G. WALTHER.

CORE FRAME.

APPLICATION FILED NOV. 17, 1919.

1,404,250.

Patented Jan. 24, 1922.

3 SHEETS—SHEET 1.

Fig. 1.

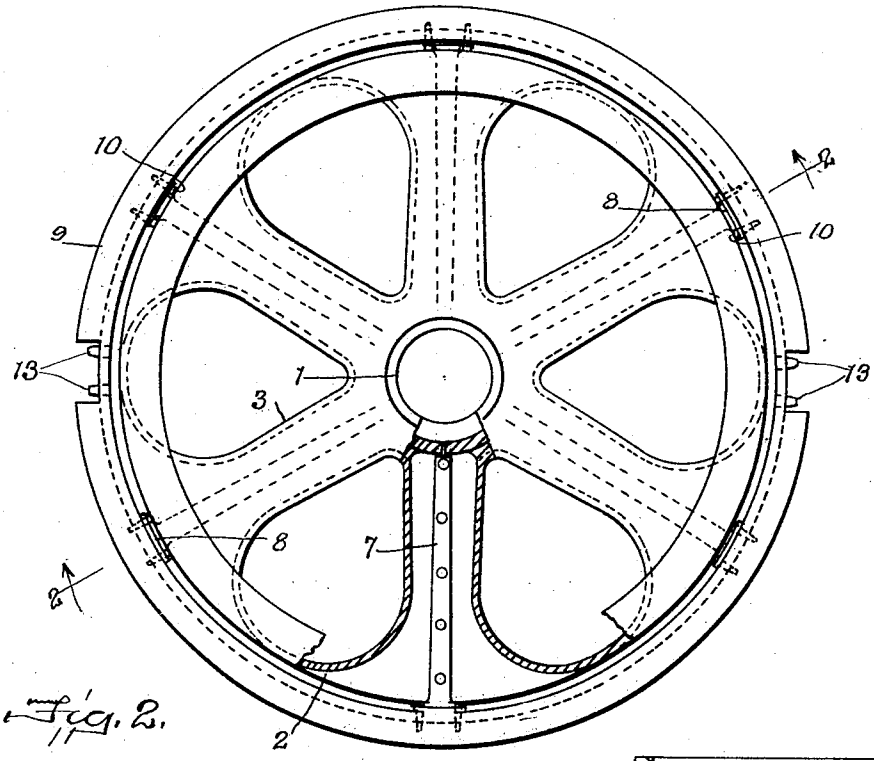
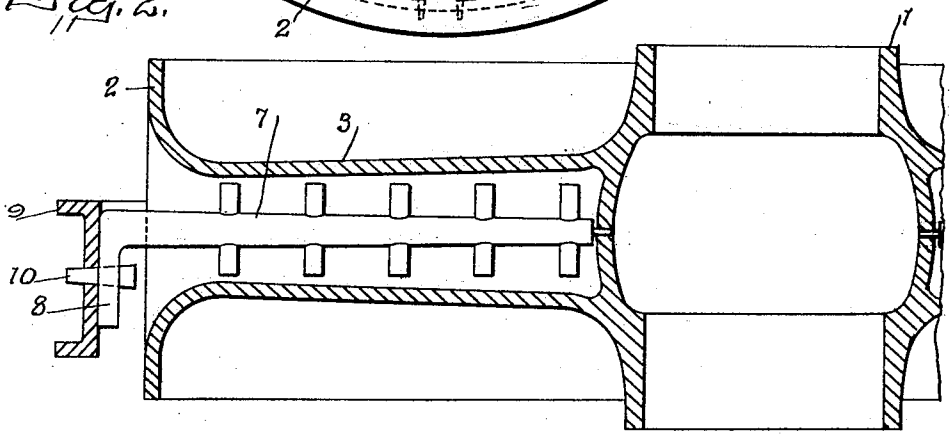


Fig. 2.



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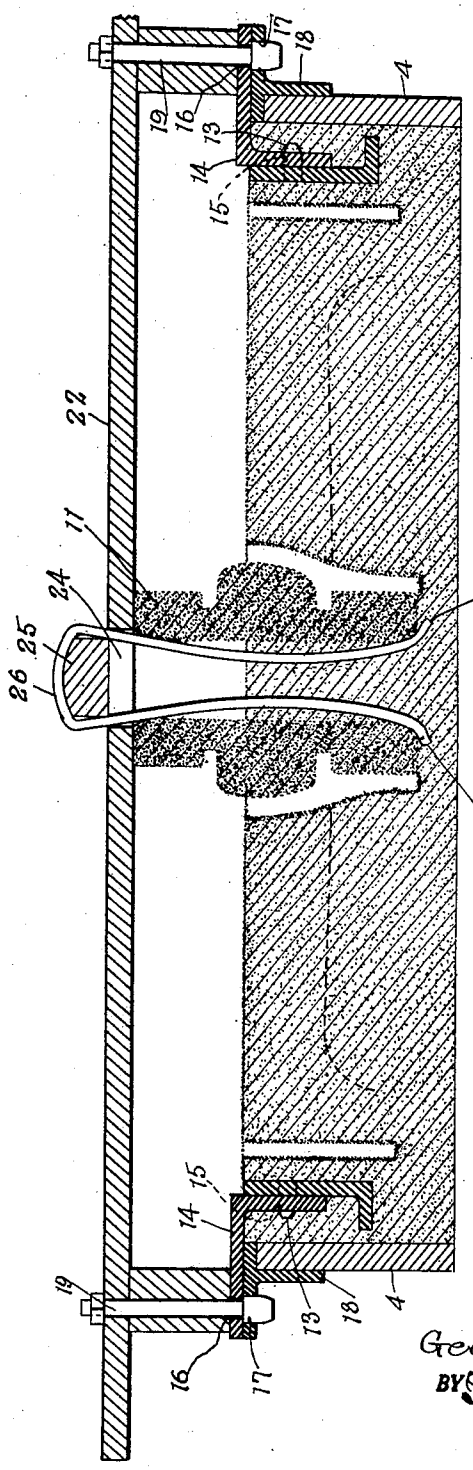


Fig. 3.

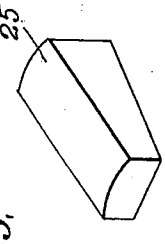


Fig. 5.

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3 SHEETS—SHEET 3.

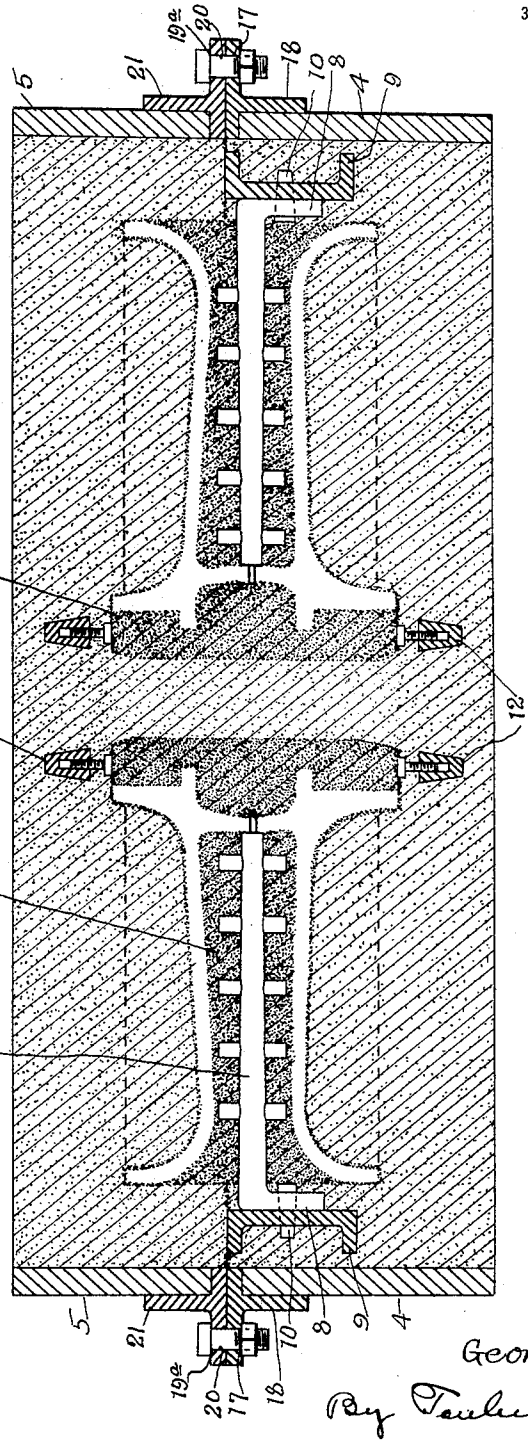


Fig. 4.

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UNITED STATES PATENT OFFICE.

GEORGE WALTHER, OF DAYTON, OHIO.

CORE FRAME.

1,404,250. Specification of Letters Patent. Patented Jan. 24, 1922.

Application filed November 17, 1919. Serial No. 338,556.

To all whom it may concern:

Be it known that I, GEORGE WALTHER, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Core Frames, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to core supports and improved method of molding cast wheels and has for its particular object to provide a core frame and arbor adapted to hold the sand or other material of which the core is made intact and to support the core in proper relation to the mold and also where a plurality of cores are used, to support the cores in proper relation to each other.

My invention as here shown is adapted especially in casting truck wheels having hollow spokes of the general type shown in Patent No. 1,120,256, issued to me December 8th, 1914, but the principle of the invention may be suitably modified and used in the casting of other types of wheels having hollow spokes and in the casting of hollow articles generally, especially in casting products requiring a plurality of cores which must be supported in the mold in substantially fixed relation to each other.

The advantages gained in using my improved core supports and method of molding in casting wheels of this character consist, first, in uniformity of the castings with respect to the hollow cast spokes and, second, in cheapness of production, the work of forming the cores, arranging the cores in the mold and removing the cores from the casting being relatively shortened; also the loss in defective castings is materially reduced.

In the accompanying drawings;

Fig. 1 is a plan view of a wheel casting as it is removed from the mold showing the core supporting frame and one of the cores in position, a portion of the wheel being broken away;

Fig. 2 is a cross sectional view of the wheel and core parts shown in Fig. 1, taken on the line 2—2 of Fig. 1;

Fig. 3 is a cross sectional view of the core frame and the central core supported thereby, and showing a preferred arrangement for handling the core structure and adjusting the same in the mold flask;

Fig. 4 is a cross sectional view of the complete flask having the core structure in position therein; and

Fig. 5 is a detail of the locking wedge for holding the dry core in position relative to the core frame.

As shown in Fig. 1 of the drawings the truck wheel, in connection with which my invention is here shown, consists of an integral casting having a hub 1, felly 2 and a plurality of hollow spokes 3. The novel features of this wheel are described in detail in the patent above referred to, but the same do not form a part of the present invention, reference being made thereto only in general terms to explain the application of the invention in casting the wheel.

In the use of the invention in the form here shown the usual mold flask, consisting of the drag 4 and cope 5, is used, and any suitable pattern may be used to form the mold for the wheel casting, the part in the mold being made sufficiently high, preferably to permit the greater part of the core print to lie within the mold depression formed in the drag.

The cores 6, as here shown, are made of the usual material and are formed on a core arbor or support 7, a separate support being used for each core, and the supports being secured to a core supporting frame, here shown in the form of a circular rim 9, and spaced apart and arranged radially relative to the position of the spokes.

The core supports may be secured to the frame 9 in any suitable manner to provide for the rigid support of the cores thereon and for the convenient removal of the cores and core supports after the casting is made. As here shown the core supports are provided with a base 8 adapted to fit in the curvature of the rim, the rim and base being drilled to receive one or more dowel pins 10 to hold the core support in fixed relation to the frame, thereby supporting the core in relatively fixed relation to the mold for the spoke.

The cores are made in the usual manner by forming the core sand about the core arbors, the cores formed on the arbors being what is known in the trade as green sand cores. In addition to these green sand cores a dry sand core 11 is used to form the hollow portion of the hub and serving also as an anchor or support for the free end of the core arbors 7 as shown in Fig. 4 of the

drawings; the dry sand core being supported in the mold in the usual manner by a plurality of chaplets 12. Thus the complete core structure including the supporting frame 9 and the green and dry cores may be handled and adjusted relative to the mold as a single core. It is obvious, however, that the core frame may consist of separate parts, made up in segments, one for each spoke or several spokes as may be desired and adjusted to the mold accordingly.

As here shown the frame 9 is provided with dowels 13 on opposite sides of its center. Angular core lining plates 14 are used in connection with these pins to properly locate the cores relative to the mold and the upper and lower members of the flask, respectively. To this end the plates 14 have apertures 15 formed in the lower extension thereof and an aperture 16 formed in the other extension thereof. The lining plates may thus be detachably secured to the frame 9 by means of the dowels 13, and the frame together with the cores supported thereby may then be adjusted or lined relative to the drag by bringing the apertures 16 into alinement with holes 17 in ears or projections 18 extending outwardly from the drag frame, the alinement being made with a suitable pin or bolt 19 passed through the holes of the coacting parts when the same are brought to register. With the alinement of the cores relative to the mold and flask thus made the plates 14 are removed and the upper member of the flask, or cope is brought into position and alined with the lower member by introducing a lining bolt 19^a through a hole 20 in an ear 21 of the cope and the hole 17 of the ears 18 of the drag when the same have been brought to register.

When the casting is made the dowel pins 10 are driven back, the rim 9 drops free of the casting, and the core supports 7 together with the sand forming the core may then be freely withdrawn from the hollow spaces formed in the spokes.

I do not claim this principle of forming and supporting the cores as broadly new in the art, but in the improved form here shown and in the casting of wheels both the construction shown and the method of using the same as far as I am aware, are new.

In Fig. 3 of the drawings I have shown a preferred arrangement for handling the core structure and adjusting the same relative to the mold flask. To this end a wide board 22 is employed, the board being of sufficient length to have its ends extend a considerable distance over the edge of the core rim 9 when the board is secured thereto in the manner shown, consisting in placing the board flat upon the rim and fastening the same to the opposite lining plates 14 by means of bolts 19. Thus the entire core structure may be handled by two men by lifting the same from the opposite ends of the board 22.

In view of the size and weight of the dry sand core 11 it has been found desirable to support the core relative to the board 22 to prevent sagging or lowering of the core by its own weight which may cause the core to collapse. To this end the board 22 is provided with a suitable aperture 24 in which is supported by means of a wedge 25 a loop or conical shaped spring 26 having its opposite ends 26^a—26^a expanding outwardly to engage the lower edge of the core 11, thus preventing movement of the core relative to the board. When the core structure is set in position in the mold flask the wedge 25 is removed and the bolts 19 are withdrawn. The board 22 may then be removed from the rim 9, and the spring 26 from the core 11 by compressing the spring.

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

1. In a device of the character described, the combination, with a mold flask for casting an integral wheel having a plurality of hollow spokes, means for forming the mold impression for said wheel, a frame positioned relative to said flask and having a corresponding plurality of core supports secured thereto, a core formed about each of said supports and positioned thereby relative to the mold impression to form the hollow portion of one of said spokes when said wheel is cast.

2. In a device of the character described, the combination, with a mold flask for casting an integral wheel having a plurality of hollow spokes, means for forming the mold impression for said wheel, a frame positioned relative to said flask and having a corresponding plurality of core supports detachably secured thereto, a core formed about each of said supports and positioned thereby relative to the mold impression to form the hollow portion of one of said spokes when said wheel is cast, and means to release the core supports from said frame when the casting is made and to remove the cores and said supports from the hollow spaces formed thereby in said spokes.

3. In a device of the character described, the combination, with a mold flask for casting an integral wheel having a plurality of hollow spokes, means for forming the mold impression for said wheel, a circular rim positioned relative to said flask and having a corresponding plurality of core supports detachably secured thereto by dowels, a core formed about each of said supports and positioned thereby relative to the mold impression to form the hollow portion of one of said spokes when said wheel is cast, means to permit of driving said dowels inwardly when the casting is formed to release said

rim and to provide for the removal of the cores and core supports from the hollow spaces formed in said spokes.

4. In a device of the character described, the combination, with a mold flask for casting an integral wheel having a plurality of hollow spokes, means for forming the mold impression for said wheel, a frame positioned relative to said flask and having a corresponding plurality of core supports secured thereto, a core formed about each of said supports and a core common to all of said cores and positioned therewith relative to the mold impression whereby the hollow portions of the hub and spokes of said wheel will be formed.

5. In a device of the character described, the combination, with a mold flask for casting an integral wheel having a plurality of hollow spokes, means for forming the mold impression for said wheel, a frame positioned relative to said flask and having a corresponding plurality of core supports secured thereto, a green core formed about each of said supports and a dry core common to all of said supports and acting to support the free ends thereof, whereby the hollow portions of the hub and spokes of said wheel will be formed.

6. In a device of the character described, the combination, with a mold flask for casting an integral wheel having a plurality of hollow spokes, means for forming the mold impression for said wheel, a frame positioned relative to said flask and having a corresponding plurality of core supports secured thereto, a core formed about each of said supports and positioned thereby relative to the mold impression to form the hollow portion of one of said spokes, and means to locate said cores relative to the mold and the mold flask.

7. In a device of the character described, the combination, with a mold flask for casting an integral wheel having a plurality of hollow spokes, means for forming the mold impression for said wheel, a frame positioned relative to said flask and having a corresponding plurality of core supports secured thereto, a core formed about each of said supports and a core common to all of said cores and positioned therewith relative to the mold impression whereby the hollow portions of the hub and spokes of said wheel will be formed, and means for handling the core structure and for securing the central core relative thereto.

8. In a device of the character described, the combination, with a mold flask for casting an integral wheel having a plurality of hollow spokes, means for forming the mold impression for said wheel, a frame positioned relative to said flask and having a corresponding plurality of core supports secured thereto, a core formed about each of said supports and positioned thereby relative to the mold impression to form the hollow portion of one of said spokes, and means secured to the core supporting frame whereby the same may be handled and adjusted relative to the mold flask.

In testimony whereof, I affix my signature.

GEORGE WALTHER.