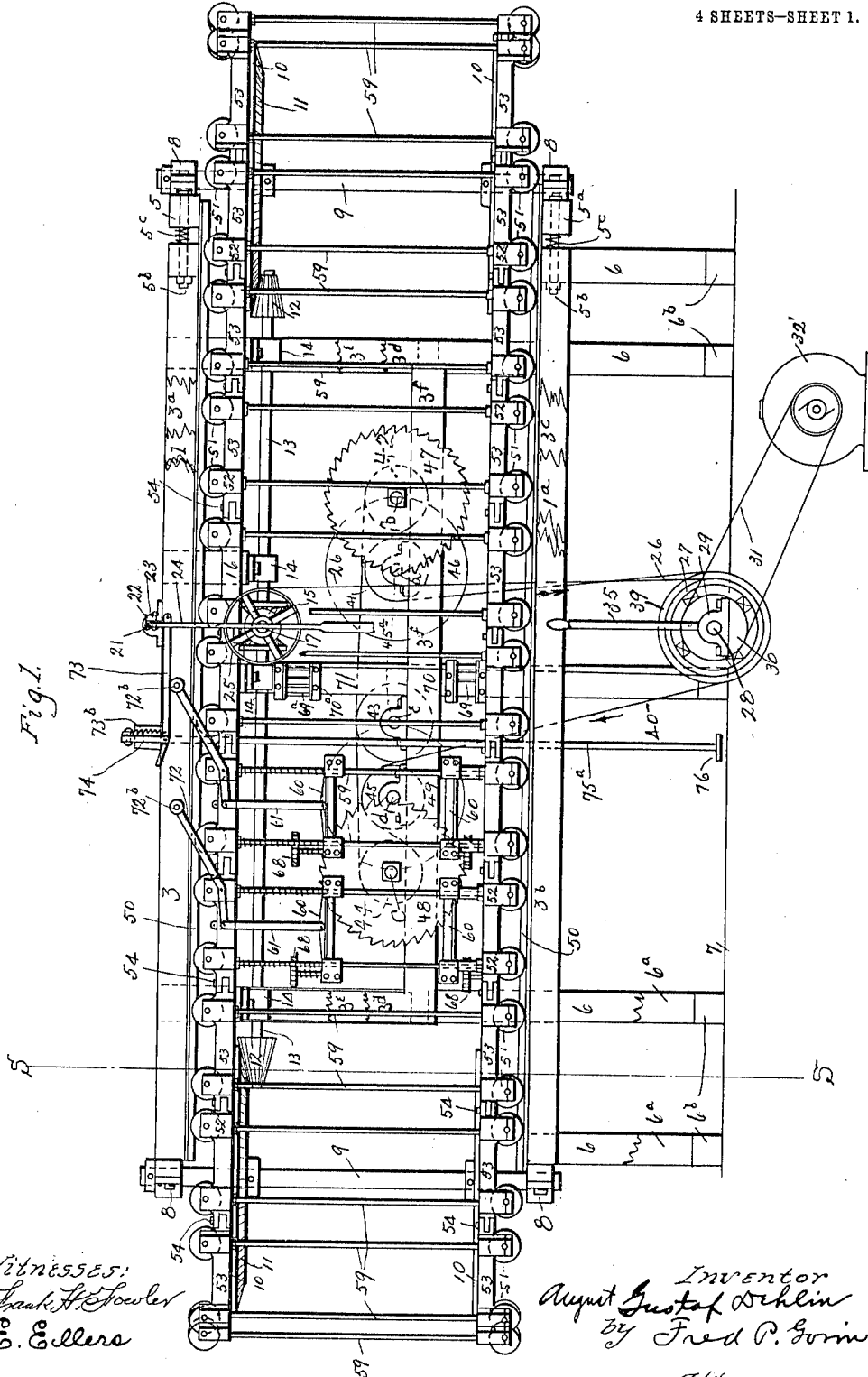


1,063,914.

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SHINGLE CUTTING MACHINE.
APPLICATION FILED DEC. 16, 1911.

Patented June 3, 1913.

4 SHEETS—SHEET 1.



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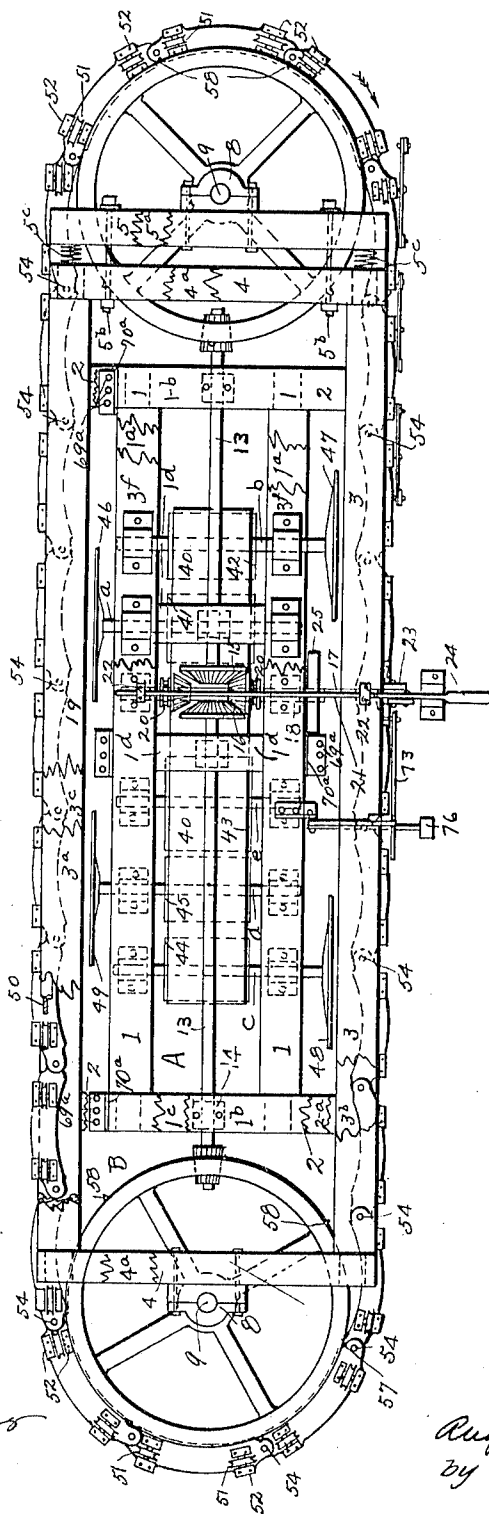
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 4.

Fig. 11.

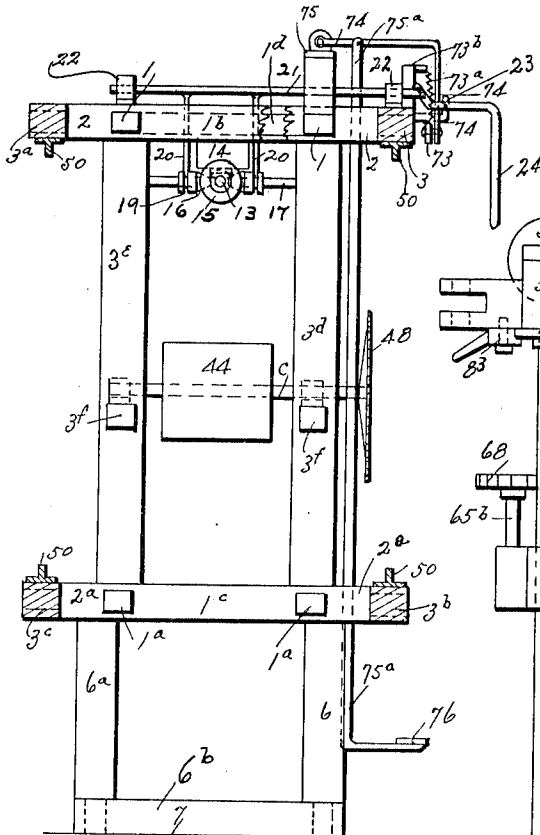


Fig. 9.

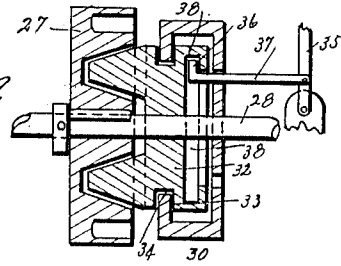


Fig. 8.

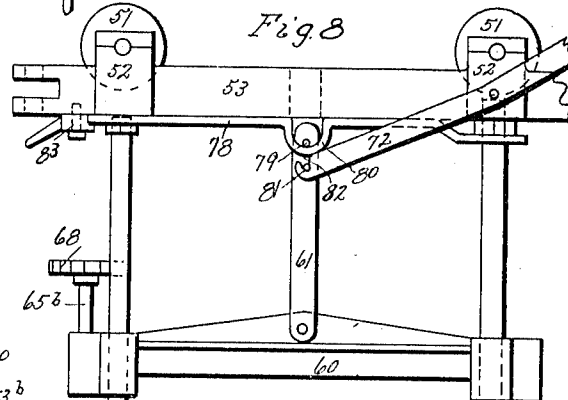
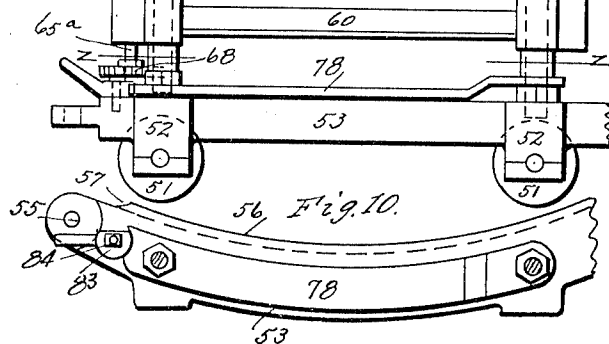


Fig. 10.



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UNITED STATES PATENT OFFICE.

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SHINGLE-CUTTING MACHINE.

1,063,914.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed December 16, 1911. Serial No. 666,305.

To all whom it may concern:

Be it known that I, AUGUST GUSTAF DEHLIN, a citizen of the United States, and a resident of Seattle, county of King, and State of Washington, have invented certain new and useful Improvements in Shingle-Cutting Machines, of which the following is a specification.

The principal object of this invention is to provide a machine of the character indicated which while occupying a minimum floor space and running at low speed yet has an exceedingly large output owing to the large multiple block system. A further object is the safety element, due, in part, to the low speed.

A further object is the saving of material, due to the use of very thin saws which is in turn due to the low speed.

A still further object is the improved block setting and conveying means. It is not new in the art to provide means for carrying the blocks, from which the shingles are cut, in a continuous direction, the saws being in the path of movement of the blocks, and I do not claim same without qualification, but in machines of this character the number of block carriers and saws has heretofore been necessarily limited thus keeping down the capacity of the machine and at the same time necessitating high speed, thick saws, danger to the operator, etc. I avoid all these undesirable results by means of the combination and arrangement of the parts as will be more fully pointed out in the following specification and shown in the accompanying drawings in which—

Figure 1 is a side elevation with parts broken away. Fig. 2, a plan view with some of the timbers broken away. Fig. 3, is a side elevation of one of the block carriers with one of the wheel boxes broken away to show the gearing. Fig. 4 a plan view of one of the links and its attached wheels. Fig. 5, an edgewise view of Fig. 3, looking in the direction of the arrow in Fig. 3. Fig. 6, a cross sectional view of one of the links taken upon the line $x-x$ of Fig. 4. Fig. 7, an end view of one of the block carriers and its attached parts, partly in section upon the line $y-y$ of Fig. 3. Fig. 8, a side elevation of one set of block carriers arranged to swing. Fig. 9, a sectional view of the clutch mechanism. Fig. 10, a plan view of one of the swingingly arranged block car-

riers, partly in section upon the line $z-z$ of Fig. 8. Fig. 11, an end elevation of the frame work of the machine partly in section and with parts omitted.

The supporting structure is formed by the inner frame A and the outer frame B. The frame A consists of the two side timbers, 1 and 1^a joined at their respective ends by the cross timbers 1^b and 1^c. The ends 2 and 2^a of which project beyond the plane of the timbers 1 and 1^a. To the projecting ends 2 and 2^a are mortised or otherwise firmly secured the upper side timbers 3 and 3^a and the lower side timbers 3^b and 3^c respectively, secured to the ends of which are the cross timbers 4 and 4^a. The timbers 1 and 1^a at each side of the frame A lie one above the other and are spaced apart vertically by the upright posts 3^d and 3^e (Figs. 1 and 2). Extending from one of the posts 3^d to the other upon the one side, and from one of the posts 3^e to the other upon the opposite side are the stringers 3^f. At the right hand end of the frame B are the cross pieces 5 and 5^a through which pass the bolts 5^b and between which and the cross timbers 4 and 4^a are the springs 5^c. The frames A and B are supported upon the legs or uprights 6 and 6^a which are secured to the sills 6^b which are in turn firmly secured to the base or floor line 7. Upon the crosspieces 5 and 5^a at one end of the frame and 4 and 4^a at the opposite end thereof are the journal bearings 8 in which are revolubly mounted the upright shafts 9 to which are secured the upper and lower bull wheels 10, the upper pair of which have the teeth 11 which mesh with the miter gears 12 secured to the shafts 13 which are revolubly mounted in the bearings 14 upon the lower sides of the timbers 1^b and 1^a.

Secured to the inner ends of the shafts 13 are the bevel gears 15 which mesh with the similar gears 16 keyed to the shaft 17 which is revolubly mounted in the bearings 18 upon the under sides of the timbers 1, shown in dotted lines in Fig. 2. The bevel gears 16 have the spools 19 formed on their outer ends which are straddled by the fingers 20 projecting downwardly from the rod 21 which is shiftable in the bearings 22 secured to the timbers 3 and 1 respectively. To the bracket 23 is pivoted the lever 24 to the upper end of which is pivotally connected the end of the rod 21 so that by pull-

ing or pressing upon the lower end of the lever 24 the rod 21 is shifted in its bearings and its straddling fingers 20 cause the gears 16 to slide along the shaft 17 to bring either one or the other of the gears 16 into mesh with the miter gears 15, as will be understood. To the shaft 17 is secured the pulley 25 around which is the belt 26 which passes downwardly and around the pulley 27 secured to the shaft 28 which latter revolves in the bearings 29 secured to the base or floor line 7. Loose upon the shaft 28 is the wheel 30 around which passes the belt 31, driven by the motor 32'. Between the pulley 27 and the wheel 30 is the friction clutch block 32, (Fig. 9) which is loose upon the shaft 28 and to which the wheel 30 is connected by the hooked fingers 33 which project into the recesses 34 in the clutch block 32 so that by means of the lever 35 the hooked finger 36 of the link 37 may be forced against the clutch block 32 to move the same into frictional engagement with the pulley 27, and by a reverse movement to withdraw the same from such engagement. The hooked finger 36 wipes around in the annular channel 38 of the clutch block 32.

Secured to the shaft 28 is the wheel 39 around which passes the belt 40, the course of which is in the direction of the arrows in Fig. 1 and is first over the drum 41 downwardly and around the drum 42, thence to the left over the idler 43, downwardly around the drum 44, returning upwardly over the drum 45 and finally down to the wheel 39. The drums 41, 42, 44 and 45 and the idler 43 are secured to the cross shafts *a*, *b*, *c*, *d* and *e* respectively, which shafts revolve in the bearings 45^a secured to the timbers 3'. To one end of the shaft *a* is secured the saw 46, to the shaft *b* is secured the saw 47, to the shaft *c* is secured the saw 48 and to the shaft *d* is secured the saw 49. To the under surfaces of the timbers 3 and 3^a and to the upper surfaces of the timbers 3^b and 3^c are secured the track rails 50 upon which run the wheels 51 mounted within the boxes 52 upon the links 53 joined together by the pins 54 which pass through the holes 55 (Figs. 3 and 4). The links 53 are curved as shown, to readily pass around the bull wheels 10, and have the ledges 56 which fit over the upper circular edges of the wheels 10. A shoulder 57 is formed at the end of each of these ledges (Fig. 4) which coöperates with the studs 58 (Fig. 2) upon the wheels 10, to prevent possible slipping of the chain thus formed by the connecting links 53. The chain thus formed passes around the bull wheels 10 as plainly shown in Figs. 1 and 2. After these chains have been passed around the wheels 10 the same are drawn to the proper tension by moving the cross timbers 5 and 5^a in or

out by means of the bolts 5^b and their co-operating nuts, the springs 5^c pressing outwardly on the timbers 5 and 5^a as will be understood. Between the upper and lower links 53 are the rods 59 upon which are slidably mounted the upper and lower shingle block keepers 60. To the upper block keeper 60 is attached the link 61 which passes through the slot 62 in the upper link 53 and through which is the pin 54. The upper block keeper 60 is downwardly pressed by the springs 63, the pin 54 forming a limit stop therefor. The block keepers 60 are recessed at 64 (Fig. 7) to receive the toothed rods 65 which are reduced at either end to revolvably fit the bearings formed by the ends 64^a of the recess 64, these ends being correspondingly reduced (Fig. 3). The block keepers 60 are vertically bored at one end to revolvably receive the spindles 65^a and 65^b, the former having flat tension spring 65^c and the latter the spiral spring 65^d, and upon both are formed the worm gears 66 (Figs. 3 and 5), which mesh with the similar gears 67 upon the ends of the rods 65. Upon the ends of the spindles 65^a and 65^b are the pinion wheels 68 the teeth of which are in the vertical plane of the pins 69 and 69^a which are removably mounted in the brackets 70 and 70^a secured to the upright timbers 71 of the frame A. Upon the wheel box 52 is pivoted the lever 72 (Fig. 3) the lower end of which is pivoted at 72^a to the link 61 and upon the upper end of the same is the roller 72^b, which passes under the plate 73 (Figs. 1, 2 and 11) which is held up by the spring 73^a attached to the bracket 73^b upon the timber 3. Pivoted to the plate 73 is the lever 74 which is pivoted to the bracket 75 (Fig. 11). To the lever 74 is pivoted the lever 75^a which is bent at right angles as shown, and projects outwardly where it terminates in the foot piece 76. When the parts are in the positions shown in Fig. 1 the rollers 72^b just pass beneath the plate 73.

While I have shown but a limited number of block carriers 60 and their attached mechanisms, it will be understood that upon each of the rods 59 a block carrier may be mounted in the manner above described.

To conveniently remove the saws 46, 47, 48 and 49 for repairs, or for other reasons, I swingingly mount one or more sets of the block carriers 60 as illustrated in Fig. 8. Referring particularly to that figure, the left hand rod 59 instead of entering the upper and lower links 53, is mounted in the plates 78, as shown in dotted lines in Fig. 8. The plates 78 swing upon the right hand rod 59 in the manner of a door, and the upper end of the links 61, instead of passing through the upper link 53, passes under the same, the pin 79 engaging with the loop 80 in the upper plate 78 to form a limit stop.

The lever 72, instead of being permanently pivoted to the link 61 is removably connected thereto by the pin 81 and notch 82 so that when it is desired to open or swing the block carrier 60 all that is necessary is to spring the lower end of the lever 72 slightly outward and then lift the same clear of the upper plate 78, when the upper and lower block carriers 60, plates 78, and the left hand rod 59 may be freely swung outwardly from left to right upon the right hand rod 59. To firmly secure the parts in position I provide the semicircular fastenings 83 revolvably mounted upon the pins 84 and which fit into corresponding openings in the ends of the plates 78, as plainly shown in Figs. 8 and 10, the operation of which is obvious.

From the foregoing description it is believed that my device will be fully understood by those skilled in the art. A shingle block is placed between each pair of the upper and lower carriers 60, the toothed rods 65 indenting into the block and holding the same firmly under pressure of the springs 63. Power is transmitted from the engine 32 to the wheel 30 and its attached shaft 28 and, through the clutch mechanism illustrated in Fig. 9, further transmitted through the pulleys 27 and 25, belt 26, shaft 17 miter gears 15 and 16, shafts 13, miter gears 12 to the bull wheels 10. The chains formed by the links 53 are carried around by the bull wheels 10, the wheels 51 rolling upon the tracks 50 during their straight forward movement, and being supported by their ledges 56 (Fig. 6) upon the wheels 10 as they are carried around the latter. The wheel 39 being also attached to the shaft 28, power is transmitted therethrough and through the belt 40, drums 41 and 42, 44 and 45 and their attached shafts *a, b, c, d*, to the saws 46, 47, 48 and 49, the saws 46 and 49 turning in one direction and the other two saws turning in the opposite direction. As the shingle block, previously adjusted between the carriers 60, passes the first saw in its path a strip is cut from its face. Before the block reaches the next saw the pinions 68 must pass the pins 69 and 69^a, the former, as will be observed in Fig. 3, being fewer in number than the latter causes the lower pinion wheels 68 to rotate through a less distance than the upper wheels 68 and causing a corresponding difference in the rotation of the upper and the lower toothed shafts 65 in the block carriers 60, which feeds the upper end of the block a certain distance toward the vertical plane of the saw which it is approaching, and the lower end of the same a certain less distance, which, when the block passes the next saw causes a properly shaped shingle to be cut therefrom. The block is again automatically set as the pinions 68 pass the

next set of pins 69 and 69^a and so on until the block has been reduced to a "spawl." By pressing downwardly on the foot piece 76 of the lever 75^a, the plate 73 is forced downwardly and slightly below the plane of the upper portion of the approaching roller 72^b. As the roller 72^b passes under the now depressed plate 73 the upper block carrier 60, through the lever 72, pin 72^a and link 61, is drawn upwardly against the tension of the springs 63 and so held while the roller 72^b is passing under the plate 73, during which the "spawl" may be readily removed and replaced by a fresh shingle block. Due to the fact that the lines of blocks when traveling in their cutting path are parallel to each other, the saws running vertically and the block setting mechanism intervening between the saws, much less space is occupied by the machine than if the blocks traveled in a circular path and the saws were arranged in a horizontal plane. It is obvious that the output of the machine is large; that the same may be run at low speed which permits the use of thin saws and at the same time saves material.

While I have shown a particular form of embodiment of my invention, I am aware that many changes therein will readily suggest themselves to others skilled in the art without departing from the spirit and scope of the invention, and I do not, therefore desire to be limited to the exact form and arrangement herein described and shown in the drawings.

What I claim as new and desire to protect by Letters Patent is—

1. In a shingle cutting machine the combination of a main frame, endless roll feed block conveying means around said frame, saws in the path of blocks carried by said conveying means, pinion wheels carried by said conveying means and coöperating directly with sets of pins of variable number upon said frame, whereby one of the ends of said blocks is fed a predetermined distance into the plane of said saws and the opposite ends thereof fed a greater distance in the same direction.

2. In a shingle cutting machine the combination of a main frame, endless roll feed block conveying means around said frame, saws in the path of blocks carried by said conveying means, upper and lower pinions carried by said conveying means and coöperating with corresponding sets of removable pins upon said frame, thereby one of the ends of said blocks are fed a predetermined distance into the plane of said saws and the opposite ends thereof fed a greater distance in the same direction.

3. The combination in a shingle cutting machine of its fixed frame, vertical circular saw, roll feed block carriers and endless conveying means therefor, of removable pins

vertically mounted on said frame and pinions on said block carriers adapted to engage said pins whereby the blocks are fed to the saw.

- 5 4. The combination in a shingle cutting machine of its fixed frame, vertical circular saws, roll feed block carriers and endless conveying means therefor, of pinions on
10 said block carriers, horizontal brackets on said frame, headed pins removably and vertically mounted in said brackets and spaced apart to conform to the pitch of said pinions and adapted to be engaged by said pinions whereby said blocks are fed to the saw.
15 5. The combination in a shingle cutting

machine of its fixed frame, vertical circular saws, roll feed block carriers and endless conveying means therefor, of sets of upper and lower horizontal brackets fixed to said frame, pins vertically and removably mounted in said brackets and equidistant from each other, and upper and lower pinions on said block carriers adapted to engage said pins, whereby the ends of the blocks may be fed to the saw in varying degrees out of the perpendicular.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."