No. 633,151. Patented Sept. 19, 1899.

W. J. PATTERSON & A. M. ACKLIN.

CASTING APPARATUS.

(Application filed July 7, 1898.)

(No Model.) 3 Sheets—Sheet 1.

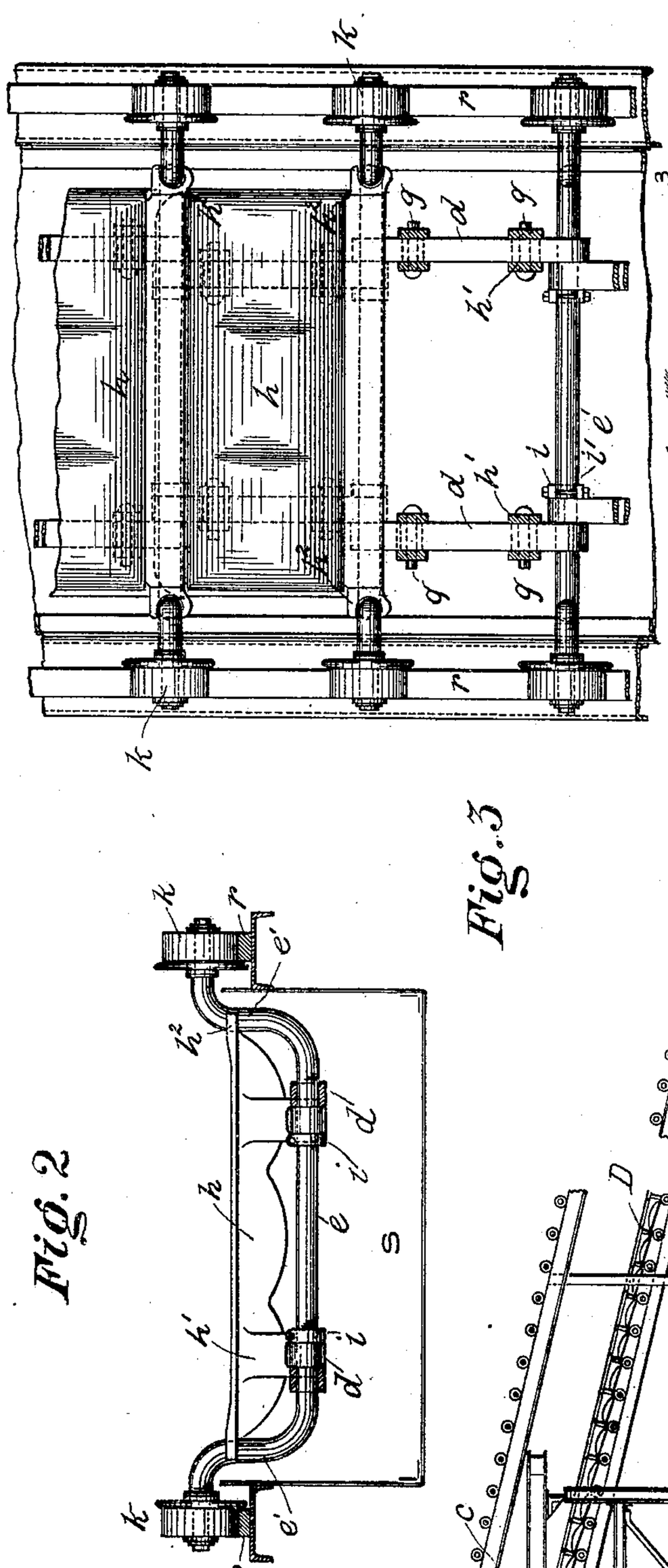

Fig. 2

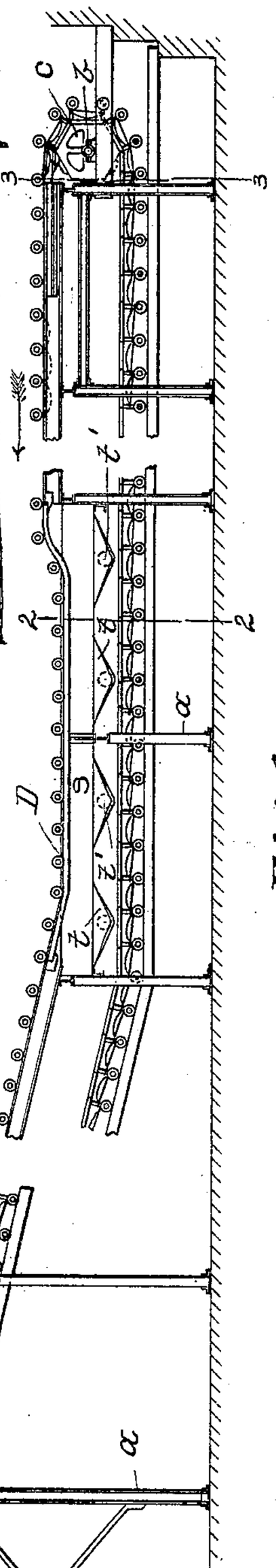

Fig. 3

Fig. 1

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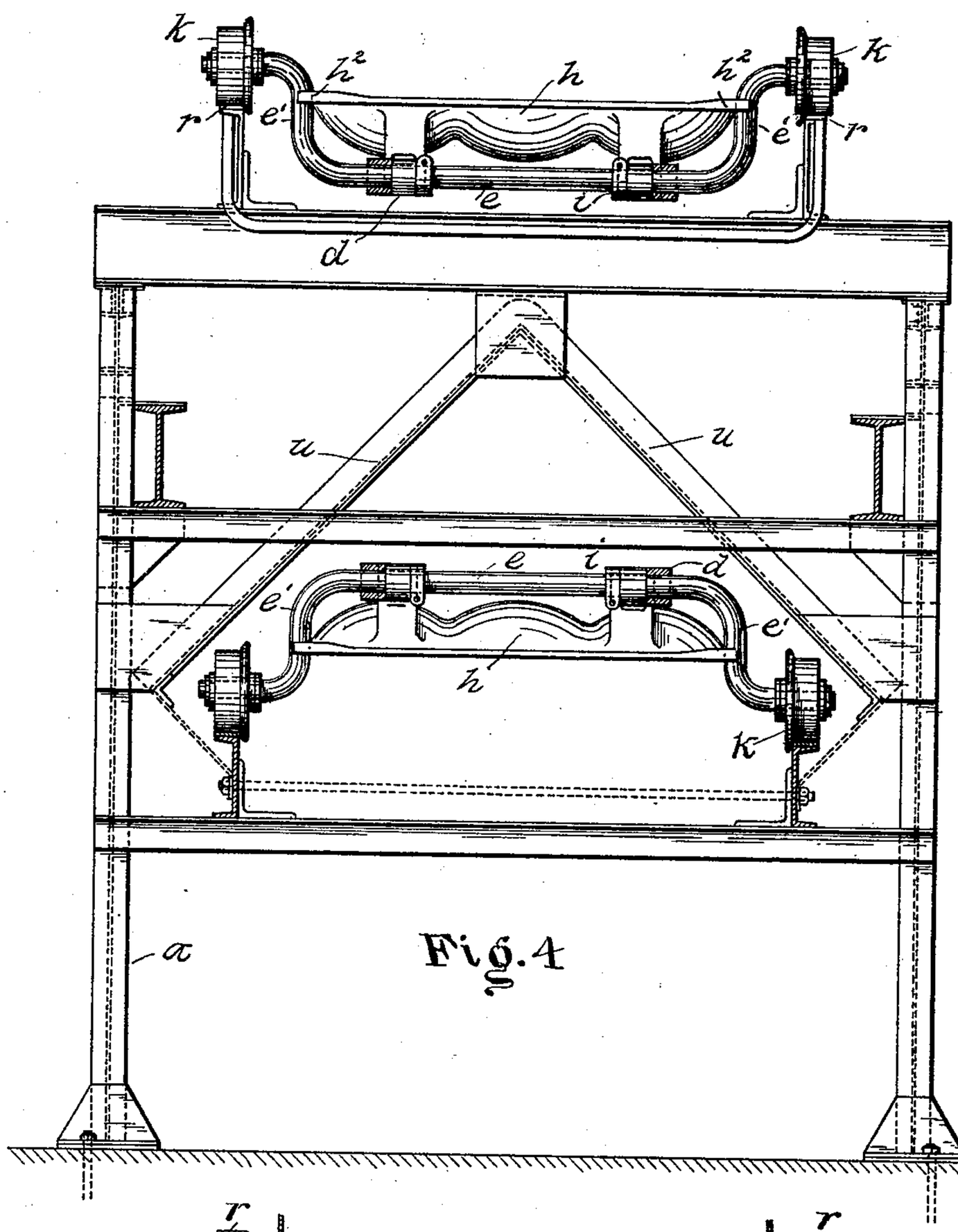

Fig. 4.

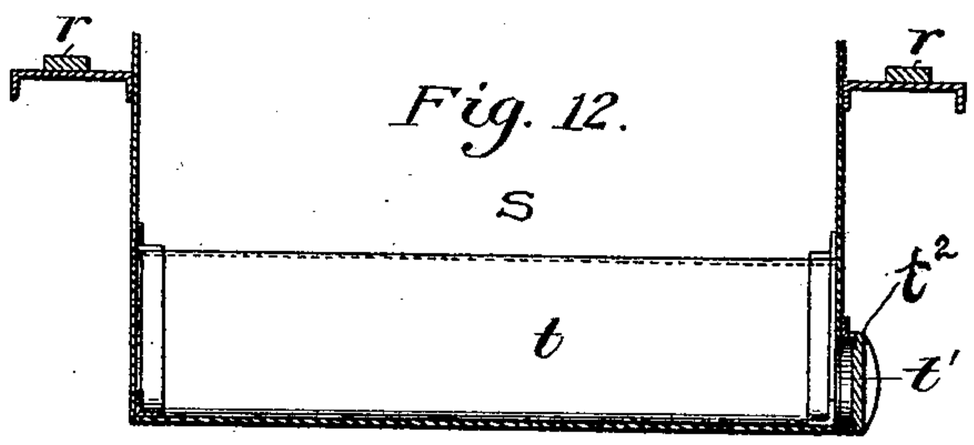

Fig. 12.

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CASTING APPARATUS.

(Application filed July 7, 1898.)

(No Model.) 3 Sheets—Sheet 3.

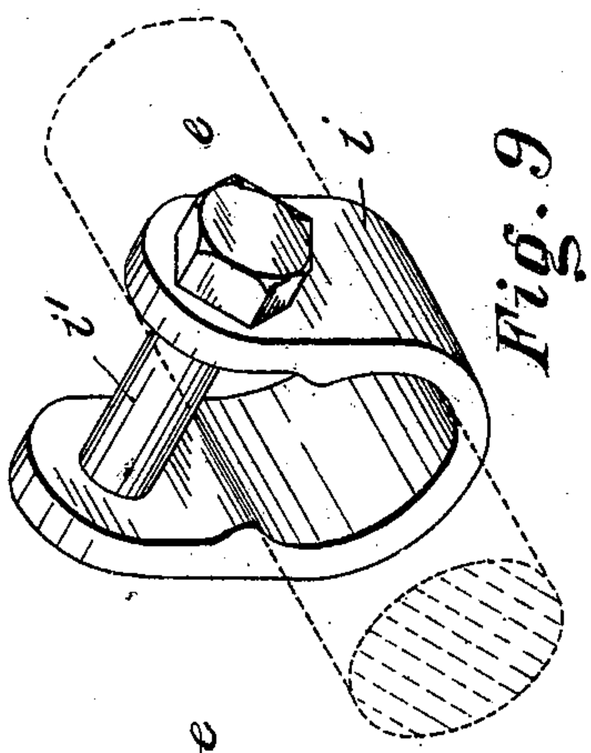

Fig. 9

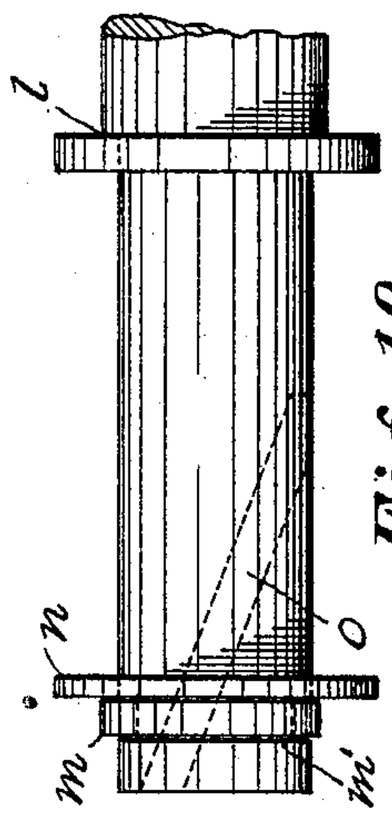

Fig. 10

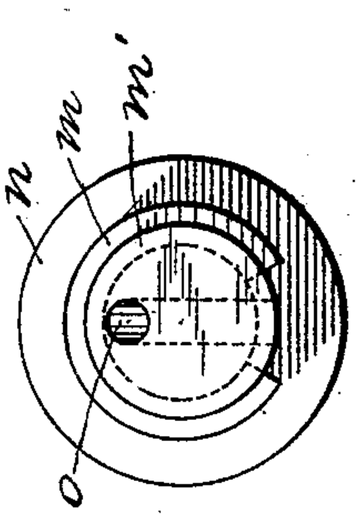

Fig. 11

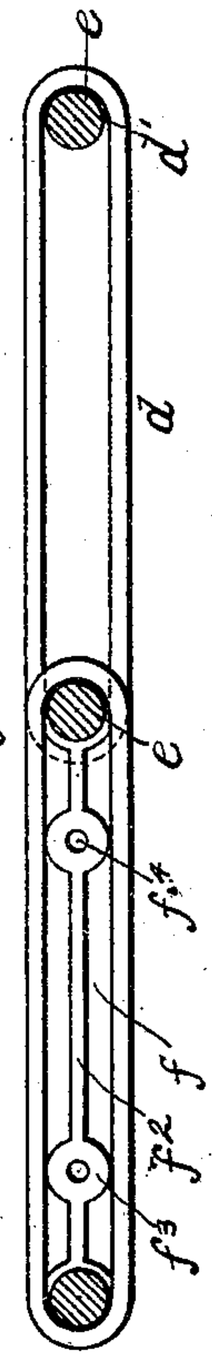

Fig. 6

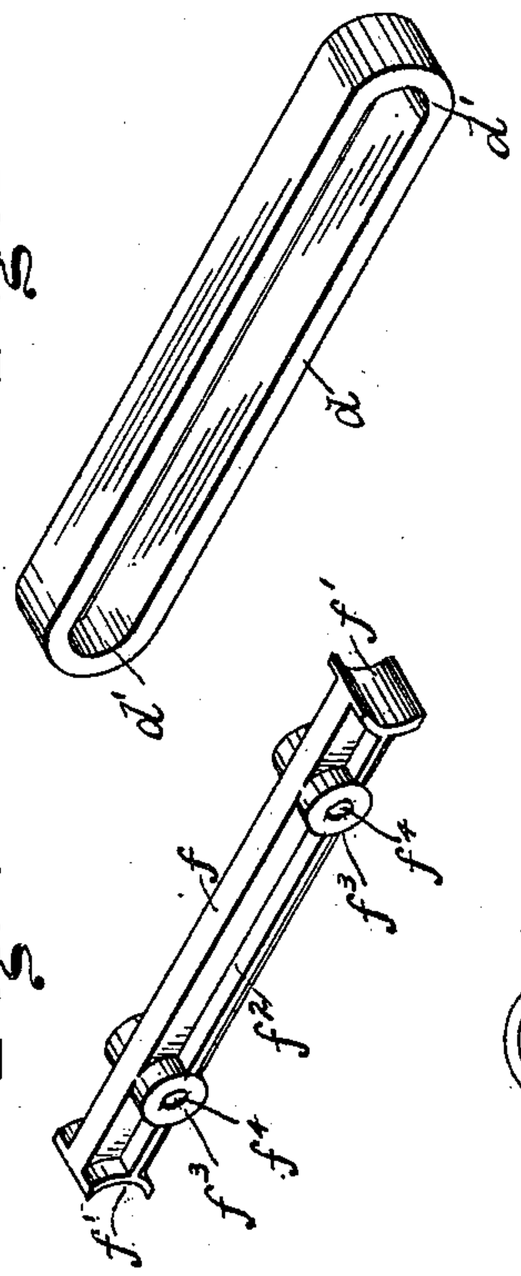

Fig. 8

Fig. 7

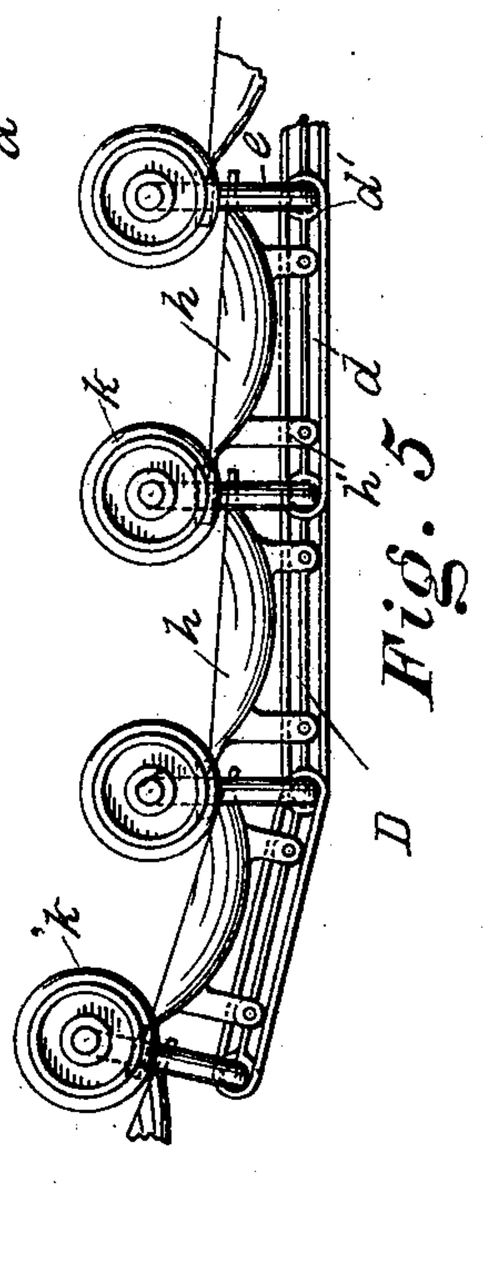

Fig. 5

Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM J. PATTERSON AND ALFRED M. ACKLIN, OF PITTSBURG, PENNSYLVANIA, ASSIGNORS TO HEYL & PATTERSON, OF SAME PLACE.

CASTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 633,151, dated September 19, 1899.

Application filed July 7, 1898. Serial No. 685,344. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM J. PATTERSON and ALFRED M. ACKLIN, residents of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Casting Apparatus; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to apparatus for casting slag, metals, &c.

In Letters Patent of the United States No. 583,424, dated the 25th day of May, 1897, and granted to Alfred M. Acklin, there is described and claimed a certain new and improved method and apparatus for casting metals. The present invention relates particularly to that method and apparatus, although we do not wish to limit its scope by this reference to said Letters Patent.

The main object of the present invention is to improve the construction of the endless carrier in such a way as to increase its strength and durability.

To enable others skilled in the art to make and use our invention, we will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a side elevation, broken away, of our improved apparatus, showing in a general way the apparatus without going into details. Fig. 2 is an enlarged cross-section on the line 2 2, Fig. 1. Fig. 3 is a plan view broken away. Fig. 4 is an enlarged section on the line 3 3, Fig. 1. Fig. 5 is an enlarged side view of a portion of the carrier. Fig. 6 is a side view of two links of the carrier, showing one filler-block in place. Fig. 7 is a perspective view of the filler-block. Fig. 8 is a like view of one of the links. Fig. 9 is a perspective view of the clamp. Figs. 10 and 11 are details of the spindle and split ring. Fig. 12 is a cross-section of the tank, showing the depressions or pockets in the same and the manner in which said pockets can be cleaned.

Like letters of reference indicate like parts in each of the drawings.

In the drawings, the letter *a* represents the structure, which supports the apparatus, said structure being braced in such manner as to give the requisite strength; but as it forms no part of our invention we will not describe it in detail. At the ends of the structure *a* are the shafts *b*, upon which are mounted the sprocket-wheels *c*, around which the endless carrier D passes and by means of one of which said carrier is driven. This carrier D is made up of the open links *d*, which have the curved seats *d'* at their ends within which the axles *e* fit. The axle *e* passes through the adjoining ends of the links. The links bear against the clamps *i*, which surround the axles. These clamps are U-shaped, as shown in Fig. 9, and the free ends have openings through which the bolt *i'* passes. By tightening this bolt *i'* the clamping force of the clamp is increased. By the use of this clamp the necessity of weakening the axle by a hole for a linchpin is avoided.

The filler-blocks *f* are adapted to fit within the open links *d*, said blocks preferably having the semicircular seats *f'* at their ends, which in conjunction with the seats *d'* of the links encircle the axles. The blocks *f* have the ribs f^2 formed thereon and the bosses f^3, with the bolt-holes f^4 therein. The filler-blocks fit snugly within the links, and bolts *g* pass through said holes f^4 and through registering openings in lugs *h'*, depending from the bottoms of the pans or molds *h*. These molds may be formed of wrought-iron, cast-iron, or other suitable material, and the shape of same may be changed to suit the circumstances.

The axles *e* have their ends bent, as at *e'*, to bring the wheels *k*, secured thereto, up on a higher plane than the main portion of the axle, whereby the molds *h* are also lowered. The molds *h* have the bifurcated lugs h^2 at their ends, said lugs engaging the vertical portions of the axles and acting to prevent the wabbling of said axles and retain the vertical portions at right angles to the plane of the travel of the molds. This is of particular advantage when the molds have discharged their contents and pass back toward the loading-point in the inverted position.

The wheels are mounted on the ends of the axles between the collar *l* and the split ring *m*, a washer *n* being interposed between said ring and the outer face of the wheel. The ring *m* is made of wrought iron or steel, and when the free ends are brought around, so that the ring encircles more than half of the axle, it is locked thereon, and being located in the annular groove *m'* of the axle it can have no lateral movement thereon. In this manner the wheel is secured to the axle without the use of a linchpin. Furthermore, by this construction an oil-passage *o* may be formed in the axle extending from the outer end thereof, where the oil is admitted to about the mid-point of the wheel-bearing. In this manner oil may be applied to the wheel-bearings while the apparatus is in operation.

As stated above, the wheels *k* are made to travel on a higher plane than the main portion of the axle. Consequently the tracks *r*, upon which said wheels travel, are on a correspondingly-elevated plane.

In the Letters Patent above referred to the method of casting consisted, essentially, in pouring the metal into molds partially submerged in water, passing said mold in a horizontal course through said water in the partially-submerged state, and then passing said molds in a horizontal course through said water in a completely-submerged state. In the present instance we also employ a tank *s*, through which the molds are carried, and by the use of axles, bent as above set forth, the tracks *r* may be secured to the exterior walls of the tank, so that the molds pass down into the tank to be partially or entirely submerged, as the case may be. The tracks *r* before the tank is reached and after it is passed are supported in a suitable manner by the structure *a*. The bottom of the tank *s* has the pockets or depressions *t* therein, which act to collect the sediment or any drippings from the molds. Openings *t'* are formed in the tank at these pockets, provided with heads t^2, so that these pockets may be readily cleaned out when desired. These heads t^2 may be secured in place in any suitable manner, and when removed a scraper or other suitable instrument may be inserted in the openings and any sediment or deposit in said pockets may be removed.

At the pouring end of the apparatus or lower end, where the metal is in a liquid or molten state, it is liable to overflow and drip from the molds as they travel along. To prevent this molten metal from dropping onto the inverted molds underneath on their way around to be filled, we employ the shields *u*, upon which the metal falls. The tank itself collects any metal that may fall from the molds, and as the metal will have hardened by the time the molds pass out of and beyond the tank it will hardly be necessary to employ the shields beyond the tank.

In the operation of the apparatus the molds are poured at the lower end of the structure *a* from a suitable pouring-spout or ladle and travel in the direction of the arrow, Fig. 1. When the molds reach the tank, the track being on a lower plane, said molds descend into the water. The form of axle employed permits the wheels to travel on a track above the plane of the molds and without the tank. The molds on leaving the tank travel up the incline to the top of the frame, where the molded pigs or slag is discharged onto a suitable chute or platform.

By the use of the above-described carrier and the manner of securing the molds thereto we obtain a strong and durable traveling carrier which will be better able to stand the severe wear and tear to which such casting apparatus is subjected.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In casting apparatus, a suitable structure, an endless traveling carrier supported thereby, said traveling carrier consisting of open links, axles passing through the adjoining ends of said links, removable filler-blocks inserted within said links between the axles at each end thereof, and molds secured to said blocks, substantially as set forth.

2. In casting apparatus, a suitable structure, an endless traveling carrier supported thereby, said traveling carrier consisting of open links having rounded seats at the ends thereof, axles fitting in the seats of the adjoining ends of said links, removable filler-blocks having seats at the ends thereof fitting within said links and engaging said axles, and molds secured to said blocks, substantially as set forth.

3. In casting apparatus, a suitable structure, an endless traveling mold-carrier supported thereby, molds, axles engaging said carrier, wheel-bearings, said axles being bent to bring the wheel-bearings above the main body of the axles, tracks, and a tank through which said mold-carrier passes, substantially as set forth.

4. In casting apparatus, a suitable structure, an endless traveling carrier supported thereby, axles engaging said carrier, wheel-bearings, said axles being bent to bring the wheel-bearings above the main body of the axles, tracks, molds connected to said carrier, said molds having bifurcated portions engaging the vertical portions of said axles caused by said bend, substantially as set forth.

5. In casting apparatus, a suitable structure, an endless traveling mold-carrier, molds, axles engaging said carrier, wheel-bearings, said axles being bent to bring the wheel-bearings above the main body of the axles, a tank through which said mold-carrier passes, a track secured to the exterior walls of said tank, substantially as set forth.

6. In casting apparatus, a suitable struc-

ture, an endless traveling mold-carrier composed of links, molds, axles engaging said mold-carrier, and U-shaped clamps secured to said axles to prevent lateral movement of the links composing said mold-carrier, substantially as set forth.

In testimony whereof we, the said WILLIAM J. PATTERSON and ALFRED M. ACKLIN, have hereunto set our hands.

WILLIAM J. PATTERSON.
ALFRED M. ACKLIN.

Witnesses:
JAMES I. KAY,
ROBT. D. TOTTEN.