

(No Model.)

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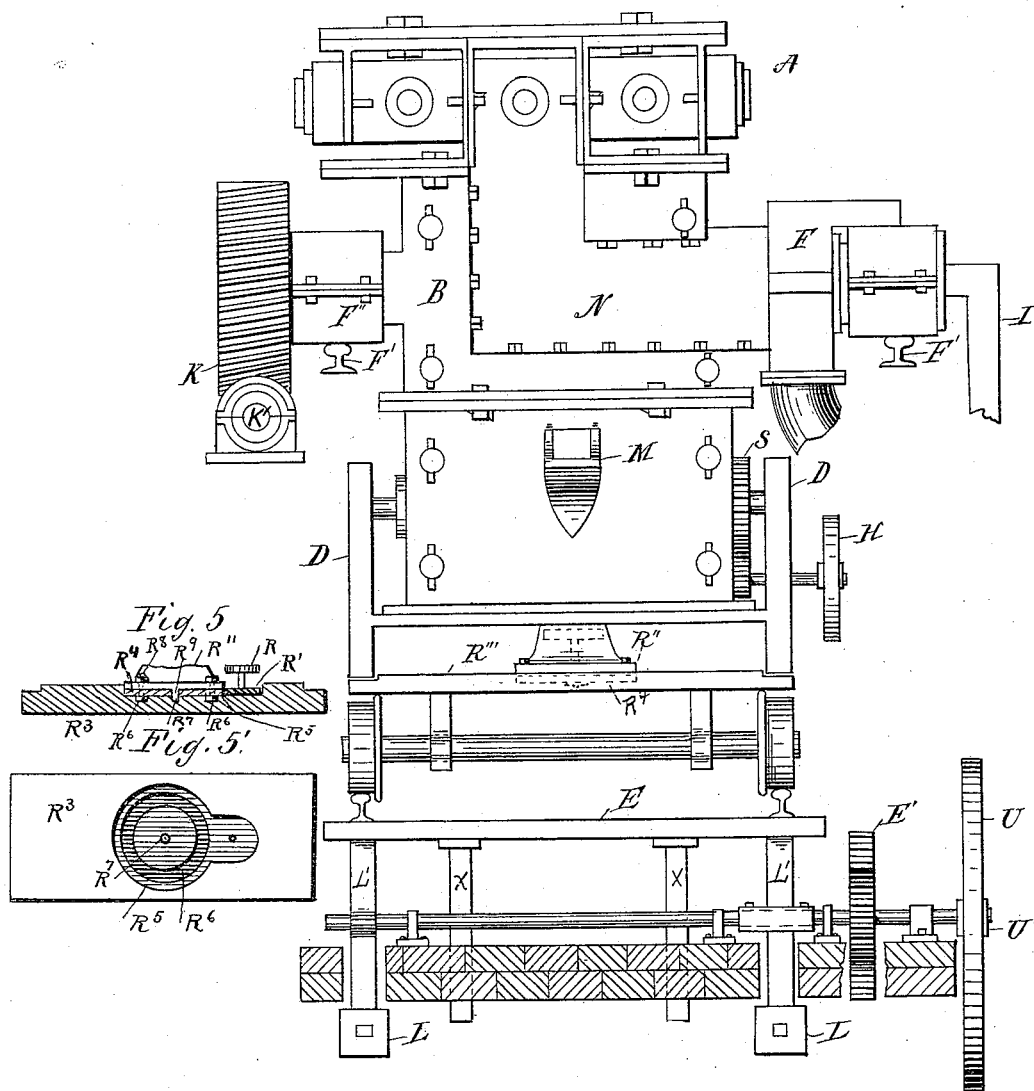
B. BAYLISS, Jr.

METHOD OF WORKING CONVERTERS.

No. 347,913.

Patented Aug. 24, 1886.

Fig. 1.



WITNESSES

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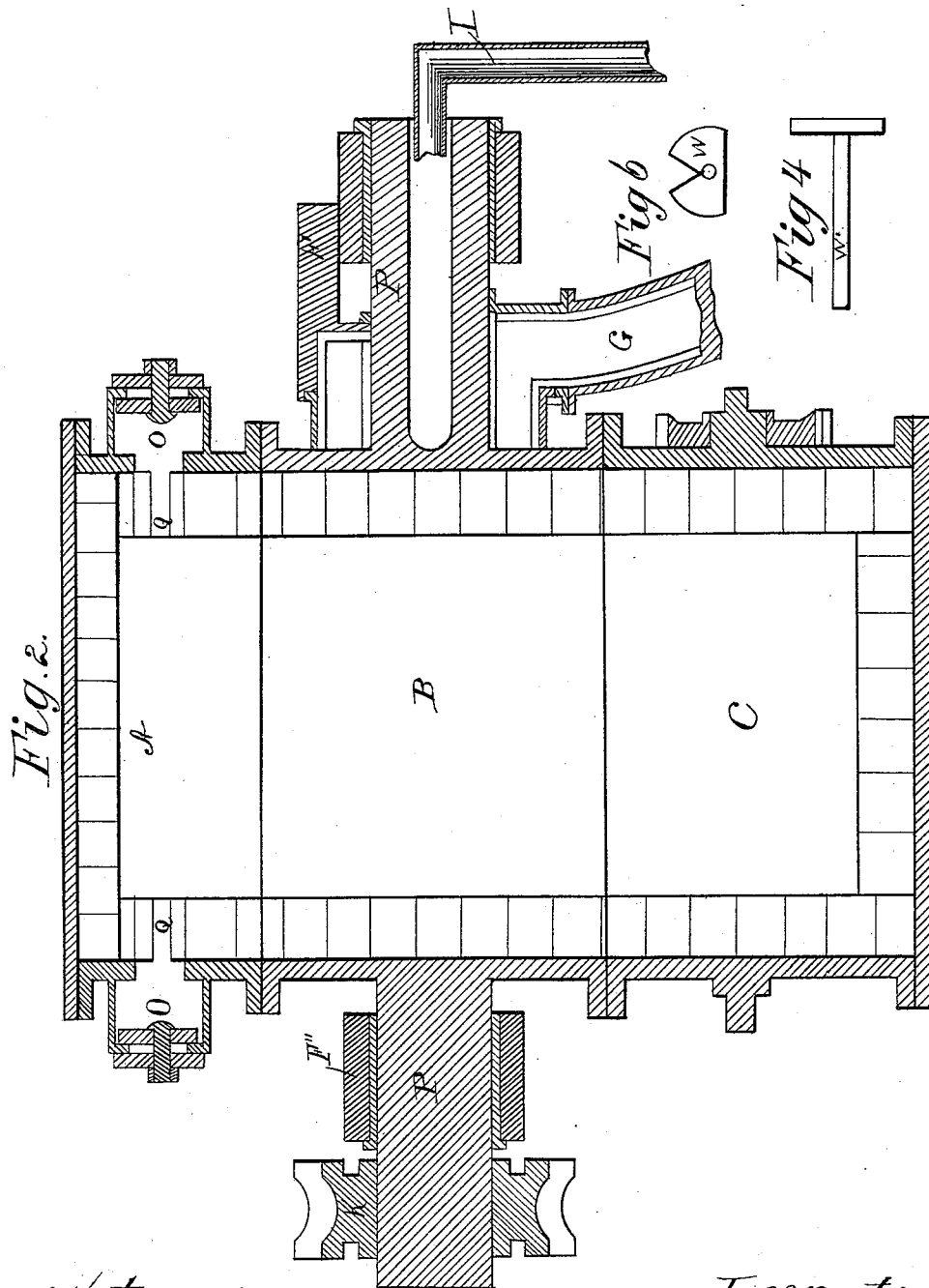
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Witnesses.

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3 Sheets—Sheet 3.

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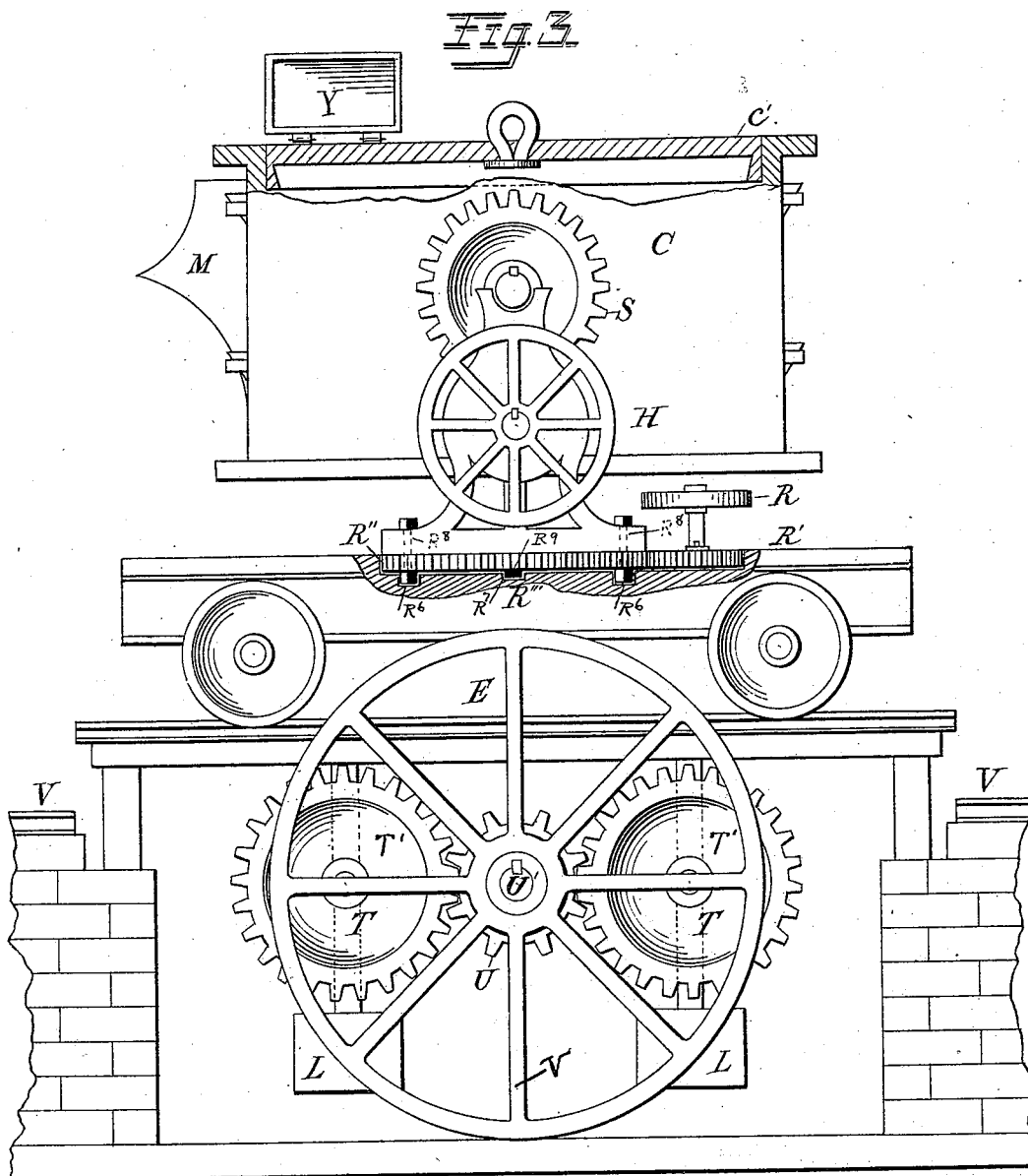
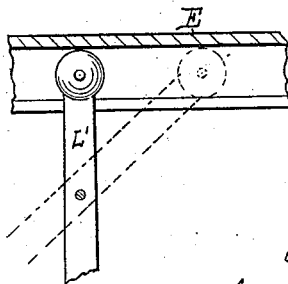


Fig 1.



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UNITED STATES PATENT OFFICE.

BENJAMIN BAYLISS, JR., OF BELTZHOOVER, PENNSYLVANIA.

METHOD OF WORKING CONVERTERS.

SPECIFICATION forming part of Letters Patent No. 347,913, dated August 24, 1836.

Application filed April 8, 1885. Serial No. 161,619. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN BAYLISS, JR., of Beltzhoover, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Methods of Working Converters; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to the art of manufacturing iron and steel; and its object is to maintain a temperature of fluidity of the mass in the bottom section of a converter during transit between the furnace and the stationary portion of the converter, or between the latter and the molds. I attain this object by the method herein specified, and the means illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of a converter and accessories embodying the principles of my invention. Fig. 2 is a vertical section of the converter. Fig. 3 is an elevation of a platform capable of vertical reciprocation and adapted to hold the truck and appurtenances shown. Fig. 4 is a view of the handle by which the efflux of slag is controlled. Fig. 5 is a vertical section through the platform of the truck and cogged turn-table, showing their relative position. Fig. 5' shows a plan view of the truck. Fig. 6 is a detail view of the valve which regulates the discharge of the slag; and Fig. 7 is a detail view of the under side of the platform, showing the sliding ball-and-socket joints operating in slots, whereby the vertical reciprocations are effected.

The same designations indicate corresponding parts in all the views.

In practice it has been found that the use of the bottom section of a converter to serve as a movable receptacle for the molten mass to and from the stationary portion of the converter (besides its normal function) involves a loss of heat and consequent fluidity, which seriously impairs the successful execution of subsequent operations. This invention is therefore intended to supply a deficiency in the apparatus shown in Patent No. 313,079, granted to me March 3, 1885, to the end of obviating the objection noted.

A B C represent the sections of my con-

verter. Concentric with the section A is a hot-air chamber, N', having removable covers O to permit of renewing tuyeres Q. The section B is keyed and luted to section A, and they normally rest together upon supports F' F". The air-passage N is attached to the outer surface of section B, and connects the hot-blast pipe G with the chamber N'. The section B is also provided with trunnions P P, rotating in bearings F' F" when so actuated by the gear-wheel K, operated by an endless screw, K'. On the other side, where the blast is admitted, a cold-water pipe, I, is provided to maintain an even temperature with that of the other trunnion. The section C is intended to be removably joined to B by keys and luting, for it is a feature of my invention that this section shall, besides its normal purpose, serve as a ladle to transport the fluid mass from the furnace to the converter. A cog-wheel, S, on the side of C, when operated by a pinion to which power is transmitted by a band-wheel, H, tends to alter the inclination of the support D and the contained section C to pour the metal. The support D is secured upon the truck R'', which, by means of the movable platform E, can receive section C from and restore it to section B. The truck R'' is recessed at R³, to permit of placing the cogged turn-table R⁴ and the operating-pinion R⁵ flush with its surface. An annular groove, R⁶, is provided to accommodate the bolts R⁸ during rotation, and a socket or depression, R⁷, affords a bearing for the spindle R⁹, on which the turn-table revolves. The frame R² being bolted to the turn-table R⁴ moves synchronously therewith and transmits the imparted motion to the supports D, thus horizontally varying the position of the section C, so as to bring its spout M in alignment with a suitable discharge-receptacle.

When the section C is in transit between the furnace and the stationary portion of the converter, a cover, C', is provided to keep approximately a uniform temperature therein. A loop, X, serves to handle the same, and a hinged door, Y, permits inspection of the interior. Weighted levers L' L', attached by a sliding ball-and-socket joint to the base of the platform E, and secured rigidly to the shafts T T, effect the reciprocations of the platform, the movement of the levers in the arc of a

circle being caused by a pinion, U, on the shaft U', which derives its motion from gear-wheels T' T' on the shafts T T, that are actuated by a hand-wheel, V. M is an aperture through which metal and slag are poured. W is a valve to control the efflux of slag from section C, and it is operated by handle W', which is rigidly secured thereto. X X are platform-guides.

10 The operation is as follows: The section C is run to the furnace by truck R'''. The molten metal is then charged. The cover C', or its equivalent, is then placed on the section. The truck and contents are conveyed to the station-
15 ary portion of the converter. The cover C' is removed. The section C is secured to section B by keys and luting, the hot blast turned on, and the converter alternately inverted and restored to secure homogeneity of the mass. The slag
20 is drawn. The section C is disjoined and conveyed to the molds, where its contents are poured. Any remaining slag is dumped after the metal has been discharged.

I do not herein claim the special apparatus
25 shown for effectuating my process, as this is covered by my application No. 164,652, filed May 7, 1885.

Heretofore in converting processes a sectional converter has been employed whose
30 lower portion could be conveyed to charge and discharge the metal, as shown in my patent of March 3, 1885, above referred to; but therein no provision was made for maintaining fluidity of the metal during transit. The obvia-
35 tion of this defect is the purpose of my present invention. I do not aim to change existing converting processes, except so far as the maintenance of a fluid temperature of the mass in the bottom portion of a sectional con-
40 verter is concerned. I am also aware that a

converter has been patented in which a semi-circular plate is secured by bolts or clamps over the mouth of a unitary converter, as well to prevent the escape of gases from the mass as to obviate atmospheric access during tran-
45 sit of the converter. My invention is solely addressed, however, to the maintenance of a fluid temperature in sectional converters during transit.

Having thus fully described my improve-
50 ments what I claim, and desire to secure by Letters Patent of the United States, is—

The process of refining crude iron herein described, which consists in charging the fluid metal from the furnace direct to the lower por-
55 tion of a sectional converter, then covering the same to maintain a temperature of fluidity in the mass, subsequently conveying said section to the stationary part of the converter, raising it from the ground-level, removing the
60 cover, attaching the section to the remaining sections without affecting the relative location of the latter, admitting a hot blast, periodically inverting and reversing the vessel to at-
65 tain homogeneity of the metal, subsequently inclining the vessel to discharge the scoria, then disjoining the lower section, covering the same from atmospheric contact, lowering
70 it to the ground-level, and finally conveying the section to and discharging the contents into the molds, for the purposes herein fully set forth.

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

BENJAMIN BAYLISS, JR.

Witnesses:

JOSEPH BLACKSHAM,
O. R. TOUDY.