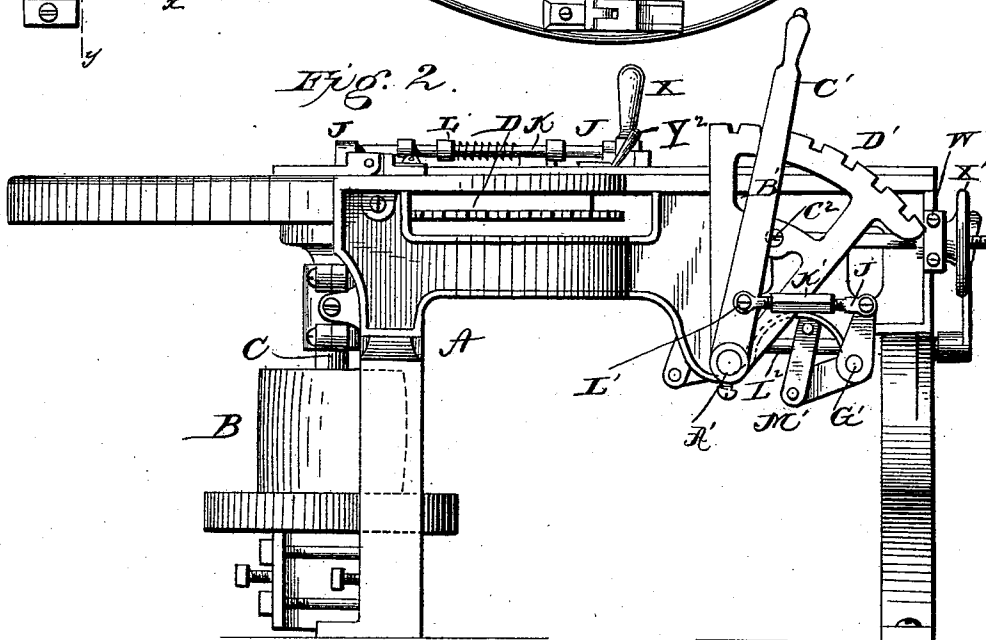
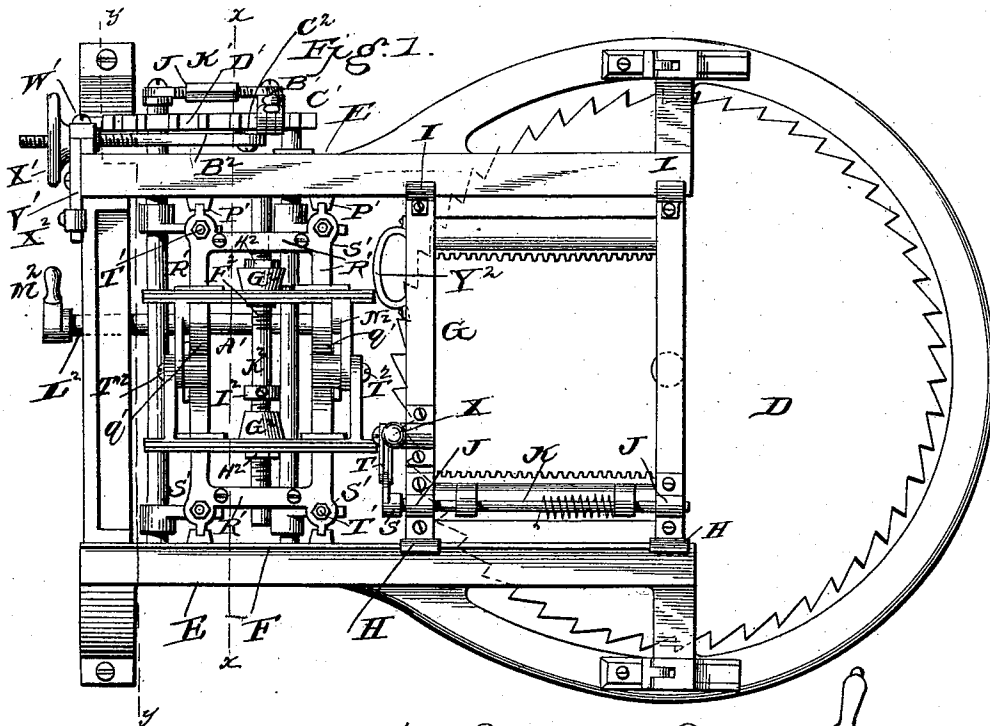


F. J. DRAKE.
SHINGLE MACHINE.

No. 415,098.

Patented Nov. 12, 1889.



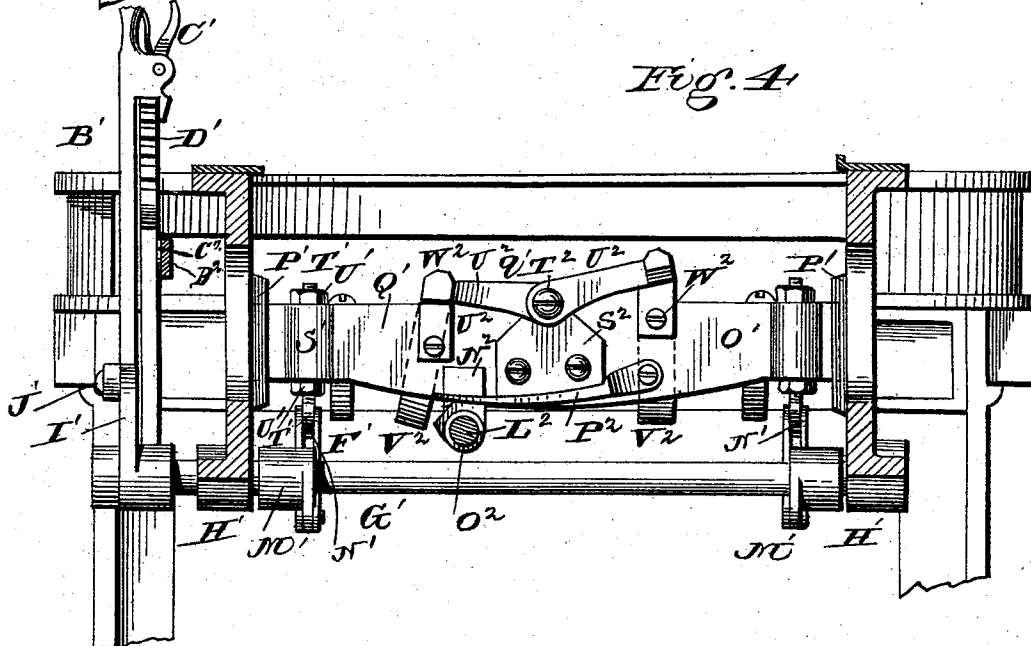
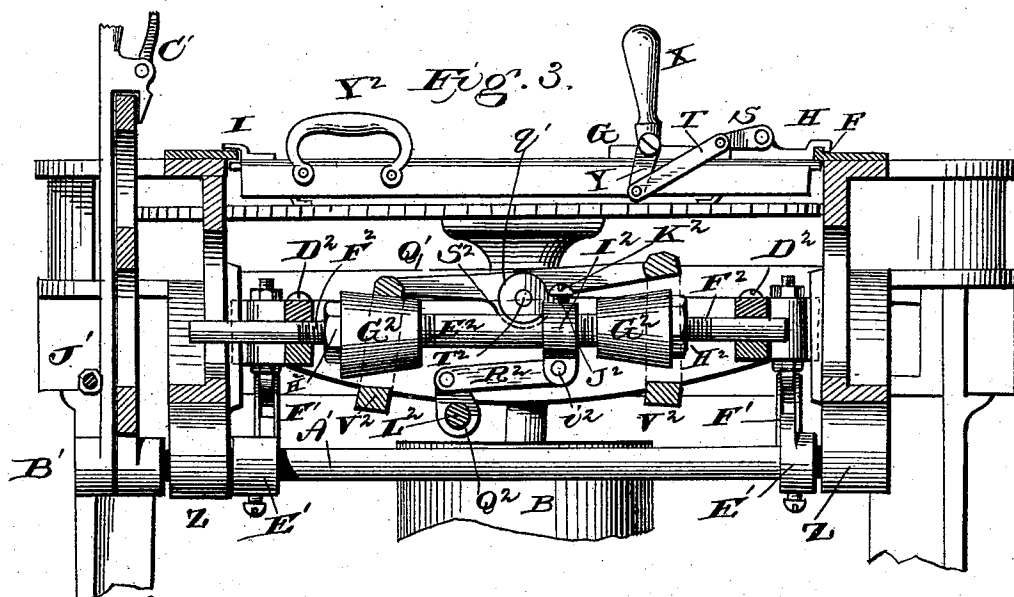
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F. J. DRAKE.
SHINGLE MACHINE.

No. 415,098.

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(No Model.)

4 Sheets—Sheet 3.

F. J. DRAKE.
SHINGLE MACHINE.

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Fig. 5

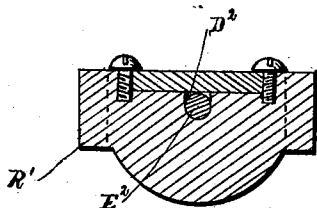


Fig. 6

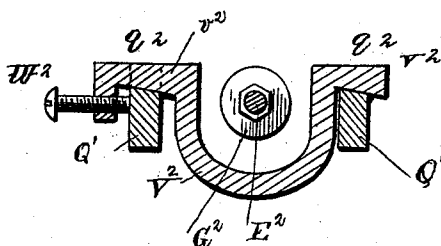
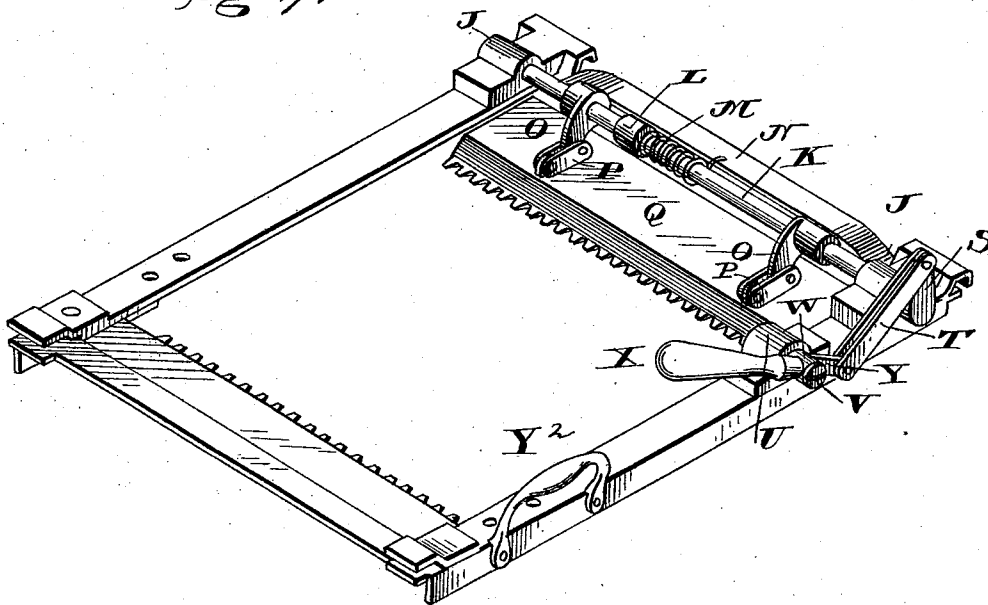


Fig. 7.



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(No Model.)

4 Sheets—Sheet 4.

F. J. DRAKE,
SHINGLE MACHINE.

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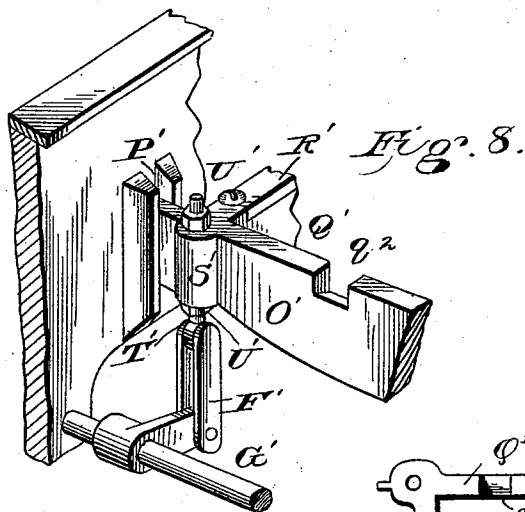


Fig. 8.

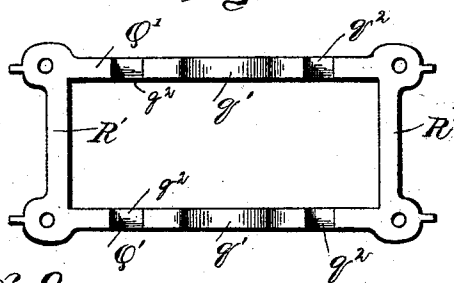


Fig. 12.

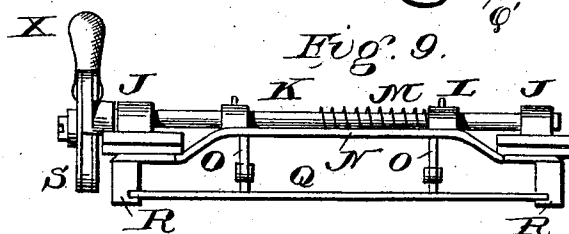


Fig. 9.

Fig. 13.

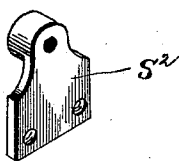


Fig. 10.

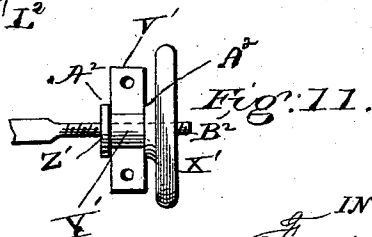
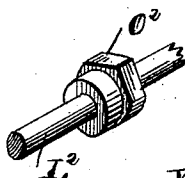


Fig. 11.

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UNITED STATES PATENT OFFICE.

FRANCIS JAMES DRAKE, OF BELLEVILLE, ONTARIO, CANADA.

SHINGLE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 415,098, dated November 12, 1889.

Application filed June 26, 1889. Serial No. 315,645. (No model.) Patented in Canada September 5, 1888, No. 29,820.

To all whom it may concern:

Be it known that I, FRANCIS JAMES DRAKE, a subject of the Queen of Great Britain, and a resident of Belleville, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Shingle-Machines, (for which Letters Patent were granted to me in the Dominion of Canada under date of September 5, 1888, No. 29,820;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a top plan view of my improved shingle-machine with the hand-carriage moved forward to show more clearly the several parts of the device. Fig. 2 is a side elevation of the device. Fig. 3 is a cross-sectional view on the line *x x*, Fig. 1, showing one of the tilting frames raised or elevated. Fig. 4 is a cross-sectional view on the line *y y*, Fig. 1. Fig. 5 is a section of one end of the reciprocating frame. Fig. 6 is a cross-section of the reciprocating frame, taken through one of the yokes. Fig. 7 is a perspective view of the hand-carriage. Fig. 8 is a detail view, partly in section, of one side of the frame of the device, showing the bearing for the extended ends of the reciprocating frame. Fig. 9 is a rear view of the reciprocating rack-bar shaft and connections. Fig. 10 is a detail view of the hexagonal collar upon which the spring bears. Fig. 11 is a section through the hand-wheel. Fig. 12 is a top plan view of the reciprocating frame with the bearing-plates and tilting frames removed, and Fig. 13 is a detail view of the bearing-plate.

Similar letters of reference denote corresponding parts throughout the several views.

My invention has relation to shingle-machines; and it consists, essentially, in providing a suitable tilting frame and mechanism in connection therewith whereby the device is made to adapt itself to sawing blocks or slabs of different widths; further, in providing suitable mechanism whereby the gage or thickness of the shingle is adjusted; further, in providing suitable means for adjusting the

thickness of the shingle at either end of the same, and, furthermore, in various other details of construction, as will be hereinafter more fully set forth and described.

In the accompanying drawings, the letter A indicates the frame of the machine, and B the cylindrical pulley drum, having mounted therein and turning in unison therewith a vertical shaft C, said shaft carrying on its upper end a slicing-saw D.

The upper forward portion of the frame of the machine is provided with longitudinal ways or tracks E E, one of said tracks being preferably provided with an upwardly-extending flange F. A hand-carriage G is reciprocated in these tracks or ways, one side of said carriage being provided with laterally-extending hooks H H, which fit over the upwardly-extending flange F of the track, and the opposite side is provided with curved lugs I I, which fit over the top portion of this side of the track. The hand-carriage is also provided on each side with laterally-extending lugs adapted to fit under the extended portions of the tracks, thereby retaining the carriage securely in position on the frame.

Mounted in suitable bearings J J, secured to the top of the hand-carriage on one side thereof, is a shaft K, encircled by a collar L, said shaft having secured thereto one end of a spring M, the other end of said spring being secured to a strip N in the frame to the rear of the shaft. This shaft is also provided with crank-arms O O, which are pivotally connected to arms P P, said arms in turn being pivotally connected to a reciprocating dog Q, said dog sliding in ways R, secured to the end pieces of the frame. This shaft is also provided on its forward end with a crank-arm S, pivotally secured to a link T.

Secured in a bearing U upon the upper side of the end piece of the frame is a short shaft V. A collar W is rigidly secured to this shaft, and is provided upon its upper portion with a lever X and upon its under portion with an inclined arm Y, which is pivotally secured to arm T. It will be seen that when the lever is depressed the connecting-arms and the crank upon the end of the shaft K will cause the dog to be moved forward in the ways, the coiled spring secured to the same

having a tendency to retract or draw back said rack-bar when the same is not held in engagement with the block to be shingled.

Mounted in suitable bearings Z Z in the frame of the machine is a shaft A', having rigidly secured to one end thereof a lever B', said lever being provided on its upper end with a spring-pawl C'. A notched quadrant D' is loosely mounted upon this shaft and bears against the inner side of the lever. The shaft A' is also provided with crank-arms E' E', having pivoted thereto links F' F'.

A second cross-shaft G' is journaled in suitable bearings H' H' to the forward portion of the frame of the machine, and is provided on one end with a crank-arm I', said arm having pivoted thereto an arm J', having its forward end screw-threaded. This arm is encircled by one end of a collar K', provided with interior threads, the opposite end of said collar having secured therein the reduced end of an arm L', the other end of said arm being pivotally secured to the lever B'. This shaft G' is also provided with oppositely-arranged cranks M' M', similar to the cranks upon shaft A', and having pivoted thereto links N' N'.

The vertically-reciprocating frame is represented by the letter O', said reciprocating frame working in grooves or ways P', located upon the inner side of the side pieces of the frame. This reciprocating frame consists of the pieces Q' Q' and end pieces R' R'. The pieces Q' Q' are provided, near the ends thereof, with perforated enlargements S' S' S' S', through which pass bolts T' T' T' T', having their ends screw-threaded to receive nuts U', located above and below the enlargements and adapted to retain the bolts in secure position within the perforated enlargements of the longitudinal pieces Q' Q'. These bolts are provided on their lower ends with flat heads adapted to be pivotally secured to the links F' and N', respectively, of the shafts A' and G', said links connecting the arms or cranks of the shafts with the bolts. By this arrangement it will be readily seen that when the lever B' is moved it carries with it the shaft A' and also the shaft G' by reason of the connecting mechanism already described. On the forward stroke of the lever, therefore, the cranks upon the respective shafts A' and G' are turned downward, which, through the pivoted links secured to the bolts passing through the enlarged perforated ends of the reciprocating frame, will give a downward movement to said frame. On the reverse stroke of the lever the reciprocating frame will necessarily be moved upward in its grooves or ways.

Extending from one side of the front portion of the frame is a bearing-plate V', provided with a semi-cylindrical recess. Adapted to be secured to this bearing-plate, by screws or other suitable means, is a cap W', provided with a similar recess, thus forming, when in position, a complete circular bearing. A

hand-wheel X' is provided with an inwardly-extending hub Y'. This hub has a central screw-threaded hole or aperture Z', said hole also extending through the center of the wheel. The hub is journaled in the bearing formed by the laterally-extending plate and its appropriate cap, and is provided with collars A² A², thus preventing said hub from lateral displacement within its bearing. The screw-threaded end of an arm B² passes into the hollow hub of the hand-wheel, and has its other end pivotally secured to a short shaft C², extending from the inner side of the notched quadrant. It will be seen that by screwing this hand-wheel to the right the screw-threaded rod will draw the notched quadrant forward, thereby increasing the forward stroke of the lever and permitting the reciprocating frame to descend a greater distance than would be the case should the lever have a more limited forward stroke. In this way the thickness of the shingle can be regulated, as it is obvious that the farther the reciprocating frame descends the thicker will be the shingle.

I have before described means for accomplishing the same result—namely, the employment of the screw-threaded arm J', encircled by one end of a collar K', provided with interior threads in connection with an arm which is pivoted to the operating-lever. It is obvious, however, that in some cases it will be found inconvenient to employ this means, or, perhaps, when the collar is screwed forward it will not decrease the stroke of the lever sufficiently. In this case the hand-wheel above described may be conveniently employed.

Journaled in suitable bearings D² in the sides of the reciprocating frame is a reciprocating shaft E². This shaft is provided with screw-threaded portions F² F², adapted to receive interiorly screw-threaded cone-shaped collars G² G², having their reduced ends pointing toward the center of the shaft. If desired, the shaft may be provided with nuts H² H² to the rear of these cone-shaped collars, holding the same securely in their adjusted position. Another collar I² encircles this shaft and is provided with a downward bifurcated extension J² and upon its upper portion with a hole K², adapted to receive a screw L², to permit of the securing of the collar upon the shaft.

A longitudinal shaft L², provided on its forward end with a lever M², is journaled in suitable bearings N² N² upon the pieces Q' Q' of the reciprocating frame, and is provided, if desired, with a hexagonal collar O², against which a spring P², secured to the front strip of the reciprocating frame, impinges, said collar bearing against the forward side of the front bearing N², so as to hold the shaft in proper position. This shaft is also provided toward its forward end with a crank Q², to which is pivotally secured an arm R², which in turn is pivotally connected to the lower extended bifurcated portion J² of the collar I².

By this means connection is attained between the longitudinal shaft and the central reciprocating shaft, so that when the lever M^2 is operated it will give a reciprocating motion to said central reciprocating shaft.

The pieces Q' Q' of the tilting frame are provided at their central points with curved recesses or depressions q' q' , in which are seated the perforated circular heads of the bearing-plates S^2 S^2 . Pivottally secured in these bearing-plates by means of bolts T^2 T^2 are the tilting frames U^2 U^2 . Upon these tilting frames are placed crosswise the block or blocks to be shingled, and by this arrangement I am enabled by suitably adjusting the cone-shaped collars upon the central reciprocating shaft to vary the width of either end of the block. For instance, the reciprocating frame, with its connecting mechanism, while adjusting the width of the block as a whole, will not permit of one end being made thicker than the other. If, therefore, it is desired to alter the taper, all that is necessary to be done is simply to turn the shaft L^2 so that the appropriate cone-shaped collar upon the reciprocating shaft will move toward the center thereof until the base of the cone supports the tilting frame. This will necessarily raise this end of the block, so that when the same meets the saw on the reciprocation of the carriage the same will be considerably decreased, while the opposite end of the block will be correspondingly increased. In thus turning the shaft L^2 in order to adjust the position of the cone-shaped collars said shaft is held in its turned position by reason of the pressure exerted by the spring P^2 upon the hexagonal collar O^2 . It will be found, however, that in adjusting these cone-shaped collars so that one end of the shingle may be made thinner than the other the opposite end will sometimes be made thicker than is desired. To provide against this I have shown the side pieces of the reciprocating frame provided with recesses q^2 q^2 q^2 q^2 , said recesses having their bottoms inclined or beveled. Disposed between these side pieces of the reciprocating frame, and seated within the beveled recesses q^2 thereof, are yokes V^2 V^2 , having laterally-extending ends v^2 v^2 , said ends being inclined or beveled upon their under sides to register with the bevels of the notches. The forward downwardly-flanged ends of these yokes are also provided with holes for the reception of screws W^2 , which, when screwed inward, will impinge against the side pieces of the reciprocating frame and necessarily force the yoke to climb the inclines and raise said yoke, whereby the supporting-frame is also necessarily raised or elevated, thus readily adjusting the device in order to overcome, when desired, the cutting of one end of the shingle too thick, by reason of the adjustment of one of the cones in order to decrease the thickness of the opposite end of the block. The forward end of the frame is also provided with a stop X^2 , against which the car-

riage bears when brought back from engagement with the saw, thereby preventing the same from running entirely off the tracks. I have also shown the carriage provided with suitable hand-piece Y^2 to facilitate the movement of the same.

Having thus fully described the construction of my improved shingle-machine, I will now point out the operation of the same.

The saw is given a circular movement in the usual manner. The block to be shingled is then placed upon the supporting-frame crosswise, one end of the same being engaged by the rigid dog, and if it does not extend entirely across the carriage the teeth of the dog may be made to engage the same by simply operating the lever hereinbefore described. The width of the shingle to be sawed is now adjusted by means of either the hand-wheel or the arms, screw-threaded sleeve, and crank upon the end of shaft G' . The next step is to adjust the butt-end of the block to be shingled by means of the cone-shaped collars, as hereinbefore described, the spring bearing upon the hexagonal collar holding the longitudinal shaft in its turned or adjusted position, and if, as stated, one end of the shingle should thereby be thicker than desired, this difficulty may be obviated by the yokes V^2 , in connection with the longitudinal shaft suitably connected to the central reciprocating shaft.

What I claim more especially as the particular advantage of this machine is the ease and readiness with which the different parts of the same are adjusted and regulated.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a hand-carriage of a shingle-machine, said carriage sliding in suitable ways or tracks in the frame of the machine, the combination of a transverse shaft mounted in suitable bearings in said carriage and provided on one end with a crank, a collar encircling said shaft, a flat strip or plate secured to the carriage at the rear of said shaft, a coiled spring upon the shaft, one end thereof being secured to the collar and the other end to the flat plate or strip, cranks secured to the shaft, a movable dog sliding in ways in the carriage and provided on its upper face with lugs or ears, links connecting said lugs or ears with the cranks, and a lever connecting arms for operating said shaft, substantially as set forth.

2. In a shingle-machine, the combination of the frame, the cross-shafts secured in suitable bearings therein, the cranks secured to said shafts, the links pivottally secured to said cranks, the lever secured to one end of the innermost shaft and provided with a spring-pawl, the notched quadrant loosely mounted upon said shaft, the crank upon the end of the forward cross-shaft, the arm pivottally secured thereto and to the operating-lever, the vertically-reciprocating frame moving in suit-

able bearing in the frame of the machine and provided with enlarged perforated corner-pieces, a tilt-table having its bearings in the reciprocating frame, the bolts passing through
 5 said perforated corner-pieces and provided with flat lower ends, and the arm pivotally secured to the flat lower ends of the bolts, substantially as set forth.

3. In a shingle-machine, the combination,
 10 with a frame, of cross-shafts secured in suitable bearings therein, cranks secured to said shafts, links pivotally secured to the cranks, a vertically-reciprocating frame moving in suitable bearings in the frame of the machine, arms extending downwardly from said
 15 reciprocating frame and articulating with the links, a tilt-table having its bearings in the reciprocating frame, a lever secured to one end of the innermost shaft and provided with the spring-pawl, a notched quadrant loosely
 20 mounted upon said shaft, a crank upon the end of the forward cross-shaft, a screw-threaded arm pivotally connected to said crank, a collar having interior threads adapted to receive the end of the arm, and a screw-
 25 threaded arm having one end pivotally connected to the lever and the other end passing into the interior screw-threaded collar, substantially as set forth.

4. In a shingle-machine, the combination
 30 of a frame, cross-shafts secured in suitable bearings therein, cranks secured to said shafts, links pivotally secured to said cranks, a vertically-reciprocating frame moving in suitable bearings in the frame of the machine, arms extending downwardly from said
 35 reciprocating frame and articulating with the links, a tilt-table having its bearings in the reciprocating frame, a lever secured to one end of the innermost shaft and provided with a spring-pawl, a notched quadrant
 40 loosely mounted upon said shaft, and provided with the inwardly-extending arm, a laterally-extending bearing-plate secured to the front
 45 of the machine, a hand-wheel mounted in said bearing-plate and provided with a hollow screw-threaded inwardly-extending hub, said hub being provided with suitable collars, and
 50 an arm having one end pivotally secured to the inwardly-extending arm from the quadrant and the opposite end screw-threaded and passing into the threaded hollow hub of the hand-wheel, substantially as set forth.

5. In a shingle-machine, the combination,
 55 with the frame having a suitable slicing-saw mounted therein, a hand-carriage sliding in suitable ways in said frame, a vertically-reciprocating frame moving in bearings upon the inner sides of the frame of the machine
 60 and having its side pieces provided with depressions or recesses, and a tilt-table consisting of two sections pivoted within the central depressions of the reciprocating frame, constructed so that either section thereof may
 65 be alternately elevated or depressed, substantially as set forth.

6. In a shingle-machine, the combination,

with the vertically-reciprocating frame having the side pieces thereof provided near opposite ends with notches or recesses having
 70 inclined bottoms, transverse yokes provided with laterally-extending ends seated in said notches and having inclined under surfaces registering with the inclines of the notches, a tilt-table pivoted to the reciprocating frame
 75 having its ends resting upon said yokes, and means for elevating or depressing the yokes, so as to adjust the thickness of the shingle, substantially as set forth.

7. In a shingle-machine, the combination,
 80 with the vertical reciprocating frame having the side pieces thereof provided near opposite ends with notches or recesses, said notches or recesses having inclined bottoms, transverse yokes provided with laterally-extending ends
 85 having inclined under surfaces registering with the inclines of the notches, the forward ends being flanged downwardly and provided with screw-threaded apertures, screws passing through said apertures and bearing against
 90 the front side piece of the frame, and a tilt-table pivoted to the reciprocating frame and having its ends resting upon said yokes, so as to be alternately elevated or depressed thereby, substantially as set forth.

8. In a shingle-machine, the combination
 95 of a vertically-reciprocating frame provided with suitable end bearings, a central reciprocating shaft mounted in said bearings and provided with opposite screw-threads, cone-shaped collars provided with female threads
 100 registering with the threads upon the reciprocating shaft, and a tilt-table suitably pivoted in said vertically-reciprocating frame in such manner as to permit of the opposite ends
 105 thereof being alternately elevated or depressed by the cone-shaped collars, substantially as set forth.

9. In a shingle-machine, the combination
 110 of a vertically-reciprocating frame provided with suitable end bearings and having its side pieces provided near opposite ends with notches or recesses having inclined bottoms, transverse yokes provided with laterally-extending
 115 ends seated in the notches of the side pieces and having inclined under surfaces registering with the inclines of the notches, a tilt-table pivoted to the reciprocating frame, having its ends resting upon said yokes, means
 120 for elevating or depressing the yokes, so as to adjust the thickness of the shingle, a central longitudinally-reciprocating shaft mounted in the end bearings of the reciprocating frame and provided with opposite screw-threads,
 125 and cone-shaped collars provided with female threads registering with the threads upon the reciprocating shaft, substantially as set forth.

10. In a shingle-machine, the combination
 130 of the vertically-reciprocating frame, the tilt-table, the central reciprocating shaft journaled within suitable bearings in the end pieces of the reciprocating frame and provided with screw-threaded portions, the cone-shaped collars encircling said screw-threaded

portions, the collar provided with the lower
bifurcated extension, the longitudinal shaft
provided on its outer end with a lever and
also having a collar secured thereto, the spring
5 adapted to bear against said collar, the crank
mounted upon the inner end of the longi-
tudinal shaft, and the pivoted link connect-
ing the crank with the lower bifurcated exten-
sion of the collar upon the longitudinal shaft,
10 substantially as set forth.

In testimony that I claim the foregoing as
my own I have hereunto affixed my signature
in presence of two witnesses.

FRANCIS JAMES DRAKE.

Witnesses:

CHARLES HAROLD JELLETT,
CHARLES ELWIN LAZIER,
Both of Belleville, Ontario.