

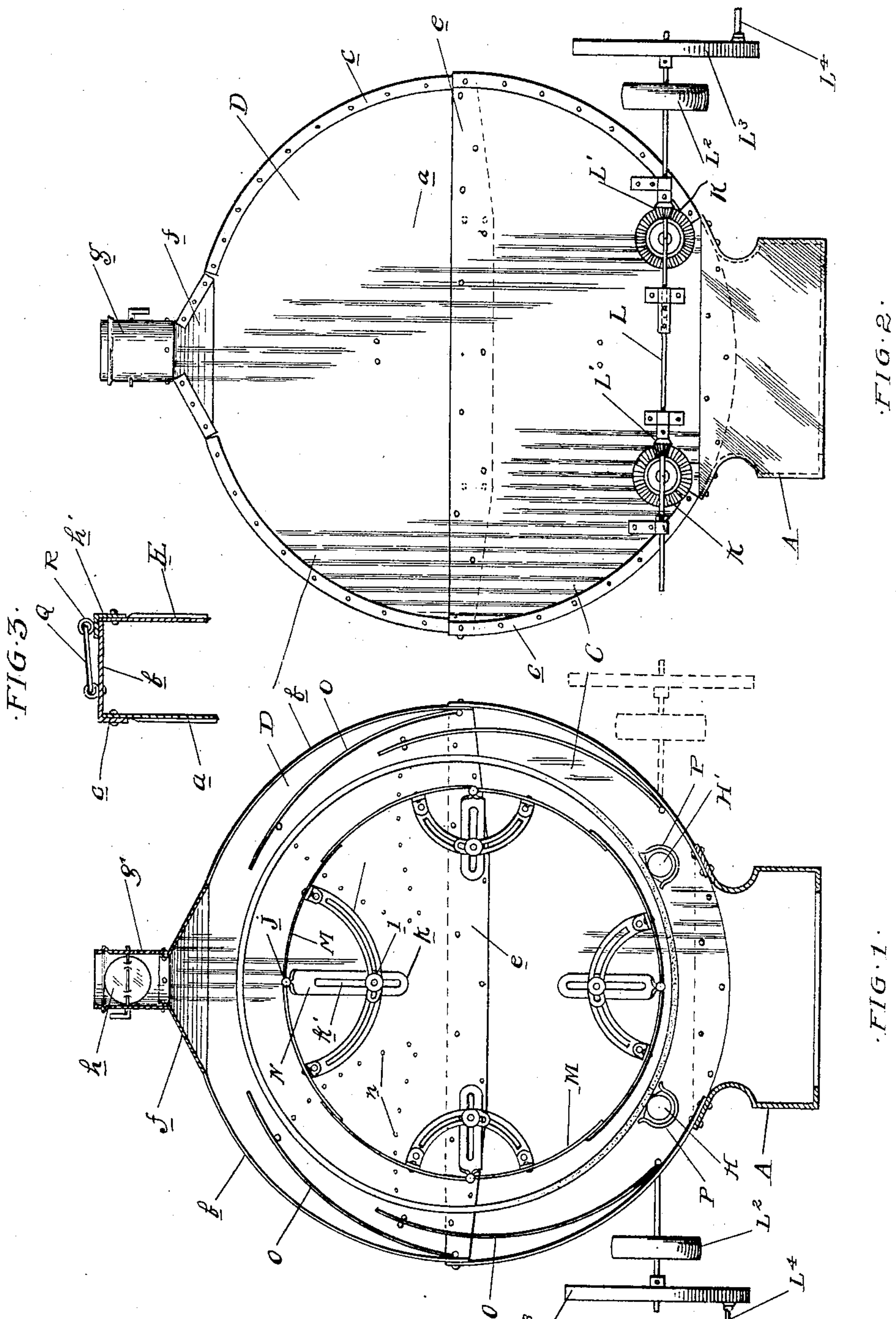
No. 810,528.

PATENTED JAN. 23, 1906.

G. W. GRAVES.
APPARATUS FOR HEATING TIRES.

APPLICATION FILED DEC. 19, 1904.

2 SHEETS—SHEET 1.



WITNESSES
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INVENTOR
GEORGE W. GRAVES.
BY James Whittemore
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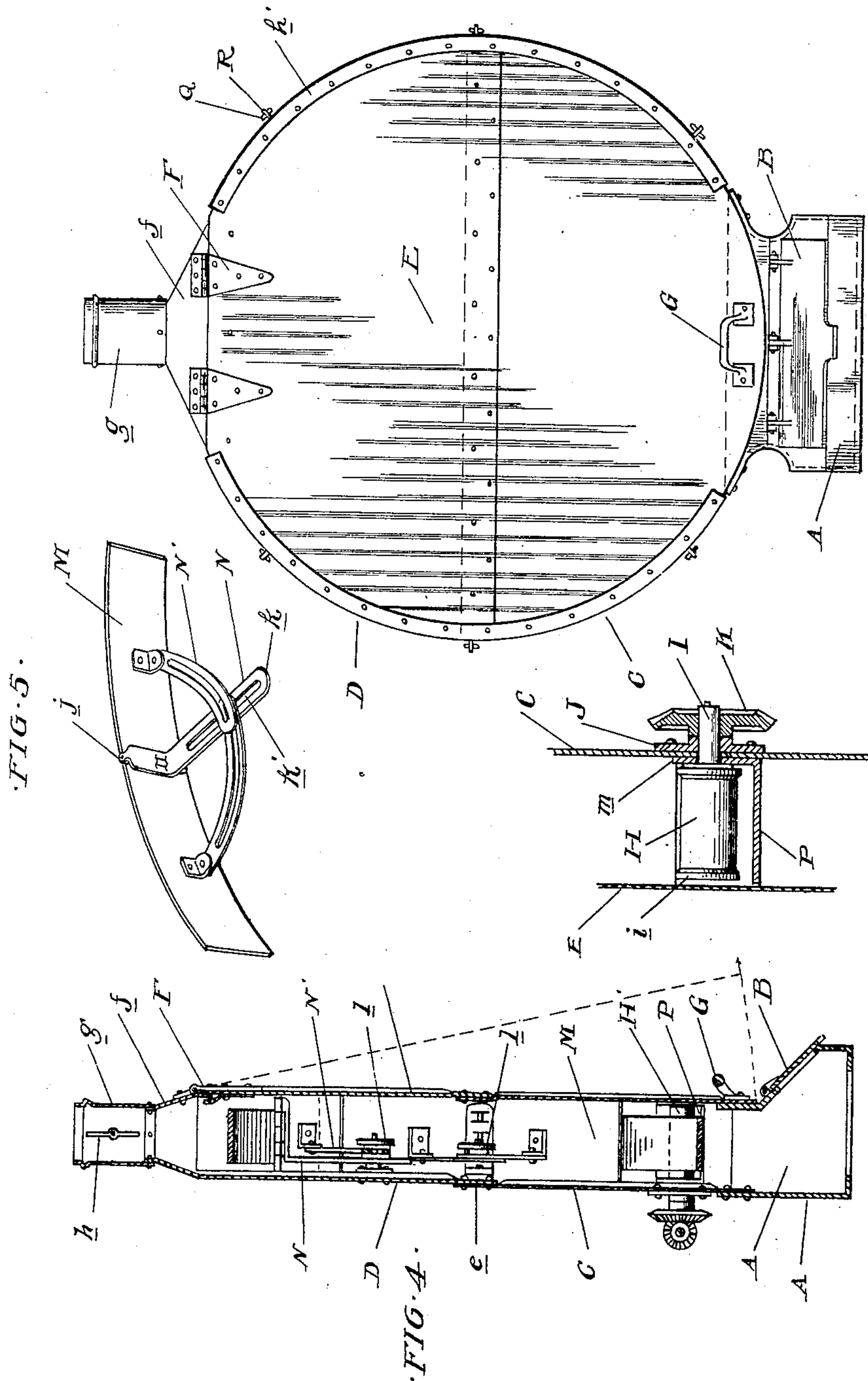
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UNITED STATES PATENT OFFICE.

GEORGE W. GRAVES, OF DETROIT, MICHIGAN, ASSIGNOR TO DANIEL D. FRISBEE, OF DETROIT, MICHIGAN.

APPARATUS FOR HEATING TIRES.

No. 810,528.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed December 19, 1904. Serial No. 237,474.

To all whom it may concern:

Be it known that I, GEORGE W. GRAVES, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Apparatus for Heating Tires, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to apparatus for heating tires of vehicle-wheels for the purpose of expanding the same for engagement with the wheel-felly.

It is one of the objects of the invention to obtain a construction capable of being shipped in knockdown condition and of having the several sections thereof stored compactly in relation to each other.

It is a further object to adapt the apparatus for receiving tires of various diameters and to simplify the adjustments necessary.

It is a further object to form a tight casing which will avoid loss of heat during use.

With these objects in view the invention consists in the peculiar construction, as hereinafter set forth.

In the drawings, Figure 1 is a sectional front elevation of the apparatus. Fig. 2 is a rear elevation thereof. Fig. 3 is a cross-section through the peripheral wall of the casing, illustrating the manner of fastening the door. Fig. 4 is a vertical central longitudinal section through the casing. Fig. 5 is a perspective view of one of the adjustable shields. Fig. 6 is a cross-section showing the roller-support for the tire, and Fig. 7 is a front elevation of the device.

In general construction my apparatus comprises a circular casing of sufficient diameter to freely receive the largest tire which is to be operated upon. The lower portion of the casing merges into a combustion-chamber A, which, if desired, may be placed directly above the hearth of a forge. This is preferably provided with a door B for the feeding of the fuel and which, as shown, is in inclined position when closed. The circular portion of the casing comprises the lower semicircular section C and the upper semicircular section D. Each of these sections includes a rear plate *a* and peripheral wall *b*, preferably joined to each other by providing an angle-flange *c* upon the peripheral wall, which is bolted or riveted to the back wall.

The two sections C and D are joined to each other by overlapping portions *e*, which are bolted or riveted together. The section D is also provided at its top with a conical flue-section *f* and an upwardly-extending flue *g*, the latter preferably containing a butterfly-valve *h*, which may be adjusted to regulate the draft.

The front of the casing is formed by a plate E, which also is preferably formed of two semicircular sections overlapping each other and bolted or riveted together. This plate is further provided at its periphery with a segmental angle-brace *h'*, which is bolted or riveted to the plate and is adapted to overlap the peripheral wall *b* of the casing, so as to form a tight joint therewith. The top of the plate E is connected by hinges F with a portion *f* of the casing, and at the lower end of the plate E is a suitable handle G, by means of which it may be raised for the insertion of the tires.

Within the casing are arranged supporting-bearings for the tire and means for revolving the tire during the heating. For this purpose I preferably provide a pair of rolls H H', which are arranged within the casing upon opposite sides of the combustion-chamber A. These rolls, as illustrated in Fig. 6, are preferably provided with marginal flanges *i*, which serve to center the tire within the case or hold it from contacting with the side walls of the case. Each roll is mounted on a stub-axle I, which passes out rearward from the casing and through a journal-bearing J, the outer end of said axle having mounted thereon a bevel gear-wheel K.

L is a drive-shaft journaled in bearings and extending horizontally across the rear wall of the case, said shaft having mounted thereon the bevel-pinions L', which are adapted to respectively mesh with the bevel gear-wheels K. The shaft is also provided with a drive-pulley L² and a hand-wheel L³, provided with a crank-handle L⁴. Thus the shaft may be revolved either by power or by hand and in so doing will communicate rotary movement to each of the roller-supports H and H'. The tire when placed within the casing rests upon the rolls H and H', and a segment of the tire between said rolls is exposed directly to the heat of the combustion-chamber. To heat other portions of the tire simultaneously with the heating of this lower segment, de-

flector-plates are arranged so as together to form an annular flue or passage-way for the excess products of combustion, carrying the same around the tire, and thence to the flue connection *g*. These deflectors must, however, be capable of adjustment, so as to accommodate tires of various sizes. As shown, the inner deflector-plates are formed by a plurality of segments *M*, preferably arranged in pairs, which are pivotally connected to a common adjustable bracket member *N*. This member *N*, as illustrated in Fig. 5, is provided with ears *j*, which support the pivot-pin by which the segments *M* are hinged. The bracket is further provided with the angular shank *k*, longitudinally slotted at *k'* to engage with the securing-bolt *l*, which latter engages a threaded bearing in the rear wall of the case. Each of the plates *N* is also provided with a segmental slotted arm *N'*, adapted to engage with the bolt *l* and be secured thereto in different positions of adjustment. Thus by loosening the bolt *l* the brackets *N* may be adjusted in or out in a radial line, so as to change the distance of the plates *M* from the center of the casing, and said plates may also be changed in angularity by swinging on the hinge connection with the ears *j*. By then reclamping the bolt the plates *M* are firmly secured in position and together constitute an annular inner wall of the flue for the excess products. In addition to these inner deflector-plates I preferably provide a series of segmental outer deflector-plates *O*, each of which is hinged at its lower end to the casing, its upper end being adjustable in or out from the center of the case. In setting these plates *O* their adjustable ends are moved in proximity to the outer face of the tire, and thus they serve to redirect the products of combustion against the tire before escaping at the upper end of the case.

Inasmuch as the rolls *H* and *H'* are located close to the combustion-chamber *A*, I preferably provide shields *P* for protecting these rolls from the direct heat of the flames or escaping excess products. These shields, as shown in Fig. 6, are of segmental form and are provided with a flange *m*, which is apertured and hung upon the axle *I* of the roll. Thus the shields *P* may be rotatably adjusted about the axis of the roll, this adjustment being necessary in order that tires of different size may be supported on the rolls without contacting or interference with the shields.

The apparatus being constructed as described, it is preferably shipped to its destination in knockdown form. This is accomplished by detaching the upper and lower sections *C* and *D* of the casing from each other and also separating the two sections of the cover *E* and detaching the angle-flange *h* thereof. The upper section *D* may then be nested with the lower section, the two semi-

circular sections of the cover being also placed therein and the segmental angle-bar *h* being adjusted to likewise fit about the semicylindrical section. If desired, the shaft *L* may be removed from its bearings and stored inside the case.

When the apparatus is set up in position, the shaft *L* and pinions *L'* thereon may be so arranged as to bring the drive-pulley *L²* and crank *L³* either at the right or left hand side of the casing, according to which is the most convenient, as illustrated in full and dotted lines in Fig. 1. In use to insert the tire the cover *E* is lifted, and after the shields *M* and *O* have been adjusted in proper position it is only necessary to place the tire upon the rolls and close down the cover. Motion is then imparted to the tire by the rotation of the shaft *L* and rolls *H* and *H'*, and this is continued until the proper degree of heat is imparted to all portions of the tire. The cover is then lifted and the tire removed and placed upon the felly.

For larger or smaller tires the plates *M* and *O* are adjusted as has been previously described, the plates *O* being secured in various positions by bolts engaging a series of apertures *n* in the back plate. It is to be observed that the plates *M* are so arranged that the lower plates overlap the upper plates, thus preventing the escape of excess products to the center portion of the case. For holding the cover *E* in close contact with the case I preferably arrange a series of hooks *Q*, which are attached to the peripheral wall of the case and engage eyes *R* on the cover, as shown in Fig. 3.

What I claim as my invention is—

1. In an apparatus of the character described, the combination with a casing formed by two detachable semicylindrical sections and having a combustion-chamber at its lower end, of tire-supports above and on opposite sides of said combustion-chamber, and means for imparting rotary motion to the tire upon said supports.

2. In an apparatus of the character described, the combination with a casing formed by two detachable semicylindrical sections and having a combustion-chamber at its lower end, of a pair of roller-supports arranged respectively upon opposite sides of said combustion-chamber and upon which the lower segment of the tire is adapted to rest, and means for imparting rotary motion to said rolls to revolve the tire.

3. In an apparatus of the character described, the combination with a circular casing having a combustion-chamber below the same and connected therewith, of roller-supports for the tire arranged upon opposite sides of said combustion-chamber and an expansible and contractible annular shield above said supports.

4. In an apparatus of the character de-

scribed, the combination with a circular casing having a combustion-chamber below the same and connected thereto, of roller-supporting bearings on opposite sides of said combustion-chamber, rollers on said bearings, an annular expansible and contractible shield above said supports, and a series of segmental shields within said casing hinged at their lower ends thereto and having their upper ends adjustable toward or from the casing.

5. In an apparatus of the character described, the combination with a casing and supports therein, of a shield comprising a pair of segmental plates, a radially-adjustable bracket to which said plates are hinged, segments on said plates, and a common clamping-screw for securing said bracket and segments to hold said plates in different positions of adjustment.

6. In an apparatus of the character described, the combination with a casing having a combustion-chamber at its lower end, of roller-supports for the tire on opposite sides of said combustion-chamber and rotatably-adjustable shields for protecting said roller-supports.

7. In an apparatus of the character de-

scribed, the combination with a substantially circular casing having a combustion-chamber therein, and an annular shield comprising overlapping segmental sections adjustable relatively to one another.

8. In an apparatus of the character described, the combination with a casing and supports therein, of an annular shield comprising segmental plates arranged in pairs, the contiguous edges of adjacent pairs overlapping, radially-adjustable brackets to which each pair of the plates is hinged, segments on said plates and means for securing said brackets and segments to hold said plates in different positions of adjustment.

9. In an apparatus of the character described, the combination with a casing having a combustion-chamber at its lower end, of roller-supports for the tire on opposite sides of said combustion-chamber, and shields separating said roller-supports from the combustion-chamber.

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

GEORGE W. GRAVES.

Witnesses:

H. C. SMITH,

JAMES WHITEMORE.