

No. 688,875.

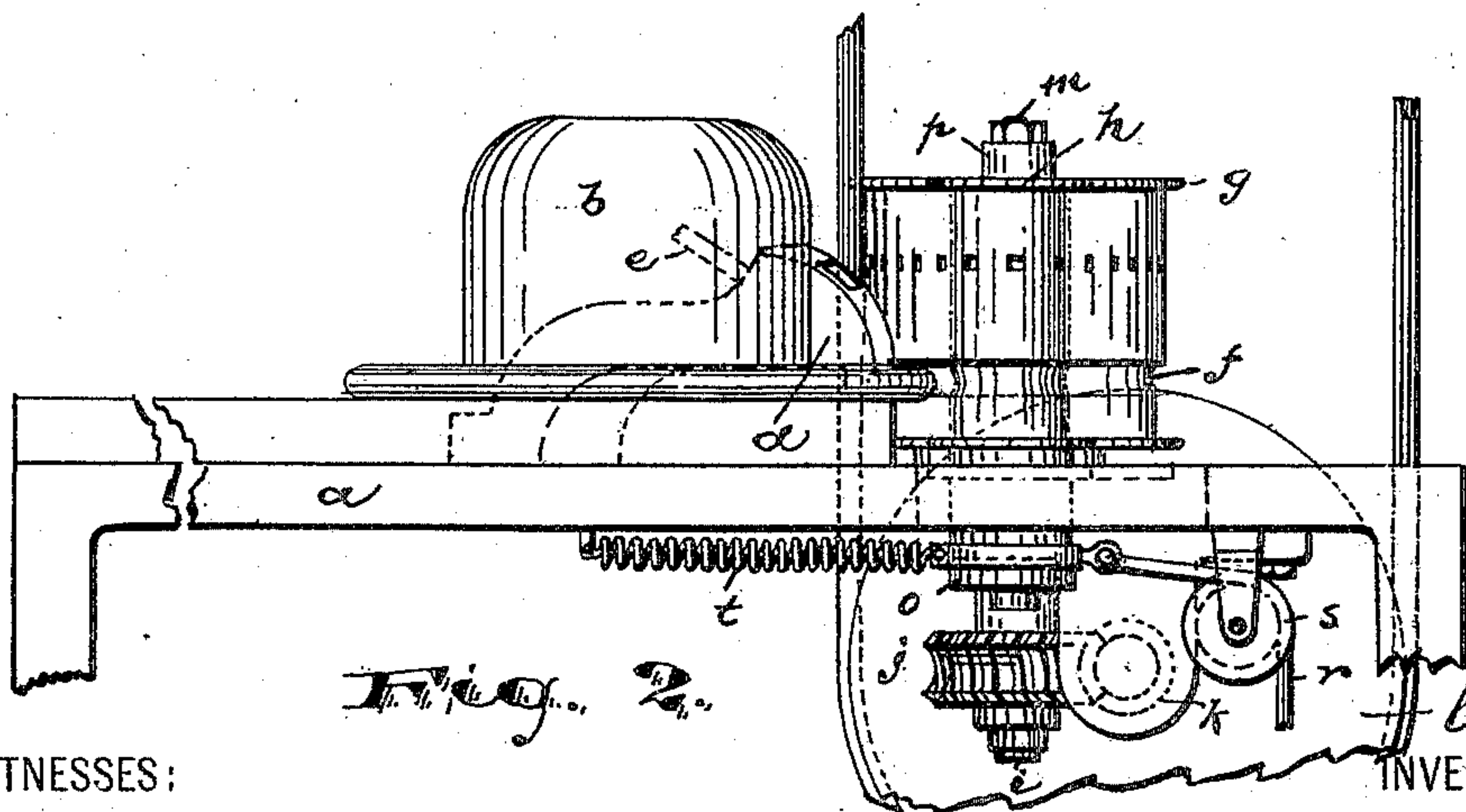
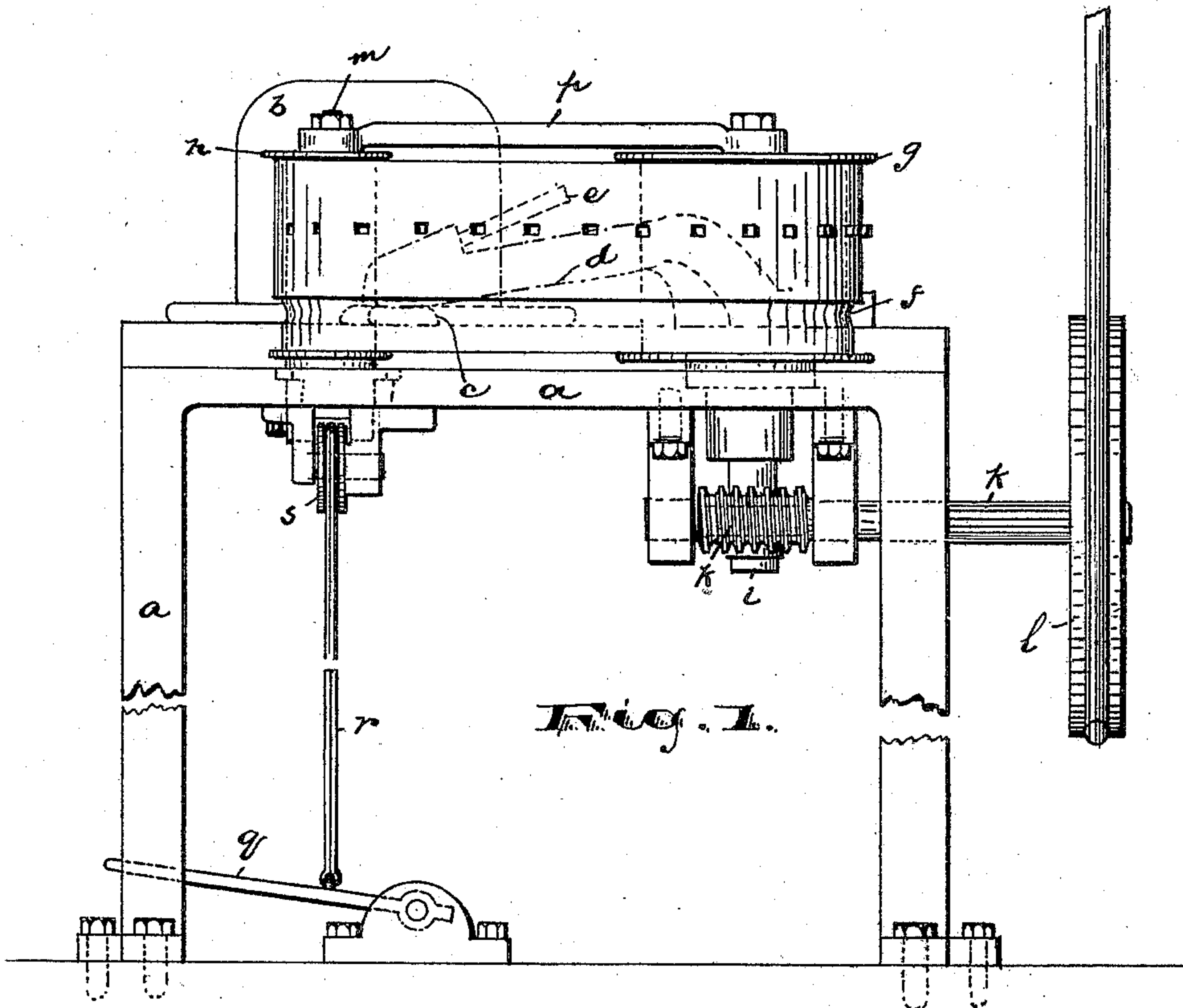
Patented Dec. 17, 1901.

W. J. MCGALL.
HAT CURLING MACHINE.

(Application filed Apr. 9, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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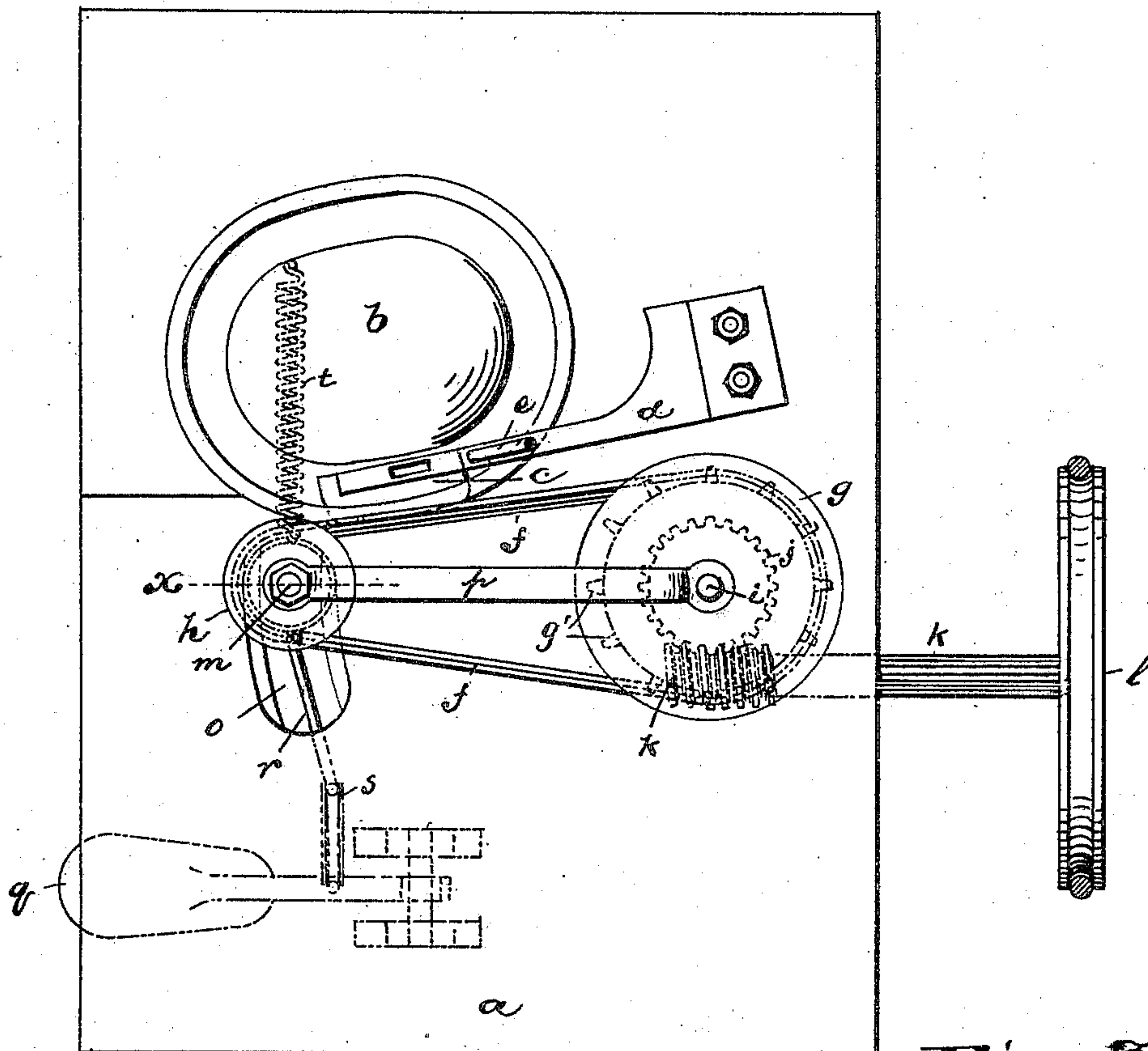


Fig. 3.

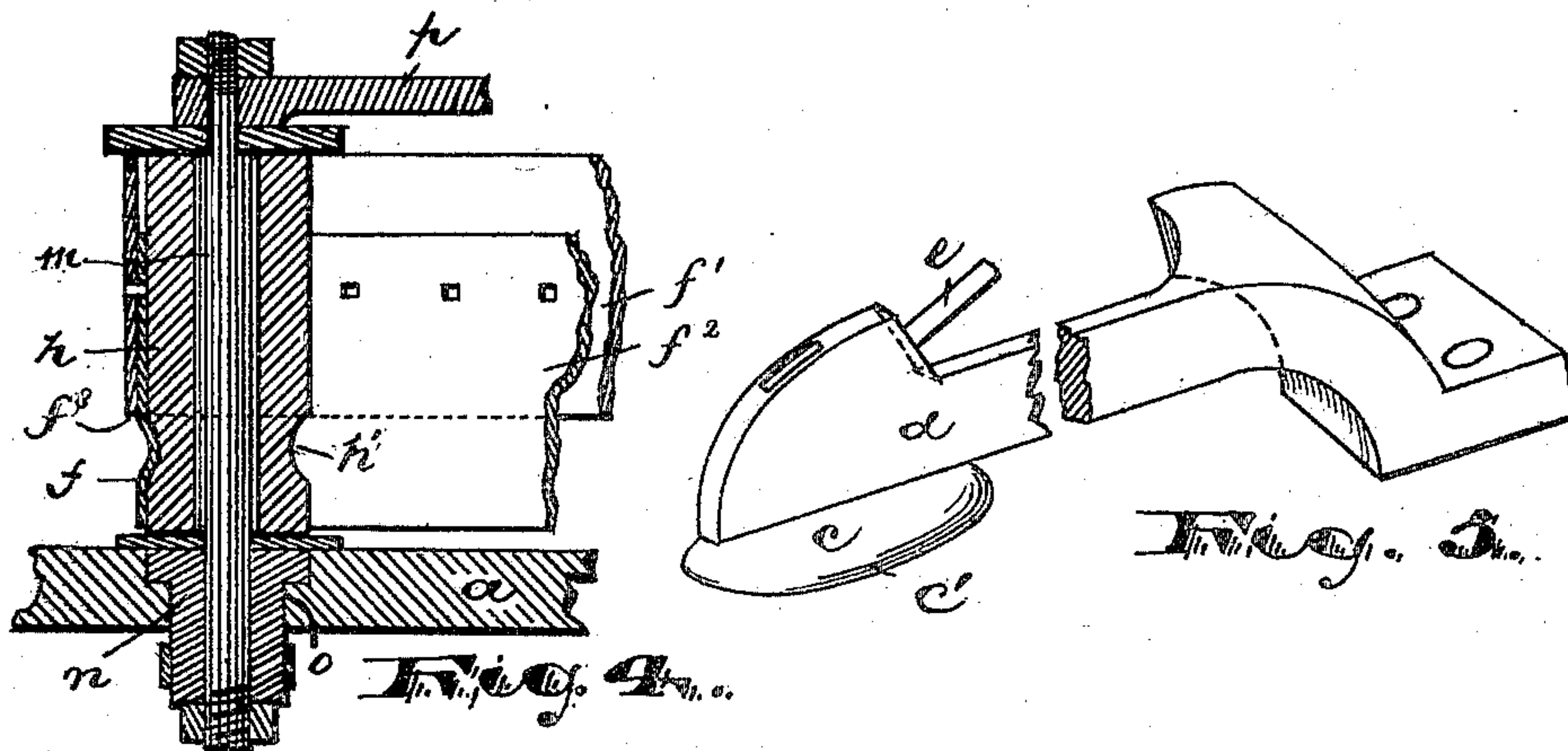


Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM J. MCGALL, OF WEST ORANGE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO MCGALL-IVES-AGAR HAT-CURLING MACHINE CO., A CORPORATION OF NEW JERSEY.

HAT-CURLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 688,875, dated December 17, 1901.

Application filed April 9, 1900. Serial No. 12,054. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. MCGALL, a citizen of the United States, residing at West Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Hat-Curling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The objects of this invention are to reduce the cost of construction, to secure a more simple and convenient curling device, to effect a more perfect curl to the brim and greater freedom from wrinkles therein, to prevent either glazing or roughing of the outer surface of the felt, to provide a longer bearing of the curling-iron against the felt and thus more effectually prevent stretching and weakening of the felt in the curling operation, to effect a more rapid curling, and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved hat-brim-curling machine and in the arrangements and combinations of parts, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a side elevation of the improved machine. Fig. 2 is a front view of the same. Fig. 3 is a plan. Fig. 4 is a detail section taken on line *x* of Fig. 3, and Fig. 5 is a perspective view of the curling iron or tool and its support.

In said drawings, *a* indicates a suitable frame or table providing bearings for the working parts, and on which the hat *b* is supported during the curling operation. Above said table is arranged a curling-tool *c*, carried by an arm *d*, rigidly fastened upon said table and extending upward and horizon-

tally to a point near to a cooperating curling-belt, where it is provided with a seat for the removable curling-tool. Said tool *c* extends laterally and horizontally from said carrying-arm and lies at its rounded curling edge *c'* parallel or approximately parallel with the said curling-belt, and thus is adapted to present an extended curling-surface to the concavity of the brim particularly effective in rendering the curl durable.

To keep the curling-tool hot, the tool-carrying arm is made hollow and is supplied with a duct *e* for a mixture of inflammable gas and air.

The curling-belt *f* is preferably of rubber and is arranged over pulleys *g h*, the driving-pulley *g* being arranged on a vertical shaft *i*, having bearings in the table, and at its lower end extending below the table and thereat provided with a threaded worm-wheel *j*, which in turn is driven by a worm-shaft *k*, having the main driving-pulley *l*.

The rotation of the shaft *k* at a rapid rate of speed serves to rotate the worm-wheel *j* and belt-shaft *i* at a slow rate, so that the driving-pulley *g* and belt *f* are driven slowly to effect the results hereinafter described.

The small pulley *h*, upon which the belt *f* is arranged, is on a vertical shaft *m* and is free to oscillate to carry the belt to and from the fixed curling iron or tool. Said shaft *m* is supported at its lower end by a slide *n*, arranged in a segmental slot or slideway *o*, formed in or on the table, and at its upper end said shaft is held at a given distance from the shaft *i* by a rigid arm or connecting-rod *p*. To reciprocate or oscillate the small pulley and its connections, I employ a pedal *q* or other device having a connecting-cord *r*, which runs over an idle pulley *s* to the slide, so that when the foot is pressed upon said pedal said slide moves on its slideway away from the curling-tool against the power of a spring *t*, which last serves to hold the parts in operative curling relation, as hereinafter described.

The curling-belt *f* is preferably in two parts, the outer part *f'* being preferably of leather, so as to be tightly applied to the pulleys and be driven thereby without slipping, and an

inner elastic part f^2 , preferably of rubber or rubber composition, and thus flexible and elastic, and when pressed against the edge of the tool as the belt moves forward lengthwise of said edge the said belt carries the hat forward or turns the same on the table because of the frictional contact and at the same time bends the felt over the tool. The lower edge of the more inelastic part f' of the belt forms a shoulder f^3 , which lies a little above the horizontal plane of the tool, and also serves to press the edge of the curl inward against the top of said tool.

The long heated edge of the tool, rounded in plan and in cross-section, presents an extended surface, which thus serves to set the curl more effectually and give greater permanence thereto.

To further prevent slipping of the belt f , I may provide the driving-pulley with sprockets g' and perforate the belt to receive the same. The pulleys may be grooved, as at h' , to increase the concavity of the curling-belt.

I have shown my invention after the construction, form, and arrangement now preferred; but I am aware that various modifications may be employed without departing from the spirit or scope of the invention.

In operating the device the belt and connections are set in motion and the hat is placed with its brim upon the table. The edge of said brim is then turned upward over the rounded edge of the fixed curling-tool by hand. The pedal is then released from pressure, and the spring t draws the moving belt against the said turned brim, so that the friction causes the hat to travel with said belt. The pressure of said belt against the brim backed by the tool causes the said brim to sink into the belt because of its elasticity and flexibility, and the latter conforms to the curvature or convexity, so that the felt is held smoothly over a considerable surface, holding the felt against any tendency to wrinkle.

Inasmuch as the belt and curled felt travel together, there is no glazing of the outside surface, nor is there any roughing of said surface.

Having thus described the invention, what I claim as new is—

1. In combination, in a curling-machine, of a fixed and heated curling-tool, and a belt arranged over pulleys, said belt being movable lengthwise and movable toward and from said tool, and operating means, substantially as set forth.

2. In a curling-machine, the combination with a fixed curling-tool having heating means, said tool having a rounded curling

edge in cross-section and in plan, of an endless flexible belt arranged to lie approximately parallel with the edge of said curling-tool and movable in a direction parallel with said edge and also movable in a direction at right angles to the first direction of movement and adapted to conform to the curvature of the said tool, and means for operating said belt, substantially as set forth.

3. In a curling-machine, the combination with the fixed curling-tool of an endless belt having a flexible and elastic supplemental belt adapted to engage the convex side of the curled brim, and means for moving said belt lengthwise of said tool, substantially as set forth.

4. In a curling-machine, the combination with the table having a curling-tool fixed thereto and lying above the plane of said table, of a belt-driving pulley arranged above said table and means to operate the same, a second loose pulley also arranged above said table and having in addition to its rotary motion a lateral motion, a belt arranged over said pulleys and adapted to press the felt against said curling-tool, said belt being flexible to yield under pressure and effect a proper curling, substantially as set forth.

5. In a curling-machine, the combination with a fixed curling-tool, of a belt comprising a longitudinal inelastic part, and a longitudinal elastic part to engage the brim, and operating means, substantially as set forth.

6. In a curling-machine, the combination with a fixed curling-tool, of a belt comprising a part having the inelasticity of leather and a part extending longitudinally along the said inelastic part and projecting laterally therefrom and having the elasticity of rubber, the latter part cooperating with the tool to effect the curling, substantially as set forth.

7. In a curling-machine, the combination with a fixed curling-tool, of a pair of pulleys having grooved peripheries, operating means, and a curling-belt stretched over the grooved pulleys, substantially as set forth.

8. In a curling-machine, the combination with a curling-tool, of pulleys, and a belt arranged on said pulleys, said belt having a longitudinal offset or shoulder adapted to press the curled felt over the curling-tool, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of April, 1900.

WILLIAM J. MCGALL.

Witnesses:

CHARLES H. PELL,
C. B. PITNEY.