

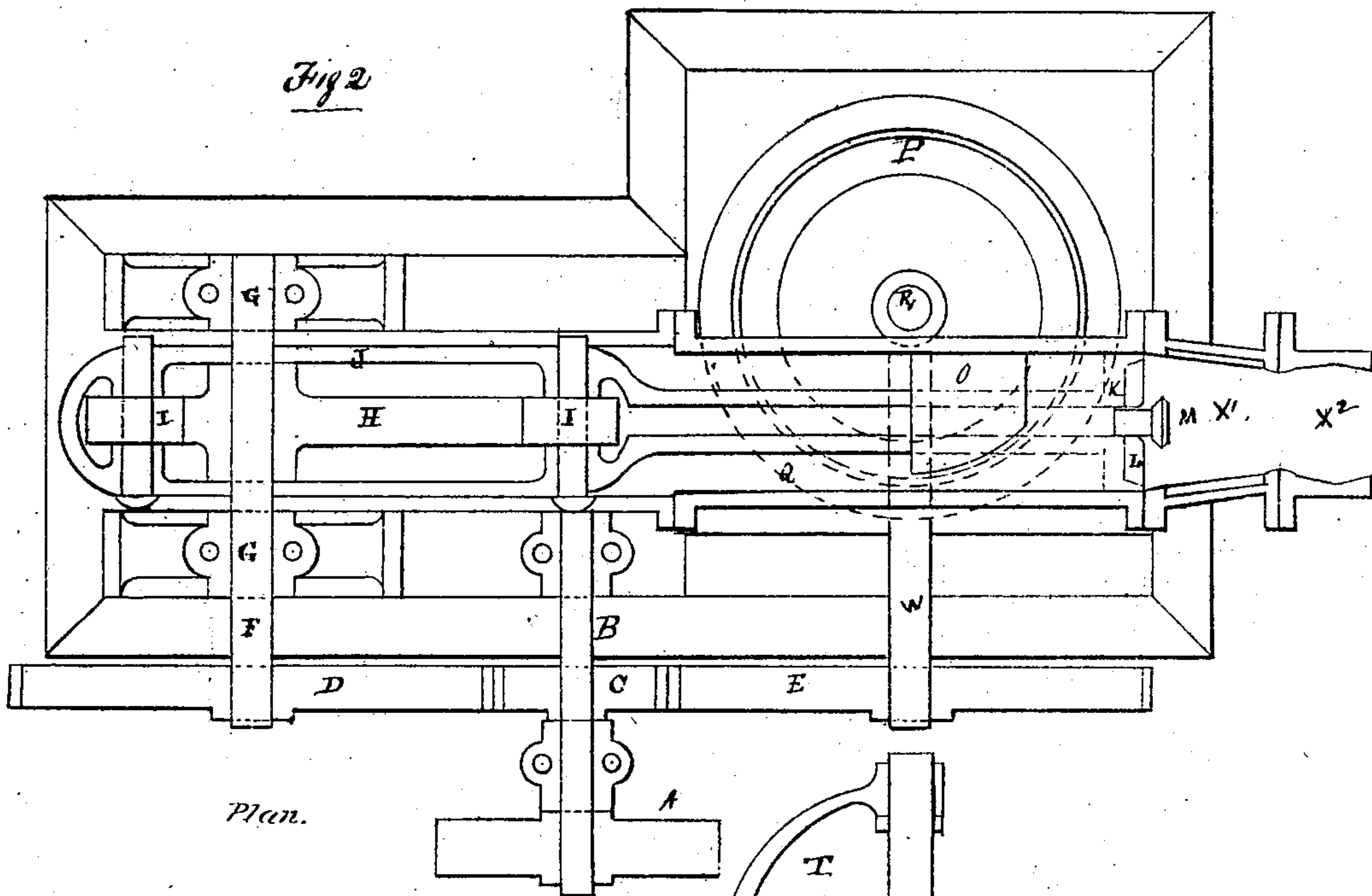
G. Scott,

Brick Machine.

No. 101,525.

Patented Apr. 5. 1870.

Fig 2

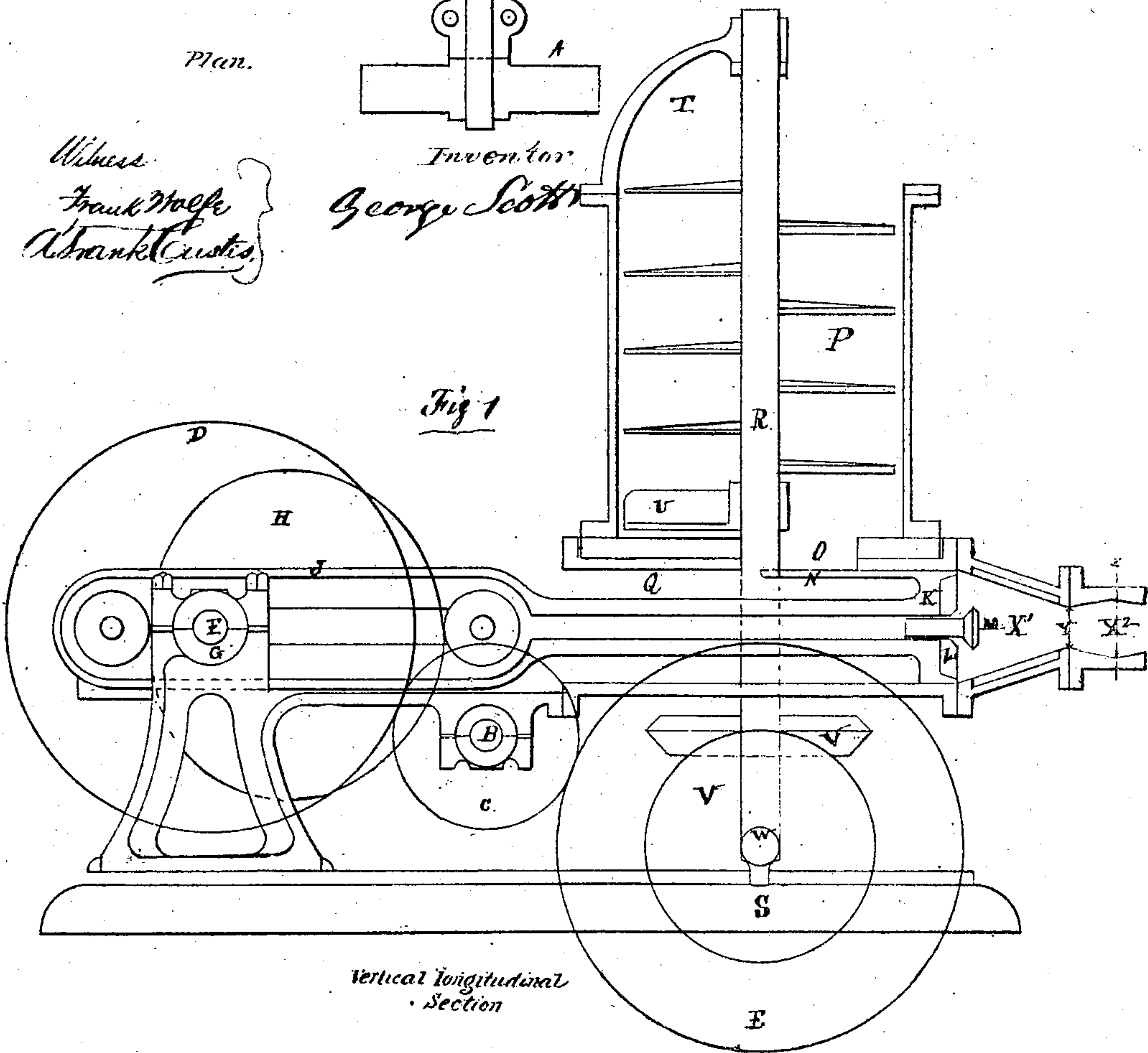


Plan.

Witness
Frank Wolfe
Abraham Curtis

Inventor
George Scott

Fig 1

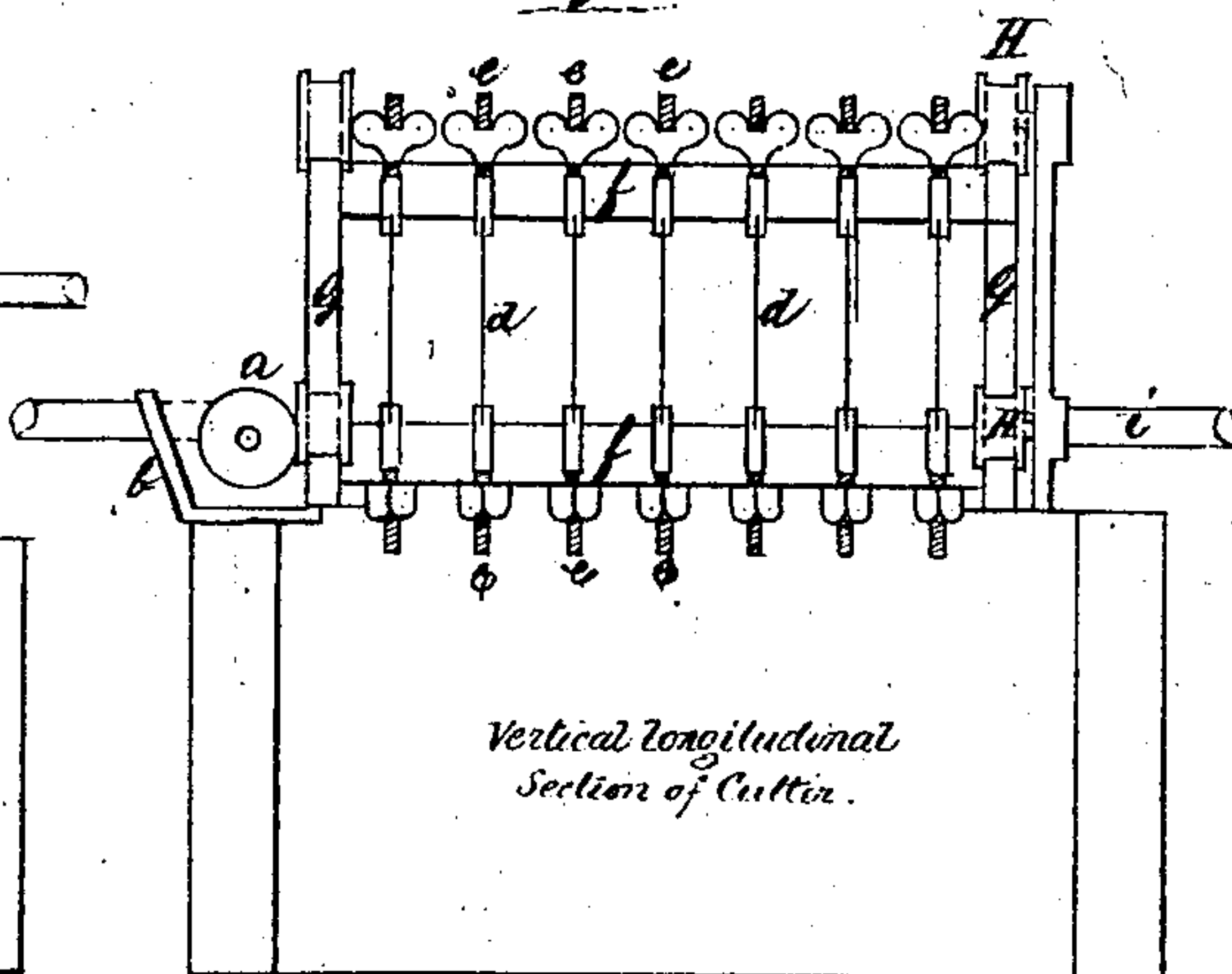


Vertical longitudinal
Section

No. 10,525.

Patented Apr. 5. 1870.

Fig 6



*Vertical longitudinal
Section of Cuttle.*

Winnipeg

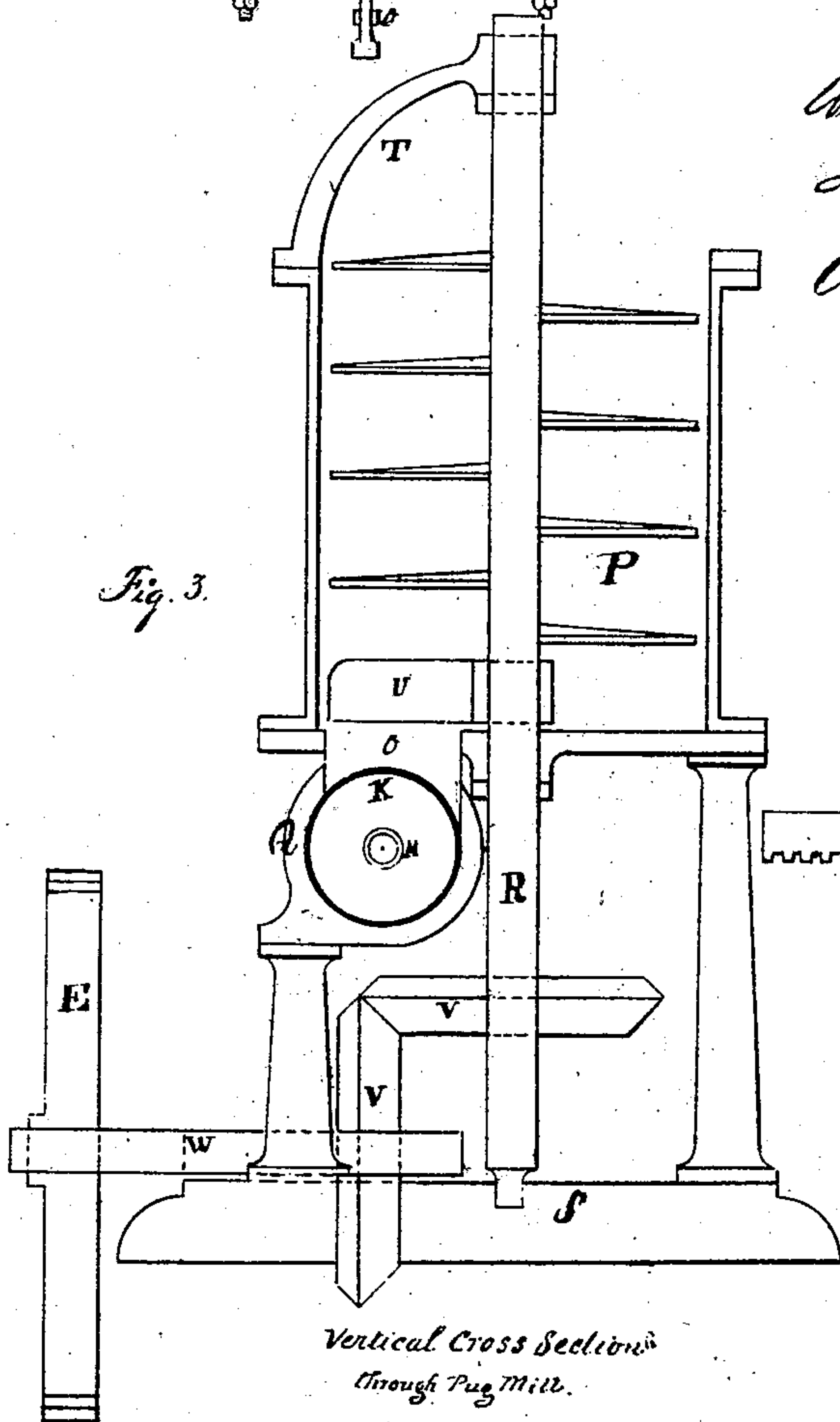
Frank Wolfe

Frank. Curtis

Inventor:

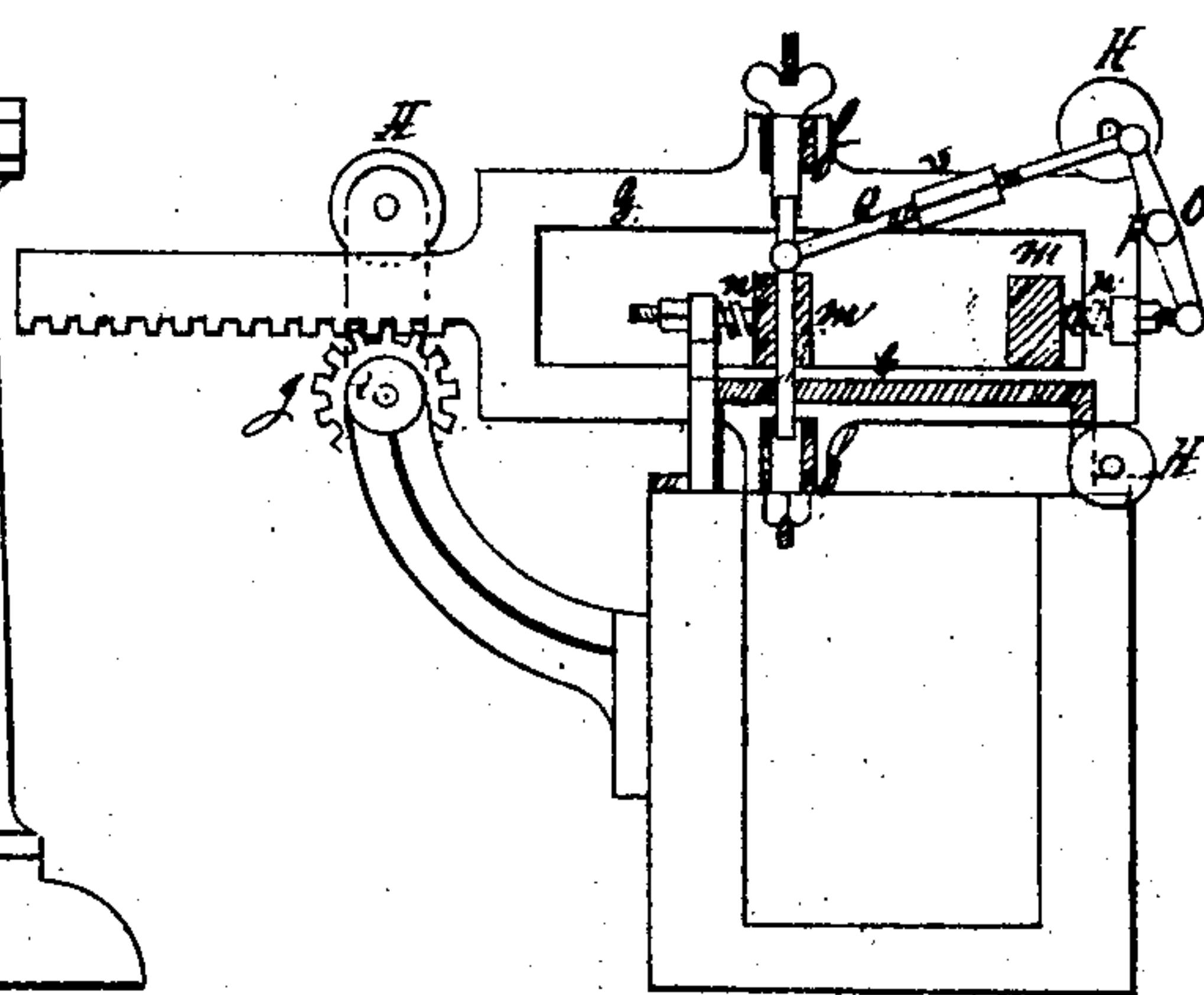
George Scotts

Fig. 3.



Vertical Cross Section
Through Pug Mill.

Fig 4



Cross Section of Cutter.

United States Patent Office.

GEORGE SCOTT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF, CHARLES MELCHER, JOHN MELCHER, CHARLES H. MELCHER, GEORGE W. MELCHER, AND WILLIAM H. MELCHER.

Letters Patent No. 101,525, dated April 5, 1870.

IMPROVEMENT IN BRICK AND TILE-MACHINES.

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

I, GEORGE SCOTT, of the city and county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Brick and Tile Machinery, of which the following is a correct specification.

The first part of my invention relates to the mode of forcing the clay from the cylinder through the die by means of a wood-filled piston-head, furnished with a valve and worked by a yoke and cam connected by intermediate gearing with the pug-mill shaft; the object of this part of my invention being to obviate liability to breakage by applying the power with the least possible friction, directly in the line of motion, alternately expel and admit air as the piston advances or recedes, and prevent the clay sticking to the piston-head.

The second part of my invention relates to shaping the die in such a manner that the tendency of the clay to expand under the pressure is done away with before the clay reaches the mouth of the die, and to the lining of the dies with soap-stone, wood, or other porous and suitable substance, into which I inject water, oil, or other lubricating fluid, if necessary. By these means the friction is diminished, and a smoother and better surface produced on the web of clay, and the use of rollers dispensed with, though rollers of soap-stone or of hollow iron or other substance into which steam is injected may still be placed at the mouth of the die to facilitate the passage of the web.

The third part of my invention relates to the cutting of the web of clay after it has left the die by means of a reciprocating knife-frame, in combination with a slotted platform and cutting-blocks, in such a manner that by the time the next stroke of the piston forces out more clay the raw bricks or tiles are ready to be pushed onto boards placed to receive them, and the knife-frame is ready on its return to cut afresh the new web.

Figure 1 is a vertical longitudinal section.

Figure 2 is a plan of the same.

Figure 3 is a vertical cross-section.

Figure 4 is a cross-section of cutting arrangement.

Figure 5 is a plan of cutting arrangement.

Figure 6 is a vertical longitudinal section.

First Part.

A is the driving-pulley, hung on the intermediate shaft B, on which is placed the spur-pinion C, which gears into the wheels D and E, represented by the pitch-lines in the drawings. These wheels D and E are of the same diameter. D is made fast on the shaft F, which revolves in the bearings G G, and between these bearings the cam H is made fast, and revolves between the friction-rollers I I, hung on strong pins at the extremities of the yoke J, which slides in grooves formed in the stands connected with the bearings G G.

The revolving of the cam acting on the friction-rollers I I gives the yoke J a reciprocating motion.

This yoke J is elongated, made hollow, and finishes with the wood-filled piston-head K. The piston-head being recessed, as indicated at L, and filled with porous wood, in the center of which is placed a valve, M, connecting with the hollow portion of the yoke J. By means of this valve the confined air at the bottom of the cylinder and in the die escapes when relieved of pressure, and adhesion between the piston-head and clay in contact with it is destroyed.

The piston K has an apron, N, attached to it on its upper portion, which closes the opening O into the bottom of the pug-mill P. The object of this apron is to prevent the clay from falling back of the piston when it has traveled past the opening O. The cylinder Q receives the clay through this opening from the pug-mill, which is of the usual construction.

The pug-mill shaft R is stepped in the bed-plate S, and passes up through the bottom of the pug-mill outside of the cylinder Q, having a top bearing in the hopper T. The shaft R is fitted with the usual knives for cutting and mixing the clay, and has keyed on it, near the bottom of the mill, a pusher, U, made in the form of a propeller-blade, so that at every revolution of the shaft the pusher forces the clay through the opening O in front of the piston.

Motion is communicated to the pug-mill shaft by means of the miter-wheels V V, one fastened to the pug-mill shaft, the other hung onto the horizontal shaft W, which carries the spur-wheel E. It will thus be seen that while the pusher U has made one revolution in the mill, the piston K has advanced and receded once, the two being so adjusted that the head of the piston is advancing just in front of the opening at the bottom of the mill, when the pusher has commenced pressing the clay down through the opening. Instead of extending the pug-mill shaft down through the mill, it can be stepped in a collar or socket at the bottom of the mill, and the motion communicated by means of a miter-wheel fastened onto the pug-mill shaft, extended above the top bearing in the hopper, and intermediate gearing connecting it with the cam.

Second Part.

The end of the cylinder Q is fitted with a die of any shape, corresponding with the article to be made, being gradually contracted for that purpose from the bottom of the cylinder to y, when it is again enlarged, as at Z, to allow the clay to expand and take away the tendency to burst outward, when it is again diminished to the size of the required article. Thus, in the manufacture of bricks, that portion of the die X' joined to the cylinder is made circular and tapering to a parallelogram.

In order to aid construction, the die is formed in two parts. The tapering portion, marked X^1 , where the clay meets with the most resistance, I line with wood or other suitable porous substance, and force oil, water, or other lubricating fluid through its pores onto the surface of the compressed clay. The outer portion of the die, X^2 , giving form finally to the article to be produced, I line with soap-stone, which affords a smoother and better surface, with less friction, than other substances. To facilitate the passage of the web, soap-stone rollers, or hollow rollers of iron or other suitable substance, into which steam is injected, may also be placed outside the die.

Third Part.

The web of clay passes over the roller a , figs. 5 and 6, covered with cloth, the under side of which is immersed in sand contained in the sand-box b . The roller a revolves by the friction of the web. Sand is taken up by the roller and communicated to the bottom of the web, and the tendency of moist clay to stick to metallic or like surfaces obviated. After passing over the roller, the web is delivered onto a platform, c , which is slotted or cut through at right angles to the axis of the web. The top surface of this platform is lined with soap-stone, which is found by experiment to offer less resistance and occasion least sticking of the web.

Through these slots knives or wires, marked $d d$, work, the upper and lower ends of which are connected by means of tightening-screws $e e e$, passing through the frame-bars $f f$, one above and one below the platform c . The bars $f f$ are attached by bolts at right angles with the side-yokes $g g$, and moving freely by aid of the friction-rollers $H H$ backward and forward. This motion is obtained by means of the shaft i , on which is keyed two spur-pinions $j j$, working into two racks formed on the extension of the yokes $G G$. The shaft i has a hand-wheel, k , fastened on it, so that it may be operated by hand as well as by power.

The web having passed from the die onto the platform c , remains stationary during the back stroke of the piston. During the period of the advance of the web, the two blocks $m m$ are pressed back from its sides by the pressure of the sides of the knives in the slots cut in the blocks on the one side, and communicated by means of the double lever s , as hereafter explained,

to the other side. While the piston is making its back stroke the hand-wheel is turned, when the two blocks $m m$, relieved from the pressure of the sides of the knives in the slots or recesses cut in the blocks, advance by means of the pressure of the springs $n n n n$, quite up to the web, where they are chocked by blocks the width of the web fastened beneath the frame, or other convenient method. The knives, made of saw-blades or aluminium wire, cut across the web, and falling into recesses in the blocks on the other side, compress the springs $n n n n$ of both blocks at the same time, causing them to recede from the web and remain clear of the fresh web.

The moving of both blocks at the same time is accomplished by means of the double lever s , one end of which is fastened firmly onto one block, the center pivoted as shown at p , and the other end jointed to the adjusting-rod Q , furnished with a right and left-hand screw and nut, r , in order to lengthen or shorten the rod Q , which is in turn fastened by its opposite extremity to the other block. Thus one block m cannot move without the other, each moving in an opposite direction. The next stroke of the piston forces out a fresh web, carrying off the cut articles onto boards ready to receive them, and during the return stroke the knives, worked by hand-power or not, as may be desired, cut back across this new web into their original position, and so on.

What I claim as my invention is—

1. The wood-lined die X^1 , in combination with the soap-stone die X^2 , substantially as and for the purpose hereinbefore set forth.

2. The use of soap-stone or of hollow cylinders into which steam is injected, for rollers, to facilitate the passage of the web, though I expressly disclaim the employment of friction-rollers for the purpose of diminishing friction in the die or the contracting of the web.

3. The combination of the soap-stone-lined slotted platform c , the frame $f f$, side yokes $G G$, the blocks $m m$, with the lever s and adjusting-rod q , substantially as and for the purpose hereinbefore set forth.

GEORGE SCOTT.

Witnesses:

FRANK WOLFE,
A. FRANK CUSTIS.