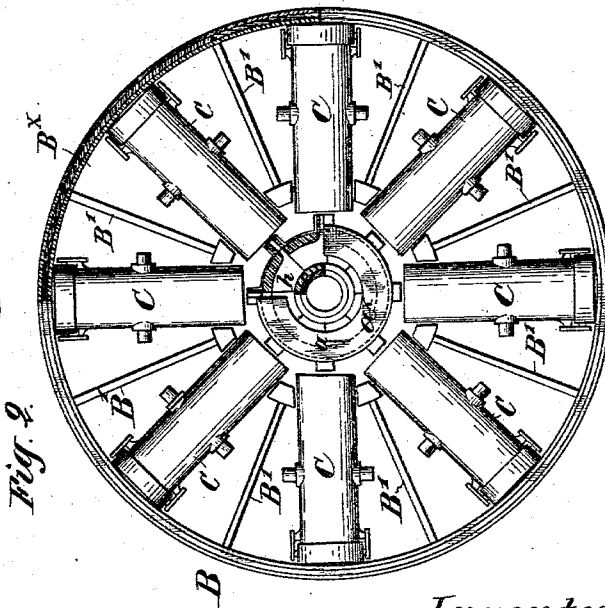
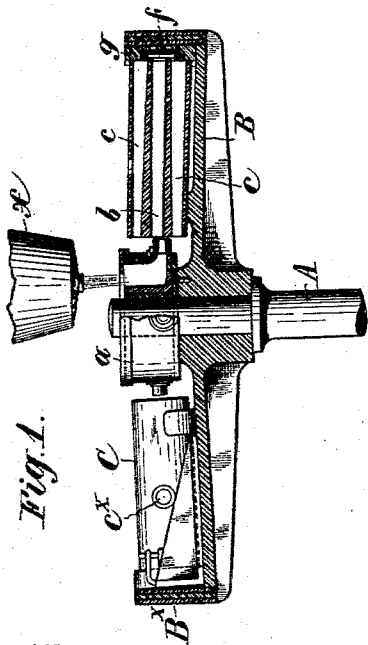
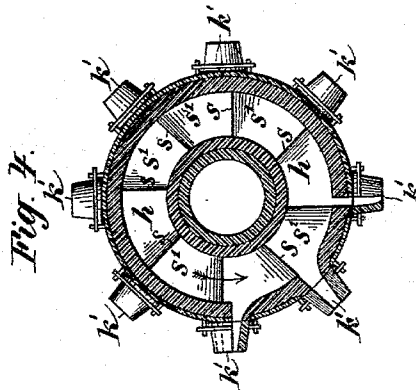
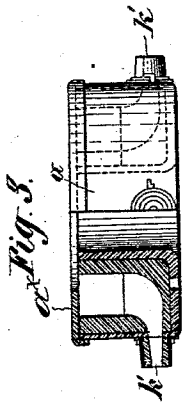
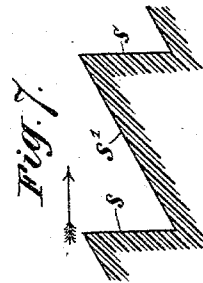
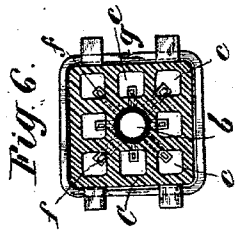
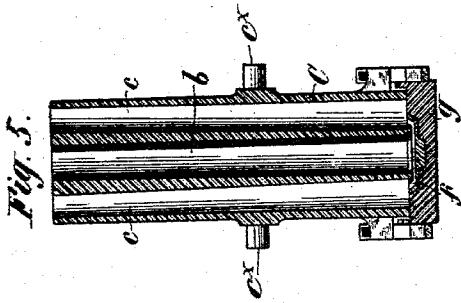


(No Model.)

J. L. SEBENIUS.  
CENTRIFUGAL APPARATUS FOR CASTING METALS.

No. 510,995.

Patented Dec. 19, 1893.



Witnesses:

Peter H. Ross

J. W. Niman

Inventor:  
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his atty.

# UNITED STATES PATENT OFFICE.

JOHAN LEONARD SEBENIUS, OF NYKROPPIA, SWEDEN.

## CENTRIFUGAL APPARATUS FOR CASTING METALS.

SPECIFICATION forming part of Letters Patent No. 510,995, dated December 19, 1893.

Application filed September 10, 1892. Serial No. 445,574. (No model.) Patented in Sweden February 13, 1892, No. 3,856.

*To all whom it may concern:*

Be it known that I, JOHAN LEONARD SEBENIUS, a subject of the King of Sweden and Norway, residing in Nykroppa, in the Kingdom of Sweden, have invented certain new and useful Improvements in Centrifugal Apparatuses for Casting Metals, (for which a patent has been granted to me in Sweden, dated February 13, 1892, No. 3,856,) of which the following is a specification

My invention relates to an apparatus for casting metals in which the molten metal is subjected to the influence of centrifugal force while it is flowing into and filling the mold, the object being to free the metal from gases and impurities and thus produce a homogeneous and solid casting. As with my apparatus the metal is subjected to centrifugal action while it is flowing and before it solidifies, and the mold is filled from through a radial tube or funnel while it is revolving about a center of rotation, the lighter impurities, gases, &c., are forced toward the center of rotation and are thus eliminated very rapidly and thoroughly.

In the accompanying drawings I have shown my invention embodied in an apparatus employing metal molds or chills, but this kind of mold is not essential to the invention.

Figure 1 is a sectional elevation of the apparatus, and Fig. 2 is a plan, also partly in section. Fig. 3 is a sectional elevation and Fig. 4, a sectional plan of the distributor, detached and on a larger scale than the principal views. Fig. 5 is a longitudinal, axial section, and Fig. 6, a transverse section of a set or group of metal molds employed in the apparatus, detached and drawn to a larger scale than the principal figures. Fig. 7 is an illustrative view which will be hereinafter explained.

A is a vertical shaft, which may be mounted in suitable bearings and rotated by any suitable mechanism and power, and B is a carrier for the molds, fixed on said shaft. As here shown this carrier is in the form of a disk provided with a raised marginal rim, B', but I do not limit myself to this particular form and construction of the carrier.

C designates the several groups or sets of

molds, mounted on the carrier and having as here shown, their longitudinal axes arranged in a position substantially radial to the axis or center of rotation. I have shown eight sets of molds, equally spaced so as to balance the apparatus, partitions B' being provided in the carrier for convenience in placing the sets of molds.

The construction of the set of molds, C, is best seen in Figs. 5 and 6, wherein *c* are the molds, grouped around a central tube *b*, and formed integrally therewith. The outer ends of the molds of the group are closed by a block or plate, *g*, which will be, by preference, secured removably to the set C. The channel or passage through the tube *b* communicates at its outer end with the several molds *c* through branch tubes or passages *f*, formed in the block *g*. When the set of molds is of metal, as here shown, the tubes and passages *b* and *f* will be lined with some refractory material. The set of molds may be provided with trunnions, *c*<sup>x</sup>, for convenience in lifting the molds out with a crane.

When placed in the carrier B the inner ends of the molds *c* will be open and the open, inner ends of the tubes *b* will coincide with the respective radial outlet nipples, *k*', on the distributor *a*, which is fixed on the upper end of the shaft A within or above the carrier B. As herein shown this distributor is circular in outline, and has in it an annular recess or chamber, *h*, partly covered by a ring plate *a*<sup>x</sup>, and open to the outlets *k*'. The metal may flow into or be poured into this recess *h* from a ladle or crucible *x*, seen in Fig. 1.

In order that the metal flowing into the distributor *a* (which rotates with the carrier B) may be carried around with the distributor and be thus at once put under centrifugal influence, the bottom of the recess *h* is constructed in the form of radial (or nearly radial) steps or ribs forming abrupt shoulders *s* at one side and easy inclines *s*' on the other side. The construction is illustrated in the sectional diagram Fig. 7. The distributor revolves in the direction indicated by the arrows in Figs. 4 and 7, and the shoulders or walls, *s* serve to carry the molten metal around and force it outward through the radial outlet nipples *k*', the said shoulders be-

ing so arranged, as seen in Fig. 4, as to direct the flow of the metal to said outlets. The surfaces of the distributor *a* exposed to the molten metal should be protected by a refractory covering if the distributor be made of metal.

The operation is as follows: The carrier is set to rotating and the molten metal poured into the distributor *a*. The centrifugal force causes the metal to flow outwardly through the several tubes *b* and thence through the lateral, branch tubes or channels *f* into the molds, which will thus be filled from their outer ends as herein arranged, the metal thus freeing itself from the lighter impurities which are driven inward toward the center of rotation. I have shown eight molds *c* grouped symmetrically around a single tube *b*, but the particular number of molds in a group is not essential to my invention. By the arrangement shown the molds will be filled in a gradual and simultaneous manner, which is quite important as it insures the molds becoming full at the same time or substantially so, and tends to prevent the flying out of the surplus metal at the center should some of the molds fill before the others. In order to avoid danger from the flying metal or from the flying pieces in case some part of the revolving apparatus should give way, the whole may revolve in an inclosure of brick or the like.

The tubes *b* are herein shown as formed in the walls of the molds, for convenience and simplicity, but the tubes for the outflow of the metal may be non-integral with the molds. The letter *b* herein refers to the tube or wall of the passage as well as to the passage through the same.

I do not claim the group of molds, as herein shown, specifically, as such or similar molds

have been before employed; but not in combination with other features as herein shown.

Having thus described my invention, I claim—

1. In a centrifugal apparatus for casting metals, the combination with a vertical, rotatively mounted shaft, a carrier fixed on said shaft, molds arranged horizontally and radially, or nearly so on said carrier, and metal-delivering tubes through which the metal flows outward to the outer ends of the respective molds, the latter being open to the air at their inner ends, of a distributor for the molten metal mounted on and embracing the vertical shaft and provided with radial outlet nipples, said nipples being arranged and adapted to lead the metal from the distributor into the inner ends of the respective metal-delivering tubes, substantially as set forth.

2. In a centrifugal apparatus for casting metals, the combination with a vertical shaft, a carrier fixed on said shaft, molds on said carrier and tubes to lead the molten metal outward radially or nearly so to the respective molds, of a distributor, *a*, carried by the vertical shaft, said distributor having an annular recess to receive the molten metal, radial outlet nipples opposite the respective radial tubes and radially arranged ribs in the bottom of the distributor, as described, whereby the molten metal is carried around and directed to the respective outlets, as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHAN LEONARD SEBENIUS.

Witnesses:

K. M. WETHERSTRÖM,  
T. GÖTHE.