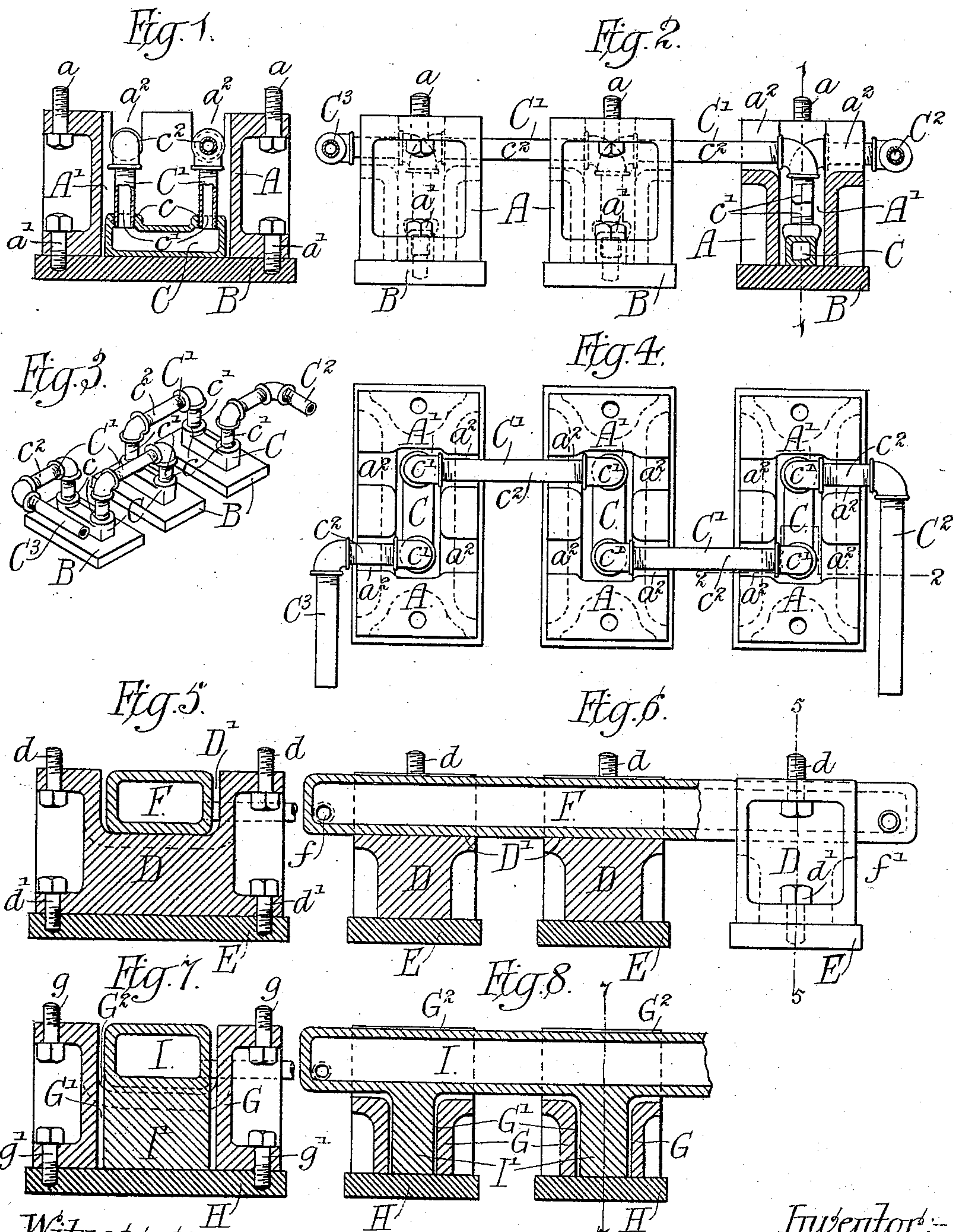


(No Model.)

B. C. WHITE.
STEAM HEATER FOR BRICK PRESSES.

No. 488,623.

Patented Dec. 27, 1892.



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UNITED STATES PATENT OFFICE.

BRUCE CLARK WHITE, OF CHICAGO, ILLINOIS.

STEAM-HEATER FOR BRICK-PRESSES.

SPECIFICATION forming part of Letters Patent No. 488,623, dated December 27, 1892.

Application filed August 11, 1892. Serial No. 442,762. (No model.)

To all whom it may concern:

Be it known that I, BRUCE CLARK WHITE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Steam-Heaters for Brick-Presses; and I do hereby declare that the following is a full, clear, and exact description thereof reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in means for heating by steam the plungers of brick presses, and it consists in the matters hereinafter described and pointed out in the appended claims.

In the appended drawings representing my invention: Figure 1 is a view in central vertical section, taken on line 1—1 of Fig. 2, of a plunger containing heating devices constructed in accordance with my invention. Fig. 2 is a view of three adjacent plungers containing the heating device shown in Fig. 1, the plunger at the right hand being shown in central vertical section taken on line 2—2 of the plan view in Fig. 4, and the other two in end elevation. Fig. 3 is a perspective view showing the face or bearing plates of the plungers and steam pipes of the heating devices separated from the main parts or bodies of the plungers. Fig. 4 is a plan view of the three plungers shown in Fig. 2. Fig. 5 is a view in central vertical section taken on line 5—5 of Fig. 6 of a single plunger embodying another form of my invention. Fig. 6 is a view of three connected plungers constructed like that shown in Fig. 5, of which the plunger at the right hand is shown in end elevation and the remaining two in central vertical section. Fig. 7 is a view in central vertical section taken on line 7—7 of Fig. 8 of still another form of heating device embodying my invention. Fig. 8 is a longitudinal section through two plungers constructed like that shown in Fig. 7.

As shown in Figs. 1 to 4, A indicates the body or main casting of the plunger, which is adapted to be secured to the lower surface of the upper cross-head of a brick press by means of bolts, *a a*, inserted through outward extending flanges at the upper edge of the same; and B is the face plate of the plunger,

which is secured to the lower surface of the same by means of tap bolts, *a', a'*, passing through outward extending flanges at the lower end of the main part or body A, and entering tapped holes in the upper surface of the said face plate. Said face plate is adapted to accurately fit and slide within the mold in the usual manner and is preferably made somewhat larger than the body of the plunger, so that the latter will clear the walls of the mold. The face plate B will commonly be made of steel with its working face ground to a smooth surface and its edge accurately shaped by grinding or otherwise to perfectly fit the mold.

The body A of the plunger is cast with a central recess, *A'*, extending therethrough from its upper to its lower surface; said recess being closed at the bottom by plate B when the latter is secured to the body. In each of the side walls of the plunger, adjacent to the upper margin thereof, are formed two notches or recesses, *a², a²*, extending downward from the top surface of the said body for the passage of steam pipes, as hereinafter described. The marginal flanges at the top surface of the body A are shown as extended downward around the notches *a² a²* (Fig. 2.) so as to give ample strength to said bodies. Each plunger is shown as provided with two bolts *a a* only for securing it to the cross-head; said bolts being arranged at the ends of the plungers so that the presence of the notches *a² a²* does not interfere with the said bolts although space may be provided between the said notches for the insertion of additional bolts if desired.

The devices intended more particularly for supplying steam heat to the plungers are made as follows: C, C, C, are hollow metal castings or steam chambers having flat bottom surfaces which are adapted to rest within the lower parts of the recesses *A'* of the plungers in contact with the plates B thereof. These hollow castings C C are each provided at their opposite ends with openings, *c c*, with which are connected the ends of U-shaped connecting pipes, *C', C'*, which extend from one end of the casting C of each plunger to one end of the casting in the adjacent plunger; said connecting pipes *C'* each consisting of two risers, *c', c'*, and horizontals, *c², c²*; the risers being of sufficient length to reach from the

hollow castings or boxes C to the upper parts of the plungers, while the horizontals $c^2 c^2$ extend across the space between the plungers and pass through the notches $a^2 a^2$ therein.

5 The several chambers or boxes C C and connecting pipes C' C' constitute a continuous steam duct or passage through which steam may pass or circulate through all of the plungers, steam being supplied to one of the end
10 plungers by means of a supply pipe, C², and the exhaust steam passing away from the opposite plunger by an exhaust pipe C³.

The heating device constructed as described has the advantage of being entirely independent of the plungers themselves or the
15 working or face plates thereof, it being obvious that the several pipes and castings may be easily removed from the plungers by detaching the plungers from the cross head so
20 that new parts of the heating device may be easily substituted or leaking joints made good; at the same time abundant and uniform heating of the face plates B is assured by reason of the contact of the lower flat
25 walls of the castings C C with the top or inner surfaces of said plates.

The construction described in the heating devices is not only advantageous by reason of being easily and cheaply made, inserted
30 and removed, but has the further advantage that all of the parts of the steam duct or passage formed by the pipes and casting described are free to expand under the action of the heat without liability of affecting the
35 tightness of the joints. It is obvious, for instance, that both ends of the castings or boxes C C being movable laterally expansion of the connecting pipes C' C' can bring no injurious strain on the joints.

40 In Figs. 5, 6, 7 and 8 are shown other embodiments of the main parts of my invention possessing in common with that shown in Figs. 1 to 4 the features of a steam supply pipe or passage separate from the plungers
45 proper and the walls of which are adapted to communicate heat by direct contact or continuous metallic connection with the face plates of the plungers.

As shown in Figs. 5 and 6, D indicates the
50 main parts or bodies of the plungers, and E the face plates secured to the lower surfaces thereof by bolts d' ; said bodies D being provided at the margins of their upper ends with flanges through which are inserted bolts, d , to secure
55 the same to the upper cross-head of the press. The lower parts of the said bodies D are solid while the upper portions thereof are provided with recesses, D' D', extending downwardly or inwardly from the top surfaces thereof and
60 extending transversely across the plungers and opening at the side walls thereof.

F is an elongated or tubular steam chamber extending transversely across the several plungers through the recesses D' D' thereof
65 and provided with steam inlet and exhaust openings f, f' , at its opposite ends. Said steam chamber is made flat on its lower surface and

rests in immediate contact with the bottom surfaces of the recesses D' D'. The steam chamber F is shown as made of rectangular
70 form in cross section, but its particular shape is immaterial provided its lower surface is in immediate contact with the bodies of the plungers. The lower surface of the plunger
75 in this instance is made flat and the face plate F rests against the same throughout its entire area, and it follows that the body of the plunger being in contact both with the passage F and the plate E forms a continuous metallic
80 connection between them whereby the heat is readily and rapidly conducted from the wall of the steam passage to the said face plate. The steam chamber F in this construction also is obviously independent of the plungers
85 themselves and may be easily detached or removed and a new one substituted without making any changes in the plungers themselves.

As shown in Figs. 7 and 8, G, G, indicate the bodies of the plungers adapted to be
90 secured to the cross-head by means of bolts g in the same manner as those hereinbefore described, and provided with face plates, H, H, secured thereto by bolts $g' g'$. In this instance the bodies G of the plungers are made
95 hollow or provided with central recesses, G', extending downward to or through the lower surface of the same so as to form an opening which is closed by the face plates H H, while in their upper parts they are provided with
100 transverse notches, G², like those shown in Figs. 5 and 6. In this instance the heating is accomplished by means of a single steam chamber, I, extending transversely across or
105 through the notches G² G² of the several plungers, but provided on its lower wall with a plurality of integral projections, I', I', which are extended downwardly through the recesses G' G' to the face plates H H with which
110 their lower flat surfaces rest in immediate contact. In a construction of this kind heat transmitted to the wall of the steam chamber I is conveyed through the extensions I' I' and is thereby imparted to the face plates H H
115 with which said projections are in contact. In this construction as in those before described the heating pipes are independent of the plungers and may be easily inserted
120 therein when assembling the parts and removed therefrom for renewal or repairs.

It will be noted that in all of the forms of heating device shown the steam passages or
chambers are not arranged in immediate contact with the plungers or lining plates excepting at the points where such contact is nec-
125 essary for the transmission of the heat. Or, in other words, spaces are provided for lateral movement or adjustment of the parts of the heating device relatively to the plungers. This construction is of great importance be-
130 cause in practice the plungers need to be located or adjusted with great exactness upon the cross-head so that they may fit smoothly and accurately within the molds, and the

making of the heating device without lateral engagement with the plungers enables such accurate adjustment to be effected without requiring changes in the heating devices or shifting of the parts of the same.

A general advantage of all the forms of construction shown is that the heating devices are made separate from and independent of the plungers thereby greatly lessening the cost of manufacture and enabling the parts to be more easily constructed, assembled and repaired, while at the same time rendering them more durable and less likely to get out of order.

I claim as my invention:—

1. The combination, with the plunger of a brick press, provided with a cavity or recess, of a heating device comprising a continuous steam pipe made separate from the plunger and passing through the same, a part of said pipe which is located within the recess of the plunger being in immediate contact with a part of the plunger which extends continuously to the working face thereof, to afford direct transmission of heat from the walls of the pipe to the working face of the plunger, substantially as described.

2. The combination, with a plunger consisting of a recessed main part or body and a face plate attached thereto, said main part or body being provided with a recess or cavity extending to the inner surface of the plate, of a heating device comprising a continuous steam pipe made separate from the body and face plate and passing through the recess of the said body, a part of said passage which is within the body being in immediate contact with the inner surface of the said face plate, substantially as described.

3. The combination with a plunger consisting of a hollow or recessed main part or body and a face plate secured thereto and closing

the lower end of the recess or opening in the body, said body being provided with lateral notches or recesses $a^2 a^2$ in its upper edge, of a steam passage consisting of a hollow casting or box C and pipes C' C' extending through said notches and connected with opposite ends of said hollow casting or box, substantially as described.

4. The combination, with a plurality of recessed plungers, of a heating device for the same consisting of a continuous steam pipe made separate from the plungers and passing through the recesses of the same; parts of said pipe which are within the plungers being in immediate contact with the inner surfaces of the plungers in their parts opposite the working faces thereof, but being free from lateral contact with the said inner surfaces of the plunger, whereby the said pipe is free to move laterally with reference to the plungers, substantially as described.

5. The combination, with a plurality of recessed plungers which are provided with face plates and the recesses of which extend to the inner surfaces of said face plates, of a heating device comprising a continuous steam pipe made separate from the plungers and passing through the recesses of the same, parts of said pipe which are within the plungers being in immediate contact with the inner surfaces of the face plates but being free from lateral contact with the inner surfaces of the plungers, whereby said pipe is free to move laterally with reference to the plungers, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

BRUCE CLARK WHITE.

Witnesses:

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G. W. HIGGINS, Jr.