

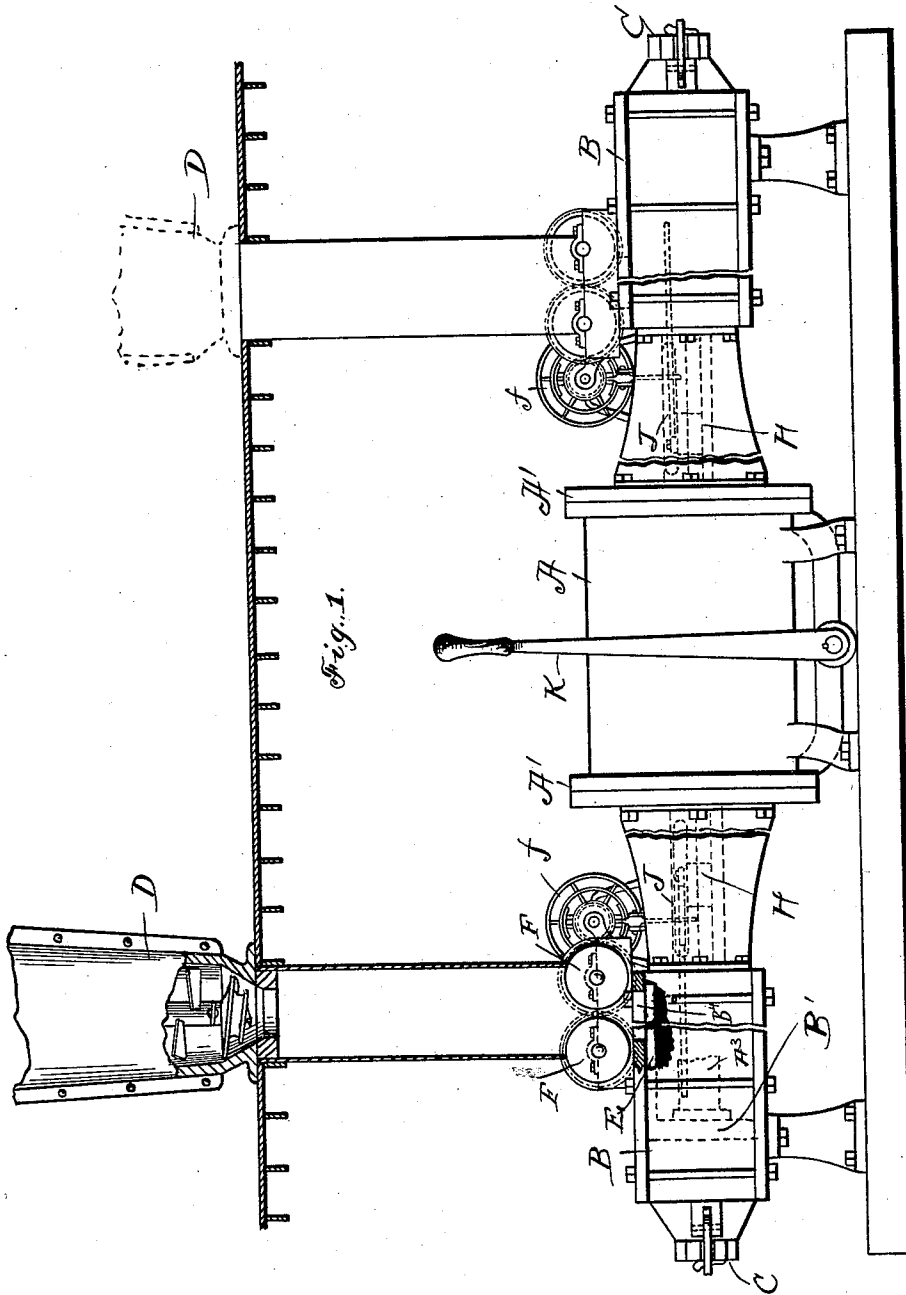
(No Model.)

3 Sheets—Sheet 1.

W. W. WALLACE & R. C. PENFIELD.
STEAM BRICK MACHINE.

No. 465,301.

Patented Dec. 15, 1891.



Witnesses.
C. J. DORRIS
A. D. S. JONES

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William W. Wallace
Raymond C. Penfield
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attorneys

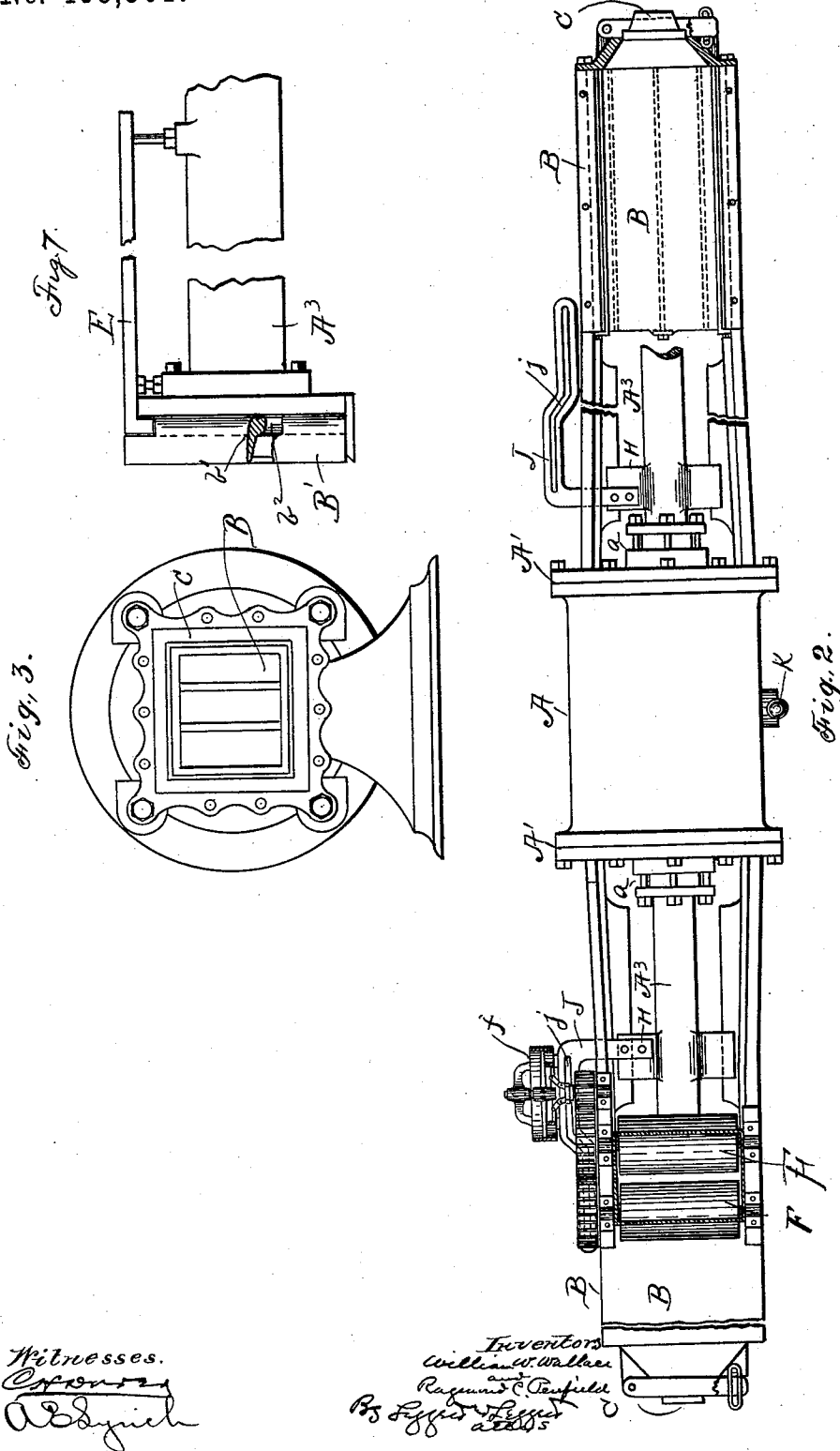
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Inventors
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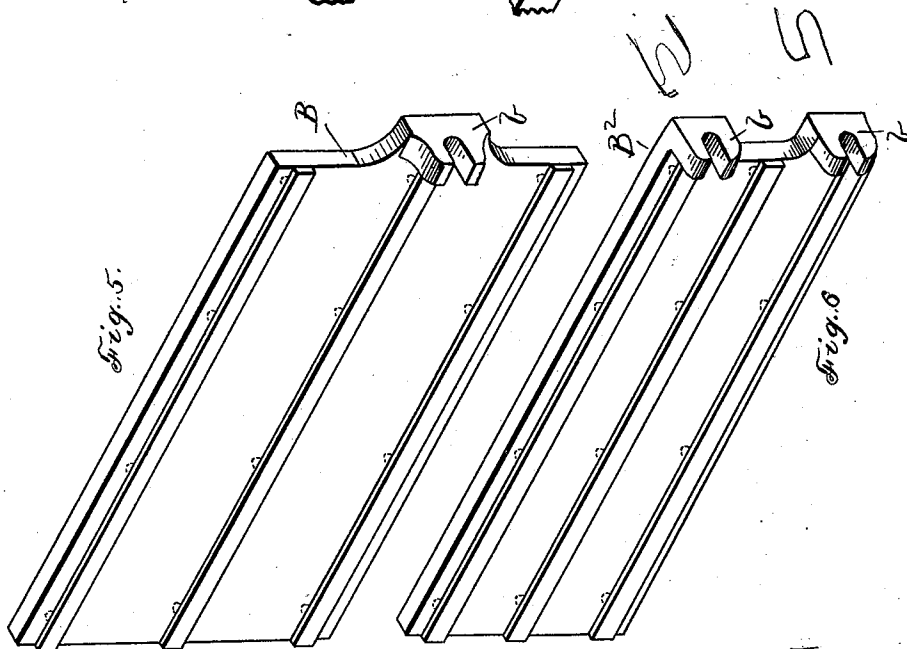
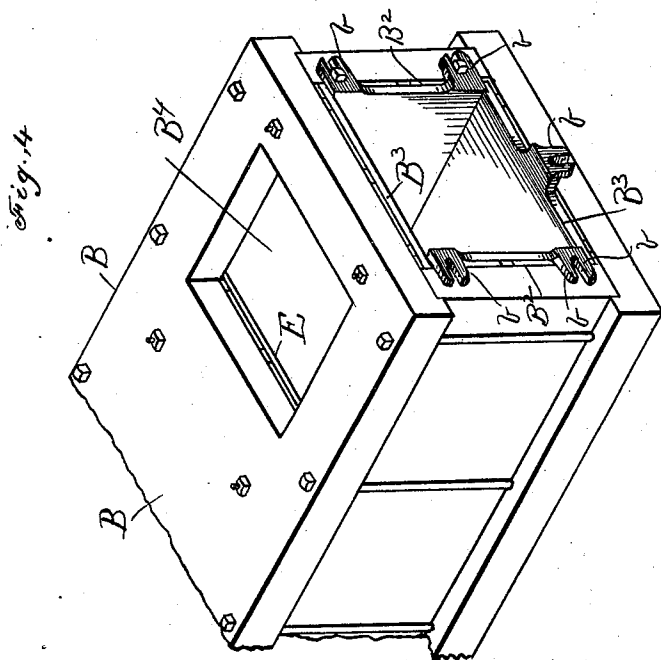
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UNITED STATES PATENT OFFICE.

WILLIAM W. WALLACE AND RAYMOND C. PENFIELD, OF WILLOUGHBY, OHIO,
ASSIGNORS TO J. W. PENFIELD & SON, OF SAME PLACE.

STEAM BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 465,301, dated December 15, 1891.

Application filed September 3, 1891. Serial No. 404,651. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM W. WALLACE and RAYMOND C. PENFIELD, of Willoughby, in the county of Lake and State of Ohio, have
5 invented certain new and useful Improvements in Steam Brick-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to
10 which it pertains to make and use the same.

Our invention relates to improvements in horizontal and preferably double-acting steam brick-machines; and it consists in certain features of construction and in combination of
15 parts hereinafter described, and pointed out in the claims. We may here remark that this class of brick-machines is usually of large size and capacity. Otherwise they would have no particular advantage over ordinary
20 brick-machines. For instance, the machines that we manufacture, such as hereinafter described, are intended to manufacture about a hundred thousand bricks per day, from which will be inferred the fact that the movable
25 parts are necessarily large, which, together with the large amount of sharp-cutting material passing through the machine, causes excessive wear and tear, especially in the compression-box, and unless the construction
30 be such that the wearing parts can be easily and cheaply renewed such machine would be considered impracticable.

In the accompanying drawings, Figures 1 and 2 are respectively side elevation and
35 plan, each partly in section. Fig. 3 is an end elevation. Fig. 4 is a perspective view of one of the compression-boxes detached, and Figs. 5 and 6 are perspective views of lining-plates for the same. Fig. 7 is a side elevation in detail
40 of a plunger and cut-off plate for a compression-box.

A represents a horizontal steam-cylinder, supposed to be of large size, and B B are the
45 compression-boxes, made square or rectangular in cross-section, and these compression-boxes are of course set in line with cylinder A. The latter is provided with the usual heads A', piston, and piston-rod A³, the piston being attached to the longitudinal center
50 of the rod and the rod extending out through the stuffing-boxes *a a* of the cylinder-heads.

The plungers B' B' of the compression-boxes are mounted on the respective ends of the piston-rod A³. Dies of any desired form, and usually a series of them, are secured at
55 the outer ends of the compression-boxes, as at C. Heretofore with this class of machines the compression-boxes were usually cylindrical and bored; but any material that is soft enough to bore will wear out so fast that the
60 frequent renewal of such cylindrical compression-box is a serious objection. To overcome this difficulty we construct the compression-boxes square or rectangular in cross-section, and we line these boxes with flat-faced
65 chilled-iron plates B² B³. (Shown in detail in Figs. 5 and 6.) As shown, the side plates B² fit in between the top and bottom plates B³, thus supporting the latter, and the plates are held endwise by means of ears *b* of the plate,
70 these ears being bolted to the ends of the compression-box. These plates should be cast of hard metal and the inner faces thereof are preferably chilled, and if these chilled faces are fairly smooth castings no dressing or fitting
75 is required, and they will eventually and soon wear smooth. To provide for the wear on the plungers B', these are provided with packing-plates *b'*, that fit in grooves *b*² of the plungers. The packing-plates *b'* are
80 supposed to be of cast-iron, and are easily and cheaply renewed. D are upright pugging-mills of ordinary construction, and are mounted above the respective boxes B, the latter
85 having large induction-openings B⁴, directly under the pugging-mill, to receive the discharge from the pugging-mill. Each plunger B' is provided with a cut-off plate E, extending from thence inward or toward the steam-cylinder. These plates E cover openings B⁴
90 when the respective pistons are thrust outward past these openings, pending which the mud discharged from the pugging-mill above piles upon the opposing plate E, and when the plate is withdrawn by the reverse movement
95 of the plunger the charge of mud is supposed to fall by gravity into the compression-box. When, however, the material is of a stiff and sticky character, it will sometimes become so packed into the chamber above
100 plate E that it will not fall by gravity alone, and to guard against this we employ a pair of

feed-rollers F F, located directly over the induction of a compression-box. These feed-rollers revolve intermittently, stopping when aperture B⁴ is closed and starting when this aperture is open. The driving-pulley *f* for each pair of rolls is of the well-known "friction-clutch" variety, and the lever that opens and closes the clutch depends and operates in cam-slot *j* of the opposing plate J, the latter being attached to the adjacent cross-head H. The steam-valve (not shown) may be of any suitable variety, and this is preferably actuated by hand-lever K, and the induction steam-port could be made so small that only a slow movement of the piston could be had with a full head of steam and with the machine running empty, from which it will be inferred that no damage is likely to accrue by reason of the steam-piston striking the cylinder-head. The valve of course could be operated automatically, if so desired; but in this connection we will add that it is very difficult, if not impracticable, to have always a uniform discharge of material from the pugging-mills, and if the operator actuates the valve by hand he can operate the machine faster or slower, according as the pugging-mill delivers material faster or slower, and hence we consider it better practice to operate the valve by hand. The piston-rod between the steam-cylinder and compression-boxes is provided with cross-heads H, that engage and travel on ways *h*, whereby the weight of the steam-piston and of the plungers is in the main sustained to prevent excessive wear on the bottom of the cylinder and compression-boxes.

What we claim is—

1. A horizontal steam brick-machine having steam-cylinder and rectangular compression-boxes, the plungers of the latter being mounted on the respective ends of the piston-rod of the steam-cylinder, such compression-boxes being provided with detachable flat-faced lining-plates, substantially as set forth.

2. A horizontal steam brick-machine comprising steam-cylinders and compression-boxes, pugging-mills located above the respective compression-boxes, and feed-rolls located between the eduction of the pugging-mill and the induction of the opposing compression-box, substantially as set forth.

3. In a horizontal steam brick-machine, the combination, with rectangular compression-boxes, substantially as indicated, of lining-plates for the same, such plates having ears for fastening to the ends of the compression-boxes, substantially as set forth.

4. A horizontal steam brick-machine comprising steam-cylinder and compression-boxes, substantially as indicated, pugging-mill and feed-rollers located between the eduction of a pugging-mill and the induction of a compression-box, and automatic shifting mechanism operated from the brick-machine for stopping and starting the feed-rollers, substantially as set forth.

In testimony whereof we sign this specification, in the presence of two witnesses, this 27th day of July, 1891.

WILLIAM W. WALLACE.
RAYMOND C. PENFIELD.

Witnesses:

C. L. GRAY,
L. W. PENFIELD.