Sept. 21, 1965 L. B. DENNISON 3,207,192

GROOVING MACHINE FOR SHINGLES

Filed Nov. 12, 1963 2 Sheets-Sheet 1

FIG. 2

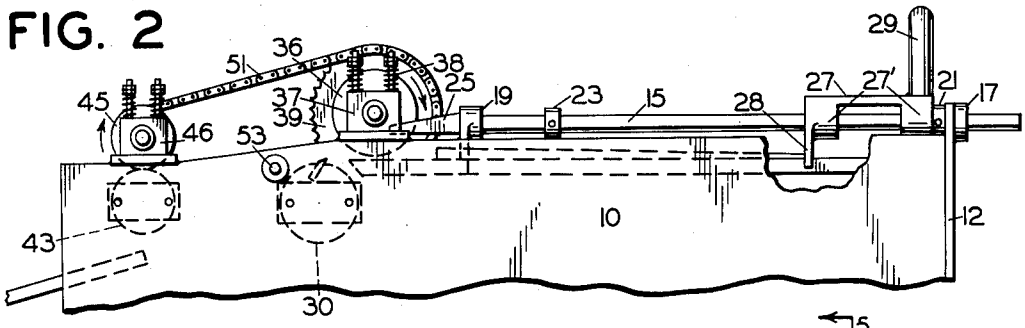
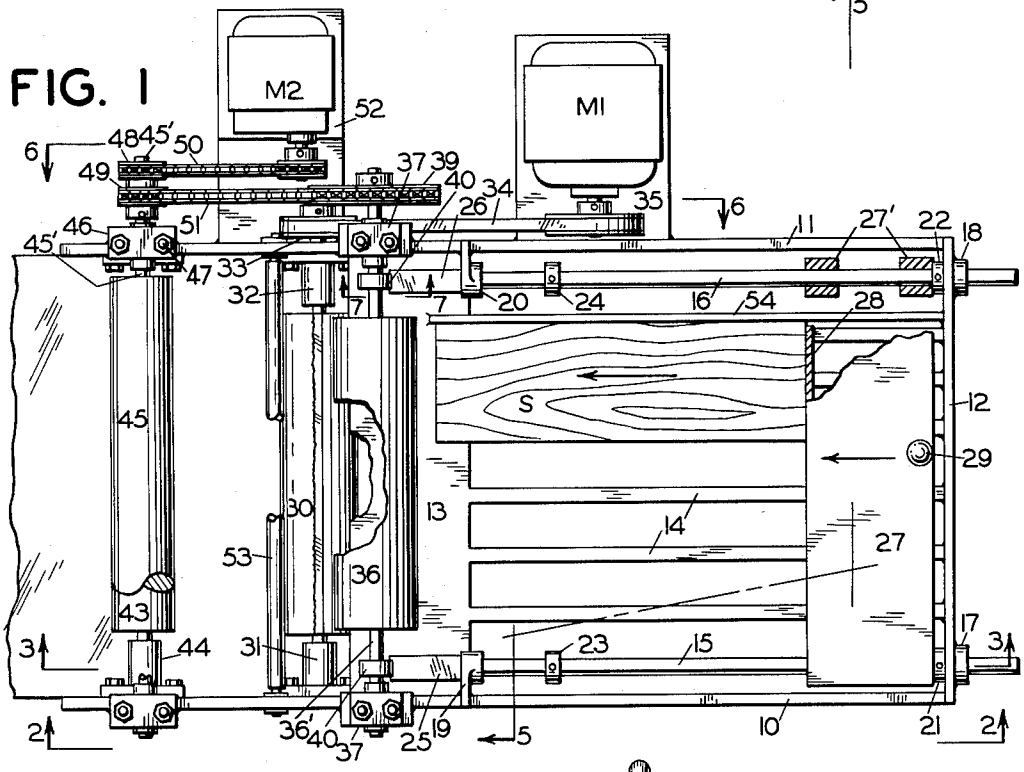


FIG. 1



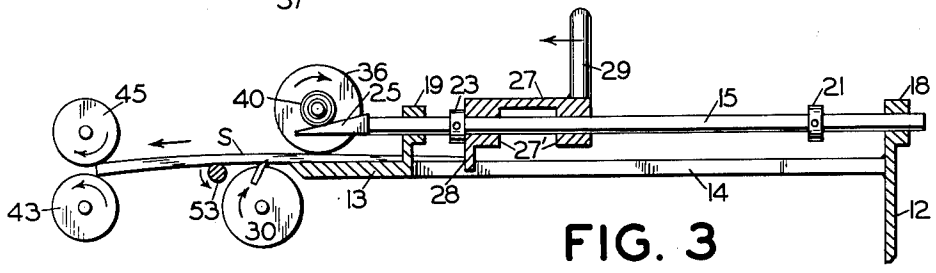


FIG. 3

INVENTOR.
LEE B. DENNISON

BY H. R. Geiler.

ATTORNEY

Sept. 21, 1965 L. B. DENNISON 3,207,192

GROOVING MACHINE FOR SHINGLES

Filed Nov. 12, 1963 2 Sheets-Sheet 2

FIG. 5

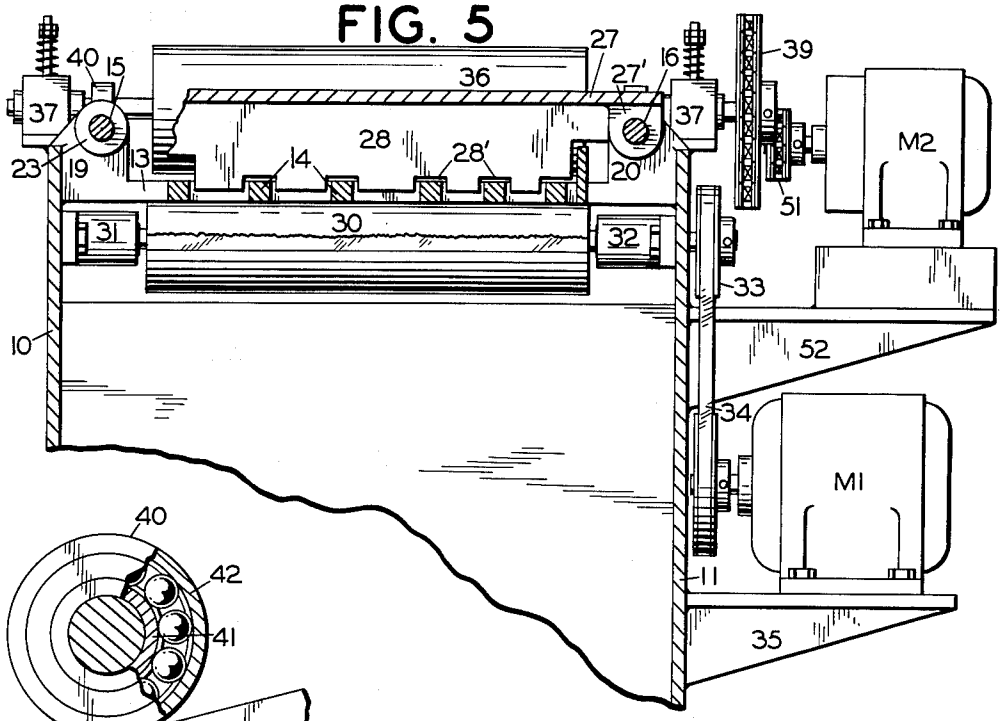


FIG. 7

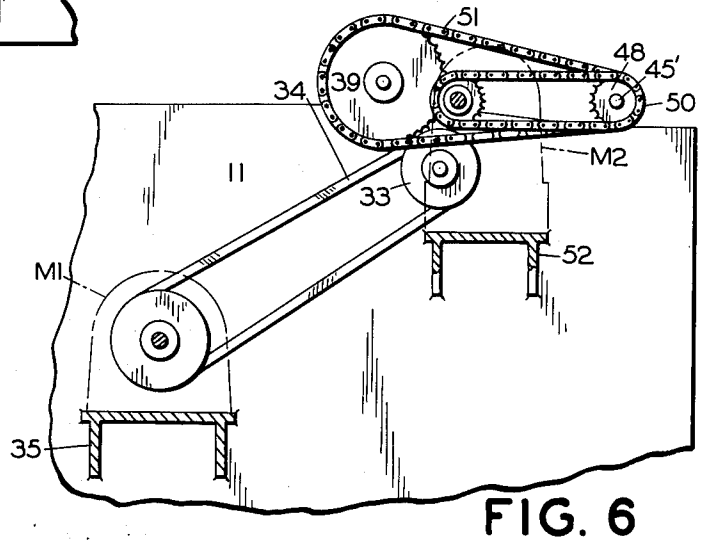


FIG. 6

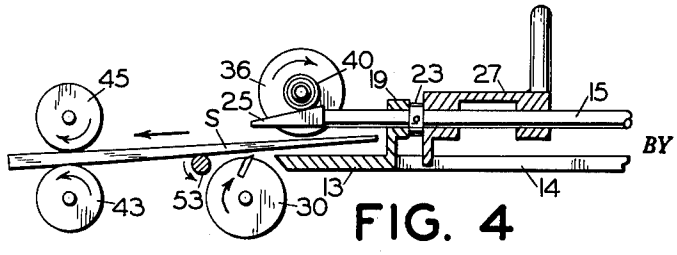


FIG. 4

INVENTOR.
LEE B. DENNISON

BY

ATTORNEY

United States Patent Office

3,207,192

Patented Sept. 21, 1965

3,207,192

GROOVING MACHINE FOR SHINGLES

Lee B. Dennison, Box 441, Sweet Home, Oreg.

Filed Nov. 12, 1963, Ser. No. 322,708

5 Claims. (Cl. 144—13)

The present invention is concerned with the grooving of machine-sawed shingles to enable the exposed surface of each shingle, when the shingle is laid in place, to present a rough grooved surface resembling in appearance that of a hand split shingle or shake.

More specifically, this invention relates to the grooving of ordinary wedge-shaped shingles with which it is necessary to confine the surface grooving to the thicker portion of the shingle, inasmuch as the continuing of the grooving to the thinner end of the shingle would result in the splitting or mutilation of the thin end tip.

It has been found most practical and satisfactory in performing such shingle surfacing or grooving to have the shingles move butt end first past the facing or grooving tool and thus in accordance with the method described in my U.S. Letters Patent No. 2,987,088, issued June 9, 1961, which method in general is also followed with the shingle facing machine described in my subsequent U.S. Letters Patent No. 3,084,726, issued under date of April 9, 1963.

The object of the present invention accordingly is to provide a further improved shingle grooving machine in which each shingle will be moved past the grooving tool butt end first, and in which the grooving of the face of the shingle will extend from the butt end towards the thin tip end but will automatically be discontinued at a desired distance from the butt end before extending too far along into the thinner end.

A specific object of the invention is to provide a considerably simplified grooving machine for ordinary wedge-shaped shingles embodying the usual rotating cutter or grooving tool and a pressure roll for holding the shingle down against the cutter during the portion of its travel corresponding to the desired extent of the grooving along the shingle, but employing novel simple means for moving the shingle through the machine, and with the moving means automatically lifting the pressure roll and releasing the shingle from contact by the cutter at a predetermined point in the forward moving of the shingle by the moving means.

Another specific object of the present invention is to provide a simplified shingle grooving machine in which no rotating cams controlling the timing of the grooving operation and no special means for synchronizing the movement of the shingles will be required, and in which the shingles may be manually fed directly to the cutter with the assistance of only a single driven pressure roll.

A still further object is to provide an improved simple shingle grooving machine which can be produced at very moderate cost, which will require only a relatively small amount of space, and which can be made available for small, owner-operated shingle mills where the production of such grooved shingles heretofore has often not been considered feasible.

The construction and method of operation of the simplified machine of the present invention, and the manner in which the above mentioned objects and other advantages are attained thereby will be briefly described and explained with reference to the accompanying drawings, wherein:

FIG. 1 is a plan view of the machine with parts broken away for clarity, showing a shingle in place preparatory to being grooved;

FIG. 2 is a side elevation taken on line 2—2 of FIG. 1;

FIG. 3 is a fragmentary sectional elevation on line 3—3 of FIG. 1, but illustrating the shingle in the process of being grooved and thus moved ahead from the starting position of FIGS. 1 and 2;

FIG. 4 is a fragmentary sectional elevation similar to FIG. 3 but illustrating the shingle at the completion of the grooving operation and in position for being discharged from the machine;

FIG. 5 is a section on the line indicated at 5—5 in FIG. 1 but drawn to a larger scale;

FIG. 6 is a fragmentary sectional elevation on line 6—6 of FIG. 1 drawn to the same scale as FIG. 1; and

FIG. 7 is a fragmentary section on line 7—7 of FIG. 1 drawn to a larger scale.

Referring first to FIGS. 1, 2 and 5, the machine includes a supporting frame with the members welded or otherwise secured together, including a pair of side walls or plates **10** and **11**, a rear wall **12**, and a deck **13** extending part way along in the top portion of the machine. Equally spaced, longitudinally extending ribs **14** are mounted on the deck **13**.

A pair of parallel horizontal slide rods **15** and **16** are positioned above the deck near opposite sides of the machine respectively and are slidably mounted at the rear in a pair of bosses **17** and **18** respectively carried at the top of the rear wall **12** and, near their forward ends, in a pair of bearing bracket arms **19** and **20** welded on the side plates **10** and **11** respectively. A pair of rear collars **21** and **22** and a pair of forward collars **23** and **24** are secured on the rods **15** and **16** respectively to limit the rear and forward travel of the rods. At their forward ends, beyond the supporting bearing brackets **19** and **20**, the rods **15** and **16** have enlarged heads **25** and **26** respectively which are wedge-shaped with their top faces sloping upwardly and rearwardly so as to constitute lifting wedges, the purpose of which will be explained later.

A carriage **27** is slidably supported on the rods **15** and **16**, having a pair of bearing lugs **27'** at each side which extend around the rods and have slidable engagement therewith. The carriage **27** has a vertical front wall **28**, the bottom edge of which is provided with upwardly extending slots **28'** (FIG. 5) to accommodate the ribs **14** so as to enable the carriage to slide along over the deck with the front wall extending down a short distance into the spaces between the longitudinally extending ribs **14**. The carriage has a handle **29** on the top to enable the carriage to be moved manually forward and back along on the rods **15** and **16**, and also to enable the rods **15** and **16**, through the intermediary of the carriage, to be moved a limited extent from rear position to forward position when the carriage engages the forward collars **23** and **24**, and similarly to be returned to normal rear position when the carriage engages the rear collars **21** and **22** of the rods.

A rotating cutter head **30** is rotatably journaled in suitable journal boxes **31** and **32** secured on the side plates **10** and **11** respectively (FIGS. 1 and 5). A pulley **33** is secured on the end of the cutter head shaft, extend-

ing beyond the side plate **11**, and this pulley is connected by a belt **34** with the drive pulley of a motor **M1**, the motor **M1** being supported on a bracket **35** secured on the outside of the side plate **11**. The cutter head is provided with one or more grooving knives as usual and is rapidly rotated by the motor **M1** in clockwise direction (as viewed in FIGS. 2, 3, and 4).

A driven, spring-mounted shingle-engaging pressure roll **36** is located above, and slightly in advance of, the cutter head **30**, as shown in FIGS. 1 and 2, and, when in normal low position, will contact the end of a shingle when a shingle is placed on the deck **13**, in the position of a shingle S in FIG. 1, for example, with butt end foremost, and is moved forwardly (to the left as viewed in FIGS. 1 and 2). The contact of this roll **36**, in low position, with the shingle aids in continuing the forward movement of the shingle and holds the shingle down into contact with the cutter head **30**, causing the underside of the shingle to be grooved by the cutter head as long as the roll **36** bears down on the shingle.

The shaft **36'** for the roll **36** is journalled in a pair of journal boxes **37** at opposite ends respectively, which journal boxes are each mounted on a pair of guide posts **38** carried by the side plates of the frame and are slidable upwardly on the guide posts. Adjustable springs on these guide posts **38** hold the journal boxes **37**, and therewith the pressure roll **36**, down in normal low position but enable the roll **36** to be lifted upwardly against the force of the tensioned springs. An end of the roller shaft **36'**, extending beyond a journal box, carries a sprocket **39** which is driven from a motor **M2** by connecting means mentioned later. The pressure roll **36** is rotated in clockwise direction (as viewed in FIGS. 2, 3 and 4).

A pair of bearing assemblies **40** (FIGS. 1 and 7) are secured on the shaft **36'** for the pressure roll **36** in the respective positions shown in FIG. 1, and thus in registration with the wedge-shaped heads **25** and **26** of the slide rods **15** and **16** respectively. While these bearing assemblies may be of various suitable and more or less well known forms, a preferred form is illustrated in FIG. 7 wherein **41** indicates the inner race for the balls or rollers of the bearings and **42** indicates the outer race and casing which has a cylindrical peripheral wall and annular side walls so as to form a closed, lubricant-containing casing in cooperation with the inner race.

It will be apparent from the construction and mounting thus far described with reference to the pressure roll **36** that forward movement of the slide rods **15** and **16** (thus movement to the left as viewed in FIGS. 1, 2 and 3), causing the wedge-shaped heads of the slide rods to move in under the pair of bearing assemblies **40** on the roll shaft **36'**, will result in the lifting of the pressure roll **36** together with the journal boxes **37** upwardly against the force of the springs on the guide posts **38**, and similarly that with the return movement of the slide rods **15** and **16** in opposite direction the roll **36** will return to its normal lower position.

A cooperating pair of shingle engaging and discharging rolls are mounted near the discharging end of the machine and at a distance of approximately half the average shingle length beyond the cutter head **30**. The lower of these two rolls **43** (FIGS. 1, 2 and 3) has the ends of its shaft mounted respectively in a pair of suitable journal boxes **44**, one of which is shown in FIG. 1, which are secured on the side plates **10** and **11** respectively. This lower roll **43** is freely rotatable. The cooperating upper roll **45**, like the pressure roll **36**, has its shaft **45'** mounted in a pair of journal boxes **46**, which journal boxes are each mounted on a pair of guide posts **47** carried by the side plates **10** and **11** respectively and are slidable upwardly on the guide posts. Adjustable springs on these guide posts hold the journal boxes down in normal low position with the roll **45** in

contact with the lower roll **43**, but permit the upper roll **45** to be lifted when engaged by the end of a shingle moving in between the upper and lower rolls.

The extending end of the shaft **45'** carries a pair of sprocket wheels **48** and **49**, the outer one of which, **48** (FIG. 1), is connected by sprocket chain **50** with a drive sprocket on the motor **M2**. The inner sprocket wheel **49** is connected by sprocket chain **51** with the larger sprocket wheel **39** on the shaft **36'** for the pressure roll **36**. In this way the pressure roll **36** and the discharging roll **45** are both driven from the motor **M2** in the same direction, the roll **45** however being driven at greater speed than the pressure roll **36**. The motor **M2**, like the motor **M1**, is supported on a bracket **52** secured on the side plate **11**.

A shaft **53** (FIGS. 1 and 2) has its ends rotatably mounted in the side plates **10** and **11** respectively. The top line of this shaft, as shown in FIGS. 2, 3 and 4, is substantially in the same horizontal plane as the top deck **13** of the machine and is slightly below the top of the path of the cutter head. Thus when a shingle moves over the shaft **53** while also being held down by the pressure roll **36**, the bottom face of the shingle will be engaged by the cutter head and accordingly grooved. The top of the lower discharging roll **43**, however, is lower than the top line of the shaft **53**, so that when the shingle passes between the discharging rolls **43** and **45** while also moving over the shaft **53** the shingle will be flexed if still engaged by the pressure roll **36** with the pressure roll **36** being in lowered position as illustrated in FIG. 3, and then, if the pressure roll **36** is raised, the shingle will be tilted forwardly and downwardly, as illustrated in FIG. 4, causing the rear or thinner edge portion of the shingle to spring up out of the path of the cutter head and thus prevent further grooving in the remaining portion of the traveling shingle.

The manner of operation of the machine will now be readily understood from FIGS. 1, 2, 3 and 4. With the carriage **27** in the normal starting position as shown in FIGS. 1 and 2, the shingle S is manually placed on the deck **13** with the thick or butt end forward (thus toward the left as viewed in the figures) and with one side edge lined up against a guide bar **54**. The carriage is then moved toward the left, causing the butt end of the shingle to be moved under the rotating pressure roll **36**. The shingle, held down by the pressure roll, then comes into contact with the rotating cutter head **30** which produces the desired grooving on the bottom face of a shingle starting from the butt end. The carriage **27** slides freely along the slide rods **15** and **16** while being moved forwardly until the carriage engages the forward collars **23** and **24**. Then the further movement of the carriage causes the rods **15** and **16** to move with the carriage. When this occurs the wedge-shaped heads **25** and **26** of the rods, engaging the pair of bearing assemblies **40** on the shaft **36'** of the pressure roll **36**, cause the pressure roll to be lifted, allowing the thin tapered end of the shingle to spring up out of contact with the cutter head, the butt end of the shingle having by this time started to pass under the driven discharging roll **45**. Consequently when the carriage **27** has been moved forwardly (to the left) to the full extent permitted, the grooving of the shingle is discontinued and the finished shingle will be in the process of being rapidly discharged from the machine by the rotating roll **45** and the companion lower shingle supporting roll **43**. The carriage is then moved back to starting position. In the return movement of the carriage the rear collars **21** and **22** of the slide rods **15** and **16** are engaged by the carriage causing the rods also to be moved back to normal starting position and thus causing the pressure roll **36** to move back down to its normal position. Thereupon the operation is repeated for the next shingle.

It has been assumed in this description that the machine will be operated manually inasmuch as this enables the machine to be employed in its simplest form and since it is believed that the main need which the present invention will be called upon to meet is for a manually operated machine of the simplest construction which can be marketed at a relatively very low price. However, it is to be understood that the forward and return movement of the carriage **27** could also be easily carried out through the medium of simple added mechanical means, such, for example, as a pitman rod connected to a crank pin on a rotating disc, or by other well known means, and the invention is not to be understood as restricted to the exact form of construction and the manual method of operation described, or to be otherwise limited, except as set forth in the claims.

I claim:

1. In a device for grooving wedge-shaped shingles, a frame assembly having a shingle-supporting deck, a driven pressure roll located near one end of said deck, means normally holding said roll down in shingle-pressing position but enabling said roll to be raised against the force of said means, a rotating cutter so positioned that when a shingle is moved over said cutter while held down by said pressure roll in lowered position the underside of the shingle will be grooved, shingle thrusting means movable reciprocally over said deck first forwardly in the direction of shingle travel and then in opposite direction, lifting means for said pressure roll operated by said thrusting means and acting upon said pressure roll only when said thrusting means has moved a predetermined distance forwardly towards said pressure roll and cutter, said lifting means being returned to inactive position by the return movement of said thrusting means in the opposite direction to starting position, whereby, when a shingle is placed on said deck with the butt eend toward said pressure roll and the thin end engaged by said thrusting means, the thrusting of the shingle forwardly toward said pressure roll by said thrusting means will result in the underside of said shingle being grooved by said cutter as long as said pressure roll is in lower position and engaging said shingle, but, when the movement of said thrusting means with said shingle has continued for a predetermined distance, said pressure roll will be raised, discontinuing the grooving of said shingle.

2. In a shingle grooving machine for wedge-shaped shingles, a frame assembly having a shingle-supporting deck, a driven pressure roll located near one end of said deck, means normally holding said roll down in shingle pressing position but enabling said roll to be raised against the force of said means, a rotating cutter located beyond said pressure roll and so positioned that when a shingle is moved over said cutter while held down by said pressure roll in lowered position the underside of the shingle will be grooved, a carriage movable reciprocably over said deck, a pair of parallel rods slidably supporting said carriage and in turn slidably mounted for limited reciprocal sliding movement in a horizontal plane, a pair of engageable elements on each of said rods near opposite ends respectively for engagement by said carriage, whereby movement of said carriage on said rods will cause said rods to be moved by said carriage as said carriage nears the end of its travel in either direction, and lifting means for said pressure roll operated by said rods causing said pressure roll to be lifted when said rods are moved by said carriage forwardly towards said pressure roll and causing said pressure roll to be returned to normal lowered position upon opposite movement of said rods, whereby, when a shingle is placed on said deck with the butt end toward said pressure roll and the thin end engaged by said carriage, the thrusting of the shingle forwardly by said carriage will result in the underside of said shingle being grooved by said cutter as long as said pressure roll is in lowered position engaging said shingle, but whereupon, with the continued movement of said carriage with said shingle a sufficient distance, said rods will be moved in the same direction causing said pressure roll to be raised and the grooving of said shingle to be discontinued.

3. The combination set forth in claim **2** with said lifting means for said pressure roll consisting of a pair of wedge-shaped heads on said rods respectively, said wedge-shaped heads moving beneath the shaft for said pressure roll and causing the lifting of said pressure roll when said rods are thrust forwardly.

4. A device for grooving wedge-shaped shingles comprising a frame assembly having a shingle-supporting deck, a driven pressure roll located near the forward end of said deck in the direction of shingle travel on said deck, means normally holding said roll down in shingle pressing position but enabling said roll to be raised against the force of said means, a rotating cutter so positioned that when a shingle is moved over said cutter while held down by said pressure roll in lowered position the underside of the shingle will be grooved, a shingle-supporting shaft located beyond said cutter in the direction of shingle travel, shingle engaging and discharging means located beyond said shaft in the direction of shingle travel and so positioned as to cause the flexing of the shingle on said shaft when the trailing end of the shingle is still engaged by said pressure roll in lowered position, shingle thrusting means movable reciprocally first forwardly and then rearwardly over said deck, and lifting means for said pressure roll operated by said thrusting means and acting upon said pressure roll only when said thrusting means has moved a predetermined distance forwardly towards said pressure roll and cutter, said lifting means being returned to inactive position by the return movement of said thrusting means in the opposite direction to starting position, whereby, when a shingle is placed on said deck with the butt end toward said pressure roll and the thin end engaged by said thrusting means, the thrusting of the shingle forwardly by said thrusting means will result in the underside of said shingle being grooved by said cutter as long as said pressure roll is in lowered position, but, when the movement of said thrusting means with said shingle has continued for a predetermined distance, said pressure roll will be raised, discontinuing the grooving of said shingle, and whereupon the return of said thrusting means to starting position will result in said pressure roll being returned to normal lower position.

5. A shingle grooving machine for wedge-shaped shingles comprising a frame assembly having a shingle-supporting deck, a driven pressure roll located near one end of said deck, spring means normally holding said roll down in shingle-pressing position but enabling said roll to be raised against the force of said spring means, a rotating cutter located beyond said pressure roll and so positioned that when a shingle is moved over said cutter while held down by said pressure roll in lowered position the underside of the shingle will be grooved, a shingle-supporting shaft located beyond said cutter in the direction of shingle travel, shingle engaging and discharging rolls located beyond said shaft and so positioned as to cause the flexing of the shingle on said shaft when the trailing end of the shingle is still engaged by said pressure roll in lowered position, a carriage movable reciprocally over said deck, a pair of parallel rods slidably supporting said carriage and in turn slidably mounted for limited reciprocal sliding movement in a horizontal plane, a pair of collars on each of said rods near opposite ends respectively for engagement by said carriage, whereby movement of said carriage on said rods will cause said rods to be moved by said carriage as said carriage nears the end of its travel in either direction, and wedge-shaped heads on said rods arranged to lift the shaft for said pressure roll and thereby said pressure roll when said rods are moved by said carriage forwardly towards said pressure roll and returning said roll to normal lower position upon opposite movement of said rods, whereby, when a

shingle is placed on said deck with the butt end toward said pressure roll and the thin end engaged by said carriage, the thrusting of the shingle forwardly by said carriage under said pressure roll and over said cutter will result in the underside of said shingle being grooved as long as said pressure roll is in lowered position, but whereupon, with the continued movement of said carriage with said shingle a sufficient distance, said rods will be moved in the same direction causing said wedge-shaped heads to raise said pressure roll and causing the grooving of said shingle to be discontinued, and the subsequent return of said carriage to starting position will result in said rods being returned to starting position and said pressure roll returning to normal lowered position.

References Cited by the Examiner

UNITED STATES PATENTS

1,764,412	6/30	Melby	144—323
2,691,394	10/54	Gifford et al.	144—13
2,987,088	6/61	Dennison	144—326
3,084,726	4/63	Dennison	144—13

WILLIAM W. DYER, JR., *Primary Examiner.*

DONALD R. SCHRAN, *Examiner.*