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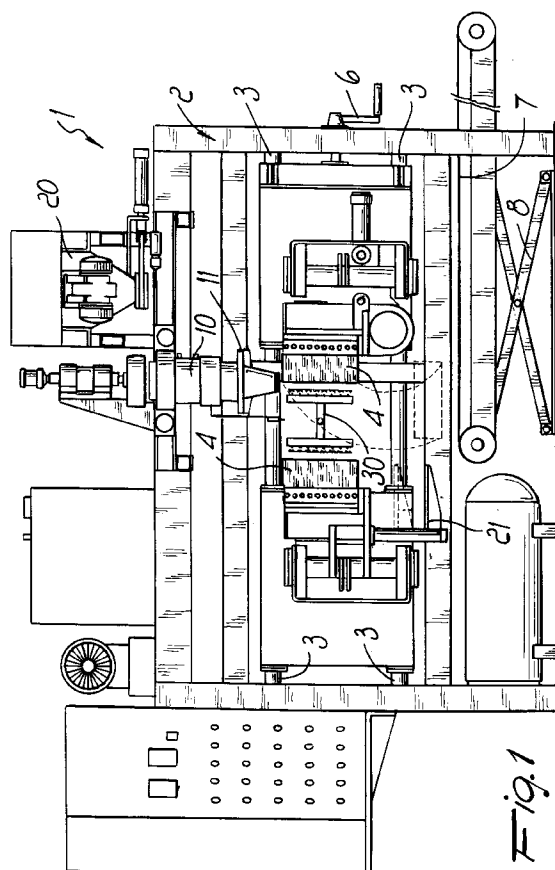
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(54) Core blowing machine for forming shell-molding cores

(57) The present invention relates to a core blowing machine (1) for forming cores for shell-molding, comprising a load-bearing frame (2) for supporting core boxes, at which a core-forming mix blower head (10) acts; the mix is supplied by a mix loading hopper (20). The particularity of the invention resides in the fact that it comprises lifting means for positioning the hopper (20) in the working position and on the ground.



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Description

The present invention relates to a core blowing machine for forming shell-molding cores.

A conventional core blowing machine is substantially constituted by a frame that supports the core boxes, at which a blowing head acts; said head injects and compacts inside the core boxes the mix drawn from a loading hopper.

In known solutions, the loading hopper is arranged above the blowing head, so as to convey the mix, and considerable difficulties are accordingly encountered in loading the mix in the hopper and in cleaning said hopper at the end of work.

Another drawback of conventional solutions resides in the fact that the formed-core removing means do not always allow to correctly remove the formed cores, with the risk of causing damage and breakage especially of the weakest cores.

The aim of the present invention is indeed to solve the problems described above by providing a core blowing machine for forming cores for shell-molding that allows to load and clean the mix feeding hopper much more easily and so as to considerably aid the operators.

Within the scope of this aim, a particular object of the invention is to provide a core blowing machine that allows to always gently deposit the core on the conveyor belt, avoiding the possibility of weak-core breakages.

Another object of the present invention is to provide a core blowing machine that allows to quickly replace the molds when they are still hot or optionally to perform small adjustments when newly-made core boxes are being used.

Another object of the present invention is to provide a core blowing machine for forming cores for shell-molding that, by virtue of its particular constructive characteristics, is capable of giving the greatest assurances of reliability and safety in use.

This aim, these objects, and others which will become apparent hereinafter are achieved by a core blowing machine for forming cores for shell-molding, comprising a load-bearing frame for supporting core boxes, at which a core-forming mix blowing head acts, said mix being supplied by a mix loading hopper, characterized in that it comprises lifting means for positioning said hopper in the working position and on the ground.

Further characteristics and advantages will become apparent from the detailed description of a core blowing machine for forming cores for shell-molding, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a schematic elevation view of the core blowing machine; and

figure 2 is a plan view of the core blowing machine.

With reference to the above figures, the core blowing

machine for forming cores for shell-molding, according to the invention, is generally designated by the reference numeral 1 and comprises a load-bearing frame 2 preferably of the bridge-like type with rectangular electrically welded steel tubes.

Guiding and supporting bars 3 are provided on the frame 2 and allow to close the core boxes precisely; said bars are arranged on the opposite side with respect to the operator, so as to allow free access to all the parts of the machine.

Adjustment systems are provided to compensate for the various thicknesses of the core boxes; they are constituted by a crank 6 located on the outward side of the machine so as to give the operator the greatest assurances of safety.

For removing the formed cores, a conveyor belt 7 is provided below the core boxes; said belt is mounted on a pantograph 8 to adjust its height, so that the overturning of the corresponding core box allows to gently deposit the formed cores onto the conveyor belt.

A blowing head 10 is provided at the core boxes; said head is easily interchangeable, since it is installed with a double-bayonet system, and is provided with a forced cooling water circulation system 11 at the part which is in contact with the core box.

The mix to be fed to the blowing head is loaded by means of a loading hopper 20 having the particularity of being mounted on lifting means that allow to position the hopper 20 at the working level, above the blowing head, and can lower the hopper down to ground level, thus allowing easy and safe filling with the mix, without having to resort to ladders and considerably facilitating internal cleaning at the end of the work shift.

As shown in dashed lines in figure 2, the hopper 20 is rotatable about a vertical axis so as to be better positioned with respect to the blowing head.

An automatic metallic male mold part extractor 21 acts at the core boxes, has an axis that is parallel to the mold closing plane, and can insert the electric heating resistors, the temperature whereof is controlled by an instrument located in the electric cabinets.

A cleaning unit 30 is provided between the spaced core boxes and is operated by compressed air; as an alternative, a sprayer is used that sprays water and release agent.

The two mold supporting heads are rotatable through 90° outwards, since they are rotatable about a vertical axis, as more clearly shown in figure 2, so that changing the still-hot molds is very easy, or to perform small adjustments when using newly-made core boxes.

The entire machine is operated by hydraulic actuators that are controlled by an electronic control unit according to a working cycle easily preset by the operator.

From the above description it is therefore evident that the invention achieves the intended aim and objects, and in particular the fact is stressed that a core blowing machine is provided which is particularly practical and functional and allows to considerably increase produc-

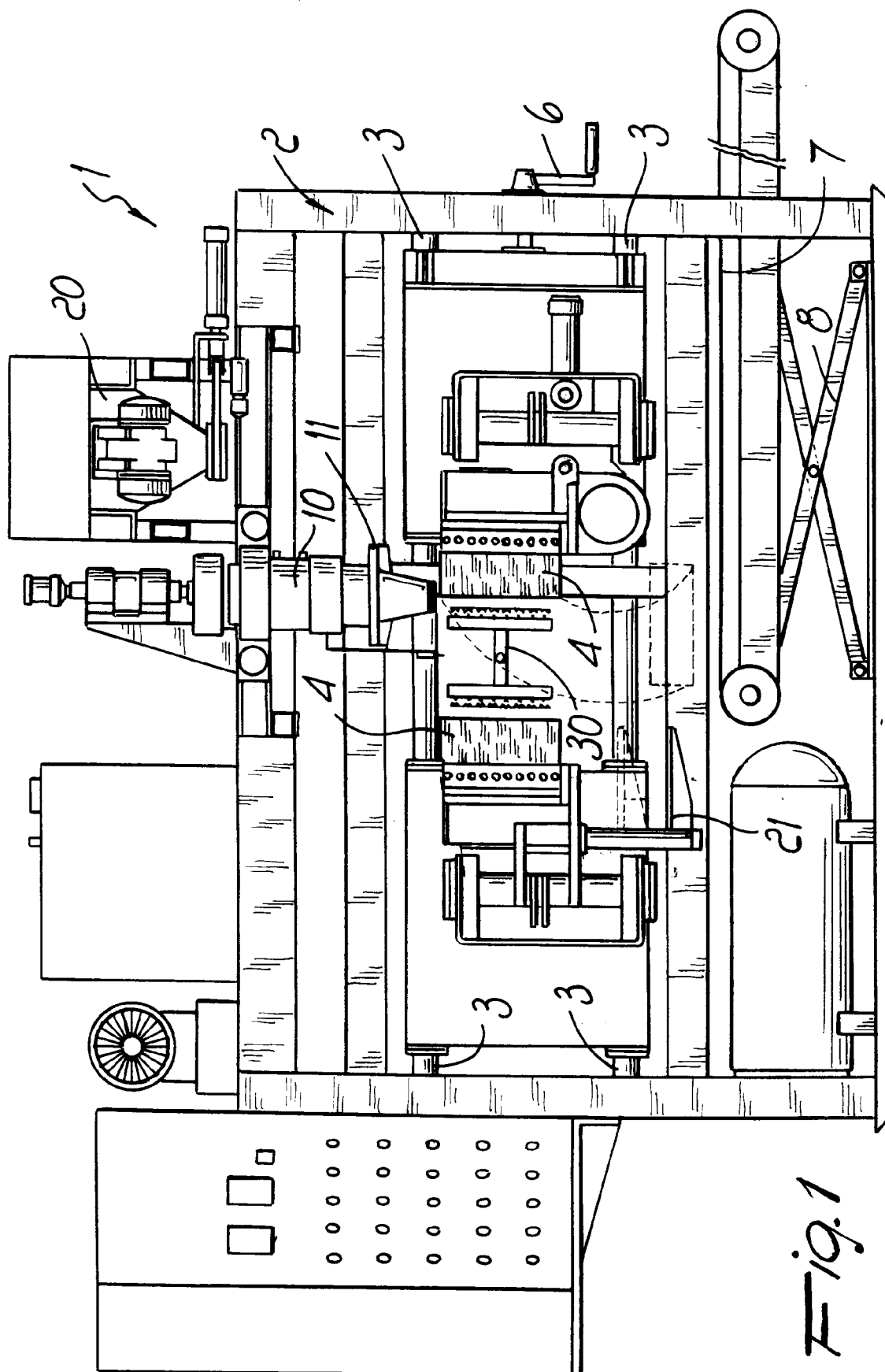
tion and improve its quality.

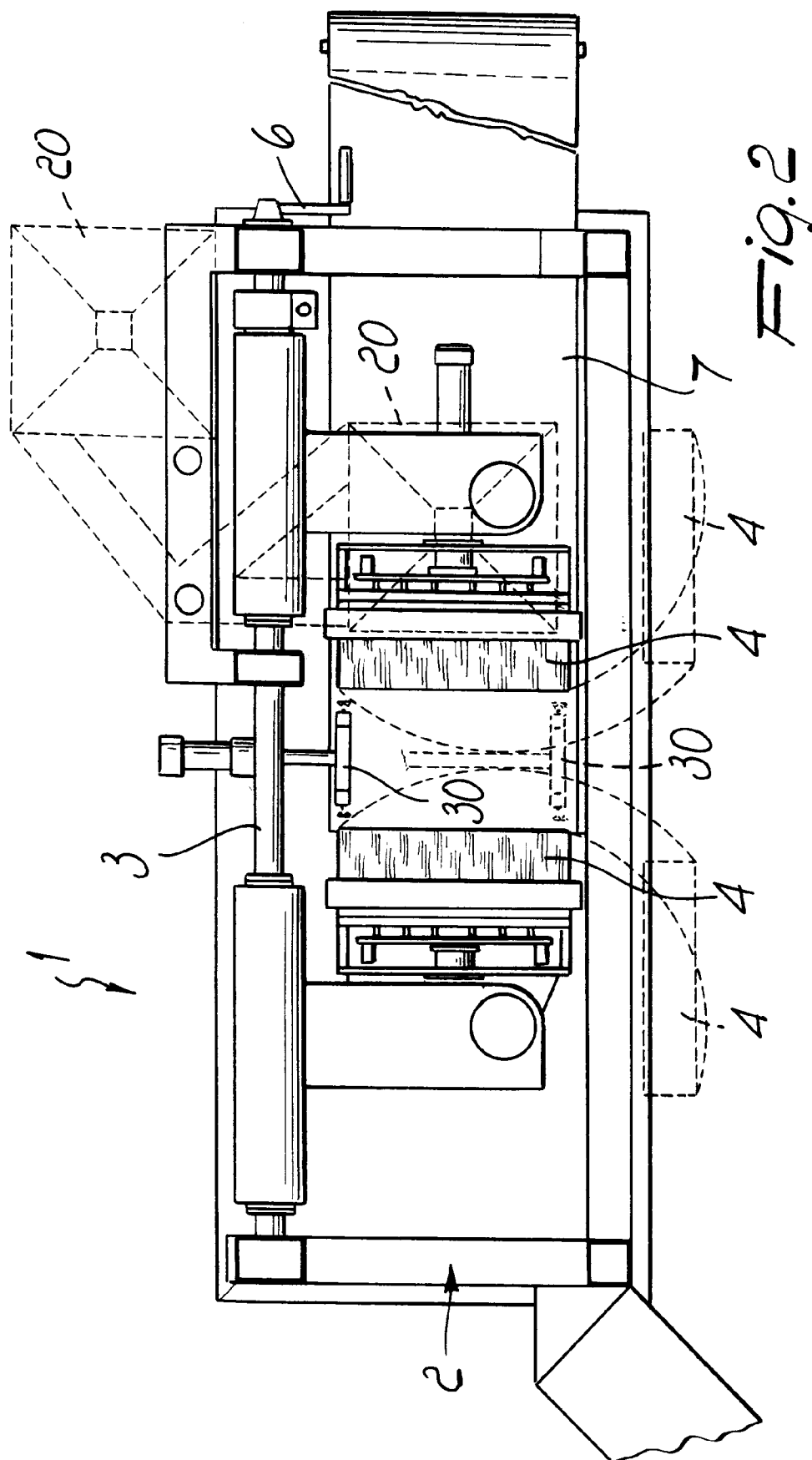
In practice, the materials employed, as well as the contingent shapes and dimensions, may be any according to the requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. Core blowing machine for forming cores for shell-molding, comprising a load-bearing frame for supporting core boxes, at which a core-forming mix blowing head acts, said mix being supplied by a mix loading hopper, characterized in that it comprises lifting means for positioning said hopper in the working position and on the ground. 20
2. Core blowing machine according to claim 1, characterized in that it comprises, on said frame, guiding and supporting bars for said core boxes, said bars being arranged on the opposite side with respect to the operator. 25
3. Core blowing machine according to the preceding claims, characterized in that it comprises means for adjusting the thickness of the core boxes actuatable by means of a crank located on the outer side of the machine. 30
4. Core blowing machine according to one or more of the preceding claims, characterized in that it comprises, below said core boxes, a conveyor belt mounted on a pantograph to adjust its height. 35
5. Core blowing machine according to one or more of the preceding claims, characterized in that said blowing head is installed with a double-bayonet system and is provided with a forced cooling water circulation system at the part in contact with the core box. 40
6. Core blowing machine according to one or more of the preceding claims, characterized in that said lifting means are provided with translation and rotation means for positioning said hopper above said blowing head. 45
7. Core blowing machine according to one or more of the preceding claims, characterized in that it comprises an automatic metallic male mold part extractor provided with an electric heating resistor. 50
8. Core blowing machine according to one or more of the preceding claims, characterized in that it comprises a cleaning unit that can be interposed between said core boxes and is adapted to introduce compressed air or a spray of water and release agent. 5
9. Core blowing machine according to one or more of the preceding claims, characterized in that it comprises means for rotating the mold supporting heads to turn them about a substantially vertical axis. 10
10. Core blowing machine for forming cores for shell-molding, characterized in that it comprises one or more of the described and/or illustrated features. 15







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EUROPEAN SEARCH REPORT

Application Number
EP 95 10 9357

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	DE-C-632 671 (MASCHINEN- U. WERKZEUGFABRIK KABEL VOGEL & SCHEMMANN A.-G.) 11 July 1936 * the whole document *	1	B22C15/24
A	DE-C-41 28 952 (ADOLF HOTTINGER MASCHINENBAU GMBH) 9 July 1992 * column 7, line 34 - column 8, line 14 *	1-10	
A	EP-A-0 359 887 (NANIWA PRODUCTS CO LTD) 28 March 1990 * abstract; figure 1 *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B22C
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		24 January 1996	WOUDENBERG, S
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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