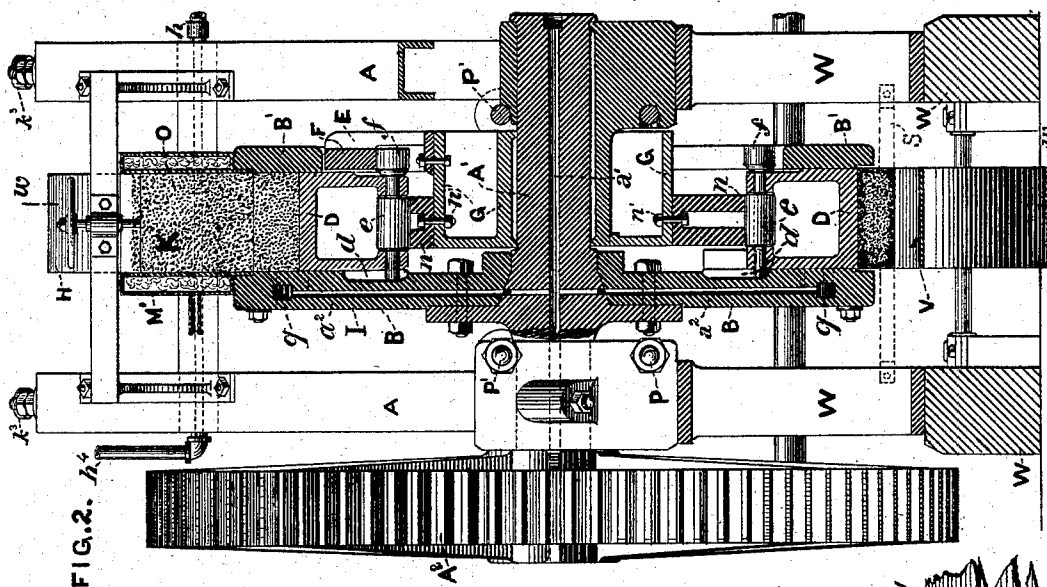
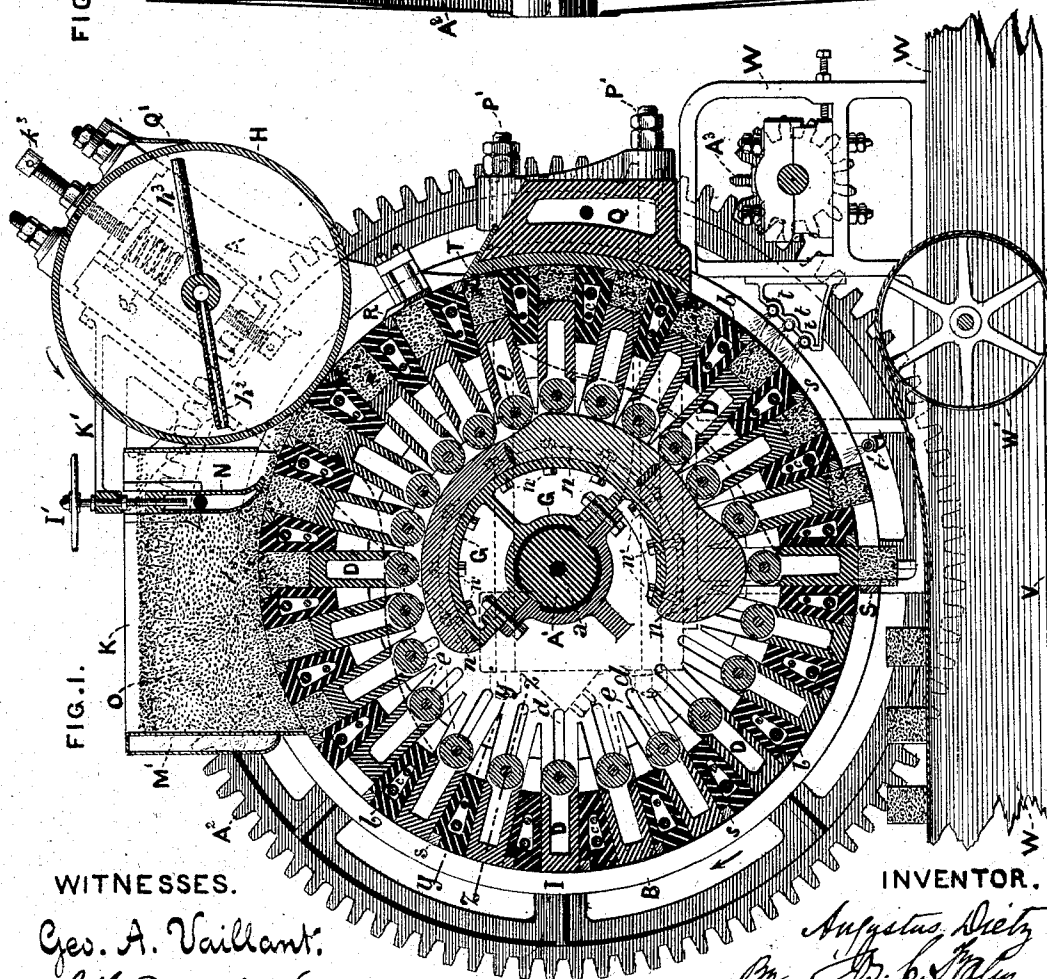


(No Model.)

2 Sheets—Sheet 1.

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No. 289,397. Patented Dec. 4, 1883.



WITNESSES.

Geo. A. Vaillant.  
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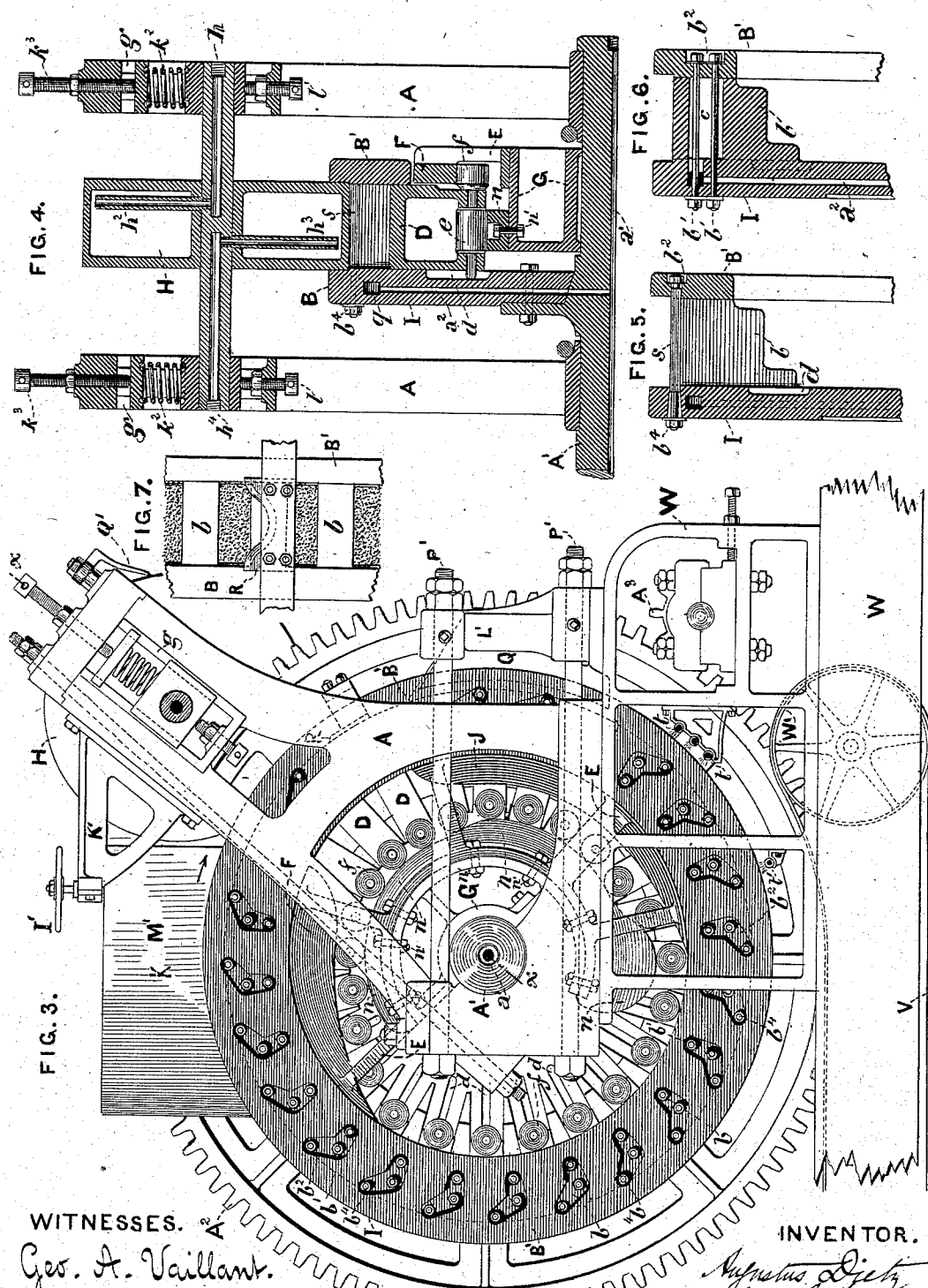
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# UNITED STATES PATENT OFFICE.

AUGUSTUS DIETZ, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR MANUFACTURING BLOCKS, &c., OUT OF ASPHALT, &c.

SPECIFICATION forming part of Letters Patent No. 289,397, dated December 4, 1883.

Application filed May 14, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUSTUS DIETZ, formerly of the Grand Duchy of Luxembourg, but now of Philadelphia, Pennsylvania, have invented a new and useful Machine for the Manufacture of Blocks, &c., out of Asphalt and Similar Materials.

The following is a specification of my invention, reference being had to the accompanying drawings, wherein—

Figure 1 is a vertical longitudinal section through the center of the machine, and Fig. 2 a vertical transverse section on the line of the axis of driving-shaft. Fig. 3 is a side elevation of the machine. Fig. 4 is a transverse section through the pressing-drum on the line *xx* of Fig. 3. Figs. 5 and 6 are transverse sections through the periphery of the mold-wheel on lines *yy* and *zz*, Fig. 1, respectively; and Fig. 7 is a plan view of a portion of said periphery, showing the trimming-knife hereinafter described.

My invention relates to that class of machines in which a wheel having a series of radial molds in its periphery is combined with devices for compressing plastic material in such molds.

The use of various machines of this general character in the manufacture of bricks, &c., from clay is common; but, so far as I am aware, none of them have been successfully applied to the production of blocks of asphalt and similar materials.

The main difficulties in dealing with this class of substances arise from the fact that they must undergo a high degree of compression and consequent reduction in bulk in order to fit them for practical use, and unless the pressure is properly applied and the material maintained in a suitably-plastic condition during the process, the machine inevitably becomes jammed and breaks.

The main feature of my invention consists in the combination, with a suitable mold-wheel of the kind before described, of successive pressing devices, whereby a pressure, at first yielding and subsequently rigid, is applied, and of means whereby the material is retained in a plastic state during the whole period of treatment.

Various subsidiary devices for accomplishing details of the operation and convenient

features of construction are also included in my invention.

In the drawings, W represents the bed-plate of the machine, upon which are supported the housings A. I prefer to cast these housings in separate pieces and secure them together by means of bolts and nuts, as indicated.

The mold-wheel I is mounted upon a strong shaft, A', to which is also keyed a large gear-wheel, A<sup>2</sup>, driven by a suitable pinion, A<sup>3</sup>, to whose shaft the driving-pulley is attached. Said mold-wheel is constructed as follows: A disk, B, having an internal duct or passage, *q*, near its periphery, is cast with a number of hollow projecting pieces, *b*, upon one face, the chamber *c*, Fig. 6, in each of these projections communicating with the duct *q*, and from the duct *q* radial passages *a*<sup>2</sup> lead to a central passage, *a*<sup>1</sup>, in the shaft A'. An annular rim, B', is secured by bolts and nuts *b*<sup>1</sup> against the face of the projections *b*, thus closing the outer end of the chambers *c*. The rim B' has preferably countersunk spaces *b*<sup>2</sup> to receive the bolt-heads. The adjacent faces of each pair of projections *b* are parallel, thus forming a series of uniform rectangular molds in the periphery of the wheel. A steel edge, *s*, is secured by bolts *b*<sup>4</sup> at one edge of each of the projections *b*. Plungers D fit closely in the spaces or molds between the projections *b*, and are provided with friction-rollers *e*, *f*, whose shafts extend into and are guided by radial grooves *d* in the face of the disk B. Upon a semicircular piece, G, which is secured between the housings A, are mounted the protruding-cam *n* beneath the rollers *e*, and the withdrawing-cams F and J above the rollers *f*. (See Fig. 4.) The cam *n* is secured to the piece G by means of countersunk bolts *n*<sup>1</sup>, while the cams F and J are mounted upon arms or standards E.

The configuration of the several cams is shown in Figs. 1 and 3; but it may be varied as desired.

A reservoir, K, provided with a steam-jacket, M', fits closely between the projecting flanges of the disk B and rim B', the bottom of the reservoir being open and the sides conforming with the periphery of the mold-wheel. A gate or feed-regulator, N, extends across the front of the reservoir K, and is ad-

justable vertically by means of a hand wheel and screw, I', mounted upon the bracket K'. The gate N is hollow, and is provided with suitable connections for admitting steam to its interior. A hollow presser-roller, H, is mounted in slide-bearings *g* in the housings A, the bearings being adjustable toward and from the periphery of the mold-wheel by means of set-screws *k*<sup>3</sup> and *l*, and being also provided with strong springs *k*<sup>2</sup>, which permit the use of the cylinder in case material should jam between its surface and that of the mold-wheel. The roller H is steam-tight, and is provided with inlets *h* *k*<sup>2</sup> and outlets *h*<sup>3</sup> *h*<sup>4</sup> to maintain a steam-circulation. A scraper, Q', is mounted at a convenient point and bears against the roller across its entire length. Adjacent to the roller H an oblique-edged trimming-knife, R, is secured to the housings in contact with the periphery of the mold-wheel, between the flanges, and below the knife is a stationary presser composed of a hollow box, Q, firmly secured against thrust radial from the mold-wheel, and having a heavy metal plate, T, which fits snugly between the flanges of the mold-wheel, and has a smooth surface, which conforms to the periphery of the wheel, thus forming for a considerable arc of the circumference a close cover to the molds. Suitable steam-connections are provided for the heating of the box Q, and the supports L' of the latter admit of horizontal adjustment toward the face of the mold-wheel by means of the bolts and nuts P'. A stop-bar, S, is secured between the housings A at the bottom of the wheel, and beneath this bar is an endless belt, V, actuated by a pulley, W'. Between the presser-box Q and the stop-bar S are sprinklers *t t t'*, with suitable connections for supplying cold water.

The operation of the machine is as follows: Steam, being let into the duct *a'* of the shaft, passes through the radial channels *a''* to the passage *g*, and thence to the chambers *c* between the molds. The presser-roller H, box Q, and reservoir K are also heated by the admission of steam, and the reservoir is filled with the hot plastic asphalt O, which flows into the molds then beneath the reservoir, whose plungers D are at or near the bottom. The mold-wheel is then rotated in the direction of the arrow, and the charged molds pass out beneath the gate N, which is adjusted so as to leave a slight surplus on the top. The molds then are brought beneath the heated presser-roller H, and their contents are uniformly and strongly compressed thereby; but as the springs *k*<sup>2</sup> relieve the wheel against the jamming which at times may occur, all danger of breaking is avoided. The roller H can be adjusted by means of the screws *k*<sup>3</sup> and *l* to secure any desired amount of compression; but in use I prefer to so arrange it that a sheet of ordinary writing-paper may just be passed between its periphery and the adjacent surface of the projections *b*. Any matter adhering to the roller is removed by the scraper Q'.

The surface of the material in the molds is then trimmed flush by the knife R, whose oblique edge facilitates the cutting off of the surplus. The steel edge *s* of the mold-not only acts as a counter-shear, but is not liable to be dented or injured by the presence of hard materials in the asphalt. After leaving the knife R, the charged molds pass beneath the smooth heated surface of the plate T, and simultaneously the cam *n* raises the plunger D at that point and compresses the material from below. The effect of this double pressure of the contents of the mold, first on top by the roller H and afterward on the bottom by the plunger D, is to compress and render compact each surface of the block to an extent which would not take place were the pressure applied on one side only. Moreover, the movement of the hot block against the stationary plate T smooths and polishes the outer surface, thus tending to close the pores thereof. During all this treatment the asphalt has been maintained in a properly-plastic condition by means of the several steam heating appliances; but after the blocks emerge from beneath the plate T they are sprinkled with cold water from the jets *t*, to harden their surface. The rise of the cam *n* continuing, the blocks are gradually pushed out of the molds, the jets *t'* now playing upon their sides, and on reaching the stop-bar S they have completely emerged from the molds, and are dislodged thereby from the surface of the plunger. They then fall upon the belt V, and are by its movement carried under the stop-bar S and removed to a cold-water trough, or are otherwise cooled and permitted to completely solidify. The purpose of the outer cam, J, is to prevent the plunger D from moving outward too soon through any cause, and the cam F draws in or depresses the plunger D into the proper position for permitting the molds to be filled from the reservoir K.

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

1. The combination, with a mold-wheel having a series of molds in its periphery, and pressing devices adapted to operate upon the material within said molds, of a series of heating-chambers intermediate between the molds, and suitable connections for admitting steam or other heating medium to said chambers, the whole operating substantially as set forth, to maintain the contents of the molds in a plastic condition during the application of pressure thereto.

2. The combination, with a mold-wheel having a series of molds in its periphery, and continuous flanges on both sides of the molds, of a presser-roller fitting closely between said flanges and supported in spring-bearings, substantially as and for the purposes specified.

3. The combination, with a mold-wheel having a series of molds in its periphery, and continuous flanges on both sides of the molds, of

an open-bottom reservoir whose sides fit closely between said flanges, and an adjustable feed-gate, said reservoir being provided with means, substantially as set forth, for heating its contents.

5 4. The combination, with a mold-wheel having in its periphery a series of molds containing movable plungers, heating-chambers between said molds, and suitable mechanism for  
10 moving said plungers radially outward, of a fixed presser-plate fitting closely against the periphery of the mold-wheel at those points in its rotation where the outward pressing  
15 movement of the plungers occurs, said presser-plate being provided with a heating device, substantially as set forth.

5. The combination of the flanged mold-wheel having in its periphery a series of molds and plungers and mechanism for protruding and withdrawing said plungers, the reservoir, 20 spring presser-roller and presser-plate fitting closely upon the periphery of said mold-wheel, between said flanges, and each provided with suitable heating devices, and the trimming-knife intermediate between the presser-roller 25 and the presser-plate, the whole combined and operating substantially as set forth.

AUG. DIETZ.

Witnesses:

J. WALTER DOUGLASS,  
WILLIAM W. FARR, Jr.