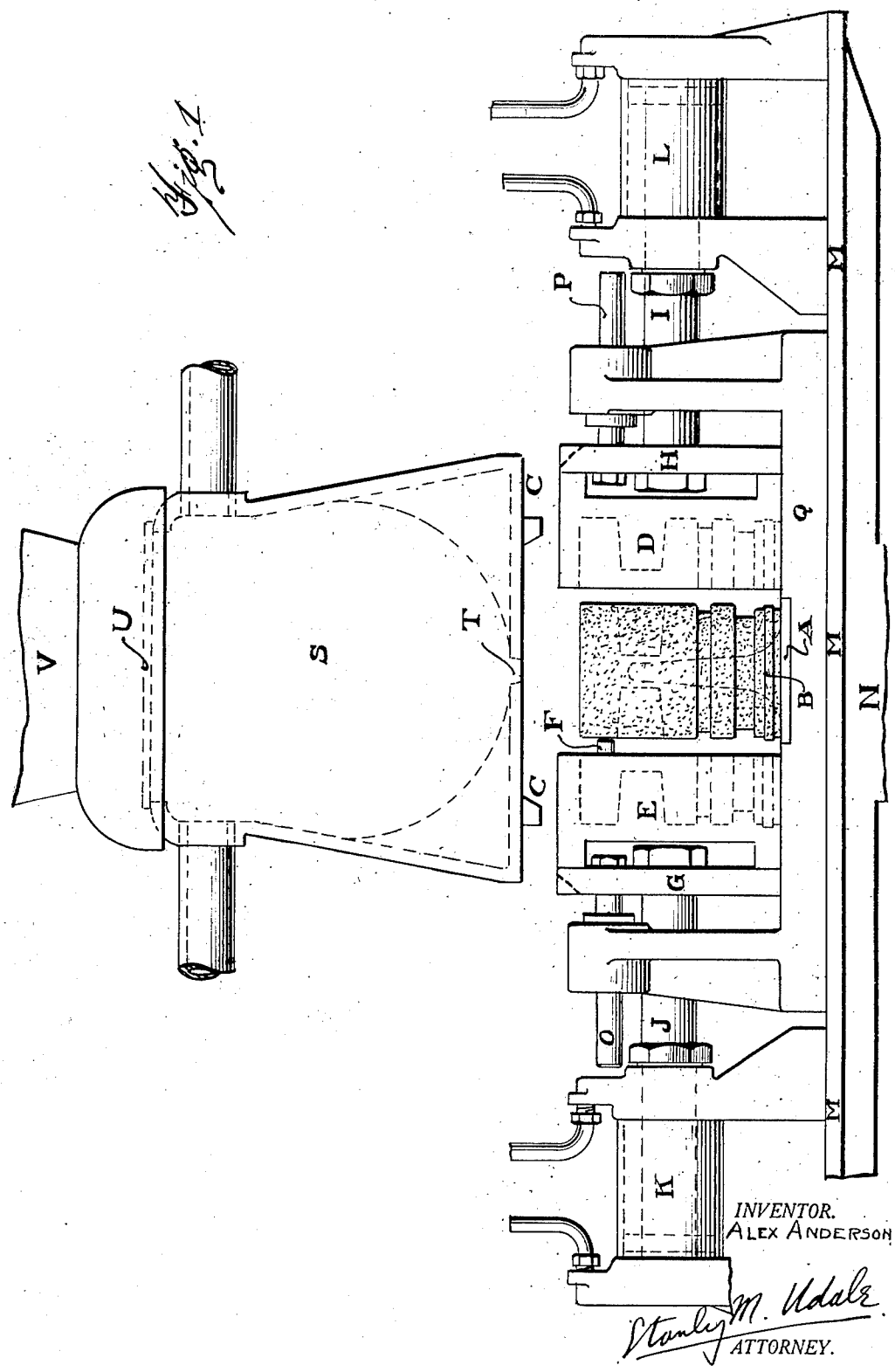
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METHOD OF MAKING CORES

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METHOD OF MAKING CORES

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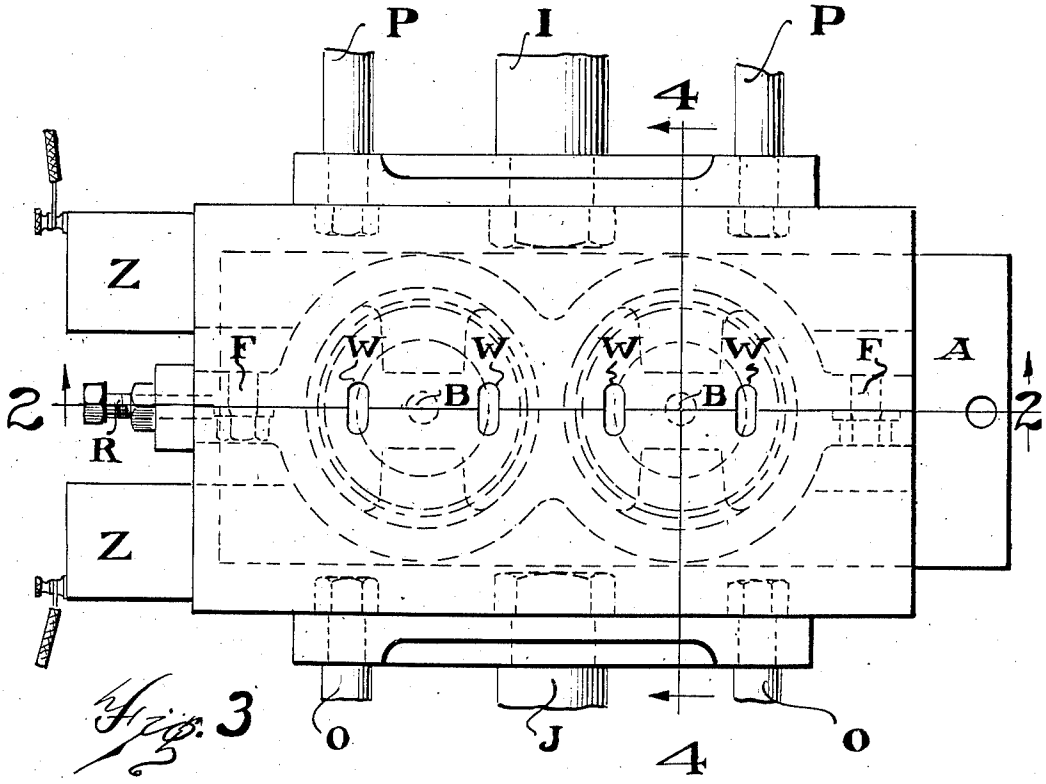
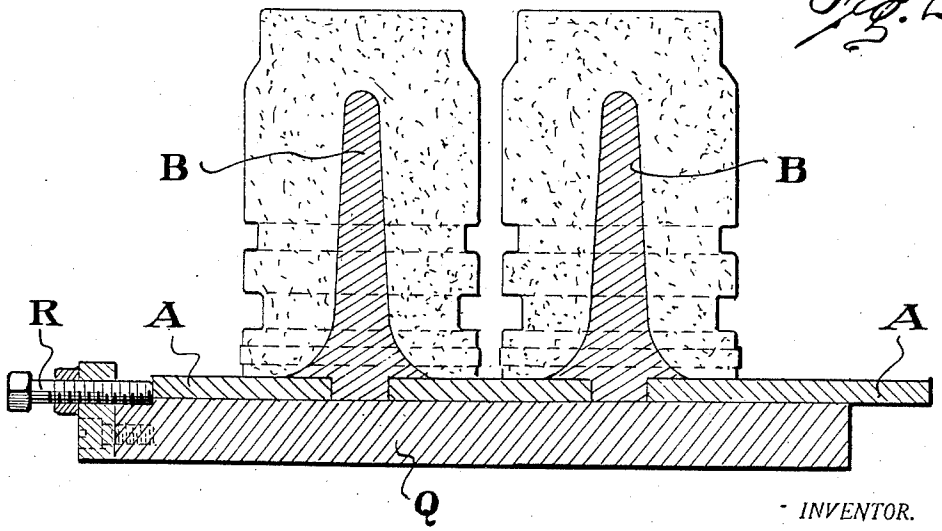


Fig. 3

Fig. 2



INVENTOR.

ALEX ANDERSON

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ATTORNEY.

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A. ANDERSON

METHOD OF MAKING CORES

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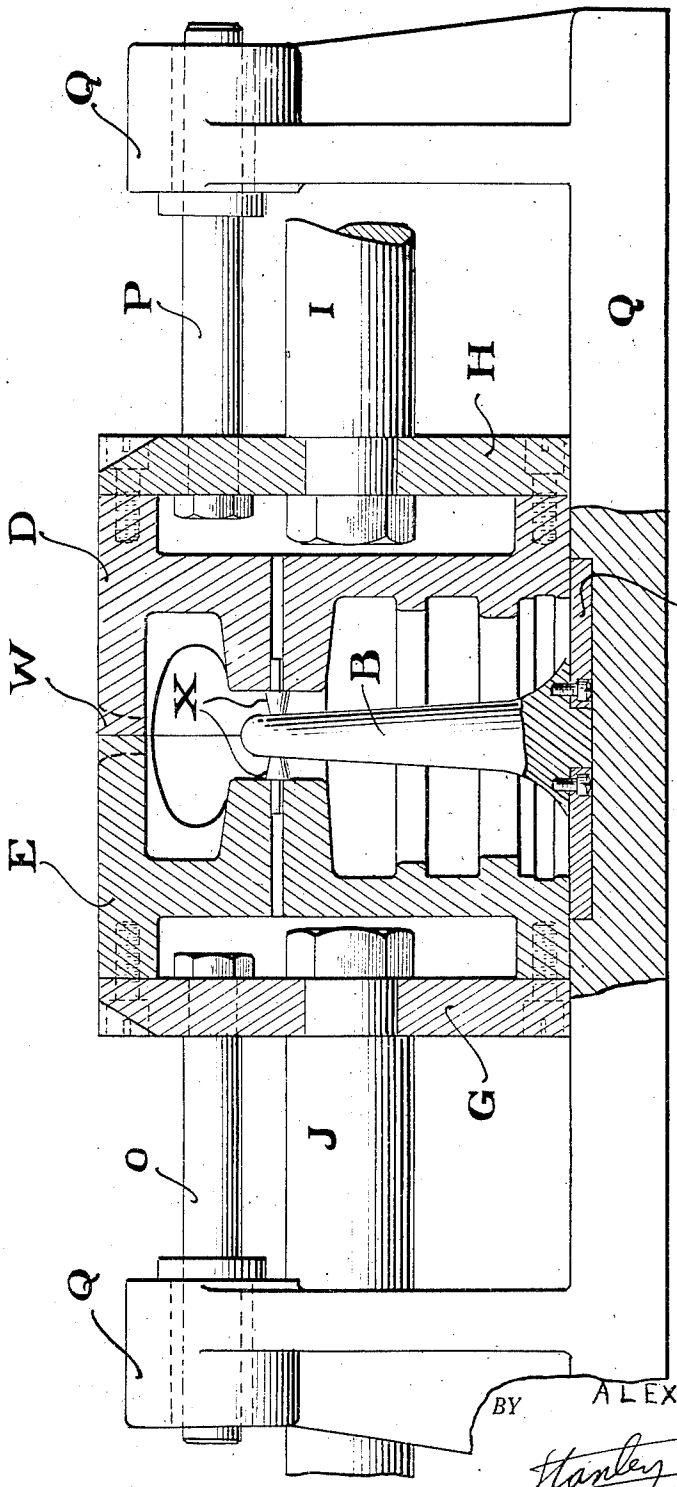


Fig. 4

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Patented Feb. 16, 1926. 1,573,436

UNITED STATES PATENT OFFICE.

ALEXANDER ANDERSON, OF DETROIT, MICHIGAN, ASSIGNOR TO EARL HOLLEY, OF DETROIT, MICHIGAN.

METHOD OF MAKING CORES.

Application filed February 25, 1924. Serial No. 694,918.

To all whom it may concern:

Be it known that I, ALEXANDER ANDERSON, a citizen of the United States, residing at 9299 Cascade Avenue, Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in the Method of Making Cores, of which the following is a specification.

The object of this invention is to improve the method of making cores by means of the sand blowing method. In this method, as at present practiced, the core box, usually an aluminum casting, is placed under the receptacle from which the sand is blown, the core box pressed against the outlet from the sand receptacle and the air pressure is then turned into the receptacle and the sand allowed to flow into the core box. The air pressure is then relieved, the table supporting the core box lowered, the core box removed and rapped by hand, and finally the clamps holding the two or more halves of the core box together removed and the core released.

The cores are then placed on core driers, which are supported on a frame in an oven where the cores are dried and baked. Before being baked the cores are very fragile and the resulting product is frequently defective due to the necessary handling, the percentage of spoilt cores being therefore large. What is more important is that the cores are not true to dimensions so that frequently castings are spoilt.

The above very brief outline of the method of making cores now in use indicates that there is quite a considerable amount of handling required which is largely eliminated in the following method. In addition there is a very considerable saving in money. The specific application of this invention, illustrated in the following specification, is an arrangement for making piston cores of the type corresponding to the copending application of Daniel H. Meloche, Serial No. 591,725, filed October 2, 1922, in which the sprue passage is placed concentrically within the core and the iron poured through the sprue into gates feeding directly into the piston bosses.

Figure 1 shows in elevation the core blowing machine with the core box in the open position and with a core mounted on a sprue print plate ready for removal.

Figure 2 is a cross sectional elevation on plane 2—2 of Figure 3 which shows a sprue print plate having two cores mounted on the prints.

Figure 3 shows a partial plan view of the core box portion (in the closed position) of the cofe blowing machine illustrated in Figure 1.

Figure 4 shows a sectional elevation through the core box on the plane 4—4 of Figure 3, which shows the core box in the closed position ready for filling.

In Figures 1, 2, and 4, A is the core support plate, B B are core prints, which serve also as the core supports. D E are the right and left halves respectively of the core box, the half E being provided with the dowels F, see Figure 3. The two halves of the core box are bolted to the beveled plates G H. The plates G H are mounted on the piston rods I J, operated by the air cylinders K L. The air cylinders K L are mounted on a base plate M extending from one side to the other of the machine. The base plate M in its turn is mounted on a platform N which is raised and lowered by mechanism not shown.

The plates G H also carry guide pins O P. These guide pins slide in bushed holes in the casting Q, the plate A sliding in a recess or groove in the casting Q. Immediately above the center of the two halves of the core box E D is located the sand container S provided with two air entrances and four sand outlets or nozzles T.

Above this is located the guillotine valve U and the sand hopper V. The wedge shaped pieces C C are secured to the face of the sand container S so as to engage with the beveled portion of the plates G H. The parts lettered S T U V are the essential elements of a commercial core filling machine now being sold. This invention, however, relates to the means for opening the core boxes and the handling of the cores in conjunction with a machine similar to that shown.

In Figure 3 the core box is shown in the closed position. The four elongated openings W W W W are the openings through which the sand is fed into the core box from corresponding openings T in the bottom of the sand container S. Gate prints X are shown located in the center of the piston bosses Y Y. These gate prints contact wih the core print B, as is clearly shown

in Figure 4. Electric vibrators Z Z are mounted on the rear of the core box halves E D to enable the box to be opened without destroying the surfaces of the core.

In Figures 2 and 3 the adjustable stop R is shown bolted to the casting Q and so arranged that the core prints B B can be located each exactly in the center of its corresponding portion of the core box.

Operation.—The plate A, with the two core prints B B integral therewith, is slid in the recess in the casting Q until the plate A contacts with the stop R which is correctly adjusted. Air pressure is then admitted to the pistons K L and the two halves D E of the core box closed. The platform N is then raised so that the openings W W W W come opposite the outlets T T T T of the sand container S, the wedges C C locking the plates G H in position. The guillotine valve U is then closed and compressed air is admitted to the chamber S. The sand in S is hereby ejected through T and the core box filled compactly.

When sand begins to escape from the top of the core box between the outlets T and entrances W the air is turned off, the platform N lowered, the air pressure reversed in the cylinders K L and the core box E D thereby opened. To facilitate this electric vibrators Z Z are attached to the two halves E D of the core box with a result that the core box separates from the core leaving two piston cores mounted upon the core prints B B. The plate A is then drawn out of the slot in Q by hand and the two cores thereon placed on racks in an oven and the core dried and baked. After the core is dried and baked the cores may be handled without any great care and are thus easily lifted off the core prints B B.

Normally a core is placed upon a core drier, which is a perforated metal structure more or less conforming to the shape of the core, and which is intended to prevent the core distorting during the baking operation. Obviously these core driers themselves warp due to the repeated heating and cooling to which they are subjected, and frequently castings are spoilt because of these distortions. By the method outlined above, however, the core drier is eliminated. The core support A and core prints B B serve the double purposes of core prints and core support for drying purposes.

But the great advantage that has been found in the practical operation of this method is that the cores do not sag, hence they may be held closely to dimensions and the machining allowances may therefore be reduced.

What I claim is:

The method of making sand cores, which consists in first mounting the two halves of a two-piece core box, which is open at the bottom, on horizontal guides, connecting pneumatic pistons to said core box halves, whereby the core box is opened and closed automatically, sliding a plate below the core box so as to close the open end thereof, closing the two halves of the core box, blowing sand therein, opening the core box so as to leave the core on said plate, drying the core on the said plate, and finally removing the core from the plate.

In testimony whereof I affix my signature.

ALEXANDER ANDERSON.