E. F. PETERSON

SAND BLOWING TUBE FOR CORE MAKING MACHINES

Filed Oct. 3, 1949

FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

FIG. 6

INVENTOR.
E. F. PETERSON

BY
Merrill M. Blackburn
ATTORNEY
My present invention relates to improvements in air-operated machines for making sand cores and, among the objects thereof are the provision of improved means used in conveying sand from a core machine hopper to the core box whereby the sand column in the blow tube leading to the core box is held in place and prevented from falling out or being drawn out of the delivery end of the tubular means by which the core sand is carried from the blow plate to the core box, thereby keeping the finished surface or cope side of the core clean and free from loose sand; the provision of a sand-conveying tube provided with a tip or extension of resilient material which is so constructed that the danger of stripping same from the tip of the rigid duct of the blow tube is reduced to a minimum; and such further objects, advantages, and capabilities as will hereafter appear and as are inherent in the structure disclosed herein. My invention further resides in the combination, construction, and arrangement of parts illustrated in the accompanying drawings and, while I have shown therein what is now regarded as the preferred embodiment of this invention, and modifications thereof, I desire the same to be understood as illustrative only and not to be interpreted in a limiting sense.

In the drawings annexed hereto and forming a part hereof,

Fig. 1 shows, in longitudinal section, one application of this invention;

Figs. 2 and 3 show modifications thereof;

Fig. 4 shows in section another form of sand tube and a core box with the end of the tube inserted through the wall of the core box;

Fig. 5 shows a modification of the structure shown in Fig. 4; and

Fig. 6 shows in section, fragmentarily, a sand hopper and core box connected by one of these blow tubes.

Reference will now be made in greater detail to the annexed drawings for a more complete description of this invention. The sand hopper, being old and well known, is not illustrated in detail in the present drawings in which the sand hopper is indicated at 1, the blow plate of the hopper at 2, and a sand-carrying blow tube, is shown at 5a, 5b, 5c, and 5d. The cope of the core box is indicated at 3. In Figs. 1, 3, 4, and 5, the sand-carrying ducts of these blow tubes are shown with an end reduced in diameter and provided with a yielding and resilient rubber, or rubber-like, open ended tip in the form of a ring molded to the external surface of the rigid, cylindrical duct of the blow tube and having its external cylindrical surface in line with the external surface of the duct, so that, at the point of juncture, the external surface of the duct and the tip is smooth. In all of the forms shown, the rubber, or rubber-like, tip covers the end of the metal duct and serves as a shield therefor against the scouring effect of the sand.

In Fig. 1, the reduced end 7 of the rigid duct of the blow tube 5a is beveled, as shown at 8, and the rubber tip 6a has an internal surface which is tapered to fit the surface 8 of the duct, thus giving the internal surface of the rubber tip of the blow tube a choke effect. Also, the fact that the end of the tip is constricted tends to cause the sand in the blow tube to separate rather smoothly from the blown core; at the very end of the tip, resulting in the core having a smooth surface without any loose sand. This is true as to all forms illustrated.

In Fig. 2, the rigid duct of the blow tube 5b has a plane end, instead of a stepped end, as shown in Fig. 1, and the tip 6c is permanently attached to the end of the rigid duct, the inner face of the tip being tapered to provide a choke opening.

Fig. 3 is similar to Fig. 1, including the stepped end, but the surface 9 is plane, instead of beveled, as in Fig. 1. The resilient tip 6d, while not identical with the tip 6c, is, nevertheless, similar thereto.

In Fig. 4, the rigid duct of the blow tube 5c is substantially identical with the same element in Fig. 3, and the tip 6d is provided at one end with an external rib or flange 10. The junction between the inner face of the inner end of the duct and the inwardly tapered face 12 of the tip 6d is smooth, so that there is no stepped end or ledge present at this junction. The tip 6d has an inwardly extending flange 11 against which the end of the duct 5c abuts.

In Fig. 5, the rigid duct of the blow pipe 5d is reduced at the end, similarly to the corresponding duct in Fig. 3, but it is provided at its reduced end with a plurality of grooves 14 which cooperate with corresponding ribs on the inner face of the tip or extension 5e, the discharge end of which is provided with a surface 12, comparable to that shown in Fig. 4.

Fig. 6 is merely illustrative of the use of these blow tubes in furnishing a sand carrying means connecting the sand hopper and the core box.

In any of the forms of tip herein shown, there may be a slight external taper, resulting from the vulcanization and subsequent cooling thereof. However, in the forms shown in Figs. 4 and 5, this is so slight as to be negligible. With the forms shown in Figs. 1, 2, and 3, there is a slight
taper at the outer end of the tip, which permits a slight outward lateral extension of the tip under the pressure of the sand being blown into the core box. When the pressure of the sand being blown is released, the tip again contracts, restoring the choke effect. The external taper is so slight that it cannot be shown in the drawings without being magnified unduly and giving a false impression. When the tip is expanded, the external wall thereof engages the wall of the hole in the core box. The constriction of the tube tends to hold the sand in the tube when the pressure in the sand box is relieved.

All of the blow tubes shown in the drawings of this application are for insertion through the wall of the core box, as shown in Figs. 4, 5, and 6, rather than pressed against the face thereof, as shown in Peterson Patent No. 2,423,341, which structure is designed for face contact, rather than for coupling, as in the present instance.

It is of course understood that the specific description of structure set forth above may be departed from without departing from the spirit of this invention as disclosed in this specification, and as defined in the appended claim.

Having now described my invention, I claim:

In a device of the class described, a core box having a sand inlet hole in a side thereof, a blow pipe for introducing sand into said core box through said hole, said blow pipe comprising a rigid pipe and a resilient tip at one end thereof, said rigid pipe being of constant internal diameter and of reduced outside diameter at one end thereof, said reduced outside diameter portion of said pipe having an irregular surface contour, said resilient tip being tubular in form and positioned about said pipe at the portion of reduced diameter and conforming to the irregular surface contour portion thereof, and said resilient tip extending beyond said pipe at the end of the reduced diameter, the inside diameter of the resilient tip beyond said end of said pipe being less than the inside diameter of said pipe, and said resilient tip being of outside diameter to fit within said hole in said core box, whereby said blow pipe so assembled with the resilient tip end thereof in said hole, sand blowing into said core box is prevented from escaping at the joint between said blow pipe and said core box, despite any imperfect alignment thereof.

EDWIN F. PETERSON.

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