

(No Model.)

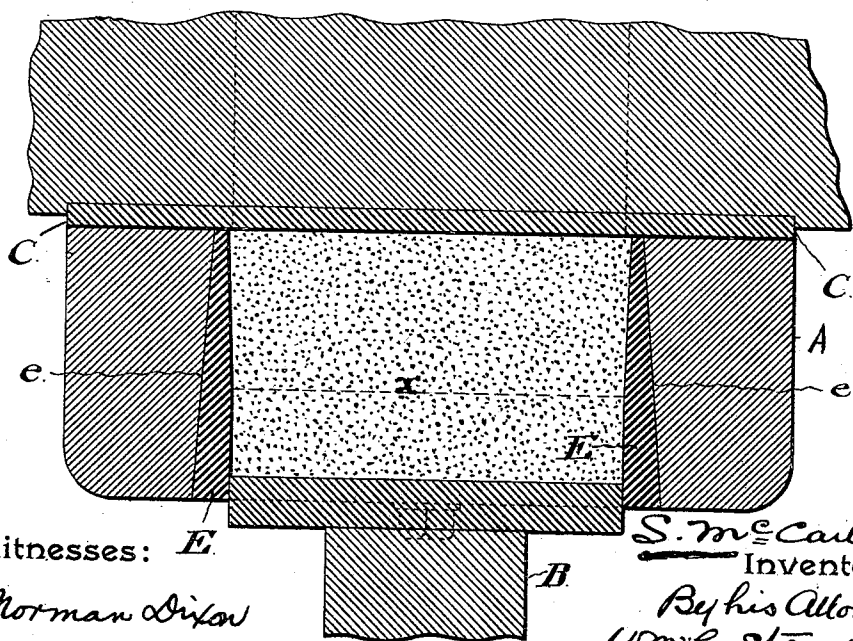
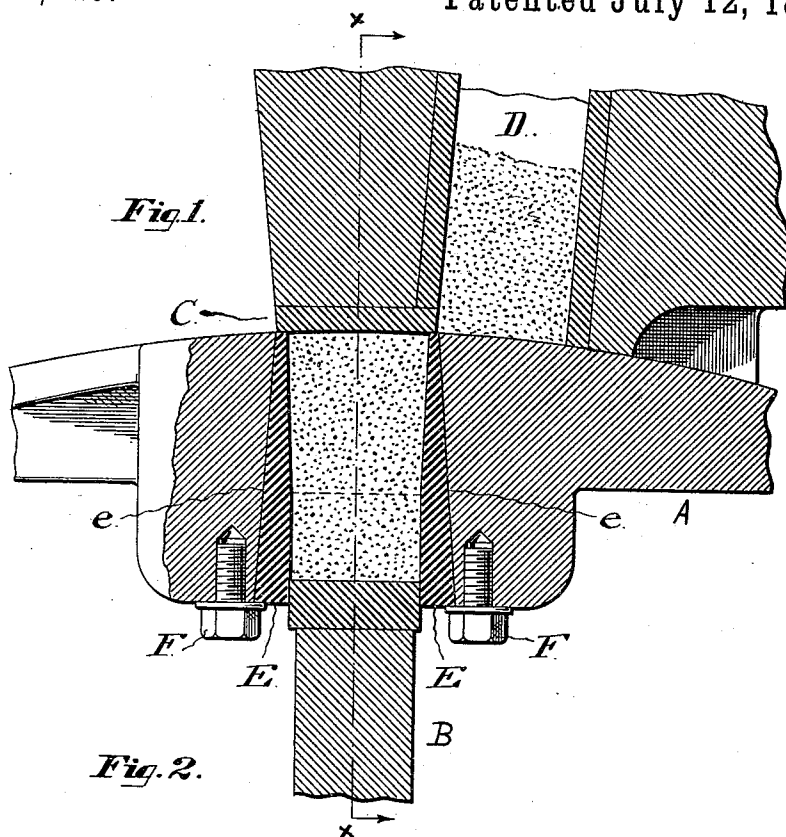
2 Sheets—Sheet 1.

S. McCARTER.

METHOD OF FORMING ASPHALT BLOCKS.

No. 478,626.

Patented July 12, 1892.



Witnesses: *E*

J. Norman Dixon

Lewis Altmaier

S. McCarter,
Inventor

By his Attorneys,
Wm. C. Strawbridge
Edmund Taylor,

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

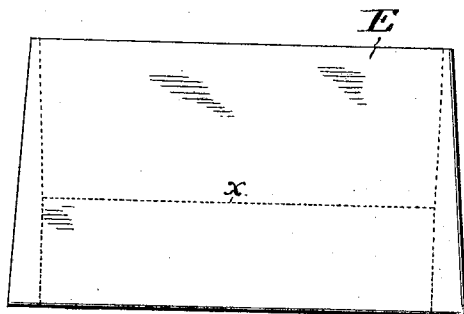


Fig. 4.

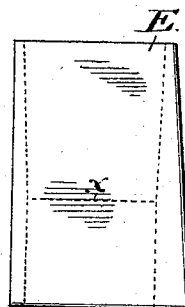


Fig. 5.

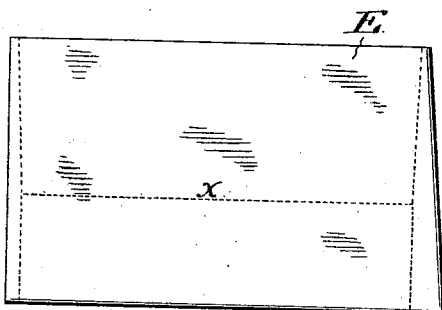


Fig. 6.

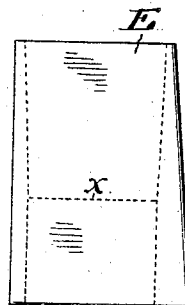


Fig. 7.

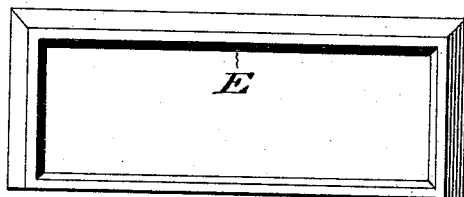
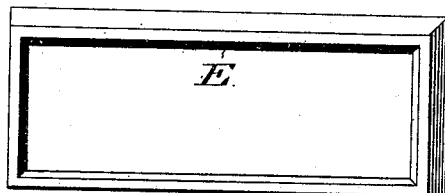


Fig. 8.



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UNITED STATES PATENT OFFICE.

SAMUEL McCARTER, OF NORRISTOWN, PENNSYLVANIA, ASSIGNOR TO THE
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METHOD OF FORMING ASPHALT BLOCKS.

SPECIFICATION forming part of Letters Patent No. 478,626, dated July 12, 1892.

Application filed March 27, 1890. Serial No. 345,472. (No specimens.)

To all whom it may concern:

Be it known that I, SAMUEL McCARTER, a citizen of the United States, residing at Norristown, in the county of Montgomery, in the State of Pennsylvania, have invented certain new and useful Improvements in Methods of Forming Asphalt Blocks, of which the following is a specification.

My invention relates to the molding of plastic compositions into blocks.

In Letters Patent of the United States No. 304,337, granted to me upon the 2d day of September, 1884, is shown described and claimed an asphalt block press in connection with which my present improvements are primarily intended and adapted to be employed, although they may be employed in connection with other forms of presses.

In the drawings, Figure 1 is a view partly in section of the mold and also of its supporting socket framework, the plunger, and the hopper frame of the press, by the aid of which my method is conveniently carried out. Fig. 2 is a central, vertical, sectional elevation taken on the line xx of Fig. 1. Figs. 3, 4, and 7, are, respectively, a vertical longitudinal section, a vertical transverse section, and a top plan view, of a modified form of mold by the aid of which my method is practiced. Figs. 5, 6, and 8, are, respectively, a vertical longitudinal section, a vertical transverse section, and a top plan view, of another modified form of mold by the aid of which my said method is practiced.

In the drawings, A represents that portion of the framework of a press which contains the mold proper and the socket therefor.

B is a compressing plunger which compacts the composition within the mold.

C is a resisting abutment which closes the outer end of the mold during the action of the plunger; and D is a charging hopper.

It is unnecessary to a comprehension of my present improvements, to further describe the construction, relative disposition, and operation of the aforesaid framework, plunger, abutment, and hopper, in connection with which the mold is illustrated as applied,—for the mold, as stated, is intended to be employed with various kinds of block presses, and only happens to be herein illustrated in

connection with the foregoing specially constructed elements of my patented press referred to. It is, however, necessary to explain that in the operation of the compressing plunger the entire operation of compression of the plastic material within the mold, takes place during the period of the advance of the plunger throughout that portion of the mold the interior faces of which are by opposite pairs in parallelism, or that portion which in Figs. 1 and 2 is included below the dotted lines ee and x ; and that the plunger accurately fits the aforesaid parallel-sided portion of said mold.

The mold proper is designated in the drawings by the letter E, and is an integral cast metal open-ended hollow lining or bushing preferably formed of chilled steel, the interior faces of which are for a portion of its depth by opposite pairs in parallelism, and for the remainder of its depth inclined or flared outwardly away from each other, and which is applied to a mold socket or recess e formed in the framework of the press and possessing the form and dimensions of the exterior of the bushing or mold proper, which exterior as hereinafter explained, is preferably, as to one or more of its sides, tapering.

In presses employed for the manufacture of asphalt and other paving blocks in which the stony constituent is of a flinty character, it has been found that these lining bushings are rapidly cut out and rendered worthless, and it has therefore, been necessary to make them separate from the socket framework of the press, and so as to be susceptible, when worn out, of being removed therefrom and replaced by others. These linings have heretofore in block presses been made as rectangular open-ended shells so to speak, the outside faces of which have been by opposite pairs parallel with each other, and also parallel with the corresponding inside or molding faces, which likewise by opposing pairs have been for the ordinary rectangular block, made parallel-sided.

In the practice of the manufacture of blocks of asphaltic compounds by compression within molds having parallel inner faces, it has been found that a large portion of the cutting and wear to which the molds have, as herein-

before explained, been subjected, has been due to the frictional contact against said inner faces of the sides of the block, which is, after compression, elevated and ejected. It has also been found that, notwithstanding the compression to which the blocks have in their formation been subjected, they will, when ejected, still be sufficiently plastic to, in the course of their setting or hardening, slightly settle or flatten down, the effect of which will be to produce irregularity of form in the finished block inasmuch as their bases become broader than their tops. The exterior of these linings have moreover necessarily been so closely fitted to the sockets within which they are placed that it has been, in consequence, extremely difficult to remove them when worn out.

In the practice of my method I arrange the inner faces of a mold lining or bushing in such manner that the resulting block will be so formed as not only to allow for the spreading of its base above referred to,—but also as to in its elevation clear or avoid wearing contact with the inner faces of said lining. I bring about this result most conveniently by forming the mold with an interior which for a distance from its top to a point as far down as equals the vertical depth of the completed block, tapers or gradually lessens in diameter.

In the drawings, E, as stated, represents a mold lining or bushing, the inner faces of which as to the portions of its height traversed by the plunger in its compressive action, that is to say from the lower edges to the line marked *x*, are by opposite pairs in parallelism,—and as to the portion of its height occupied by the compressed material after the plunger has reached the line *x*, that is to say from said line *x* to the top edges of the mold or lining, are inclined outwardly.

As a result of the foregoing construction, when a block has been compressed in the upper portion of the mold, and, in the construction shown, the mold has been carried away from the resisting abutment so that the block is free to be lifted out, it will, so soon as its initial starting from its seat has been effected, be in its further upward movement of ejection clear of the inner faces of said lining. The compressed block so formed will be of a shape corresponding to the shape of the inner faces of the lining above the line *x* and when such form is as described, a taper, allowance will thereby be made for that spreading of the base of the compressed block which experience has demonstrated to be incident to the removal of a fresh block from the support of the walls of the mold. The diameters of the top of the mold lining are the required diameters of the completed block, while the diameters of the lining at the point abreast the base of the block are to such extent less than the required diameters of the hardened block as the extent compensated for by the spreading of the block in its setting and hardening.

In the practical construction and applica-

tion of the externally tapering mold bushings, such as those which I employ, I prefer to correspondingly taper all the exterior faces from the lower or plunger end of the bushing as an entirety, toward its discharging or abutment end, and in Figs. 1 and 2 of the drawings I have represented a mold lining of this character, all of the exterior faces of which have a common and equal convergence. It is obvious that an externally pyramidal lining of this character can be readily applied to its socket, and that in the operation of the plunger the tendency will be to maintain the lining within its socket, it being in effect constantly wedged thereinto. When applied, the socket can be conveniently maintained by the application of retaining bolts F F, Fig. 1, the under faces of the heads of which engage beneath the basal edges of the mold and retain it against removal within its socket. When, however, these bolts have been removed, the mold can be readily removed by the blow of a hammer against its upper edges, the mold being by such means as readily unseated as can be any tapering plug.

Although the best results are obtained by tapering or inclining all of the outside faces of the mold, it is obvious that the same results can measurably be secured by inclining or tapering three of the outside faces as shown in the mold of Figs. 3, 4, and 7,—or two adjacent outside faces as shown in the mold of Figs. 5, 6, and 8.

Having thus described my invention, I claim—

1. The method of forming plastic material into blocks of a given form, which consists in molding or compressing such material to a form the diametric measurements of the base of which are as much less or narrower than the required ultimate measurements as will be compensated for by the subsequent spreading of the material in the settling and setting of the block after removal from the mold, substantially as set forth.

2. The method of forming plastic material into quadrangular blocks, which consists in, first, molding or compressing such material in a mold the interior faces of which are flared or inclined outwardly away from each other,—in then expelling the material so molded or compressed from the mold,—and in then permitting the molded block to settle and set into quadrangular form by causing it during such action to rest upon its base or that end which within the mold possessed the lesser diametric dimensions, substantially as set forth.

In testimony that I claim the foregoing as my invention, I have hereunto signed my name this 21st day of February, A. D. 1890.

SAMUEL McCARTER.

In presence of—

J. BONSALE TAYLOR,
F. NORMAN DIXON.