

(No Model.)

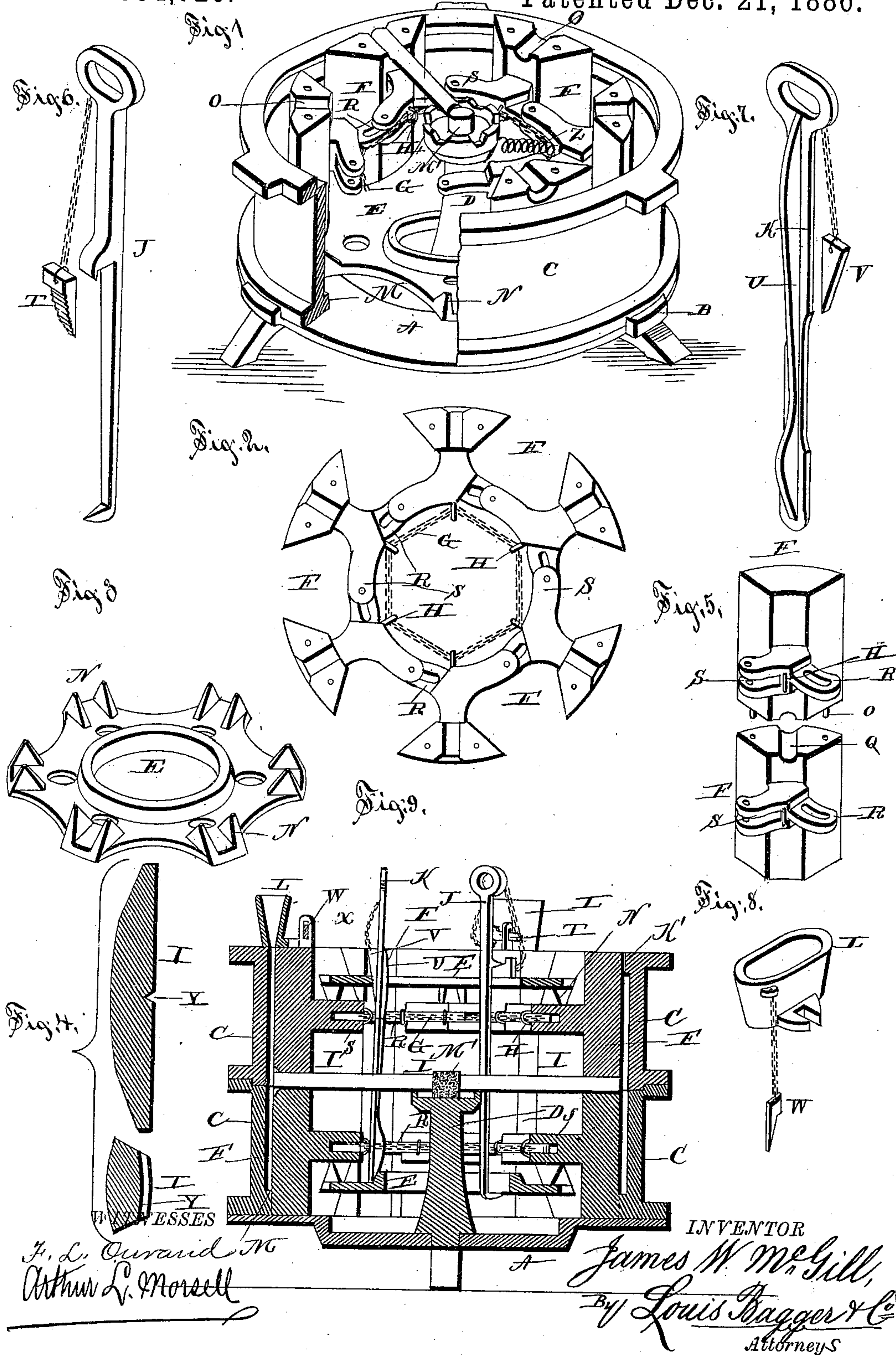
2 Sheets—Sheet 1.

J. W. MCGILL.

MOLD FOR CASTING WHEELS.

No. 354,720.

Patented Dec. 21, 1886.



WITNESSES
F. L. Durand
Arthur L. Morrell

INVENTOR

James W. McGill,
By Louis Ragger & Co.
Attorneys

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Fig. 10.

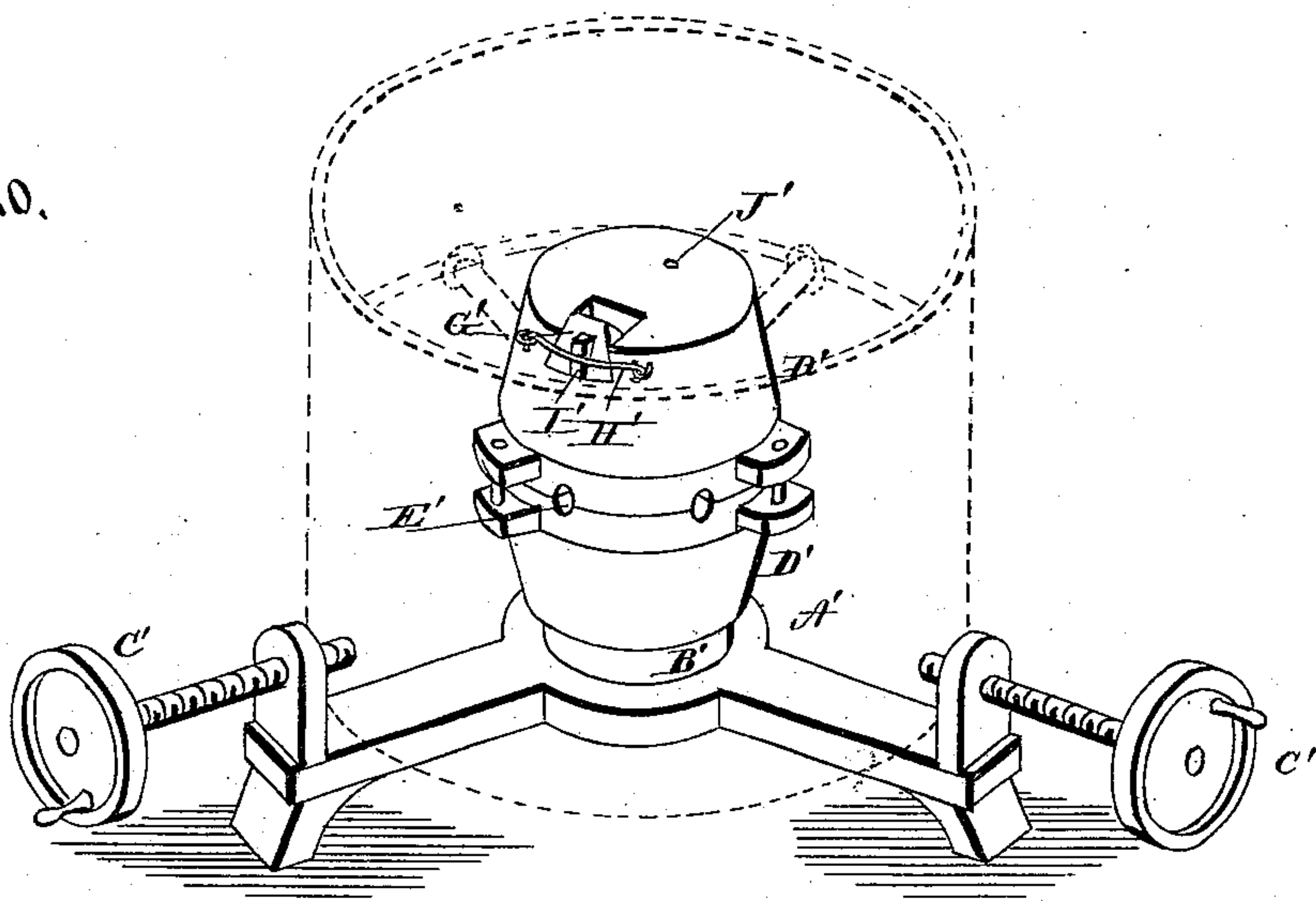
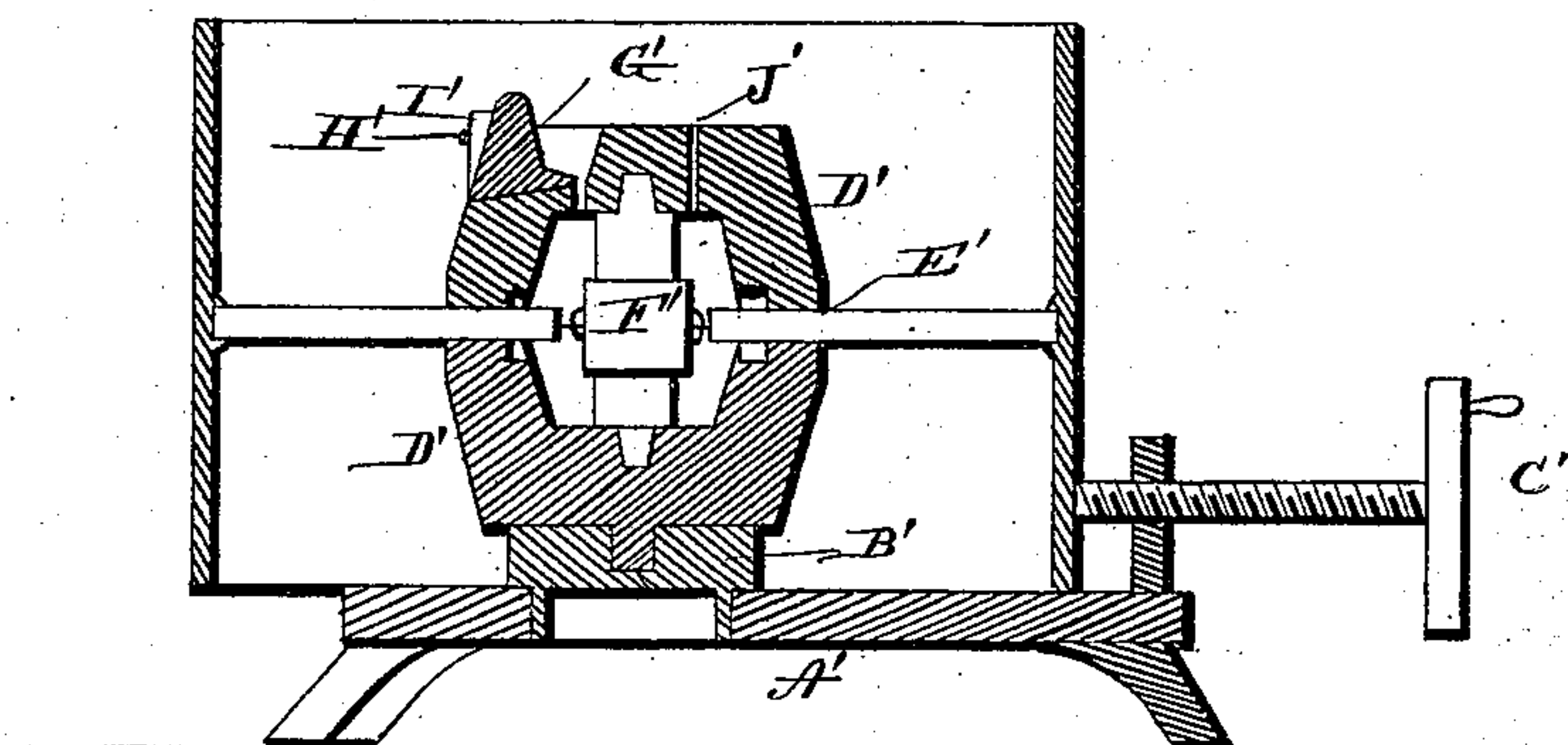


Fig. 11.



WITNESSES

F. L. Curran
Arthur L. Morrell

James W. McGill
INVENTOR,
By Louis Baggett & Co.
Attorney

UNITED STATES PATENT OFFICE.

JAMES WILSON MCGILL, OF PEORIA, ILLINOIS.

MOLD FOR CASTING WHEELS.

SPECIFICATION forming part of Letters Patent No. 354,720, dated December 21, 1886.

Application filed August 18, 1886. Serial No. 211,203. (No model.)

To all whom it may concern:

Be it known that I, JAMES WILSON MCGILL, a citizen of the United States, and a resident of Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Molds for Casting Metals; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of the rim-mold partly set up, a part of the lower casing being broken away. Fig. 2 is a plan of the lower link-section. Fig. 3 is a perspective view of the lower brace-ring. Fig. 4 shows a longitudinal and a transverse section of one of the double wedges. Fig. 5 is a perspective view showing the two separate parts which combine to form the wedge-links. Fig. 6 is a perspective view of one of the clamping-rods with its wedge. Fig. 7 is a similar view of one of the chain-tightening rods. Fig. 8 is a perspective view of the gate for the rim-mold with its securing-wedge. Fig. 9 is a vertical cross-section of the rim-mold when set up and filled. Fig. 10 is a perspective view of the hub-mold when set up, the wheel or pulley rim with its cast-in spokes being shown in dotted lines; and Fig. 11 is a vertical section through said mold, showing the construction of the gate and the attachment of the core.

Like letters of reference indicate corresponding parts throughout the several figures.

My invention has relation to molds for casting metals; and it consists in the improved construction and combination of parts constituting the same, as will be hereinafter fully set forth.

The object of my invention is to produce a pulley, wheel, or like article in a manner such that said articles will be so perfect as not to need truing up in a lathe after being removed from the molds; also to provide a means by which wheels and pulleys may be readily formed with spokes made from wrought-metal bars or pipes without springing the spokes or

causing the rim to break. To accomplish these objects I form two metallic molds—one for casting the rim onto the wrought-metal spokes, and the other for casting the hub to said spokes after the rim with its cast-in spokes has been carefully centered as to said hub-mold.

In the accompanying drawings, A represents the bed-plate of the rim-mold, which is supported upon legs and provided with projections B, for retaining in place the casing C, mounted upon said plate. D represents a pedestal arising from the middle of a central depression in said plate; E, the upper and lower brace-rings; F, the upper and lower half of the wedge-links which form the upper and lower link-sections; G, chains which pass through eyes H, formed upon each half of the wedge-links; I, the double wedges; J, the clamping-rods; K, the chain-tightening rods, and L the detachable gate.

The casing C is formed of two double-flanged rings, one fitted upon the other by means of a rabbet-joint, and both held together by ordinary glands. On the inside of the casing at both ends are formed beads M, which make walls for the edges of the rim, and against which the inner parts of the mold rest.

The pedestal D has an encircling flange near its upper end, which has an upwardly-projecting rim at its edge. In this rim are formed notches for receiving the ends of the spokes, which bear against the sand core M' upon said pedestal. Each brace-ring is formed of a plate having a circular aperture in the center and a scalloped periphery. The extremity of each scallop-arc is joined to its neighbor by a short arc, whose center of curvature is the center of the ring. On one face of said rings and interior to each short arc arises a pair of pyramidal points, N.

The wedge-links, Fig. 5, are each formed of two parts, which are removably joined together by steady-pins O. In the joining faces of these parts are formed transverse semi-cylindrical grooves Q. Said grooves terminate at their outer ends in countersinks, which allow the molten metal in molding the rim to form a seamer about the ends of said spokes. The

inner face of each part of the wedge-links is provided with a Y-shaped lug, one prong, R, of which is horizontally reduced from both upper and under sides, and provided with an oblong vertical perforation. The other prong, S, is formed with a central horizontal recess for the reception of the reduced prong of an adjacent link. The parts of said wedge-links are then hinged together by passing a pin through the prongs S and the perforations of the prongs R, thus forming the upper and lower linked sections. In the angle of each Y-shaped lug is formed one of the eyes H, through which the tightening-chains G are passed.

Each clamping-rod, Fig. 6, is a rod provided with a handle at its upper end, a projection at its lower end, and with an intermediate lipped projection. To each clamp is attached a wedge, T, with a roughened upper edge, which assists in operating the clamp.

Each chain-tightening rod, Fig. 7, has a handle formed at one end and a web, U, extending down the middle of one side. This web is wedge-shaped at its lower end, and also near its upper end, the lower wedge portion to act upon the lower chain and the upper one on the upper chain. To each tightening-rod is attached a wedge, V, for assisting the tightening-rod in performing its function.

The gate, Fig. 8, is of an oblong funnel shape, having a laterally-projecting recessed lug at its base and a key, W, attached thereto for securing said gate to a perforated stud, X, upon the top of a wedge-link. One or more gates may be used, there being a cut-away in the upper bead of the casing at each of the wedge-links, to which a gate is secured.

In setting up the rim-mold, the lower base-ring is placed on the bed-plate with the pyramidal projections upward, the lower linked section placed about the pedestal, the wedge-links resting in the scallops of said ring, the lower half of the casing slipped upon the bed-plate, the spokes placed with one end in the notches of the pedestal-rim and the other in the grooves of the wedge-links, the upper link-section placed upon the lower one, the steady-pins assisting to hold it in place, the upper half of the casing slipped upon the lower half and clamped to it by ordinary glands, the double wedges I put in place between the wedge-links, their lower wedge-faces resting against the pyramidal projections upon the lower brace-ring, the upper brace-ring put in place with its pyramidal points downward and resting against the upper wedge-faces of the double wedges, the clamping-rods applied by passing them down through the apertures of the brace-rings, the lower ends extending into the central depression of the bed-plate, thus allowing the lower projections of said rods to engage the under side of the lower brace-ring and the lipped projection to engage the upper side of the upper brace-ring, and their respective

wedges driven under said lipped projections, thereby drawing said brace-rings toward each other and forcing the double wedges out against the beads of the casing. The chain-tightening rods are next inserted so as to rest against the inner edges of the brace-rings, the wedge-shaped webs and the wedges serving to tighten the chain and draw the wedge-links tightly against the edges of the double wedges. Then the gates are keyed in position, and the mold is ready for heating. There is a groove, Y, running horizontally around the middle of the united double wedges and the wedge-links, intersecting the countersinks at the ends of the spoke-grooves and providing for the formation of a rib along the inner middle line of the rim.

Instead of the chains and their tightening-rods, spiral springs may be used by connecting them to the eyes H and to the pedestal, as seen at Z, Fig. 1.

After the mold has been heated to the desired degree the molten metal is poured in. Immediately upon the solidifying of the metal the mold is collapsed to prevent scoring. This is done by removing the wedges from the clamping-rods and pushing the latter toward the center of the brace-rings, which act releases the latter and removes the strain upon the several inner parts of the mold and from the chains or springs, causing instant collapsing of the mold. Then upon the cooling of the rim it is taken from this mold and, with its attached spokes, transferred to the hub-mold.

The hub-mold consists of a three-armed bed-plate, A', supported upon legs and provided at its center with an aperture for receiving one end of a removable replaceable trestle, B'. At the end of each radiating arm is a screw and hand-wheel, C', supported in an upwardly-extending projection.

The trestle has a reduced portion at its lower end, by which it is retained in place in the center of the bed-plate. It also has a socket in the center of its upper face, into which fits a tenon on the lower end of the hub-mold proper. The trestle is made removable that it may be replaced by those of different sizes to suit different widths of rims or different lengths of hubs for rims of equal width.

The hub-mold proper consists of a hub-shaped casing divided horizontally into two parts, D', provided with lateral ears near the line of division, which are provided with steady-pins, and upon which the glands may be clamped. The uniting faces of each part are provided with semi-cylindrical grooves E', having countersinks at their inner ends for the reception of the inner ends of the spokes. In the center of the upper and lower inner faces of the mold are formed sockets, into which fit the ends of the sand core F'.

The gate for this mold is formed by making a perforation near the edge of the top, removing one side of said perforation for a distance from the top and dovetailing a piece,

G', to fit removably in its place. This piece is held in place by means of the hook H' and wedge I'.

In setting up this mold the rim, with its cast-
5 in spokes, is placed upon the bed-plate, the spokes resting in the semi-cylindrical grooves of the lower portion of the mold, the hand-wheels turned up till the center of the rim coincides with the mold, the upper half of the
10 mold adjusted, and the gate secured.

Then, after the mold has been heated, the pouring done, and the metal cooled, the removable side of the gate is taken out and the
15 geat easily broken off by striking it toward the removed side of the gate.

In the upper part of the hub-mold is formed the usual vent, J'; but in the rim-mold the vents are formed by filing vertical creases K' in the upper head of the casing.

20 By casting a wheel or pulley in the above-described manner the spokes are free at the inner ends during the contracting of the rim, the sand core M' giving way to any pressure, and therefore cannot cause injury to the rim
25 nor to themselves; and as no injury can be done to any part of the wheel or pulley by the contraction of the hub a true and sound wheel or pulley is formed.

Having thus fully described my invention,
30 I claim—

1. In a metallic mold, the combination of the casing of two parts uniting by rabbet-joint and provided with a bead at each end of the inner
35 face, the bed-plate with side projections, linked sections, double wedges, and brace-rings, as set forth.

2. The combination of the bed-plate, casing C C, brace-rings, double wedges, linked sections, and clamping-rods J, as shown and de-
40 scribed.

3. The combination of a bed-plate provided with a central depression, casing C C, brace-rings, linked sections, double wedges, and clamping-rods, for the purpose set forth.

45 4. The combination, with a bed-plate, casing, linked sections, and double wedges, of brace-rings consisting of a plate formed with a central aperture, a scalloped periphery, and having upon one face a pair of pyramidal pro-
50 jections at each scallop-point, as shown and described.

5. The combination, with a bed-plate, casing, linked sections, double wedges, and brace-rings, of a rough-edged wedge and a clamping-
55 rod formed with a handle at one end, a projection at the other, and an intermediate lipped projection, as shown and described.

6. In a metallic mold, the combination, with a casing, a chain, and linked sections, of a
60 wedge and a tightening-rod formed with a handle at one end and a double wedge-shaped web extending down the middle of one side, as shown and described.

7. In the within-described metallic mold, the
65 combination, with a casing, double wedges,

and brace-rings, of a linked section consisting of wedge-links formed with a Y-shaped lug upon their inner faces, one prong of which is reduced and provided with an oblong perforation, the other prong centrally recessed, said
70 links being united by a pin passed through the centrally-recessed prong and the perforation in the reduced prong of an adjacent link, as shown and described.

8. In a metallic mold, the combination of a
75 bed-plate, a casing, linked sections consisting of wedge-links, each provided with an eye upon its inner face, a chain passing through said eyes, double wedges, brace-rings, clamping-rods, and chain-tightening rods, as set forth. 80

9. The combination of a bed-plate provided with a central pedestal having a notched rim about it near its upper end, a casing, linked sections detachably united by steady-pins and provided on their uniting ends with semi-cy-
85 lindrical grooves terminating at their outer ends in countersinks, double wedges, brace-rings, and clamping-rods, as shown and described.

10. The combination, with the within-de-
90 scribed metallic rim-mold, in which the bead on the upper end of the inner face of the casing is recessed at intervals, of an oblong funnel-shaped gate provided with a lateral recessed projection at its base and a key attached
95 thereto for securing the same upon a perforated stud projecting from the upper end of a wedge-link, as shown and described.

11. The combination, with a hub-mold, of the within-described metallic rim-mold, consisting
100 of bed-plate, casing, pedestal, linked sections, double wedges, brace-rings, clamping-rods, chains, and chain-tightening rods, as described and shown.

12. In a metallic hub-mold, the combination
105 of a three-armed bed-plate provided with a screw and hand-wheel supported by a projection upon the end of each arm, a replaceable trestle at the center of said plate, and a hub-mold proper resting upon said trestle, as set
110 forth.

13. The combination, with a metallic hub-mold having a tenon on its bottom, of a trestle formed with a reduced lower end and with a
115 socket in its upper end adapted to receive said tenon, and a bed-plate with a central opening adapted to receive the lower end of said trestle, as set forth.

14. The within-described hub-mold, consist-
120 ing of two parts formed and united at their meeting edges substantially as specified, and the upper portion provided with a perforation, one side of which is removed for a distance from the top of the mold, and a dovetailed piece corresponding in size to the removed por-
125 tion fitted removably in the place thereof, substantially as and for the purpose set forth.

15. The within-described gate for metallic
130 molds, consisting in the combination of a removable dovetailed piece shaped to form a

portion of one side of the inlet, a hook, and a wedge for retaining said piece in place, as shown and described.

16. The combination of a rim-mold with
5 the within-described hub-mold, consisting of a three-armed bed-plate, screws, and hand-wheels, trestle, hub-mold proper, and its gate with detachable side, hook, and wedge, as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JAMES WILSON MCGILL.

Witnesses:

WILLIAM HENERY GRAY,
CLABE SANFORD JACKSON.