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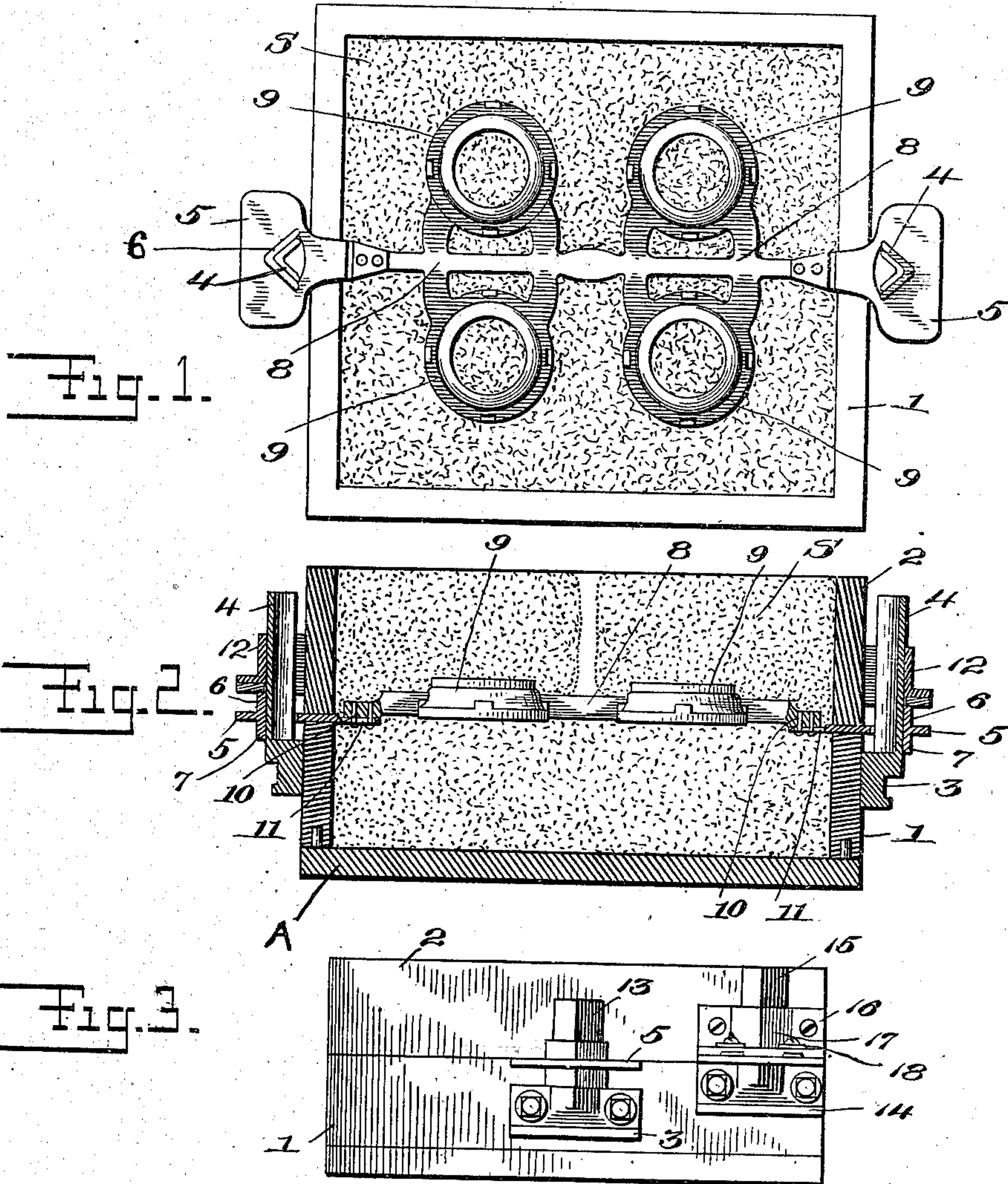
PATENTED MAR. 17, 1903.

S. GRIFFITH.
MOLDER'S FLASK AND GATE.

APPLICATION FILED JAN. 30, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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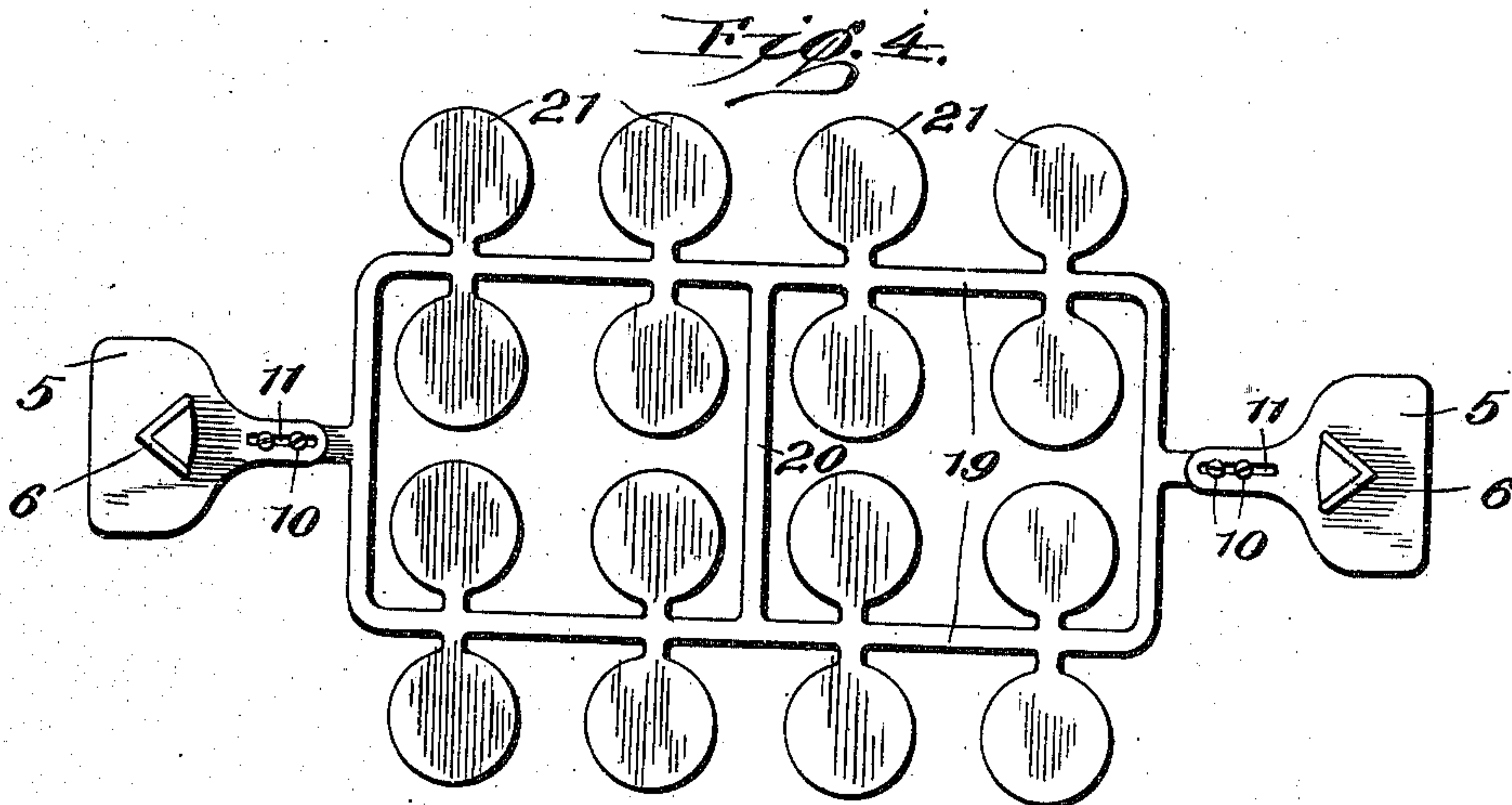
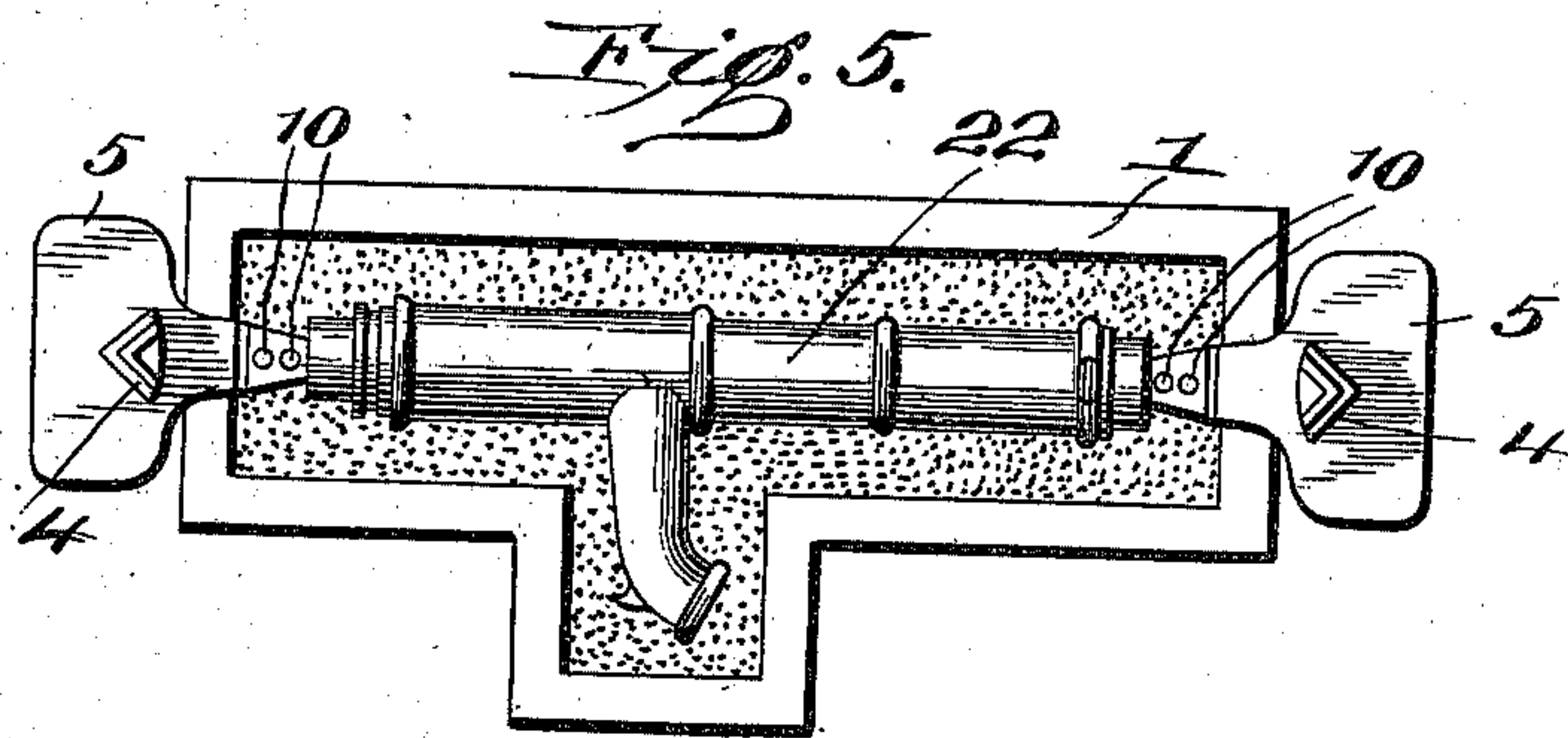
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WITNESSES.

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MOLDER'S FLASK AND GATE.

SPECIFICATION forming part of Letters Patent No. 723,151, dated March 17, 1903.

Application filed January 30, 1902. Serial No. 91,822. (No model.)

To all whom it may concern:

Be it known that I, STANTON GRIFFITH, residing at Seneca Falls, in the county of Seneca and State of New York, have invented certain new and useful Improvements in Molders' Flasks and Gates, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

10 This invention relates to a molder's flask and gate; and its object is to provide a flask and gate which shall be of simple and cheap construction, but very efficient in operation.

The invention consists in the features of 15 construction and the combinations of elements which will be hereinafter fully set forth, and the novel features thereof pointed out in the claims at the end of this specification.

20 In the accompanying drawings, Figure 1 is a top plan view of the drag of a flask, showing the gate with its patterns in position thereon. Fig. 2 is a vertical sectional view through a flask, showing the drag, gate, cope, and the 25 guides and pins by which right-line movement of the several parts is secured during the drawing operation. Fig. 3 is a side elevation of a flask, showing a modification in the means for guiding the cope relatively to the drag. Fig. 4 is a bottom plan of a different form of gate, the patterns applied thereto being shown diagrammatically. Fig. 5 is a 30 view showing a modified form of pattern and illustrating the advantages of my construction as applied to irregular-shaped patterns.

Similar reference characters refer to similar parts throughout the several views.

It has been heretofore proposed to mount the patterns upon cross-bars, which cross-bars 40 are connected to a rectangular frame resting in a rabbet in either the cope or the drag. Various objections have been found to exist with such a construction, among which may be noted the tendency of the pins to bind in the guides due to the weight of the frame 45 carried thereby and the relatively long bearing-surfaces which must be provided. Moreover, where a frame is interposed between the two parts of the flask it is necessary that 50 the meeting surfaces of the frame and flask should be perfectly true or parallel at all points. A very slight deviation from such parallelism will cause an unequal movement

of the frame in drawing the pattern, and hence an error in the mold and in the finished casting. The required perfection of fit, 55 even with the most careful shaping and planing, which is very expensive, can only be approximated. Moreover, a slight strain of any sort, whether due to warping from heat or cold 60 or through other causes, will destroy the fit of the parts and render the work faulty.

My construction does away entirely with the frame and its attendant disadvantages and accomplishes better results in a different 65 manner, as will be seen upon more specific reference to the drawings, wherein—

1 designates the drag of a flask, and 2 the cope. Attached to the drag 1 are castings 3, which carry vertical V-shaped pins 4, having 70 their openings or concave sides on the inside or next the flask. Guide-plates 5 have upwardly and downwardly extending flanges 6 and 7 to cooperate with these pins. The inner ends of the guide-plates extend within 75 the walls of the flask, either the cope or the drag, or both, being cut away to allow the guides to pass between them without preventing a close fit of the cope and drag. A gate 8 carries patterns 9, suitably secured thereto, 80 and this gate is attached at its ends to the inwardly-projecting ends of the guides 5 by means of screws 10, which pass through elongated slots 11 in the guides, so that an adjustment is provided whereby the relative position of the gate and guide may be adjusted, 85 if desired, and the right-line movement which is so necessary in drawing the patterns may be at all times obtained. This adjustment constitutes an important part of my invention. It is found by experience that the metal 90 of which the various parts are made is so likely to warp or get out of shape from various causes that where no means are provided for varying the relation between the guides 95 and gate the efficiency of the apparatus soon becomes impaired. To the cope 2 are attached castings or guides 12, which likewise fit over the pins 4.

The operation of the parts thus far described 100 does not differ materially from the ordinary drawing operation. The gate with its patterns is placed on a follow-board, the drag placed on top, its cover A having first been removed, and it is rammed with sand or other 105 molding material, as desired. The drag and

follow-board are then turned over and the follow-board removed, leaving the parts in the position shown in Fig. 1. The cope is placed in position, its guides 12 fitting over the pin 4, and it is rammed with sand, (indicated by S in Fig. 2.) The patterns are then rapped, either by means of pins inserted through the sand of the cope, by striking the outer projecting ends of the guides 5 with a mallet or vibrating engine, or in any other way. The cope is then removed, the patterns further rapped, if necessary, the gate removed, it being handled by taking hold of the projecting guide-plates, the cope replaced, and the flask is then ready for pouring. The guide-flanges 6 and 7, in connection with the guides 5, provide ample bearing-surfaces in connection with the pins 4 to prevent any movement during the drawing except the rectilinear movement directly away from the sand of the drag, which rectilinear movement is so necessary, while at the same time the extent and relative proportions of these bearing-surfaces is not such as to cause the binding which is likely to occur in constructions wherein a long guide-pin, in connection with a heavy frame, fits inside of a guide. Where such binding occurs, it is necessary for the operator to give a sudden jerk or pull in order to draw the patterns, which, of course, often results in injury to the mold. The results to be obtained, if possible, are a perfect freedom of movement for the patterns without there being any possibility of deviation from a right-line movement, and it will be seen that my construction provides effectively for such results. Moreover, my construction is so cheap and simple that it is possible to provide a different set of guides for each gate, so that the whole remains together to be used when desired. In other constructions it is necessary to use the same frame and guide or match plate and guide with different gates, so that the old gate must be removed and a new one inserted for each new casting. Obviously, this can only be done at the expense of much time and trouble. It is found, moreover, that with the guides and guide-pins constructed as herein set forth the contacting surfaces need not be milled or machine-finished, as is necessary in other constructions, but that in most cases proper results will be secured by using castings for such pins and guides directly as they come from the mold. At the most they need only be burnished slightly. This also lessens the expense of construction.

In the modification shown in Fig. 3 the drag, cope, and gate-carrying guide are the same as in Figs. 1 and 2; but in this construction pin 13, over which guide 5 fits, is made much shorter. The drag is provided with a second casting 14, which carries a vertically-extending pin 15, cooperating with the guide secured to the cope. This guide comprises a plate 16, secured to the side of the cope, having an outwardly-extending flange on which

is mounted the guide proper, 17, having an outwardly-extending flange through elongated slots for the screws 18, thereby connecting the two parts adjustably together. A sliding rib-and-groove connection between the two parts of this guide may also be provided, if desired, and as shown in the illustration.

It will be seen upon inspection of Fig. 2 that the guide-pin 4, inasmuch as it cooperates with both the guide 5 in connection with the gate and guide 12 in connection with the cope, must be long enough to secure proper motion of the cope until it is quite clear of the patterns. This necessitates a relatively long pin, and the guides must be lifted clear of such pin before the molder can relax the caution necessary to be observed in order not to shake the drag. In the construction shown in Fig. 3, however, inasmuch as pins 13 and 15 for guiding the gate and cope, respectively, are independent of each other the pin 13 may be made shorter than in the other construction. It is necessary that the guides for the gate should clear their pins as soon as possible in the upward movement, so that the gate may then be moved sidewise and the danger of jarring the mold be obviated. Where the guide is carried upon an independent pin, as in Fig. 3, this pin need only be of such a length that it will steady the gate until it has cleared the sand in the drag. Accordingly, the advantages of this construction will be obvious. Moreover, when the patterns are rapped through the medium of the gate-guides it will be seen that with the construction shown in Fig. 2 the vibration will be transmitted, through the various metallic parts in contact, both to the gate and cope. In the construction in Fig. 3, however, the rapping of the guides 5 can be transmitted to the cope only through the medium of the wood of which the frame of the cope is composed, and as wood is a poor conductor of such motion and as, moreover, it only contacts with the guides 5 for a limited space the likelihood of the sand in the cope being injuriously affected by the vibration applied to the gate is lessened. It will be seen that this same advantage applies to the construction wherein the gate is applied directly to its guides such as I have shown herein distinguished from a construction wherein the gate is connected to a frame, whether solid or open, which lies between the cope and drag. Where there is such an interposed frame, the rapping of the guides or lugs projecting therefrom will transmit vibration throughout the extent of the metal frame and the contained material as well as directly to the patterns where it is desired. This will be an obvious disadvantage, especially if the frame does not fit truly to the drag and cope at all points. All vibration when transmitted to other parts than to the patterns themselves is a disadvantage. Accordingly, the advantage of a construction wherein the only metallic parts

for transmission of motion is direct to the patterns and the motion can only be transmitted to the cope and drag through the wood of which they are composed will be obvious.

It will of course be understood that the pins 13 and 15 and the guides 16 of Fig. 3 are to be duplicated on the other side of the flask, the two guide-pins 15 being preferably arranged at diagonally opposite corners.

In Fig. 4 is shown a modified form of gate called an H-gate. Such gate is shown composed of two parts 19, having a cross-bar 20. The patterns are shown diagrammatically at 21, the other parts being the same.

The present construction is, moreover, particularly applicable for making castings of irregular shape. The pattern is supported entirely by its guides, and thus the cope and drag can be constructed of such shape as to conform with the outline of the pattern. This does away with much trouble and expense attendant upon the use of a construction wherein there is an unyielding metal frame, which is so much more expensive that it is necessarily the principal feature of the construction, so that the shape of the flask must conform to the shape of such metal frame irrespective of the shape of the casting. This is illustrated in Fig. 5, wherein is shown the irregular pattern 22 for a pump-casting connected directly to guides 5 by means of the screws 10, so that the cope and drag may be made of any desired shape without having to be adapted to the shape of other parts.

Where in the claims I use the word "directly" as defining the connection between the gates and guides, I mean a connection which dispenses entirely with any supporting-frame, as such frame is known in the usual construction, or with any other interposed member. Thus a direct connection between a gate and its guides permits of the meeting of the drag and cope with a flush joint on all sides and with nothing interposed therebetween save for the very small space which is occupied by the guides on opposite sides of the flask, where as in the present construction the plates 5 pass between the drag and the cope.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination, a drag having guide-pins, guides suitably mounted on said pins and a pattern-carrying gate supported directly by said guides.

2. In combination, a drag having guide-pins, guides suitably mounted on said pins and a pattern-carrying gate supported directly by said guides and adjustable with relation thereto.

3. In combination, a cope, a drag provided with guide-pins, guides provided with flanges for cooperation with said pins and a pattern-carrying gate supported directly by said guides, the construction and arrangement being such that there is a flush joint between

the opposing faces of the cope and the drag save for the limited spaces where said guides pass between said cope and drag.

4. In a molder's flask, a pattern-carrying gate, guides by which said gate is directly supported, a drag, means on said drag and cooperating with said guides whereby a right-line movement is obtained during the drawing of the patterns.

5. In a molder's flask, in combination, a pattern-carrying gate, guides by which said gate is directly and adjustably supported, a drag, and means upon said drag cooperating with said guides whereby a right-line movement is obtained during the drawing of the patterns.

6. In combination, a pattern-carrying gate and guide members therefor, said pattern-carrying gate being supported directly by said guide members.

7. In combination, a pattern-carrying gate and guide members therefor, said pattern-carrying gate being supported directly by said guide members, and adjustable with relation thereto.

8. The combination, of a drag and a pattern-carrier having guide members in connection therewith cooperating with guide members on said drag, a cope, and cooperating guide members on said cope and drag, independent of said first-mentioned guide members.

9. A pattern-carrier comprising a gate 8, to which the patterns are suitably connected, and guide-plates 5 directly supporting the ends of said gate.

10. A pattern-carrier comprising a gate 8, to which the patterns are suitably connected, and guide-plates 5 directly and adjustably supporting the ends of said gate.

11. In a molder's flask, in combination, a drag, a cope, a gate having guides thereon directly attached to its ends, said guides passing between said cope and drag at opposite points, and guide-pins on the outside of said drag cooperating with the projecting ends of said guides, to insure right-line movement during the drawing operation.

12. A drag for use in a molder's flask, having guiding means thereon adapted to cooperate with pattern-carrying guides and independent guiding means adapted to cooperate with guides for the cope.

13. In a molder's flask, in combination, a drag 1, having relatively short guide-pins 13 attached thereto, guides 5 adapted to fit thereon and to have patterns suitably connected thereto, independent pins 15 connected to such drag, a cope 2 and guide means on said cope cooperating with said pins 15, substantially as and for the purposes set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

STANTON GRIFFITH.

Witnesses:

O. A. COONS,

WILLIAM H. HURLEY.