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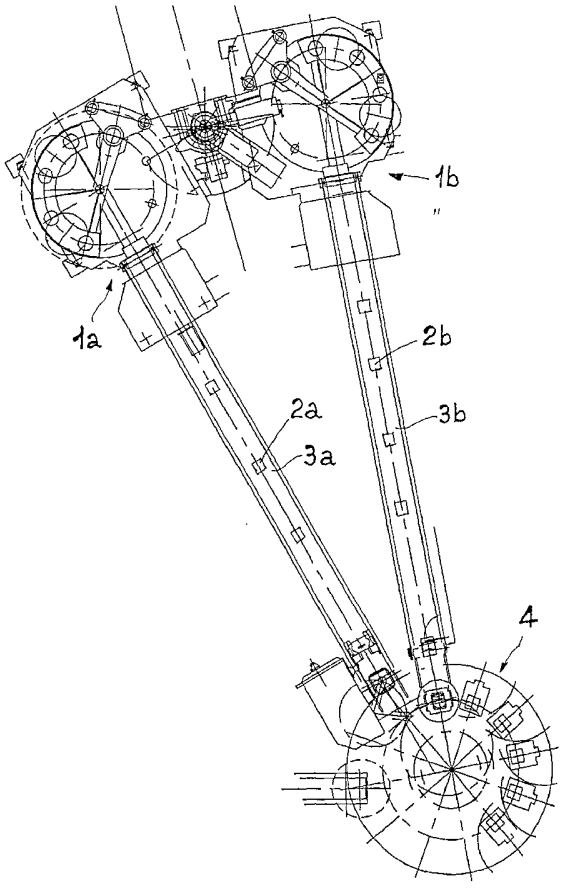
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(54) Title: METHOD AND PLANT FOR MANUFACTURING GLASS BRICKS



(57) Abstract: A method for manufacturing glass bricks, comprising the following phases: - moulding mutually identical glass half-bricks, preferably having a visible smooth face and an inner face, opposite to the visible one, moulded according to a pre-set design that is viewed in see-through fashion; - joining two half-bricks (2a and 2b) in correspondence with their inner faces, to form a finished brick, is characterised in that the two half-bricks are joined together by drawing the two half-bricks respectively from a first station (1a) for moulding the half-bricks and from a second station (1b) for moulding the half-bricks, said two stations moulding half-bricks, each of whose inner faces has its own characteristic design. The plant comprises two presses for moulding half-bricks having different inner faces and a sealing machine (4) that joins half-bricks coming respectively from the first and from the second press.

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European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designation US*

— *of inventorship (Rule 4.17(iv)) for US only*

Published:

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METHOD AND PLANT FOR MANUFACTURING GLASS BRICKS

TECHNICAL FIELD AND BACKGROUND ART.

The present invention relates to a method and a plant for manufacturing glass bricks.

The prior art in the manufacture of glass bricks provides for operating according to a method and using a plant of the type schematically illustrated in Figure 1, where a press is present that realises a half-brick and is provided with known means for extracting the half-brick.

The half-brick is moulded using a series of moulds composed by three fundamental elements: punch, band, die, mounted on a rotating press. There is only one punch, whereas the number of dies and bands is equal to the work positions of the rotating press, and therefore the punch moulds, for each complete rotation of the machine, a number of half-bricks, having the same face, equal to the number of the work positions of the press.

The press moves by one cycle, hence by one sector, in reference to a previously set cycle time, and at each cycle the rotating counter of the press moves by one sector, stopping aligned under the punch.

The punch drops and by means of a hydraulic action it impresses its own geometric figure, deforming the glass drop laid over the die and contained peripherally by the band.

The half-bricks thus obtained then end on a linear conveyor belt to be transferred to a subsequent work station, constituted by a sealing machine provided with an upper feeding system that grips a first half-brick carried by the conveyor belt, and a lower feeding system that grips another half-brick to

enable the sealing machine to join them to form a finished brick that is unloaded by an appropriate unloading system.

The finished brick, obtained by coupling two identical half-bricks, has two traditionally smooth outer faces, and always two exactly identical inner faces, so said configuration cannot be changed, as would instead be desirable.

The smooth outer faces are made necessary by the fact that the brick after the laying operation, be it indoors or outdoors, exposed to the atmospheric elements, needs to be subjected to periodic cleaning operations to maintain unaltered its aesthetic characteristics.

Unlike masonry walls, which can be plastered or painted over, the glass wall can only be washed and cleaned to enhance the shine of the glass and therefore it is necessary for the outer surface to be smooth, without particular designs, which are instead etched inside the brick on the inner faces of the two half-bricks that comprise it.

DISCLOSURE OF INVENTION.

The aim of the present invention is to make available a plant and a method that allow to obtain bricks with mutually different inner faces, in an extremely simple and not particularly expensive manner.

An additional aim is to obtain finished bricks with an innovative appearance.

Said aims are fully achieved by the plant and by the method of the present invention, which are characterised by the contents of the claims set out below.

In particular, the plant comprises a pair of presses for moulding half-bricks with inner faces having different designs and a sealing machine so structured as to form the finished brick by joining half-bricks whereof one comes from the first press and the other one from the second press, in such a way that at

least the designs of the inner faces are different.

A conveyor can be associated to each press and so shaped as to feed the sealing machine, which draws the half-bricks alternatively from the two conveyors.

The method provides for joining the half-bricks to form a finished brick by drawing the two half-bricks respectively from a first a half-brick moulding station and from a second half-brick moulding station, said two stations moulding half-bricks, each of whose inner faces has its own characteristic design.

Preferably, the method provides for a phase of transporting the half-bricks towards the sealing station where the half-bricks are joined to form the finished brick.

BRIEF DESCRIPTION OF DRAWINGS.

These and other characteristics shall become more readily apparent from the following description of a preferred embodiment, illustrated purely by way of non limiting example in the accompanying design tables in which:

- Figure 1 schematically shows a plant according to the prior art;
- Figure 2 schematically shows the plant according to the present invention.

BEST MODE FOR CARRYING OUT THE INVENTION.

With reference to the figures, the reference numbers 1a and 1b indicate two presses of a substantially known type, destined to mould glass half-bricks, preferably with a smooth visible outer face and with an inner face, opposite and parallel to the outer one, bearing a particular design that can be viewed in see-through fashion.

Originally, the press 1a moulds half-bricks 2a that have a first design on the

inner face, whilst the press 1b moulds half-bricks 2b that are substantially identical but bear a second design, different from the previous one, on the inner face.

The half-bricks 2a feed a first conveyor 3a, whilst the half-bricks 2b feed a second conveyor 3b, which are for instance constituted by substantially known conveyor belts.

The conveyors 3a and 3b both feed the same sealing machine 4, also of a substantially known type, which originally forms the finished bricks by sealing together two half-bricks of a different kind, i.e. coming respectively from the first press 1a and from the second press 1b, in such a way that the finished brick, which preferably has smooth outer faces, has its two inner faces (destined to be mutually joined and sealed) with different designs which can be viewed in see-through fashion from the opposite sides of the wall built with said glass bricks.

Substantially, the sealing machine 4 alternatively draws the half-bricks from the first conveyor 3a and from the second conveyor 3b in such a way as to join a half-brick 2a with a half-brick 2b, i.e. half-bricks having inner faces with different designs.

The plant and the method of the present invention allow both to couple glass half-bricks in the standard version with identical inner faces (improving the productivity of the production line), and half-bricks having different inner faces, thus destined to create different aesthetic effects.

The presses employed are preferably of the type with rotating counter with 8 work positions and the conveyors are synchronised with each other and with the sealing machine.

CLAIMS

1. Method for manufacturing glass bricks, of the kind comprising the following phases:

- moulding mutually identical glass half-bricks, preferably having a visible smooth face and an inner face, opposite to the visible one, moulded according to a pre-set design that is viewed in see-through fashion;

- joining two half-bricks in correspondence with their inner faces, to form a finished brick,

characterised in that the two half-bricks are joined together by drawing the two half-bricks respectively from a first station for moulding the half-bricks and from a second station for moulding the half-bricks, said two stations moulding half-bricks, each of whose inner faces has its own characteristic design.

2. Method as claimed in claim 1, comprising a phase of transporting the half-bricks towards a sealing station where the half-bricks are joined to form the finished brick.

3. Plant for manufacturing glass bricks, of the type comprising:

- a press for moulding mutually identical glass half-bricks, preferably having a smooth visible face and an inner face, opposite to the visible one, moulded according to a pre-set drawing that is viewed in see-through fashion;

- a sealing machine that joins the two half-bricks coming from the press, in correspondence with their inner faces, to form a finished brick,

characterised in that it comprises an additional press for moulding half-bricks of a different type, and in particular having a different design of the inner face, and in that the sealing machine is so structured as to form the finished

brick by joining half-bricks whereof one comes from the press and the other one from the additional press, in such a way that at least the designs of the inner faces are different.

4. Plant as claimed in claim 3, characterised in that it comprises a conveyor associated to each press and so shaped as to feed the sealing machine, which draws the half-bricks alternatively from the two conveyors.

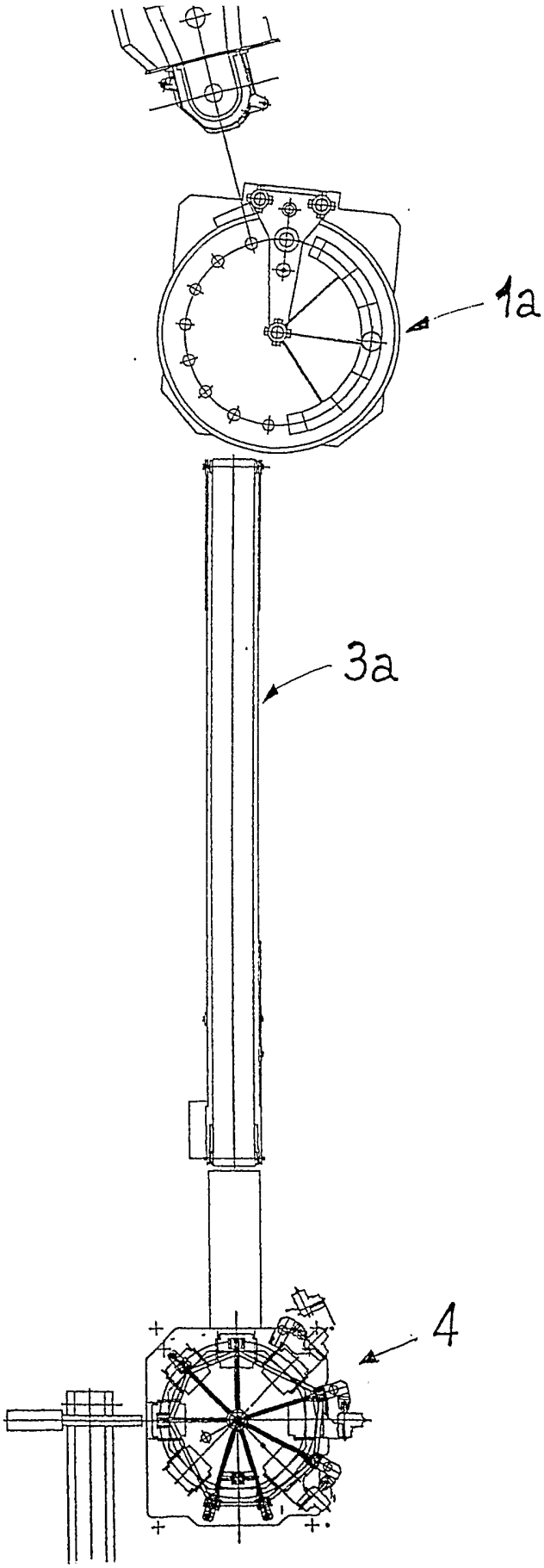


FIG.1

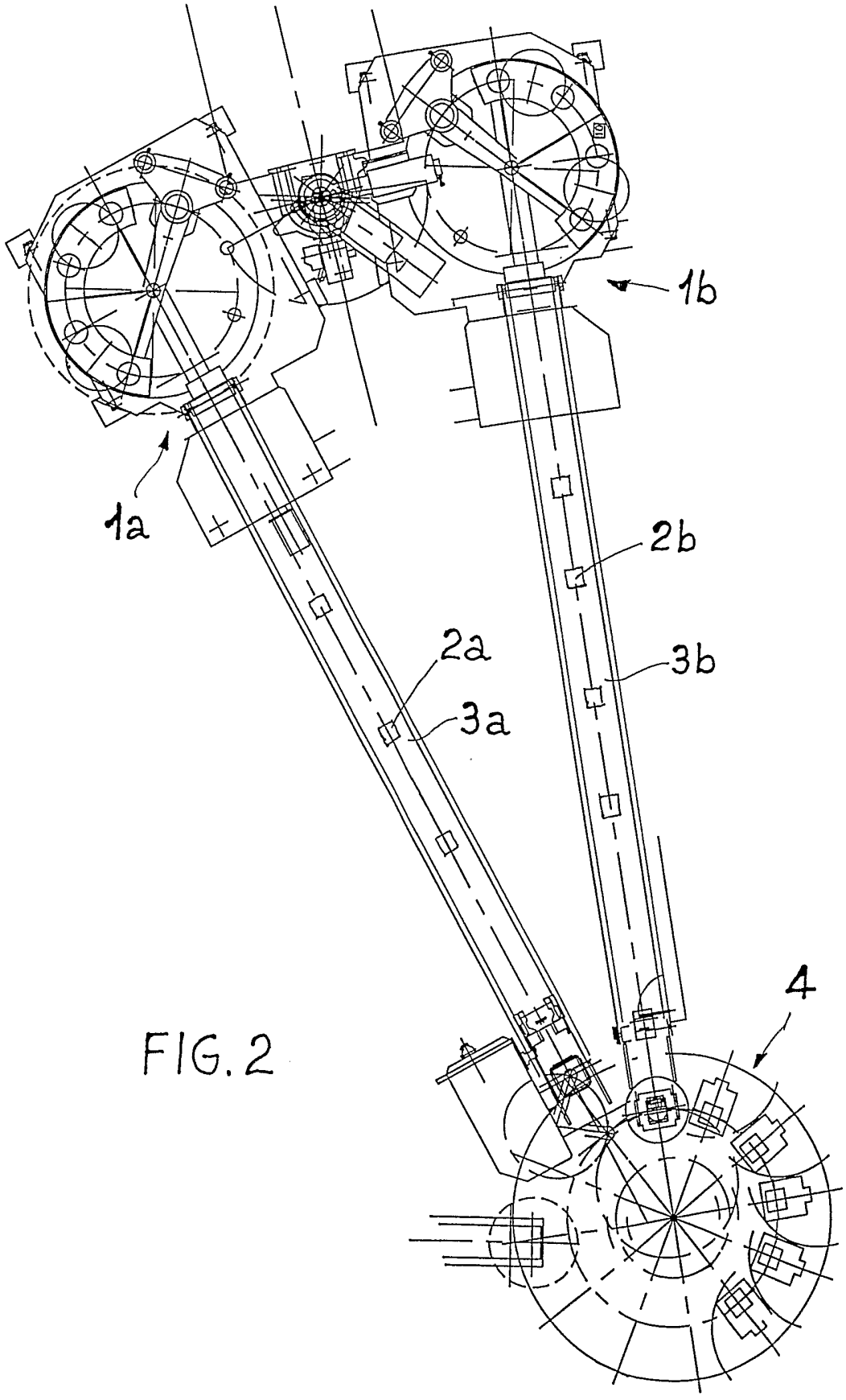


FIG. 2

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C03B23/24 E04C1/42

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C03B E04C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X	DE 93 09 849 U (WESTERWALD GLASSTEIN GMBH) 4 November 1993 (1993-11-04) page 6, paragraph 1; claims; figures	1-4
A	US 2 297 337 A (WILEY OTIS W) 29 September 1942 (1942-09-29) page 1, column 2, line 30 - line 45	1-4
A	WO 98 52881 A (YAMAJI MICHIO ;HASHIBE YOSHIO (JP); NIPPON ELECTRIC GLASS CO (JP)) 26 November 1998 (1998-11-26) the whole document	1-4

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

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Date of the actual completion of the international search	Date of mailing of the international search report
12 February 2003	19/02/2003

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Reedijk, A

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IT02/00545

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