

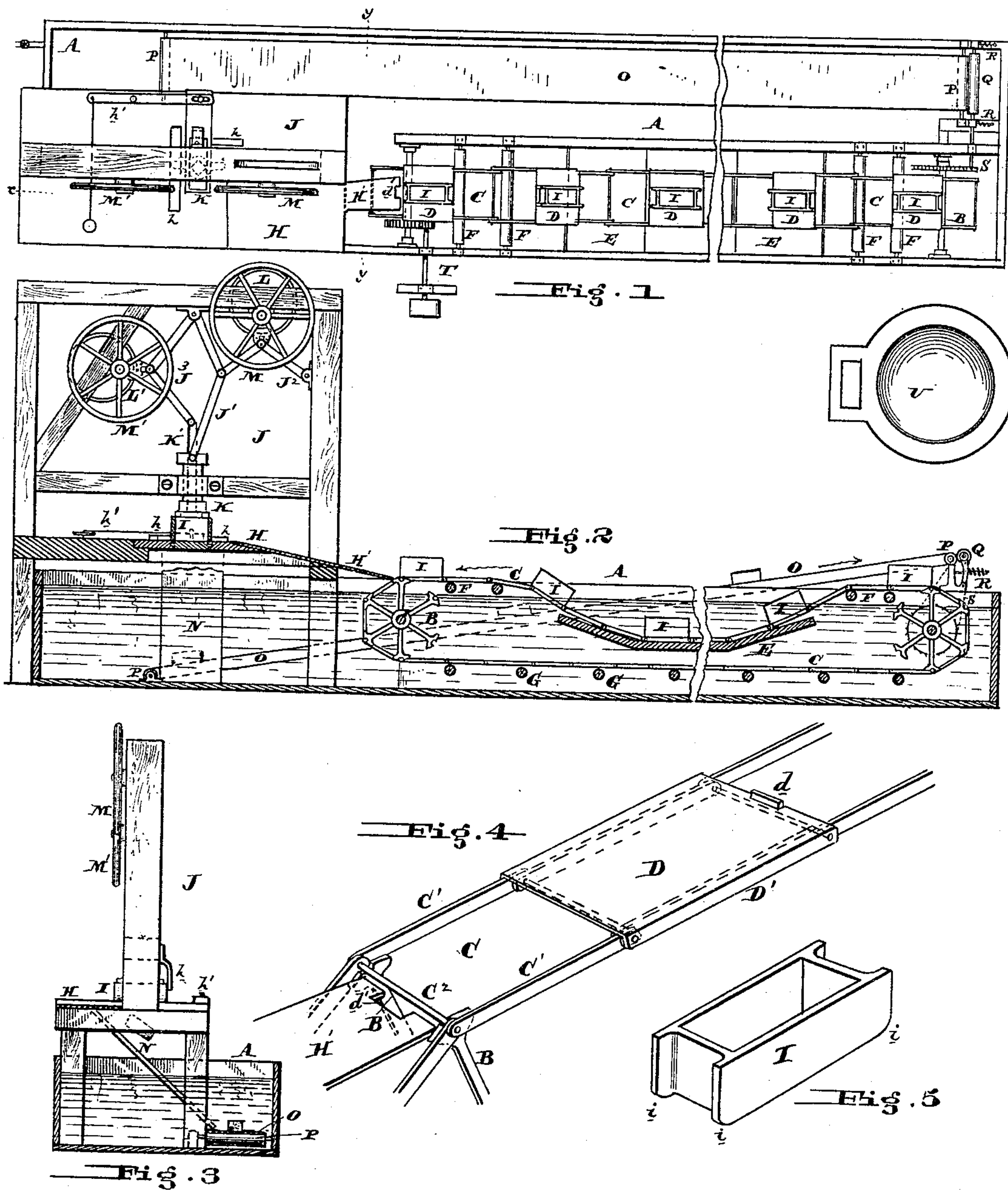
(No Model.)

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MACHINE FOR MAKING PAVING OR BUILDING BLOCKS.

No. 328,551.

Patented Oct. 20, 1885.



Attest  
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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR MAKING PAVING OR BUILDING BLOCKS.

SPECIFICATION forming part of Letters Patent No. 328,551, dated October 20, 1885.

Application filed May 19, 1885. Serial No. 165,999. (No model.)

*To all whom it may concern:*

Be it known that I, AARON WARD, a citizen of the United States, residing at Camden, in the county of Camden, State of New Jersey, have invented a new and useful Improvement in Machines for Making Paving or Building Blocks, of which the following is a specification.

My invention has reference to machines for making paving or building blocks; and it consists in certain improvements in mechanism and apparatus for molding, cooling, compressing, and delivering the blocks in succession, all of which is fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

The object of my invention is to provide suitable apparatus by which the successive operations specified above may be carried on continuously and in consecutive order, producing from the soft plastic material—such as asphaltum—combined and solid compressed and hardened paving or building blocks.

In the drawings, Figure 1 is a plan view of apparatus embodying my improvements. Fig. 2 is a sectional elevation of same on line *x x*. Fig. 3 is a cross-section of same on line *y y*. Fig. 4 is a perspective view of the mold-conveying chain, and Fig. 5 is a perspective view of the mold.

A is a tank kept full of and through which cold water is allowed to circulate.

B B are two chain-wheels journaled in said tank and preferably below the liquid-level.

C is an endless chain consisting of links C' C' coupled together by rods C<sup>2</sup>, which chains pass around the chain-wheels B, and are propelled thereby. These chains, in passing from one chain-wheel to the other in the direction indicated by the arrow, pass over guide-rollers F, and are allowed to sag down below the liquid-level, being guided upon the frame E; or, if desired, a series of rollers such as the rollers G, upon which the chain returns close to the bottom of the tank. Every other pair or every third pair of links of the chain support a plate, D, having flanges D', extending down parallel to the links and through which the rods C<sup>2</sup> pass, thereby securing the said plate to the chain and also greatly adding to their strength. The rear ends of these plates D are furnished with projections *d*, adapted to catch the molds

I, placed upon the plates, and insure them being carried through the water with the chain. These molds I are shown similar to a box with the lid and bottom removed, being formed of cast-iron, and when placed upon the said plates D the latter forms the temporary bottom of the said molds.

J is a press or compressing-machine, and may be of any suitable construction, that shown, however, being preferable, the function of which press being to compress a partly-solidified asphaltum or composite block, and then allow it to be discharged once more into the tank, to be a second time cooled. This press, as shown, consists, essentially, of the double toggle-joints J' and J<sup>2</sup>, actuated by the eccentric L and hand-wheel M, and adapted to reciprocate a compressing plunger or die, K, and a third toggle-joint, J<sup>3</sup>, also actuated by an eccentric, L', and a hand-wheel, M', and adapted to reciprocate a discharging-plunger, K', the plunger K being used to compress the material in the molds, and the double toggle is used for the purpose of obtaining great power.

H' is a continuation of the table of the compressing-machine, and extends down close to the chain-wheel B, and automatically receives the mold I and its contents as the plate D passes under it, the lug *d* passing through the notch *d'* in the table H', so that the chain C may be run continuously. The rounded edge *i* enables the mold to pass up onto the table. If desired, the table H' and H may be on the same level by raising the chain-wheel B or lowering table H.

H is a table upon which the molds I with their cooled contents are placed and adjusted by guides *h* under the compressing and discharging plungers K K', and over the slide H. After the compressing-plunger K has descended and compressed the block into the desired shape, the lever *h'* is operated by hand or otherwise, causing the slide H' to be withdrawn, and the hand-wheel M' is then rotated, and the discharging-plunger K' is forced down, ejecting the compressed block through the trap, whereupon it falls on the slide N, and is conveyed to the endless band O, traveling over guide-rollers P, and is once more carried through the cooling-water in the tank and finally discharged. This band O is caused to travel by



a rotating roller, Q, being pressed in contact with one of the rollers P by springs R, which roller Q may be rotated by a crank or by a chain and sprocket-wheels, S, connecting with the endless-chain apparatus, and one of the chain-wheels B may be caused to rotate through the agency of suitable gearing and band-wheel T. The particular construction of these parts is immaterial to my invention, as they may be modified in various ways without departing from the spirit thereof.

The operation is as follows: The composition from which the block is to be molded being made in the kettle U, enough to fill the molds placed upon the plate D is poured therein, and as said molds are conveyed by the chains C under the cold water in the tank, the outer surface of the composition is sufficiently cooled that, when the said molds are once more brought to the surface, they, with their contents, may be removed from the plates D, and placed upon the table H, and after being adjusted in position they are first compressed, and then discharged and delivered to the endless band O, and are conveyed once more through the water by said endless band, and when they emerge they are ready for use. After passing first through the water the outer surface of the composition alone is solidified. The interior being still in a plastic condition, and when subjected to the action of the press, the whole block is tightly compressed and solidified, and the second passage through the water completely hardens it. Any other form of press may be used, if desired, and the bands and chains may be constructed in any other suitable manner; and in this application I do not claim this specific construction of the press, as it forms the subject-matter of another application bearing even date with this.

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

1. The combination of a cold-liquid tank with a conveyer, suitable guides therefor, and molds carried thereby, whereby the plastic material contained in the mold may be conveyed under the water and have its outer surface cooled and solidified, and rendered in a condition for being compressed, substantially as and for the purpose specified.

2. The combination of a cold-liquid tank with a conveyer, suitable guides therefor, molds carried thereby, whereby the plastic material contained in the mold may be conveyed under the water and have its outer surface cooled and solidified and rendered in a condition for being compressed, and a compressing-machine having a compressing-die to correspond to the shape of the mold, by which the material may be compressed within the mold, substantially as and for the purpose specified.

3. The combination of a cold-liquid tank with a conveyer, suitable guides therefor, molds carried thereby, whereby the plastic material contained in the mold may be conveyed under the water and have its outer surface cooled and solidified and rendered in a condition for being compressed, a compressing-machine having a compressing-die to correspond to the shape of the mold, by which the material may be compressed within the mold, a discharging die or plunger to eject the compressed block from the mold, and a conveyer to receive the compressed block and convey it under the water, and then above the same for removal, substantially as and for the purpose specified.

4. The combination of the tank A, endless-chain conveyer C, chain-wheels B, and guide E, located below the liquid level of the water in the tank, substantially as and for the purpose specified.

5. The combination of the tank A, endless-chain conveyer C, chain-wheels B, rollers F G, and guide E, located below the liquid level of the water in the tank, substantially as and for the purpose specified.

6. The combination of the tank A, endless-chain conveyer C, having plates D, chain-wheels B, molds I, and guide E, located below the liquid level of the water in the tank, substantially as and for the purpose specified.

7. The combination of the tank A, endless-chain conveyer C, having plates D, having lugs d to catch the molds, chain-wheels B, mold I, and guide E, located below the liquid level of the water in the tank, substantially as and for the purpose specified.

8. The combination of tank A with endless chain C, having plates D, chain-wheels B, suitable guides for said chain, by which it is allowed to pass below the water-level, molds I, press J, and conveyer O, substantially as and for the purpose specified.

9. The combination of tank A with endless chain C, having plates D, chain-wheels B, suitable guides for said chain by which it is allowed to pass below the water-level, molds I, press J, inclined guide N, and conveyer O, substantially as and for the purpose specified.

10. The inclined conveyer O, in combination with rollers P and Q, springs R, and tank A, substantially as and for the purpose specified.

11. The combination of tank A with chain-wheels B, chain-conveyer C, consisting of links C', rods C'', and plates D, having flanges D' and lugs d, substantially as and for the purpose specified.

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Witnesses:

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