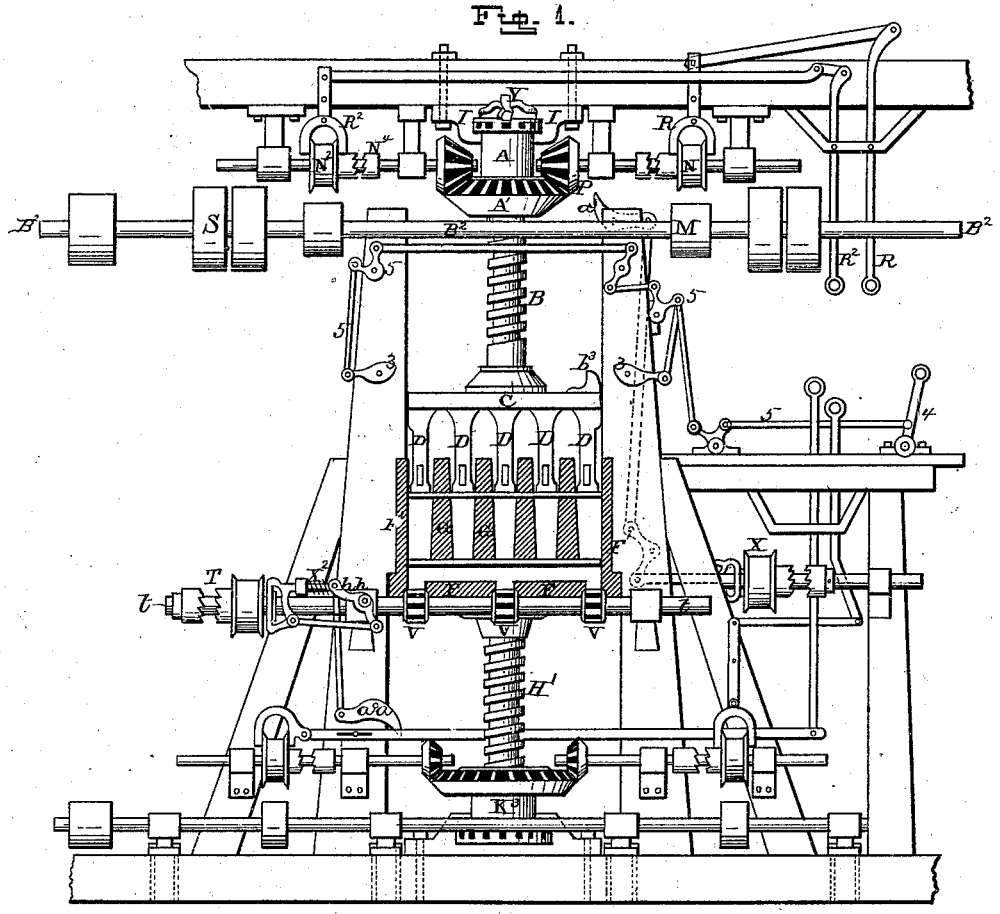
3 Sheets—Sheet 1.

A. H. AUSTIN.

Machine for Making Paving and Building Tiles.

No. 203,811. Patented May 21, 1878.

Fig. 1.



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3 Sheets—Sheet 2

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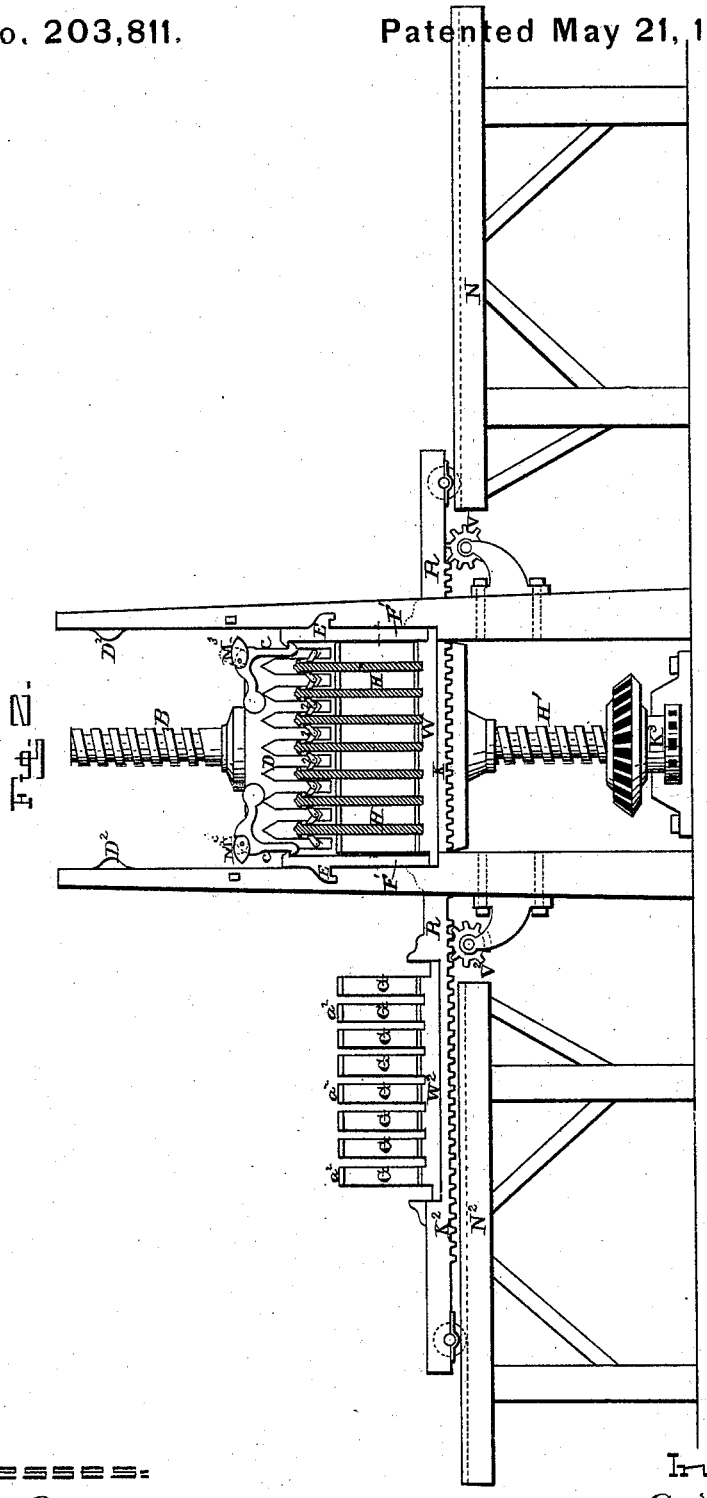
Fig. 1.



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3 Sheets—Sheet 3.

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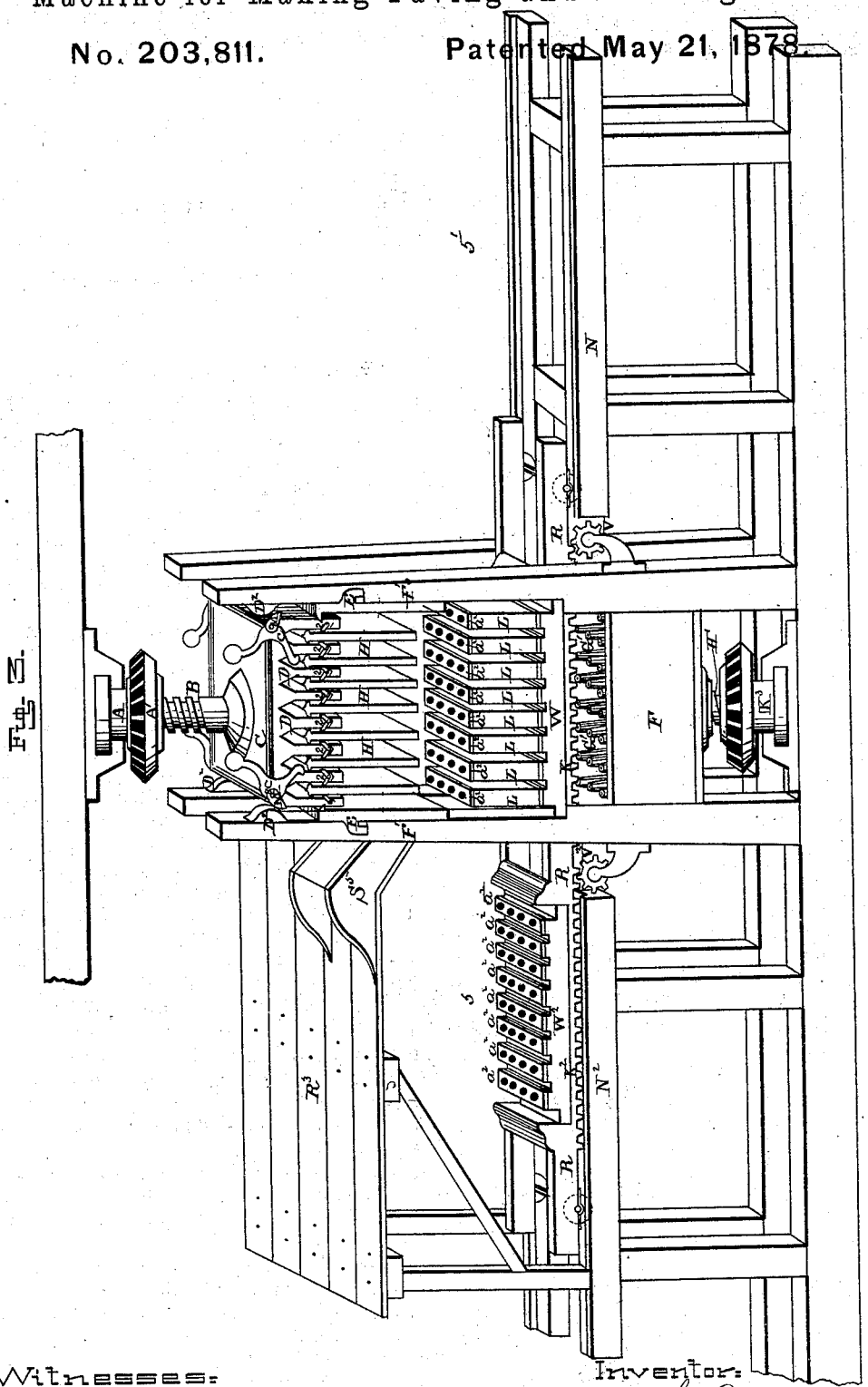
Fig. 5.



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UNITED STATES PATENT OFFICE.

ADRIAN H. AUSTIN, OF GUTTENBERG, NEW JERSEY.

IMPROVEMENT IN MACHINES FOR MAKING PAVING AND BUILDING TILES.

Specification forming part of Letters Patent No. **203,811**, dated May 21, 1878; application filed April 9, 1878.

To all whom it may concern:

Be it known that I, A. H. AUSTIN, of Guttenberg, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Tile-Machines; and I 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 which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in tile-machines.

It consists in the arrangement and combination of parts, whereby tiles, hollow blocks, and bricks can be rapidly and cheaply made from concrete cement, clay, or other materials, as will be more fully described hereinafter.

Figure 1 is a vertical cross-section of my invention. Fig. 2 is a longitudinal vertical section, and Fig. 3 is a vertical longitudinal perspective view.

The driving-power, from any suitable source, is applied from the pulley M, on the main shaft B^2, to the loose pulley, which forms one-half of the clutch N, the said loose pulley being made to move horizontally back and forth upon its shaft by means of the levers R. When the two parts of this clutch N are in gear, the nut A is made to revolve through the beveled pinion P, which gears with the large beveled wheel secured thereto.

The beveled wheel A′ causes the screw B to revolve and adjust the plate C, secured to its lower end, vertically up and down, and, through the plate, the plungers D, secured to its under side. When these plungers have been raised to a sufficient height, the loose pulley is thrown out of gear with the clutch N by the lever R.

The nut A is movably attached to the under side of a hanger or bearing, I, and can be locked in any desired position by means of a pawl, Y, which catches in ratchets on its top.

A mechanism substantially the same as above described is employed to operate the lower screw H′ and nut K^3. Upon the top of the screw H′ is secured the bottom and sides of the molds F, and upon the top of this bottom are secured the cores G, that produce the hollows in the blocks or tiles. The bottom and sides F, as one piece, are made to descend by the screw until they strike the pivoted cam or lever *a a*, which is connected by a connecting-rod with the crank *h h*, which crank is connected with a clutch, T, on the shaft *t*. This clutch T receives motion from a belt which passes from a pulley, S, on the shaft B^2. Upon this shaft *t* are the pinions V, which mesh with the racks K K^2, and move the platform R back and forth, and, with the platform, the two perforated bottoms W W^2 of the mold.

As the teeth on the rack do not extend along the whole distance, as seen in Fig. 2, the pinions V run out of gear at the moment the perforated bottom W is in its position, directly under the plate C and plungers D and directly over the bottom F. At the same time the movable platform R, by means of the pinions V, as described, move the other perforated bottom, W^2, upon which the blocks or tiles G have been pressed or molded, upon the tramway N^2, so that the rack K^2 is in gear with the pinion V^2. When this is the case, the rack and pinion will move the platform backward, when the clutch X is thrown into gear by the projection b^3 on top of the plate C, when the plate is drawn upward by the screw B until the projection b^3 strikes the cam a^3. This cam is connected by suitable rods and levers with the clutch X, as shown by dotted lines, Fig. 1, so that they have a simultaneous movement.

The two clutches T X are thrown out of gear by means of a spring, X^2, which acts as soon as the pressure is removed from the cams *a* a^3.

The screw B and plate C, with plungers D, are lowered by means of the clutch N^2 being thrown into gear, by means of the lever R^2, with the clutch N^4.

The ends F of the mold are raised by means of movable automatic catches *c*, attached to each of the four corners of the plate C, and which catches are so arranged that, as the screw B is raised, they catch under a flange on the inside upper edge of the ends F′, and raise them until the cams M^3 on the catches *c* strike the projections D^2 on the uprights, and so free the catches *c*. The ends

F′, thus freed, fall, so that the projections E on the outer edges of the ends F′ catch upon the pawls 3, and suspend them until the platform has been run out and an empty perforated bottom is in position, as described. Then the pawls are removed by means of the lever-bar 4 and cranks and connecting-rods 5, pressing down the long arms of the pawls 3, as shown in Fig. 1, thus allowing the ends F′ to fall into position on the perforated bottoms W^2 or W.

The cams M^3 on the catches *c c* are free to move up when the catches *c c* move downward, so that after having passed above the projections D^2 they raise up, as shown by dotted lines, so as to allow a free passage in the downward movement of the screw. The catches, after being freed, fall into position by the action of a weighted arm.

The divisions between the blocks or tiles are formed by the plates H, of any suitable material and size, and these plates are moved upward with the screw B by means of suitable pawls 2 at the lower ends of the plungers D, which pawls are moved outward by suitable springs, so as to catch under the flanges on the upper edges of the plates.

The operation of my machine is as follows: The molds are placed in position, and the concrete or other material is fed through the chute S^5 from the platform R^3. The perforated plates a^2 a^2, having holes through them of the size required, are placed in the molds upon the concrete between the partitions H. Power is then applied to the screw B by means of the lever-bar R^2, as described, which lowers the plungers D upon the plate a^2, and presses them down between the divisions H until the concrete has attained the desired compactness. The clutch N^2 is then thrown out of gear by a reverse action of the lever R^2. The clutch N is then thrown into gear by lever R, so as to raise the screw B and plungers D, and with them the divisions H H and ends F′ of the molds. These are raised until the ends F′ are freed by the action of the catches *c*, as described, and allowed to fall on the pawls 3. The pawl Y is then allowed to fall into the ratchet in nut A and so hold it, and thus the plungers and divisions and ends are suspended at a sufficient height to allow a free passage of the platform with the blocks or tiles upon it. The bottom F, with the cores G′ and sides F′, are then lowered, as described, by means of the screw H and nut K^3, until the clutch T is thrown into gear by the cam *a*. This moves the platform R, by means of the rack and pinion, so that the perforated bottom W, with the blocks or tiles L just made, passes from under the screw to 5 on tramway N, and at the same time the other perforated bottom, W^2, is brought into position under the screw B. The mold is now ready to be put together again, and this is done by raising the screw H′, and with it the sides F′ and cores G, the cores G passing up through the perforated bottom W^2, as shown. A similar pawl to Y in nut A holds the nut K^3, with the bottom and cores of mold, in position, as shown. The divisions H are now placed in the grooves between each row of perforations on the perforated bottom W^2. The ends F′ of the mold are dropped into place on the bottom of the mold by relieving the pawl 3, as already described. The concrete or other material is now supplied, as before, the perforated plates a^2 are placed on it, and the screw B lowered. While this is being done the blocks or tiles have been removed from the perforated bottom W. Having pressed this lot of blocks or tiles, we have to lower the bottom, cores, and sides first, and then raise the ends, plungers, and divisions, so that the projection b^3 on the plate C raises the cam a^3 so that it throws the clutch X into gear, as described, and causes the return movement of the platform.

The plungers, cores, and divisions are detachable, so that any sized or shaped block, tile, or brick can be made by this machine by having any sized or shaped plungers and cores.

Having thus described my invention, I claim—

1. The division-plates H, having flanges on their upper edges, in combination with the spring-catches for elevating them, substantially as shown.

2. The perforated plates a^2, for placing upon the top of the cement while it is being compressed, substantially as described.

3. The combination of the plates a^2 and the division-plates H, substantially as set forth.

4. The combination of the carriage R, having racks provided with teeth that are arranged in divisions, whereby the pinions V will be thrown out of gear just as another set of molds are moved into position under the plungers, substantially as specified.

5. The plate C, provided with cam b^3, in combination with the cam a^3 and the connecting devices, whereby the clutch X is thrown into gear, substantially as shown.

6. The combination of the screw B, plate C, catches *c*, and ends A, substantially as described.

7. The combination of the plate C, catches *c*, cams M^3, and projections D^2, substantially as set forth.

8. The combination of the screw B, plate C, plungers D, and plates a^2 with the screw H′ and bottom F, substantially as specified.

9. The combination of the cam *a*, lever *h*, clutch T, spring, and connecting-rods with screw H′ and bottom F, substantially as shown.

10. The combination of the cams 3, connecting-rods and levers 5, and lever 4 with the ends F′, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 1st day of April, 1878.

ADRIAN H. AUSTIN.

Witnesses:

DANIEL H. WHILLDIN,

WM. T. VAN ZANDT.