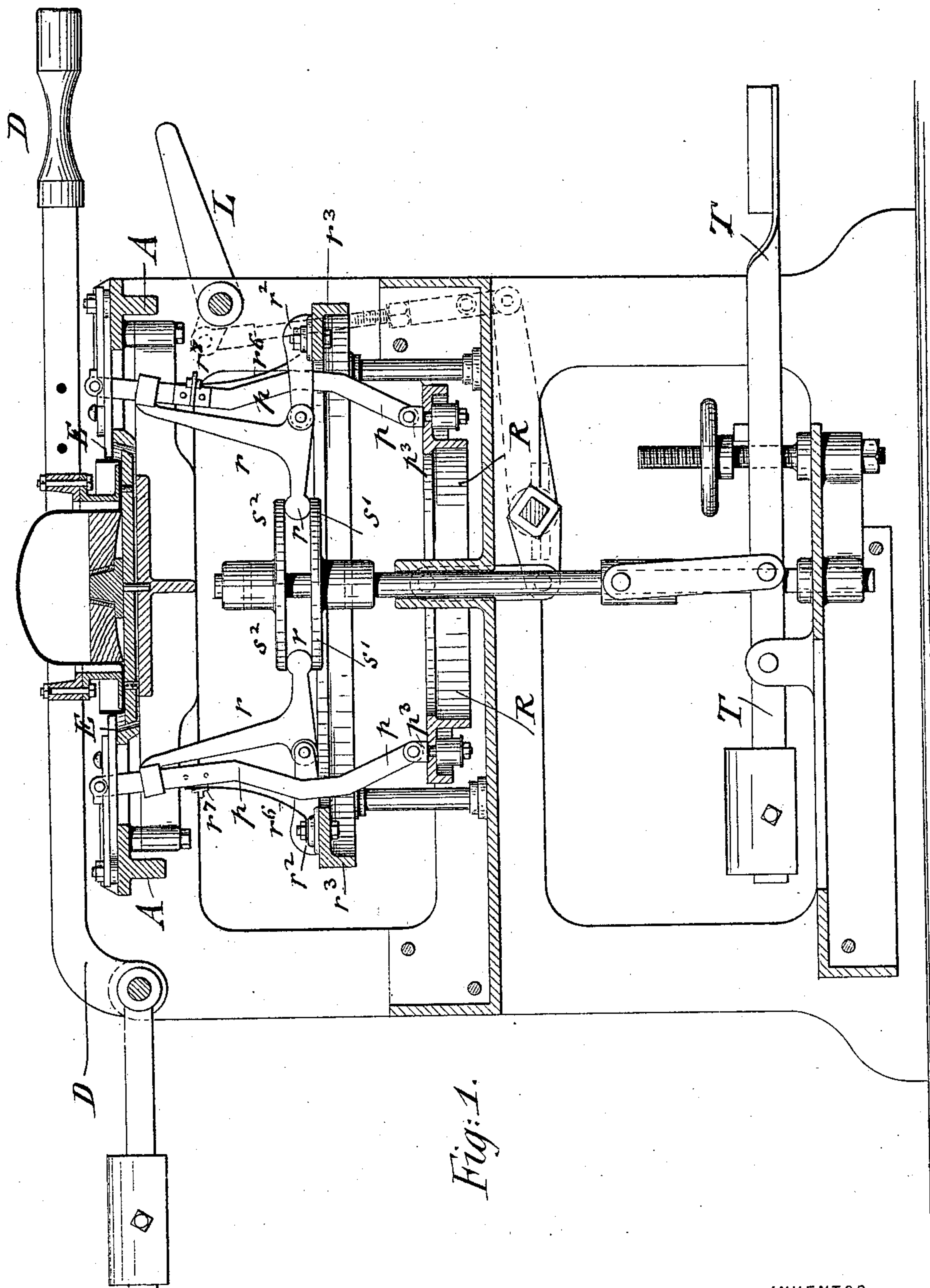


Fig. 1.

WITNESSES:

D. P. Palmedo
J. A. Jackel

INVENTOR

Carl Eickemeyer

BY

Samuel R. Rogers
ATTORNEYS.

(No Model.)

4 Sheets—Sheet 2.

C. EICKEMEYER.
HAT BRIM CURLING MACHINE.

No. 579,744.

Patented Mar. 30, 1897.

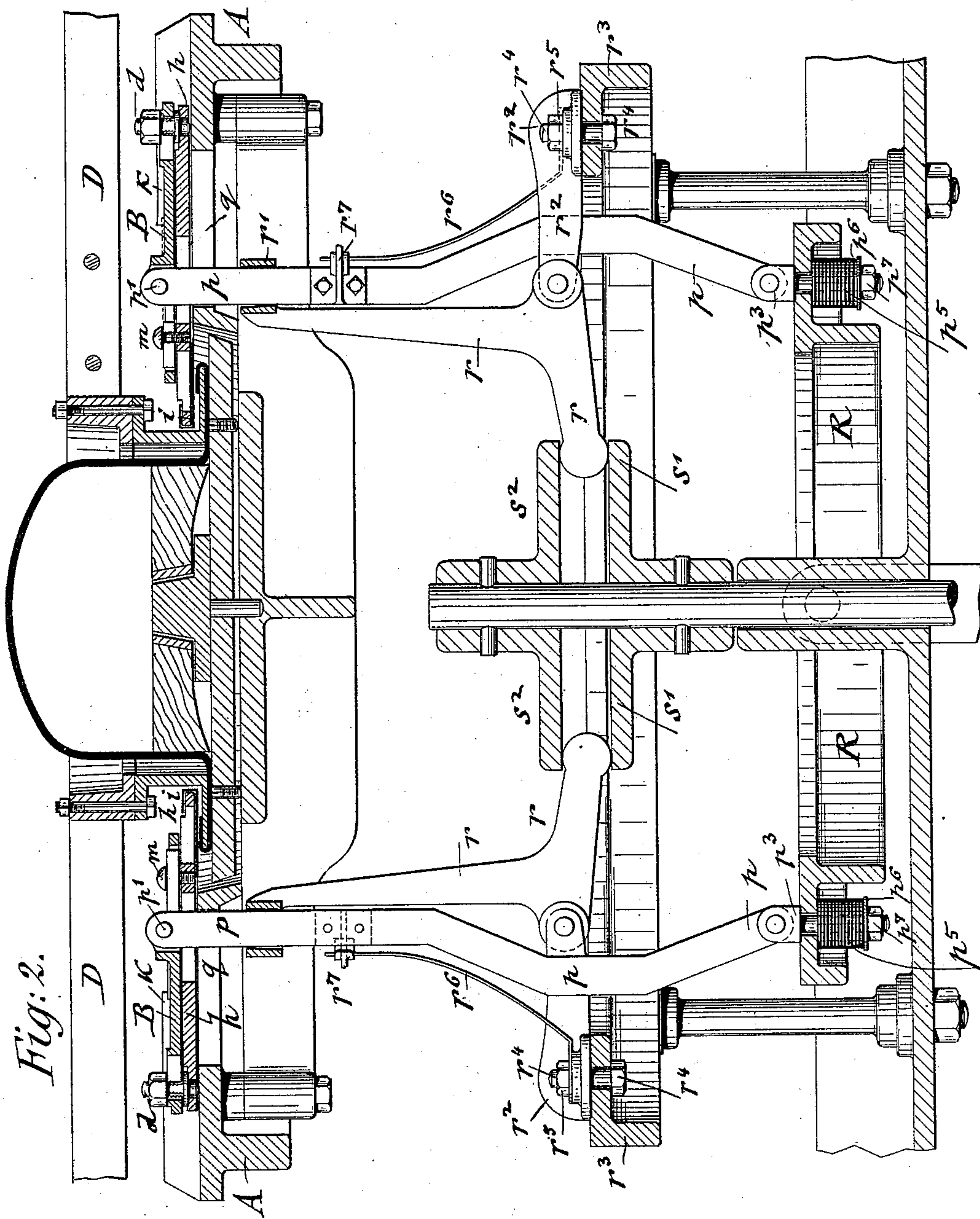


Fig. 2.

WITNESSES:

D. Petri Palmedo.
Geo. H. Jackel.

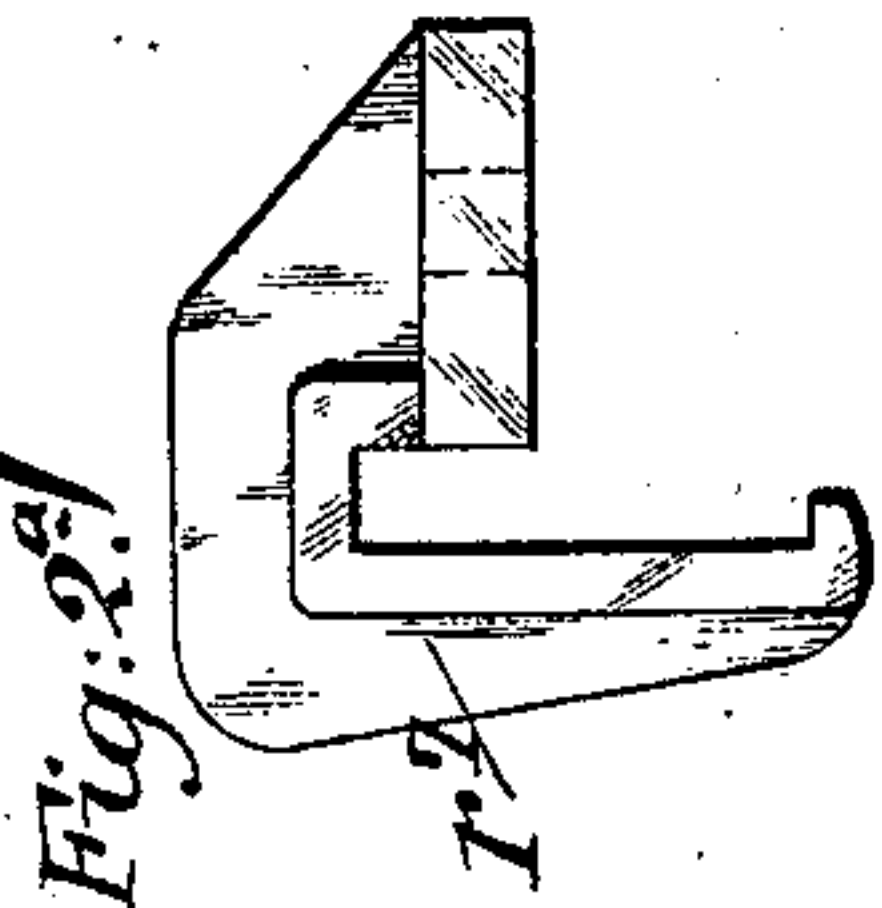


Fig. 2a.

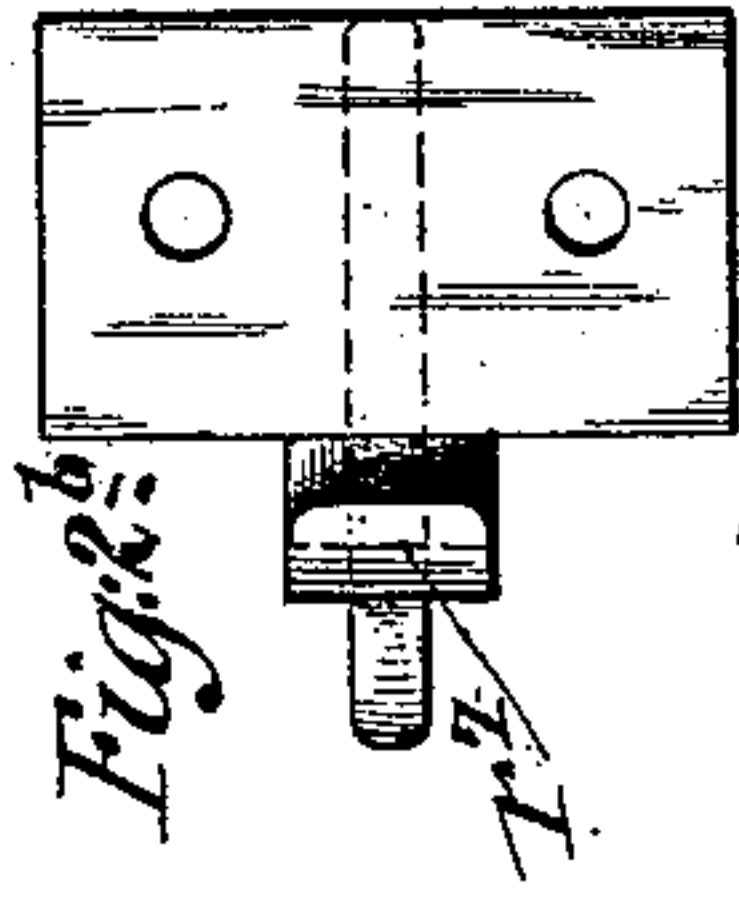


Fig. 2b.

INVENTOR

Care Eickemeyer
BY *Grace & Paeguer*
ATTORNEYS.

(No Model.)

4 Sheets—Sheet 3.

C. EICKEMEYER.
HAT BRIM CURLING MACHINE.

No. 579,744.

Patented Mar. 30, 1897.

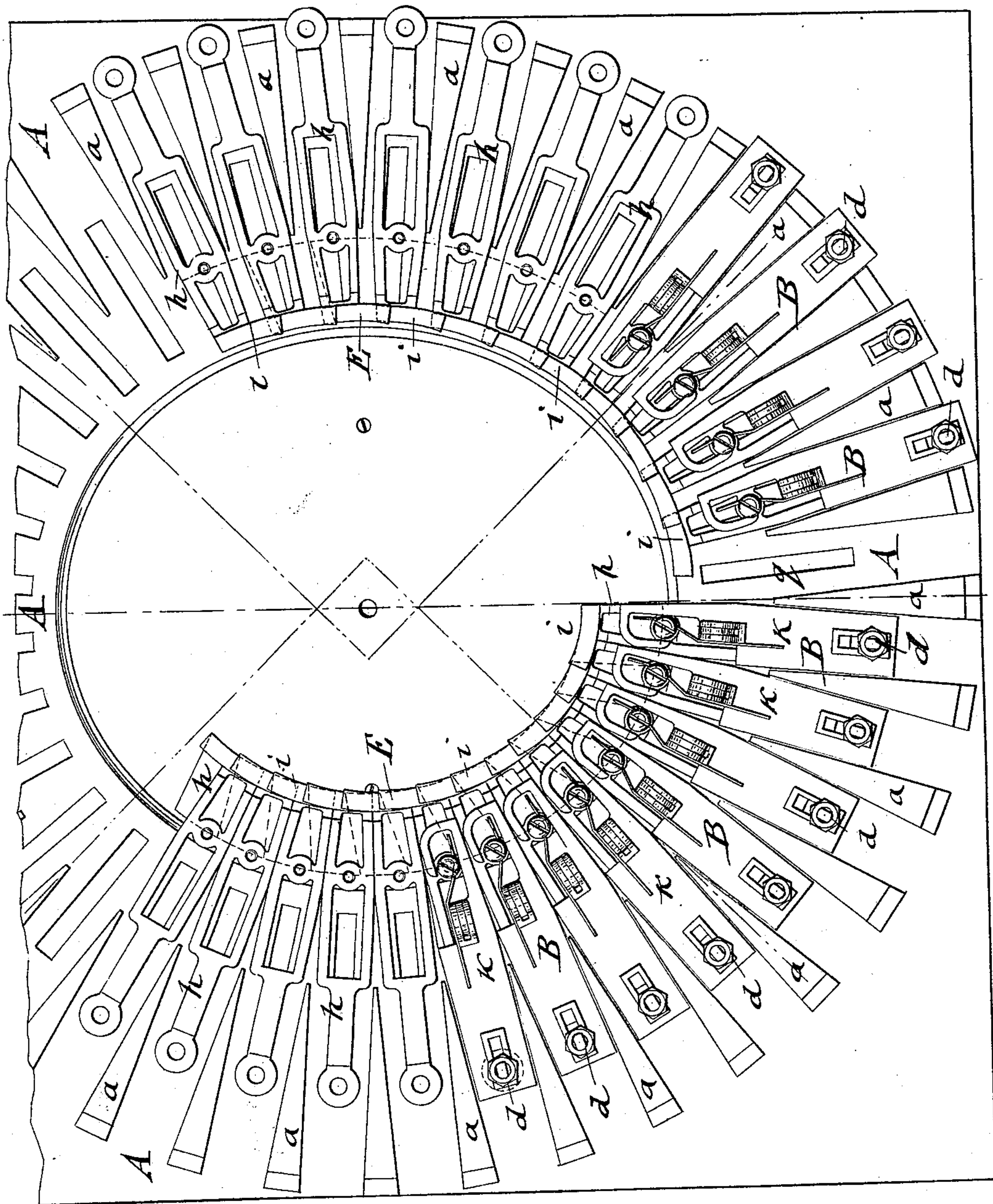


Fig. 3.

WITNESSES:
D. Petri-Palmedo
G. J. Jackel

INVENTOR
Care Eickemeyer
BY
Gorrell Paegener
ATTORNEYS.

(No Model.)

4 Sheets—Sheet 4.

C. EICKEMEYER.
HAT BRIM CURLING MACHINE.

No. 579,744.

Patented Mar. 30, 1897.

Fig. 4.

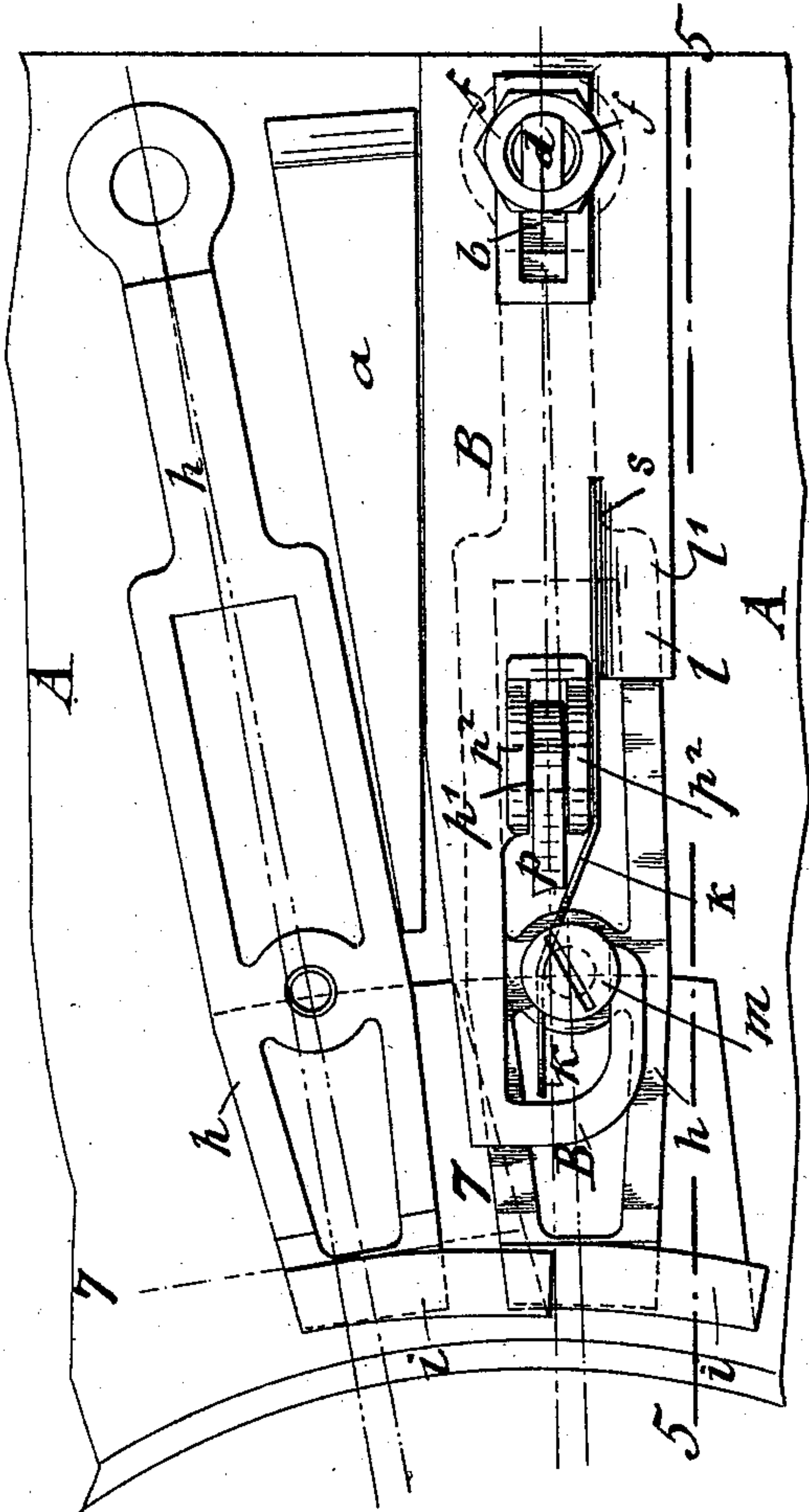


Fig. 5.

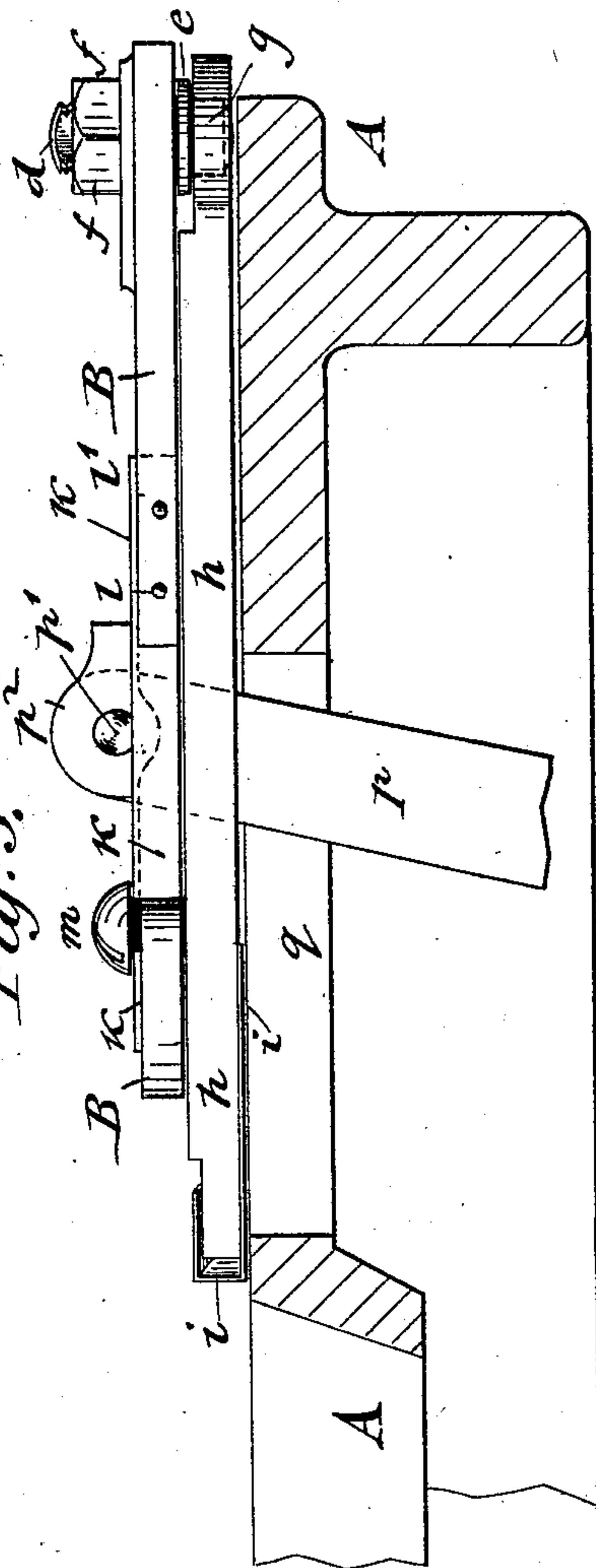


Fig. 7.

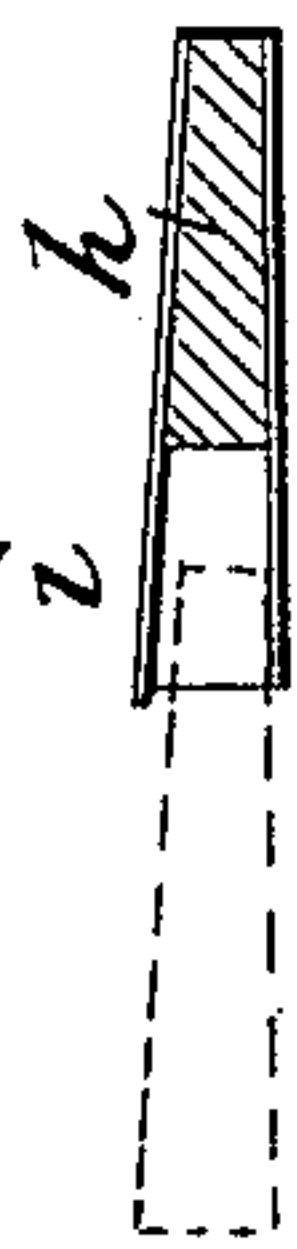


Fig. 6.

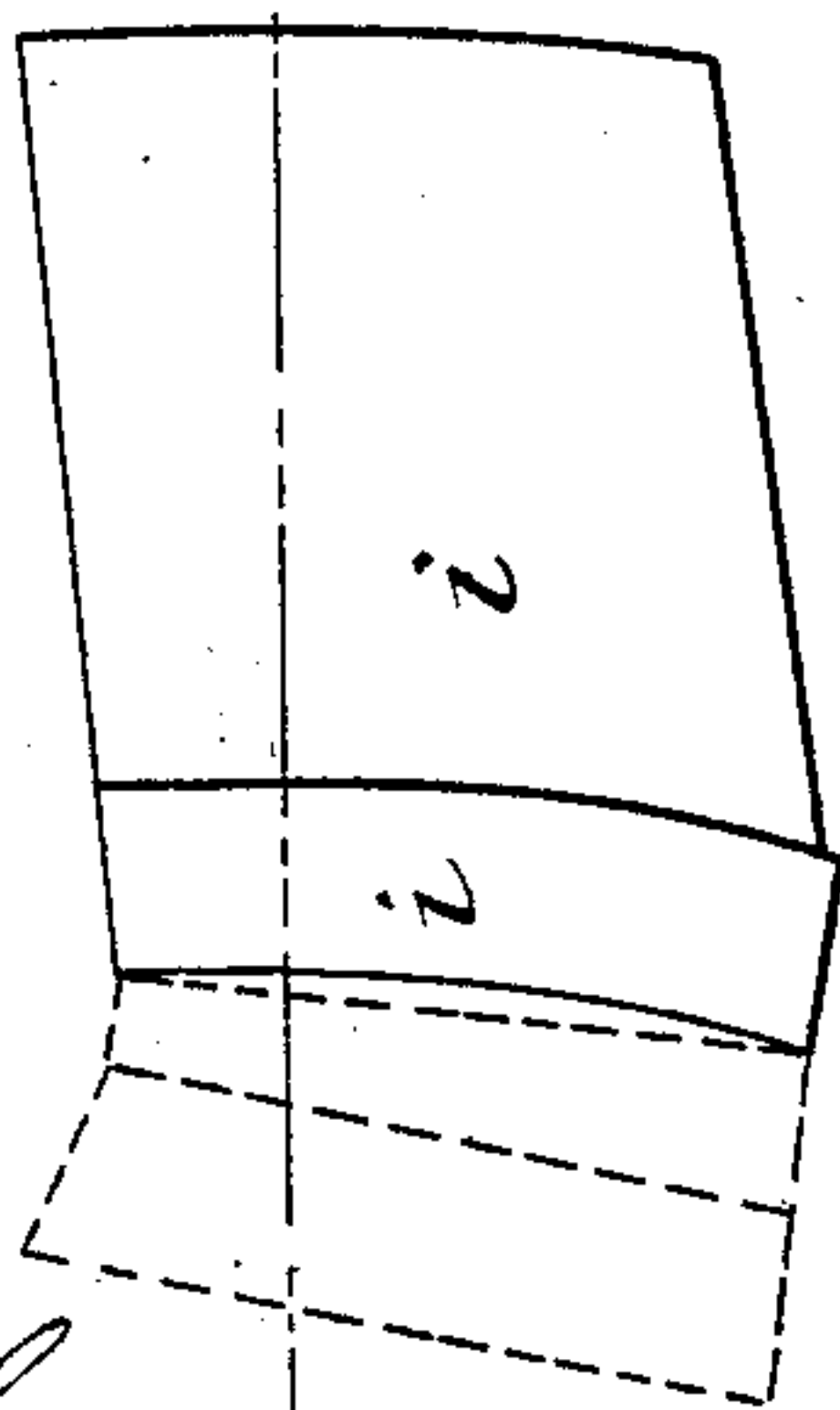
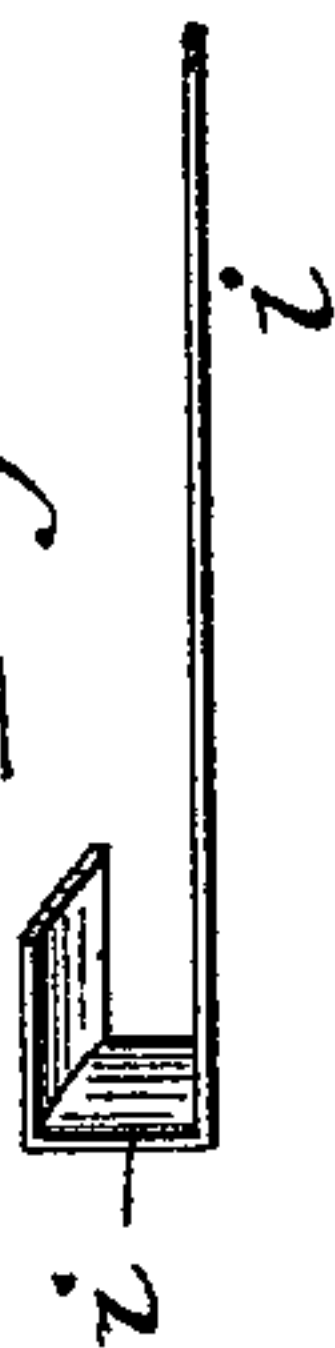


Fig. 8.



WITNESSES:
G. H. Jaekel
R. F. Pelouze

INVENTOR
Care Eickemeyer
BY
James H. Rogers
ATTORNEYS.

UNITED STATES PATENT OFFICE.

CARL EICKEMEYER, OF YONKERS, NEW YORK.

HAT-BRIM-CURLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 579,744, dated March 30, 1897.

Application filed July 21, 1896. Serial No. 600,058. (No model.)

To all whom it may concern:

Be it known that I, CARL EICKEMEYER, a citizen of the United States, residing in Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Hat-Brim-Curling Machines, of which the following is a specification.

This invention relates to certain improvements in that class of hat-brim-curling machines in which the hat-brim is folded over a guide-ring or matrix by means of a contracting and expanding brim-folding ring, by which, after folding, pressure is exerted on the edge of the brim, which allows the same to set while cooling to the shape of the matrix, as is fully described in Letters Patent granted heretofore to Rudolf Eickemeyer for curling hat-brims and machine therefor, No. 308,759, dated December 2, 1884.

Instead of the brim-folding contracting and expanding ring described in the patent referred to I have devised an improved ring which forms practically a continuously-closed curve on its inner or oval surface in all its positions during its passage from its expanded to its contracted position. This improved ring further gives also an unbroken surface on its under side in all positions during its expanding and contracting operation and likewise an unbroken surface on its upper side. The ring thus operating on the brim of the hat allows no folds or wrinkles to form on the edge of the curl, which was the case with the ring described in the patent before referred to. The spaces which existed between the fingers that formed the folding-ring in said patent have been entirely obviated in the new ring by the use of interlocking forms of thin sheet metal, which form hollow and slightly wedge-shaped pieces, and which when the folding-ring is contracted are permitted to slide into each other, so that one is partly overlapped by the adjacent one. Of these interlocking wedge-shaped forms about thirty-six are arranged, which are mounted on the inner ends of levers that are pivoted at their outer ends to sliding carriers, which move radially in wedge-shaped guides in the top plate of the machine. By the pivoted levers the wedge-shaped forms are permitted to move tangentially to the oval of the brim-

folding ring, of which they form a part, which motion is accomplished automatically by means of springs on the sliding carriers which continuously press on screws near the outer ends of the form-carrying levers. This pressure keeps the inner surface of the wedge-shaped form of one pivoted lever in tight contact with the wedge-shaped form of the adjacent lever, one form overlapping partially the wedge-shaped form of the adjacent lever and which overlapping increases as the ring passes from its expanded to its contracted position.

The sliding carriers are pivoted to the upper ends of levers which are pivoted at their lower ends to a stationary ring, so as to produce a lifting motion of the carriers for releasing the pressure of the brim-folding ring after the hat-brim has been cooled and set on the matrix. The lower ends of the levers are pivoted to vertically-sliding eye-bolts, which are held in position on the stationary ring by rubber cushions, as in the patent heretofore referred to. The upper ends of the pivoted levers are readily adjusted by means of screw-bolts, which are applied to the slotted outer ends of the sliding carriers and held tightly in position by suitable nuts, which adjustment is designed with reference to the oval of the folding-ring, in order that the contour of the same may be changed to any desirable oval corresponding to the oval of the matrix.

To prevent any loss of motion in the bearings of the levers operating the sliding carriers, flat springs are arranged, which are attached at their lower ends to the stationary supporting-ring, their free ends engaging keepers or guides on the upper portions of the bell-crank levers, by which the radial motion of the sliding carriers is produced. These springs render the motion of the parts of the folding-ring as positive as possible, so that all the parts move in unison from their expanded to their contracted position, and vice versa. The flat springs are fastened by means of bolts and nuts to the stationary supporting-rings, which also form the support for the bell-crank levers.

In the accompanying drawings, Figure 1 represents a vertical central section of my improved hat-brim-curling machine, the parts being shown in position before folding over the

rim of the brim. Fig. 2 is a similar section, drawn on a larger scale, showing the parts in position after the rim of the brim is folded over. Figs. 2^a and 2^b are a top view and an end view of the keeper or guide for the spring acting on the bell-crank levers of the sliding carriers. Fig. 3 is a plan view of Fig. 2, showing some of the forms in contracted and the others in expanded position. Fig. 4 is a detail plan view of the sliding form-carriers and their pivot connection with the levers. Fig. 5 is a vertical longitudinal section on line 5 5, Fig. 4. Fig. 6 is a top view of one of the wedge-shaped forms, showing the blank from which it is made in dotted lines; and Figs. 7 and 8 are respectively a vertical transverse section on line 7 7, Fig. 4, and a side elevation of one of the forms as detached from the carrier.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the top or main plate of the machine, on which are arranged wedge-shaped guide-pieces *a a*, that are arranged radially, so as to form guides for the sliding carriers B B. Each carrier B is provided at its outer end with a slot *b*, in which is arranged an adjustable pin *d*, carrying a collar *e*, a nut *f*, and bearing *g*, which forms a fulcrum for the lever *h*, located below the carrier B. The screw *d* is flattened on opposite sides, as shown in Figs. 4 and 5, so as to be prevented from turning in the slot *b* when the screw-nut is tightened. To the inner end of each lever *h* is soldered an interlocking wedge-shaped form *i*, which is shown in detail in Figs. 6, 7, and 8. These forms are made from a blank, (shown partly in full lines and partly in dotted lines in Fig. 6,) while Fig. 8 shows the finished blank after the same is shaped over a suitable die corresponding to the radius of the lever *h*, the shank of the form being set off at a suitable inclination from the bent-over wedge-shaped end of the same. The curvature of the overlapping forms *i* corresponds somewhat to the location of the same and to the radius of their respective levers *h*. In a slot *s* of each carrier B is arranged a flat spring *k*, which is held in place by two pins or rivets *l l'*, (see Figs. 4 and 5,) the heads of which prevent any vertical motion of the spring. The spring *k* forms at the same time a support for the lever *h* by means of the head of the screw *m*, which is screwed into a socket of the lever *h*, and the head of which bears on the upper edge of the spring *k*, as shown clearly in Fig. 5.

A radial and vertical motion is imparted to each carrier B by means of a lever *p*, which is pivoted at its upper end to a pivot-pin *p'*, as shown clearly in Figs. 2, 4, and 5. The pivot-pin *p'* is supported in bearings of parallel ears *p²* on each carrier B. The lever *p* is guided in a slot *q* of the main plate A of the machine and in a sleeve *r'* at the upper end of a bell-crank lever *r*, which is fulcrumed to a radial bracket *r²*, that is attached to a sta-

tionary bracket-supporting ring *r³* by means of a bolt *r⁴* and nut *r⁵*. The nut *r⁵* holds in position on the bolt *r⁴* the lower end of a flat spring *r⁶*, the upper end of which acts on a hook-shaped projection of a keeper *r⁷*, which is attached to one side of the lever *p* by means of suitable fastening-screws. The spring *r⁶* takes up any lost motion of the lever *p* and renders its motion positive and reliable. The lever *p* is pivoted at its lower end to an eyebolt *p³*, which has a slight vertical motion, by means of a rubber cushioning-sleeve *p⁵*, applied to the shank of the eyebolt and retained in position by a washer *p⁵* and nut *p⁶* on a stationary supporting-ring R, as shown clearly in Figs. 1 and 2.

Vertical motion is imparted to the lower arm of each bell-crank lever *r* by means of two disks *s' s²*, with which it forms a knuckle-joint. The disks *s' s²* are attached to the vertical central shaft of the machine by means of hubs, which are rigidly keyed to the same, as shown in Fig. 2. The vertical motion imparted to the lower arms of the bell-crank levers *r* imparts a horizontal or radial motion to the upwardly-extending arms of the bell-crank levers *r* and to the levers *p*, which are carried by the same. The levers *p* in turn impart a horizontal or radial and a vertical motion to the sliding carriers B, which in turn carry the levers *h*, to the inner ends of which the interlocking forms *i* are applied, which forms together form the expanding and contracting portion of the brim-folding ring.

The operation of my improved hat-brim-curling machine is more or less the same as that in the patent heretofore referred to. It will be seen that the several sections of the contracting and expanding ring are held in a partially-expanded position by means of a weighted treadle T at the lower part of the machine, as shown in Fig. 1, and it has been assumed that said ring has been set so as to fold a brim of a certain diameter when finished. The hat, with this brim approximately trimmed and softened by heat and mounted on a block, is properly located on the hat-bed, so that the brim will equally overlie and be supported on the inner ends of the rim-sections. The weighted hand-lever D is then brought down so that the guide-plate attached to the same will bear upon the upper surface of the brim and force it down on the brim-bed proper, thereby causing the edge of the brim to turn upwardly against the inner edge of the brim-folding ring E, as shown in Fig. 1, thus clamping the main portion of said brim between the brim-bed and the forms. The treadle is then depressed, so that the brim-folding ring is contracted by causing each of its overlapping forms to move inwardly at right angles to the edge of the brim and until the peripheral portion of the brim is folded evenly on the top of the guide-plate, but with the inner edge of said forms slightly elevated by the body held beneath them. The lever L is then depressed, whereby the disks *s' s²*

are also depressed, which act on the bell-crank levers *r* and cause the levers *p* to press the folded felt rim between the forms and the guide-plate, as shown in Fig. 2. The hat-brim remains then for a few seconds in this position of rest, so as to enable it to cool, whereupon the lever *L* is lifted, the treadle *T* released, the lever *D* lifted, and the hat removed.

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

15 1. In a hat-brim-curling machine, the combination of an expanding and contracting brim-folding ring, composed of a series of constantly-overlapping forms, forming a continuously-closed surface on their upper and lower sides and a closed curved or oval surface on their inner face, means for adjusting
20 the individual forms of said ring into any required position, and means for moving the ring into expanded or contracted position, substantially as set forth.

25 2. In a hat-brim-curling machine, the combination with an expanding and contracting brim-folding ring, composed of a series of

overlapping forms, of means for moving the individual forms of the ring into contracted or expanded position and springs connected with said actuating mechanism so as to take
30 up the lost motion in said mechanism and make all the parts of the brim-folding ring move in unison, substantially as set forth.

3. In a hat-brim-curling machine, the combination with an expanding and contracting
35 brim-folding ring, composed of radially-sliding carriers, levers pivoted thereto, wedge-shaped overlapping forms at the inner ends of said levers, springs interposed between the carriers and levers for holding the adja-
40 cent forms in contact with each other, an actuating mechanism for moving the individual forms of same into contracted or expanded position, substantially as set forth.

In testimony that I claim the foregoing as
45 my invention I have signed my name in presence of two subscribing witnesses.

CARL EICKEMEYER.

Witnesses:

HENRY OSTERHELD,
GEORGE EICKEMEYER.