No. 626,813. Patented June 13, 1899.

E. H. KRUGER.

SHINGLE PLANING MACHINE.

(Application filed July 20, 1897. Renewed Apr. 17, 1899.)

(No Model.) 2 Sheets—Sheet 1.

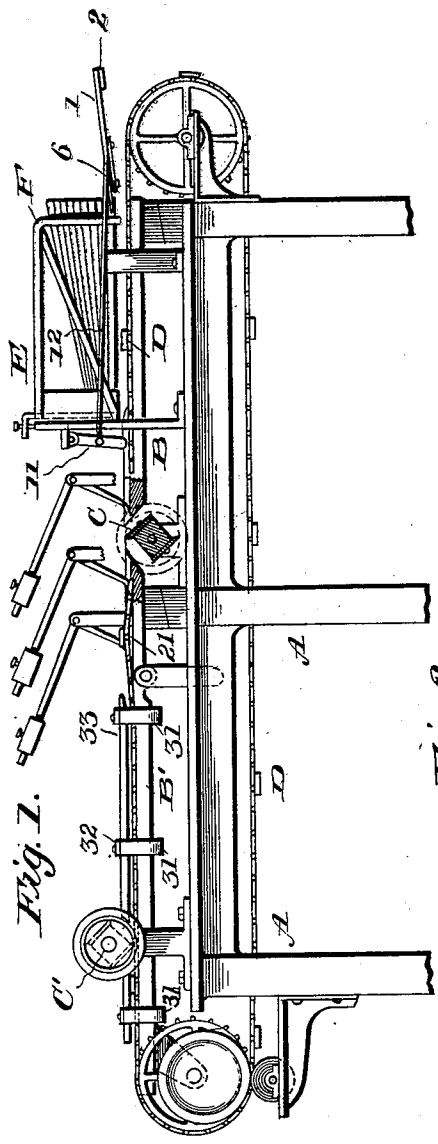


Fig. 1.

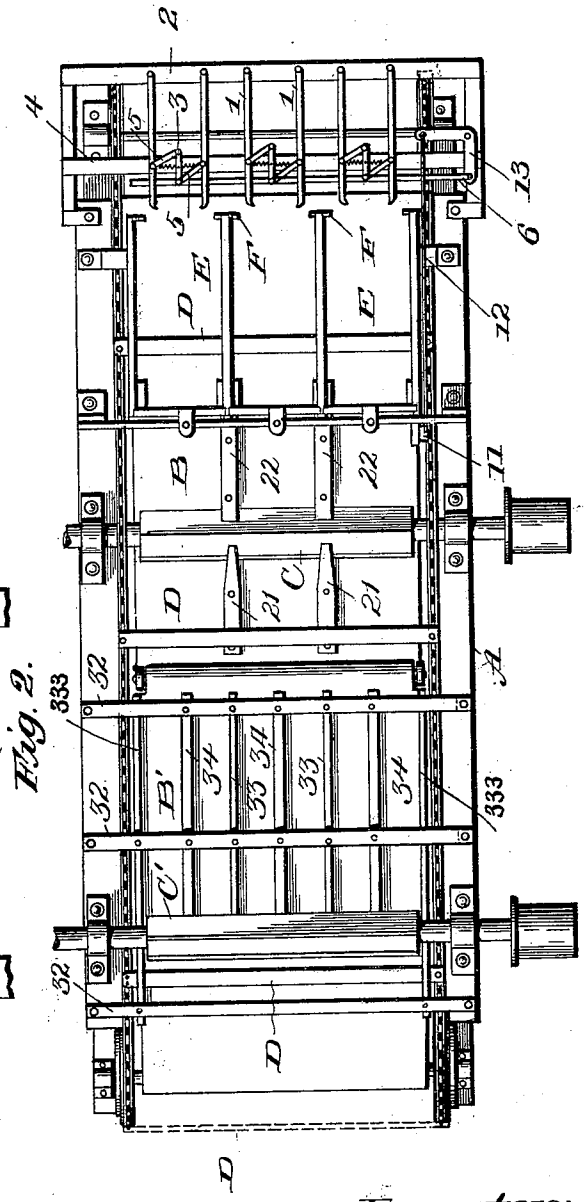


Fig. 2.

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Fig. 3.

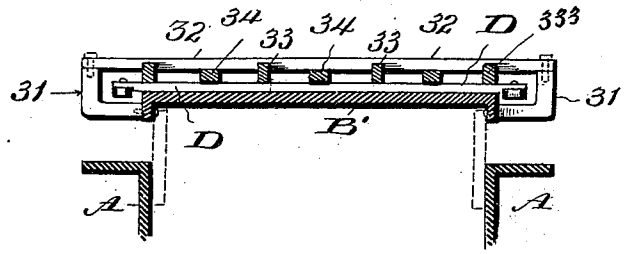


Fig. 7.

Fig. 4.

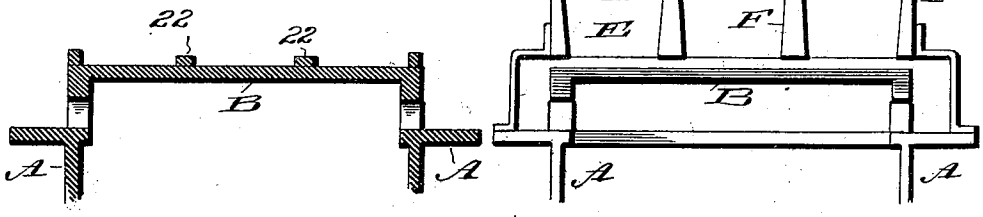


Fig. 5.

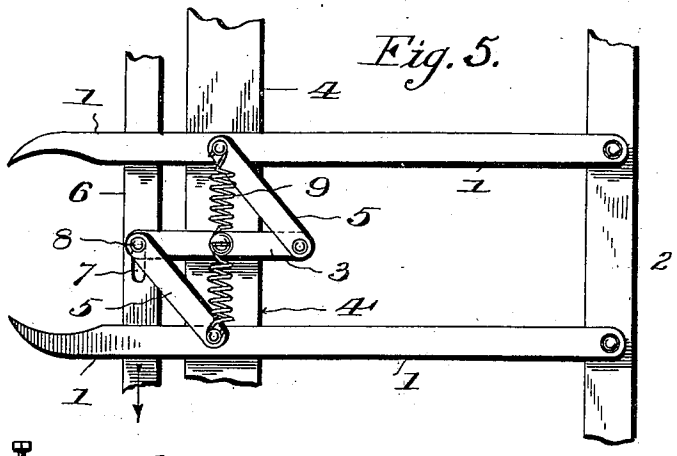
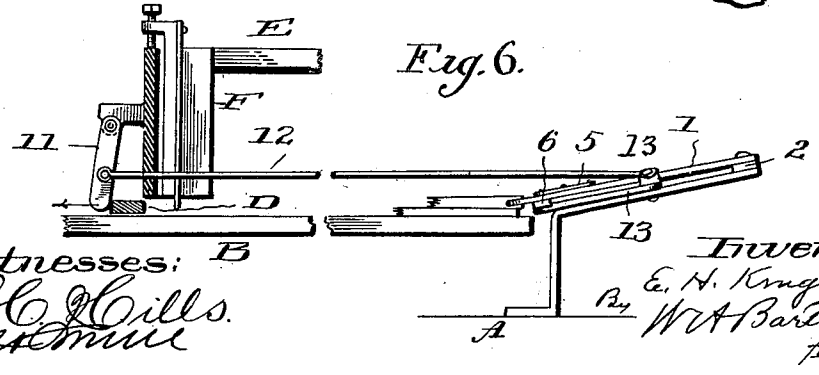


Fig. 6.



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UNITED STATES PATENT OFFICE.

EDWARD H. KRUGER, OF ELIZABETH CITY, NORTH CAROLINA.

SHINGLE-PLANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 626,813, dated June 13, 1899.

Application filed July 20, 1897. Renewed April 17, 1899. Serial No. 713,330. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. KRUGER, residing at Elizabeth City, in the county of Pasquotank and State of North Carolina, have invented certain new and useful Improvements in Shingle-Planing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to machines for planing shingles and similar tapering things.

The object of the invention is to so improve my machine patented December 11, 1894, No. 530,695, as to make it certain that under no circumstances will more than one shingle be automatically fed to the planers in one passage-way at one time and to prevent the displacement of shingles while in the process of planing; and the invention consists in improvements on said patented machine.

The general structure of the machine is like that embraced in the patent referred to. Dimension-shingles—that is, shingles approximately of the same size and form—are placed in troughs or hoppers, a plurality of such troughs being arranged side by side at the front or feeding end of the machine. Push-bars extending across the bed and moved by endless-chain carriers take the bottom shingle from the pile in each hopper thin end foremost and carry the shingles over the lower cutter-head, where the lower face of the shingle is planed, the shingle being held down by bearers or pressers. The shingle is carried along under the second cutter, the bed yielding as the shingle grows thicker, and by the second cutter-head the upper surface of the shingle is planed and is afterward carried off from the rear or delivery end of the machine.

It is not believed to be necessary to give a further detailed description of the original machine further than to refer to said Patent No. 530,695. While said patented machine has done excellent work, I have sometimes had trouble from the feed of two shingles together, one on top of the other. This objection I have fully overcome by the dogging device herein described. I have further had difficulty from the accidental engagement of the push-bars with the rotary cutters. This, I believe, I have entirely overcome.

Figure 1 is a side elevation of so much of the patented machine and the present improvements as shows the general relation of parts, one pile of shingles being shown in a trough. Fig. 2 is a plan view showing the same features of the machine, the shingles omitted. Fig. 3 is a cross-section of the lower or yielding bed, showing the improved attachments for holding and guiding the shingle. Fig. 4 is a cross-section of the fixed bed and attachments. Fig. 5 is an enlarged detail plan of a pair of holding-dogs and connections. Fig. 6 is an enlarged detail elevation of the trigger and connections by which the holding-dogs are spread. Fig. 7 is an end view of the troughs or hoppers.

A denotes the frame of the machine; B, the fixed bed; B′, the yielding bed; C C′, the cutter-heads, and D one of the push-bars, which bars are drawn by endless chain from the feeding to the delivery end of the machine.

The feed troughs or hoppers E are preferably mere skeletons divided by uprights F, which uprights taper, so that the hoppers are as wide at the bottom as the widest shingle. Shingles are placed in these hoppers the butts to the front or feed end.

The sliding gate of the patent is preferably used. In addition I apply at the front end of the machine for each trough or hopper a pair of holding-dogs 1 1. These dogs are pivoted to a cross-bar 2 and extend nearly to the partition F and are supported at such a height that the dogs will grasp the edges of the shingle next above the shingle lying on the bed of the machine when free to do so. Between the dogs 1 1 there is a short lever 3, having its fulcrum on cross-bar 4. The opposite ends of this lever 3 are connected to the two dogs 1 1 by links 5 5, pivoted to the lever and dogs, respectively. By such toggle or lazy-tongs connection when lever 3 is rocked on its fulcrum the dogs 1 1 will be rocked to open, and in reverse direction the dogs will be closed toward each other.

A slide-bar 6 extends across the machine just above or below levers 3 and has a slot 7 therein at about the end of each lever 3, there being a pair of dogs and connections for each hopper or trough. A pin 8 extends from lever 3 into the slot 7 of the slide-bar. When said slide-bar moves lengthwise in the direction of the arrow, Fig. 5, one end of the slot 7 bears against pin 8, and thus the lever 3 is

rocked and the dogs are spread apart at their ends nearest the hoppers. When the slide-bar moves in reverse direction, the pressure on pin 8 is released, and this pin is then free to move along in slot 7, following up the second or reverse movement of the slide-bar. Pin 8 thus being free to move the dogs are drawn toward each other by the spiral spring 9 and as the slot 7 permits some play the dogs may close onto a narrow shingle, but the sliding movement of bar 6 will always open the dogs to the full width of the trough or hopper, so as to grasp the widest shingle. When fully open, the dogs are at the front or end of the partitions.

The slide-bar 6 is moved to open the dogs by means of a trigger 11, against which each push-bar D engages as it travels along. The trigger 11 is simply a lever hung at the side of the machine with its free end (shown as the lower end) in the path of travel of the push-bars D. A draw rod or wire 12 extends from this trigger 11 to one end of a bell-crank lever 13, which lever is pivoted to the frame, the other end being connected to slide-bar 6.

Other mechanism might be used to cause the slide-bar to move lengthwise and so spread the dogs; but whatever mechanism is used it will be understood that when one push-bar D has traveled far enough to carry the lowermost shingle from a hopper the desired distance it then encounters the trigger or other mechanism for opening the dogs, and the dogs are thus spread and all the shingles permitted to fall on the bed or feedway. As soon as the push-bar D has released trigger 11 the springs 9 close the dogs onto the next to the lowest shingle and at the same time draw back bar 6 and its connections to position to be again operated. These positively-acting dogs grasping the sides of the next to the lowest shingle to prevent the feed-bars from moving more than one shingle from the troughs or hoppers I find much superior to any other mechanism I have yet tried for the purpose.

As the push-bars D bear against the butt-ends of the shingles and push them forward these bars must extend across the bed of the planer and must move over cutter-head C and under cutter-head C′. To prevent any possible contact between these push-bars and the cutter C, I attach longitudinal strips 21 to the fixed bed B of the machine. These strips are a trifle thicker than the upward extension of the cutter-head C above the plane of the bed B. At the rear side of the cutter C, I place bars 22, the front ends of these bars 22 being tapered, as shown. The ends of bars 21 22 nearest the cutter C come as close to such cutter as is possible without danger of contact, and the push-bars D are wider than the distance between the adjacent ends of bars 21 22. Thus the push-bars will ride on these bars 21 22 and be held up against any possibility of contact with the knives of the cutter. At the same time the longitudinal bars form guideways in which the shingles move, and the beveled ends of bars 21 serve to guide the shingles back to the proper direction should they be inclined to move sidewise on the bed. The shingles will be held down to the bed by pressers, as usual.

As the bed B′ yields to accommodate the increasing thickness of shingle, it is desirable that the feed-bars shall be kept out of contact with the cutter-head C′. I hold down the feed-bars by the mechanism about to be described.

Near the opposite edges of the bed B′, I attach angle-bars 31 to said bed. There are preferably three sets of these angle-bars, which extend out at the side of the bed and then upward. Cross-bars 32 are firmly attached to these angle-bars. From the first cross-bar 32 I extend longitudinal bars 33 almost into contact with the cutter-head, and the side bars 333 extend past the ends of the cutter-head. The front of these bars may be slightly beveled off, so that the push-bars will pass easily under the longitudinal bars, and the push-bars will thus be held down close to the table B′ and as far as possible from the cutter C′ in passing under said cutter. Between the bars 33 I place bars 34 at such a distance from the bed of the machine as to permit the passage of the shingle-butts. The shingles are thus guided between the bars 33 and held down by bars 34 while being pushed along the yielding bed by the push-bars D, and are guided very perfectly. By this construction I have been able to overcome nearly all the difficulties encountered in planing both faces of a shingle by a continuously-operating machine.

I have illustrated a machine for planing three shingles at a time. It will be evident that a machine may be readily constructed to operate on a greater or lesser number. It is also apparent that modifications may be made to suit the circumstances, the same being contemplated by my claims.

As the push-bars pass off the rear ends of bars 21 they are about to pass under the front ends of bars 33. The ends of the bars may be beveled accordingly. The endless chains carrying the push-bars D will yield to accommodate the slight change in the plane of movement of the push-bars.

What I claim is—

1. In a shingle-planing machine, feeding mechanism to convey the lowermost shingle from a pile of shingles, combined with automatic dogs in position to grasp the edges of the shingle next above the bottom one, and so detain all but the lowermost shingle from moving forward.

2. In a shingle-planing machine, the dogs in position to engage the edges of the shingle, the lever and links connecting said dogs, and means for moving said lever to expand the dogs.

3. In a shingle-planing machine, the spring-dogs engaging the edges of the shingle, the

lever mechanism for expanding said dogs, and a slotted slide permitting a closing of the dogs to grasp shingles of various width.

4. In a shingle-planer, the holding-dogs, spring connections for closing the same on shingles of varying widths, and expanding mechanism by which the dogs are thrown fully open, all combined.

5. The trigger, draw-rod, and lazy-tongs mechanism, combined with the dogs and the push-bars, all substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD H. KRUGER.

Witnesses:
W. A. BARTLETT,
CHAS. K. DAVIES.