

S. BUCK.
Machines for Setting Tires.
 No. 152,456. Patented June 30, 1874.

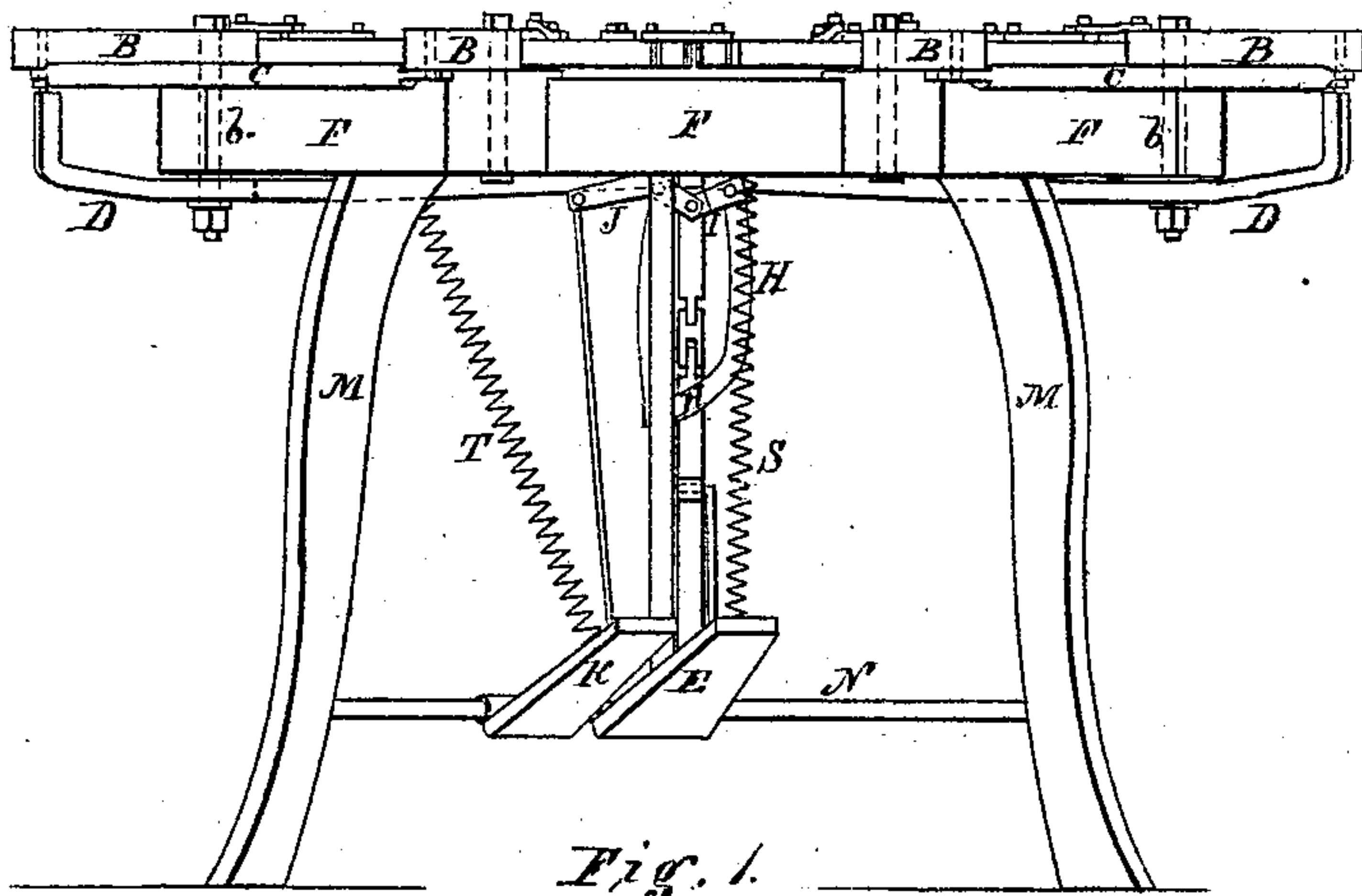


Fig. 1.

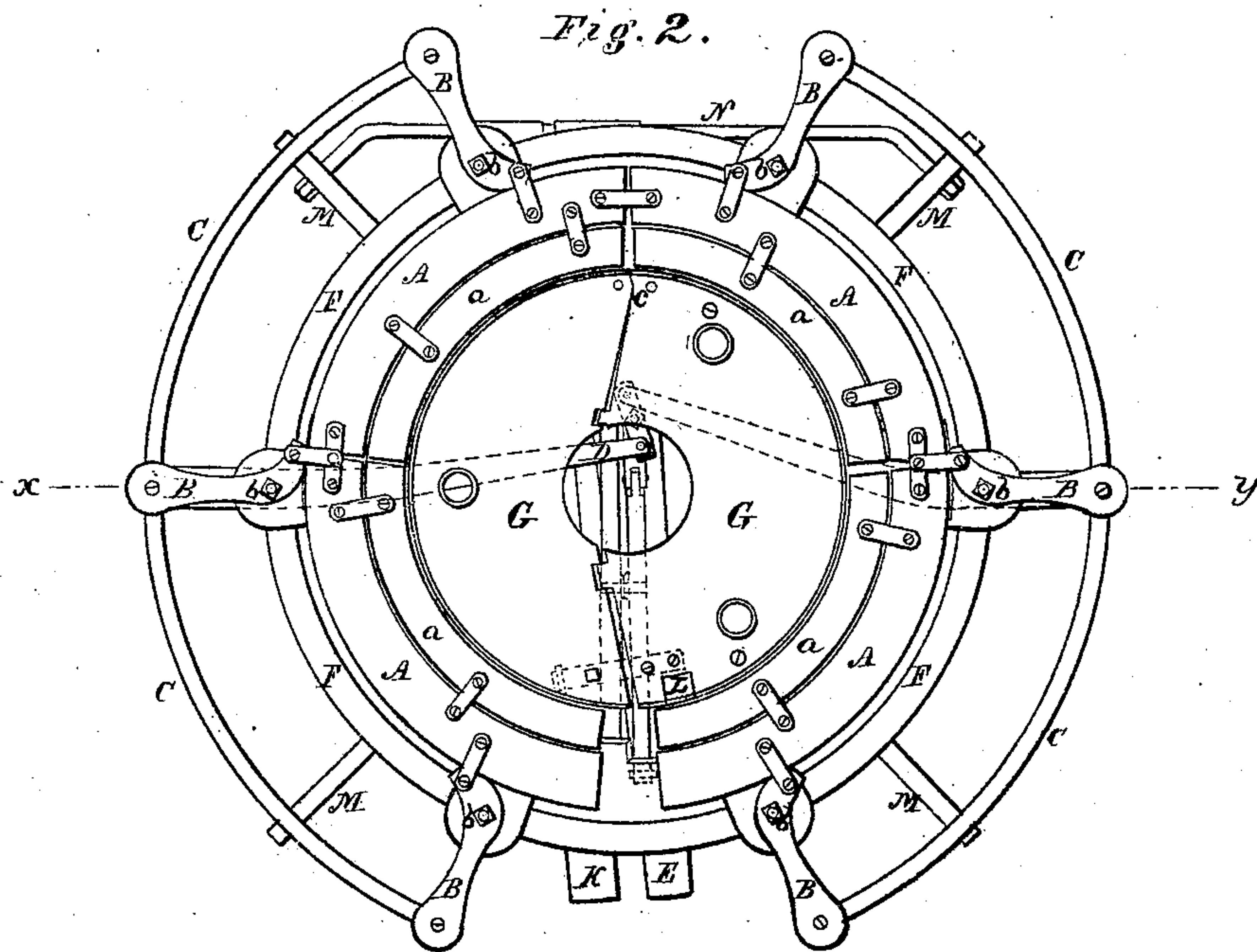


Fig. 2.

Witnesses.
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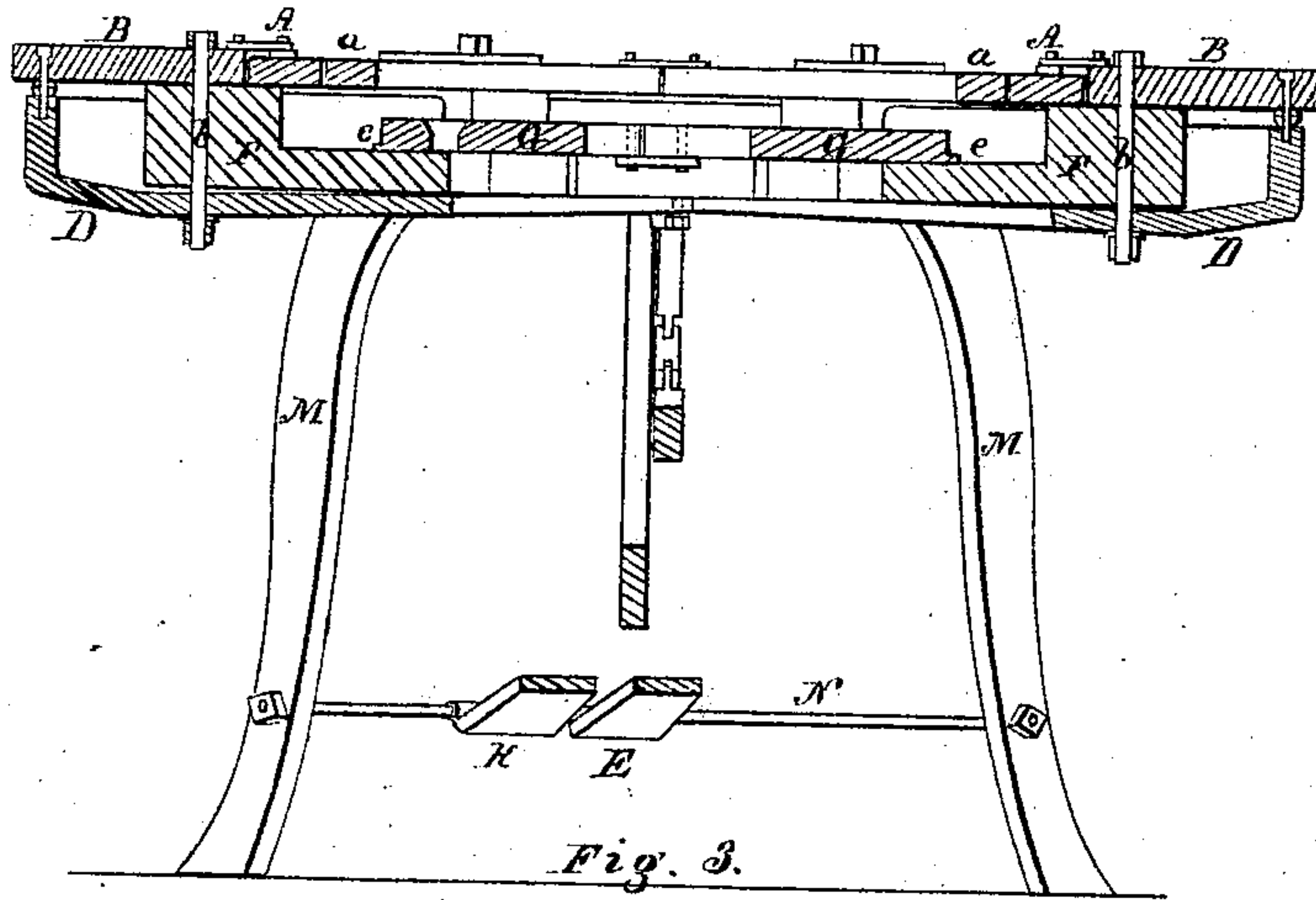


Fig. 4.

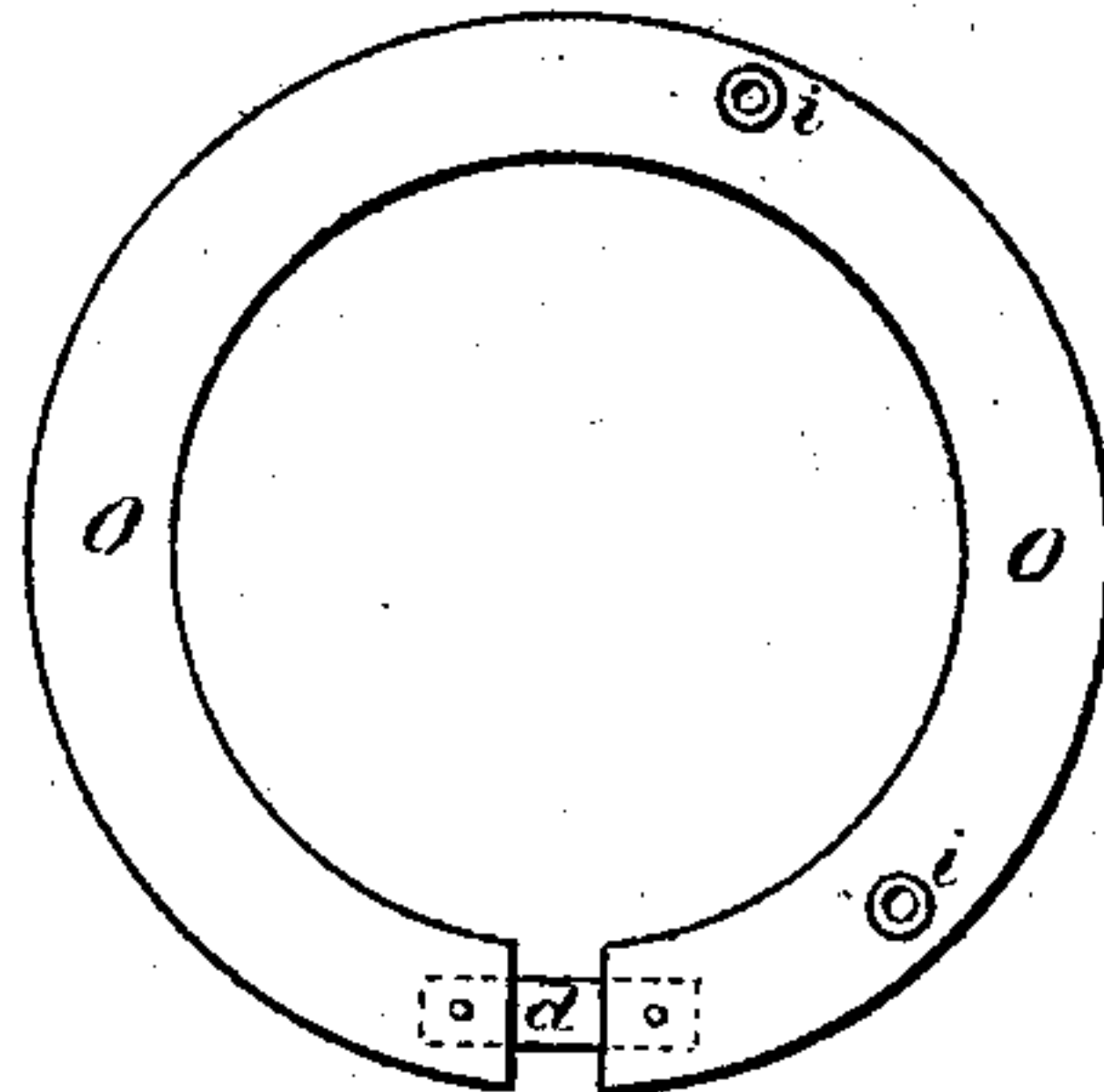


Fig. 5.

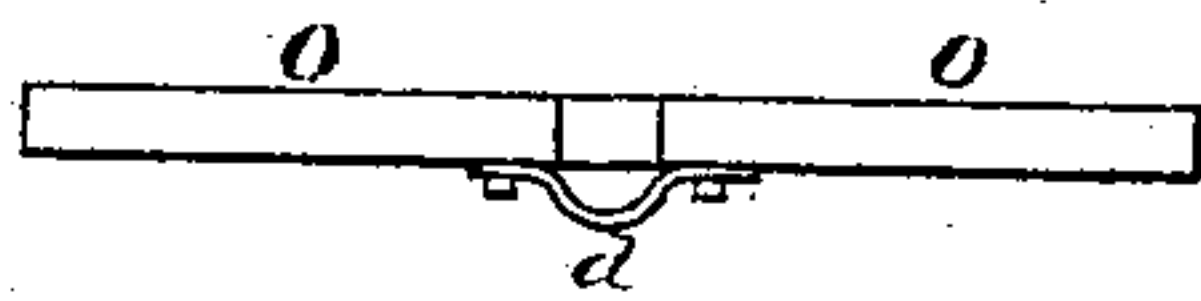


Fig. 6.

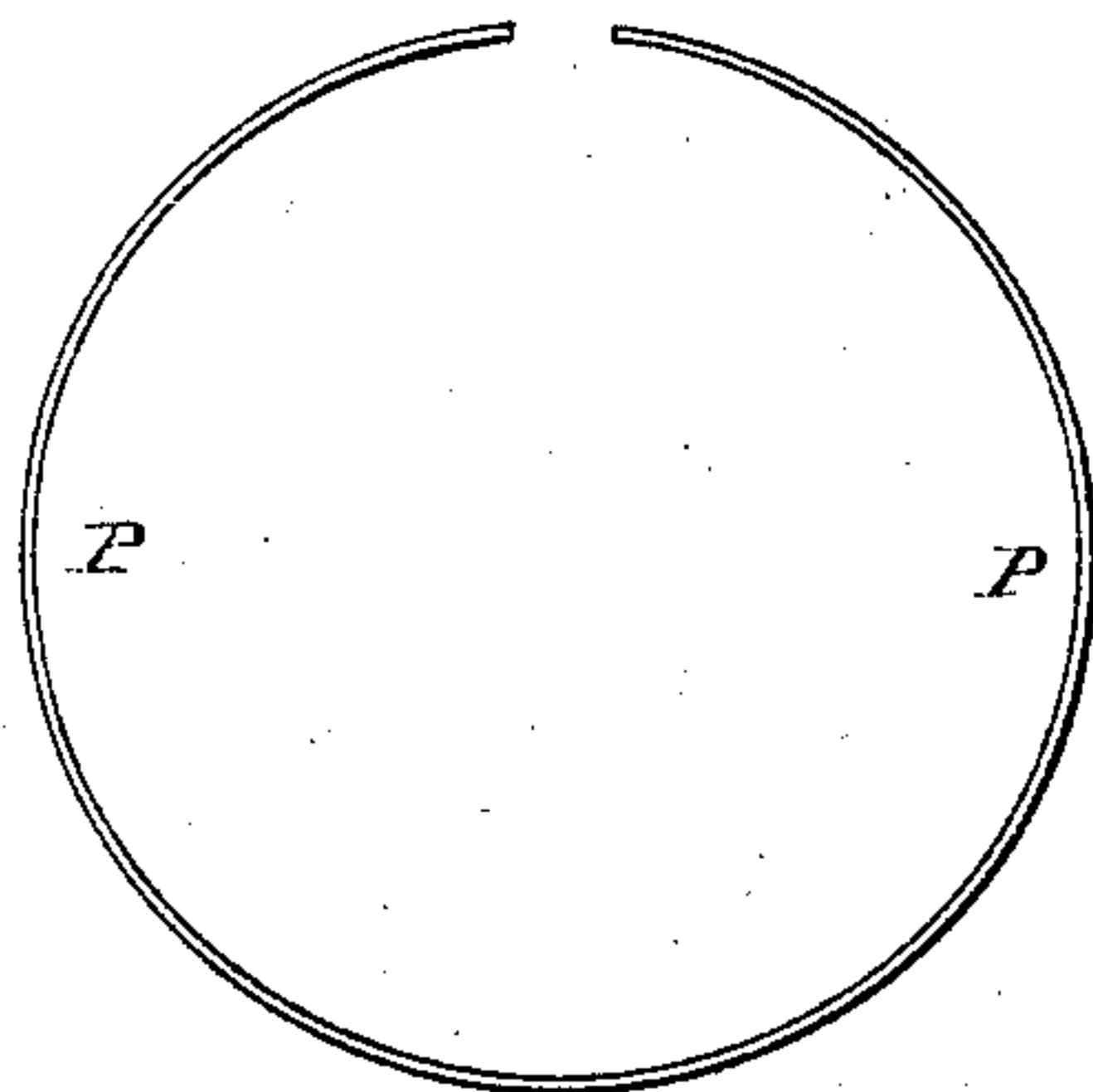
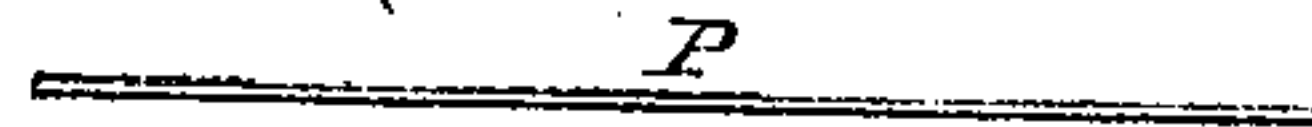


Fig. 7.



Witnesses.

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UNITED STATES PATENT OFFICE

SILAS BUCK, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN MACHINES FOR SETTING TIRES.

Specification forming part of Letters Patent No. **152,456**, dated June 30, 1874; application filed April 2, 1874.

To all whom it may concern:

Be it known that I, SILAS BUCK, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machinery for Setting Tires; and I do hereby declare that the following is a full, clear, and exact description thereof, whereby a person skilled in the art can make and use the same, reference being had to the accompanying drawings and to the letters of reference marked thereon.

Like letters in the figures indicate the same parts.

My invention consists in a mechanism for making the outside of the rim or felly of the wheel of an exact diameter or gage. It also consists in a mechanism for making the tires of an exact interior diameter or gage, so as to fit the wheel. It also consists in an improved mechanism for setting the tires upon the wheels.

The object of my invention is to set tires upon wheels without heating the metal to expand it, in such a manner that they shall have the proper degree of bind or compression, and the wheels shall be of a uniform size.

In the accompanying drawings, on two sheets, Figure 1 is a front view, and Fig. 2 is a top view, of my improved machine. Fig. 3 is a section through the middle of Fig. 2 upon the line *x y*. Fig. 4 is a top view, and Fig. 5 is an edge view, of a part of the mechanism for gaging the fellies, as will be hereinafter described. Fig. 6 is a top view, and Fig. 7 is an edge view, of a ring used in setting the tires, as will be hereinafter described.

A A, &c., are segments of a compression-circle, which are pressed up and released by means of the cams B B, &c. These cams have fulcrums upon the fixed frame F of the machine, at *b b*, &c., and are connected at their outer ends by the connecting-rods, C C, &c., so that they operate simultaneously. The middle cam on each side of the machine is operated by a lever, D, passing under the frame F, and turning upon the same bolt which forms the fulcrum of the cam. These levers are united near the center of the machine, and are worked by the treadle E by means of a bell-crank and stirrup, which pulls the inner ends forward when the treadle is depressed. This causes the cams B B to turn and press inward the segments A

A. *a a*, &c., are interior pieces attached to A A by links to regulate the size of the wheel to be made in the machine. The above-described parts form a compressing mechanism to operate upon the exterior of the wheel.

G is a circular metallic table formed of two parts, jointed at one end of the division, at *c*, and opening and closing at the other. At the open end the two parts of the plate are connected by a frame, H, which allows them to open and close, but which keeps them in the same plane, and by a toggle-joint, I, for forcing them apart. This toggle is operated by the lever J and the treadle K. The outer circumference of the circular plate G is furnished with a small flange, *e*, Fig. 3, for receiving the tire. This plate is firmly attached to the frame F of the machine by screws or bolts, but is removable at pleasure. The above-described parts form an expanding mechanism to act upon the interior of the tire.

The spiral springs S and T are for the purpose of bringing back the parts of the machine to their ordinary position, and to raise the treadles E and K after they have been depressed.

L is a piece of hardened steel with a serrated edge let into the circumference of the plate G. It is intended to serve as an anvil-block to strike upon when enlarging a tire placed upon the machine. The serrated edge assists this operation by its action upon the inside of the tire.

M M are the legs of the machine, and N is a bar attached to them to serve as a support for the treadles.

O, Figs. 4 and 5, is a metallic circle intended to be placed in the machine concentric with and at the bend of the compression-rings A *a*, and held firmly in place by bolts passing through the holes *i i*. This ring is open upon the front side, and has its ends supported by the small bridge *d*. This ring is used in cutting the fellies to a gage, and the opening is for the purpose of running a saw through to cut the rim while compressed.

P, Figs. 6 and 7, is a circular washer made open to admit of expansion and contraction. It is for the purpose of being placed upon the flange *e*, Fig. 3, to raise the tire when placed upon it.

The operation of my invention is as follows: The fellies of the wheel are made to a uniform size by placing the ring O in the machine. The strips are then bent around it and compressed tightly against it by means of the treadle E, operating the compressing mechanism. A saw is then passed through the opening over *d*, and the ends cut off so that they exactly join. This renders them all of an exact length, so that when they are placed upon the spokes in the usual manner the wheels will all be of the same size. The tires are made of a uniform size by placing them upon the rim of the double plate G and bringing a tension upon them by means of the treadle K. If not sufficiently large, they are hammered upon the block L and stretched to the required size. This plate G may be used in the machine; or, if a large number of tires are to be adjusted at the same time, it can be removed from the machine and used upon a separate frame or table.

To set the tires upon the wheels the machine is used as shown in Figs. 1, 2, and 3. The ring P is placed upon the flange *e* and the tire placed upon it. This raises the tire above the top surface of the plate G, so that a portion of it is free for the wheel to enter. The wheel is then placed within the segments *a* of the compressing mechanism, and compressed at the same time that the tire is expanded, by depressing both the treadles E and K. The wheel is then driven down so as to enter into the upper edge of the tire. The whole is then removed together, and the operation of driving

on the tire is completed with a mallet in the usual manner.

In order to adjust the compressing mechanism so that it will be exactly concentric with the plate G and bring the wheel to an exact circle, the bolts *b* are made slightly eccentric where they pass through the frame F, so that by turning them slightly the cams B can be moved a little out or in, as desired.

What I claim as my invention is—

1. The combination of the segments A, the cams B, the connecting-pieces C, and the levers D with the fixed frame F, substantially as described, as a compressing mechanism.

2. The combination of the compressing mechanism with the notched ring O, for gaging and cutting the fellies of a wheel to an exact size, substantially as described.

3. The combination of the jointed plate G with the toggle I and the lever J, substantially as described, as an expanding mechanism.

4. The serrated anvil-block L, in combination with the expanding mechanism, for lengthening the tires, substantially as herein described.

5. The combination and relative arrangement of the expanding and compressing mechanism, in such a manner that the tire is expanded and the wheel is compressed and driven into it, substantially as herein described.

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Witnesses:

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