(No Model.) 2 Sheets—Sheet 1.

A. S. HODGES.

FLASK FOR MAKING SEAMLESS SASH WEIGHTS.

No. 414,838. Patented Nov. 12, 1889.

Fig. 1.

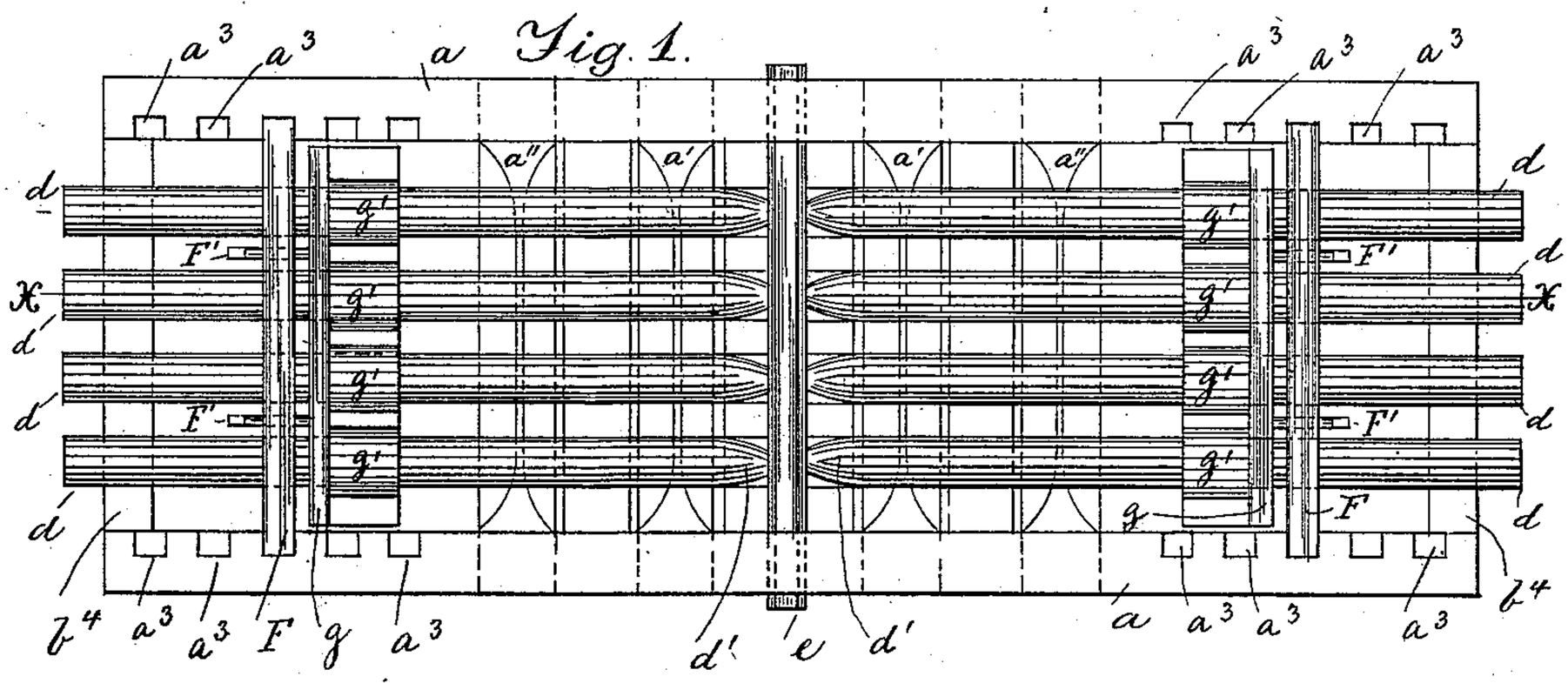


Fig. 2.

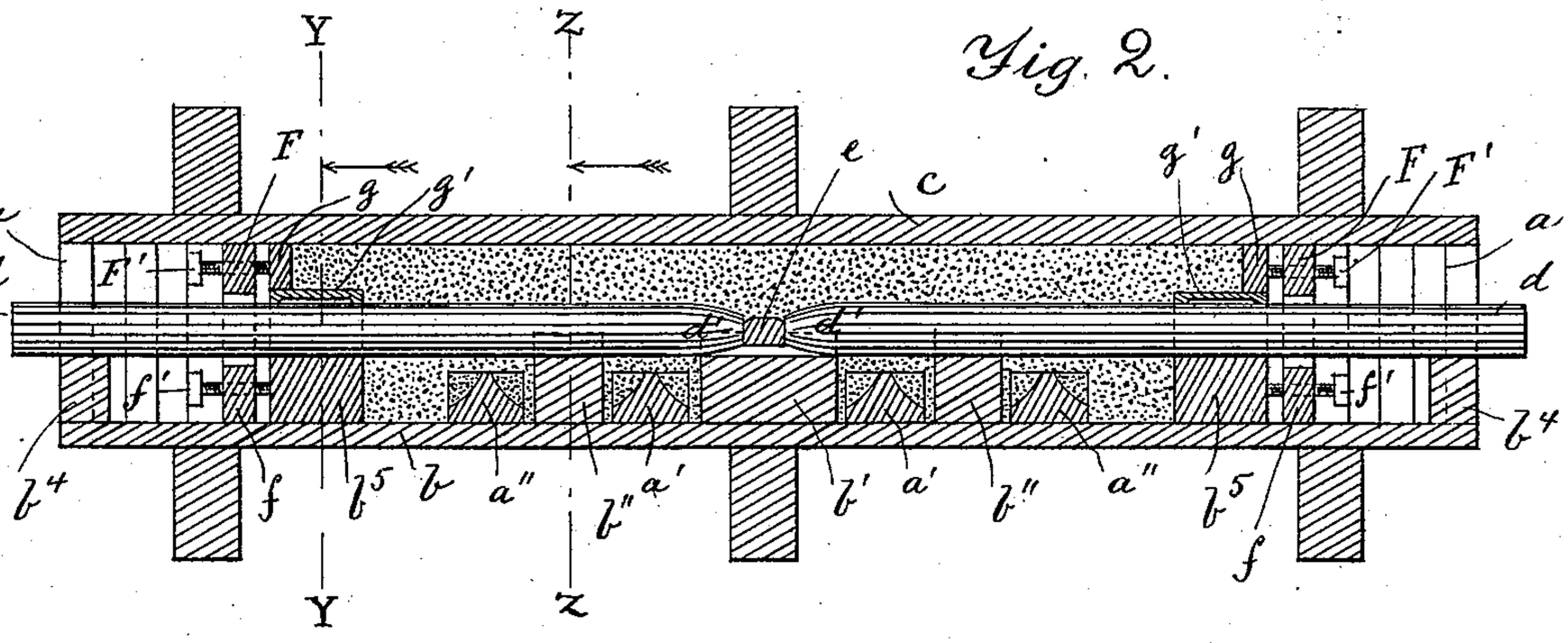


Fig. 3.

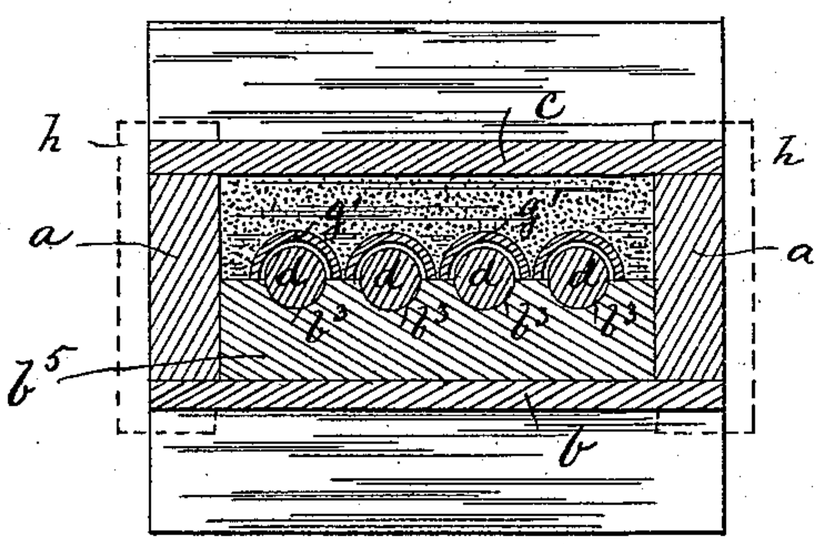
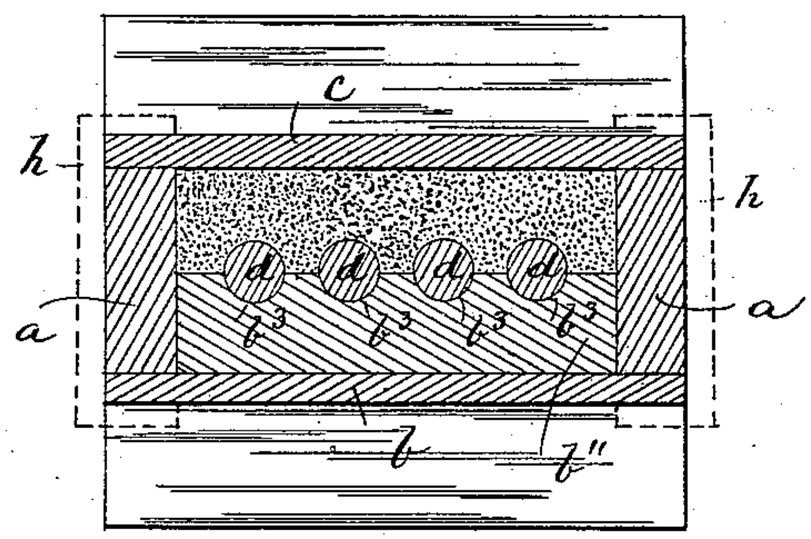


Fig. 4.



Witnesses.

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(No Model.) 2 Sheets—Sheet 2.

A. S. HODGES.

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Fig. 5.

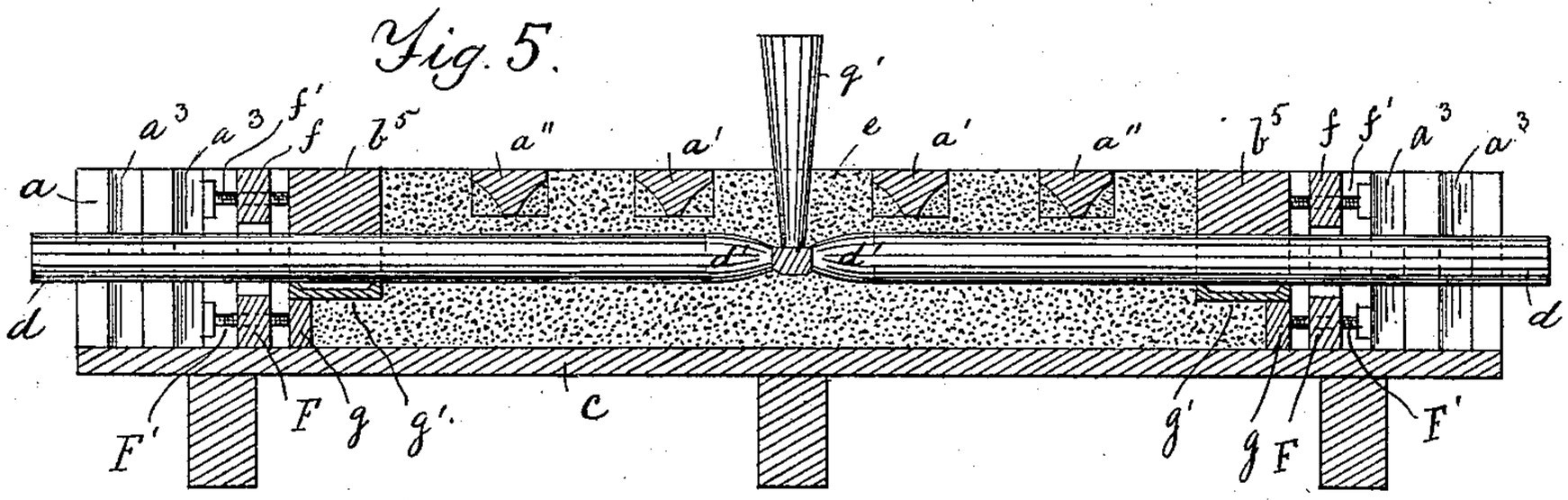


Fig. 6.

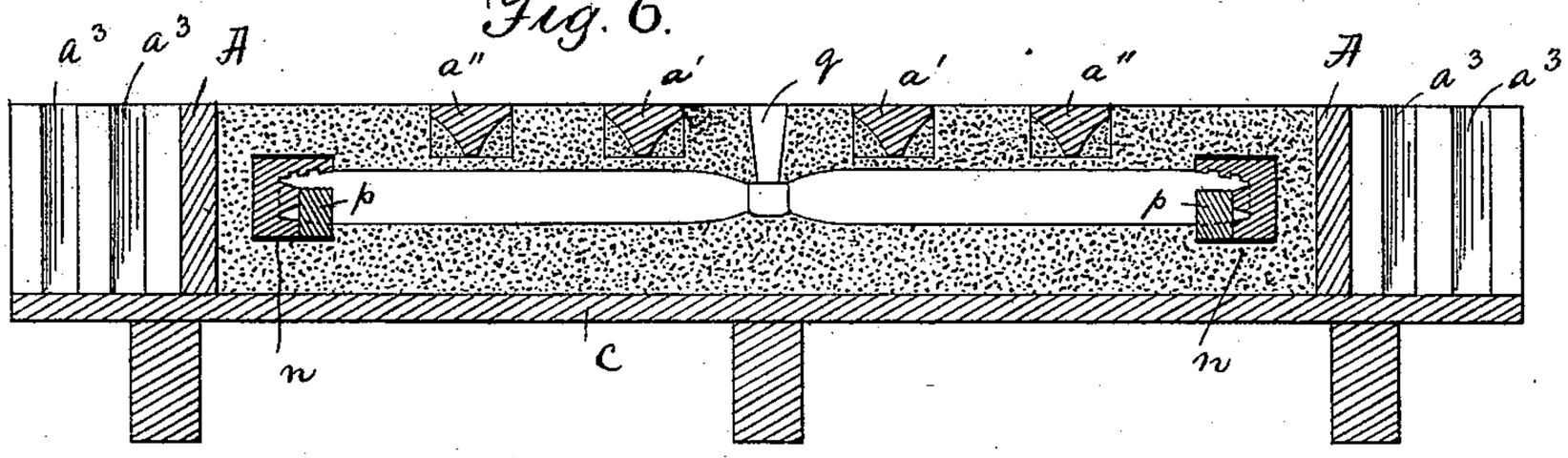


Fig. 8.

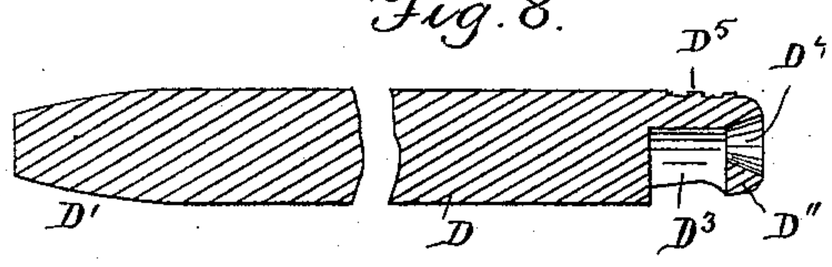


Fig. 7.

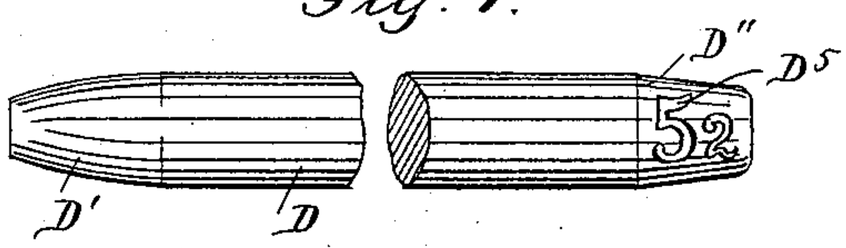


Fig. 9.

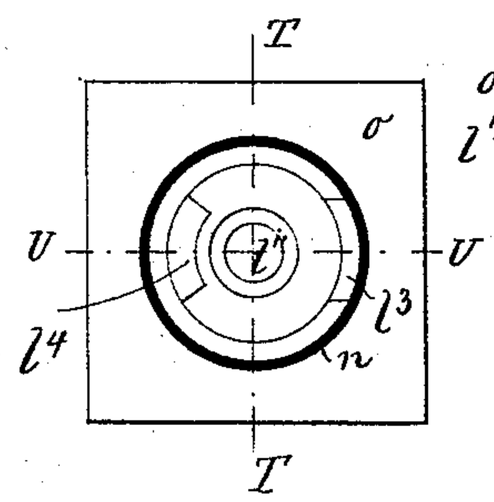


Fig. 10.

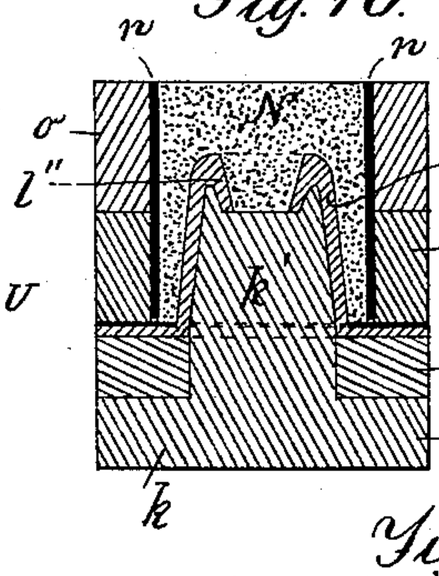


Fig. 11.

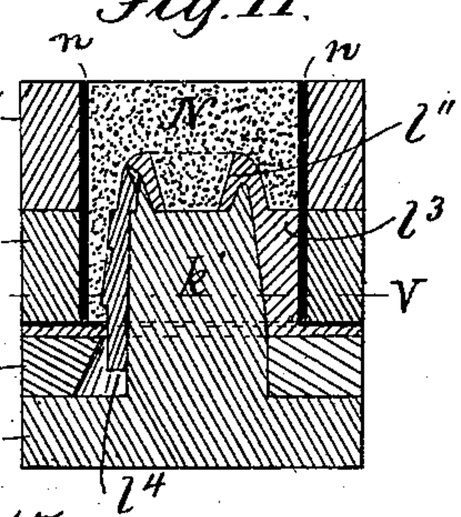


Fig. 12.

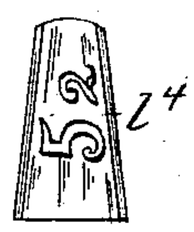
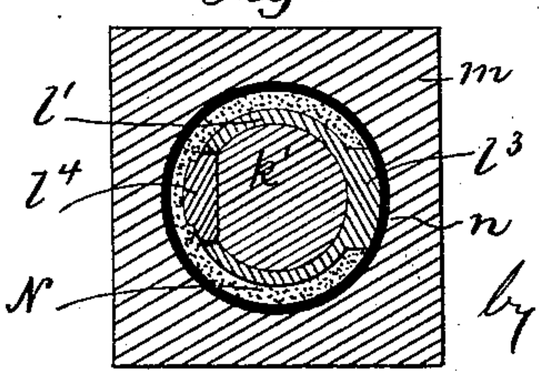


Fig. 13



Witnesses.
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Inventor.
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by Albert Andrews his atty.

UNITED STATES PATENT OFFICE.

ADDISON S. HODGES, OF CHELSEA, MASSACHUSETTS.

FLASK FOR MAKING SEAMLESS SASH-WEIGHTS.

SPECIFICATION forming part of Letters Patent No. 414,838, dated November 12, 1889.

Application filed April 23, 1889. Serial No. 308,304. (No model.)

To all whom it may concern:

Be it known that I, ADDISON S. HODGES, a citizen of the United States, and a resident of Chelsea, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Flasks for Making Seamless Sash-Weights, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in flasks for molding and casting seamless window-sash weights, and it is carried out as follows, reference being had to the accompanying drawings, where—

Figure 1 represents a plan view of the improved flask, showing the sash-weight patterns placed in position therein preparatory to ramming in the sand, and showing the bottom board removed. Fig. 2 represents a longitudinal section of the flask and the bottom board on the line X X, shown in Fig. 1, the sash-weight patterns being shown in elevation. Fig. 3 represents a cross-section on the line Y Y, shown in Fig. 2. Fig. 4 represents a cross-section on the line Z Z, also shown in Fig. 2. Fig. 5 represents a longitudinal section of the flask and its bottom board after being turned upside down and the mold-board removed. Fig. 6 represents a similar longitudinal section of the flask, showing the patterns as withdrawn and the molds and cores for forming the perforated heads of the sash-weights placed in position within the flask. Fig. 7 represents a side view of one of the finished seamless sash-weights, and Fig. 8 represents a central longitudinal section of the same. Fig. 9 represents an enlarged end view of the mold for forming the perforated head of the sash-weight. Fig. 10 represents a cross-section on the line T T, shown in Fig. 9. Fig. 11 represents a cross-section on the line U U, also shown in Fig. 9. Fig. 12 represents a side elevation of the detachable pattern for producing marks or numbers on the head of the sash-weight; and Fig. 13 represents a horizontal section on the line V V, shown in Fig. 11.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

The flask is non-divided—that is, it is made as a single-piece structure, without being made in two separate parts—and it is composed of the side pieces *a a*, secured together at a proper distance apart, according to the width of the desired flask, by means of bars or braces *a' a'' a' a''*, as shown in Figs. 1, 2, 5, and 6.

b represents the mold-board, on which the flask is supported during part of the molding operation; and *c* represents what is termed the "bottom board," which during the first part of the molding operation is placed on the top of the flask, as shown in Figs. 2, 3, and 4, and which, after the flask is reversed for receiving the molten metal, is underneath said flask, as shown in Figs. 5 and 6, and serves as a support for the sand contained in the flask during the casting of the metal. Midway on the mold-board is secured to it the pattern-rest *b'*, and between the flask-braces *a' a''* are secured to said mold-board similar pattern-supports *b'' b''*, all of which have on their upper sides semicircular recesses b^3, adapted to receive one-half of the circumference of the cylindrical sash-weight patterns *d d d*, which are placed in position within the flask with their tapering ends *d' d'* placed in opposite direction, as shown in Figs. 1, 2, and 5.

e is the gate, which is inserted centrally through the flask-sides *a a* previous to placing the patterns in position within the flask.

b^4 b^4 are pattern-rests secured at or near the ends of the mold-board *b*, as shown in Figs. 1 and 2; but these may be dispensed with, if so desired, without departing from the essence of my invention.

The patterns *d* are made longer than the weights desired, so that said patterns may be used for weights of different lengths, and in connection with the flask and its patterns I use an adjustable device for regulating the lengths of the desired sash-weights and forming their perforated heads, as will hereinafter be more fully shown and described.

D in Figs. 7 and 8 represents one of the finished seamless sash-weights having its lower end tapered, as shown at D' in said figures.

D'' represents the head or upper end of the sash-weight, having near its end a side notch

or recess D^3, adapted to receive the knot on the end of the sash-cord. Through the end of the head is made the conical perforation D^4, which is largest in its upper end, having its smallest portion communicating with the side recess D^3, as shown in Fig. 8. The object of making the upper end of the perforation D^4 larger than its other portion is to give freedom for the cord passing through it to bend sidewise when the weight is swung or shaken from side to side as the window is worked up or down without unnecessarily wearing the sash-cord at the place where it passes through the perforated head D'' of the said sash-weight.

D^5 in Figs. 7 and 8 represents raised or recessed marks or figures on the head D'', indicating the weight, number, or size of the respective weights.

For the purpose of regulating the length of the desired sash-weight to be cast, as well as for producing the perforated head on it, I proceed as follows: Before the patterns *d* are placed in position on the notched pattern-supports b' b'' b'', I place on the mold-board *b*, at or near the place where the head of the weight is to be produced, a removable pattern-support b^5, having semicircular notches or recesses b^3 on its upper side, like those on the pattern-supports b' b'', before mentioned. Said pattern-support b^5 is made adjustable in the direction of the axes of the patterns *d d* by means of a bar *f*, which is guided and retained in position in any of the vertical grooves a^3 a^3, made on the inside of the flask *a a*, as shown, said bar having thumb or set-screws f' f' screwed through it, the inner ends of which are forced against the loose pattern-support b^5, as shown in Figs. 1 and 2, and by this arrangement the position of the pattern-support b^5 can be adjusted to a nicety. After the pattern-supports b^5 b^5 have been placed in position and adjusted, as above described, the patterns *d d* are laid in the notched supports b' b'' b'' and b^5 b^5, as shown in Fig. 2, and above each pattern-support b^5 is placed a core-print bar *g*, having a series of semicircular core-prints g' g' secured to it, which latter cover one-half of the circumference of the patterns *d d*, as shown in Figs. 1, 2, and 3, and are of a length equal to the width of the adjustable pattern-support b^5, as shown in Figs. 1 and 2. Back of the core-print bar *g* and directly above the bar *f*, I locate in the notches a^3 a similar bar F, provided with thumb or set screws F' F', which, when adjusted to bear against the outside of the bar *g*, serve as adjustable stops for preventing outward movement of said core-print bar when the sand is rammed in the flask.

We will suppose the various parts in their respective positions, as shown in Figs. 1 and 2, (with the bottom board *c* removed.) The operator now rams the sand in the flask, as shown in Fig. 2, and strikes the sand off even with the upper edge of the flask. The bottom board *c* is then placed on top of the flask, as shown in Fig. 2, and clamped firmly to the flask *a a* and its mold-board *b* by means of suitable clamps *h h*, (shown in dotted lines in Figs. 3 and 4,) after which the whole is turned upside down, the clamps *h h* and the mold-board *b* removed, leaving the flask and its parts in the position shown in Fig. 5. I now pull out the patterns *d d*, loosen the set or thumb screws f' F', and remove their bars *f* F, and insert in their places the flask end boards A A. (Shown in Fig. 6.) I remove the pattern-supports b^5 b^5 and the core-print bars *g*, with their semicircular core-prints g', thus leaving in the sand where the heads are to be formed semicircular depressions adapted to receive the molds by which the heads are produced. The said head-molds are made as follows, reference being had to Figs. 9, 10, 11, 12, and 13: To a bottom plate *k* is secured or made in one piece the upwardly-projecting plug k', that is made to project through a perforated plate *l* and a hollow mold l', secured to it, which latter is of the shape and size desired to be given to the head of the sash-weight. On the top of the plate *l* is located the perforated plate *m*, having a vertical perforation adapted to receive the thin metal cylinder *n*, and on top of the perforated plate *m*, I locate a similar perforated plate *o*, the top of which comes even with the top of the metal cylinder *n*, as shown in Figs. 9, 10, and 11. The hollow mold l' has in its upper end a conical recess l'', corresponding to the tapering eye D^4 to be given to the sash-weight head, as shown in Fig. 8. The mold l' has on one side a core-print l^3, (shown in Figs. 9, 11, and 13,) by which a space is made in the sand of the head-mold for receiving a core *p*, (shown in Fig. 6,) by which the side recess D^3 is formed in the head of the sash-weight, as shown in Fig. 8.

For the purpose of producing the figures or marks D^5 on the head of the sash-weight, as shown in Figs. 7 and 8, I use a detachable marked or lettered piece l^4, Fig. 12, which is placed in a cut-away place in the side of the hollow mold l' before the plug k' is introduced in said hollow mold, as shown in Figs. 9, 11, and 13. After the parts are placed in position, as shown in Figs. 9, 10, 11, and 13, I fill the tube *n* with sand or equivalent material N, as shown in Figs. 10, 11, and 13, and strike it off even with the top of the plate *o* and tube *n*, after which I remove the plate *o*, the plate *k*, and its plug k'. The figure-piece l^4 is then removed by first swinging its lower end inward sufficiently to allow the figures on it to go free from the matrix in the sand N, after which said figure-piece is drawn downward through the perforation in the plate *l*, which latter and its hollow mold l' are then drawn downward from the tube *n* and sand N, after which the tube *n*, with the sand N contained in it, is detached from the plate *m*, and a core *p*, Fig. 6, is placed in the sand cavity produced by the projection l^3. The said tube *n*, with its sand and core, as

above described, is then placed in the recesses produced in the sand of the flask by the semicircular projection g' on the bar g, as shown in Fig. 6, and the sand in the flask is then rammed around and back of the tubes n n. After removing the gate-pattern e and closing up the perforations in the flask-sides a a, through which said gate-pattern was inserted, the molten metal is poured in through a sprue-hole q, formed by a sprue-pattern q', as is common in the art of casting.

After being cooled the sash-weights are broken off from the metal connecting the inner tapering ends, leaving said weights in a condition as shown in Figs. 7 and 8.

What I wish to secure by Letters Patent and claim is—

1. The non-divided flask a a, having stays a' a'', and the detachable mold-boards b, having the recessed pattern-supports b' b'' b'' secured to it, combined with the patterns d d, the adjustable pattern-supports d^5 d^5, the bottom board c, and the bar g, with its prints g' g', and means for forming the perforated eye, substantially as and for the purpose set forth.

2. The non-divided flask a a, having stays a' a'', and the detachable mold-board b, having the recessed pattern-supports b' b'' b'', and the bottom board c, combined with the patterns d d e, the adjustable pattern-supports b^5 and prints g', and the detachable bars f F, adapted to rest in grooves on the flask and having the regulating-screws f' F', substantially as and for the purpose set forth.

3. The non-divided flask a a, having the stays a' a'', in combination with the detachable end boards A A, the bottom boards c, and means, substantially as described, for forming the perforated head of the sash-weight, as and for the purpose set forth.

4. The device for making the mold for the perforated sash-weight heads, as described, consisting of the tube n, the removable pattern l', and plug k', all arranged and combined to operate in a manner substantially as specified.

5. The device for making the mold for the perforated sash-weight heads, consisting of the tube n, the removable pattern l', and plug k', combined with the detachable letter or figure pattern l^4, substantially as and for the purpose set forth.

6. The device for making the mold for the perforated sash-weight heads, consisting of the tube n, the removable pattern l', having a tapering recess in its upper end, and core-print l^3, combined with the detachable plug k' and detachable letter or figure pattern l^4, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 22d day of April, A. D. 1889.

ADDISON S. HODGES.

Witnesses:
ALBAN ANDRÉN,
ROBT. A. SOUTHWORTH.