(No Model.)

H. G. SHEPARD.

METHOD OF AND APPARATUS FOR BENDING WHEEL RIMS.

No. 533,236. Patented Jan. 29, 1895.

Fig. 1

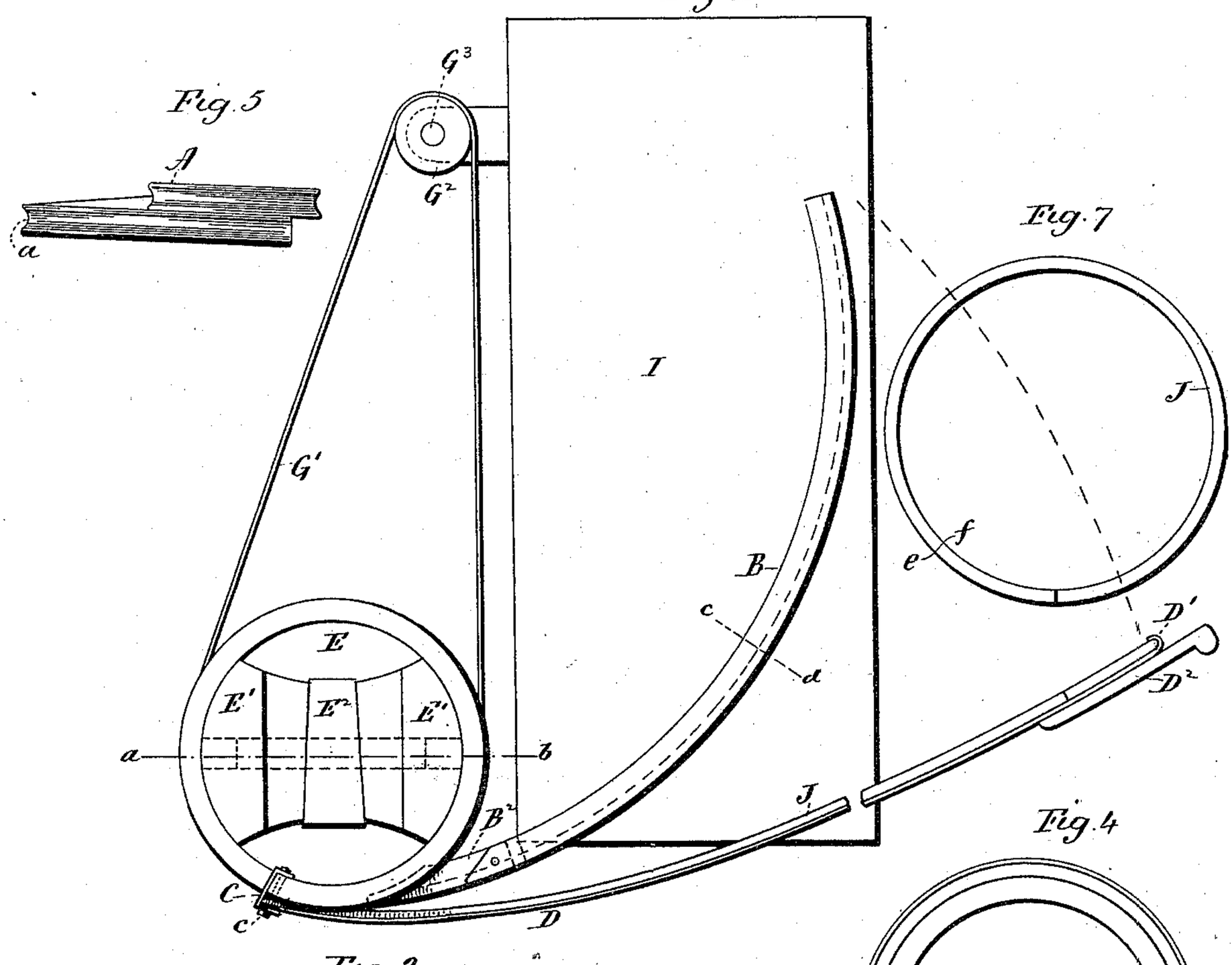

Fig. 5

Fig. 7

Fig. 4

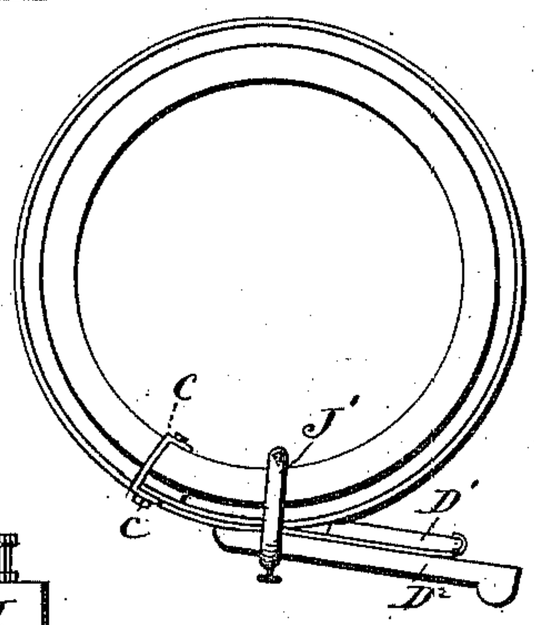

Fig. 3

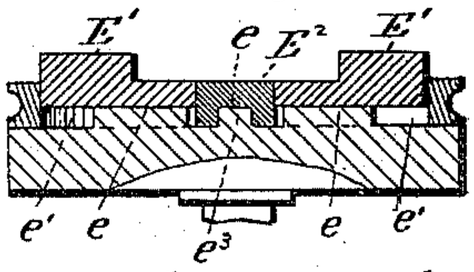

Fig. 2.

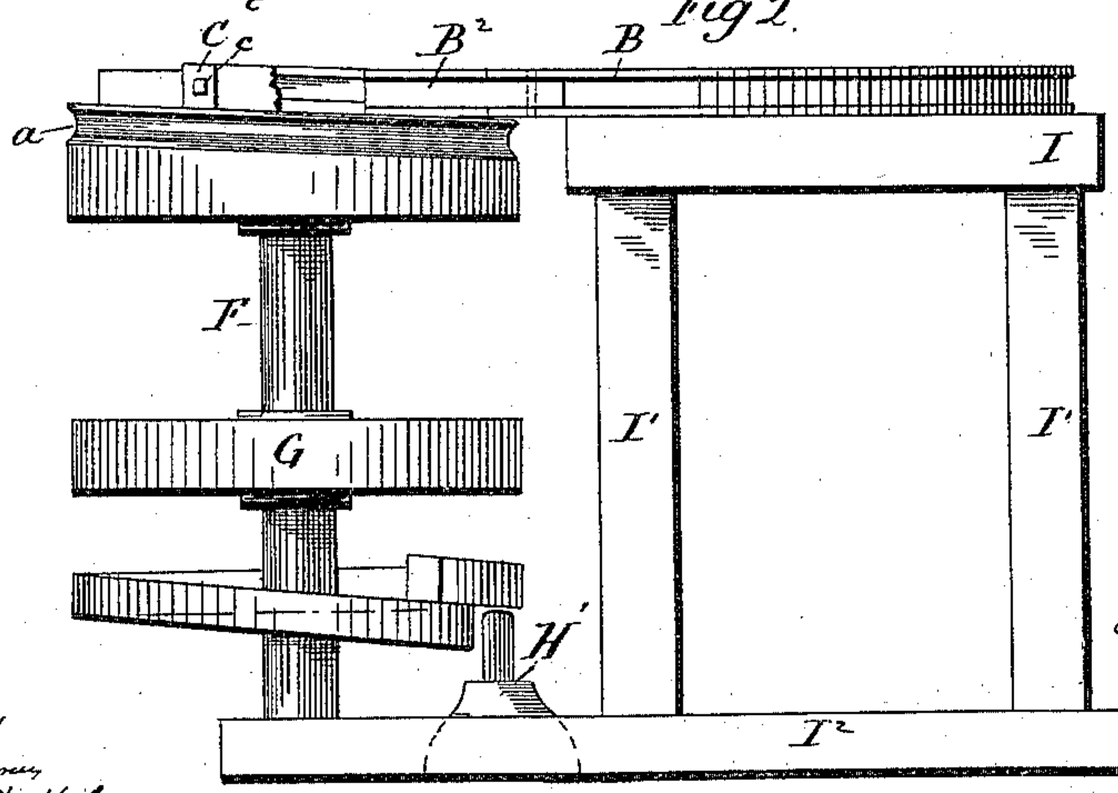

Fig. 6

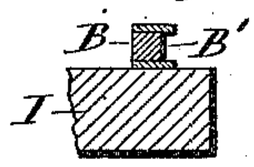

Fig. 8

Witnesses
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UNITED STATES PATENT OFFICE.

HARVEY G. SHEPARD, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO H. G. SHEPARD & SONS, OF SAME PLACE.

METHOD OF AND APPARATUS FOR BENDING WHEEL-RIMS.

SPECIFICATION forming part of Letters Patent No. 533,236, dated January 29, 1895.

Application filed May 14, 1894. Serial No. 511,161. (No model.)

To all whom it may concern:

Be it known that I, HARVEY G. SHEPARD, of New Haven, in the county of New Haven and State of Connecticut, have invented an Improved Method of and Apparatus for Bending Wheel-Rims; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a plan view of one form which an apparatus constructed in accordance with my invention may assume; Fig. 2, a view thereof in front elevation; Fig. 3, a view in vertical section on the line *a—b* of Fig. 1 and showing the rotatable head, and the jaws and wedge applied thereto; Fig. 4, a detached view of the primary form after its removal from the rotatable head and showing a strip wound upon it and clamped at its ends; Fig. 5, a view in side elevation of the primary form with the sheet-metal binder or band removed from it; Fig. 6, a detail view in vertical section of the secondary form on the line *c—d* of Fig. 1; Fig. 7, a detached plan view of one of the rims showing the abutment of its ends; Fig. 8, a view of the rim in transverse section on the line *e—f* of Fig. 7.

My invention relates to an improved method and apparatus for bending wood wheel-rims, the object being to produce a superior article at a comparatively low cost.

With these ends in view, my invention consists in the method and apparatus to be hereinafter described, and pointed out in the claims.

In carrying out my invention as herein shown, I employ a primary form A, and a secondary or segmental form B. The said form A, consists of a heavy strip of wood or metal, having its ends extended beyond each other and overlapped edgewise in spiral form, and conforming in exterior diameter to the internal diameter of the wheel-rims to be produced. Preferably the said strip is provided with a longitudinal peripheral groove or recess *a*, as shown. The upper end of this form is furnished with a metal yoke or clip C, secured in place by a transverse bolt *c*, and providing for the attachment of a long flexible sheet-metal band or binder D, corresponding in length to the length of the strips J to be wound, and having its free outer end bent inward to form a retaining finger D′, and also having its said end provided upon its outer face with a handle D^2. The said form is removably applied to a circular horizontally arranged head E, provided upon its upper surface with two corresponding radially movable jaws E′ E′, receiving a wedge E^2, between them, the outer ends of the jaws being curved in conformity with the curvature of the inner periphery of the form. Each jaw has formed in its lower face a groove *e* receiving radially arranged guide-ribs *e′*, formed on the upper face of the head, whereby a regular radial movement of the jaws is secured. The lower face of the wedge is longitudinally grooved as at e^2, to receive a rib e^3, extending above the face of the head, located between and at a right angle to the ribs *e′ e′* before mentioned and guiding the wedge as it is moved back and forth. The said head is mounted upon the upper end of a vertically arranged shaft F, carrying a driven pulley G, over which runs a driving-belt G′, also running over a small driving pulley G^2, mounted upon a driving-shaft G^3, which is turned in any convenient manner. Preferably it will be provided at its upper end with a lever or crank for turning it manually; but in addition to providing for the rotation of the shaft, provision must also be made for permitting it to move up and down a distance measured by the separation of the overlapping ends of the form A. With that end in view, I provide the shaft at a point below the driven pulley G, with a cam H, corresponding in pitch to the pitch of the form A. This cam rides upon a post H′, which, through the medium of the cam, lifts the shaft F, and allows it to descend. The particular construction of this cam may be varied, and if desired it may be dispensed with and replaced by other means for causing vertical movement of the shaft F.

The secondary or segmental form B is fixed upon a table I, secured to uprights I′ I′, fastened to a base I^2, which contains a bearing for the lower end of the shaft F. This form

B has its outer edge recessed, as at B′, to receive the strips J, to be wound, and is provided at its forward end with a pivotal piece or member B^2, the end of which is chamfered to adapt it to extend into the groove *a* formed in the periphery of the primary form. This pivotal piece is swung outward to permit the form to be placed upon and removed from the rotary head E. It will be noted that the secondary form B is tangentially arranged to the primary form A.

In using my improved method and apparatus, I first place the primary form upon the rotatable head, and clamp it thereto by means of the jaws and wedge. I then take a strip of wood direct from the steam box and force one end of it between the periphery of the said form and the inner end of the flexible band D. The outer end of the strip is then forced within the retaining finger D′ of the band, which then confines the strip against longitudinal extension. The band is now moved by its handle D^2 inward, to bring the strip against the recessed outer edge of the secondary form B, whereby the inner periphery of the strip is compressed and condensed, while its outer periphery is forced against the band, which prevents it from buckling. The head is now rotated to turn the primary form upon which the strip is wound, its outer end being held against and following along the outer edge of the segmental secondary form. During the winding of the strip it will be constantly forced against the band, which, however, will prevent it from moving outward or buckling. The band will also prevent its longitudinal extension. It will be understood that the strip is long enough for the overlapping of its ends upon the overlapped ends of the primary form. After the strip has been wound, it is secured upon the form by a clamp J′, which is then removed and allowed to stand, until the strip has set, after which the same is taken off, and its overlapping ends sawed off and abutted against each other, as shown in Fig. 7.

By means of my improved method and apparatus, I am enabled to form wheel-rims of superior excellence very rapidly, and at a low cost, the preparatory bending of the strip upon the secondary form, and the coiling of the strip from the same preventing it from buckling, and securing a uniform compression and condensation of its inner surface without stretching and tearing the fibers of its outer surface.

I would have it understood that I do not limit myself to employing the particular apparatus described in carrying out my method, further than the combined use of the rotary head and segmental form, for the other details of the apparatus may be changed. Thus, if desired, I may replace the circular form herein shown by a circular form, having a portion of its periphery recessed to receive one end of the strip to be wound, the other end of the strip being lapped directly over the strip in the recess.

In the use of the circular form just described, it will not be necessary to rivet the same as provided for herein. I prefer, however, to employ a circular form having its ends overlapped edgewise.

I am aware that it is old to apply a flexible strap to a strip of wood preparatory to bending the same, so as to facilitate the manipulation of the wood and to guard against the splitting thereof. I do not, therefore, claim the use of such a strap broadly.

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

1. A method of making wheel-rims, consisting in first applying the strip from which the rim is to be formed, to a flexible sheet-metal band, then clamping the strip throughout its length between the said band and a long segmental form, whereby the inner periphery of the strip is pressed and condensed and its outer periphery so confined by the band that it is prevented from buckling, and then winding the strip upon a circular form which gradually takes it from the segmental form against which it is held, until it has been entirely wound upon the circular form, substantially as described.

2. In an apparatus for bending wheel-rims, the combination with a circular form, of means for rotating the same, and a fixed segmental form arranged tangentially to the circular form, one of the said forms being vertically movable with respect to the other substantially as described.

3. In an apparatus for bending wheel-rims, the combination with a circular primary form consisting of a trip having its ends overlapped edgewise, of means for rotating the said form, and a segmental secondary form arranged tangentially to the primary form, one of the said forms being movable vertically with respect to the other substantially as described.

4. In an apparatus for bending wheel-rims, the combination with a circular primary form consisting of a strip having its ends overlapped edgewise, of means for rotating the said form and moving it vertically, and a fixed, segmental secondary form with respect to which the said primary form is moved vertically, substantially as described.

5. In an apparatus for bending wheel-rims, the combination with a circular primary form, of means for rotating the same, and a fixed segmental form provided at its inner end with a pivotal member, substantially as described.

6. In an apparatus for bending wheel-rims, the combination with a circular primary form consisting of a strip, the ends of which are overlapped edgewise, of a long sheet-metal band or binder fastened to one end of the said strip, and provided at its outer end with

a handle, a rotatable and vertically movable head to removably receive the said form and a fixed segmental form arranged tangentially to the primary form and constructed at its inner end with a pivotal member, the primary form being moved vertically with respect to the secondary form substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

HARVEY G. SHEPARD.

Witnesses:
GEO. D. SEYMOUR,
J. H. SHUMWAY.