

(Model.)

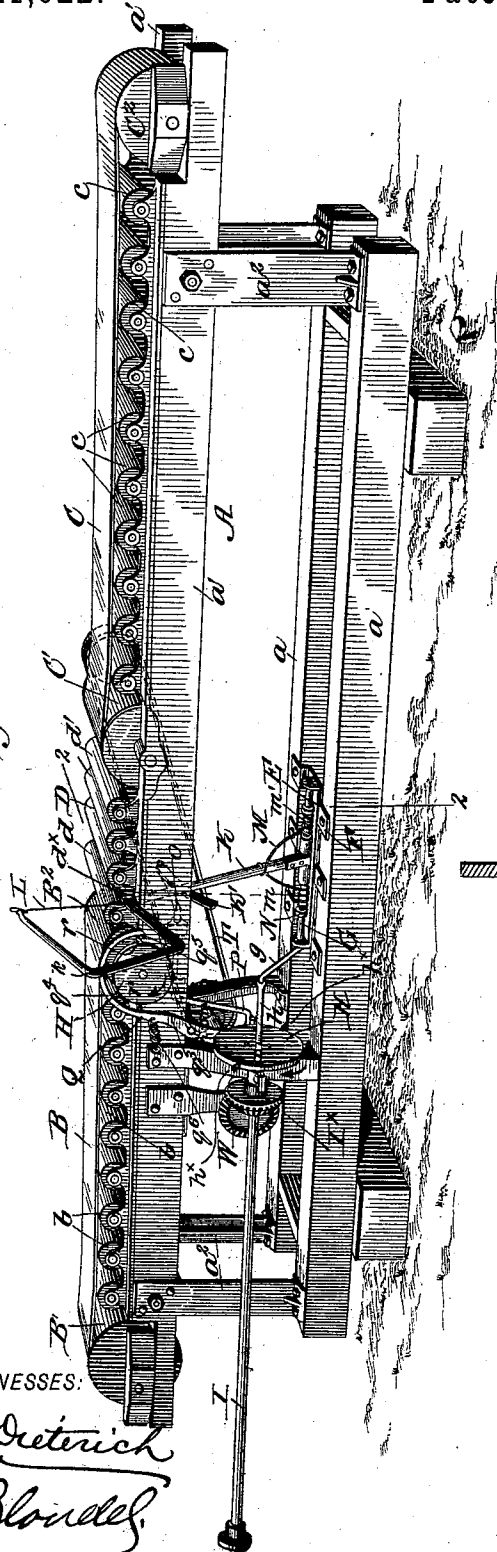
2 Sheets—Sheet 1.

J. C. STEELE.
BRICK OR TILE CUTTING MACHINE.

No. 541,022.

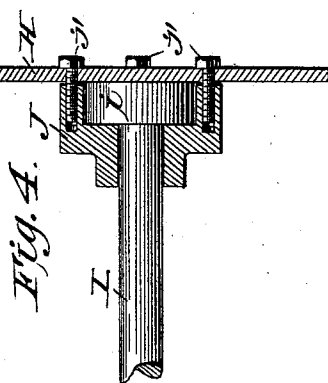
Patented June 11, 1895.

Fig. 1.



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(Model.)

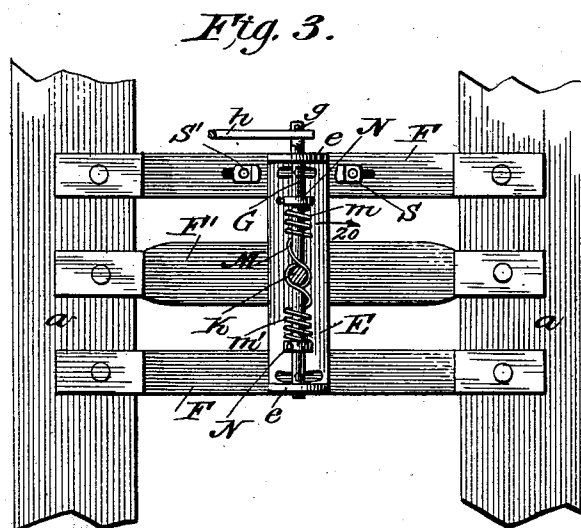
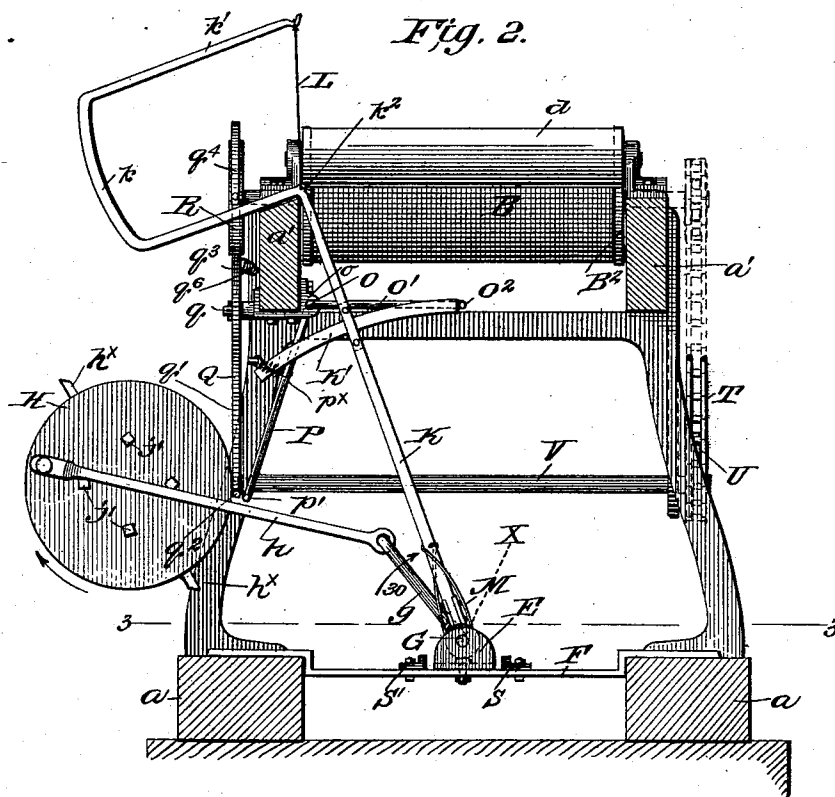
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UNITED STATES PATENT OFFICE.

JAMES C. STEELE, OF STATESVILLE, NORTH CAROLINA.

BRICK OR TILE CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 541,022, dated June 11, 1895.

Application filed June 13, 1894. Serial No. 514,412. (Model.)

To all whom it may concern:

Be it known that I, JAMES C. STEELE, residing at Statesville, in the county of Iredell and State of North Carolina, have invented a new and Improved Brick or Tile Cutting Machine, of which the following is a specification.

My invention relates to brick or tile cutting machines in which the clay bar is cut into the desired lengths as it is fed out of the bar forming mechanism, and it primarily has for its object to provide a machine of this kind of a simple construction, automatic in its operation, and which will positively and effectively serve for its intended purposes.

It has also for its object to provide a machine in which the several parts can be readily adjusted to cut the clay bar into different lengths and in which the cutting mechanism is set for operation by the movement of such clay bar.

With other objects in view, which hereinafter will be referred to, the invention consists in such novel features of construction and peculiar combination of parts, as will be first described in detail and then be specifically set out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved brick and tile cutting-machine. Fig. 2 is a transverse section of the same, taken practically on the line 2 2, Fig. 1. Fig. 3 is a horizontal section taken on the line 3 3, Fig. 2; and Fig. 4 is a section of the friction-disk, a portion of the drive-shaft, and the connecting devices hereinafter referred to.

Referring to the accompanying drawings, A indicates the supporting frame, which comprises substantially a pair of base beams *a*, a pair of bed beams *a'* *a'*, and uprights *a*² *a*². B indicates the clay bar feed belt, passed at its opposite ends over the outer or drive pulley B¹ driven in the usual manner, and an inner pulley B², disposed about centrally of the supporting frame, just in advance of the cutting devices presently referred to, such belt being also guided and supported on the guide rollers *b* journaled on the bed beams as shown most clearly in Fig. 1.

C indicates the take off belt, the inner end of which passes over a drive pulley C¹ driven

in a manner hereinafter described and a pulley C² journaled in the delivery end of the frame, the belt being also guided and supported on guide rollers *c*.

D indicates a series of guide and supporting rolls disposed between the delivery end of the belt B and the receiving end of the belt C, which receive and support the end of the clay bar as it is being cut, the inner one *d* of such rolls being held spaced apart from the next succeeding roll *d'*, whereby a cutting space *d*^x is provided, in which reciprocates the cutter presently referred to.

At a point under the rolls D, is held a bearing box E mounted on bearing bars F F' secured transversely on the base beams *a*, which box has end bearings *e* and is centrally pivoted on the central bar F', whereby it can be oscillated or swung on its pivot.

G indicates a rock shaft journaled in the bearings *e* formed at one end with a crank arm *g* which connects with a pitman *h* connected with a wrist pin on a friction disk H secured on and driven by the main drive shaft I, which in practice is driven from the clay forming operating mechanism.

Referring now more particularly to Fig. 4 it will be seen on the drive shaft I is secured a hub member *i* over which is fitted a hollow or cap plate J, having a hub portion fitted loosely on the said shaft, while its base or inner wall is held to bear against the rear face of the hub *i*, and to such cap plate is secured the friction disk H, by means of screws *j'* which when tightened or screwed home serve to bind the disk H and cap plate against the disk *i*, it being manifest that by slightly tightening or loosening the said screws *j'* the frictional bearing of the disk with the shaft can be increased or diminished.

K indicates a rocker or oscillating arm, loosely connected at its lower end with the rock shaft G, which extends upward between the bed beams *a'*, and has an outwardly extending bow like portion *k*, to the end of the arm *k'* and to the curved portion *k*² of which is secured the cutting wire L as shown.

M indicates a spring having a central portion looped about the arm K, and end portions *m* *m'* coiled in opposite directions about the shaft G, the ends of which connect with

collars N, N, adjustably held on such shaft, whereby the tension of such coiled portions can be readily adjusted.

The object in providing a spring having a double coil wound in opposite directions is to swing the cutter arm in reverse directions when released from the stop or detent devices presently referred to, it being understood that by fastening the ends of such opposite coils to the shaft, as such shaft is rocked in one direction tension will be stored up in one coil, and when rocked in a reverse direction, it will be stored up in the opposite coil.

Normally the cutter arm K is held thrown against either one of the bed beams a' and held locked to such positions by a detent or stop mechanism, which engages a segmental plate K' secured to arm K as most clearly shown in Fig. 2, such devices comprising a rock shaft O journaled in bearings $o o$ one end of which has a crank member O' formed with a projecting finger O^2 which is adapted to project normally in front of either one of the ends of the plate K^x as will presently more fully appear.

P indicates an arm extended down from the rock shaft O, which extends toward the periphery of the friction disk and has an angle or finger piece p' , which extends over such disk as shown most clearly in Fig. 2. By reference to such Fig. 2 it will be noticed the disk H has at diametrically opposite points radially projecting fingers $h^x h^x$, which are adapted to engage a stop mechanism consisting of a rocker arm Q pivoted at q to the main frame, and having a downwardly extending member q' formed at the end with a finger piece q^2 which projects over the finger piece p' and an upwardly extending member q^3 , which terminates in a curved portion q^4 extended over a disk R detachably secured on the shaft of pulley B^2 , which disk has radial studs $r r$, having tapering impact edges which are adapted to successively engage the beveled face of a nose piece q^5 formed on the portion q^4 of the arm Q as most clearly shown in Fig. 1, such arm Q being normally drawn with its finger piece q^2 projected in the path of the fingers $h^x h^x$, by means of the coiled spring q^6 , such fingers $h^x h^x$ it should be stated having their impact faces formed with a straight and a beveled portion as shown, the straight portion being adapted to engage the piece q^2 while the beveled portion is adapted to engage the member p' as will presently more fully appear, such member p' being also normally held in the path of the fingers h^x by the spring p^x .

The operation of the several parts of the machine so far as described is best explained as follows: Assuming the parts to be in the position shown in Figs. 1 and 2, in which the disk H is shown in the position for rotating with the shaft I, the cutter carrying arm K as having completed the stroke toward the left, and the crank member g in the position of just starting in a reverse direction toward

the right, as indicated by the arrow marked 30. At this time it will be seen the member h^x which last tripped the members Q and P will have passed some distance below the engaging portions of such members, while the opposite member h^x is traveling toward the same. Now it will be readily understood, that as the disk H is turned in the direction indicated by the arrow, by frictional contact with the shaft I, the crank member g will be caused to swing toward the right until it reaches a point approximately that indicated by the arrow X. During the time in which the said member g is thus swung over the arm K will be held locked to the position shown by the catch finger O^2 . As it is thus held it will be manifest the spring coil m' will be wound up under tension until the disk H has made a half revolution, it being understood that at the time the aforesaid arm g is swung to the right as above stated the finger h^x adjacent the wrist pin on the disk will have come into engagement with the member q^2 , and it and the disk be thereby held from further rotation, until released by the rocking of the arm Q, which is accomplished by the engagement of one of the studs r with the nose piece q^5 , which operation will serve to draw the member q^2 from under the finger h^x . As the finger h^x is released it immediately engages the member p' of the lever P which in consequence rocks shaft O, and moves the part O^2 from in front of the segment K' , on the cutter carrier arm K, which being thus released is instantly, through the medium of the stored up tension on spring coil m' , swung over to the right where it remains in a locked position until released and swung over by the movement of member g , disk H and the tension on spring coil m . As the clay bar is passing forward as the cutter wire passes there-through transversely, it follows that a square cut on the ends of the brick section cannot be cut by moving the cutter at a direct right angle to the movement of such clay bar, as such movement would cut the ends at an angle. To overcome this objectionable feature I support the box which forms the support for the cutter arm for an oscillatory movement by pivotally connecting the same on the main frame as before stated, such oscillatory movement being imparted thereto during the cutting action on the clay bar in the following manner: After the disk H is released as before stated, and it has acted on the shaft O to release the arm K, it continues in the direction indicated by the arrow, and as it does its pitman will through the medium of the crank member g , which is under spring tension force the box E to swing as indicated by arrow 20, until it reaches an adjustable stop S, when owing to the box being held from further swing in such direction, the crank member will be rocked in the direction indicated by arrow 30. As the box D is thus swung it follows that the cutting wire continuously changes its angle to the moving clay bar,

which angle can be changed as desired by increasing or diminishing the throw of such box, which is attained by adjusting the stops S and S'.

5 It will be noticed by reference to Fig. 1, so soon as the finger h^x passes the members q^2 and p' such members will be thrown back to their normal position by the retractile springs before referred to, and as the member P and
10 shaft O, are thus thrown back the crank portion with the catch finger is moved in front of the forward end of the plate K' of arm K, (which at this time is seated against the rear beam) and thereby holds such arm from being
15 thrown forward by the tension now on coil m' , until it is released in the manner before referred to.

It will thus be seen that while the shaft I rotates continuously, the disk and cutting
20 mechanism will be held from operation until the lever Q is tripped by the fingers on disk R. In the practical application of my invention a number of pulleys B² of different diameters are provided having disks R having
25 radial projections $r r$ properly spaced apart which spacing depends on the length it is desired to cut the clay bar.

It will also be noticed that the tripping devices are so arranged relatively to the cutter
30 operating means, that the said cutting devices will be set in operation immediately after the disk is released. Furthermore by means of the peculiar construction and arrangement of the disk in connection with shaft G, and
35 the spring M, the tension of such spring is automatically adjusted to swing the cutter arm in reverse directions.

To separate the cut sections or bricks, I arrange the take off belt to travel a little faster
40 than the clay bar feed belt, and such belt is driven by a chain belt T which passes over a sprocket wheel U on a shaft V having a bevel gear W held to mesh with a bevel gear I^x on the main drive shaft as shown.

45 Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for cutting brick or tile, the combination with the clay feeding devices, of
50 a cutter movable transversely through the clay bar, a support therefor movable in the arc of a circle transversely to the clay bar, and mechanism for continuously reciprocating the said support laterally and for oscillating the cutter at predetermined intervals,
55 substantially as and for the purposes described.

2. In a machine for cutting brick or tile, the combination with the clay feeding devices, of
60 an oscillating cutter movable transversely through the clay bar, a support for the pivotal end of the cutter, having one end held to be swung laterally in reverse directions, and mechanism for oscillating the cutter and
65 swinging its support laterally as the cutter is oscillated all substantially as shown and described.

3. The combination with the clay carrier devices, and a main drive shaft, of an oscillating cutter, held to swing transversely through
70 the clay bar, and shifting mechanism operated by the drive shaft for continuously changing the angle or cutting direction of the cutter relatively to the longitudinal movement of the clay bar substantially as shown and for the
75 purposes described.

4. In a machine as described, the combination with the clay carrier devices, and a main drive shaft, of a spring actuated oscillating
80 cutter, movable transversely across the clay bar, and mechanism operated by the main shaft for restoring the tension of such spring at each oscillatory movement of the cutter, all arranged substantially as shown and for the purposes described.
85

5. The combination with the clay bar feed mechanism, and a disk having an intermittent rotary motion, of a pivoted arm having a
85 cutting wire held to swing transversely across the clay bar, a spring for operating such bar
90 in reverse directions, a detent for engaging the said bar at the end of each transverse movement, having a connection with the disk and adapted to be moved to release the cutter
95 bar as such disk rotates, and means for restoring the tension of the said springs connected with and operated by the rotation of the disk, all substantially as shown and for the purposes described.

6. In a machine of the kind described, the
100 combination with the clay bar carrier, a main drive shaft, and a disk having a friction connection therewith, of a rock shaft a cutter carrying arm pivotally held thereon, a spring
105 for operating to swing such arm, having a pair of coils wound in opposite directions about the rock shaft, and connected therewith, said shaft having a crank member, a pitman connected to such member and the
110 disk, a detent for holding the cutter arm temporarily at the end of each throw, having an arm projected over the periphery of the disk, a pivoted lever adapted to be intermittently shifted by the movement of the clay carrier,
115 having an arm projected over the periphery of the disk, said disk having radial projections adapted to engage the said lever and detent arms, all arranged substantially as shown and for the purposes described.

7. In a cutting mechanism for brick and tile
120 machines the combination with the clay carrier, a disk having radial projections held on one of the drive pulleys thereof, and a continuously moving main drive shaft having a
125 disk held thereon by frictional contact, provided with radial projections, of a spring actuated swinging arm having a cutting wire movable transversely through the clay bar,
130 a rock shaft having a detent adapted to be moved to alternately engage the opposite sides of the said arm, and an arm having a finger portion projected in the path of the radial projections of the friction pulley, a trip lever having a member adapted to engage the pro-

jections on the friction disk to hold it from rotation and having a nose piece held in the path of the projections on the clay belt pulley disk, and connections between the cutter arm 5 operating springs, and the friction disk on the driveshaft all arranged substantially as shown and for the purposes described.

8. An improved brick or tile cutting machine, comprising a clay bar feed belt, a take 10 off belt, movable at a greater speed than the feed belt, supporting guide rolls disposed between the adjacent ends of such belts, a spring actuated cutter held to oscillate transversely across the clay bar between the said adjacent 15 ends of the belts, a main drive shaft, having a friction disk at one end, gear connections between such shaft and the take off belt, a detent for holding the cutter arm at the end of each transverse movement connected with 20 and moved to a released position by the rotation of the friction disk, a trip lever for normally holding such disk from rotation and a shifting means operated by the clay feed carrier adapted to engage such trip lever to re- 25 lease such friction disk substantially as and for the purposes shown and described.

9. In a machine as described, the combination with the main drive shaft, a disk having a frictional connection therewith, a trip lever 30 for normally holding such disk from rotation, the clay bar carrying belt and a shifting disk carried thereby adapted to intermittently en-

gage the trip lever and shift the same, of a bearing box centrally pivoted on the main frame, a rock shaft journaled therein having 35 a crank member a pitman connection between such member and the friction disk, the cutter carrying arm loosely pivoted on such rock shaft, the double acting spring connected with the said arm and the rock shaft a detent 40 for holding such arm to a lock position, having a rocker arm held to engage the friction disk, said disk having a projection adapted to engage such arm to rock it all arranged substantially as shown and described. 45

10. In a machine of the character described, the combination with the feed belt, and the drive pulleys therefor, one of such pulleys having a disk R, and the cutter devices, of the lever Q connected with disk R, the rock 50 shaft G having a crank member *g*, the spring devices connected with the shaft, the drive shaft I having a fixed collar or hub, the sleeve J held thereon, the disk H connected to the sleeve J, and having radial projections *h*^x, and 55 the pitman connection between such disk and crank member *g* all arranged substantially as shown and for the purposes shown and described.

JAMES C. STEELE.

Witnesses:

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WILMATH W. HILL.