

(No Model.)

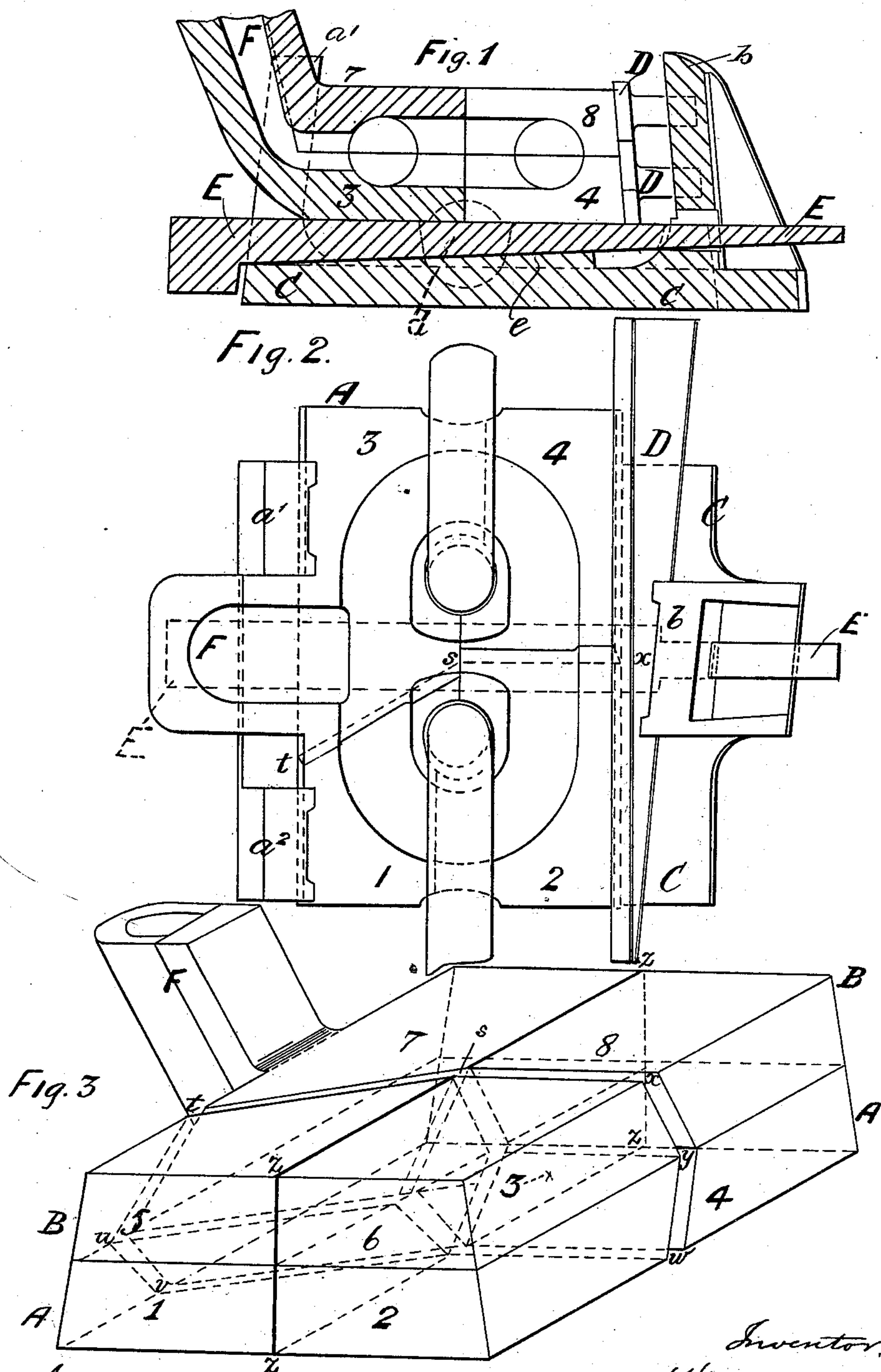
2 Sheets—Sheet 1.

W. PENMAN.

MOLD FOR CASTING CHAINS.

No. 375,567.

Patented Dec. 27, 1887.



Attest:

Edmond Steer,

F. A. Hopkins,

Inventor,

William Penman

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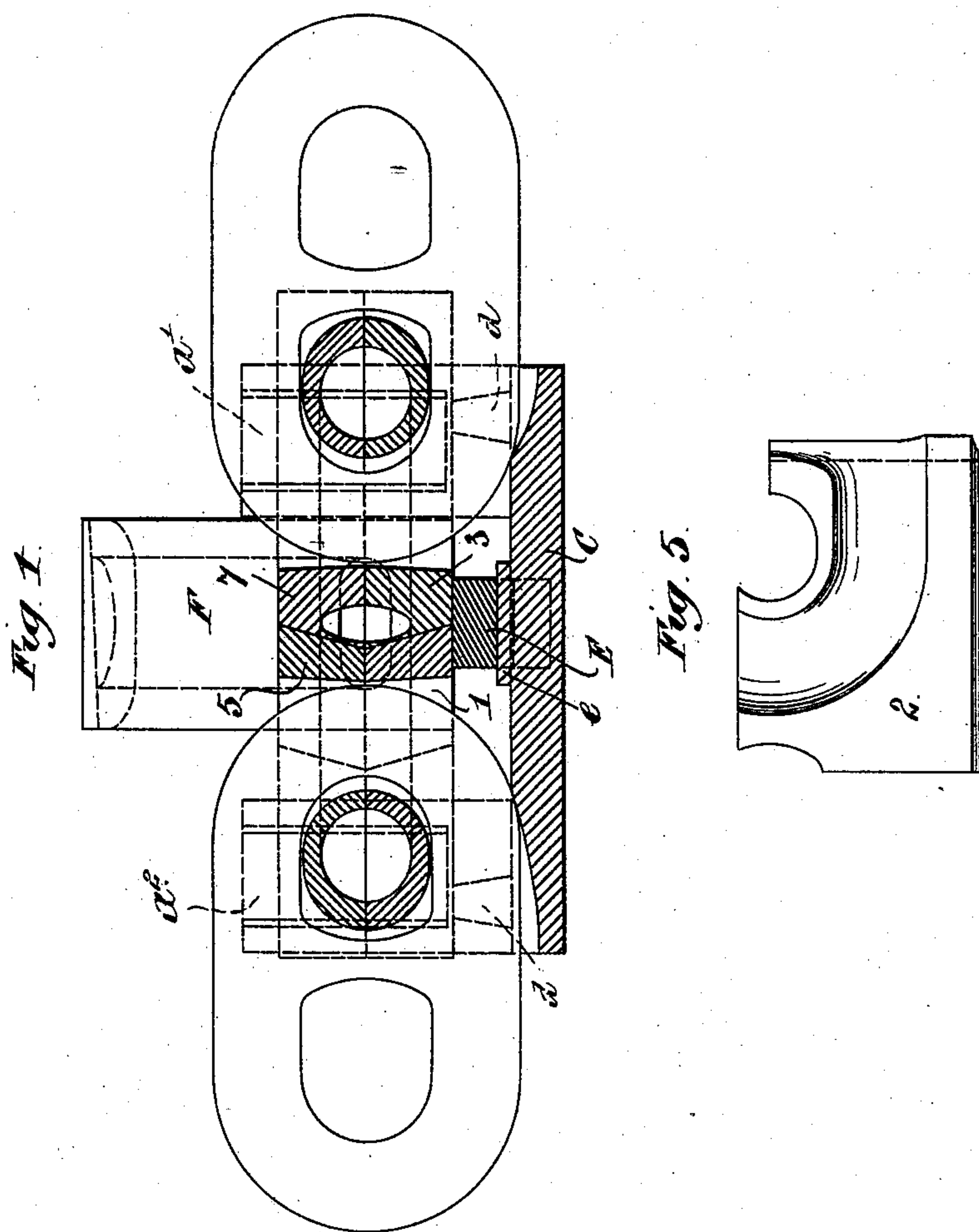
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Attest:
T. S. Knight
J. M. Hopkins

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William Penman
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UNITED STATES PATENT OFFICE.

WILLIAM PENMAN, OF 2 BENSAM ROAD, GATESHEAD-ON-TYNE, COUNTY OF DURHAM, ENGLAND, ASSIGNOR TO HIMSELF, WILLIAM GIBSON, AND LANCELOT TULIP PENMAN, OF SAME PLACE.

MOLD FOR CASTING CHAINS.

SPECIFICATION forming part of Letters Patent No. 375,567, dated December 27, 1887.

Application filed May 31, 1887. Serial No. 239,897. (No model.) Patented in England February 5, 1887, No. 1,864.

To all whom it may concern:

Be it known that I, WILLIAM PENMAN, property owner, a subject of the Queen of Great Britain and Ireland, and residing at 2 Bensham Road, Gateshead-on-Tyne, in the county of Durham, England, have invented certain new and useful Improvements in Molds for Casting Chains and other Articles, (for which I, conjointly with William Gibson and Lancelot Tulip Penman, have applied for a patent in Great Britain on the 5th of February, 1887, No. 1,864, since patented of the same date and number,) of which the following is a specification.

This invention has for its object to provide improved molds for casting chains and other metal articles, by the use of which the cracking of the castings during contraction in the molds is prevented.

According to this invention the mold is formed in sections, the contiguous ends or surfaces of which sections are inclined or made to slope, instead of being perpendicular or at right angles to the contiguous surfaces of the said sections, and a wedge or wedges or its or their equivalents is or are used for supporting the sections of the mold at their inner ends when fitted in position to receive the molten metal, but capable of being readily loosened or removed, so as to release the sections to admit of their yielding to the contraction of the casting.

I will describe this invention with reference to the accompanying drawings, which illustrate a mold constructed according to this invention for casting chains, from which it will be readily understood how the invention may be applied to molds for casting other articles.

Figure 1 is a transverse vertical section of the mold fixed in position for receiving the molten metal. Fig. 2 is a plan of the lower portion of the same. Fig. 3 is a perspective view showing diagrammatically the form of the contact-surfaces between the sections of the mold. Fig. 4 is a vertical longitudinal section of the mold, the plane of the section being a little to one side of the center. Fig. 5 is a plan view of one of the sections of the mold.

The mold is divided horizontally into two

parts, A B, each of which is subdivided in an upward and downward direction into four smaller parts or sections, numbered, respectively, 1 2 3 4 and 5 6 7 8.

In building up the mold for the reception of the molten metal the lower parts or sections, 1 2 3 4, are placed in position between projections a' , a'' , and b , formed on the base-plate C, and on these lower parts are placed the upper parts or sections, 5 6 7 8, the whole thus constituting the mold, one side of which bears against the projections a' a'' , while between the opposite side thereof and the projection b are driven the wedges D, to secure the mold in place on the base-plate. The bottom sections of the mold are supported at their outer ends by projections d d on the base-plate C, while their inner contiguous ends are supported by a taper key or wedge, E, the under surface of which bears upon an inclined plane, e , formed on the base C. The gate F may form parts of such of the bottom and top sections of the mold as may be most convenient.

The mold being fixed in position on the base-plate, as described, the molten metal is poured in at the gate F until the mold is filled, immediately after which the wedge E, which supports the center portion of the mold, and the wedges D D, which keep the upper and lower sections in position, are released or knocked out, so that the sections of the mold may be free to move, in order to permit of the free contraction of the metal in cooling. The formation of the contact-surfaces between the sections of which the mold is composed is arranged so as to facilitate such movement as will be clearly seen by reference to Fig. 3, the four lower sections, 1, 2, 3, and 4, being separated horizontally from the corresponding upper sections, 5, 6, 7, and 8. The faces of the sections 2 4 6 8, which meet or lie contiguous to the corresponding faces of the sections 1 3 5 7, are vertical, or at right angles to the base-line of the mold, as shown by the line $z z z$. The faces of the two sections 2 6, which meet or lie contiguous to the corresponding faces of the sections 4 8, form an obtuse angle, $x y w$, the said faces of the sections 4 8 forming a corresponding re-entrant angle. The line of division $s x$ between the sections 6 8 and the

sections 2 4 is at a right angle to longitudinal division-line $z z$. The faces of the two sections 3 7 contiguous to the meeting faces of sections 1 5 form an obtuse angle, $t u v$, in the reverse direction to the obtuse angle $x y w$ of the sections 2 6, and the said meeting faces on the sections 1 5 form a corresponding re-entrant angle. The line of division $t s$ between the sections 1 5 and the sections 3 7 forms an obtuse angle, $t s z$, with the longitudinal division-line $z z$. The object in providing these angular meeting faces on the sections of the mold will be understood by the following:

If the whole of the vertical contact-surface of the sections were at right angles to the base of the mold, the casting contracting while cooling would tend to draw the sections closer together, and as the sections are already in close contact they cannot yield to the contraction of the casting, and consequently the casting would be liable to crack, whereas by making the meeting faces of the sections in an angular form, as described, when the casting contracts the angular contact-surfaces will slide over each other, so as to yield to the contraction, and consequently the liability to cracking of the castings is entirely obviated.

By constructing the sections with inclined or sloping contact or opposed surfaces, as described, when the wedges D D and E are released after the mold is charged with molten metal, the lower sections, 1 2 3 4, will drop for want of support, thereby slackening the upper sections, 5 6 7 8, and thus admit the casting to contract without liability to crack.

I claim—

1. Molds for casting chains and other articles, composed of sections having inclined or sloping edges or opposed surfaces, substantially as and for the purpose hereinbefore described, and illustrated by the accompanying drawings.

2. In molds for casting chains and other articles, the combination, with the sections having inclined or sloping edges or opposed surfaces, of the base-plate C, having projections $a' a^2$ on one side, projection b on the opposite side, and an incline, e , wedge E, adapted to engage said incline to support the sections, and the wedges D D, for holding them in posi-

tion, said wedges D D engaging the projection b , all such wedges being capable of being readily released or removed, substantially as and for the purpose set forth.

3. In molds for casting chains and other articles, the combination, with a base-plate having projections $a' a^2$ on one side, projection b on the opposite side, and a central incline rib, e , of the sections constituting the mold and wedges for retaining said mold on the base-plate, said wedges being adapted to be readily released or removed, substantially as and for the purpose set forth.

4. A mold for casting chains and other articles, consisting of lower sections, 1 2 3 4, and upper sections, 5 6 7 8, separated from the lower sections horizontally, the faces of the sections 2 4 6 8, which meet or lie contiguous to the corresponding faces of the sections 1 3 5 7, being vertical or at right angles at $z z$ to the base-line of the mold, the faces of the two sections 2 6, which meet or lie contiguous to the corresponding faces of the sections 4 8, forming an obtuse angle, $x y w$, the said faces of the sections 4 8 forming a corresponding re-entrant angle, the line of division $s x$ between the sections 6 8 and the sections 2 4 being at right angles to the longitudinal division-line $z z$, the faces of the two sections 3 7 contiguous to the meeting faces of sections 1 5 forming an obtuse angle, $t u v$, in the reverse direction to the obtuse angle $x y w$ of the sections 2 6, the said meeting faces on the sections 1 5 forming a corresponding re-entrant angle, and the line of division $t s$ between the sections 1 5 and the sections 3 7 forming an obtuse angle, $t s z$, with the longitudinal division-line $z z$, substantially as shown and described, and for the purpose set forth.

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

WILLIAM PENMAN.

Witnesses:

WM. LEACH,
3 Percy Terrace, Gateshead, Solicitor's Clerk.
C. M. USHER,
Orchard House, Jesmond, Newcastle-on-Tyne,
Solicitor's Articled Clerk.