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(54) **BRICK FORMING APPARATUS.**

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Brick forming apparatus

This invention relates to a forming apparatus for bricks or the like.

Known brick forming apparatus disclosed for example in DE - A - 2245853 includes a mould for receiving brick forming material, a vertically reciprocable mould support arranged to support the mould, and upper and lower plungers adapted to compact therebetween the material within the mould.

In conventional brick forming machines, the upper plunger may be driven by a hydraulic cylinder secured to an upper portion of the machine to press the brick material in the mould against a stationary lower plunger. The mould support is typically driven by hydraulic cylinders mounted on right and left columns of the machine such that the mould is firmly supported while the brick is being pressed.

With such apparatus, when the shape or size of the bricks is to be altered, the mould, and upper and lower plungers have to be changed. While they are changed, the forming operation is interrupted, and with known apparatus the time needed for the change is relatively long. This results in a reduction in production efficiency with conventional brick forming machines.

The present invention is characterised in that the mould support is provided with a sideways facing opening permitting lateral insertion or removal of an assembly of mould and plungers into or from said support.

In accordance with the invention the time required for changing moulds is reduced as compared with conventional brick forming machines and thus a higher efficiency in brick production is achieved. A combination of mould and upper and lower plungers with particular dimensions can as an assembly be rapidly put into and withdrawn from the mould support thus enabling ready replacement of mould and plungers when the brick size is to be changed.

An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, wherein;

Fig. 1 is a partial cross-sectional front elevation of brick forming apparatus in accordance with the invention;

Fig. 2 is a side elevation of the apparatus;

Fig. 3 is a cross section on the line III—III of Fig. 1;

Fig. 4 is a perspective view on an enlarged scale of the metallic mould support; and

Fig. 5 is a plan view of a mould transfer truck.

Referring to the drawings, brick forming apparatus includes a metallic mould 1 which receives brick forming material. The mould 1 is supported by a metallic mould support 4 which is reciprocable in a vertical direction and is driven by hydraulic cylinders 5. A movable upper plunger 2 is driven via a pressing block 8 by hydraulic cylinders 9 mounted on an upper frame 6 of the machine via a pressing block 8 and is effective in operation to compact downwardly the material in the mould 1 against a stationary lower plunger 3. The mould support and mould may then be pulled downwardly to the position shown in broken lines in Figures 1 and 2 to allow removal of the formed brick from the apparatus.

As shown in Figs. 1 and 3 there are holes 13 in the bottom face of the mould support 4, adapted to receive protruding pins 12 of the mould to ensure correct positioning of the mould 1. As shown in Fig. 2 the mould support 4 includes two pairs of wedges 11 located in front of and behind the mould 1, the wedges being driven by hydraulic cylinders 10 to advance and retract. In the advanced position the wedges engage inclined surfaces formed on flanges 30 provided on the front and rear sides of the mould 1, and thus firmly secure the mould in place.

The mould 1 and the plungers 2, 3 form a detachable assembly which may conveniently as a whole be placed into and removed from the brick forming apparatus as described below, and this minimises the time delay involved in changing the mould 1, and plungers 2 and 3.

As shown in Figures 3 and 4, the mould support 4 is in the form of a square frame one side of which is open and thus is generally U-shaped as viewed from above. The mould 1 and upper and lower plungers 2, 3 are assembled together prior to insertion into the apparatus and are placed into the mould support 4, via its front opening. In the lowermost position of the mould support 4 as shown by the broken lines in Figs. 1 and 2, the flanges 30 of the mould 1 are above the support 4, and thus the mould 1, together with the plungers 2, 3, may be moved into the apparatus by means of a transfer truck 16 and into the mould support via the front opening thereof. When the mould support 4 is raised, the bottom flange of the mould support 4 will contact the flanges 30 of the mould 1 and thus the mould is seated snugly.

The transfer truck 16 has upwardly protruding pins 15, which fit into holes 14 on the underside of the mould 1 to position it correctly when on the truck. The underside of the transfer truck 16 is provided with rollers 17, which roll back and forth on transfer rails 19 and positioning rails 7. As shown in Figure 5 the transfer truck is also generally U-shaped as viewed from above and thus includes an open end end through which the lower plunger 3 passes when the assembly of mould and plungers is removed from or placed on the truck. The assembly of mould 1 and the upper and lower plungers 2, 3 is replaced by moving the transfer truck 16 through the opening of the U-shaped mould support 4 such that the assembly

is centred relative to the mould support 4; the transfer truck 16 is stopped at the correct position by a stopper 18 at the end of the positioning rails 7.

The mould support 4 is then raised by the hydraulic cylinders 5. As the mould support 4 moves upwardly engagement of the pins 12 with the holes 13 guides the flanges 30 of the mould 1 to position it correctly on the mould support 4. As the mould support 4 ascends further the mould 1 and the upper and lower plungers 2, 3 are lifted from the transfer truck 16, and the truck 16 may be moved to the left as shown in Fig. 2 out of the apparatus.

The mould 1 is secured to the support 4 by the advance of the hydraulic cylinders 10 and wedges 11, and the mould support 4 is then raised further such that the upper plunger 2 engages and may be for example bolted to the pressing block 8. Then the mould 4 is lowered until the bottom of the lower plunger hits the bottom face of the frame 6 to which the lower plunger may be secured by means of bolts or the like. This concludes the installation of a new assembly of mould and plungers. The removal of the mould 1 from the apparatus follows the above steps in reverse order.

It will be seen how problems would arise in moving the mould 1 and the upper and lower plungers 2, 3 individually into and out of the apparatus since interference with the body of the apparatus would make it difficult to position them correctly. However in accordance with the invention the mould and the upper and lower plungers are assembled together in correct relative alignment outside the apparatus. Furthermore positioning of the mould plungers assembly can be effected automatically and accurately.

Claims

1. Apparatus for forming bricks or the like comprising a mould (1) for receiving brick forming material, a reciprocable mould support (4) arranged to support the mould (1), and upper and lower plungers (2, 3) adapted to compact therebetween the material within the mould (1), characterised in that the mold support (4) is provided with a sideways facing opening permitting lateral insertion or removal of an assembly of mould (1) and plungers (2, 3) into or from said support (4).

2. Apparatus as claimed in claim 1 characterised in that the mould (4) support is generally U-shaped.

3. Apparatus as claimed in claim 1 or 2 characterised in that said mould support (4) is reciprocally driven by means of hydraulic pistons and cylinders (5).

4. Apparatus as claimed in any of claims 1 to 3 characterised in that the mould support (4) further comprises hydraulically actuable wedges adapted to engage and secure the mould.

5. Apparatus as claimed in any preceding claim characterised in that an assembly of mould (1) and plungers (2, 3) is carried into and out of the mould support (4) by means of a rail mounted transport truck (16).

Revendications

1. Dispositif pour le formage de briques ou analogues comprenant un moule (1) destiné à recevoir la matière de formage des briques, un support (4) de moule pouvant effectuer un mouvement de va-et-vient agencé pour supporter le moule (1), des plongeurs supérieur et inférieur (2, 3) adaptés pour compacter entre eux la matière contenue dans le moule (1), caractérisé en ce que le support (4) de moule est muni d'une ouverture orientée latéralement et permettant une insertion ou un enlèvement par le côte de l'ensemble du moule (1) et des plongeurs (2, 3) dans ledit support (4) ou hors de ce dernier.

2. Dispositif selon la revendication 1, caractérisé en ce que le support de moule (4) a une forme générale en U.

3. Dispositif selon l'une des revendications 1 et 2, caractérisé en ce que ledit support de moule (4) est entraîné en va-et-vient au moyen de pistons et cylindres hydrauliques (5).

4. Dispositif selon l'une des revendications 1 à 3, caractérisé en ce que le support de moule (4) comprend en outre des cales hydrauliquement manoeuvrables adaptées pour venir en appui sur le moule et le fixer.

5. Dispositif selon l'une des revendications précédentes caractérisé en ce qu'un ensemble de moule (1) et de plongeurs (2, 3) est transporté dans et hors du support de moule (4) au moyen d'un chariot (16) de transport monté sur rail.

Patentansprüche

1. Einrichtung zum Formen von Ziegelsteinen u.dgl. mit einer Form (1) zur Aufnahme von Material zum Formen von Ziegelsteinen, einem hin- und herbewegbaren Formträger (4), der so angeordnet ist, daß er die Form (1) trägt, und einem oberen und einem unteren Kolben (2, 3), die das zwischen ihnen befindliche Material in der Form (1) verdichten können, dadurch gekennzeichnet, daß der Formträger (4) eine seitlich liegende Öffnung aufweist, die das Einführen oder Entfernen einer aus der Form (1) und den Kolben (2, 3) bestehenden Einheit in den Träger (4) oder aus dem Träger (4) von der Seite her ermöglicht.

2. Einrichtung nach Anspruch 1, dadurch gekennzeichnet, daß der Formträger (4) im allgemeinen U-förmig ausgebildet ist.

3. Einrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der Formträger (4) durch hydraulische Kolben und Zylinder (5) wechselseitig angetrieben wird.

4. Einrichtung nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß der Form-

träger (4) außerdem hydraulisch betätigbare Keile aufweist, die an der Form angreifen und diese festlegen können.

5. Einrichtung nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die aus der Form (1) und den Kolben (2, 3) bestehende Einheit mit der Hilfe eines auf Schienen angeordneten Transportwagens (16) in den Formträger (4) und aus dem Formträger (4) befördert wird.

FIG. 1

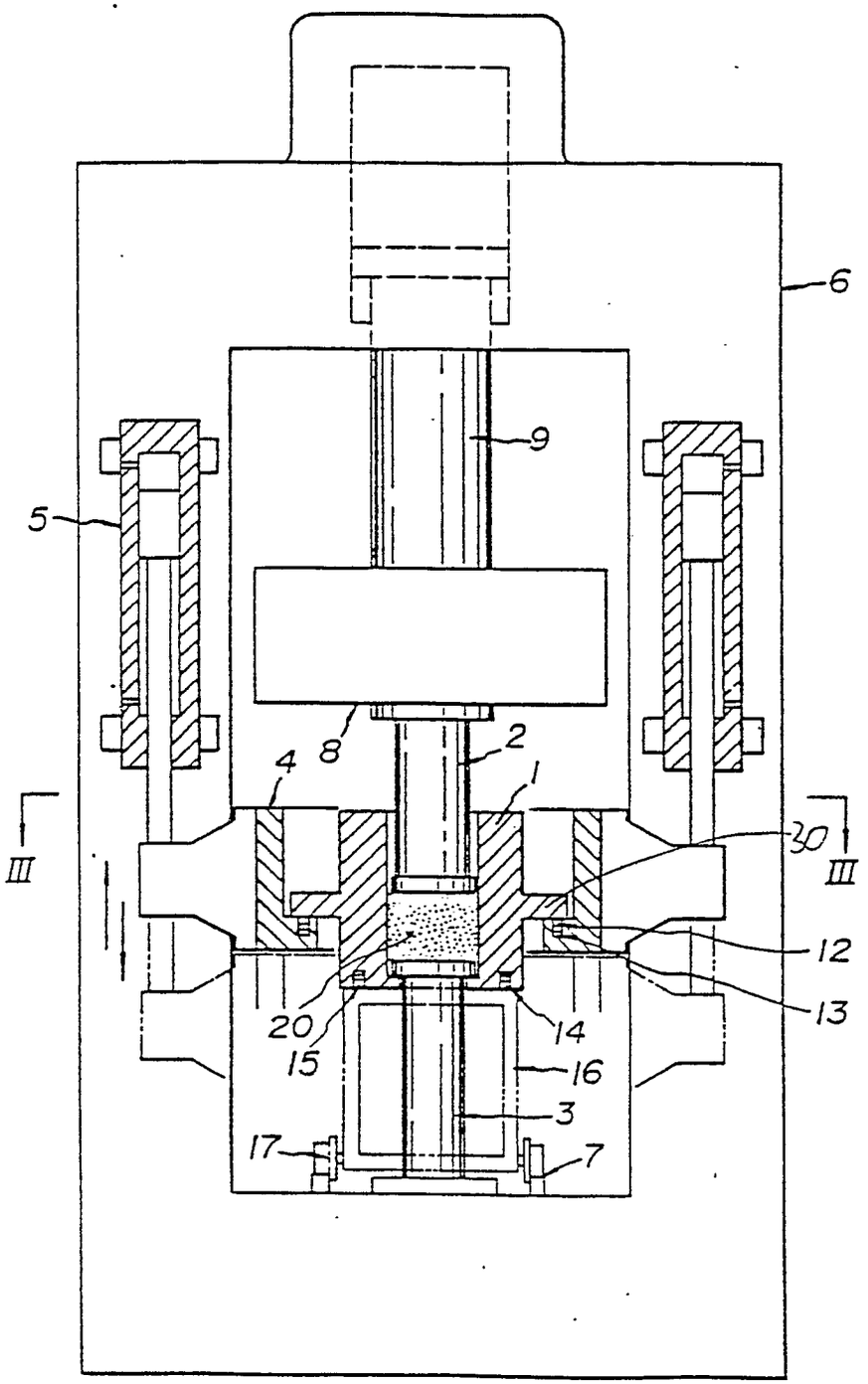


FIG. 2

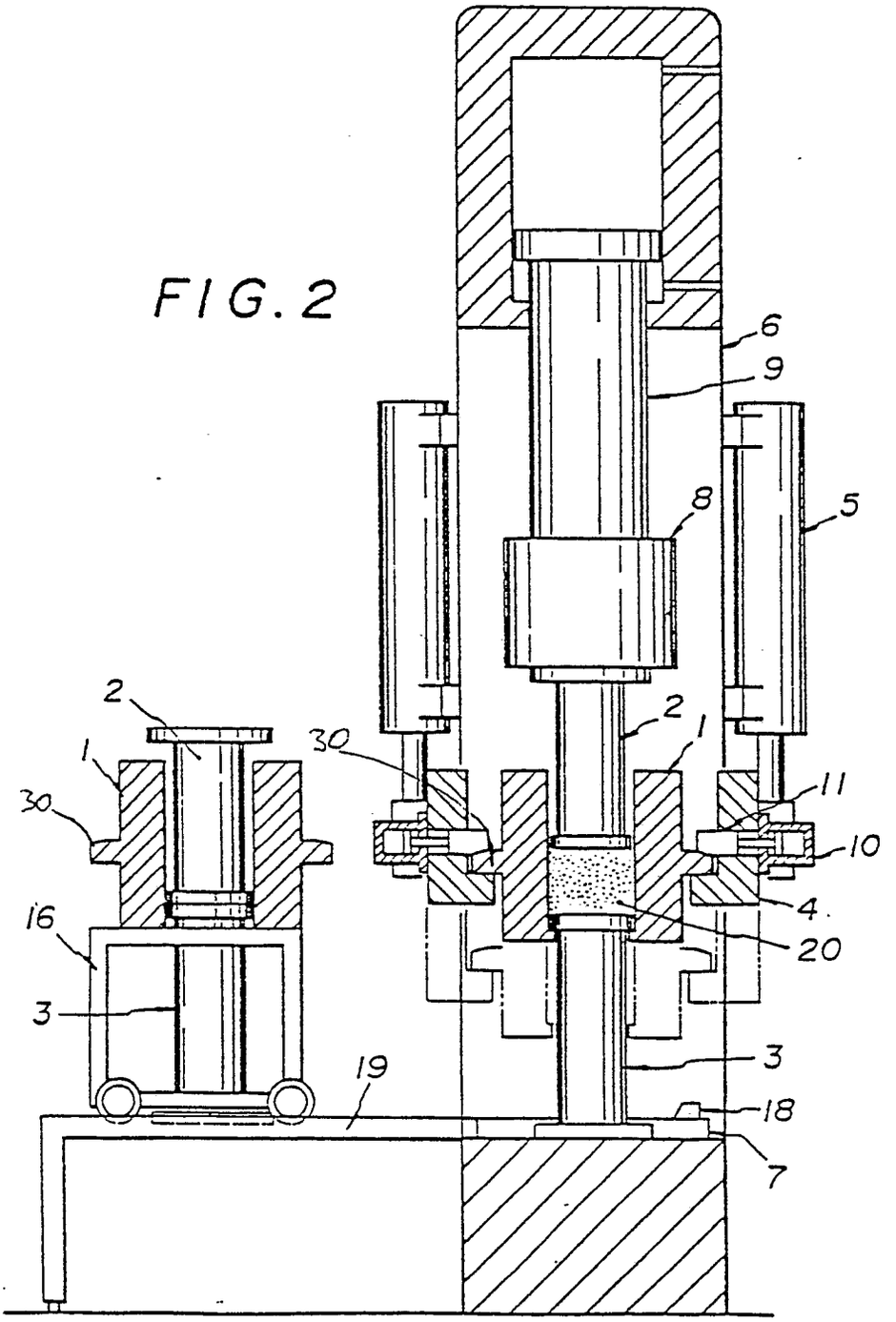


FIG. 3

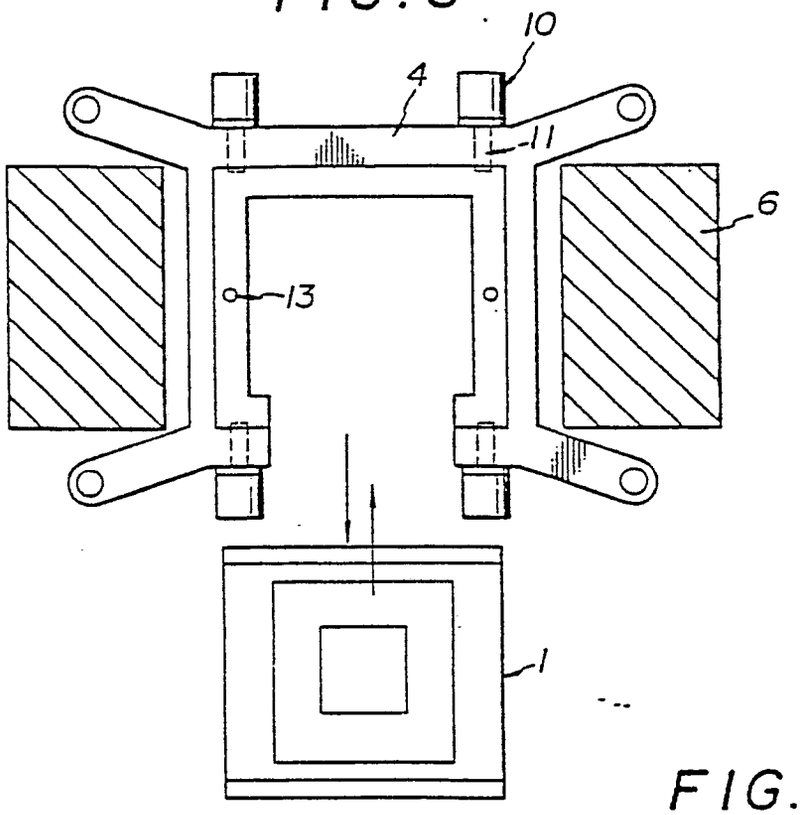


FIG. 5

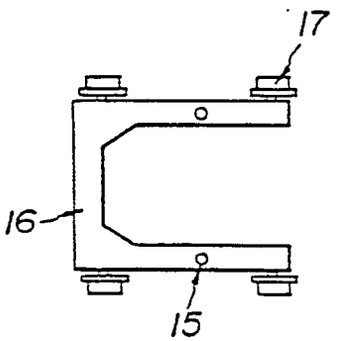


FIG. 4

