

No. 777,452.

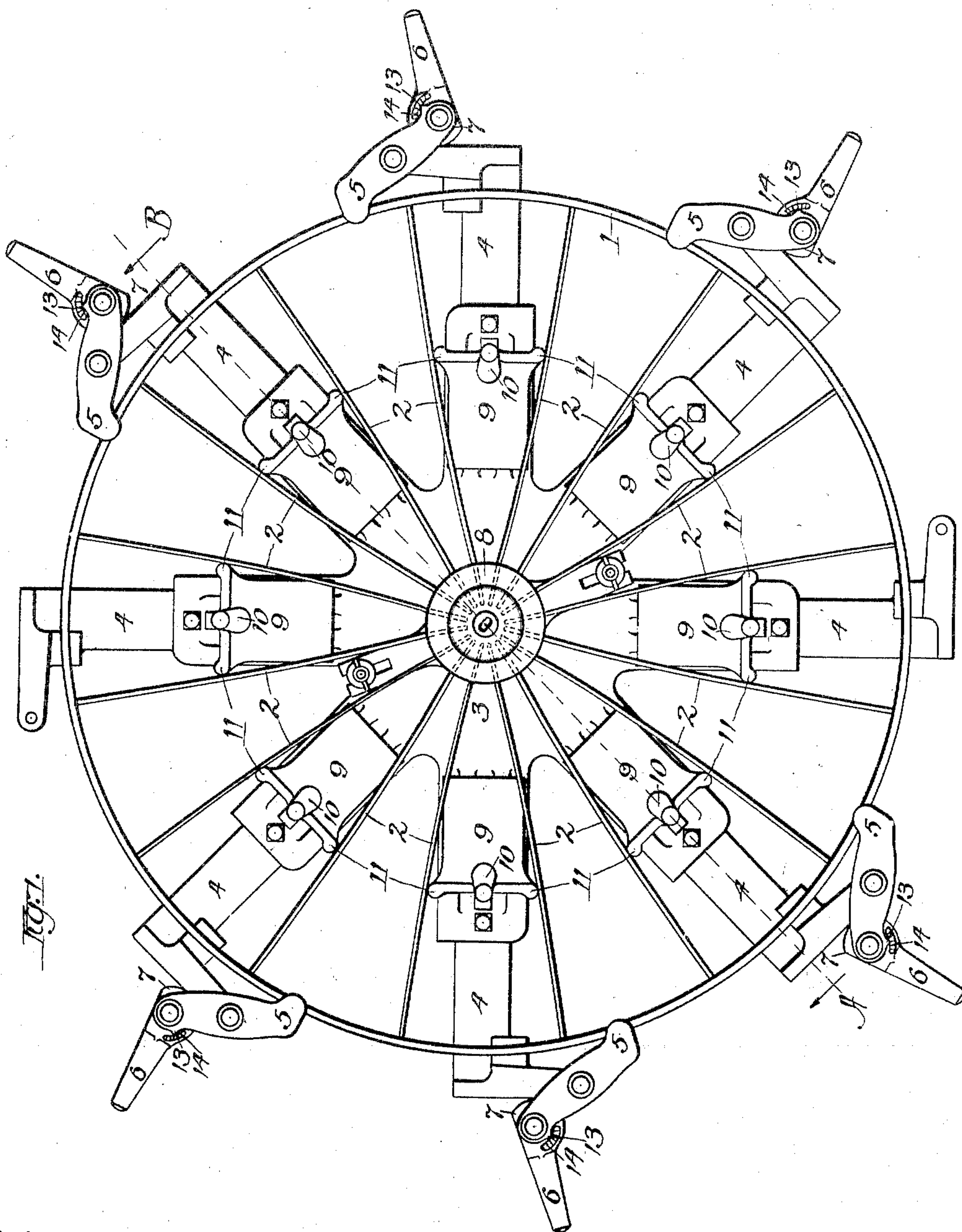
PATENTED DEC. 13, 1904.

G. E. TUFFLEY.
METHOD OF MAKING METAL WHEELS.

APPLICATION FILED AUG. 27, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

B. H. Alford.

J. N. Daggett.

Inventor:
George E. Tuffley.
By *E. W. Burgess*
Attorney

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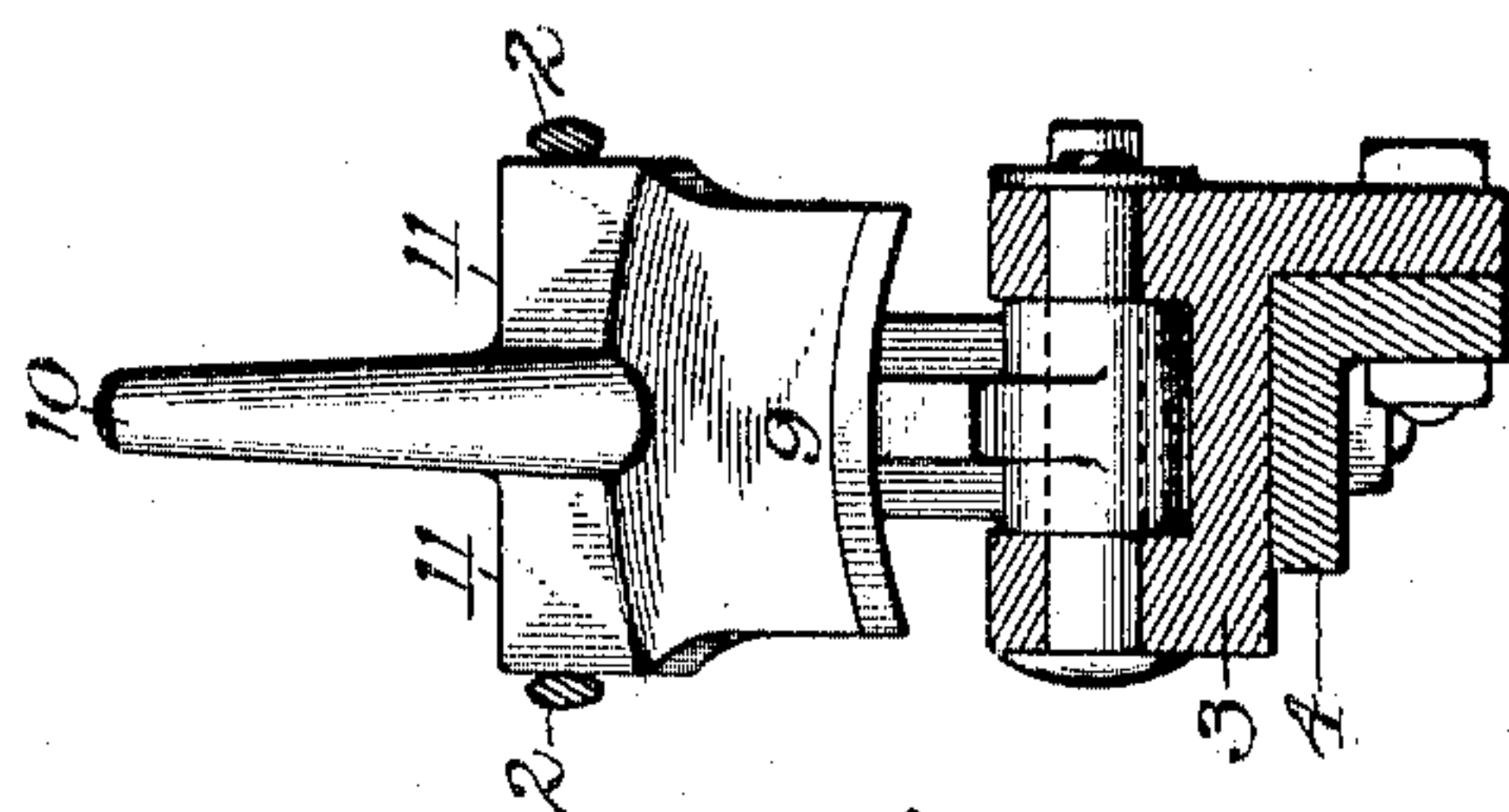
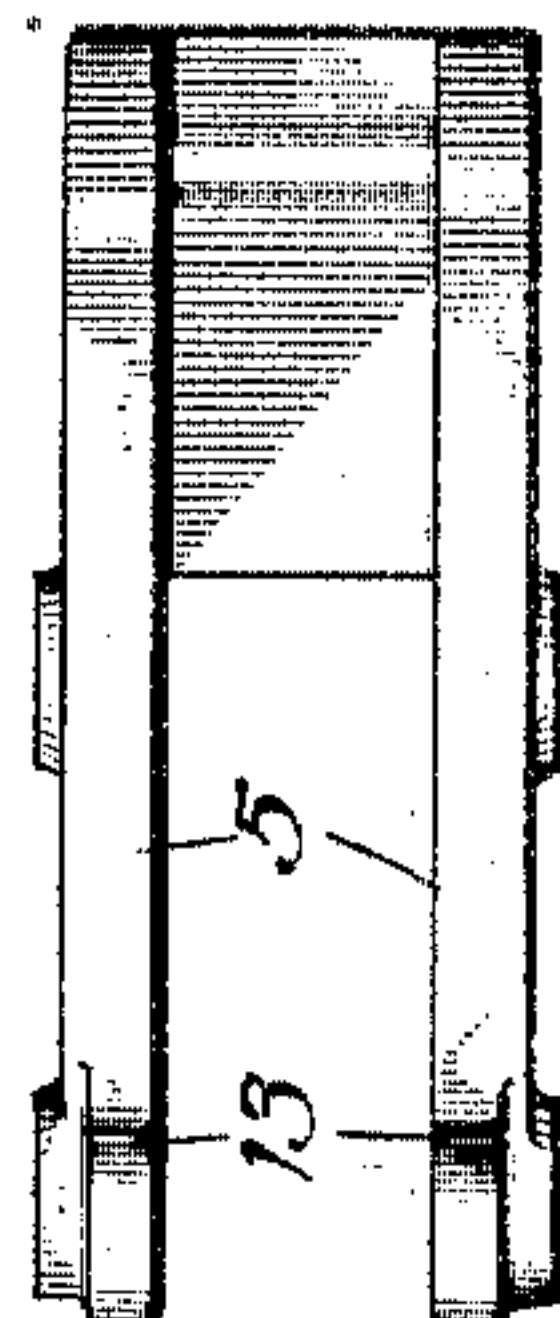
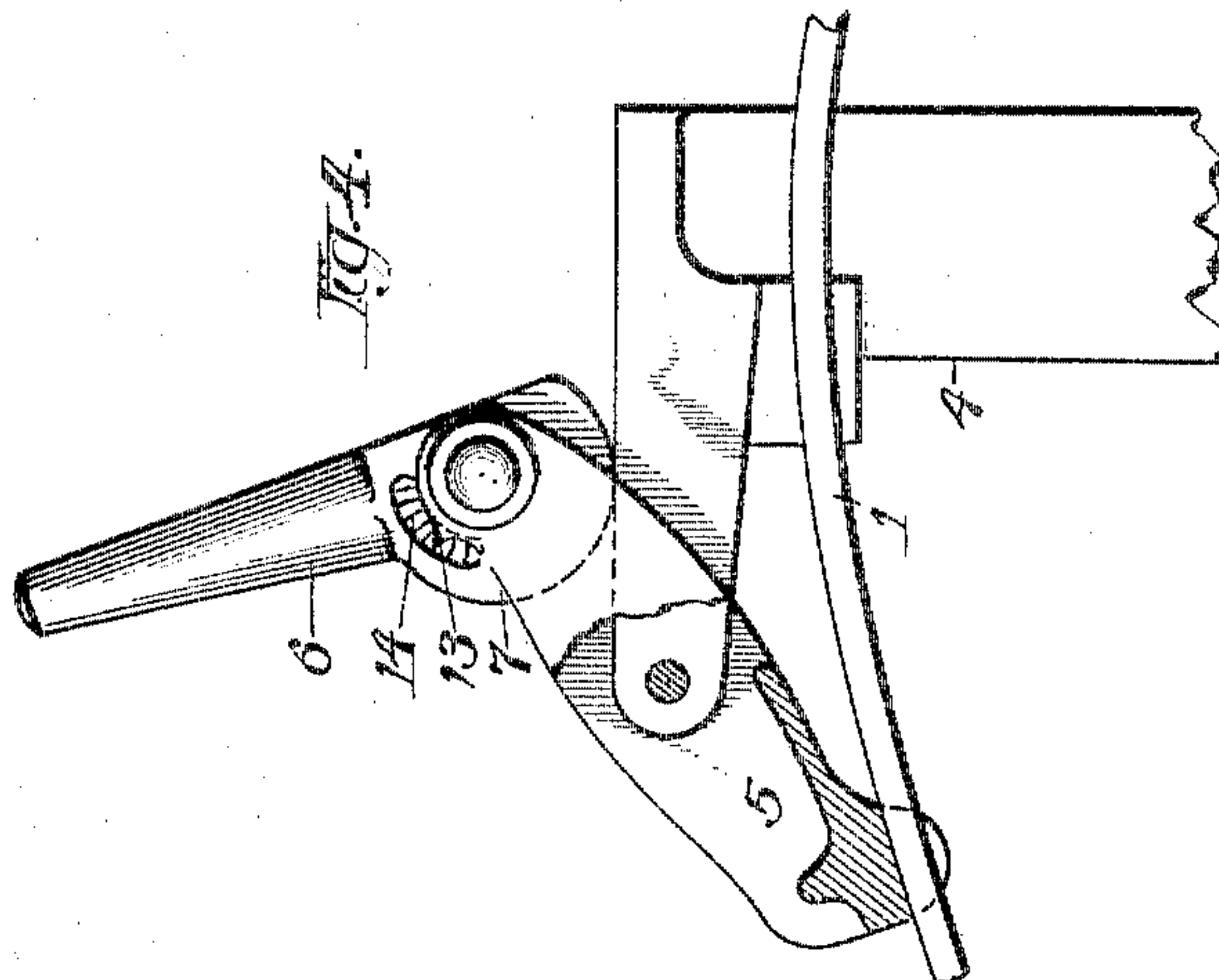
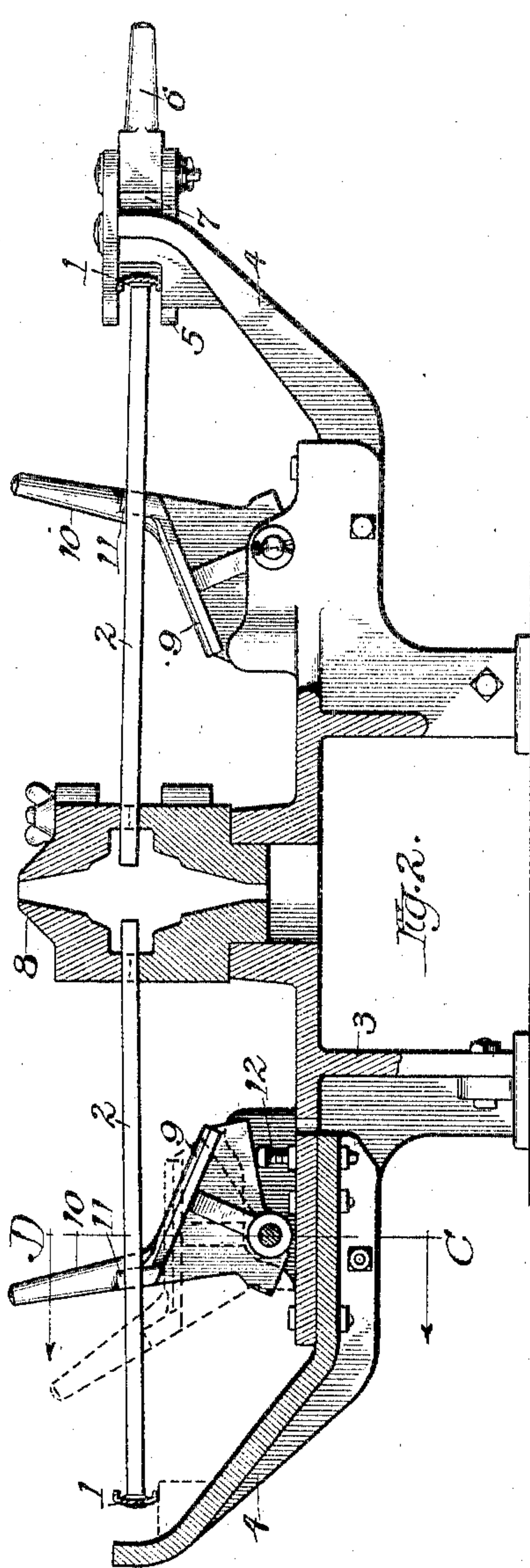
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2 SHEETS—SHEET 2.



Witnesses:
P. H. Alford.
J. N. Daggett.

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UNITED STATES PATENT OFFICE.

GEORGE E. TUFFLEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO INTERNATIONAL HARVESTER COMPANY, OF CHICAGO, ILLINOIS.

METHOD OF MAKING METAL WHEELS.

SPECIFICATION forming part of Letters Patent No. 777,452, dated December 13, 1904.

Application filed August 27, 1904. Serial No. 222,393. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. TUFFLEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Methods of Making Metal Wheels, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to a method of casting metal wheel-hubs around spokes that have been previously secured in a wheel-rim, its object being to produce a stronger and more lasting article than those hitherto made by other methods. A common mode of procedure in the manufacture of wheels of this type has been to secure the spokes in the wheel-rim and then place the inner ends of the spokes in a suitable mold for forming the hub and pour the molten metal in the mold. As the metal cools it gradually contracts and draws inward on the spokes, and if the rim be light it will buckle under the stress produced. If it be stiff enough to withstand the stress, then the metal will draw away from the spoke ends, which tends to weaken the wheel very much at that point.

To remedy the above evil is the object of my invention, and the method employed is that hereinafter described.

To utilize the method invented, I provide means for properly holding the spokes and rim concentrically with a hub-forming mold, and such means are illustrated by the accompanying drawings, in which like parts are represented by like numerals.

Figure 1 is a top plan view of a receiving-form. Fig. 2 is a cross-section on line A B of Fig. 1. Fig. 3 is a sectional detail on line C D of Fig. 2. Fig. 4 is a detail view of one of the rim-securing clamps, and Fig. 5 is a detail of one of the clamping parts.

1 represents the wheel-rim, and 2 the spokes secured thereto.

3 represents the base portion of what I call a "holding-frame," having radially-projecting arms 4 secured thereto. Upon the outer ends of the radial arms are pivotally-mounted clamping-levers 5, one end of which is adapted

to engage with the wheel-rim, and at their opposite ends said levers are provided with pivoted levers 6, having cam-shaped inner ends 7, adapted to bear against an abutting-surface at the ends of the radial arms 4.

The base 3 is adapted to receive a hub-mold 8 of any preferred form, into which the inner ends of the spokes 2 project, as shown in Fig. 2. Between the inner and outer ends of the spokes and between each pair are located pivoted levers 9, mounted on the radial arms 4 and provided with handles 10 and laterally-projecting wing portions 11. An adjusting-screw 12 is located inside of each pivotal connection of the levers 9 with the radial arms, and said levers have a portion adapted to contact with the screws when the lever has been thrown to a predetermined position.

The tire-clamping levers 5 are provided with pointers 13, and the levers 6 are provided with indexes 14, the function of the two being to indicate when the levers have been adjusted to the proper position.

The wheel-rim with the spokes secured thereto is laid upon the radial arms, and the levers 5 are caused to move against the rim by means of the cam-levers 6 and cause it to assume a position concentric with the center of the hub-mold, upon which the inner ends of the spokes are resting. The upper half of the mold is then put in place and the levers 9 thrown inward, bringing their wing portions 11 in contact with the spokes and temporarily bending them outwardly, the set-screws 12 limiting the movement of the levers. By deflecting the spokes between their ends their inner ends are drawn away from the mold. After the molten metal has been poured into the mold around the inner ends of the spokes and allowed to cool enough to become set the deflecting-levers are released and the spokes allowed to straighten as the hub contracts in cooling, thus preventing any drawing of the spokes away from the hub. By adjusting the set-screws under the levers 9 the amount of flexure of the spokes may be determined in order to allow for any variation of the weight or size of hubs required or length of spokes.

One important feature of the above method

of casting metal wheel-hubs is in the equal
tensional strain upon the spokes as the rim is
welded or otherwise joined at its meeting
ends, and the contracting of the cooling metal
5 of the hub draws equally upon each spoke,
thus making the wheel much stronger to re-
sist working strains than one having unequal
tensional strain upon them.

What I claim as my invention, and desire to
10 secure by Letters Patent, is—

The herein-described method of casting
metal wheel-hubs around spokes that have

been secured to a rim and said parts placed
concentrically with a hub-forming mold,
which consists in deflecting the spokes between 15
their ends, pouring the molten metal, and re-
leasing the spokes from the deflecting means
when the metal has cooled sufficiently.

In witness whereof I hereto affix my signa-
ture in presence of two witnesses.

GEO. E. TUFFLEY.

Witnesses:

T. H. ALFREDS,
ART VANDERWALKER.