

**No. 698,594.**

**Patented Apr. 29, 1902.**

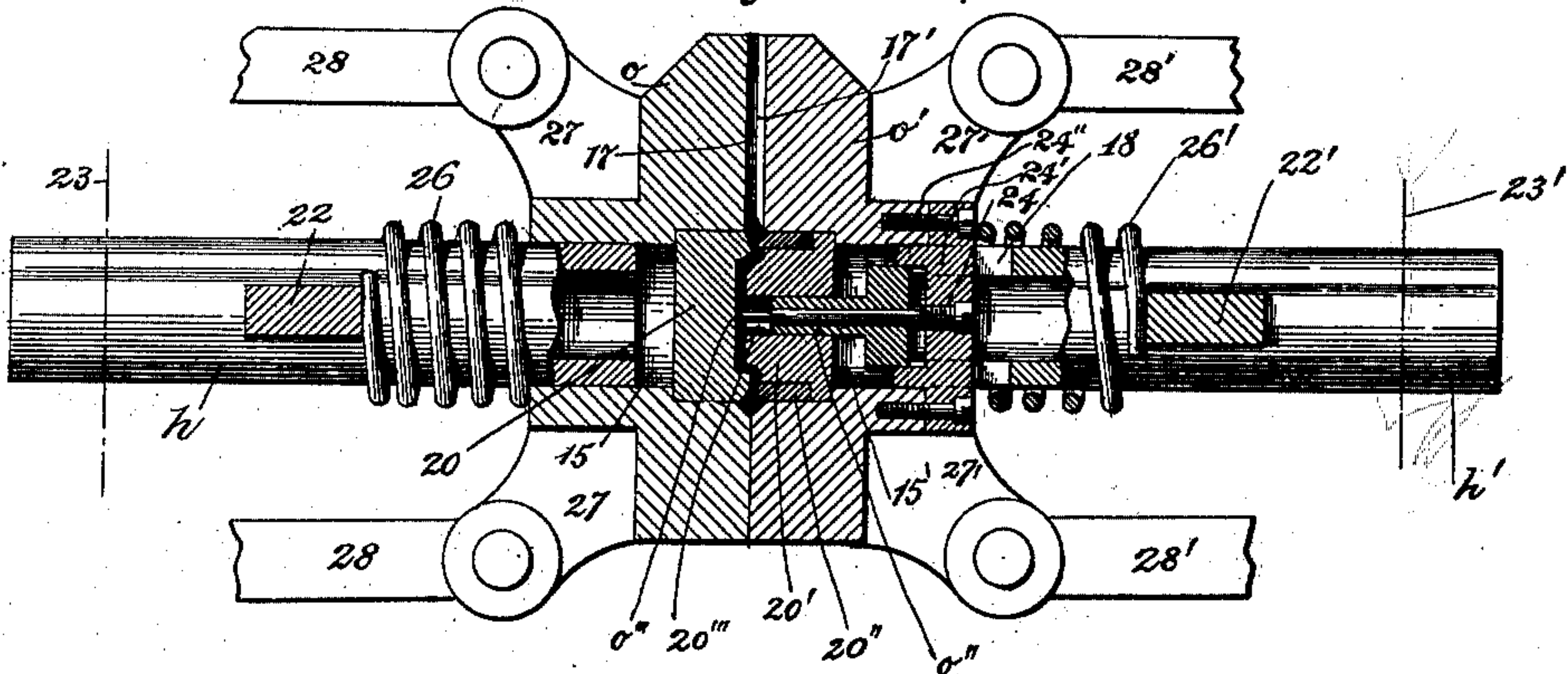
**C. H. VEEDER.**  
**MOLD MECHANISM.**

(Application filed May 21, 1900.)

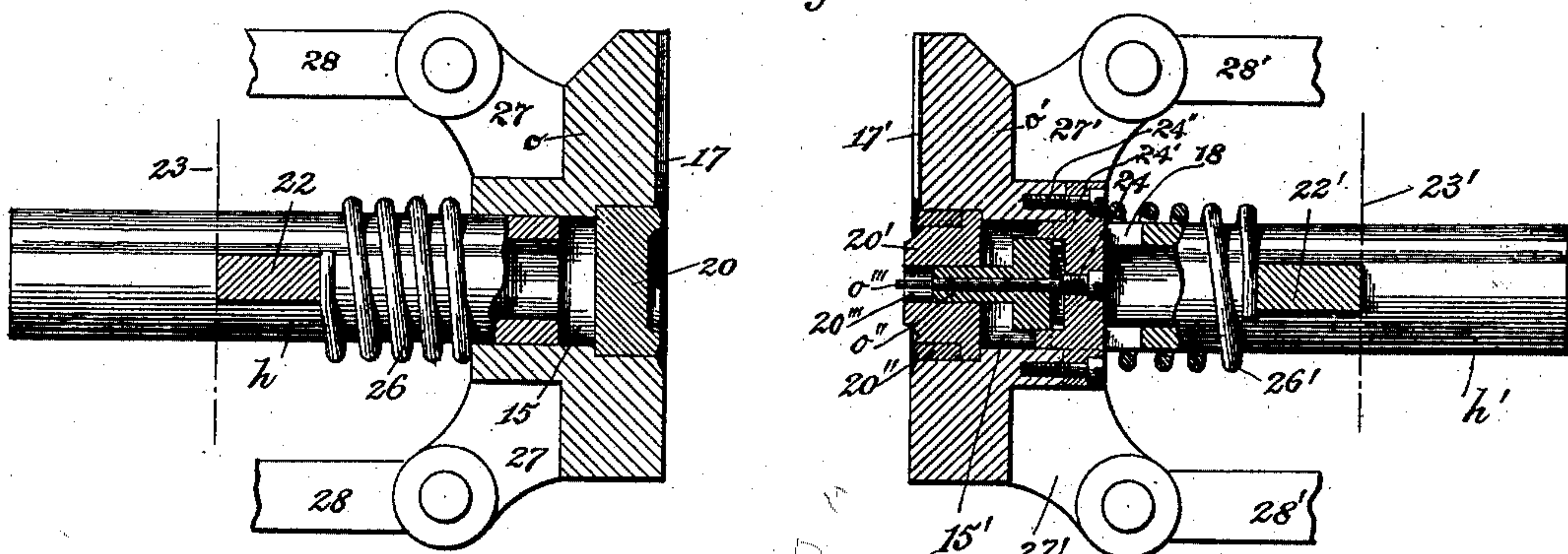
(No Model.)

**2 Sheets—Sheet 1.**

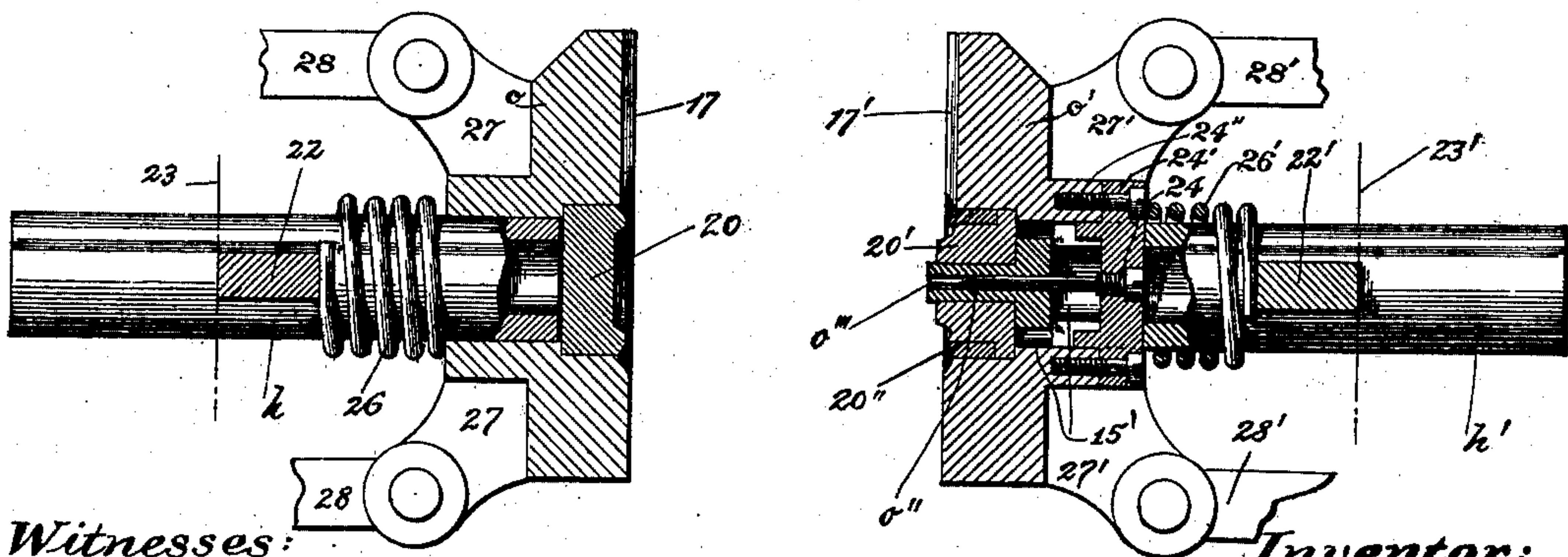
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Witnesses:*

Chas. D. Fitch  
Champion

***Inventor:***

*C. H. Veeder,*

By his Attorney

F. A. Richards.

No. 698,594.

Patented Apr. 29, 1902.

C. H. VEEDER.  
MOLD MECHANISM.

(Application filed May 21, 1900.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 4.

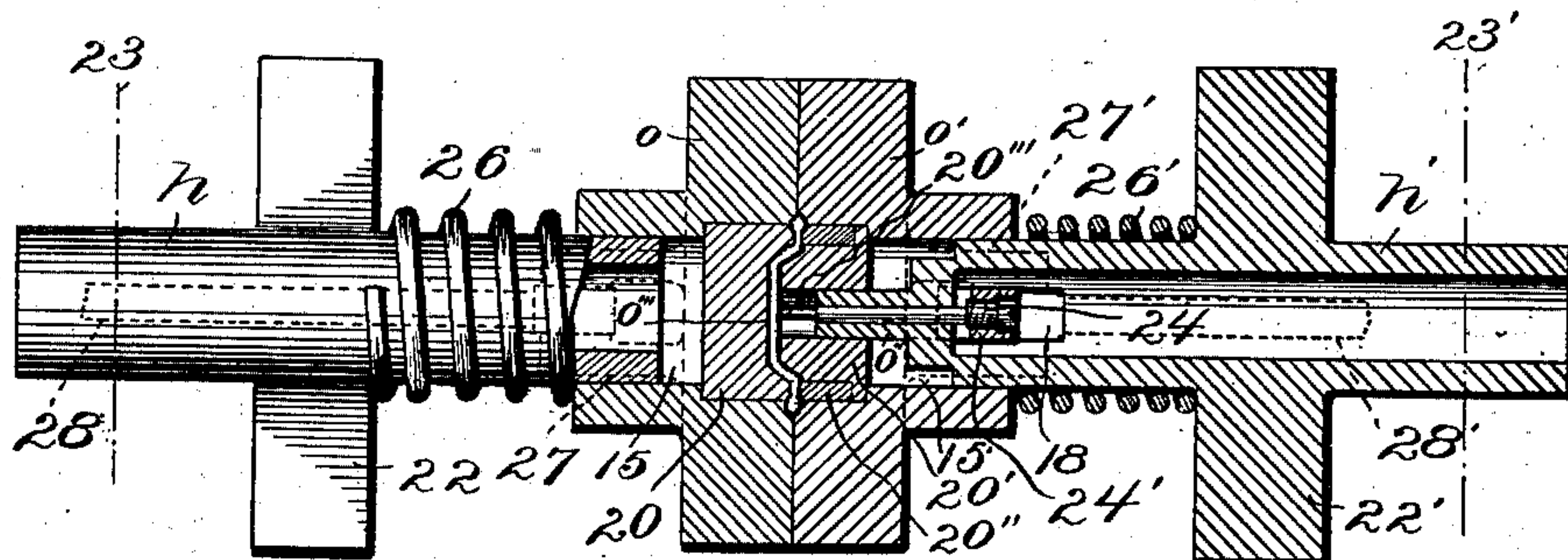
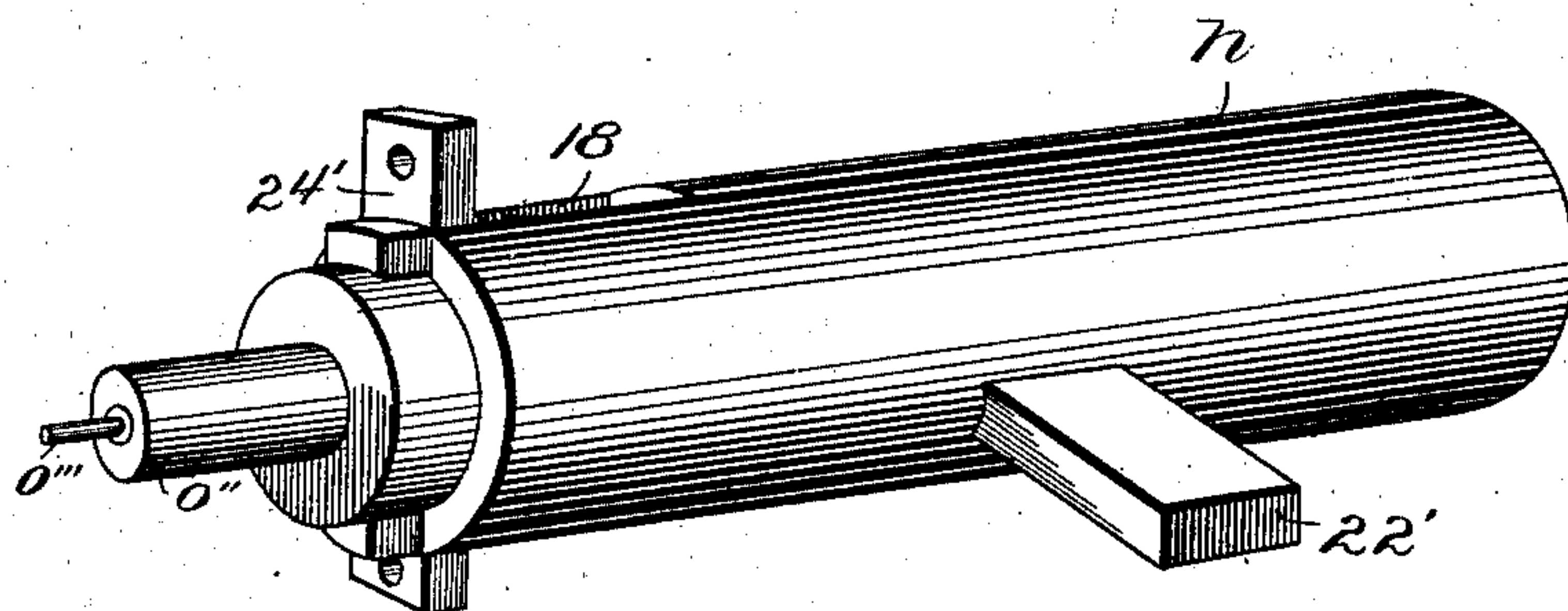


Fig. 5.



Witnesses:  
Frank G. Campbell.  
E. A. Jarvis.

Inventor:  
C. H. Veeder.

By his Attorney,

F. H. Richards.



# UNITED STATES PATENT OFFICE.

CURTIS H. VEEDER, OF HARTFORD, CONNECTICUT.

## MOLD MECHANISM.

SPECIFICATION forming part of Letters Patent No. 698,594, dated April 29, 1902.

Application filed May 21, 1900. Serial No. 17,332. (No model.)

*To all whom it may concern:*

Be it known that I, CURTIS H. VEEDER, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Mold Mechanisms, of which the following is a specification.

This invention relates to mold mechanism; and it has for its main object the provision of an improved separable mold in which articles may be shaped into form, and especially a mold in which castings may be formed from molten metal delivered into the mold under high pressure.

The present invention is in the nature of an improvement upon that shown, described, and claimed in my prior application, Serial No. 17,219, filed May 19, 1900, in which I have illustrated mold mechanism embodying a separable mold, one of the main sections of which has an auxiliary section or core-section mounted thereon, the main section and the auxiliary section being so mounted that one of them is movable relatively to the other for the purpose of stripping a casting readily from the mold. The mold mechanism illustrated in the present case is distinguished from the corresponding mechanism illustrated in my said prior application in that it embodies a pair of complementary main sections and two auxiliary sections coöperative with one of the main sections, one or more of these last three coöperative mold-sections being movable relatively to another or others for the purpose of stripping the casting from the several mold sections or dies.

My improved mold mechanism is especially designed and intended for use in connection with a casting-machine, and an important feature of the present invention is the employment of a separable mold having combined sprue-forming and casting-forming main sections, at least one of which has a pair of auxiliary sections coöperative therewith, these parts having such relative movements as to facilitate the stripping of the sprue and the main portion of the casting from the mold when the latter is opened. In practice the walls of the sprue-hole become roughened and coated at the point where the molten metal first enters, and it is very difficult to withdraw the sprue from a solid mold at this point. Hence I have shown a mold em-

bodimenting a pair of side sections which constitute not only mold-sections for forming the body of the casting, but also sprue-forming sections, the mold in this case being divided into two principal sections, each one of which is a combined sprue-forming and casting-forming section, while one or both of these main sections will have a pair of auxiliary sections, one of which is movable relatively to the other or core and also relatively to the main section. Each auxiliary mold-section will preferably be movable in the path of its main section, and the separation of the several coöperative sections from the casting will be determined by the relative movements of said sections in such common path.

In the drawings accompanying this specification and forming part of the present application, Figure 1 is a sectional side elevation of mold mechanism embodying my present invention and illustrating the parts in their closed positions. Fig. 2 is a similar view with the mold partly open, and Fig. 3 is a similar view showing the mold fully opened. Fig. 4 is a longitudinal section on a plane transverse to that of Fig. 1, with the mold closed as in the latter figure. Fig. 5 is a perspective view, upon a somewhat larger scale, of one of the mold-carriers and certain of its associated parts.

Similar characters designate like parts in the different figures of the drawings.

Many different styles of molds may be employed in my improved mold mechanism for forming castings of various shapes, provided that the molds differ only in the shapes of the mold-spaces; but in the present case I have illustrated a mold embodying two main sections adapted to be separated to the proper extent, only one of these sections having in this case an auxiliary mold section or die movable relatively thereto. One of the main sections is designated in a general way by *o* and the other by *o'*. These main sections are preferably combined sprue-forming and casting-forming sections, and each may be in two or more parts, the main portion of each section or die containing in this case the sprue-forming channel or channels, such as 17 or 17', which in this case surround the mold-space proper, while such mold-space for determining the shape of the body of the casting is formed in a separate inserted mold



section or die, such as 20 or 20'. Each of the mold-sections *o* and *o'* preferably has a substantially central cylindrical bore, such as 15 or 15', which may be countersunk, as shown, to form a seat or recess, in which may be inserted such removable casting-forming section, and it will be noticed that many different interchangeable casting-forming mold-sections may be employed, provided that they differ from one another only in the shapes of the mold-spaces. The main casting-forming mold-section, which is inserted into the sprue-forming section *o'*, may be in two parts, and in this case not only is there a mold-section 20', but there is also an annular die or ring 20'' surrounding the same. The mold-section or die 20' is preferably a tubular one, having a bore 20''', in which an auxiliary mold-section or die may work; but the die 20 may be a solid one, as no auxiliary mold-section or die is carried thereby. In this case two other mold-sections or auxiliary sections cooperate directly with the main section *o'*, one of which auxiliary sections is in the form of a tubular die or sleeve *o''*, while the other is a core *o'''*, movable in said sleeve *o''*.

The mold-sections are intended to be supported by suitable mold-carriers, and in this case two principal mold-carriers are shown, they being preferably cylindrical members, such as *h* and *h'*, and carrying, respectively, mold-sections *o* and *o'*. These mold-sections, however, are not connected directly to, and hence do not move always in unison with, said mold-carriers, but instead are loosely mounted thereon for reciprocation relative thereto at certain times. The auxiliary mold-section *o''* is, however, secured directly to the inner end of the mold-carrier *h'*, and hence always moves in unison therewith. In the construction shown said mold-carrier has a transverse key-slot 18, through which passes a key 24', to which a core-carrier, such as 24, is directly connected. This key 24' may be fastened directly to the sprue-forming mold-section or main section *o'* by means of screws, such as 24''. In this case the core *o'''* and the core-carrier 24 are formed in one piece and are embodied in a screw having a long point of two diameters. It will be seen, therefore, that the core and the main mold-section *o'*, while forming two distinct parts of the mold, have a fixed relation to each other, and hence are movable in unison, while the auxiliary mold-section *o''* is a separate part and is movable relatively to the other two. In one direction this relative movement is limited by one wall of the slot 18, while in the other direction it is limited by the other wall of such slot. As these parts are also intended to have a retreating movement in unison during a portion of their stroke, I have shown at 22' a stop or key which may strike a suitable fixed stop, (indicated by 23',) which will limit the retreating movement of the mold-carrier *h'*. In substantially the same way a stop or key 22, carried by the mold-carrier *h*, may abut

against a stop-face 23 for limiting the retreating movement of the mold-carrier *h*. In this case the relative movement of one of the main sections with respect to its carrier is intended to be effected by means of a spring, and I have shown herein a pair of coiled springs, such as 26 and 26', which work between the respective stops 22 and 22' and the outer ends of the respective mold-sections *o* and *o'*, it being apparent that the key 24' is substantially a part of the mold-section *o'*. These springs normally tend to force the mold-sections *o* and *o'* inward toward each other, as will be evident by referring to Figs. 1 and 2; but when a casting has been formed and the mold-sections are opened the carriers *h* and *h'* will move from the positions shown in Fig. 1 to the positions indicated in Fig. 2, all of the parts on each carrier moving together until the stops 22 and 22' strike the stop-faces 23 and 23', respectively. It should be understood that these parts will be operated in the present construction by connections to the main mold-sections *o* and *o'*, and any means suitable for the purpose may be employed. Here said mold-sections have ears, such as 27 and 27', to which are pivoted links or rods, such as 28 and 28', which may be operated by any suitable means. (Not shown.) As the pull on the operating members 28 and 28' is continued it will be apparent that the mold-sections *o* and *o'* will continue their retreating movements and will put the springs 26 and 26' under compression. At the same time the main mold-sections and the core-section *o'''* will move back with respect to the mold-section *o''*, and the latter will serve to strip the casting from the face of the main mold-sections and from the end of the core-section. When the parts begin to move toward each other again, the core and the main section 20' will serve to strip the casting from the face of the auxiliary mold-section *o''* and the casting will drop out of the way before the mold-sections close.

It will be evident from the foregoing that the springs serve to operate the main mold-sections in one direction relatively to the carriers *h* and *h'*, while the operating members 28 and 28' serve to actuate said main mold-sections in the opposite direction in opposition to the force of the springs and to put said springs under such compression that when released they will shift the parts back again to their normal positions, as seen in Fig. 1.

Having described my invention, I claim—

1. In a separable mold, the combination with a pair of complementary main mold-sections, one of which is reciprocatory toward and from the other in a straight line, of an auxiliary mold-section assembled with said reciprocatory main mold-section, a core fixed relatively to said reciprocatory main mold-section and movable therewith relatively to said auxiliary mold-section, and means for moving said auxiliary section, the core-section and the reciprocatory main mold-section as a unit during the first portion of the back-



ward movement of the reciprocatory main mold-section, and for causing the main reciprocatory section and the core to move relatively to the auxiliary section, as the main mold-section nears the end of its backward reciprocation.

2. In a separable mold, the combination with a pair of complementary main mold-sections, one of which is reciprocatory toward and from the other in a straight line, of an auxiliary mold-section assembled with said reciprocatory main mold-section, a core fixed relatively to said reciprocatory main mold-section and movable therewith relatively to said auxiliary mold-section, means for moving the reciprocatory main mold-section, the core and the auxiliary section as a unit, and means for arresting the movement of the auxiliary section during the last portion of the backward movement of the reciprocatory main mold-section, thereby permitting such main section and the core to move relatively to the auxiliary section.

3. In a separable mold, the combination with a pair of oppositely-disposed complementary main mold-sections facing each other and one of which is reciprocatory toward and from the other, of an auxiliary mold-section assembled with said reciprocatory main mold-section, a core fixed relatively to said main mold-section and movable therewith relatively to said auxiliary mold-section, and means for movably supporting all of the mold-sections and the core.

4. In a separable mold, the combination, with a pair of oppositely-disposed complementary main mold-sections, of a mold-section removably attached to one of said main mold-sections; an auxiliary mold-section adapted to move in said attached mold-section and to project beyond the face of such attached mold-section when the mold is fully opened; a core-section movable within said auxiliary mold-section; and means for movably supporting all of said mold-sections.

5. In a separable mold, the combination with a pair of complementary main mold-sections, one of which is reciprocatory toward and from the other in a straight line, of an auxiliary mold-section assembled with the reciprocatory main mold-section, a spring interposed between the assembled sections, a core fixed relatively to said reciprocatory main mold-section and movable therewith relatively to said auxiliary mold-section, and means comprising a fixed stop for arresting the movement of the auxiliary section, thereby permitting the other sections to move near the end of the backward movement of the main mold-section.

6. The combination, with a mold-carrier, of an auxiliary mold-section secured to said mold-carrier; a pair of oppositely-disposed complementary main mold-sections, one of which is reciprocatory on said carrier toward and from the other and relatively to said auxiliary mold-section; a second auxiliary mold-

section shiftable relatively to one of said other mold-sections; and means for movably supporting the mold-sections and for actuating said reciprocatory main mold-section.

7. The combination, with a mold-carrier, of a tubular auxiliary die secured to said mold-carrier; a pair of oppositely-disposed complementary main mold-sections one of which is reciprocatory on said carrier toward and from the other and relatively to said auxiliary mold-section; a core mounted in said tubular mold for movement relative thereto; and means for movably supporting the mold-sections and core and for actuating said reciprocatory main mold-section.

8. The combination, with a mold-carrier, of a tubular auxiliary die secured to said mold-carrier; a pair of oppositely-disposed complementary main mold-sections one of which is reciprocatory on said carrier toward and from the other and relatively to said auxiliary mold-section; a core mounted in said tubular mold-section and fixed to said main mold-section; and means for movably supporting the mold-sections and core and for actuating said reciprocatory main mold-section.

9. The combination, with a mold-carrier, of a tubular auxiliary die secured to said mold-carrier; a pair of oppositely-disposed complementary mold-sections one of which is reciprocatory on said carrier toward and from the other and relatively to said auxiliary mold-section; a core mounted in said tubular die and fixed to said main mold-section and movable therewith in one direction and then in the opposite direction to strip the casting from the mold; and means for movably supporting the mold-sections and core and for actuating said reciprocatory main mold-section.

10. The combination, with a mold-carrier, of a tubular auxiliary mold-section secured to said mold-carrier; a main mold-section shiftable on said carrier relatively to said auxiliary mold-section; a core mounted in said tubular mold-section and fixed to said main section; and a spring between said mold-carrier and the main mold-section.

11. The combination, with a mold-carrier, of a tubular auxiliary mold-section secured to said mold-carrier; a main mold-section shiftable on said carrier relatively to said auxiliary mold-section; a core mounted in said tubular mold-section and fixed to said main section and movable therewith; a stop for limiting the movement of the mold-carrier in one direction; a spring between the mold-carrier and the main mold-section for shifting said main section and the core in one direction relatively to said auxiliary mold-section; and means for shifting said main mold-section in the opposite direction in opposition to the force of such spring to strip a casting from the mold.

CURTIS H. VEEDER.

Witnesses:

ELBRIDGE P. ANDERSON,  
HENRY BISSELL.