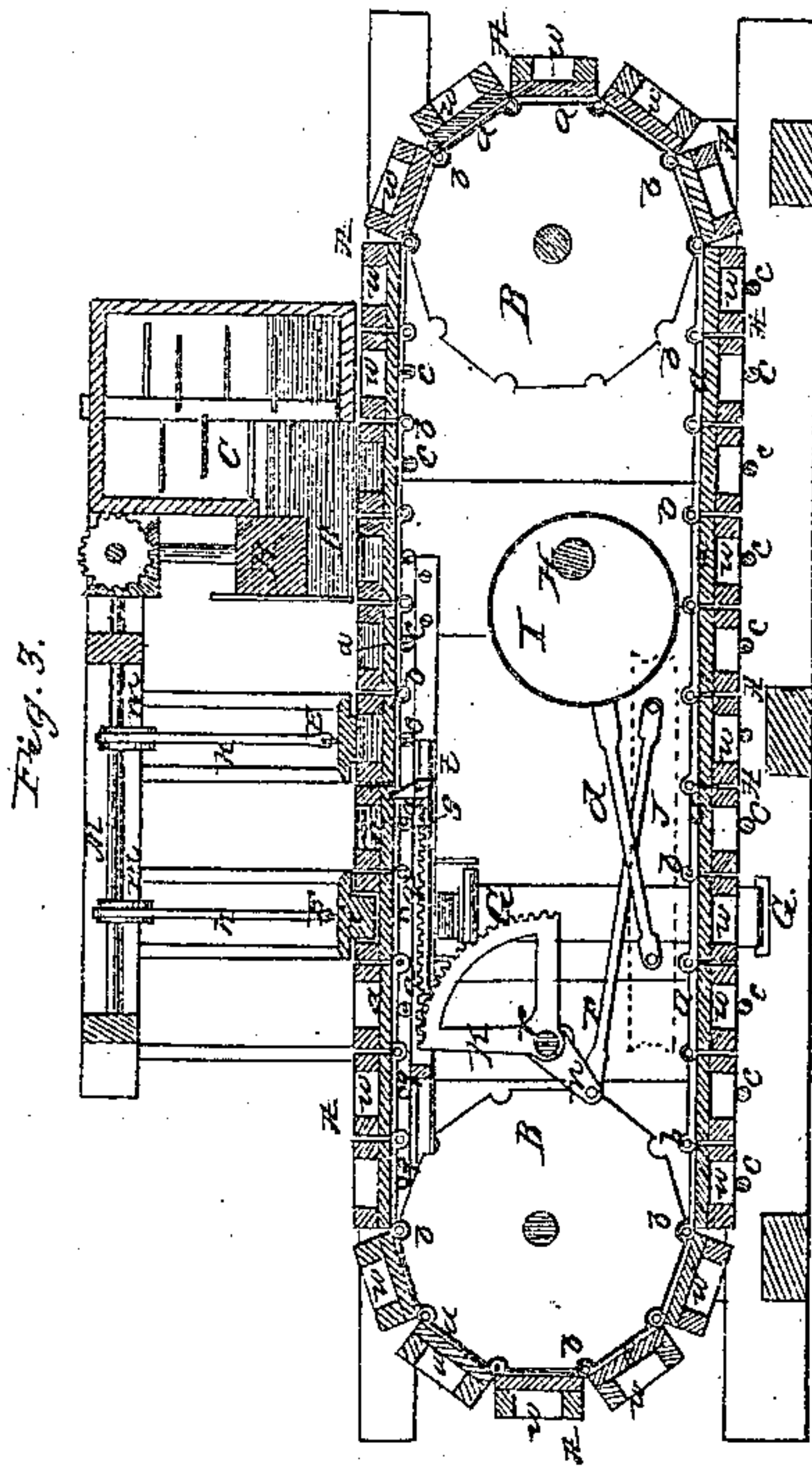
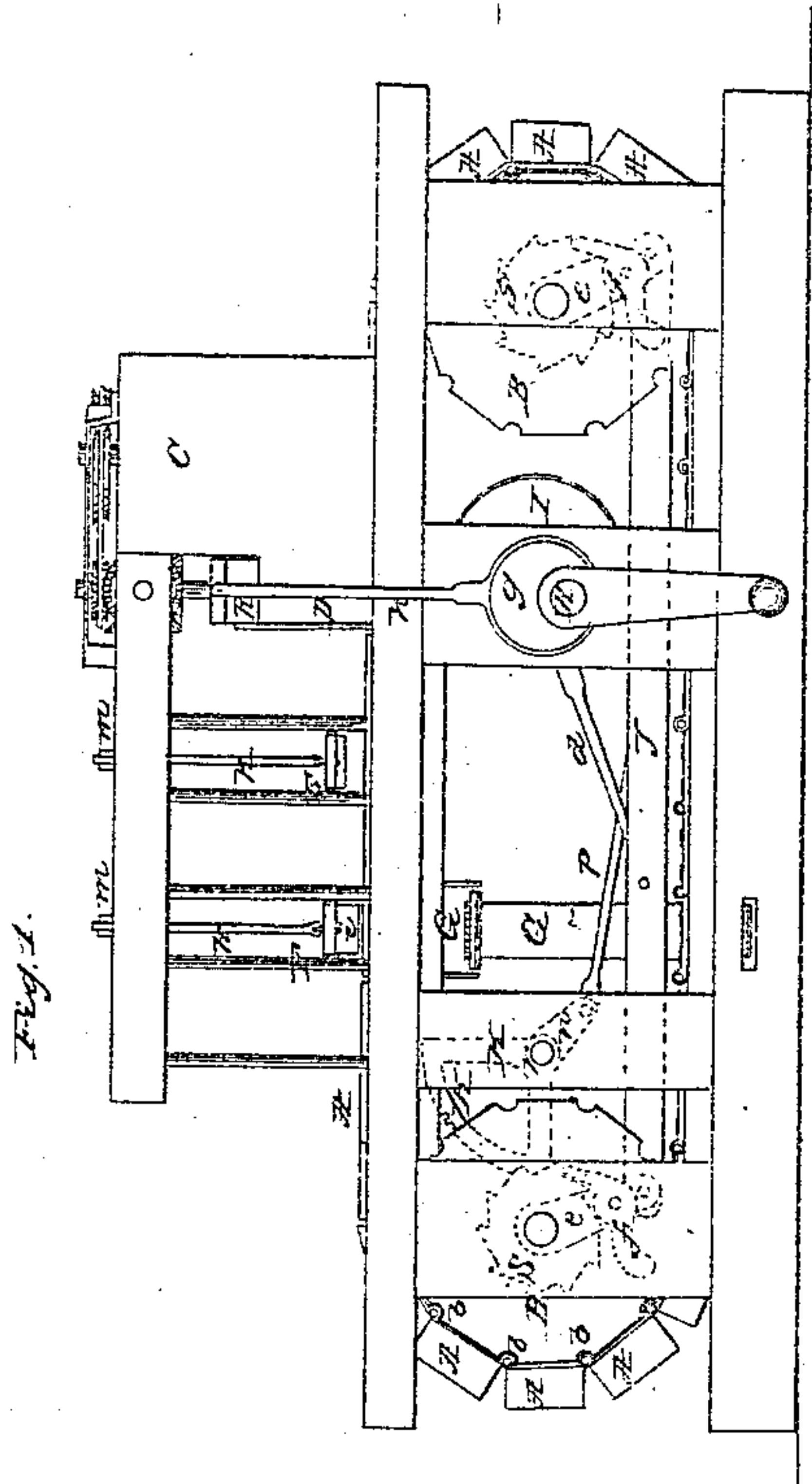
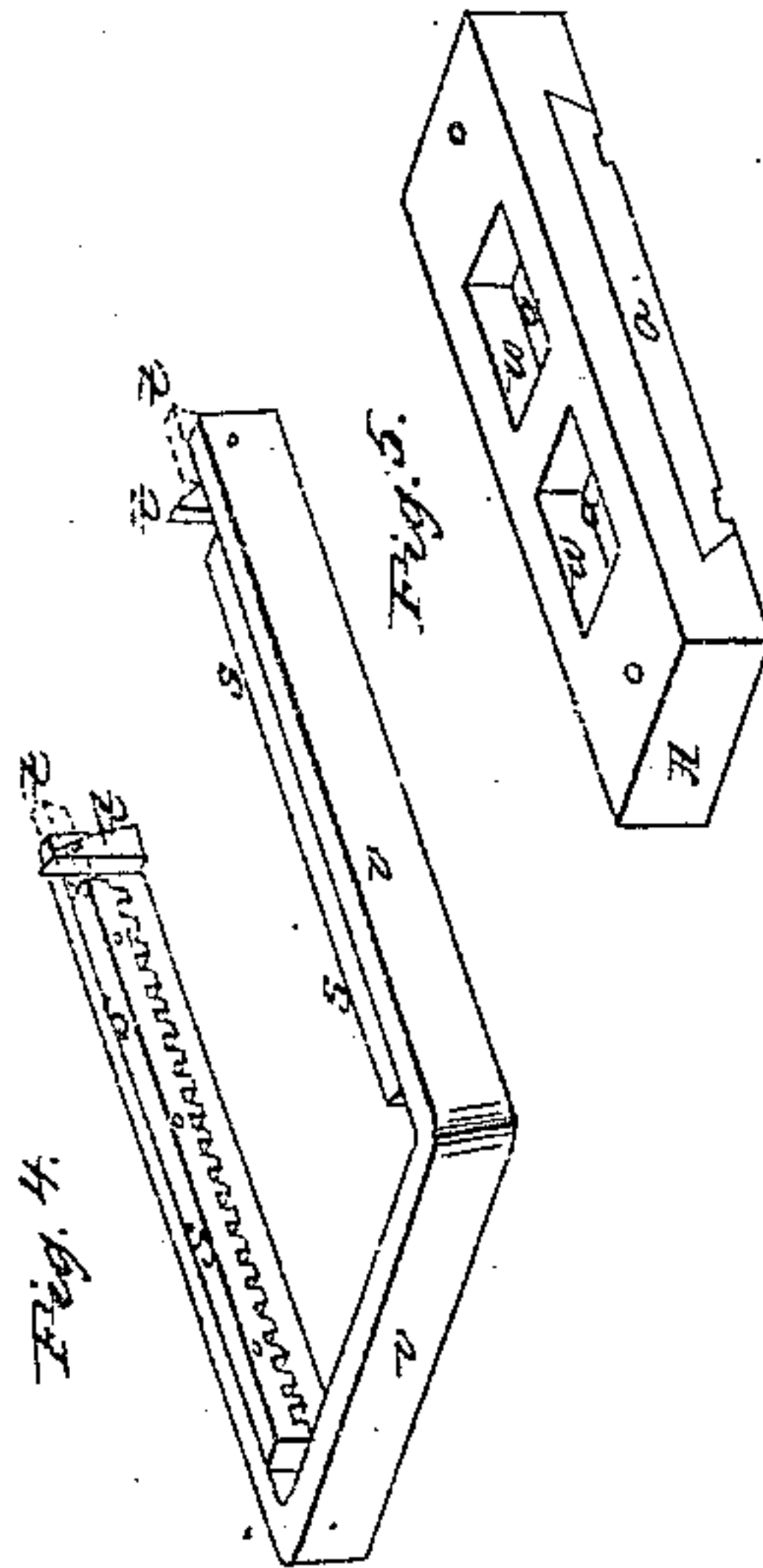
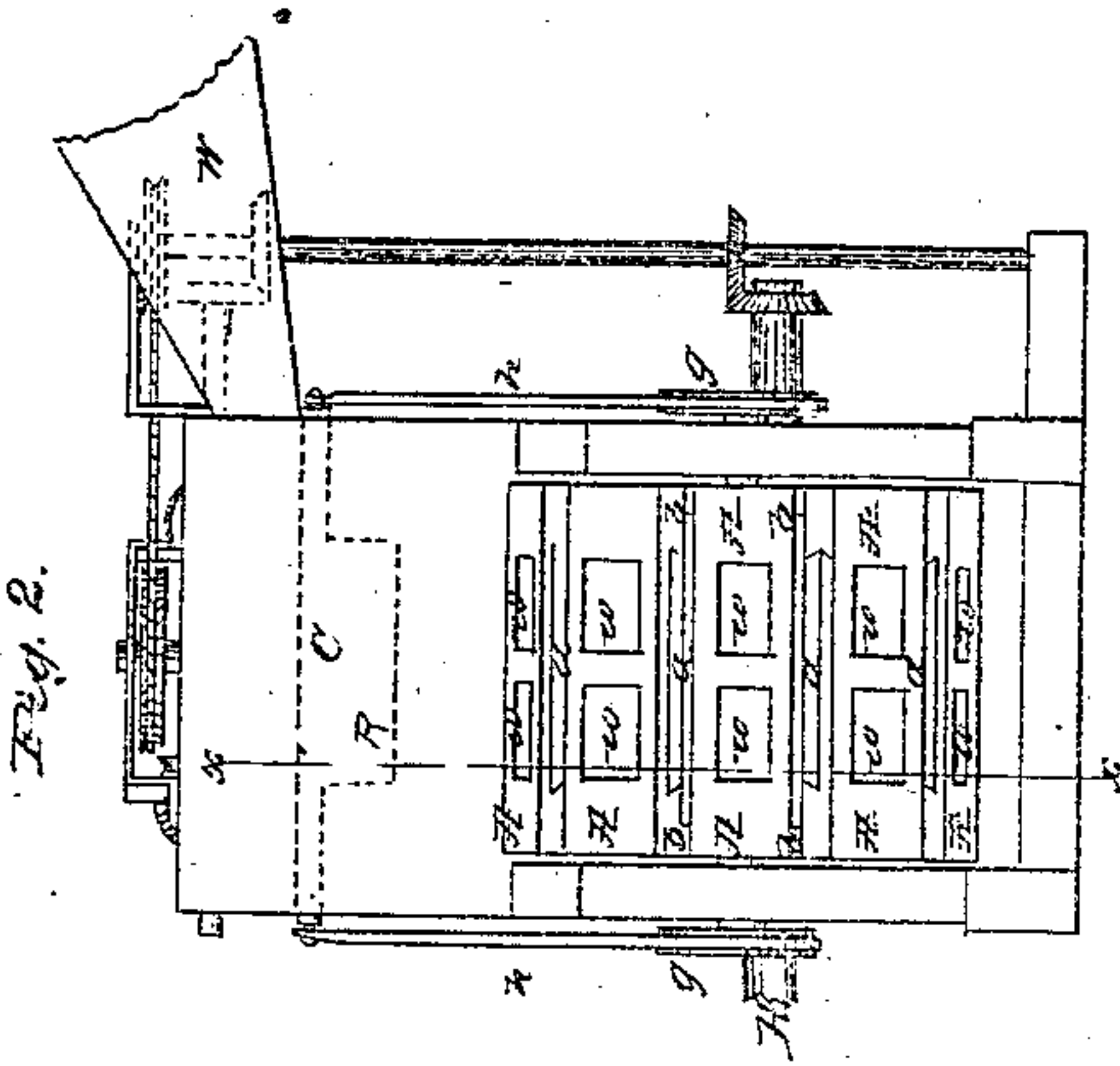


P. CLARK.
BRICK MACHINE.

No. 82,492.

Patented Sept. 29, 1868.



Witnesses
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PETER CLARK, OF BROOKLYN, NEW YORK.

Letters Patent No. 82,492, dated September 29, 1868; antedated September 24, 1868.

IMPROVED BRICK-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, PETER CLARK, of the city of Brooklyn, in the county of Kings, and State of New York, have invented a new and useful Machine for Making Bricks; and I do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation,

Figure 2 an end view, and

Figure 3 a longitudinal section, in the line $x x$ of fig. 2, of my improved machine.

Figure 4, a perspective view of the sliding racks and connecting-bar, whereby the bottoms of the moulds are shifted, and

Figure 5 a perspective view of one of the mould-frames of my machine detached.

Similar letters of reference indicate like parts in all of the figures.

The nature of my invention consists in the combination of an endless chain of moulds provided with sliding bottoms, and revolving beneath a suitable pug-mill and under-plungers for charging the moulds, and compressing the clay into and removing the fresh bricks from the same, with suitable shafts, cams, levers, and other mechanism for operating the plungers and imparting an intermittent movement to the chain of moulds.

Also in the combination, with the same mechanism, of toothed sectors upon a rocking-shaft, engaging sliding racks operating to remove the sliding bottoms of the charged moulds, and transfer them to the moulds last discharged.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The brick-moulds of my machine are formed in frames, A A A, made of iron or wood, or of the two combined, and may be lined with brass or other metal that will not rust.

These mould-frames, A, may be larger or smaller, according to the capacity of the machine. In one capable of making two hundred thousand bricks in ten hours, each frame should contain moulds for twenty bricks. They are each made with a sliding bottom, a , figs. 3 and 5, which is removed from the mould-frame just before the bricks are to be delivered therefrom, as will be hereinafter shown. They are fastened together by strong hinges b to form an endless chain, fig. 3, which is made to pass around two polygonal wheels B B, one at each end of the machine. These wheels may have more or less angles and sides, each measuring the same as the width of one of the mould-frames A. At each angle is a groove or notch, into which the circular projections of the hinges b catch and closely fit to keep the mould-frames from slipping upon the wheels.

The mould-frames A thus connected in an endless chain, are supported between the wheels B B by means of friction-rollers c , fig. 3, at the top and bottom of the machine, and they pass in succession under the pug-mill C, mortar-box D, and plungers E F, and deliver the bricks upon an endless belt, G, carrying them to a suitable drying-oven.

The machine is operated by means of a main driving-shaft, H, extending across between the upper and lower planes of movement of the chain of moulds, at right angles thereto, and properly connected with a steam-engine, or other source of motive-power.

Upon this main shaft H, near the centre thereof, is placed a large eccentric, I, whose arm, d , takes hold of a horizontal rod or beam, J, which extends from one polygonal wheel B to the other, and is supported at either end by links e , (see dotted lines in fig. 1,) pivoted thereto, and swung loosely from the shafts of said wheels B B. Thus the revolution of the main shaft H is made to impart a reciprocating movement to the beam J. Weighted payls, $f f$, (see dotted lines, fig. 1,) are pivoted at each end of the beam J, to engage in ratchet-wheels S secured to the polygonal wheels B, so that the reciprocating movement of the beam J will produce an intermittent movement of the wheels B, and each revolution of the main shaft H will turn said wheels, and consequently throw forward the chain of mould-frames just the width of one of said frames.

During the intervals of rest, the moulds in one frame are filled with clay, those in another packed, and the fresh bricks delivered from another, as shown in fig. 3 of the drawings.

The pug-mill C and mud-box D are of the common kind. They are placed over the chain of moulds at the rear of the machine, and cover the width thereof, and are supported by the frame of the machine, as shown in the drawings. Under these the moulds pass in constant succession, when the machine is in operation.

The pug-mill C is provided with knives and a broad wiper at the bottom, which mix and force the tempered clay downwards and forward into the mud-box D, and, as the moulds pass underneath the same, their complete compact filling is secured by a pressing-plate or plunger, R, working vertically therein between suitable guides.

This charging-plunger R is operated by two pitman-rods *h h*, pivoted at either end thereof, (see fig. 2,) and connected to two small eccentrics placed upon the main driving-shaft H, which is situated immediately below said plunger R, as shown in the drawings, figs. 1 and 3.

From the mud-box D the moulds pass forward, in the movements of the endless chain, under a second plunger, E, which presses the individual bricks in each mould. In the next two movements they pass under a third plunger, F, provided with followers *i i*, which fall into the moulds, and gently press the fresh bricks out of them, and cause them to drop upon the endless belt G, as illustrated in fig. 3 of the drawings.

This endless belt G carries the bricks into the drying-oven, where one is used in connection with the machine, or, should the machine be used without a drying-oven, the bricks may be delivered upon boards provided for such purpose, which may be taken away by hand from off the endless belt.

The plungers E F are made adjustable upon their connecting-rods by means of thumb-screws, or other adjustable fastening-devices, so that they may be made longer or shorter in movement, as the case may require, either in delivering the bricks or in pressing the clay into the moulds.

These plungers are all operated by connecting-rods K K, from cams *m m* upon horizontal-revolving shafts M in the framework above, and are stayed and guided in their movements by rods or ways at either end.

The sliding bottoms *a a* of the mould-frames A are removed successively as they pass under the plunger F, and shifted or carried forward to the mould-frame last emptied, by means of two toothed sectors K secured upon a shaft, *r*, underneath, (figs. 1 and 3,) and provided with crank-arms *n n*, to which are pivoted connecting-rods *p*, taking hold of the reciprocating beam J.

The shaft *r* is placed in front of the plane of the plunger F, under the mould-bearing chain, and on a line with the main shaft H, and of the shafts of the polygonal wheels B B. These toothed sectors mesh into two racks *s s*, arranged to slide in ways under the mould-bearing chain, on either side thereof, and which are connected by a cross-bar, *v*, as illustrated in fig. 4, to preserve unity in their movements. The ends of said sliding racks, towards which the moulds approach in their movement, are fitted with dogs or pawls *t*, (figs. 3 and 4,) arranged to swing and catch by their own gravity, when the racks move forward, into notches cut on the under side of the sliding bottoms of the moulds, but which permit the racks to slide freely back under the same, as shown by red lines in fig. 4 of the drawings.

The length of the crank-arms *n* of the sectors K is so proportioned as that, while the mould-chain makes one movement forward at each revolution of the main shaft H, traversing a distance equal to the width of one mould-frame, the sectors make a sweep forward and back of twice this distance. Hence the sliding racks, in which the sectors engage, are made to travel forward under the mould-frames, whilst the latter are in motion, a distance equal to the width of two of them, carrying the sliding bottom of the first mould-frame forward, and transferring it to the second, leaving the former open for the discharge of bricks therefrom, and closing the latter previously opened by a similar movement, and then, whilst the mould-frames are momentarily at rest, and the bricks are being compressed therein and discharged therefrom to travel back, so that the dogs *t* may engage the sliding bottom of the next mould-frame.

The bottoms of the moulds can, if it is deemed necessary, be thoroughly sanded just before passing under the pug-mill C, and the fresh bricks may also be sanded at the top, after leaving the mill, to prevent any adhesion of the plungers E and F thereto.

The chain of mould-frames A A is supported by friction-rollers *c c* extending across beneath the same, above and below, from one side of the frame to the other. These rollers *c c* are not used under the sliding racks *s s*, but small friction-wheels, *q q*, fig. 3, are inserted in the frame on either side as an equivalent therefor. These friction-wheels are made a little smaller between the compressing and discharging-plungers E F than elsewhere, so as to let the sliding bottoms *a* of the mould-frames drop a little in order to overcome any adhesion thereof to the under side of the bricks. Small steel springs may be placed for the same purpose in the mould-frames to act upon the sliding bottoms, and relieve them from an adhesion of the clay thereto.

To prevent any displacement of the mould-frames as they pass forward, small steel springs or catches are inserted in the bottom of the ends thereof, which, at each resting-point, fall into notches made in the framework of the machine to prevent them from slipping back.

As a further precaution against any displacement of the mould-frames, as they pass under the plungers of the machine, these plungers E F may be fitted with guide-pins, on the under side thereof at each end, to fall into small grooves cut in the mould-frames, so as to guide the plungers and followers exactly to their place in the moulds.

To accomplish the sanding of the moulds, small wire sieves may be placed in the rear of the pug-mill, and so adjusted as to drop into the mould and sand the bottom thereof only. If found necessary, sieves may also be placed in front of the pug-mill to sand the upper side of the bricks.

When required, the moulds may also be brushed or washed clean of any clay adhering thereto, and also sanded as they pass down under the machine from front to rear.

In addition to the perpendicular pug-mill C, a horizontal pug-mill should be placed, at right angles to the

machine, upon the side opposite to the end where the power is applied to the main shaft, especially if the machine is a large one. The mortar having passed through this horizontal pug-mill, may be thrown out at the end next the machine, and then carried by an elevator and emptied into the hopper W, (fig. 2,) of the pug-mill on the machine itself.

The several parts of my machine may be varied in size and form, retaining the same relative size and proportions, so as to produce the same results.

The rod, *d*, connecting the eccentric, *I*, on the driving-shaft *H* with the reciprocating beam *J*, may be unshipped at pleasure, as also the gearing of the pug-mills, to allow the machine proper and the pug-mills to be worked independently of each other.

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

1. The combination, in a machine for making bricks, of an endless chain of moulds *A*, having detachable sliding bottoms *a*, with a suitable pug-mill, *C*, and with compressing and discharging-plungers *E F*, while said sliding bottoms are successively transferred from the charged moulds to those last emptied, to open the one and close the other, all substantially in the manner and for the purpose herein set forth.

2. The improved mould-frames *A*, provided with and closed by sliding bottoms *a*, and combined in an endless chain, substantially in the manner and for the purpose herein set forth.

3. The sliding racks *s s*, operated by toothed sectors *R*, and arranged to engage with and transfer the detachable bottoms *a* of the mould-frames *A* from charged moulds to those last emptied, substantially in the manner and for the purpose herein set forth.

4. The combination, of a swinging connecting-beam *J*, links *e*, and weighted pawls *f f*, with ratchets *S S* on the polygonal wheels *B B*, and the endless chain of moulds *A A*, arranged and operating substantially as and for the purpose herein described.

As witness my hand to the foregoing specification.

PETER CLARK.

Witnesses:

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MORRIS POOL.