(No Model.)

H. C. PIERCE.

TIRE HEATING FURNACE.

No. 350,389. Patented Oct. 5, 1886.

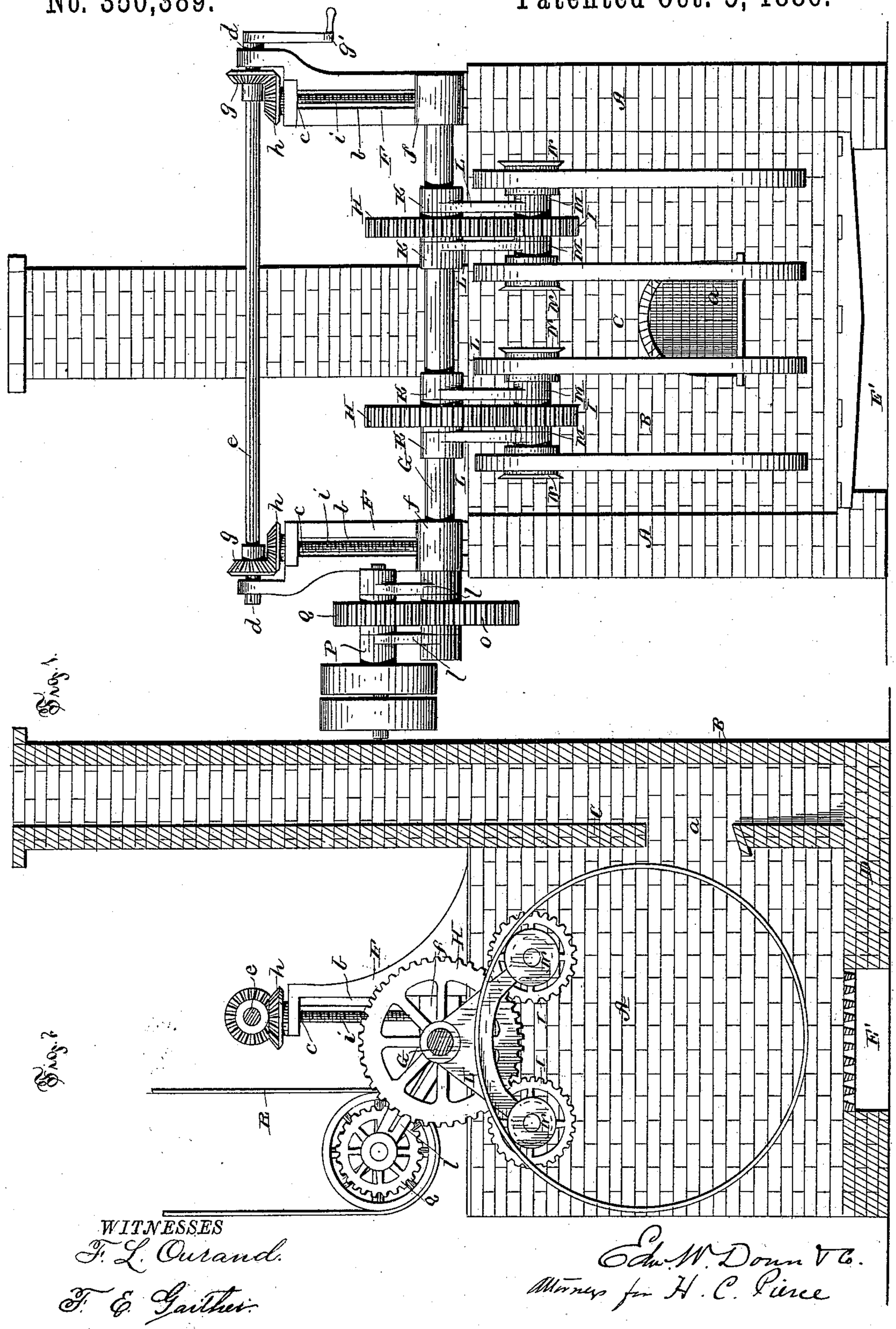

Fig. 1.

Fig. 2.

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HOEL C. PIERCE, OF HOMER, NEW YORK.

TIRE-HEATING FURNACE.

SPECIFICATION forming part of Letters Patent No. 350,339, dated October 5, 1886.

Application filed July 28, 1886. Serial No. 209,345. (No model.)

To all whom it may concern:

Be it known that I, HOEL C. PIERCE, a citizen of the United States, residing at Homer, in the county of Cortland and State of New York, have invented certain new and useful Improvements in Tire-Heating Furnaces; 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.

My invention is an improvement in tire-heaters; and it consists, essentially, in an arrangement of devices by which the tires are kept revolving regularly and smoothly above the heating medium of a furnace. The furnace in which I heat the tires is of simple construction, it being composed of three principal upright walls and a partition, forming together with the back wall a flue provided with an opening which receives the products of combustion and carries them off out of the way. The furnace is provided with a floor, within which is formed an opening for an ash-pit, the same being covered at the top with grate-bars which support the fuel. A draft-space is provided beneath these grate-bars not unlike that of any ordinary furnace. Upon the two side walls of the furnace are mounted two uprights, which are adapted to receive and hold two vertical screws surmounted with bevel gear-wheels, which mesh with corresponding gear-wheels secured upon a horizontal shaft, on one end of which is an operating-crank for said screws. The uprights supporting the said screws are provided with face-flanges, forming ways to sliding blocks, which are engaged by said screws and drawn up or thrown down by means of the crank and said bevel gear-wheels. The sliding blocks aforesaid form journal-bearings and supports to a shaft which extends horizontally across and outside of the area of the furnace on one side. On the outside end of said shaft are loosely secured the collars of two arms which extend obliquely upward and terminate with two other collars secured to a short shaft carrying a spur-gear wheel and two pulleys, one of which latter is fixed and the other loose upon said short shaft. On the main shaft, supported in movable bearings mentioned, is a large gear-wheel which meshes with the spur gear wheel on the short shaft aforesaid. Upon the main shaft mentioned, between the two side walls of the furnace, are secured two spur-gear wheels, and on either side of these are suspended bifurcated hangers, which swing loosely on said main shaft by collars and extend downward, and their lower ends being provided with collars clasp loosely short shafts, to the outer ends of which are secured flanged cylindrical bearings, forming supports for the tires to be heated. The hangers just mentioned are formed in pairs, each pair being provided with two cylindrical bearings or supports for the tires. Upon each of the short shafts which carry the bearings or supports is a spur-gear wheel which meshes with the corresponding gear-wheels, between the said hangers, on the main shaft. Motion being imparted to the main shaft, it is transmitted to the two sets of rollers on each of the hangers simultaneously, so that with the arrangement as shown four tires may be revolved and heated all at once.

In my drawings, illustrating my invention, Figure 1 is a front elevation of the open furnace. Fig. 2 is a vertical transverse section of the same.

Similar reference-letters indicate like parts in both the drawings.

Referring to the drawings, A A are the two vertical side walls of the furnace, and B the rear upright wall.

C is a wall serving as a partition in forming the smoke-flue, and it is provided with an opening, *a*, through which smoke and other products of combustion may pass off.

D is the base of the furnace, provided with an ash-pit, E', and a draft-space beneath the grate-bars.

F are the uprights, planted firmly upon the furnace-walls, provided with flanged ways *b*, bearings *c* for the screws, and bearings *d* for the shaft *e*.

f f are movable blocks, which engage the screw-threads of the screws *i i* and move vertically as they are carried by the movement of the said screws, and carry with them the main shaft G, increasing or diminishing the space between the furnace-floor and said shaft. Bevel gear-wheels *g g* are fixed upon the shaft *e*, and these mesh with bevel gear-wheels *h h*, fixed to the upper ends of the screws *i i*. By

means of screws *i*, shaft *e*, provided with bevel gear-wheels *g* and crank *g'*, and blocks *f f*, clasping the shaft G, said shaft may be raised at both ends simultaneously.

On the shaft G, between the side walls of the furnace, are fixed spur-gear wheels H, and on one or both sides of these gear-wheels are hung, by collars *k* and bifurcated hangers L, which terminate in collars also, short shafts M. In the middles of these shafts M are secured spur-gear wheels I, which mesh with corresponding wheels, H, and to the ends of these said shafts M are secured flanged cylindrical supports *n*, for the tires to be heated.

Near one end of the shaft G is fixed a spur-gear wheel, O, and on either side of this gear-wheel are collars which extend obliquely upward by suitable arms, *l*, terminating in collars which clasp a short shaft, P. Upon this short shaft is secured a spur-gear wheel, Q, which meshes with gear-wheel O, fixed to main shaft G. On the outer end of shaft P are two pulleys, one loose and the other fixed, which connect by a belt with the source of power.

In operating my machine, I first hang the tires upon their cylindrical bearings and adjust the shaft G, by means of the crank *g'*, so that the said tires will reach the flames of the fire. The tires are kept from slipping laterally from their two bearings by the flange-guards of the cylinders *n*. Motion is imparted to the fixed pulley and shaft G through the belt R, to impart motion to gear-wheels H, corresponding gear-wheels, I, and the cylinders *n*. The weight of the tires upon the cylinders produces friction sufficient to prevent slipping, and as the said cylinders revolve independently the tires are rapidly and evenly moved to present all parts of the exteriors to the flames of the furnace, so that all parts are heated uniformly.

In my application I have shown and described two gear-wheels mounted upon the main shaft G, each gearing with a corresponding gear-wheel operated in connection with four bearing-cylinders, forming a set, though in practice I may use more than two sets of these bearing-cylinders and their associate parts in connection with the main shaft.

I am aware that furnaces have been invented and are in use with arrangements for heating tires, consisting of single rotary cylinders as bearings and drivers for the rotary movement of the said tires; and I am also aware that similar bearing-cylinders have been employed for a like purpose, arranged in couples one above another as single bearings for more than one tire. These, in my judgment, are defective for practical work, as with the single bearing-cylinder during a rapid movement the tires are liable to remain stationary, or nearly so, by reason of the said cylinders slipping from under them, on account of the very slight contact or bearing surface offered. The result of this irregularity of movement to the tires causes very irregular heating. In my arrangement what might be lost at one point in one of the cylinders is overcome by the friction offered at the bearing of the twin roller, each cylinder assisting its fellow to keep up a regular and uniform movement to the hoop as it passes over the flames, in order that it may be heated evenly throughout its circumference.

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

1. A set of two bearing-cylinders for a vehicle-tire fixed upon small shafts, which also carry small gear-wheels connecting or meshing with a larger gear-wheel fixed upon a shaft suspended upon the walls of a tire-heating furnace, as and for the purpose set forth.

2. The combination, with a tire-heating furnace provided with upright bearing-walls, substantially as described, of upright elevating-screws *b*, secured in suitable fixed bearings and provided with gear-wheels *h*, shaft *e*, provided with gear-wheels *g* and crank *g'*, elevating-blocks *f*, shaft G, means, substantially as described, for driving said shaft, gear-wheel H, bifurcated hangers L, suspended from said shaft G, gear-wheels I, meshing with gear-wheel H, and bearing-cylinders *n*, all arranged as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HOEL C. PIERCE.

Witnesses:
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