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MANUFACTURE OF CAST STEEL CHAIN.

APPLICATION FILED MAY 4, 1918. RENEWED DEC. 13, 1920.

1,365,672.

Patented Jan. 18, 1921.

2 SHEETS—SHEET 1.

Fig.1.

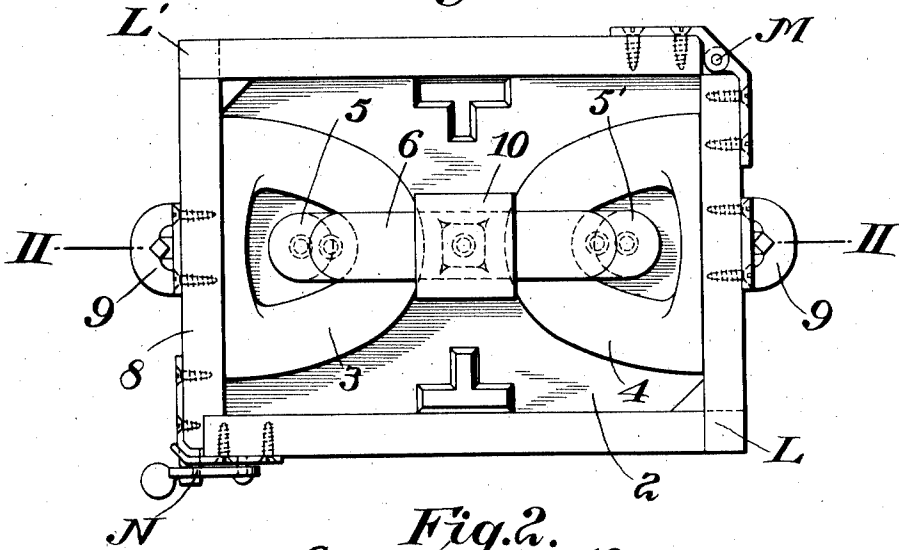


Fig.2.

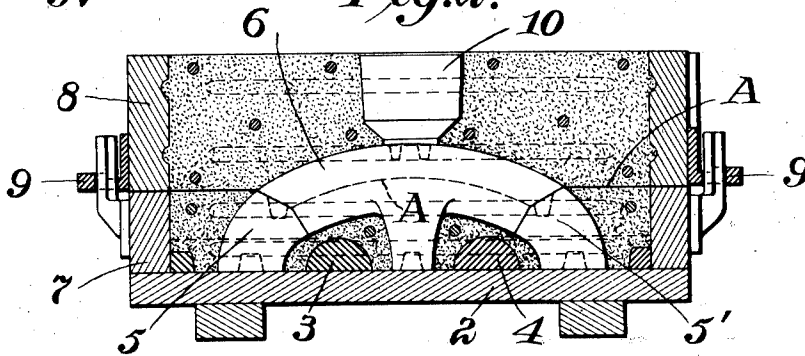
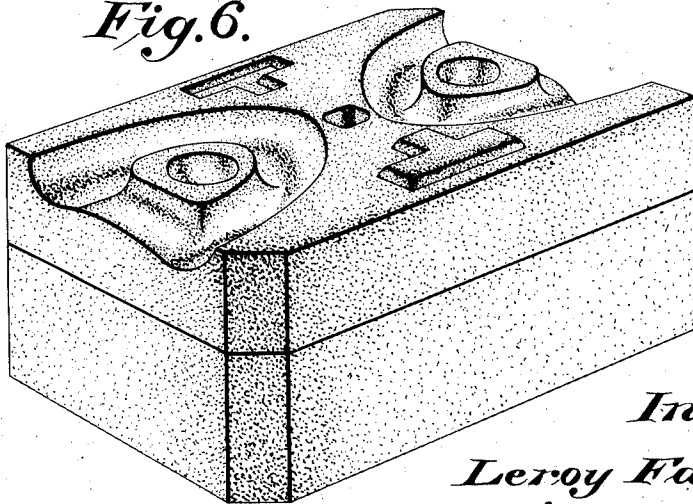


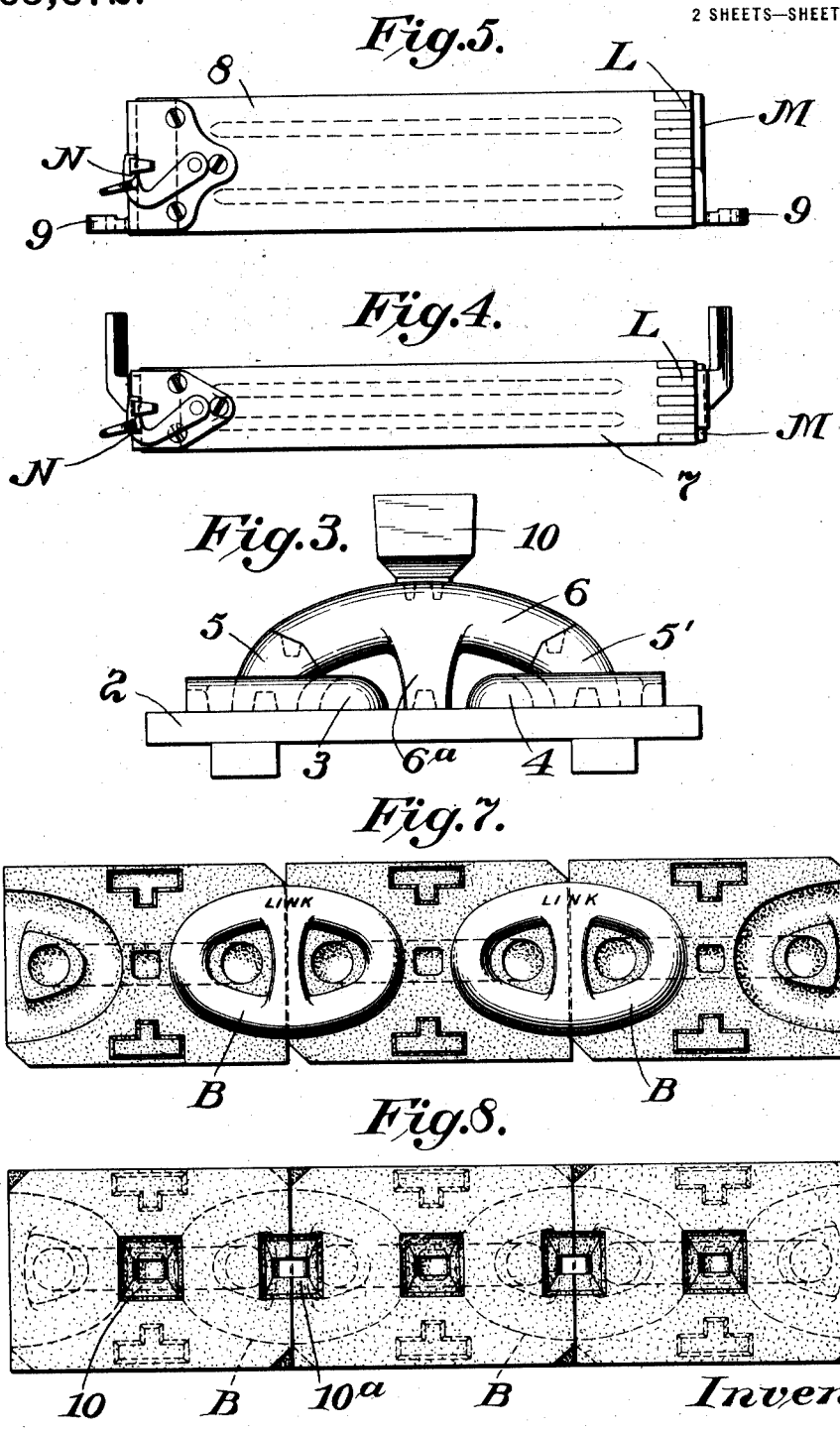
Fig.6.



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UNITED STATES PATENT OFFICE.

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MANUFACTURE OF CAST-STEEL CHAIN.

1,365,672.

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To all whom it may concern:

Be it known that I, LEROY FAWCETT, a citizen of the United States, and a resident of Sharon, Mercer county, Pennsylvania, have invented new and useful Improvements in the Manufacture of Cast-Steel Chain, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a plan of a pattern for forming a half mold; Fig. 2 is a vertical section on lines II—II of Fig. 1, but with the flask rammed up with sand; Fig. 3 shows the follower board and the pattern parts of the flask arranged thereon; Figs. 4 and 5 are side elevations of the lower and upper flasks, respectively; Fig. 6 is a perspective of a completed half mold; Fig. 7 shows a series of drag molds with precast links in position, and Fig. 8 is a plan of the completed and connected molds apertured to permit the pouring of all the links at one time.

My invention relates to the making of cast steel chain links in the form of a continuous chain, and consists in casting the chain without the use of inserted cores or mold parts in sand molds. My invention also consists in the various steps which I shall hereinafter describe and claim.

In carrying out my invention for the manufacture of cast steel chain links interlinked with each other, I mount upon the follower board 2 the patterns 3 and 4, each corresponding to one-fourth of a link. Loosely mounted by means of dowels also upon the board 2, in a plane at right angles to the plane of the parts 3 and 4, are the pieces 5, 5', which, with the piece 6, comprise the form of half of a link. The pieces 3 and 4 are slightly larger than the shape of a link and serve to form impressions in the mold in which the preformed links are to be set. The piece 6 has a central depending stub portion 6^a, intended to form the impression for the stud portion of a link.

Upon the board 2 is also a snap flask 7, which extends from the board up to the line indicated by A in Fig. 2. As is shown in Fig. 1, this snap flask consists of four sides rigidly joined at L, L', hinged at M and latched at N, so that when the latch N is released the flask may be swung open and removed from about the mold. When the flask is in position upon the board, sand is

rammed about the patterns up to the line A, leaving the upper part of the pattern piece 6 exposed above this line. Parting sand is then sprinkled upon the molded sand and the upper exposed surface of the pattern, and the snap flask 8 is then placed on the flask 7 and the two flasks are secured in alinement by means of the guides 9.

After the flask 8 is in place, sand is rammed up to the top of the flask and about the gate piece 10. The gate piece 10 is then removed and the upper flask 8 is lifted, and with it the sand above the line A. The part 6 of the pattern is then taken out of the sand. Paste is applied to the joint along the line A and the flask 8 with its sand is then replaced. The entire mold is then turned over, and the board 2 lifted off. The loose pieces 5, 5' may then be withdrawn by hand, after which the flasks 7 and 8 are unlatched and removed. The mold thus made (which may be baked if desired) forms the cope or upper half of the mold.

In forming the drag or lower half of the mold, a similar operation is employed, except that the gate piece 10 is not used. After sufficient molds have been completed, a row of drag molds is abutted end to end, and the impressions made by the pattern pieces 3, 4, are preferably filled with preformed links, after which the cope molds are lowered upon the drag molds, thereby completing the molds for the links which are to connect the links which have already been formed.

The metal is poured through the gates 10', thus forming the connecting links and a complete section of chain. Sections of chain may be connected by placing the end links of sections in a single mold and pouring a connecting link therebetween.

If desired, the whole chain may be cast at one time, as is shown in Fig. 8, through the gates 10' and 10^a, but as it has been found that more uniform results have been secured by pouring all of the links arranged in one plane, it is preferred to first cast the separate links on a vertical or a horizontal axis and then to complete the chain by later pouring the connecting links, also arranged on a similar axis, as has been described above.

The terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expres-

sions, of excluding equivalents for the steps described and shown, but recognize that various modifications are possible within the scope of the invention claimed.

5 What I claim is:

1. The herein described process of making cast steel chain, which consists in forming by means of patterns part impressions in a sand half mold for three connecting
10 chain links and a pouring gate, withdrawing the patterns from the impressions, and securing the half mold to a complementary half mold thereby forming part impressions for two links and a complete link impression for a third link, and pouring the mold.
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2. The herein described process of making cast steel chain, which consists in forming part impressions for chain links in sand in a flask, forming a further part impression
20 for a connecting link in sand in a flask superimposed on the first named flask, lifting the second named flask with its molded sand, withdrawing a pattern piece from the central link impression extending through
25 the body of the sand first molded, replacing the second named flask upon the first and withdrawing the other pattern pieces, thereby forming part impressions for links connected by a half impression of a central
30 link.

3. The herein described process of making connecting cast steel chain links, which consists in forming in a sand half mold link impressions over patterns in the face of the
35 mold, and part impressions within but not intersecting the first-named impressions, and a third impression completing within the body of the mold with the last named impressions an impression for one-half link, forming a similar complementary half mold,
40 inserting preformed links in the first-named impressions in the half molds, securing the half molds together, and pouring the second and third named impressions in the two
45 complementary parts of the mold, thereby forming a link connecting the preformed links.

4. The herein described process of making connecting cast steel links, which consists in ramming sand in flasks about part
50 patterns for three chain links, lifting one of the flasks with contained sand to expose a pattern piece of the intermediate link, withdrawing the exposed piece, cementing the
55 sand in the two flasks and then withdrawing the other part patterns for the intermediate

link and the other two links, thus completing one-half of the mold, making a similar complementary half-mold, placing them with their impressions in alinement, and pouring
60 the mold.

5. The herein described process of making continuous cast steel chain which consists in forming in a half-mold in two ramblings a half-impression of a link to be poured and
65 part of impressions for adjacent links, placing preformed links in said last named impressions registering said half-mold with a complementary half-mold provided with a gate to form a complete impression for a
70 link, and pouring the mold.

6. The herein described process of making continuous cast steel chain which consists in forming a series of half-molds, each half mold containing a half impression of a
75 link to be poured and part impressions for adjacent preformed links, connecting said series of half-molds by preformed links, superimposing upon the half-molds complementary half-molds provided with gates,
80 and pouring the series of molds.

7. The herein described process of making continuous cast chain which consists in forming a half mold from patterns in a two
85 part flask, said mold having part link impressions upon one face and a half link impression within the body thereof; removing part of the pattern for the half link impression from between the flasks, and the remainder of the pattern pieces from the face
90 of the mold, forming a complementary half mold, securing the half molds together to form a complete link impression and pouring the impression.

8. In apparatus for forming half molds
95 for cast chain links, a pair of flasks arranged one above the other, part patterns for three links being secured in the under flask, the part pattern for one link being arranged in a plane at right angles to the plane of the
100 patterns for the other two links and projecting above the top surface of the under flask, the second flask being removable with its upper part mold to permit the withdrawal of the part of the pattern projecting
105 above the top surface of the under flask after the forming of the lower part mold in the under flask, the remainder of the part patterns being withdrawn from the bottom of the lower part mold.

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