

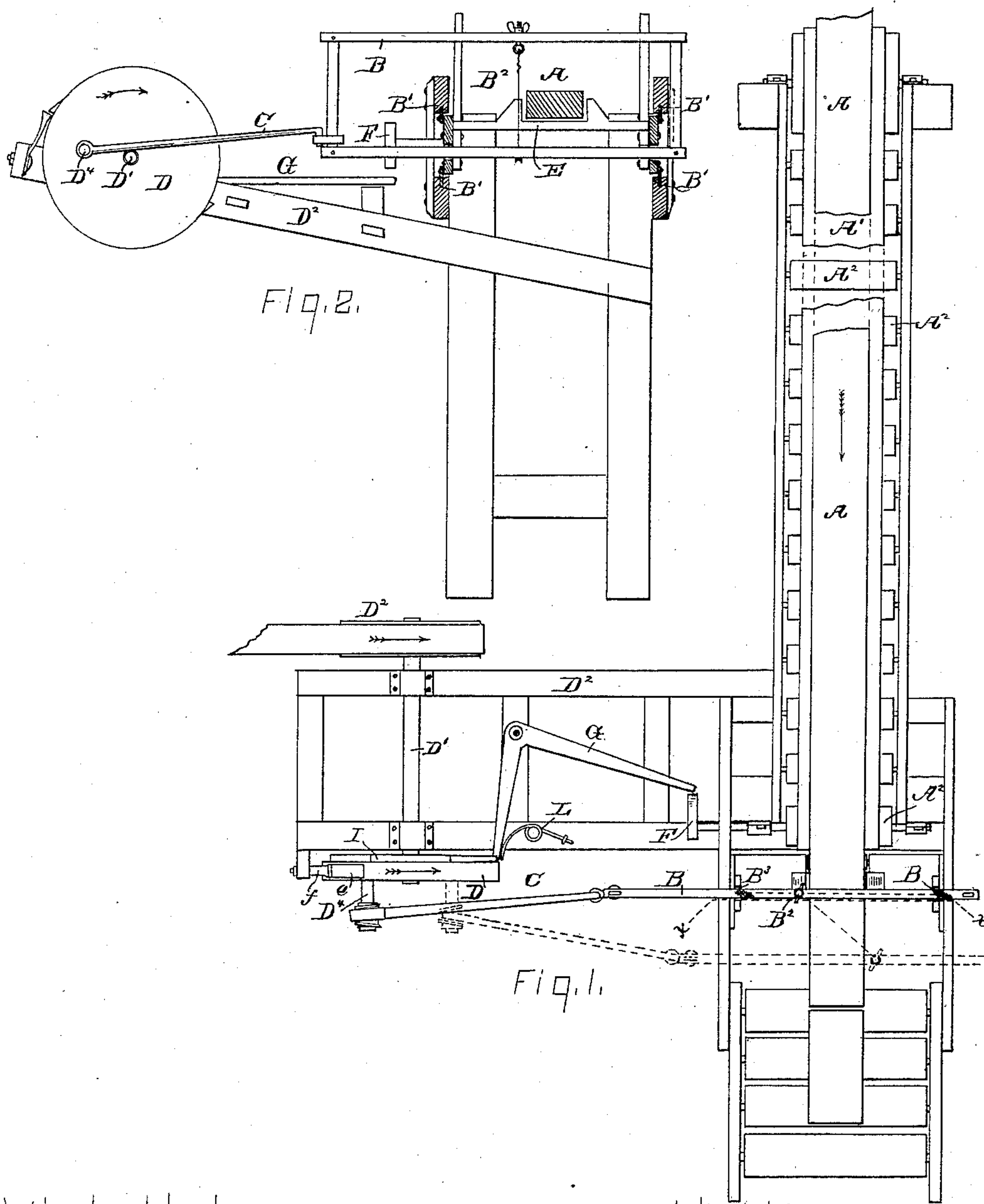
(No Model.)

2 Sheets—Sheet 1.

D. B. RAYMOND.
TILE AND BRICK MACHINE.

No. 336,434.

Patented Feb. 16, 1886.



WITNESSES:

Cyrus K. Lr.

Charles H. Roberts.

INVENTOR:

Daniel B. Raymond,
per Manahan & Ward
his Atty

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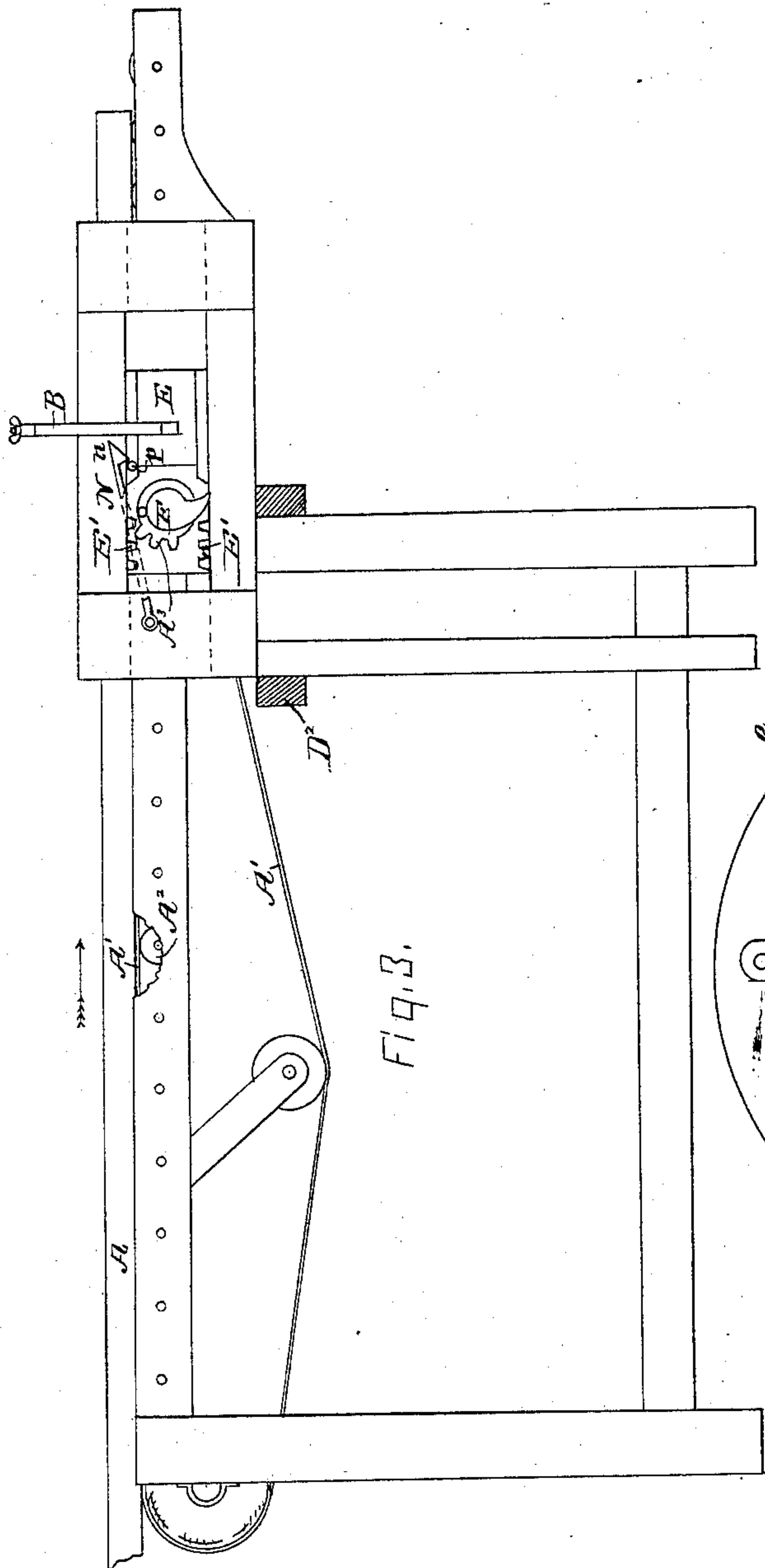


Fig. 3.

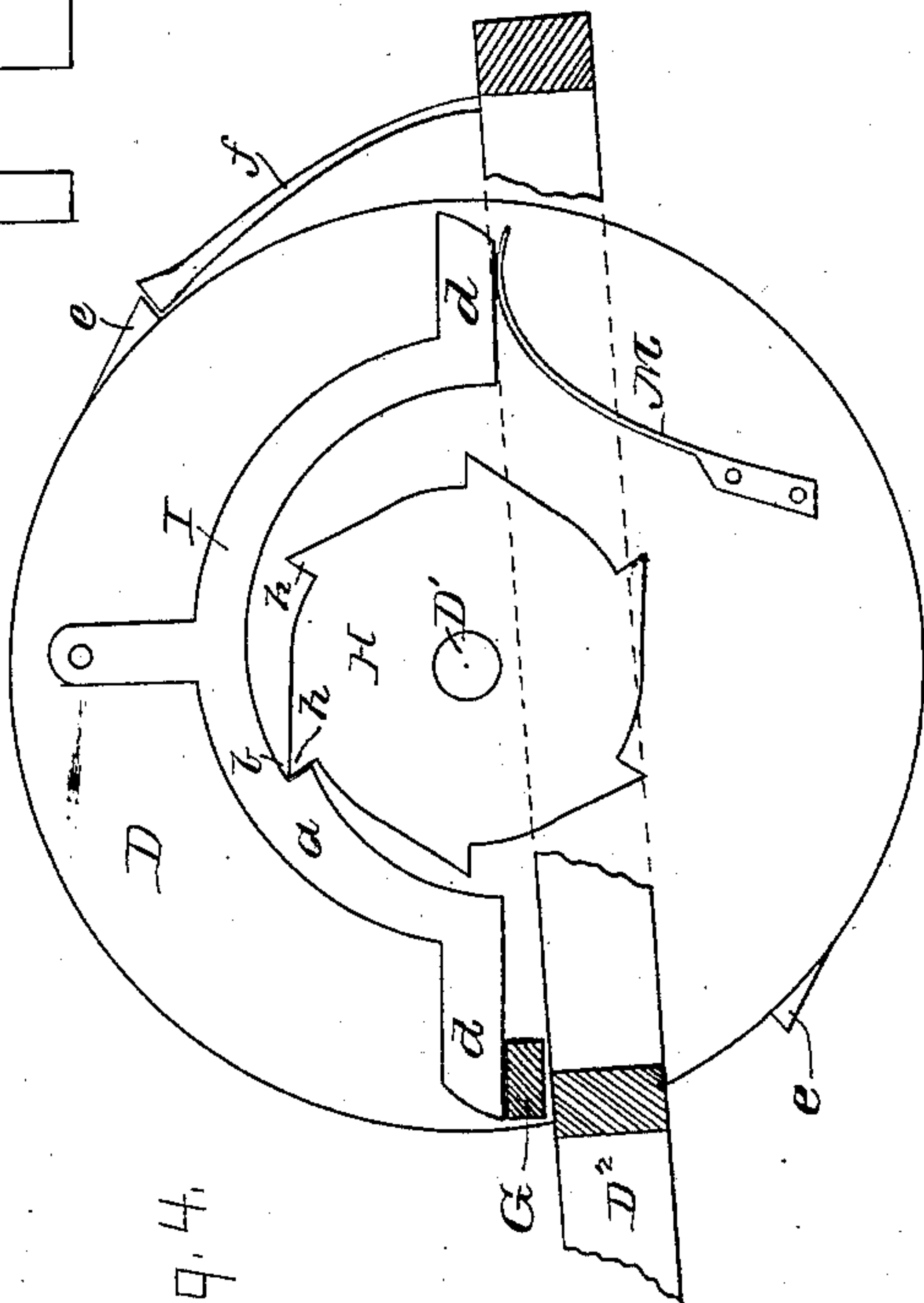


Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

DANIEL BURT RAYMOND, OF DIXON, ILLINOIS.

TILE AND BRICK MACHINE.

SPECIFICATION forming part of Letters Patent No. 336,434, dated February 16, 1886.

Application filed July 29, 1885. Serial No. 172,928. (No model.)

To all whom it may concern:

Be it known that I, DANIEL BURT RAYMOND, a citizen of the United States, residing at Dixon, in the county of Lee and State of Illinois, have
5 invented certain new and useful Improvements in Tile and Brick 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 ap-
10 pertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention has reference to machines for
15 making tile and brick, and pertains more especially to certain novel mechanisms for automatically cutting such tile and brick into suitable or required lengths as the material is *in transitu* from the mixer.

20 To cut the tile and brick into requisite lengths by hand is too tedious and expensive, and in seeking to accomplish such cutting by automatic machinery two difficulties are met.

First. The cut must be transversely of the
25 movement of the material, and must be made while such material is in motion. This necessitates a lateral movement of the cutting-edge during the process of cutting, or the ends of the finished product will be beveled, instead
30 of square, as they should be.

Second. The progress of the plastic material as it is forced out of the mixer is variant, owing to variations in the quantity in such mixer and in the density of such material, so a cut-
35 ting-edge which should be actuated at regular intervals of time, regardless of the velocity of the material, would result in producing different and divergent lengths in the articles severed.

40 In my invention it is the aim to provide automatic mechanism which shall not only allow the cutter to move with the progress of the material during the process of cutting, but shall also be governed as to the frequency of cuts by
45 the coincident speed of such material, thus meeting and avoiding both of the difficulties referred to.

In the drawings, Figure 1 is a plan of a machine embodying my invention. Fig. 2 is
50 a cross-section thereof in the line *x x* of Fig. 1. Fig. 3 is a side elevation of the mechanism for carrying the tile or brick before and after cut-

ting. Fig. 4 is a side elevation of the wheel which drives the cutting-knives, exhibiting the means for producing intermittent rotation 55 of such wheel, showing the yoke I about to be disengaged from the wheel H.

A represents the stream of material to be cut transversely into desired lengths. The mixer is not shown, but the stream of plastic 60 material A is forced therefrom through an aperture corresponding in shape to the conformation desired, and carried on a rubber apron, A', which is in turn supported and carried on rollers A². 65

B is a vertical reciprocating gate, Fig. 2, which carries the wire or cutting-edge B², and the scope of whose lateral deflections during the process of cutting is shown by dotted lines in Fig. 1. The gate B is driven by a pitman, 70 C, pivotally attached to the outer lower corner of such frame, and seated at its outer end in a crank-wrist, D⁴, fixed in the outer face of the wheel D. The latter wheel is easily seated on the shaft D', which latter is driven continuously 75 by the pulley D², or in any other suitable manner. The gate B is carried laterally during the process of cutting, in a movable frame, E, Fig. 3, suitably supported in the frame of the machine, so as to reciprocate freely in ways 80 B' in the line of movement of the tile or brick material, and such gate is guided in ways B³, formed transversely in such frame E.

On the lower face of the upper side plate of the frame E, and on the upper face of the ad- 85 jacent lower side plate of such frame, are fixed the gear-racks E', in such relations to the outer roller, A², of the rubber belt A', which roller is provided on one side with a like gear-rack, A³, that such last-named gear-rack A³ will, at 90 each revolution of the roller A², engage alternately both gear-racks E' on the frame E. Thus one half-revolution of the roller A² will, by engagement with the upper gear-rack E', move the frame E outward, and the other half 95 of such revolution will by like engagement with the lower gear-rack E' move the frame E inward. Gear-racks A³ and E' are at each end of the roller A².

In order that the gate B may move trans- 100 versely of the tile and brick material, so as to cut the same coincidently with the outward movement of the frame E, I provide the following mechanism:

To the lower end of the roller A^2 , next to the pitman C, and outside of the journal-bearing of such roller, is affixed a cam, F, having a convex face. A bell-crank or trip lever, G, is pivoted horizontally at its angle upon the frame D^2 , which supports the shaft D' , with its inner end in such relations to the convex side of the cam F that the backward movement of the latter will strike such inner end of the lever G and drive it backward, and thereby draw the other end of such lever toward the roller A^2 . A ratchet-wheel, H, is rigidly seated on the shaft D' close to the inner face of the wheel D. A yoke, I, is pivoted at its center on the inner face of the wheel D, and provided with a semi-annular bow, a , to extend around and over half of the ratchet-wheel H, and is also furnished with a recess, b , in the wall of such bow, to intermittingly engage a ratchet, h , on the wheel H. The extreme ends of the yoke I are turned horizontally outward, so as to form lugs d when the wheel D is in a state of rest. The outer end of the crank-lever G is interposed between the frame D^2 and the then lower face of one of the lugs d of the yoke I. In this condition the recess b of the bow I is forced and held out of engagement with the ratchets of the wheel H, and the latter is free to revolve, while the wheel D remains stationary; but when such outer end of the trip-lever G is by the actions of one side of the cam F drawn toward the roller A^2 , as aforesaid, it is drawn sufficiently to release the bow I, when the recess b of such bow at once drops into engagement with one of the ratchets h on the wheel H, when the latter carries the wheel D with it. Such movement of the wheel D is but a half-revolution, because the cam F immediately releases the inner end of the trip-lever G, and a spring, L, seated on the frame D^2 , throws the outer end of the lever G outward and in position to stop and hold the opposite lug, d , of the yoke I, and thereby again disengage the recess b and allow the ratchet-wheel H to rotate and the wheel D to remain stationary. A spring, M, seated on the inner face of the wheel D, and having its free end abutting against one of the lugs d , serves to keep the yoke I in position for the actions before described. The cutting-edge B^2 of the gate B makes one cut with each half-revolution of the wheel D—that is, with each stroke of the pitman C; but after each cut (which is made while the tile or brick material is being carried forward and the gate B carried forward with it) it is necessary to carry the gate B back to its first position, and this is accomplished by the rack A^3 of the roller A^2 engaging the lower gear-rack, E' , on the movable frame E, which carries the gate B. During the carrying backward of the gate B the latter, as well as the pitman C and wheel D, are otherwise at rest, and this carrying back of the gate B necessitates the stopping and holding of the wheel D about half of the time. It will be seen that

the wire or cutting-edge B^2 is carried back alternately on each side of the material to be cut, and is therefore in position to cut at each stroke of the pitman C, and to be carried with the material during the process of cutting. It will also be seen that there is one cut to each revolution of the end roller, A^2 , and as the movement of the periphery of such roller is previously coincident with and at the same speed as that of the rubber apron A' , and the movement of the latter caused by and the same as that of the material A, it is obvious that the circumference of the roller A^2 will be the distance between the cuts of the wire B^2 , and therefore to change the cuts to make variant lengths of the tile or brick it is only necessary to use a roller, A^2 , having a circumference equal to the desired length. Thus the length cut will be uniform regardless of the variance in the speed of the material. Opposite lugs, e , on the periphery of the pitman-wheel D, engaged by the end of a spring, f , seated in the rear of such wheel on the frame D^2 , prevent any retrogressions of the wheel D.

I have had one of these machines in continuous practical use for many months, and it operates very successfully, cutting the material with straight ends and in any desired uniform lengths. A latch, N, is pivoted at one end on the frame of the machine, and a pawl, n , on the lower side of such latch, engages a stud, p , on the frame E when the latter is at the limit of its instroke, and holds such frame until the gear A^3 is about to engage the upper gear-rack, E' , when the first cog of the gear A^3 lifts and disengages such latch.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. The combination of wheel D, roller A^2 , provided with a gear-rack on one side thereof, and the frame E, having gear-racks projecting inwardly from the upper and lower side plates of the frame, as and for the purpose set forth.

2. The combination of the roller A^2 , provided with the gear-rack A^3 , and the frame E, provided on the lower face of the upper side plate and the upper face of the lower side plate, respectively, with the gear-racks E' , substantially as shown, and for the purpose mentioned.

3. The combination of the wheel D, yoke I, provided with recess b , and the ratchet-wheel H, seated on shaft D' , substantially as shown, and for the purpose described.

4. The combination of the roller A^2 , provided with the actuating-cam F, the trip-lever G, spring L, wheel D, yoke I, and ratchet-wheel H, substantially as shown, and for the purpose described.

5. The combination of the roller A^2 , provided with cam F, trip-lever G, spring L, and yoke I, substantially as shown, and for the purpose named.

6. The combination of the laterally and transversely reciprocating gate B, cutting-edge

or wire B², pitman C, crank-wrist D⁴, and means for driving the same, wheel D, and frame E, reciprocating in the line of movement of the tile or brick material, substantially as set forth.

7. The combination of the transversely-reciprocating frame E, means for reciprocating said frame, the laterally and transversely reciprocating gate B, provided with the cutting-edge or wire, and means for actuating said gate during the outward movement of the frame, substantially as shown, and for the purpose specified.

8. The combination of the rubber belt A', roller A², gear-rack A³, frame E, wire B², gear-racks E', cam F, lever G, ratchet H, yoke I, wheel D, pitman C, and spring L, whereby the material is cut into lengths corresponding to the circumference of such roller, substantially as shown, and for the purpose mentioned.

In testimony whereof I affix my signature in presence of two witnesses.

DANIEL BURT RAYMOND.

Witnesses:

ALBERT JOHNSON,
ARVENE S. HYDE.