

No. 711,533.

Patented Oct. 21, 1902.

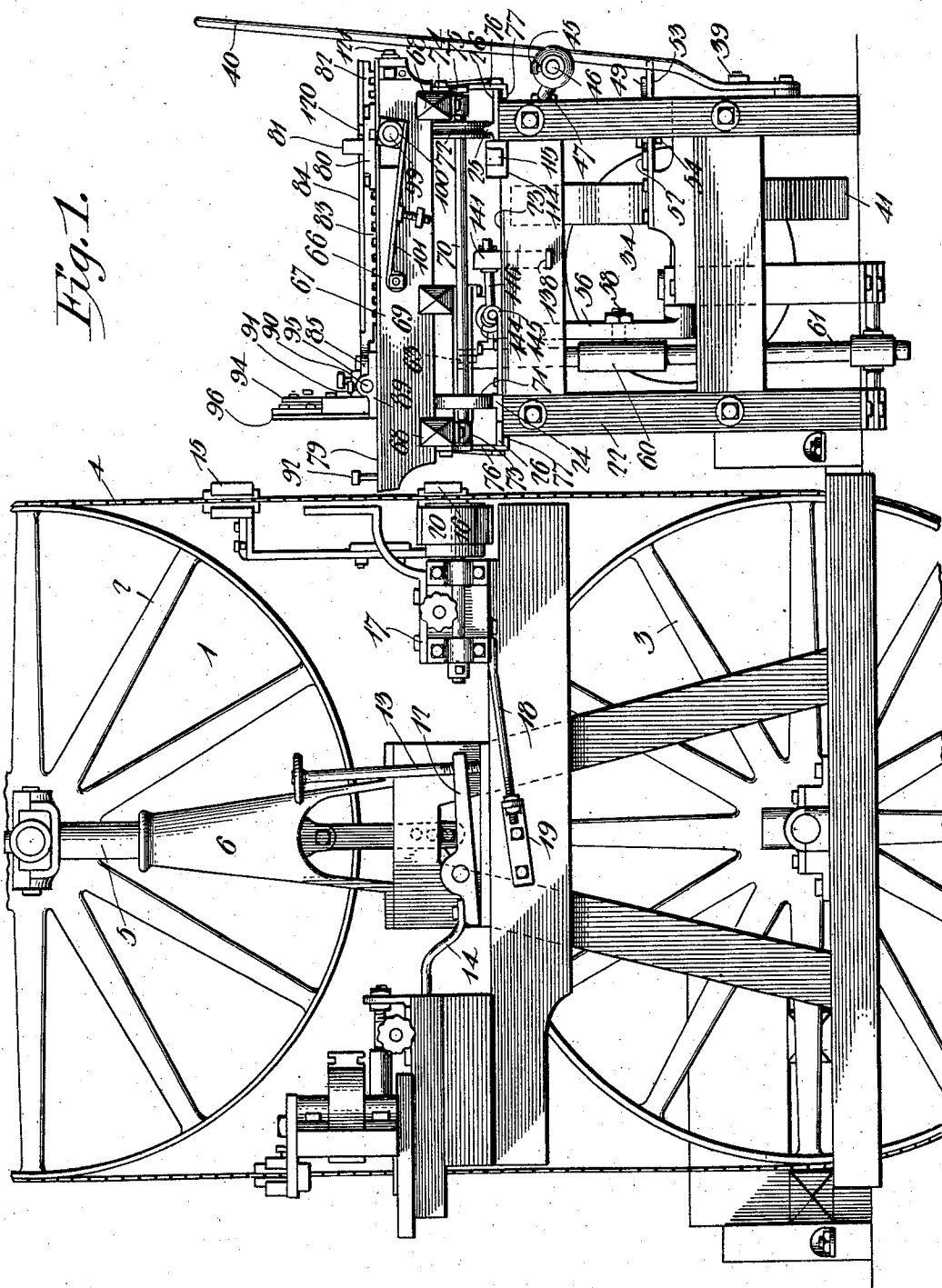
G. W. ROPER.
SHINGLE MACHINE.

(Application filed June 18, 1901.)

(No Model.)

5 Sheets—Sheet I.

Fig. 1.



Witnesses

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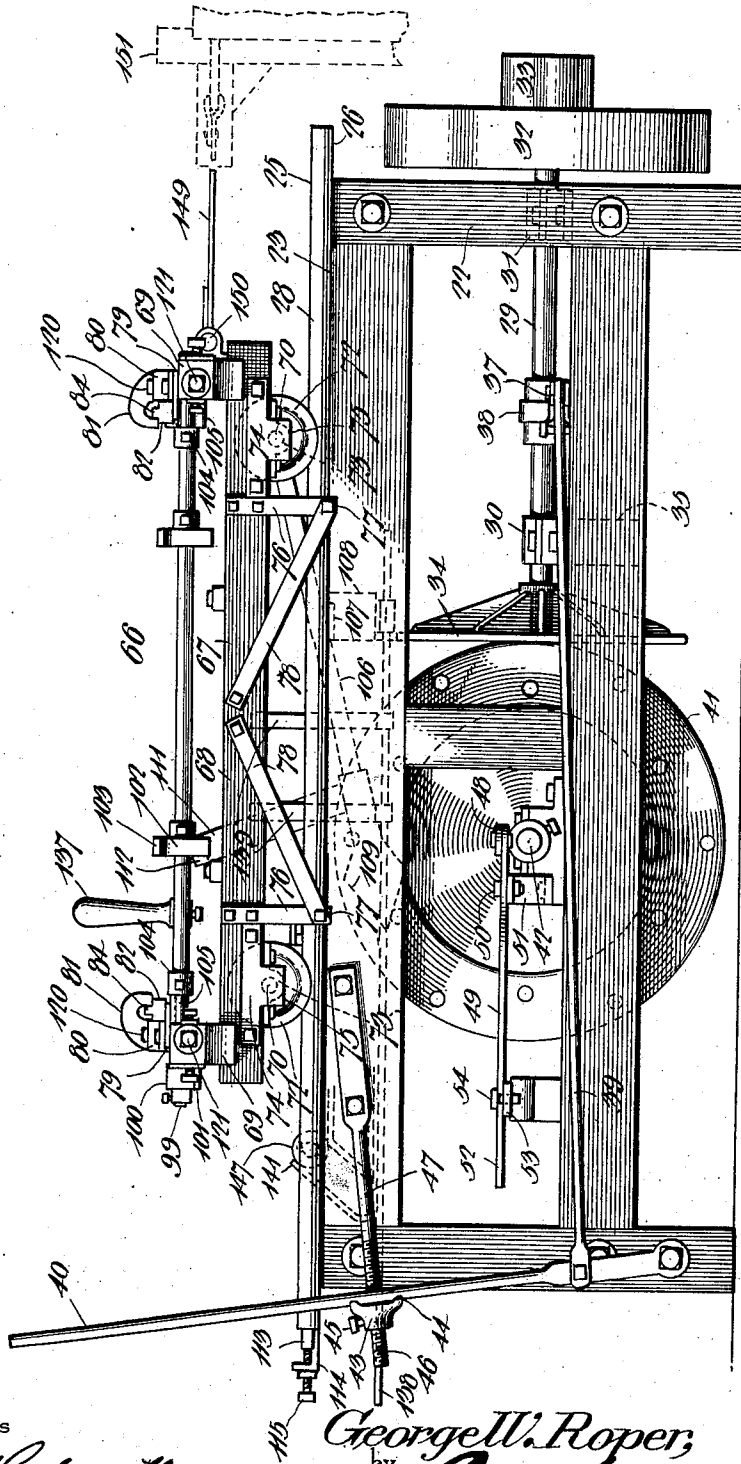
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(No Model.)

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Fig. 2.



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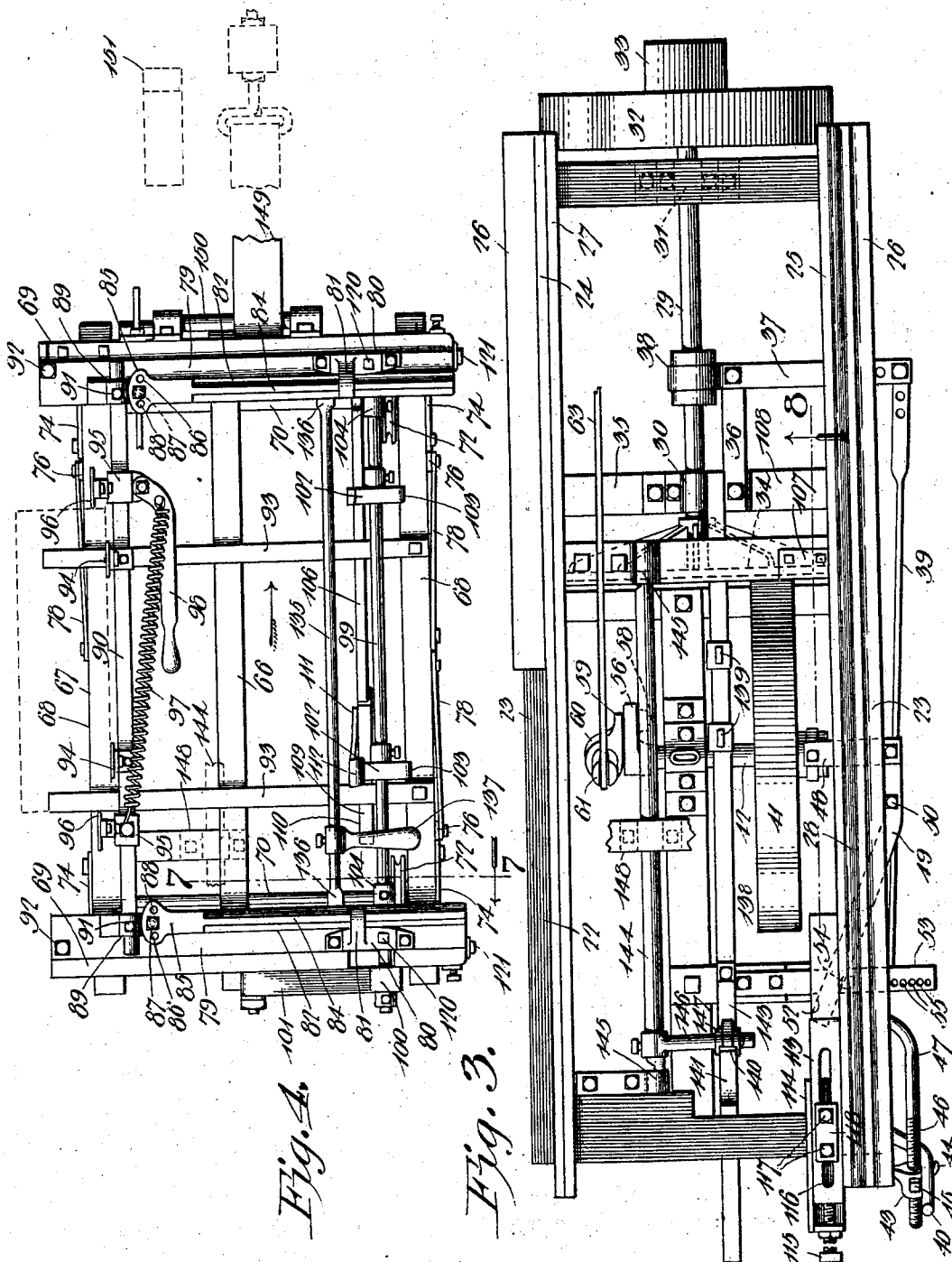
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5 Sheets—Sheet 3.

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Fig. 5.

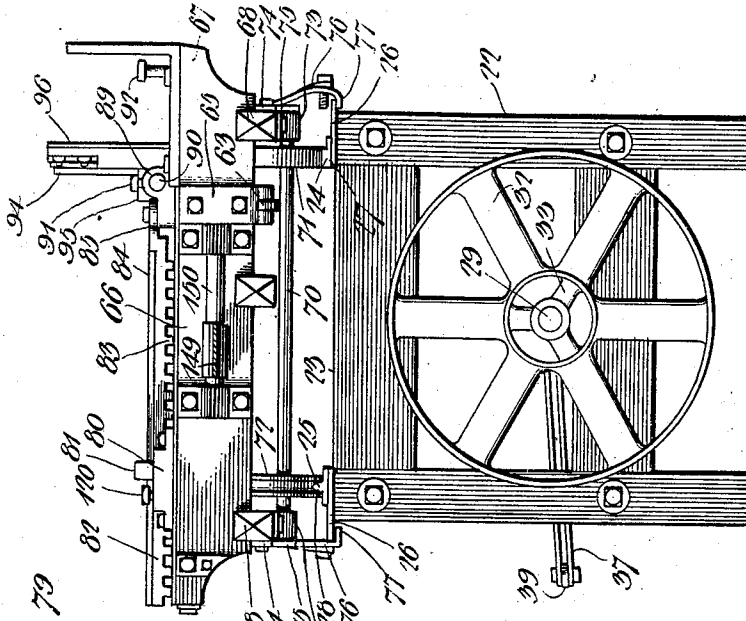
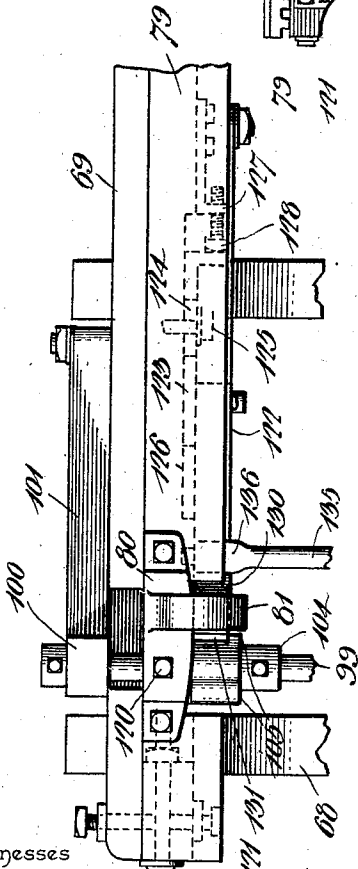


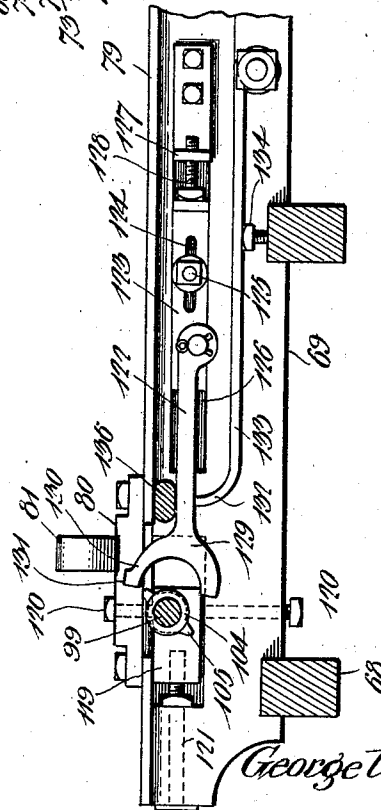
Fig. 6.



Witnesses

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Fig. 7.



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(No Model.)

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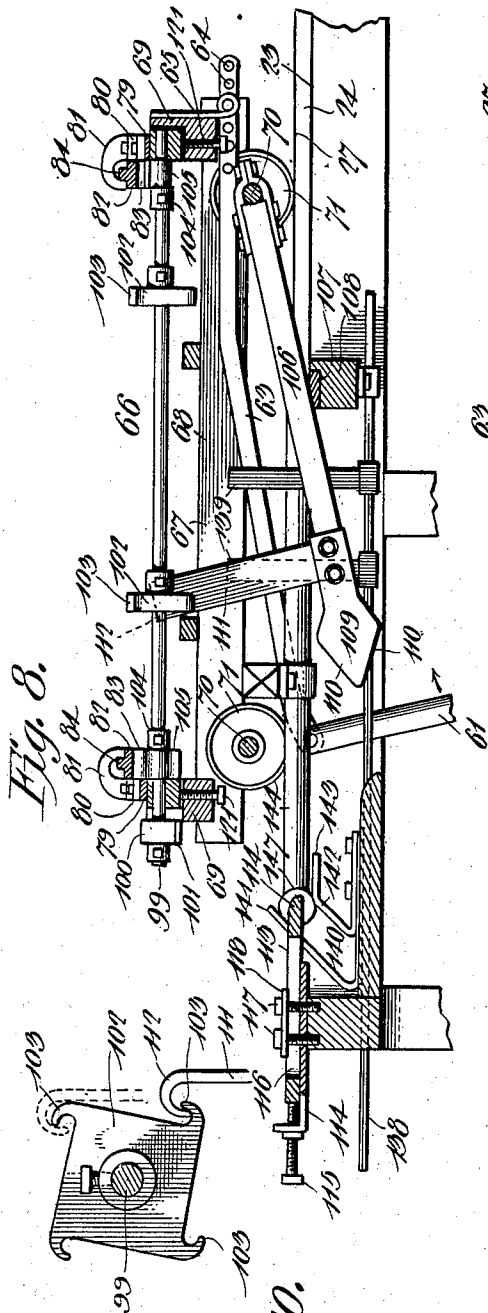


Fig. 8.

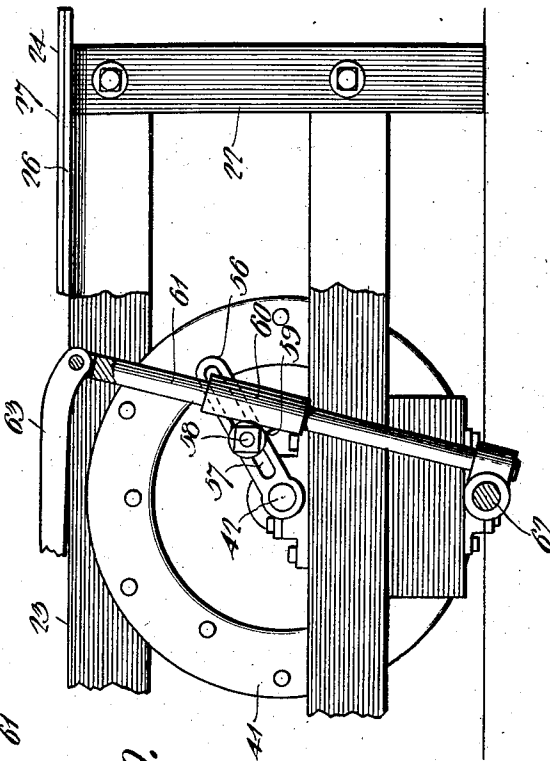


Fig. 9.

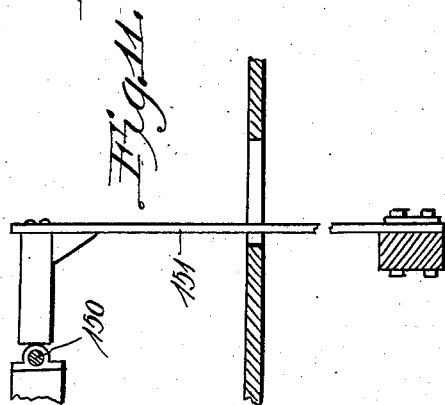


Fig. 10.

Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE W. ROPER, OF NORFOLK, VIRGINIA.

SHINGLE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 711,533, dated October 21, 1902.

Application filed June 18, 1901. Serial No. 65,059. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. ROPER, a citizen of the United States, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented a new and useful Shingle-Machine, of which the following is a specification.

This invention relates to shingle-machines, and more particularly to a feed mechanism, and has for its objects, among others, to provide comparatively simple means for producing shingles, to facilitate the manufacture of shingles by increasing the rapidity of the cutting action, and consequently rendering the machine susceptible of producing a greater number of shingles in a given time, to avoid binding of the shingle-bolt on the saw, to simplify this class of machinery, and to render them more efficient in operation.

With these and other objects in view the invention consists in the construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is an end elevation of a portion of a band-saw embodying features of adjustment for the saw-blade and showing in end elevation mechanism for feeding the shingle-bolt. Fig. 2 is a side elevation of the shingle-bolt-feeding mechanism looking from the outer side of the same. Fig. 3 is a top plan view of a portion of the shingle-bolt-feeding mechanism, the carriage being removed. Fig. 4 is a top plan view of the carriage. Fig. 5 is an end elevation of the shingle-bolt-feeding mechanism looking toward the end opposite that shown by Fig. 1. Fig. 6 is an enlarged top plan view of a portion of the carriage. Fig. 7 is a section on the line 7 7, Fig. 4. Fig. 8 is a section on the line 8 8, Fig. 3, with the carriage in position. Fig. 9 is a detail broken elevation of a part of the mechanism. Fig. 10 is a detail view of a portion of the rack-operating devices. Fig. 11 is a detail elevation showing the manner of arranging the buffer to check the return movement of the carriage.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates a band-saw, with which the improved feeding mechanism hereinafter referred to is preferably used, though

it will be understood that a circular saw can also be employed with the said mechanism. The band-saw includes upper and lower wheels 2 and 3, with which the saw-blade 4 engages in the usual manner, the said wheels being mounted on suitable shafts, the upper shaft being movable for the purpose of adjustment. Connected to the upper wheel-shaft is a vertically-movable standard 5, which is guided in an upright 6, and on the opposite side is a substantially similar standard, which acts as a support against which the adjustment is made, it being understood that primarily the upper wheel can be moved to establish the necessary tension on the saw. The band-saw in the present instance is provided at one side with guides 15 and guard 16, the guides being adjustable to regulate the direction or angle of cut of the saw-blade passing therethrough, and both the guides and guard are carried by a frame 17, which is adjustable outwardly and inwardly on the bed of the saw through the medium of an adjusting screw-bolt 18, attached thereto and engaging an angle-guide 19, secured to the saw-bed. The frame 17 also has a shingle-carrier 20 carried thereby and includes a wheel mechanism and belt, the shingles as cut falling upon the latter and conveyed away from the saw-blade.

The principal part of the present invention resides in mechanism for feeding bolts and comprises mechanism for alternately disposing the bolt at an angle to obtain the necessary shingle pitch, clearing the bolt from the saw after the cut has been completed, so that on the next movement no injury to the saw will result and the operation of the several coacting devices will not be impeded, and also includes devices and coöperating elements for causing the feeding operation and relative disposition of the parts to be carried on in a substantially automatic manner. This feeding mechanism involves a frame 22 of open structure and having an upper bed 23 and supporting members at different points for the coacting parts and which will be referred to from time to time in considering said parts. At opposite sides of the bed 23 and extending longitudinally thereof are tracks 24 and 25, the latter both including flat plates 26, which project beyond the edges of

the bed 23, the track 24 having a flat bar 27 at the inner edge thereof and the track 25 having an upstanding flange 28. In the frame 22 is a drive-shaft 29, mounted in separated bearings 30 and 31 to have a slight longitudinal sliding movement, and on the outer end of said shaft are drive-pulleys 32 and 33 to receive a belt from a suitable power source, the inner end of the shaft being provided with a friction-disk 34, which is secured thereto. The inner bearing 30 is secured to a cross-support 35, and also projecting therefrom is a fulcrum-bar 36, on which is fulcrumed a lever 37, having its inner end yoked around a collar 38, fast on the shaft 29. The lever 37 projects outwardly beyond the outer side of the machine or frame 22, and adjustably connected thereto is one end of a shifting rod or bar 39, which extends along the side of the frame 22 and has its opposite end movably secured to a hand-lever 40, pivoted to the outer side of the frame at one end, and by moving this hand-lever toward the disk 34 the shaft 29 will be moved inwardly to correspondingly shift the said disk and effect engagement of the latter with the periphery of a friction-wheel 41 in relative position to said disk and fast on a transverse shaft 42. The contacting face of the disk 34 is in a plane at a right angle to the periphery or rim of the wheel 41, and provision is made for varying the contacting pressure of the said disk with the wheel through the medium of a keeper 43, having retaining lugs or projections 44 and held in fixed adjustable position by a set-screw 45 on the screw-threaded extremity 46 of a rod 47, secured to the end of the frame 22 above the point of attachment of the hand-lever 40. When the hand-lever 40 is pushed in the direction to cause the disk 34 to bear against the wheel 41, said lever is forced over the keeper 43 and caught and held by the lugs or projections 44 against accidental disengagement, and by this means the disk 34 will be positively held in operative relation to the wheel 41. By moving the keeper 43 longitudinally on the rod 47 in opposite directions the degree of pressure of the disk against the wheel can be regulated and wear compensated for, the said rod 47 being inclined downwardly to have the keeper present the portion thereof engaged by the lever 40 at such angle as to accommodate the angle of said hand-lever and have both lugs or projections 44 coact with said lever to effectually hold the same. When the said hand-lever is disengaged from the keeper and drawn forward or in the direction of the operator, the disk 34 will be unshipped or moved from engaging position with relation to the wheel 41. It will also be understood that the speed of the latter wheel will be varied by moving it closer to or outwardly from the center of the disk 34, and for this purpose said wheel is splined on the shaft 42 by any suitable means and has an outwardly-projecting arm 48 secured thereto, a lever 49 being movably at-

tached to the outer end of the said arm and fulcrumed, as at 50, to a fulcrum projection 51. The unattached portion 52 of the lever is deflected inwardly at an angle into the frame and adjustably bears on a supporting-bar 53 by a headed bolt 54, the latter being adjustable by means of a series of openings 55 in the bar 53 and bears against the outer edge of the portion 52 of the lever 49. Through centrifugal action it is obvious that the wheel 41 if free would work outwardly toward the periphery of the disk 34, and hence it is only necessary to obstruct this outward movement of the wheel in the manner set forth and maintain the adjustment desired.

On the inner end of the shaft 42 an arm 56 is secured at about an angle of forty-five degrees and is formed with a longitudinal slot 57, in which a bolt 58 is adjustably mounted and serves as a fulcrum or a connecting means for a sleeve 60, slidably mounted on an oscillating rod 61, said sleeve having an ear 59 which is engaged by said bolt. The lower end of the rod 61 is fulcrumed, as at 62, to a depending portion of the frame 22, so as to have a swinging movement in a vertical plane, and to the upper end of the said rod one end of a connecting-bar 63 is movably attached, and the opposite horizontal extremity of the latter is formed with a series of apertures 64 to adjustably connect with a depending projecting member 65 of a carriage 66, and by means of the said rod 61 and the connections set forth the carriage is shifted in alternation in opposite directions longitudinally on the frame 22. The movement of the sleeve 60 on the rod 61 compensates for the different positions of the arm 56, and by changing the point of engagement of the bolt 58 in relation to the arm 56 the rod 61 may be accelerated or diminished, as may be desired, and to conform to such adjustment the connecting-bar 63 is correspondingly adjusted. This variation in the movement of the carriage will be commensurate to the differentiation of the length of shingles cut, so that when a shingle of maximum length is produced the movement of the carriage or the interval between the reverse positions assumed by the carriage in drawing away from and feeding up to the saw-blade will be longer than when a shorter shingle is produced. The carriage 66 comprises a frame 67, having side bars 68 and end bars 69, axles 70 being located near opposite ends of the side bars and having inner flat-rim wheels 71 and outer grooved-rim wheels 72 to respectively engage the flat bar 27 and the upstanding flange 28. The purpose of this flat and grooved-rim wheel and corresponding flat bar and flange arrangement is to insure a true aligned movement of the carriage in accordance with the initial adjustment and at the same time reduce the friction as much as possible and which will result by the use of a single pair only of the grooved-rim wheels, it being obvious that the

flat-rim wheels will have less friction in their operation. The carriage has a slight movement transversely on the said axles to clear the work from the saw, and to the outer sides of the side bars 68 plates 74 are secured and have guard members 75, depending over the bearings 73, to receive the impact of the opposite ends of the axles, and thus definitely limit the movement of the carriage. Pairs of spaced hangers 76 depend from the side bars 68 and have lower intumed ends 77, which take under the edges of the flat plates 26 on the bed 23 of the frame 22 to overcome any possibility of the carriage moving out of place on said frame, each one of the hangers being strengthened by a diagonal brace 78, secured thereto and to the central portion of the adjacent side bar 68. These hangers have a loose relation to the edges of the plates 26 and with the provision of the flat-rim wheels on one side of the carriage will compensate for expansion or contraction of the parts of the latter and of the frame 22, which is of material importance in maintaining a regular position of the carriage to insure smooth running of the latter.

The carriage 66 is equipped with devices for alternately changing the angle of the face of the bolt operated upon in reverse planes, so that the shingles will be started alternately from the butt and reduced ends thereof, and thus produce a shingle at each forward movement of the carriage. On the end bars 69 of the carriage flat metal plates 79 are secured, one on each, and near the inner end of each plate is an upwardly-projecting fulcrum 80, having a bearing edge curved in the arc of a circle and an upstanding inwardly-overhanging keeper 81. On each plate and movable lengthwise thereof is a rack-bar 82, provided with under teeth 83, extending the full transverse width thereof for a greater portion of its length, and upwardly-projecting top flange 84 and an inner head 85, formed with a series of apertures 86, 87, and 88 for adjusting the same to vary the movement of the rack-bar. The rack-bars are identical in shape and dimensions, and the flanges 84 thereof are held under the keepers 81 and have the outer edge portion of each adjacent to the keepers braced against the individual fulcrums 80. The heads 85 are pivotally held in connection with castings or slides 89, which have the opposite extremities of a shifting-bar 90, held therein by set-screws 91, the terminals of the shifting-bar projecting through the castings or slides and adapted to contact with stop-bolts 92, upstanding from the inner ends of the plates 79, and thereby limit the inward movement of the shifting-bar and the rack-bars connected thereto. The shifting-bar 90 extends longitudinally of the carriage over transverse bearing or supporting bars 93, which project inwardly over the inner side bar 68 of the carriage to hold the bolts of stock from which the shingles are cut. On the shifting-bar 90 a pair of knees 94 are adjustably

mounted, and on said bar also are a pair of slides 95, each having a gripping-dog 96. To one slide 95 one end of a spring 97 is secured, and to the other slide is pivoted a hand-lever 98, the opposite terminal of the spring being attached to the said lever 98, all as clearly shown by Fig. 4, and by this means each bolt may be locked in place on the bars 93 by the movement of the hand-lever 98 in one direction by aid of the spring, the tension of the spring also acting when the hand-lever 98 is turned outwardly past its center to hold the lever with sufficient force to resist accidental release. When the handle is turned inwardly or to the position indicated in Fig. 4, the tension of the spring is reduced to such an extent that the remaining end of the bolt may be disengaged from the dogs by the exercise of slight force.

In suitable bearings near the outer extremities of the end bars 69 of the carriage the opposite ends of a tumbling-shaft 99 are rotatably mounted, the one end of the said shaft being projected through its bearing and provided with a squared lock-head 100, which contacts with a stiff spring 101 at the lower portion thereof to thus lock the shaft 99 after each tumbling operation against accidental movement. On the shaft 99 a tumbling-head 102 is rigidly secured and is of substantially square form, with hooks 103 outstanding from the corners thereof and all directed in the same manner. On the said shaft 99, under the rack-bars 82, are cam-heads 104, having duplex diametrically-disposed cam projections 105 to take into the teeth of the rack-bars, the cam projections on one cam-head being in a plane at a right angle to those of the other head, so that the rack-bars will be alternately engaged and moved by said cam projections to produce a step-by-step movement and alternately push one casting or slide 89 in advance of the other to dispose the bolt at the proper angle relatively to the saw-blade in order to obtain the proper pitch relatively to the length of the shingle produced or as may be desired. Freely movable on one of the axles of the carriage is the one end of an actuating-bar 106, which is free to raise and lower by the movement of the carriage and slides on a wear-plate 107 on the upper surface of a cross-support 108, (see Fig. 8,) the free end of said bar 106 being provided with a striking-head 109, having inclined faces 110. Rigidly secured to the shank of said head is an upwardly-projecting catch-bar 111, provided with an upper terminal hook 112 to engage the hooks 103 of the tumbling-head 102. On one end of the frame 22 in the path of movement of the said head 109 is an adjustable striker-plate 113, which is held by a supporting-plate 114, having an adjusting-screw 115 passing through one end thereof and bearing against the outer end of the said striker-plate. The latter plate is formed with a longitudinal slot 116, having clamping-screws 117 projecting therethrough

from a clamping-plate 118, bearing on the plate 113, and by loosening the screws 117, and thereby releasing the plate 118, the plate 113 is free for adjustment through the medium of the screw 115, and thus controls the distance the head 109 travels before engaging the striker-plate to thereby regulate the rapidity of movement of the tumbling-shaft and the feed of the rack-bars in accordance with the character of the work to be performed. It will be seen that the cams 105 are adjacent to and located in a plane below that of the keepers 81 of the rack-bars 82 and that said bars are held sidewise against the fulcrum 80 and have their inner ends connected to the castings 89, which support the shaft 90. The latter will be properly held in position during the longitudinal movement of the carriage past the saw. The rack-bars, as shown by Fig. 4, have the intermediate openings 87 of the heads 85 thereof engaged by the pivot-bolts therefor, and the said adjustment produces a medium movement for the castings or slides 89, whereas when the openings 86 are engaged a minimum movement of the slides results, and when the openings 88 are engaged a maximum movement will ensue. These several connected positions of the heads of the rack-bars will cause a variation in the angle or pitch of the shingles cut, as the openings 86, 87, and 89 are in the arc of a circle, and the angle of the shifting-bar will be correspondingly changed and the inner face of the bolt likewise adjusted. If the carriage be moved in the direction of the arrow shown by Fig. 4, the actuating-bar 106 will be drawn over the wear-plate 107 and support 108, so that the head 109 thereof will be gradually raised, and thus elevate the catch-bar 111. The upward movement of the catch-bar continues until the terminal hook thereof engages the hook 103 of the tumbling-head 102 in position for operative contact, and thus the actuating-bar is held elevated. On the return movement of the carriage, the actuating-bar being still elevated, the upper inclined face of the head contacts with the striker-plate 113, which causes the said actuating-bar to be forcefully depressed, thus drawing downwardly on the catch-bar. This downward movement of the catch-bar gives the tumbling-head one-quarter movement, as indicated by Fig. 10, and correspondingly actuates the tumbling-shaft to cause the cam projection of the cam-head then in position to shift one of the rack-bars, the shaft carrying the cam-head again becoming locked through the medium of the squared head on one end thereof. The cam-head that performs its work in shifting the one rack-bar will then be out of position to engage the same rack-bar by the succeeding similar movement of the parts just set forth; but the opposite cam-head will be turned to such position that such succeeding movement of the said parts will result in the actuation of the remaining rack-bar, and this operation will be continued regularly in alter-

nation until the bolt is used up as far as practicable. The bearing-boxes 119 for the tumbling-shaft 99 are adjustable, as shown by Fig. 7, in a vertical direction by means of bolts 120 and in a horizontal direction by means of set-bolts 121, this adjustment being provided to take up wear and insure an accurate registration of the cam projections of the cam-heads on the said tumbling-shaft with the teeth of the rack-bars. In placing a new bolt on the carriage and properly positioning the same it is necessary to provide some means for preventing the rack-bars from moving and destroying the accuracy of the operative relation of the several parts and also obviate the tendency toward breakage of the latter owing to the weight of the bolt. For this purpose a manually-controlled catch is provided in connection with each rack-bar and comprises a shank 122, pivotally connected at one end to an adjustable plate 123, having a longitudinally-extending slot 124, engaged by a clamping-bolt 125, which enters the end bar 69 of the carriage. The plate 123 is mounted in a recess 126 on the inner side of the end bar, and adjacent thereto is an angle-plate 127, carrying a set-screw 128 in one terminal, said set-screw having its head bearing against the adjacent terminal of the plate 123 to render the adjustment of the latter positive, as will be readily understood. The extremity of the shank opposite that which is pivoted to the plate 123 is formed with a yoke 129, whose upper member 130 is formed or provided with a terminal tooth 131, which is adapted to take into the teeth of the rack-bar above, and both rack-bars will thus be held against movement in a positive or reliable manner when the terminal teeth 131 of the catches for the rack-bars are let free for engagement with the adjacent teeth of the latter. Each of the rack-bar catches are held up in a normal position by the upturned terminal 132 of a horizontally-disposed spring 133, which bears against the under side of the shank 122 near the yoke 129, the said spring being pivoted at its opposite terminal to the inner side of the end bar 69 of the carriage below the plane of the said shank 122, and has bearing upon the head of an intermediate adjustable fulcrum-screw 134, seated in one of the longitudinal beams of the carriage and operating to stiffen the spring or increase the resistance of the latter. When the shanks 122 are at liberty to so operate, the springs act to throw them upwardly, and to depress the said shanks and the terminal teeth thereof a manually-operated shaft 135 is longitudinally disposed in the carriage and has its opposite ends 136 increased in dimensions in oval form. The said shaft 135 is operated by a handle or grip 137, secured thereto at a point within easy reach of an operator, and when turned in one direction the said ends of the shaft 135 will be turned to bring their longest axes in vertical position to thereby depress the said shanks 122 and

lower the teeth 131 out of engaging position with the rack-bars and permit the latter to be freely moved over the plates 79, the ends 136 working between the latter plates and the shanks as the opposed points of resistance. When the shaft is turned in the opposite direction to that just set forth, the shorter axes of the ends 136 of the shaft 135 will be arranged in a vertical plane in relation to the shanks and permit the terminal teeth 131 of the yoke 129 to move upwardly into the teeth of the rack-bars. When the teeth 131 are depressed, the rack-bars will be free to be shoved outwardly, so as to place the bolt in proper position to commence cutting the shingles therefrom, and this movement will operate the tumbling-shaft in a direction reverse to that pursued in feeding the bolt, and hence the catch-bar will not interfere with said operation, as the tumbling-head will turn in such manner as to clear the corner-hook projections thereof from the terminal hook of the said catch-bar.

The mechanism for causing the carriage to have a slight transverse movement to clear the bolt from the saw-blade succeeding each shingle-cut made includes a longitudinally-disposed slide 138 in the frame 22, having two vertically-arranged strikers 139 thereon and spaced apart from each other a predetermined distance, and on the said slide 138 is a cam-throat 140, formed by two upwardly-projecting inwardly-inclined strips 141 and 142, which are suitably spaced apart from each other, the strip 142 having a horizontal extending arm 143, which is below the plane of the upper extremity of the strip 141. To one side of and above the plane of the slide 138 a cam-shaft 144 is mounted in the frame 22 and has its ends eccentrically reduced and mounted in suitable bearings 145. This cam-shaft 144 is provided with a horizontally-extending arm 146 near one end which has a roller 147 thereon to enter or engage the cam-throat 140, and when the carriage is moving in one direction—in feeding the bolt to the saw-blade to cut a shingle, for instance—the striker 139 on the left (see Fig. 8) will contact with the carriage-axle on the left and move the slide 138 sufficiently to cause the roller 147 to be drawn downwardly into the cam-throat 140, and consequently lower the arm 146 and turn the shaft 144, so as to bring the maximum projecting portion thereof upwardly, and as said shaft passes through a suitable seat in a cross-bar 148, secured to the under side of the carriage, the latter will be shifted outwardly on its axles, as hereinbefore set forth, and thus clear the face of the bolt operated upon from the plane of the saw-blade. The carriage will remain in this shifted position until slightly before reaching the opposite limit of its movement, when the right striker will be brought into contact with the right carriage-axle and shift the slide 138 in the opposite direction and raise the roller 147 and arm 146 and turn the shaft 144

in the opposite direction to shift the carriage inwardly just as the carriage moves forwardly again for another cutting operation, it being understood that one of the rack-bars will have been in the interval actuated to properly dispose the bolt in relation to the plane of the saw-blade by the mechanism heretofore set forth. The horizontal extension of the strip 142 forms a rest and guide for the roller 147 and insures a proper direction thereof into the cam-throat 140, and the said roller will be forced to enter the throat by means of the upwardly-projecting extremity of the strip 141. This automatic operation of the carriage is of very material importance, as the saw-blade will be less liable to impairment, and the frictional resistance that would be set up by a drag of the face of the bolt over the saw-blade is avoided.

As an efficient auxiliary to prevent the carriage from overriding the distance on the frame 22 which it is intended to have it move, a strap 149 is attached to a rod 150 at one end of said carriage, and said carriage is cushioned on its return movement by a portion thereof striking a resilient means. This resilient means will preferably consist of a yielding upright 151, partially shown in dotted lines in Figs. 2 and 4, and which rises above the supporting means for the entire machine. The upright 151 is in the form of a stout board, which is about fifteen feet long and extends through the flooring on which the machine rests, and is free to move and exert a cushioning effect through its inherent resiliency. It will also be understood that the cam-heads on the tumbling-shaft have their projections extending upwardly through slots in the plates 79, and likewise the teeth 131 of the shanks 122 also work through slots in said plates. The parts of the frame 22 and the carriage will be strengthened by suitable means wherever found necessary, and features of adjustment and removability of the several parts will be provided in connection with the several parts, when desired, other than those specifically referred to.

From the foregoing it will be seen that a band-saw is utilized in a convenient manner to saw shingles in conjunction with an oscillating or reciprocating carriage having an offset clearing movement, that shingles can be sawed from bolts with less waste in sawkerf and slab, and that the shingles will be smoother and more accurate. In fact, the improved machine is of such structure as to render the manufacture of shingles extremely economical.

Having thus described the invention, what is claimed as new is—

1. In a shingle-machine, the combination with a saw, of a shingle-bolt-feeding mechanism comprising a frame, a carriage movable on the said frame, and means for slightly shifting the carriage in a transverse direction automatically and consisting of a cam device mounted in the frame and engaging a portion

of the carriage, a slide in the frame, and operative mechanism between the cam device and slide, and strikers extending upwardly from the slide to contact with opposite end portions of the carriage.

2. In a shingle-machine, the combination with a saw, of a shingle-bolt-feeding mechanism comprising a frame, a carriage movable on the frame and having axles at opposite extremities having a loose connection to permit the carriage to be transversely moved thereon, means depending from the carriage-frame over the plane of the ends of the axles of said carriage to limit the transverse movement of the latter, and means for transversely moving the carriage on its axles.

3. In a shingle-machine, the combination with a saw, of a shingle-bolt-feeding mechanism comprising a frame, a carriage movable on the frame and having a frame with axles in loose connection with opposite extremities thereof, depending guards to contact with the opposite ends of the axles, and means for transversely moving the carriage-frame on its axles.

4. In a shingle-machine, the combination with a saw, of a shingle-bolt-feeding mechanism comprising a frame, a carriage longitudinally movable on the frame and of itself having a frame mounted on axles, and means for slightly shifting the carriage automatically in a transverse direction consisting of a cam-shaft engaging the carriage provided with an arm, a slide in the frame supporting the carriage having a cam-throat into which said arm extends, and a pair of upstanding strikers on the slide to engage opposite extremities of the carriage-frame.

5. In a shingle-machine, the combination with a saw, of a shingle-bolt-feeding mechanism comprising a frame, a carriage longitudinally movable on the frame and of itself having a frame mounted on axles, and means for slightly shifting the carriage automatically in a transverse direction consisting of a cam-shaft engaging the carriage and provided with an arm having a terminal roller, a slide in the frame supporting the carriage having a cam-throat formed by two upwardly-projecting inwardly-inclined strips spaced apart from each other to receive the said roller between them, and a pair of upstanding strikers on the slide to engage opposite extremities of the carriage-frame.

6. In a shingle-machine, the combination with a saw, of a shingle-bolt-feeding mechanism comprising a supporting-frame, a carriage longitudinally movable on said frame and having means for supporting a shingle-bolt, a shifting-bar having bolt-engaging dogs, slides carrying said shifting-bar and adapted to move transversely of the carriage, guided rack-bars arranged on the carriage, means for independently and adjustably connecting the rack-bars to the slides thereby to adjust the degree of inclination of the shifter-bar, and means for alternately feeding the

rack-bars to dispose the shingle-bolt face in opposing angular planes.

7. In a shingle-machine, the combination with a saw, of a shingle-bolt-feeding mechanism comprising a supporting-frame, a carriage longitudinally movable on the frame and having means for supporting a shingle-bolt, an inner shifting-bar, bolt-engaging dogs carried thereby, slides adapted for movement transversely on the carriage and carrying said shifting-bar, rack-bars guided on the carriage, means for adjustably pivoting the inner ends of said rack-bars to the slides, curved fulcrum-plates for engagement with the outer side of said rack-bars, keepers for preventing excessive upward movement of the rack-bars, and means for alternately feeding said rack-bars to dispose the shingle-bolt face in reverse angular planes.

8. In a shingle-machine, the combination with a saw, of a shingle-bolt-feeding mechanism comprising a frame having actuating devices therein, a carriage longitudinally movable on said frame and having means for supporting a shingle-bolt, an inner shifting-bar attached to opposite slides to which the inner ends of the rack-bars are pivoted to have lateral adjustment, said rack-bars, a tumbling-shaft and cam-heads for actuating said rack-bars, a tumbling-head on the said shaft, an actuating-bar loosely hinged at one end to one extremity of the carriage and having its opposite end free and provided with an angular head, a catch-bar attached to the free end of the actuating-bar for operation with the tumbling-head, the actuating-bar being automatically elevated by the movement of the carriage, and a horizontally-disposed longitudinally-slotted striker-plate on one end of the frame for automatically depressing the free end of the actuating-bar.

9. In a shingle-machine, the combination with a saw, of a shingle-bolt-feeding mechanism comprising a frame having actuating devices therein, a carriage movable on said frame and having means for supporting and feeding a shingle-bolt to the saw, a tumbling-shaft having devices for operating the feeding means on the carriage and also provided with a tumbling-head, an actuating-bar attached at one end to the carriage to have a free elevation and a positive depression and provided with a catch-bar at its free end to operate in conjunction with the said tumbling-head to turn the tumbling-shaft, and a horizontally-disposed longitudinally-slotted striker-plate on one end of the frame for engaging and automatically depressing the free end of the actuating-bar.

10. In a shingle-machine, the combination with a saw, of a shingle-bolt-feeding mechanism comprising a frame having actuating devices thereon, a carriage movable on the frame and having means for supporting and feeding a shingle-bolt to the saw, a shaft having mechanism operatively connected to the feeding means on the carriage, a tumbling-

head secured to said shaft, a rectangular block carried by the shaft, a spring adapted to engage with the flattened side of the block to assist in the rotative movement of the shaft and to lock the same at the completion of each intermittent rotative movement, an actuating-bar fulcrumed to the carriage, a cross-bar carried by the frame and serving as a support and as a means for elevating the actuating-bar, a catch-bar secured to said actuating-bar and adapted to engage with and turn the tumbling-head, and a longitudinally-adjustable striker-plate carried by the frame and adapted to engage and lower the actuating-bar, and means for locking the striker-plate in any position to which it may be adjusted.

11. In a shingle-machine, the combination with a saw, of a shingle-bolt-feeding mechanism comprising a supporting-frame, a carriage movable on the frame and having bolt-engaging dogs, carrying devices therefor, a pair of rack-bars arranged on the carriage, means for independently and adjustably connecting the rack-bars to the dog-carrying devices, thereby to adjust the degree of inclination of the bolt, means for operating said rack-

bars, pivoted arms having terminal teeth for engagement with the rack-bars, means for adjusting the pivot-points of said arms, springs engaging under the arms and adapted to force the same into engagement with said rack-bars, and a manually-operated shaft having elliptical end portions for effecting a movement of said arms to inoperative position, substantially as specified.

12. In a shingle-bolt-feeding mechanism, the combination of a frame having plates at the upper side portions thereof which project outwardly beyond the said side portions, a carriage longitudinally movable on the frame, depending hangers having lower angular ends to take under the projecting portions of said plates, and braces connected to the lower extremities of the hangers and to the central side portions of the carriage.

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

GEORGE W. ROPER.

Witnesses:

CHAS. N. NORSWORTHY,
GEO. S. COLLINS.