

No. 776,780.

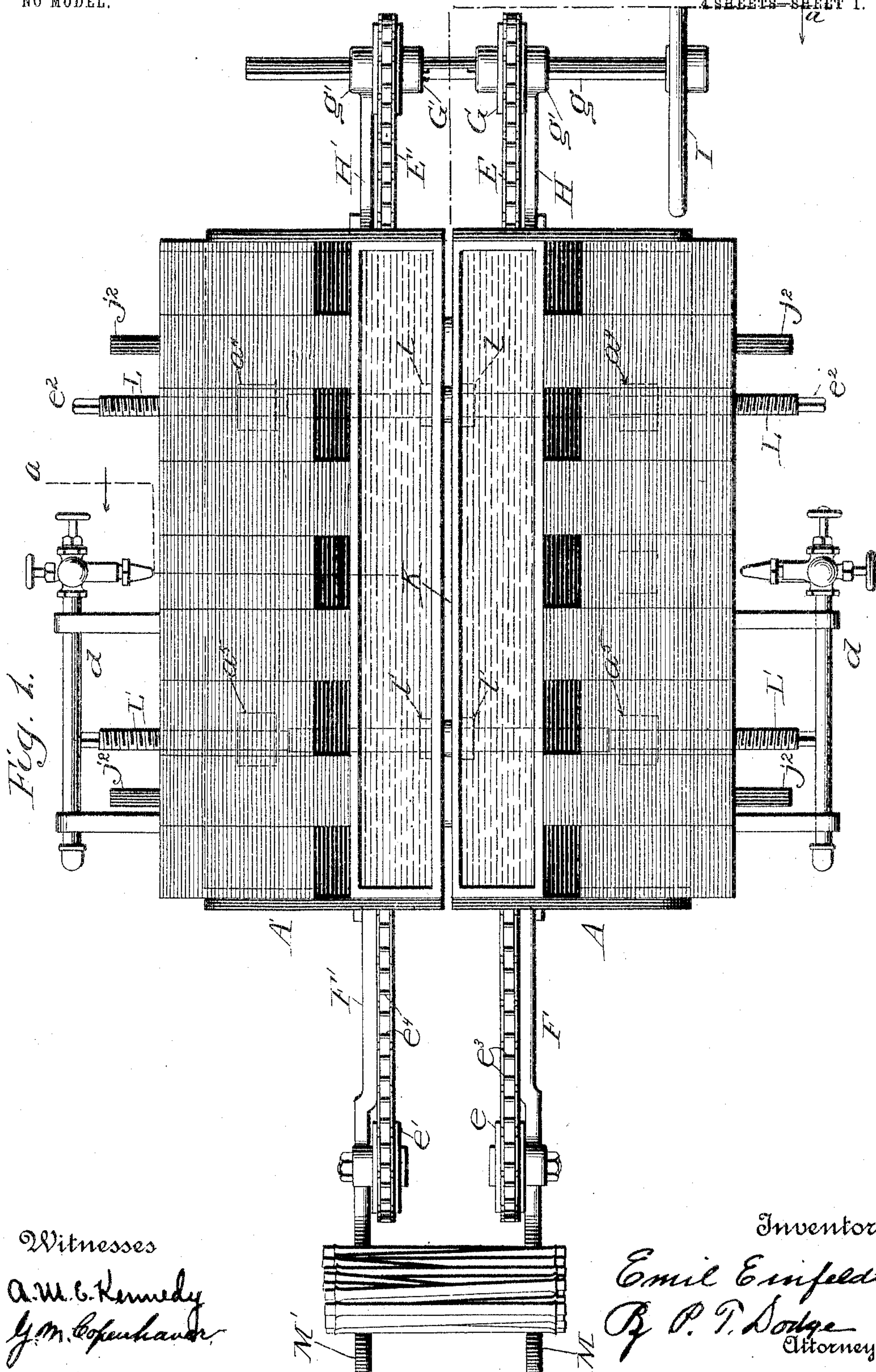
PATENTED DEC. 6, 1904.

E. EINFELDT.
FURNACE FOR HEATING SPOKES, &c.

APPLICATION FILED JUNE 3, 1904.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses

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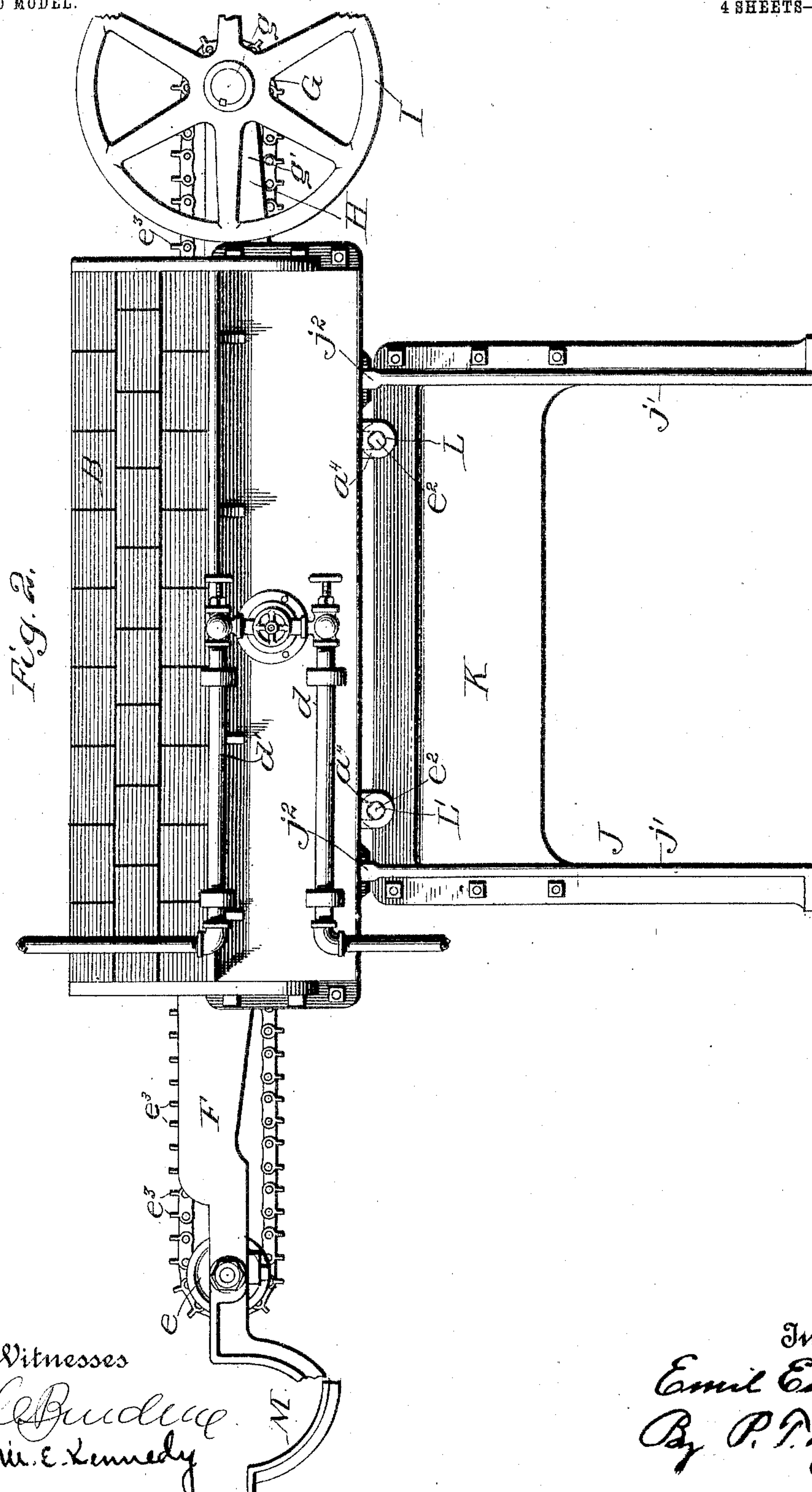
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4 SHEETS—SHEET 2.



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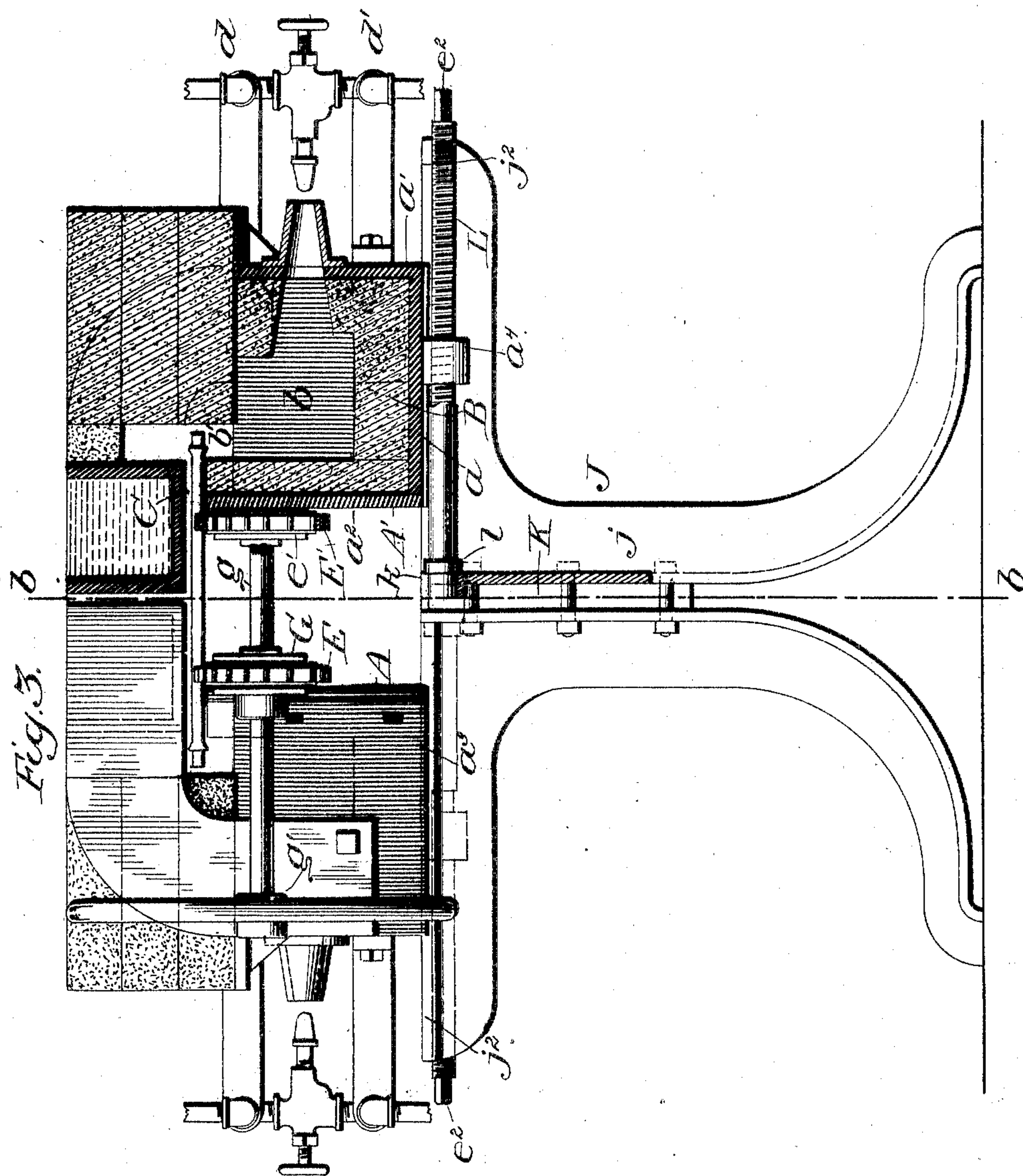
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4 SHEETS—SHEET 4.

Fig. 5.

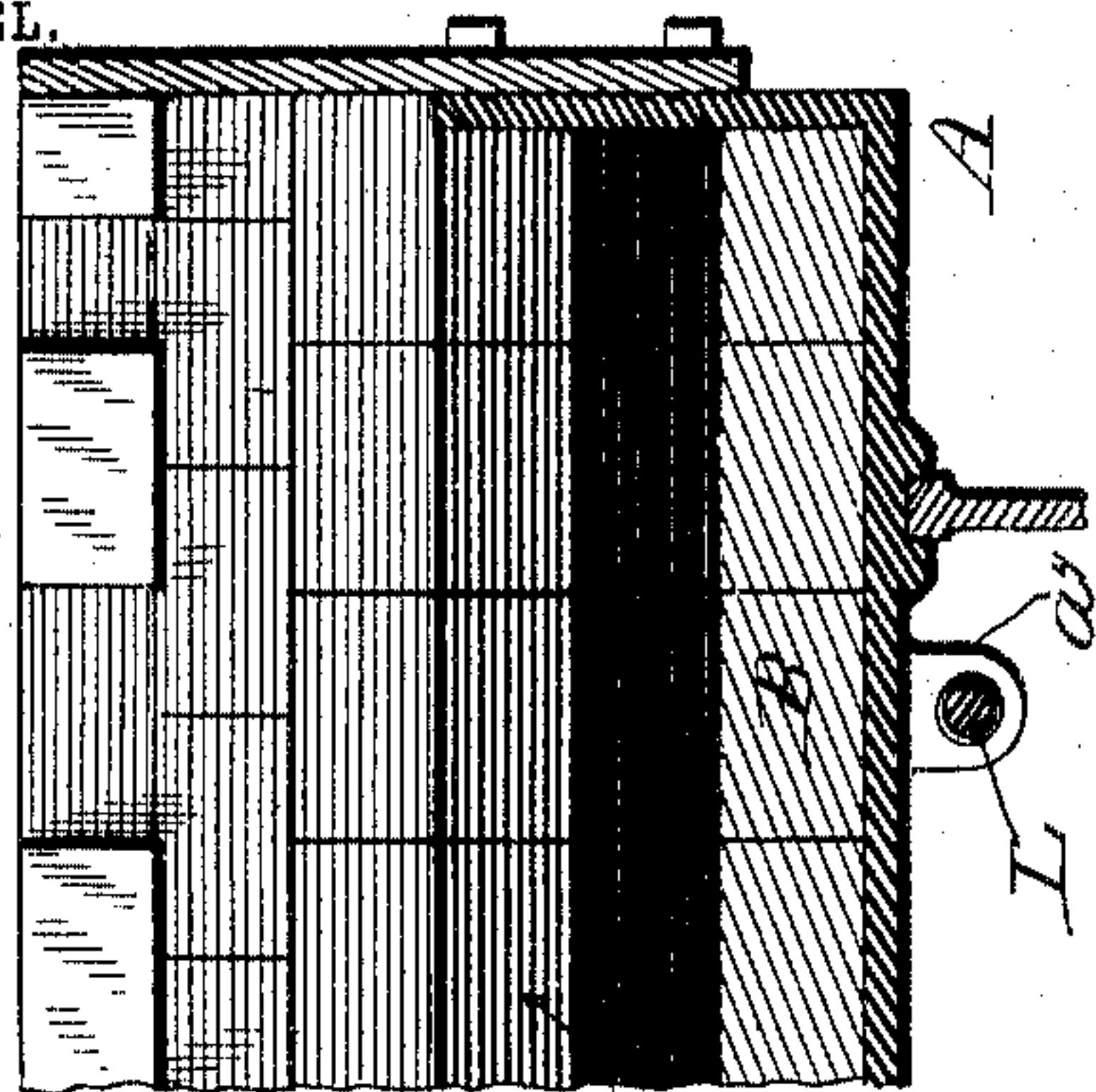


Fig. 6.

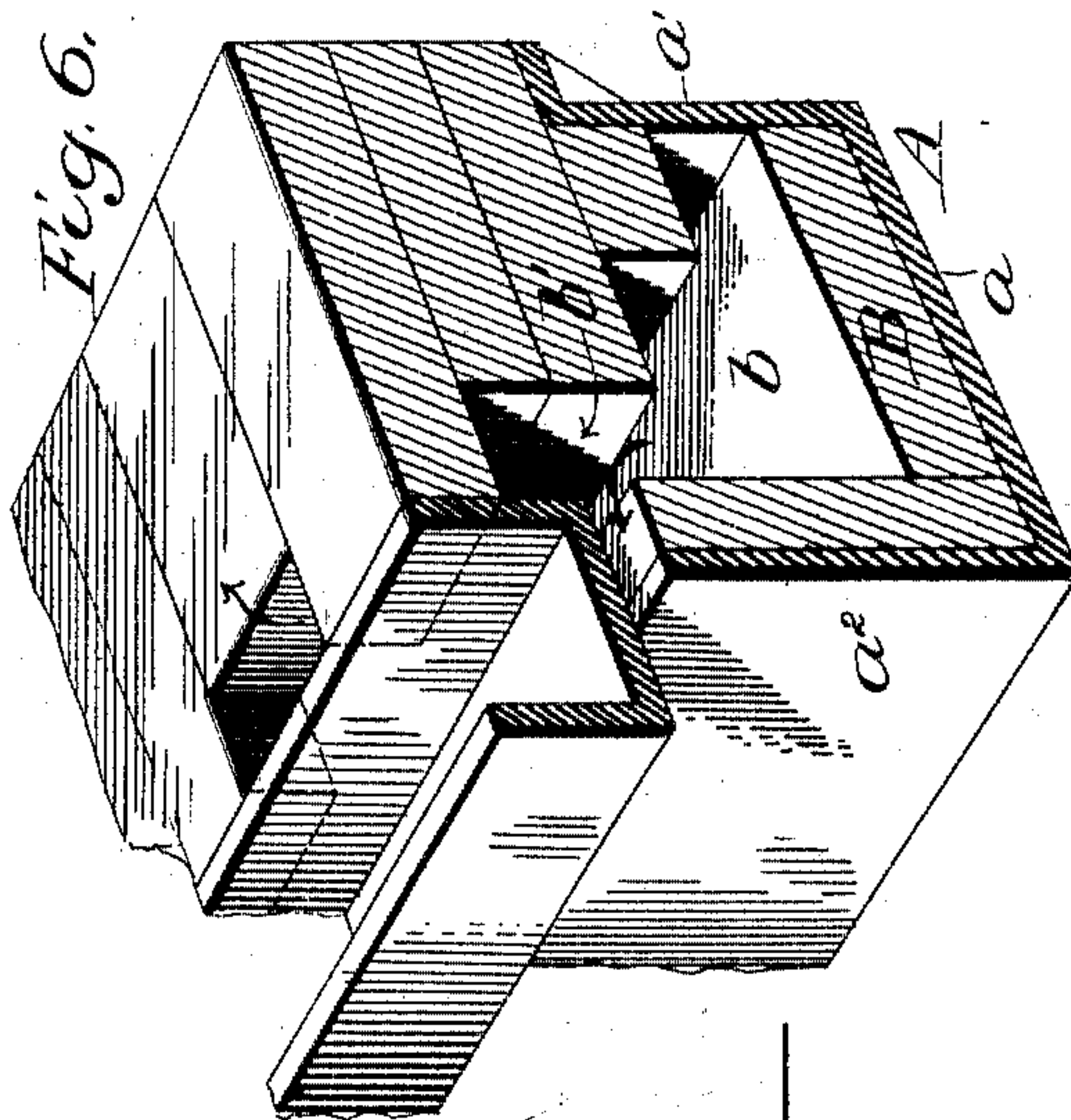
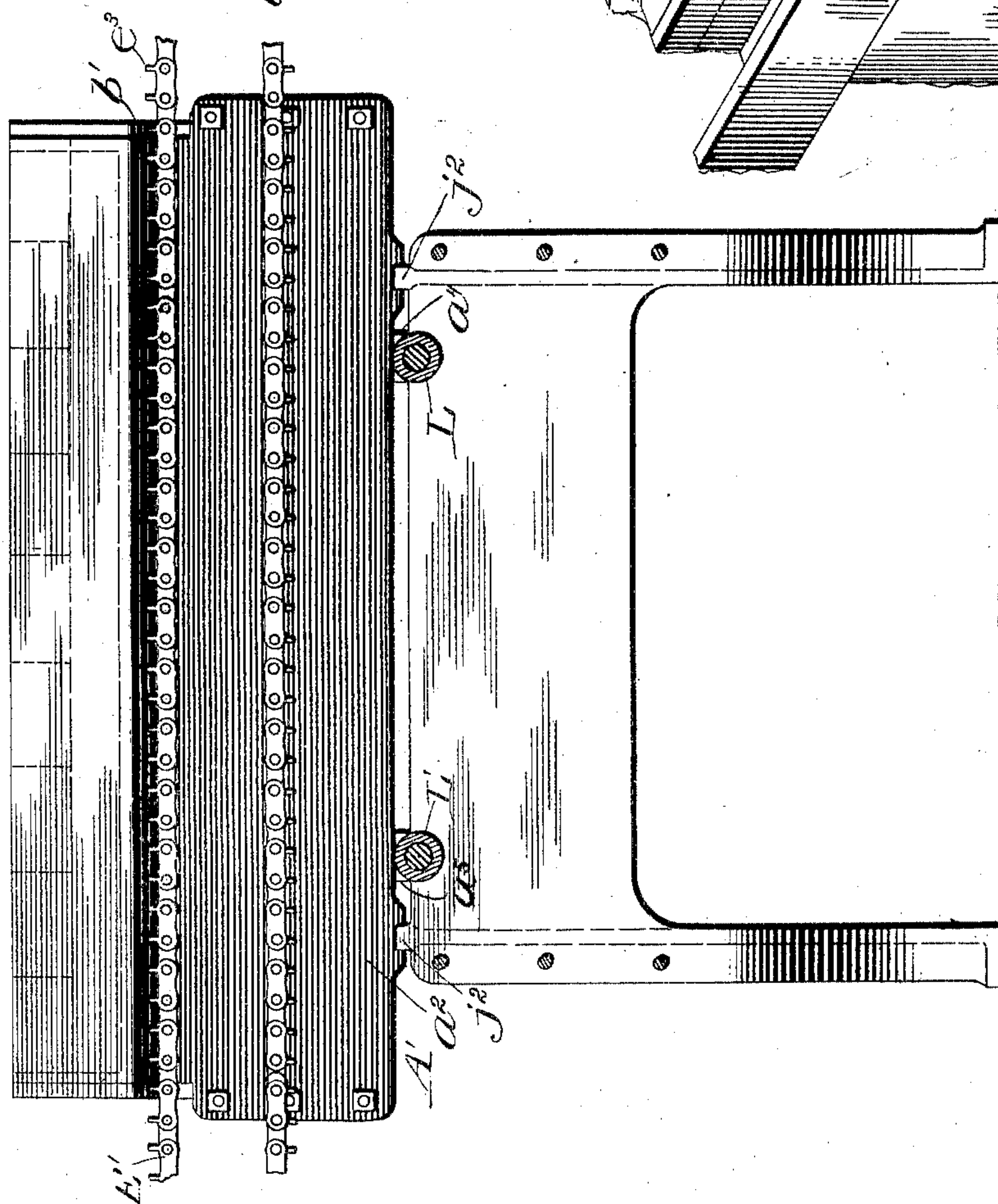


Fig. 4.



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UNITED STATES PATENT OFFICE.

EMIL EINFELDT, OF DAVENPORT, IOWA, ASSIGNOR TO BETTENDORF METAL WHEEL COMPANY, A CORPORATION OF IOWA.

FURNACE FOR HEATING SPOKES, &c.

SPECIFICATION forming part of Letters Patent No. 776,780, dated December 6, 1904.

Application filed June 3, 1904. Serial No. 210,940. (No model.)

To all whom it may concern:

Be it known that I, EMIL EINFELDT, of Davenport, county of Scott, and State of Iowa, have invented a new and useful Improvement in Furnaces for Heating Spokes, &c., of which the following is a specification.

This invention relates to furnaces designed more particularly for heating the ends of metal spokes preparatory to the fastening of the same to the rim and hub of the wheel; and the invention consists in the combination, with means for sustaining the spoke, of heating-chambers for acting on the same, and means for varying the distance between said chambers in the direction of the longitudinal axis of the sustained spoke, to the end that the furnace will be adapted for acting on spokes differing in length.

The invention consists also in the details of construction and combination of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a top plan view of my improved furnace. Fig. 2 is a side elevation of the same. Fig. 3 is a cross-section on the line *a a* of Figs. 1 and 2. Fig. 4 is a longitudinal sectional elevation on the line *b b* of Fig. 1. Fig. 5 is a vertical longitudinal section through one end of one of the heating-chambers. Fig. 6 is a perspective sectional view of one end of one of said chambers.

Referring to the drawings, my improved furnace embodies as its essential elements two oppositely-disposed heating-chambers *A A'*, adjustable to and from each other and adapted to act on the ends of the spokes, and a supporting device *B* for the spokes, which supporting device is adapted to sustain the spokes with their ends in operative relation to the two heating-chambers. The heating-chambers are identical in form and construction and consist each of a base-plate *a*, an outer side plate *a'*, an inner side-plate *a''*, and end plates *a''' a''''*, which plates are firmly connected together and form an elongated frame or casing which is lined with fire-brick *B* or other heat-resisting material. The fire-brick is arranged so to leave a longitudinal passage *b*, extending inward from the outer side of the

casing and then upward, as at *b'*, through the top, the arrangement being such that the end of the spoke projecting into the upwardly-extending passage *b'* through a lateral opening *C* will be subjected to the action of the heating-flame passing upward through the passage. I prefer to employ to produce the heating-flame a mixture of vaporized oil and air, which mixture is introduced under pressure into the passage *b* from pipes *d d'* and, filling the longitudinal passages *b b'*, will find an exit through the top between the fire-bricks, which are spaced apart at this point to form escape-openings. The two heating-chambers thus constructed are sustained side by side, with the lateral openings *C* adjacent, so that the opposite ends of the spoke sustained between the two chambers on the supporting device will extend through the lateral openings and into the field of the heating-flame, passing upward through passages *b'*.

The supporting device for the spokes is adapted to hold them in a horizontal position side by side, as indicated in Fig. 1, and is arranged to advance the spokes in this position wholly throughout the length of the heating-chambers, the action of the flame during their passage serving to heat the ends to the proper degree. This supporting device is preferably in the form of two parallel longitudinally-extending carrying-chains *E E'*, which at the receiving end of the machine pass over idler sprocket-wheels *e e'*, mounted on fixed studs extending inward from the outer ends of two arms *F F'*, whose inner ends are fixed to the inner sides of the heating-chambers, respectively. At the opposite end of the machine the carrying-chains pass over two driving sprocket-wheels *G G'*, splined to a horizontal driving-shaft *g*, mounted to rotate in bearings *g' g''* on the outer ends of two arms *H H'*, fixed at their inner ends to the inner sides of the two heating-chambers, the splined connection of the driving-wheels with the driving-shaft being such that while the wheels will be caused to rotate when the shaft is turned they may be moved relatively and set at will at different points along the shaft for the purpose presently to be described. The

driving-shaft has fixed to its end a hand-wheel I, which when turned as indicated by the arrow, Fig. 2, will rotate the driving-wheels and feed the carrying-chains, thereby advancing the spokes between the two heating-chambers, with their ends in operative relations to the same, which spokes are seated between lugs e^3 e^4 , &c., extending outwardly from the chains and serving to space the spokes uniformly and maintain their proper relations.

In order that the furnace may be adapted for spokes of different lengths, the two heating-chambers are so sustained that the distance between them may be varied to the end that the ends of the spokes acted on may occupy the proper relation to the heating-flame without regard to the length of the spoke. This is accomplished, preferably, by mounting the two heating-chambers on the upper end of a sustaining-frame J in such manner that they may be moved along the said frame to and from each other, a suitable adjusting mechanism being provided for controlling these movements and for holding the chambers fixedly in the adjusted position. The sustaining-frame J comprises a front standard j and a rear standard j' , connected together by a longitudinal central connecting member K, the upper ends of which standards are spread laterally to conjointly form a broad supporting-surface, and they are each formed with a transversely-extending guiding-rib j^2 , which ribs extend in transverse guide-grooves in the under sides of the two chambers, near the front and rear of the same. Each chamber is provided on its under side with two lugs a^4 a^5 , formed each with a threaded opening in which are screwed two long transversely-extending adjusting-bolts L L', held against endwise movement by collars l l' , fixed on said bolts and bearing at the opposite sides of the longitudinal connecting member K, which latter is formed with sockets k to receive and afford a bearing for the bolts at this point. The threads on the opposite ends of the bolts are arranged, respectively, "right" and "left," so that when they are turned to adjust the heating-chambers the latter will be caused to approach or recede, according to the direction of the rotation of the bolts, which may be turned by a wrench applied to the squared ends e^2 of the bolts or by any suitable means. By means of the construction described it will be observed that if the machine is set to operate on spokes of a given length and if it is desired to operate on spokes of a different length, the adjusting-bolts being turned to bring the chambers closer together or set them farther apart, according to the length of the spoke, the two heating-chambers will be moved transversely in opposite directions along the upper ends of the two standards, it being understood that the driving sprocket-wheels are previously released

from the driving-shaft, so that they may be moved with the respective chambers. It will also be observed that when the two heating-chambers are thus adjusted the sprocket-wheels and carrying-chains are simultaneously adjusted, and while their relations to the chambers remain the same they are changed in relation to each other to accommodate the changed length of the spoke.

In order that the spoke to be heated may be conveniently stored within easy reach of the attendant at the receiving end of the furnace, the two longitudinally-extending arms F F' are formed with supporting-arms M M', extending beyond the ends of the supporting-chains and curved downward, so that the spokes to be heated may be supporting *en masse* thereon.

In the operation of the furnace motion may be imparted to the carrying-chains by appropriate means, either by power or by means of the hand-wheel I. The attendant at the receiving end of the machine places the spokes one by one on the carrying-chains between the lugs, which spokes are by the movement of the chains advanced between the heating-chambers with their opposite ends projecting into the field of the heating-flame, and by the time they arrive at the delivery end of the furnace they will be at a suitable temperature for fastening them to the rim and the hub of the wheel.

Having thus described my invention, what I claim is—

1. In a furnace for heating spokes and analogous objects, the combination with opposing heating-chambers formed each with a longitudinal heating-passage, of means for directing a heating agent in said passages, means for supporting and advancing the spokes along said chambers with their ends in the heating-passages, and means for adjusting one chamber with relation to the other in the direction of the length of the spokes.

2. In a furnace for heating the ends of elongated bodies such as wheel-spokes, the combination with opposing heating-chambers adjustable one with relation to the other, of a traveling supporting device for the spokes, said supporting device comprising two relatively adjustable members.

3. In a furnace for heating the ends of spokes and analogous objects, the combination with oppositely-disposed heating-chambers adjustable to and from each other, of two supporting-chains adapted to conjointly carry the spokes to be heated, said chains being sustained by and adjustable with the respective chambers.

4. In a furnace for heating the ends of spokes, &c., the combination with two opposing heating-chambers formed with longitudinal heating-passages and adjustable to and from each other, of a supporting device for

the spokes, comprising two carrying-chains, one chain sustained by each of the chambers.

5 In a furnace for heating the ends of spokes, &c., the combination with a sustaining-frame, of two opposing heating-chambers movably mounted thereon, means for supporting the spokes to be acted on in operative relation to said chambers, a rotary adjusting member mounted on the frame and fixed
10 against endwise movement, and operative connections between said adjusting member and the chambers, adapted by the rotation of said member to move the chambers in opposite directions.

15 6. In a spoke-heating furnace the combination with the sustaining-frame, of two opposing heating-chambers movably mounted thereon, a spoke-supporting device adapted to advance the spokes between said chambers with
20 their ends in operative relation to the same, threaded lugs on the respective chambers, and an adjusting-bolt sustained by the frame and

fixed against endwise movement and screwed into said lugs.

7. In a furnace for heating the ends of 25 spokes, &c., the combination of two opposing heating-chambers provided each with a vertical longitudinally-extending passage for the circulation of the heating agent, a supporting device traveling between said chambers 30 and adapted to sustain the spokes horizontally side by side and advance them with their opposing ends projecting into the longitudinal heating-passages, and means for adjusting said heating-chambers to and from each other 35 in the direction of the length of the spokes.

In testimony whereof I hereunto set my hand, this 1st day of June, 1904, in the presence of two attesting witnesses.

EMIL EINFELDT.

Witnesses:

M. LOUISE DODGE,
ANDREW NEILSON.