2 Sheets—Sheet 1.

H. C. SERGEANT.

Brick-Machine.

No. 199,472. Patented Jan. 22, 1878.

Fig. 1.

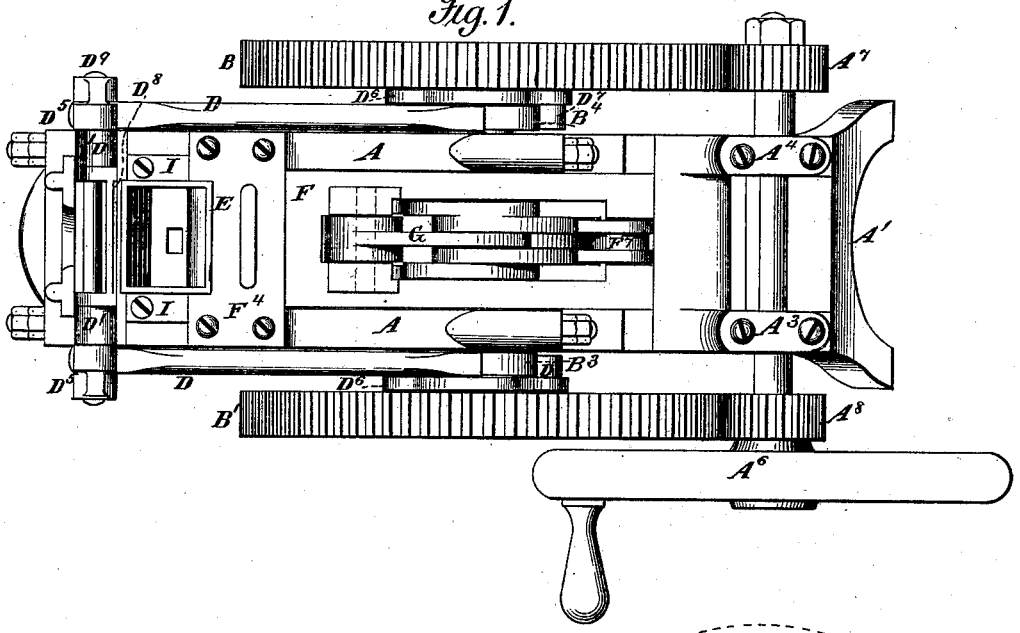


Fig. 2.

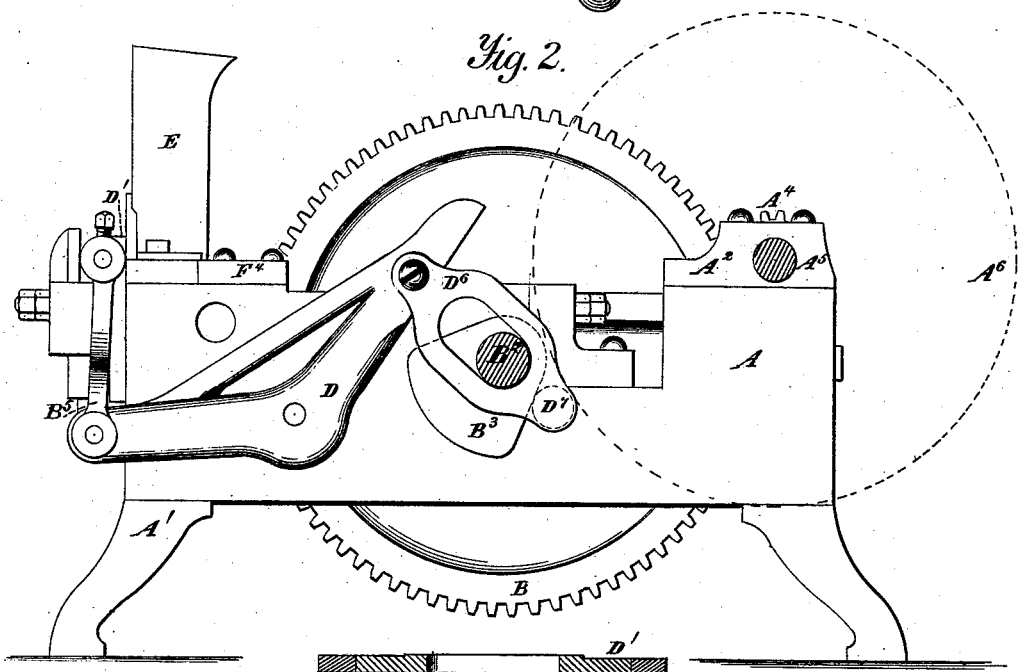
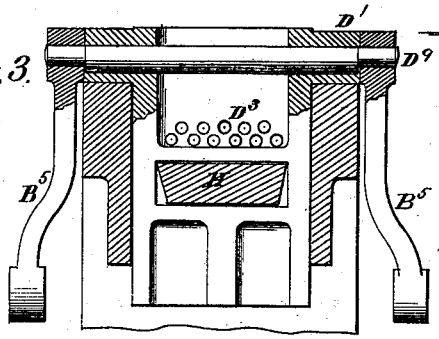


Fig. 3.



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2 Sheets—Sheet 2.

H. C. SERGEANT.

Brick-Machine.

No. 199,472. Patented Jan. 22, 1878.

Fig. 4.

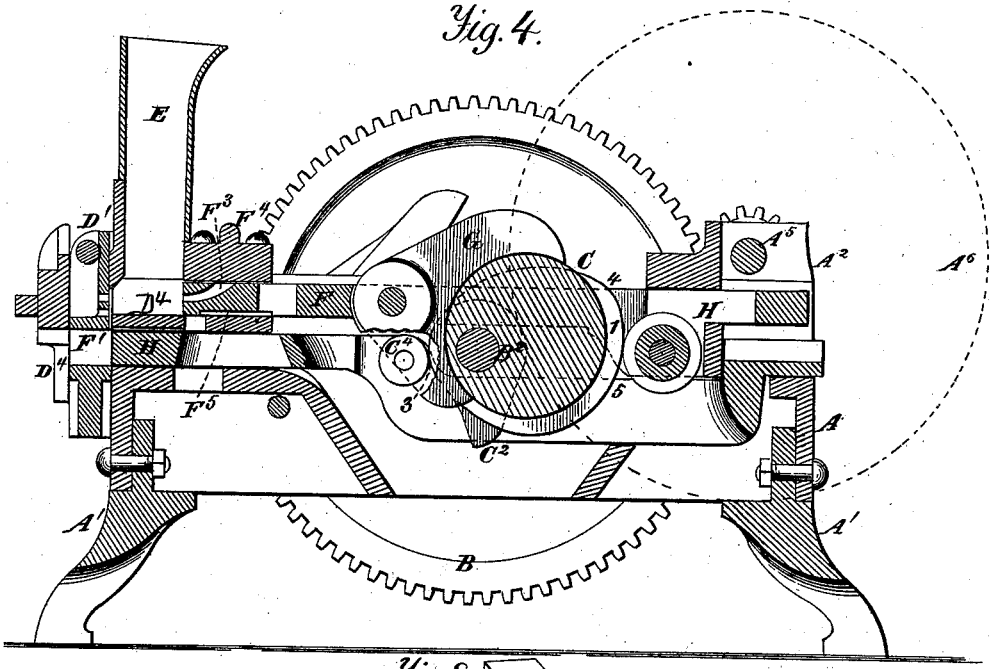


Fig. 8.

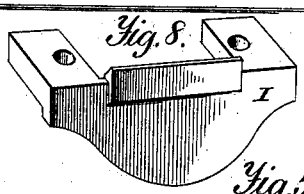


Fig. 5.

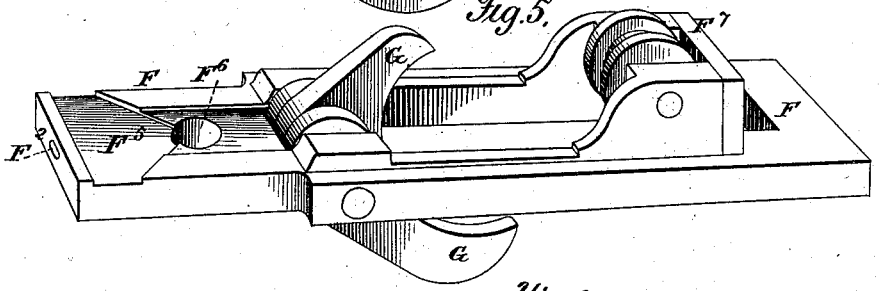


Fig. 6.

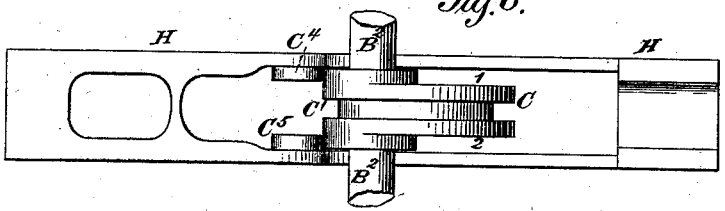
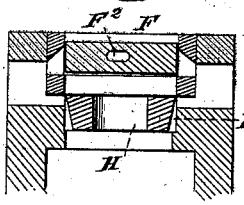


Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY C. SERGEANT, OF NEW YORK, N. Y.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. **199,472**, dated January 22, 1878; application filed December 8, 1877.

To all whom it may concern:

Be it known that I, HENRY C. SERGEANT, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Machines for Making Bricks, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification—

Figure 1 being a plan view of my improved machine, showing the frame-work, the gearing for moving the operating parts, the hopper through which the material is fed to the mold, the sliding presser, the clearing-aperture in the forward end thereof, the cams which move the presser, the sliding mold or die in which the bricks or blocks are formed, and the mechanism for moving the same. Fig. 2 is an elevation with one of the driving-wheels removed, showing the frame-work, the feeding-hopper, the sliding mold, the cam which moves the same, and a yoke and friction-roller operated by said cam. Fig. 3 is a transverse section, showing the sliding mold, the plunger which presses the finished brick therefrom, the clearing-apertures in said mold, the eccentrically-formed shaft for regulating the position of said mold with reference to the plunger, and the connecting-rods which impart movement to the mold. Fig. 4 is a longitudinal vertical section, showing the parts above alluded to in position, and also the plunger for removing the block from the mold. Fig. 5 is a perspective view of the block-presser, showing the swinging yoke against which the cam presses in moving the presser forward, the friction-roller for returning it to its position, and the apertures and recess for allowing the material which passes its end in its forward movement to be removed. Fig. 6 is a plan view of the plunger for removing the block from the mold, showing also a portion of the main shaft of the machine and the cams which move the presser. Fig. 7 is an end view, partly in section, showing the presser with the clearing-aperture in its end and the plunger in position. Fig. 8 is a perspective view of the support of the lower end of the hopper.

Corresponding letters denote like parts in all of the figures.

This invention relates to machines for making paving-blocks, bricks, compressing fuel, and for other purposes, it being an improvement upon a machine for the same purpose, a patent for which was granted to me on the 11th of September, 1877, numbered 195,199; and it consists in the construction, combination, and arrangement of some of its parts, as will be more fully pointed out hereinafter.

In constructing machines of this type, I use a frame, A, the sides and rear end of which are, by preference, of one piece of cast metal, but which may be of any suitable material, and bolted together. To this frame legs A^1, of any required height, are attached, and it is otherwise adapted for the reception and support of the working parts of the machine, it having upon its rear upper surface projections, to which a plate, A^2, is attached, and in which bearings A^3 A^4 are formed, in which rests a shaft, A^5, which has upon one of its ends a fly-wheel, A^6, which may also serve as a pulley for receiving a belt for driving the machine; or a separate pulley or gear-wheel may be placed thereon, which may receive motion from any suitable motor. Upon this shaft A^5 there are firmly secured two pinions or small gear-wheels, A^7 A^8, which mesh with and impart motion to two larger wheels, B B^1, which are keyed or otherwise secured to a shaft, B^2, located about midway of the frame A, as shown in Figs. 2 and 3. This shaft passes through the sides of the frame, and has its bearings therein, its ends extending outward far enough to admit of there being secured thereto the gear-wheels B B^1, and between them and the surfaces of the frame the cams B^3 and B^4, the office of which will be hereinafter described.

Upon the central portion of the shaft B^2 there is secured a series of cams, one of which is designated by the letter C, it being located at or near the outer end of the shaft, and having a groove, C^1, in its center, as shown in Fig. 6, the outer surface of said grooved portion being a perfect circle, but eccentric to the shaft, in order that it may be made to carry

forward the presser at the proper time, which is done by the full part of said eccentric coming in contact with a swinging yoke, soon to be described. The flanges on either side of the groove above alluded to are cam-shaped upon their peripheries, and constitute a series of cams for controlling the movements of the presser on its return-stroke and after it has performed its office of pressing the block. That portion of this cam extending from 3 to 4 is of a less degree of curvature than the remaining portion, as shown in Fig. 4, in order that it may leave the presser in a state of rest for a short space of time after it has been carried forward and has pressed the block, and then that it may be suddenly withdrawn and impart its rapid movement to the plunger, which presses the block from the mold.

From the point 4 on the cam C to point 5 the degree of curvature is less than from the last-named point on to point 3, in order that when the presser has been withdrawn or carried rearward to its full extent it may be retained in that position until the eccentric C^1 comes in contact with the swinging yoke to again carry it forward. Upon the sides of the cams 1 and 2, and attached thereto, or to the shaft B^2, are placed two other cams, C^2 and C^3, which move with the cams 1 and 2, but are so arranged with reference thereto that as soon as the presser has been carried forward to its full extent they will come in contact with friction-rollers C^4 and C^5, and carry the plunger forward and press the block out of the mold while the presser is being withdrawn and the material is being brought into position to be thrust forward and pressed by the next forward movement of said presser. Upon the same shaft B^2, but outside of the frame A, there are placed two cams, B^3 and B^4, one upon either side of the frame, their office being to act upon the levers D D, and thus operate the sliding mold D^1, which is a plate of metal having in it the aperture in which the bricks or blocks are formed, and a series of apertures, D^3, (shown clearly in Fig. 3,) the office of the latter being to afford means for preventing the clogging of the mold when asphalt or other pasty substances are used as a component part of the material to be pressed. These apertures are located just above the aperture into which the material is pressed, and are so arranged that when the mold is carried down to its lowest position they, or some of them, pass below the upper sharp edge of a stationary plate, D^4, which is placed in the forward end of the machine, and between the presser and the plunger, as seen in Fig. 4, and the small amount of material which passes up around the presser when forming the block is, upon the downward movement of the mold, forced through the said apertures, either by the presser or by the plate D^4, and the machine is thus relieved from what would otherwise cause a great resistance to its movements, and ultimately, if not removed, cause the moving parts to be broken.

The mold D^1 is operated by the above-named agencies, and the cams B^3 and B^4, which are upon the shaft B^2, are so constructed and arranged with reference to the movements of the presser that when the latter is moving forward to press the block their peripheries do not touch the levers D; but so soon as the requisite pressure has been imparted to the material—at which time the mold is in its most elevated position—said cams come in contact with the levers D D, which are pivoted to the frame A, and by elevating their rear ends cause their forward ends to be lowered, and thus, by means of the connecting-rods, carry down said mold into a position such as will permit the plunger to be thrust forward and carry the pressed block out of the mold, and, as is usually the case, deliver it into a trough or box containing water, through which it may be carried by means of an endless belt, or by any other suitable means, and in doing which it will have been cooled and will be ready for use.

The cooling apparatus just described will only be found necessary when material such as broken stones and asphalt, or some other composition which requires to be heated before being pressed, is used. When bricks for building purposes, which are made of clay or other similar substance, and fuel-blocks are being pressed, the cooling apparatus may be dispensed with.

As a means of returning the mold to its most elevated position, a yoke, D^6, is made to span the shaft B^2, and has its upper end pivoted to the lever D, as shown in Fig. 2, it being arranged as shown, whereby, when the plunger has been withdrawn from the mold, the cam B^3 will come in contact with a friction-roller, D^7, in the lower end of the yoke, and the mold will be lifted to the proper position to receive the charge of material and have it pressed.

In machines of this character it is essential that the forward end of the presser should work past the end of the dividing-plate D^4; and, to enable it to do so without coming in contact with the face of the mold, there is a recess, D^8, formed in its inner surface, which has the effect to allow of the proper travel of the presser, and also to obviate the shaving of the material as the mold is carried downward, as at such times there is a small space between its recessed face and the end of dividing-plate D^4.

The material to be operated upon by this machine, when consisting of finely-broken stones, asphalt, and a small quantity of oil, or of any other composition suitable for making a durable paving-block, is first heated in any suitable receptacle, one being provided for the stone, one for the asphalt, and another for the proper admixture of the same; and when it is thus heated and mixed it is carried by any suitable means to the hopper E, down through which it passes to and rests upon the surface of dividing-plate D^4, when, by the forward movement of the presser F, it is carried forward into the recess F^1 of the mold, where it receives its pressure.

The device which is herein designated by the letter F, and termed the "presser," consists of a plate of metal, which is made to slide in a recess formed in the frame A, as shown in Figs. 1, 4, and 7, its front end being provided with a recess, F^2, which extends rearward therein for a short distance, and then slants upward and terminates in the upper surface of the presser at F^3, it being thus constructed for the purpose of allowing any of the sticky or pasty material remaining upon the end thereof, and which is not carried away by the apertures in the sliding mold, to pass up to the upper surface of said presser, and be removed by coming in contact with the edge of a cap, F^4, which holds the forward end of the presser in position.

As a further means of relieving the presser from the clogging material, a recess, F^5, is formed in its under surface, which extends from a point near its forward end, as shown in Fig. 5, to an aperture formed vertically through the presser, as seen at F^6, by means of which any of the material which gets under the presser is carried backward and delivered out through an aperture formed in the plunger. This presser F is operated by means of a swinging yoke, G, and a pair of friction-rollers, the former serving to carry it forward upon being pressed upon by the eccentric C^1, and the latter to carry it rearward by being pressed upon by the projections 1 and 2 of cam C, as hereinbefore described. The friction-rollers, in this case, are journaled in projections formed upon the under side of the presser, said projections being furnished upon their rear ends with a plate, F^7, which may be changed in thickness, so as to cause an earlier or later withdrawal of the plunger from the mold, which it effects by coming in contact with a projection thereon.

That portion of the machine which has heretofore been termed the "plunger" consists of a plate of metal such as is shown in Fig. 6, and is lettered H, it being of the curved form shown in Fig. 4, and carrying upon its rear end a projection, which, as above stated, is acted upon by the projecting plate F^7 in withdrawing it from the recess in the mold, it being carried forward by means of the cams C^4 and C^5, as previously described; and, in order that it may at all times enter the aperture in the mold without being obstructed by coming in contact with its upper or lower surfaces, an eccentrically-formed shaft, D^9, is placed in bearings formed in the sliding mold, so that by turning the same therein the mold will be either raised or lowered, as occasion may require, to adapt it for the reception of the plunger.

For receiving and retaining the lower end of the feeding-hopper, and for strengthening the mold, as well as directing the material thereto, a cap, I, (shown in Fig. 8,) is bolted to the frame, so that its outer face comes in contact with the mold, and a beveled projecting lip upon its under surface extends downward, so as to direct the material into the mold in a solid mass, and thus prevent the formation of blocks when the mold is only partially filled.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for making paving-blocks, bricks, and for other similar purposes, a presser having a longitudinal recess in its under surface and a vertical aperture through its body, substantially as and for the purpose set forth.

2. In a machine for making paving-blocks, bricks, and for other similar purposes, a sliding mold having in a portion of its surface a series of apertures for relieving the same from obstruction in being operated by the accumulation of sticky or pasty substances, substantially as set forth.

3. In a machine for making paving-blocks, bricks, and for other similar purposes, the combination of the sliding mold D^1, the levers D, the yoke D^6, and the cam B^3, the parts being arranged to operate substantially as and for the purpose specified.

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

HENRY CLARK SERGEANT.

Witnesses:

JOHN W. PILLING,

C. M. CONNELL.