

No. 818,941.

PATENTED APR. 24, 1906.

J. M. DODGE.
MOLD FOR CASTING.
APPLICATION FILED JAN. 18, 1905.

Fig. 1.

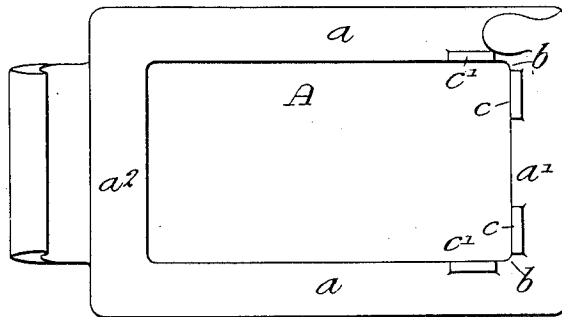


Fig. 6.

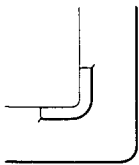


Fig. 2.

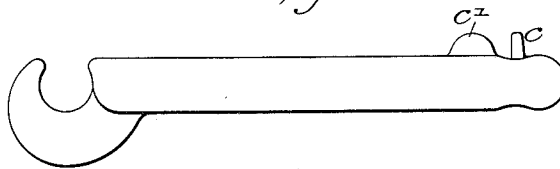


Fig. 7.

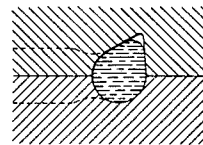


Fig. 3.

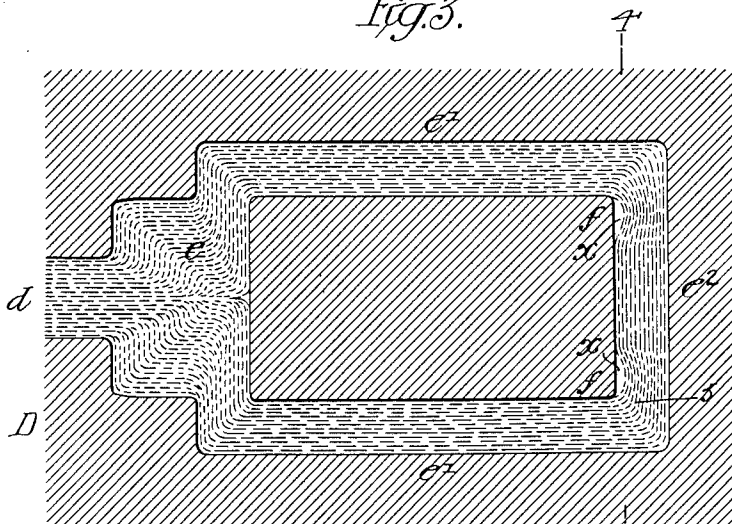


Fig. 4.

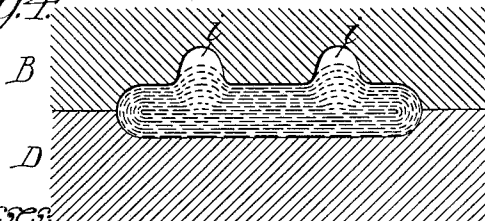
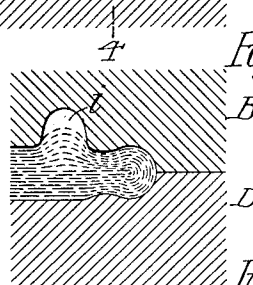


Fig. 5.



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JAMES M. DODGE, OF PHILADELPHIA, PENNSYLVANIA.

MOLD FOR CASTING.

No. 818,941.

Specification of Letters Patent.

Patented April 24, 1906.

Application filed January 18, 1905. Serial No. 241,684.

To all whom it may concern:

Be it known that I, JAMES M. DODGE, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Molds for Casting, of which the following is a specification.

The object of my invention is to improve the process of casting open quadrangular chain-links or other objects in which the metal must flow past an abrupt corner, so as to prevent blow-holes, which are formed by entrapped air which accumulates at or near the corners. This object I attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a quadrangular detachable chain-link having an open center. Fig. 2 is a side view of Fig. 1. Fig. 3 is a sectional plan view of a mold, illustrating in diagram the flow of the metal. Fig. 4 is a sectional view on the line 4 4, Fig. 3. Fig. 5 is a sectional view on the line 5 5, Fig. 3; and Figs. 6 and 7 are views of modifications of the form of projection.

While my invention is to be used particularly in the manufacture of chain-links, (illustrated in the drawings,) it will be understood that it can be carried out in other forms of cast metal in which the metal must flow around abrupt corners.

In casting links by the ordinary method in the form illustrated cavities or blow-holes are formed in the links which often extend for a considerable distance each side of the corner, making the corners in many instances very weak. Some of these cavities are not open, being entirely within the cast metal, so that it is impossible to find these defects without a series of tests, and in many cases these fail to disclose the defect. These links are used to make up drive-chains which are subjected to very rough usage and intense strains and must be perfect, and where the links are imperfect the chain will part and in many instances serious damage is caused.

Referring now to the drawings, A is an ordinary form of drive-chain link having longitudinal members *a*, an end bar *a'*, and a hooked portion *a''*, which is shaped to engage the cross-bar of an adjoining link.

c c are projections formed on the link by the metal entering cavities in the mold. These projections are preferably at the point immediately on one side of the corners *b* at the point where an eddy is formed in the molten metal.

Referring now to Figs. 3 and 4, B is the cope of the mold, and D is the drag of an ordinary sand mold used in casting links of this type. The metal if poured into the mold at *d* and allowed to flow into the space *e* separates and flows through the longitudinal spaces *e' e'*, turning abruptly the corners *ff*, and flows into the space *e''*. The flow of the molten metal is very rapid, and the entrapped air travels with the molten metal until it reaches the corners *ff*. As it passes the corners the molten metal seems to force the entrapped air or gas into the spaces *x x*, due to decreased fluid-pressure forming an eddy directly beyond the corner, and the majority of the air will not travel farther. The air is confined at this point by the body of metal, and as it expands by heat it works its way into the metal, causing the honeycombed cavities mentioned above, and it is to obviate this that my invention has been devised. It will be understood that if the mold is tilted in one direction or the other while the metal is being poured the metal may flow into one longitudinal passage, then across and down the other longitudinal passage, so that in any event an eddy will be formed at each corner. I have found that by making a cavity *i* beyond each turn directly above the place where the eddy of whirl would take place the air will enter this cavity and accumulate there rather than in the body of metal forming the link. There is a certain proportion of metal which will enter the cavity, and this forms the projections *c*, as shown in Figs. 1 and 2. These projections, however, can be readily broken off and the link ground or otherwise finished before it is put in service.

The cavities *i* can be of any form desired and will depend considerably upon the size and shape of the casting.

I have found by providing the cavities at the precise points indicated that I am enabled to make a more perfect link than heretofore, the entrapped air or gas being removed entirely from the body of the link and allowed to dissipate through the sand of the mold without in any sense affecting the casting.

As it is impossible in practice to so adjust the molds that the metal will flow in one direction only, I prefer to make the cavities *i* on each side of each corner, so that in the event of the metal flowing either down both longitudinal passages or down one and then the other the entrapped air or gas will have a

chance to escape and a perfect link insured. Thus four projections were shown in Fig. 1, which must be removed during the finishing of the link.

5 While in Figs. 1 and 2 I have shown narrow projections on each side of the corner *b*, in Fig. 6 I have shown a single right-angled projection *c'* at the corner and in Fig. 7 I have shown a tapered projection, the shape
10 of the mold being such that the entrapped air will pass from the inner corner to the outer edge of the link.

I claim as my invention—

1. A mold for casting open quadrangular
15 links and other objects having abrupt corners, said mold having passages into which the cast metal flows, and a closed cavity formed in the mold directly above the inner
20 inner corner into which the entrapped air

may escape which is collected at this point in an eddy of the flowing metal, substantially as described.

2. A mold for casting open quadrangular links and other objects having abrupt corners, said mold having a passage into which
25 the cast metal flows and a cavity on each side of the inner corner of the passage and above said passage and communicating only with the inner side of the passage so as to allow the
30 entrapped air to enter the passage and prevent the formation of blow-holes in the castings, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of
35 two subscribing witnesses.

JAMES M. DODGE.

Witnesses:

WILL. A. BARR,
JOS. H. KLEIN.