W. K. LEVERING.

CORE BOX.

APPLICATION FILED JUNE 13, 1911.

**1,028,367.**

Patented June 4, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

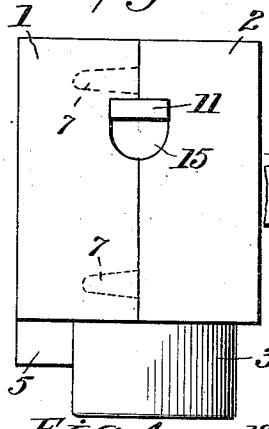



Fig. 2.

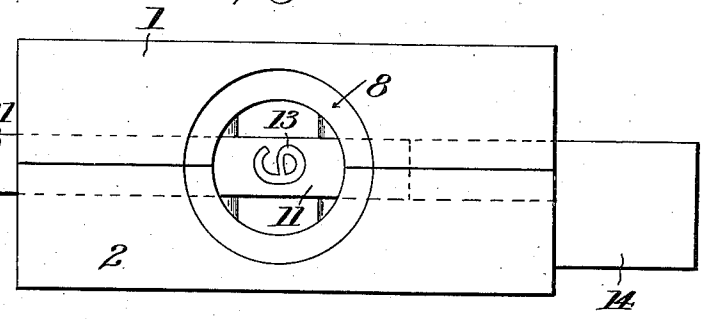



Fig. 3.

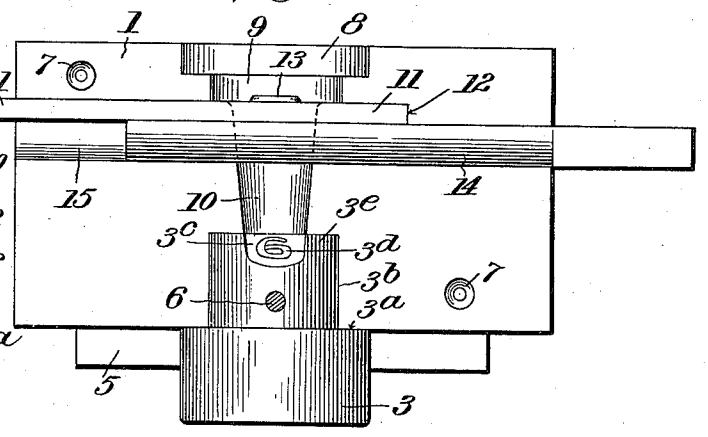



Fig. 4.

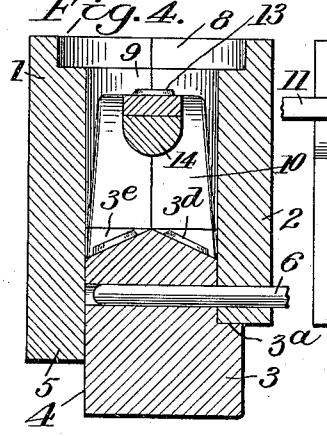



Fig. 6.

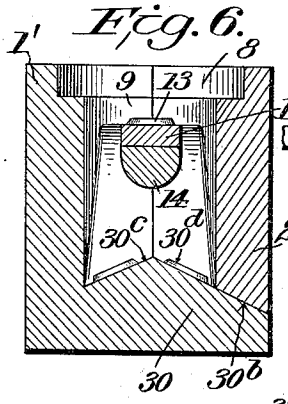



Fig. 5.

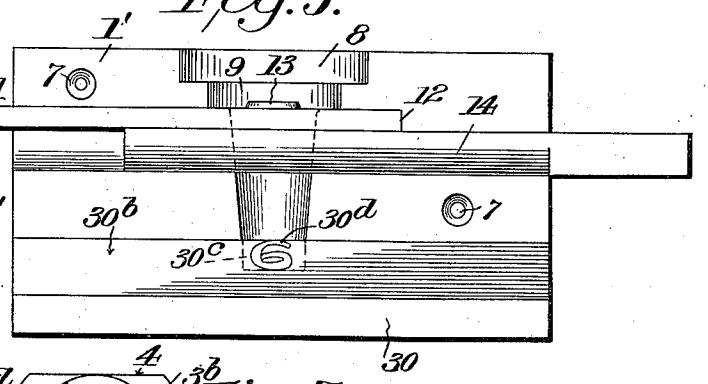
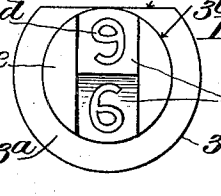



Fig. 7.




WITNESSES

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2 SHEETS—SHEET 2.

Fig. 8.

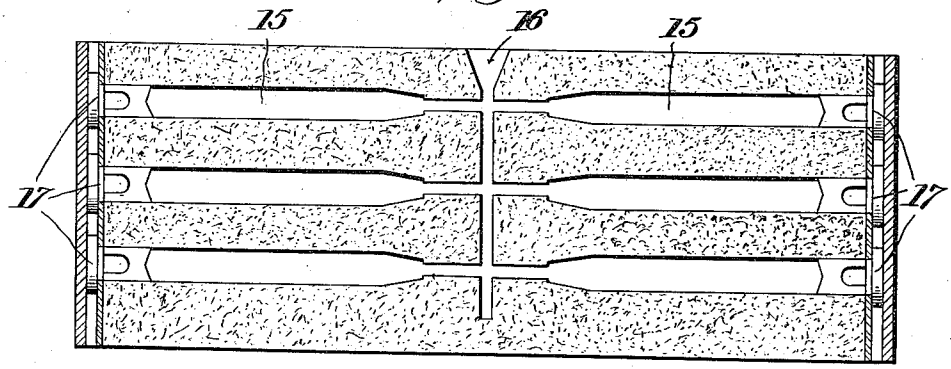



Fig. 12.

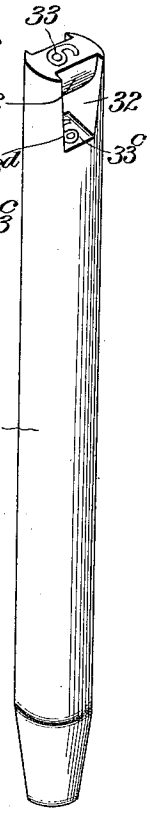



Fig. 9.

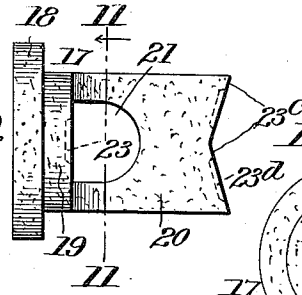



Fig. 10.

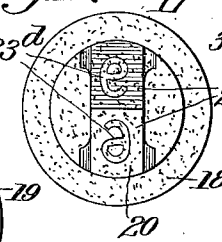



Fig. 11.

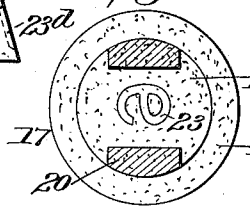



Fig. 13.

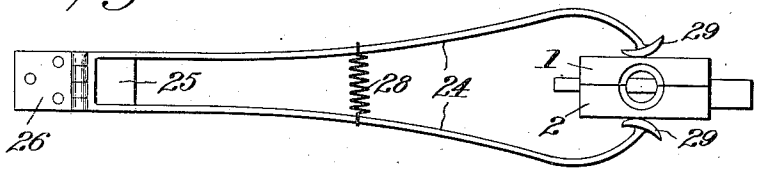
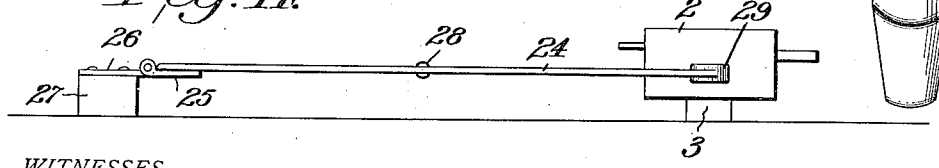



Fig. 14.

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# UNITED STATES PATENT OFFICE.

WILSON K. LEVERING, OF BALTIMORE, MARYLAND.

## CORE-BOX.

1,028,367. Specification of Letters Patent. Patented June 4, 1912.

Application filed June 13, 1911. Serial No. 632,978.

*To all whom it may concern:*

Be it known that I, WILSON K. LEVERING, a citizen of the United States, residing at Baltimore, State of Maryland, have invented certain new and useful Improvements in Core-Boxes, of which the following is a specification.

This invention relates to core boxes, and more particularly to boxes for making cores to be used in forming the eyes of sash weights.

Heretofore, one of the methods employed for forming the heads of sash weights has been by means of chills, which chills are inserted at the end of the molds in the flask. Owing to the fact that the iron usually employed for manufacturing sash weights is of extremely low grade, it has been found in practice that the effect of such chills is to render the iron adjacent the eye extremely brittle and, since it is of poor quality and of small tensile strength any way, the result is that weights so manufactured have given rise to continuous complaints in regard to the breaking of the eyes. It is therefore desirable to avoid the use of chills and to employ sand cores. It has been proposed to make sand cores in solid core boxes having an opening of the desired size and shape, but in order to be able to remove the finished cores from the boxes it is necessary to make such cores somewhat tapering. When such tapering cores are inserted in the flask, a small space of gradually decreasing thickness is left around their ends and the incoming metal flows into this space and forms objectionable fins. It is therefore highly desirable that such cores shall be made of uniform size throughout their length, so that they may snugly fit in the mold flask and thus produce smooth castings.

The object of the present invention therefore is to provide an improved core box in which sand cores of uniform size may be satisfactorily made and from which they may be removed without danger of mutilating the same.

A further object is to provide a core box of this character having fewest possible number of parts and so constructed that the operation of core making may be carried out in a simple and expeditious manner without the necessity of employing specially skilled labor.

With the above and subsidiary objects in view, which will hereinafter appear, the invention consists in the construction and arrangement of parts hereinafter described and claimed, and illustrated in the accompanying drawings, in which,—

Figure 1 is an end elevation of my improved core box; Fig. 2 is a plan view thereof; Fig. 3 is a side elevation thereof, one of the sections being removed; Fig. 4 is a central transverse section through the box; Figs. 5 and 6 are views corresponding to Figs. 3 and 4, respectively, but showing a slightly modified construction; Fig. 7 is a plan view of a plug hereinafter described; Fig. 8 is a longitudinal sectional view of a form of flask in which cores made in accordance with my invention may be employed; Fig. 9 is a side view of one of the finished cores; Fig. 10 is an end view thereof; Fig. 11 is a section on the line 11—11 of Fig. 9, looking in the direction of the arrow; Fig. 12 is a perspective view, on a somewhat reduced scale, of one of the finished sash weights; and Figs. 13 and 14 are a plan view and side elevation, respectively, of a holding device which may be employed to advantage in connection with my improved core box.

Referring to the drawings in detail and particularly to Figs. 1 to 4 thereof, my improved two part core box comprises the separable sections 1 and 2, fitted together on a plane passing through the longitudinal center of the core, and held together by means of sockets and dowel pins 7. The bottom of the mold cavity is formed by means of a plug 3 which is held in place by means of a cross pin 6. In order to properly aline the openings in the section 2, and block 3, so that the pin 6 may be readily inserted, I provide the block 3 with a flattened portion 4 as clearly shown in Fig. 7, such flattened portion adapted to abut snugly against a guide strip 5 carried by the section 1 of the core box.

By further reference to Figs. 4 and 7, it will be seen that the block 3 has an annular shoulder $3^a$ adapted to fit against the bottom of the core box sections, and with a cylindrical body portion adapted to fit within an opening formed in the core box in alinement with the mold cavity. It is therefore obvious that the inner end of the block forms the bottom of the mold cavity, and this inner end comprises the inclined surfaces $3^c$ and the square portions $3^e$. Carried by the inclined converging surfaces $3^c$

are figure patterns $3^d$ as clearly shown in Figs. 4 and 7. It will be observed that the surfaces $3^c$ intersect at a point lying in the plane of division between the sections of the core box. At the top of the mold cavity is the annular space 8, and below this is the cylindrical portion 9 and the body portion 10, which latter, it will be seen, is substantially flat on two sides and such sides converge downwardly until the bottom of the cavity is reached.

Extending across the mold cavity just below the cylindrical portion 9 thereof is a figure pattern carrying bar. This bar comprises upper and lower sections 11 and 14, the upper of which carries on its upper surface a figure pattern 13, and is supported by the lower section 14 which, in turn, fits in a guideway 15 formed jointly in the two box sections. When the box is in operative condition it will be seen that the sections of the bar are clamped between the sections of the box. It will also be observed that the ends of the sections 11 and 14 project beyond the ends of the box so that they may be grasped by the operator, and the inner end of section 11 preferably rests against a shoulder 12, formed in the box, so as to bring the figure pattern 13 to the proper position in the mold cavity.

In operation the parts are assembled as shown in Figs. 1 and 2, and the green sand packed into the mold cavity in the well known manner. The enlarged end of the section 14 of the bar is then grasped by the operator and this section withdrawn. During this operation the shoulder 12 prevents movement of the section 11, and when the section 14 has been entirely withdrawn, the section 11 is permitted to fall, thereby disengaging the figure pattern 13 from the sand. The section 11 may then be withdrawn without causing any obliteration of the impression of the figure pattern in the sand. The pin 6 is then withdrawn and the plug 3 taken out, and then, upon separation of the sections 1 and 2 of the box, the finished core may be readily removed.

The form of the finished core is shown in Figs. 9, 10 and 11. By reference to these figures it will be seen that the core comprises a flange 18 corresponding with the part 8 of the box and a cylindrical portion 19 corresponding with the part 9 of the box. The body portion 20 is formed by that part of the cavity marked 10 in Fig. 3. 23 designates the impression formed by the pattern 13 and $23^d$ indicates the impression formed on the inclined faces $23^c$ of the core by the patterns $3^d$. 21 indicates the opening formed by the bars 11 and 14. Where the cores are large, and under some circumstances, I may dispense with the block 3, and instead, employ the construction illustrated in Figs. 5 and 6. In these figures the section 1′ of the box has formed integral therewith a bottom portion 30. This carries the figure patterns $30^d$ which are formed on inclined surfaces $30^b$ and $30^c$, which surfaces converge and intersect at a point in the plane of division of the box sections. The surface $30^b$ is extended beyond the mold cavity to the outer edge of the box and the section 2′ of the box has a lower beveled edge which conforms to the slope of the surface $30^b$ and fits snugly thereagainst, as illustrated in Fig. 6. The operation of this form of device is practically the same as that above described, except that after the withdrawal of the bar sections 11 and 14 the section 2′ is removed, and then the finished core may be taken out of the mold cavity without damage.

Fig. 8 illustrates a flask in which my improved cores may be used. This flask has a number of mold cavities 15 formed in the sand therein, which are fed by means of a central passage 16. 17 designates the cores in their entirety, which cores are inserted in the ends of the openings 15, their inward movement being limited by the engaging of the flange 18 with the end of the flask.

Fig. 12 shows a finished sash weight. It will be seen that the eye is formed between two side portions 32 and beneath a cross bar 22, which bar is formed by the metal flowing into the opening 21 of Fig. 9. It will also be seen that the inclined surfaces $23^c$ of Fig. 9 form the inclined shoulders $33^c$ in Fig. 12, and that the impressions $23^d$ of Fig. 9 form the figures $33^d$ on the sash weight. The impression 23 on the core forms the figure 33 at the end of the sash weight. It will be observed, therefore, that this construction provides for the formation of a figure, indicative of the size of the weight, at the extreme end of the weight, and also at a point below the eye at some little distance from the end of the weight. It is found in practice that owing to the fact that any existing impurities or foreign matter in the molds 15 are carried along by the incoming iron to the extreme end of the mold cavity, it is very difficult to get the figure 33 to form clearly. It will usually be blurred and almost illegible. For this reason it is extremely desirable to provide means for producing the figures $33^d$. These being removed from the end of the sash weight, will usually come out clear, and in any event the chance of getting them clear and sharp is much better than in the case of the figure 33 at the extreme end of the weight.

In Figs. 13 and 14 I have illustrated a clamping device which may be used to advantage to facilitate the manipulation of my improved two part core box. This device comprises resilient arms 24 arranged in a horizontal plane and rigidly secured at one end to one member 25 of a hinge, the other

member 26 of which is secured to any suitable fixed support 27. The arms are preferably urged together by means of a coil spring 28, and at their extreme ends the arms are provided with curved, outwardly flaring box-engaging portions 29. After the box has been assembled, it is pushed between the parts 29 of the holding device as clearly shown in Figs 13 and 14, and this device serves to hold the parts of the box together while the sand is being packed therein. Owing to the curved form of the buttons 29, the box may be readily swung about such buttons as pivots, and reversed or inverted to facilitate removal of the core. When not in use, the arms 24 may be swung about the hinge to an elevated position out of the way of the work table.

It will thus be seen that I have provided a simple and practical two part core box which readily lends itself to the requirements of modern practice, and it is thought that the numerous advantages of the invention will be obvious to those familiar with such matters.

What I claim is:—

1. A box for making sand cores for forming eyes in sash weights, said box having a mold cavity, and a bar extending across such cavity, said bar being formed of a pair of superposed sections capable of relative sliding movement the one on the other.

2. A two part core box having half the pattern formed in each part, and a bar extending across the pattern cavity and clamped between the two sections of the box, said bar being supported wholly by such sections.

3. A divided core box having the mold cavity formed partly in each section, and a figure-pattern-carrying bar extending across the mold cavity between the two sections of the box parallel with the line of division thereof.

4. A divided core box having the mold cavity formed partly in each section, and a figure-pattern-carrying bar extending across the mold cavity between the two sections of the box, said bar comprising two superposed independent, separable sections.

5. A core box having a mold cavity therein, and a bar extending across said cavity, said bar being made up of two unconnected sections, one resting on the other, and supported wholly thereby a figure pattern carried by the upper section, and the end of the lower section projecting beyond the side of the box so that it may be grasped by the operator, whereby, when said lower section is withdrawn, said upper section will fall away.

6. A core box comprising a pair of separable sections, each section having part of the mold cavity formed therein, and a figure-pattern-carrying plug forming the bottom of the mold cavity and held between the sections of the box and means for locking such plug rigidly to one of such sections.

7. A core box having a mold cavity therein, a cylindrical plug forming the bottom of such cavity, a pattern formed on the end of such plug, and means for insuring the accurate adjustment of said plug to the proper angular position.

8. A core box for making sand cores for forming eyes in sash weights, said box having a mold cavity, and a bar extending across such cavity, a figure pattern carried by said bar, and a similar pattern also formed on the bottom of said mold cavity, whereby a figure may be produced on the finished weight at the extreme end, and also at a point removed from the end thereof.

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

WILSON K. LEVERING.

Witnesses:
W. D. CLARK,
H. L. MASON.