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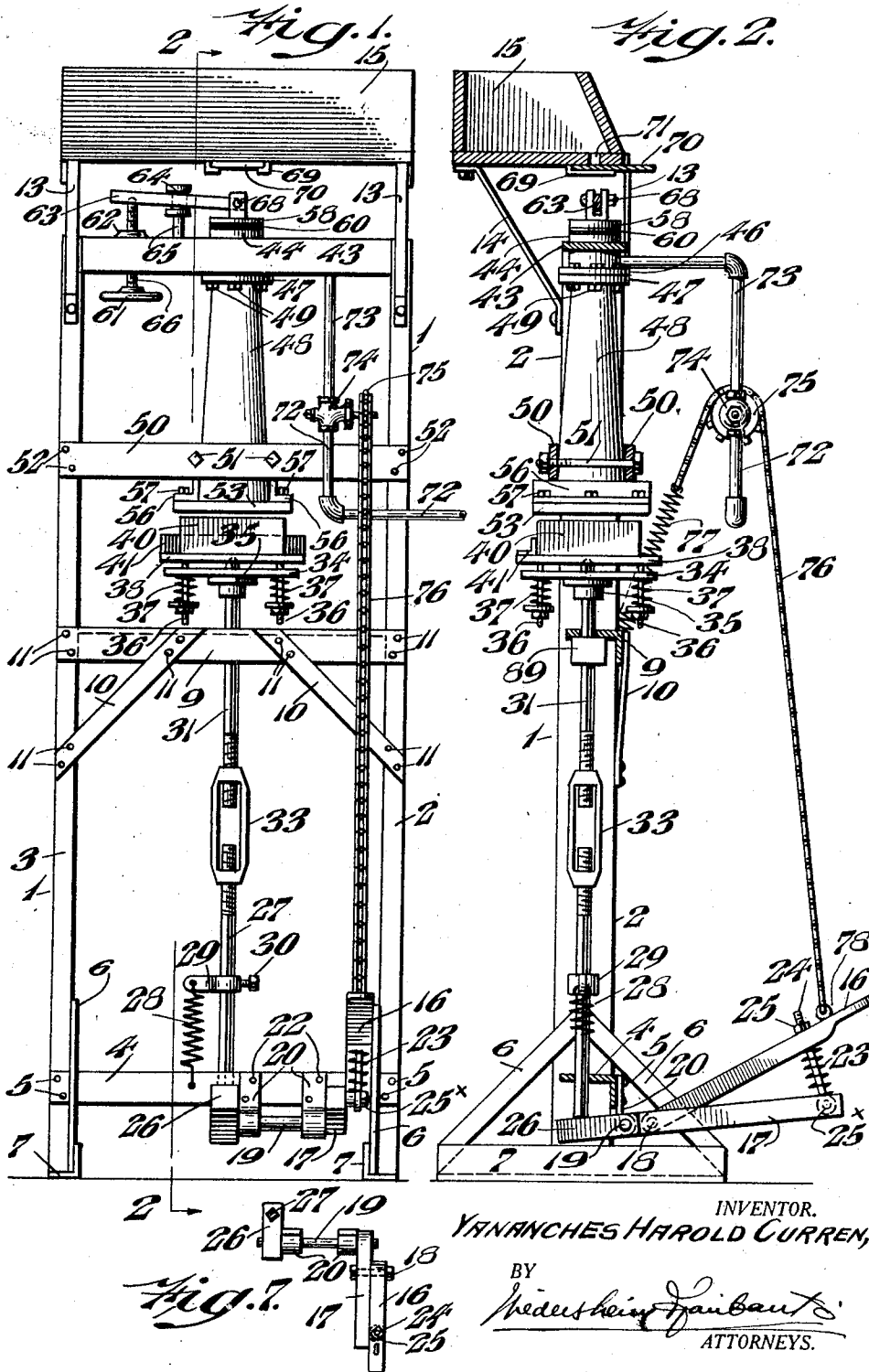
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CORE MOLDING MACHINE

Filed June 28, 1928

2 Sheets-Sheet 1



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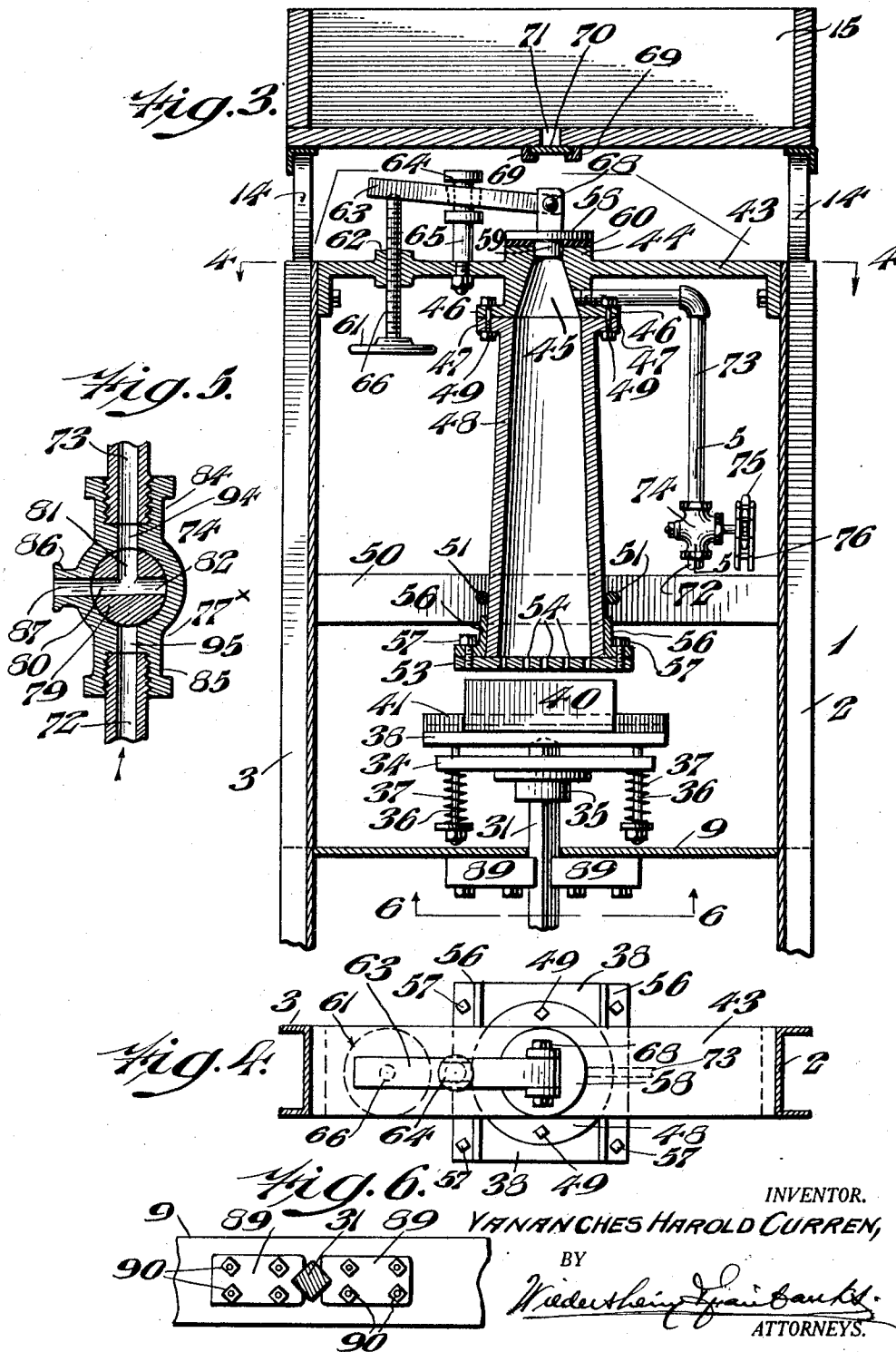
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INVENTOR.

VANANCHES HAROLD CURREN,

BY

Wiedersheim & Grunbaum,

ATTORNEYS.

UNITED STATES PATENT OFFICE

VANANCHES HAROLD CURREN, OF WILMINGTON, DELAWARE

CORE-MOLDING MACHINE

Application filed June 28, 1928. Serial No. 289,025.

My invention relates to a new and useful core molding machine, wherein sand or similar material is packed into a core box having a pattern therein to form a core or half core or mold.

My invention further relates to a novel machine of this character whereby the sand is packed into the core box by means of compressed air pressure exerted on a sand supply positioned above the core box, and controlled in a novel manner hereafter described.

My invention further relates to a novel machine of this character, wherein the core box, containing the pattern of the core to be made, is brought into position to receive the sand or other material from which the core is to be made, and such sand or other material is supplied to and compressed in said core box by the actuation of a single lever, the positioning of the core box and the release of the sand being accurately timed and coordinated.

My invention further relates to a novel core molding machine which possesses the efficiency and advantages of machines of this character heretofore known and which moreover is characterized by a minimum number of parts, a very simple assembly, easy and convenient operation and extreme durability.

My invention further consists of means for adjusting the position of the core box and its adjuncts and for replenishing the supply of sand within said sand receptacle.

My invention still further consists of means for regulating the flow of sand into the core box, and means for allowing the escape of any excess air pressure that may be introduced into the sand receptacle.

It further consists in the provision of a novel valvular control for the compressed air which is automatically actuated, following the elevation of the core box, to pack the sand therein.

To the above ends my invention consists of a vertically adjustable core box support, a sand receptacle positioned above and in operative alignment with said core box, means for introducing compressed air to expel the sand into said receptacle, and means for simultaneously raising said core box into op-

erative receiving position with respect to said sand receptacle.

My invention still further consists of various other novel features of advantage and construction hereinafter described and claimed.

For the purpose of illustrating my invention I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

In the accompanying drawings:

Figure 1, represents a front elevation of a core molding machine embodying my invention.

Figure 2, represents a section on line 2—2 of Figure 1.

Figure 3, represents on an enlarged scale, a vertical sectional view of the upper portion of the core molding machine shown in Figure 1 certain parts being shown in elevation.

Figure 4, represents a sectional view on line 4—4 of Figure 3.

Figure 5, represents on an enlarged scale, a section on line 5—5 of Figure 3.

Figure 6, represents a section on line 6—6 of Figure 3.

Figure 7, represents a fragmentary plan view of the bottom portion of Figure 2, showing details of construction.

Referring to the drawings, in which like reference characters indicate like parts, 1 designates my novel core molding machine, comprising the upright frame members 2 and 3 to which is secured the lower horizontal angle iron brace 4 by the rivets 5 or the like. 6 designates upwardly converging angular braces suitably secured to said uprights 2 and 3 at their top, said uprights and said brace members being secured at their lower ends by the bottom horizontally disposed angle irons 7. The uprights 2 and 3 are further secured together by the intermediate transverse

angle iron 9 and the upwardly converging bars 10, secured by the rivets 11 or the like. To the upper ends of the uprights 2 and 3 are secured the top braces 13 and 14 which support the sand reservoir 15. 16 designates a foot pedal which is pivotally connected at its inner end to the lever 17 by the bolt 18, said lever being fulcrumed at its inner end on the shaft 19, which is supported by the hanger brackets 20 secured to the angle brace 4 by the bolts 22, as will be understood from Figures 1 and 7. A spring 23 surrounding the stem 24 and having the adjustment nut 25, is interposed between the bottom of the foot pedal 16 and the top of the lever 17, said stem 24 being pivoted at its lower end to the outer end of the lever 17 by the bolt 25* as will be understood from Figures 2 and 7. The inner end of the shaft 19 carries the bar 26, on which is supported the lower polygonal rod 27, which is normally retained in its lowermost position by the spring 28, the lower end of which is connected to the transverse angle brace 4 and the upper end of which is connected to a collar 29 which is adjustably secured to said stem 27 by the set screw 30. An upper threaded rod 31 is adjustably connected to the lower standard 27 by the turn buckle 33, and carries at its upper end the disc or head 34, resting on the boss 35 and suitably secured thereto, said head being provided with the bottom threaded stems 36, carrying the tension springs 37. By the employment of the turn buckle and its adjuncts, I am enabled to adjust with great exactness the extent of travel of the core box 40 and its adjuncts. The rod 31 passing through the transverse brace 9 is further guided by its bearing within the bearing blocks 89 secured to the bottom of said brace by the screws 90 as seen in Figure 6. On the head 35 is suitably supported the platform 38 adapted to support the core box 40, the position of said platform being adjusted by manipulating the nuts on the stems 36 which carry the springs 37. An angle iron 41 is suitably secured to the top of the platform 38 to form a guard rail or stop to limit and determine the position of the core box 40, as will be understood from Figures 1 and 2. A transverse top brace member 43 is secured to the upper ends of the uprights 2 and 3 and is provided with the central hub 44 which is provided with a conical opening 45, said hub 44 being provided with the bottom flange 46 to which the upper flange 47 of the cylinder 48 is secured by the bolts 49. The lower end of the cylinder is held in position between the bolts 51 passing through the transverse brace members 50 which are secured to the uprights 2 and 3 by the bolts 52 as will be understood from Figures 1 and 2. To the lower end of the cylinder 48 is secured the bottom plate 53 by the angle irons 56 and the bolts 57, said bottom plate having the ports 54 therein, which are in alignment with corresponding

ports (not shown) in the top of the core box 40.

The conical opening 45 in the hub 44 of the brace 43 is provided with the cover 58 having the plunger 59 and provided with the gasket 60, said cover being operated by turning the hand wheel 61 to revolve the stem 66 which is threaded in the boss 62 and whose upper end bears against one end of the lever 63, fulcrumed at 64 to the stud 65 secured to the brace 43, the other end of said lever being pivoted at 68 to the upper end of the plunger 59 as will be best understood from Figure 3. The sand reservoir 15 is provided with the bottom ways 69 in which slides the gate or valve 70 to close or open the port 71.

73 designates a pipe, the upper end of which leads into the passage 45 in the hub 44, and the lower end of which leads to a two-way valve 74 which is supplied with compressed air through the pipe 72 leading to a source of compressed air (not shown). The two-way valve 74 is provided with the sprocket wheel 75 over which passes the sprocket chain 76 one end of which is connected to one end of the spring 77, which is connected to the brace member 9, the lower end of the chain 76 being secured to the outer end of the foot pedal 16 by the eye 78 or the like. The valve 74 comprises the outer casing 77* and the inner valvular member 79, the latter being provided with the intercommunicating passages 80, 81 and 82, and being rotatable by the passing of the chain 76 over the sprocket wheel 75. The outer casing 77* is provided with the upper and lower threaded portions 84 and 85 into which are threaded the pipes 73 and 72 respectively and with the exhaust portion 86. The exhaust port 87 is adapted to register with the port 80 in the valve 79 while the ports 81 and 82 in said valve are adapted to register with the ports 94 and 95 respectively which latter register with the pipes 73 and 72 respectively as will be seen from Figure 5.

The operation is as follows:

The core box or pattern 40 from which a core is to be formed is positioned on the platform 38. Sand is introduced from the tank 15 partially to fill the cylinder or other receptacle 48 by withdrawing the slide 70 and removing or swinging to one side the cover 58 by manipulating the hand wheel 61, as above explained. A funnel or the like is used to connect the opening 71 of the tank 15 with the passage 45 leading to the cylinder 48 to guide the sand. A bottom plate 53 having suitable ports therein to match the ports (not shown) in the top of the core box 40 is used to regulate the passage of sand from the cylinder 48 into the core box 40, it being understood that the cylinder 48 and the bottom 53 are interchangeable to suit different core boxes and different molds or cores.

The foot pedal 16, fulcrumed to the shaft 19 and pivoted to the lever 17 is then depressed against the tension of the spring 23 to raise the plate 26 carried by the inner end of the shaft 19, thus raising the rods 27 and 31, against the tension of the spring 28, and bringing the top of the core box 40 into contact with the bottom plate 53 of the sand cylinder 48. Further pressure on the foot pedal 16 compresses the spring 23 and exerts a pull on the sprocket chain 76, thus turning the sprocket wheel 75 which in turn revolves the valve 79 to bring the passages 80 and 82 into alignment with the ports 94 and 95 which align with the pipes 73 and 72, respectively, thus permitting the flow of compressed air from the source of supply (not shown) through the pipe 72, the valve 79 and pipe 73 into the cylinder 48 to force the sand through the ports 54 in the bottom plate 53 into the core box 40. When the core box has been packed, the pressure on the foot pedal 16 is released and the spring 77 retracts the chain 76, thus revolving the wheel 75 and turning the valve 79 in the reverse direction to close the pipe 72 and port 95 and to establish communication between the passage 81 and pipe 73 leading into the cylinder 48 and the exhaust port 87 to permit the escape of any excess compressed air remaining in the cylinder 48, this position of the valve being best seen in Fig. 5.

While I have shown the hand wheel 61, lever 63 and its adjuncts for removing and replacing the cover 58 of the cylinder 48, it is to be understood that any other suitable construction, such as a cam and lever movement may be employed if desired.

It will thus be seen from the foregoing that the initial depression of the lever 16 elevates the core box to the desired extent so that its top edges are sealed by their contact with the plate 53, and that a further depression of said lever automatically opens the valve 79 to admit air to the top of the sand in the cylinder 48. Upon the release of the lever or pedal 16, the springs 28, 23 and 77 cause the coating elements to automatically assume the positions seen in Figures 1, 2, 3 and 5, as is evident.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

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

1. In a device of the character stated, a stationary sand cylinder, a perforated bottom plate therefor, a core box, a cushioned

support therefor, means including a foot pedal for elevating said core box into sealed contact with the outer portions of said plate, a valved air supply leading to the upper portion of said sand cylinder, means operated by said foot pedal for automatically opening said air supply following the elevation of said core box, and a turn buckle adjustment for said cushioned support.

2. In a device of the character stated, a housing, a vertically adjustable core box support mounted on said housing, a sand receptacle carried by said housing and having bottom ports therein, a core box supported on said core box support, foot operated pivotal means for first raising said core box into contact with the bottom of said sand receptacle and for next automatically introducing compressed air into the latter to pack said sand into said core box, and tension devices for restoring said pivotal means and core box support to normal position.

3. In a device of the character stated, a housing, a vertically adjustable and movable core box support, a sand receptacle carried by the top of said housing and having bottom ports therein, a core box supported on said core box support, foot operated means for automatically and successively raising said core box into sealed contact with the bottom of said sand receptacle, and for introducing compressed air into the latter to drive and pack the sand into said core box and foot controlled means for automatically releasing excess air from said sand receptacle.

4. In a device of the character stated, a housing, a movable vertically adjustable core box support, a main sand reservoir carried by said housing and having a bottom outlet, means for opening and closing said outlet, an auxiliary sand receptacle positioned below said main sand reservoir and having an upper inlet mouth and bottom ports, means for closing said upper mouth, a movable and vertically adjustable core box support, a core box supported thereon in proximity to the bottom of said auxiliary receptacle, a foot pedal for initially raising said core box into sealed contact with the bottom of said auxiliary sand receptacle, and for next automatically introducing compressed air into the latter to drive and pack sand into said core box and means for automatically permitting the escape of excess air from said auxiliary sand receptacle after said core box has been packed.

5. In a device of the character stated, a sand receptacle having a perforated bottom, a cushioned core box support, a foot pedal, a lever on which said foot pedal is pivoted, a spring intermediate said foot pedal and lever, a turn buckle intermediate the inner end of said lever and said cushioned support for actuating the latter, and a spring for normal-

ly exerting downward tension on said turn buckle and core box support.

6. In a device of the character stated, a housing, a sand receptacle supported thereon and having a perforated bottom, a cushioned core box support, a foot pedal, a lever pivoted to said housing on which said foot pedal is pivoted, a spring intermediate said foot pedal and lever, a turn buckle intermediate the end of said lever and said cushioned support for actuating the latter, transverse upper lower and intermediate braces for said housing in which the rods of said turn buckle are guided, and a spring for normally exerting downward tension on said turn buckle and core box support.

7. In a device of the character stated, a housing, a sand receptacle supported thereon and having a perforated bottom, a cushioned core box support, a foot pedal, a lever pivoted to said housing on which said foot pedal is pivoted, a spring intermediate said foot pedal and lever, a turn buckle intermediate the end of said lever and said cushioned support for actuating and adjusting the latter, transverse lower and intermediate braces for said housing in which the rods of said turn buckle are guided, a spring for normally exerting downward tension on said turn buckle and core box support, a pipe for leading compressed air into the upper portion of said sand receptacle, a valve in said pipe, and a connection from said foot pedal to said valve for automatically opening the latter following the depression of said foot pedal.

8. In a device of the character stated, a housing, a sand receptacle supported thereon and having a perforated bottom, a cushioned core box support, a foot pedal, a lever pivoted to said housing on which said foot pedal is pivoted, a spring intermediate said foot pedal and lever, a turn buckle intermediate the end of said lever and said cushioned support for actuating the latter, transverse upper, lower and intermediate braces for said housing in which the rods of said turn buckle are guided, a spring for normally exerting downward tension on said turn buckle and core box support, a compressed air supply pipe leading to the upper portion of said sand receptacle, a two way valve in said pipe, a stem for said valve, a sprocket wheel on said stem, a sprocket chain having one end secured to said pedal, and a spring having one end attached to said housing and its other end attached to said sprocket chain, the latter passing over said sprocket wheel.

9. In a device of the character stated, a stationary sand cylinder, a perforated bottom plate therefor, a core box, a cushioned support therefor, means including a foot pedal for elevating said core box into sealed contact with the outer portions of said plate, a valved air supply leading to the upper portion of said sand cylinder, and means operated by

said foot pedal for automatically opening said air supply following the elevation of said core box.

10. In a device of the character stated, a housing, a vertically adjustable core box support mounted thereon, a stationary sand receptacle having bottom ports therein, a movable core box, below said sand receptacle, a foot pedal, a pivoted lever on which said pedal is mounted, a compressed air supply leading to said sand receptacle, a connection from said foot pedal for controlling said air supply to said sand receptacle when said pedal is depressed and connections intermediate an end of said lever and said core box for simultaneously actuating said core box when said pedal is depressed towards said lever.

11. In a device of the character stated, a housing, a vertically adjustable core box support mounted thereon, a stationary sand receptacle having bottom ports therein, a movable core box below said sand receptacle, a foot pedal, a pivoted lever on which said pedal is mounted, a compressed air supply leading to said sand receptacle, a connection from said foot pedal for controlling said air supply to said sand receptacle when said pedal is depressed, connections intermediate an end of said lever and said core box for simultaneously actuating said core box when said pedal is depressed towards said lever, and adjusting devices in the connections intermediate said lever and core box.

VANANCHES H. CURREN.