

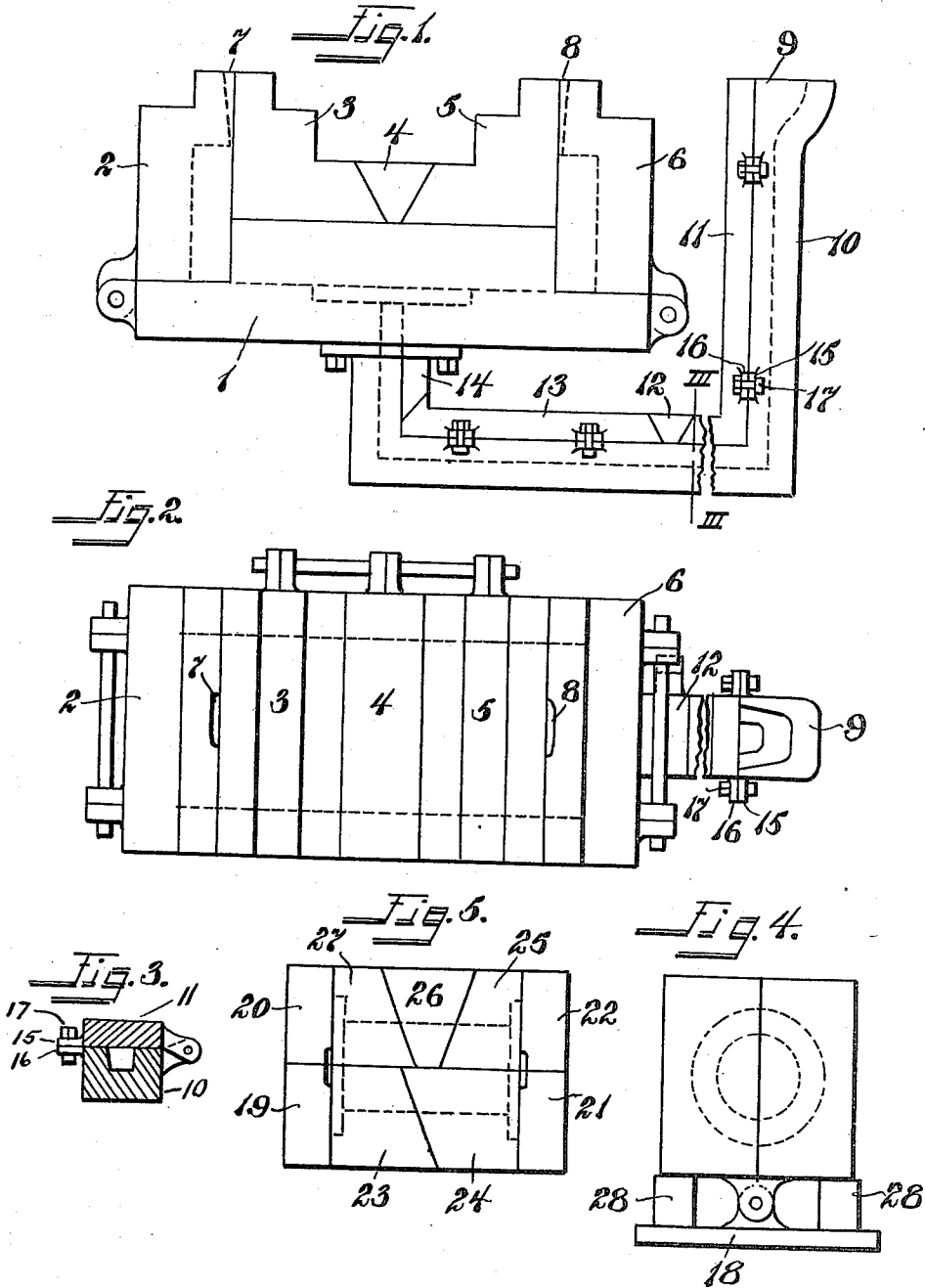
G. F. McKEE & W. F. SCHILLING.

CASTING APPARATUS.

APPLICATION FILED MAR. 10, 1909. RENEWED NOV. 11, 1911.

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UNITED STATES PATENT OFFICE.

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CASTING APPARATUS.

1,030,198.

Specification of Letters Patent.

Patented June 18, 1912.

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To all whom it may concern:

Be it known that we, GEORGE F. McKEE and WILLIAM F. SCHILLING, both citizens of the United States, residing at Aspinwall, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Casting Apparatus, of which the following is a specification.

Our invention relates to casting apparatus, and particularly permanent casting apparatus designed for repeated use. It has for its primary objects; the provision of improved casting apparatus adapted to permit the metal of the casting to shrink naturally, and having its parts arranged in an improved manner so that they may be readily separated and the casting easily removed; the provision of improved heading or venting means; and the provision of improved pouring means.

Our invention is illustrated in preferred form in the accompanying drawing, wherein—

Figure 1 is a side elevation of a mold for an irregular casting, showing our improved pouring means;

Figure 2 is a plan view of the device shown in Figure 1;

Figure 3 is a section through the gate taken on the line III—III of Figure 1;

Figure 4 is an end elevation of a mold for making a pipe with flanges, and

Figure 5 is a plan view of Figure 4.

Referring particularly to the mold, it will be seen that in carrying out our invention we provide a supporting member or portion 1, carrying separable mold sections 2, 3, 4, 5, and 6, all of a configuration to suit that of the article to be cast and constituting when assembled in the position shown in Figure 1, the inclosing mold. These mold sections are pivotally mounted on the supporting member 1, and are adapted to be swung out of engagement with one another and with the supporting member, thus permitting the removal of the casting from the supporting member when the pouring gate is separated, as shall hereinafter appear.

It will be observed that the section or member 4 is substantially V-shaped in cross section and that the sections 3 and 5 have beveled ends to engage the sides of the V. It is obvious that in any irregular casting, or in any casting wherein there are pro-

jecting portions, there will be a pinching or binding on the mold parts caused by the shrinking of the metal in the casting, which will either cause flaws and cracks, etc., since the metal cannot shrink uniformly, or cause the mold parts to stick and prevent their being separated. Our device among other things tends to overcome these difficulties and to permit the metal of the casting to shrink naturally and uniformly. This is accomplished by means of the V-shaped section 4, which owing to its contour, is forced upwardly as the metal shrinks and thereby exerts pressure on the sections 3 and 5. This upward movement of the section 4 permits the sections 3 and 5, because they are loosely pivoted, to move inward a sufficient distance to compensate for the reduced size of the casting, and this compensation prevents any undue straining in the metal. The V shape of the section also obviates any binding on the sections 3 and 5 when it is thrown out of engagement, and thereafter the said sections can in turn be readily thrown back.

The means of venting the mold of air or gases formed during the pouring consists in the provision of the openings 7 and 8 formed in the sections 3 and 5 along the adjacent surfaces of the sections 2 and 6, which construction is necessary in carrying out our invention, in order to permit the mold sections to be easily disengaged from one another.

Referring now more particularly to the pouring gate, we employ a divided gate 9 consisting of a supporting member 10 and separable sections or members 11, 12, 13, and 14 carried thereby, and having their adjacent ends beveled. The sections 11, 13, and 14 may be secured to the supporting member in any acceptable manner, as by the open-ended lugs 15 and 16 and the bolts 17 (see Figure 1). The section 12 is substantially V-shaped in cross section and is pivotally mounted on the supporting member 10 adapted to be swung free of the adjacent sections. This arrangement is designed to overcome any pinching or binding caused by the shrinkage of the metal in the gate as it is cooled, which binding would prevent the ready separation and removal of the gate parts. The operation of the sections of the gate is substantially the same as that of

the mold sections, and need not be further described. The same construction of gate could be used in pouring in the side of a mold, or in the top.

5 In Figures 4 and 5 we have shown our invention applied to a mold for making standard pipe provided with flanges. The arrangement of parts is substantially the same, there being a supporting member 18 carrying
10 ing pivotally mounted thereon sections 19 to 27 inclusive, the section 26 in this case being the V-shaped section, and the sections 23 and 24 being beveled in the manner shown in the pouring gate. During the
15 pouring, and as long as desired, the various parts are held in operative position by means of the blocks 28 placed on the member 18. Upon removal of these blocks the parts can be swung apart in the manner
20 above described and the casting removed.

It is apparent that by our construction a very practical molding apparatus is provided, wherein a practically natural shrinkage of the metal is secured, thus preventing
25 the occurrence of cracks or other flaws in the casting, and wherein the mold parts are designed to simplify venting or heading and to overcome any binding caused by the contraction of the metal in cooling. It is ob-
30 vious that our invention may be applied to a variety of differently shaped castings. Other advantages will readily occur to those familiar with the art.

Having thus described our invention and
35 illustrated its use, what we claim as new and desire to secure by Letters Patent, is the following:

1. A permanent casting apparatus comprising in combination, a supporting mold
40 member, opposing mold sections mounted thereon for relative movement, a series of mold sections mounted between the opposing sections for free relative movement, and a recess formed in one or more of the mold
45 sections to form a projection on the casting, some of said series being provided with their adjacent ends beveled in such manner as to permit the movement of the said series to open position from between the op-
50 posing sections, and the opposing sections being adapted to move outwardly thereby fully releasing the casting.

2. A casting apparatus comprising in combination, a supporting mold portion, op-
55 posing mold portions thereon, a series of mold portions mounted between the opposing portions, and a recess formed in one or more of the mold portions to form a projection on the casting, some of said series of mold portions having adjacent ends
60 beveled to permit the movement of the said series to open position.

3. A casting apparatus comprising in combination, opposing mold sections, a se-
65 ries of mold sections therebetween, and re-

cesses in the mold portions to form projections on the casting, one of said series of sections being substantially V shaped in cross section to permit the successive movement of the said series of the sections to open po- 70 sition.

4. In combination in a casting apparatus, a supporting mold member, opposing mold members formed thereon, a series of mold members pivotally mounted therebetween on 75 the supporting member, and recesses in the mold members for forming projections on the casting, some of said series of mold members having their adjacent ends beveled to permit the movement of the series to open 80 position.

5. In combination in a casting apparatus, a supporting member, opposing mold members pivotally mounted thereon, a series of mold members pivotally mounted on the 85 supporting member and between the opposing members, and recesses formed in the mold members to form projections on the casting, some of the series of sections having their adjacent ends beveled to permit 90 of the successive movement of the mold members to open position.

6. In combination in a casting apparatus, supporting member, opposing mold members thereon, a series of mold sections piv- 95 otally mounted on the supporting member between the opposing mold members, recesses in the mold members for forming projections on the casting, one of said sections of the series being substantially V shaped 100 in cross section to permit the movement of the sections to open position.

7. A casting apparatus comprising in combination, opposing mold portions, a se- 105 ries of mold members mounted for free relative movement therebetween, recesses formed in some of the mold portions to form projections on the casting, a pouring gate, and a vent formed in adjacent surfaces of the opposing mold portions and one of the 110 mold members, to permit the said series to be moved to open position.

8. A casting apparatus comprising in combination opposing mold members, a se- 115 ries of mold members therebetween, a recess formed in the mold portions to form a projection on the casting, some of said series having their adjacent ends beveled to permit movement of the series to open position, a pouring gate, and a vent formed in adja- 120 cent surfaces of the opposing mold members and the series.

9. A pouring gate for a casting apparatus having portions thereof extending in different planes, comprising in combination a 125 supporting member and a series of members mounted thereon, some of the series having their adjacent ends beveled to permit of the movement of the series to open position.

10. A pouring gate having portions there- 130

of extending in different planes, comprising in combination a supporting member and a series of members pivotally mounted thereon, some of which have their adjacent
5 ends beveled to permit of the movement of the series to open position.

11. A pouring gate having portions thereof extending in different planes, comprising in combination a supporting member,
10 and a series of members pivotally mounted thereon, one of which is substantially V

shaped in cross section to permit of the movement of the series to open position.

In testimony whereof we have hereunder signed our names in the presence of the 15 two subscribed witnesses.

GEORGE F. McKEE.
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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."