Aug. 9, 1927. 1,638,310

C. A. KILLEBREW

BOARD KICKER FOR END MATCHING MACHINES

Filed June 22, 1923

Fig. 1

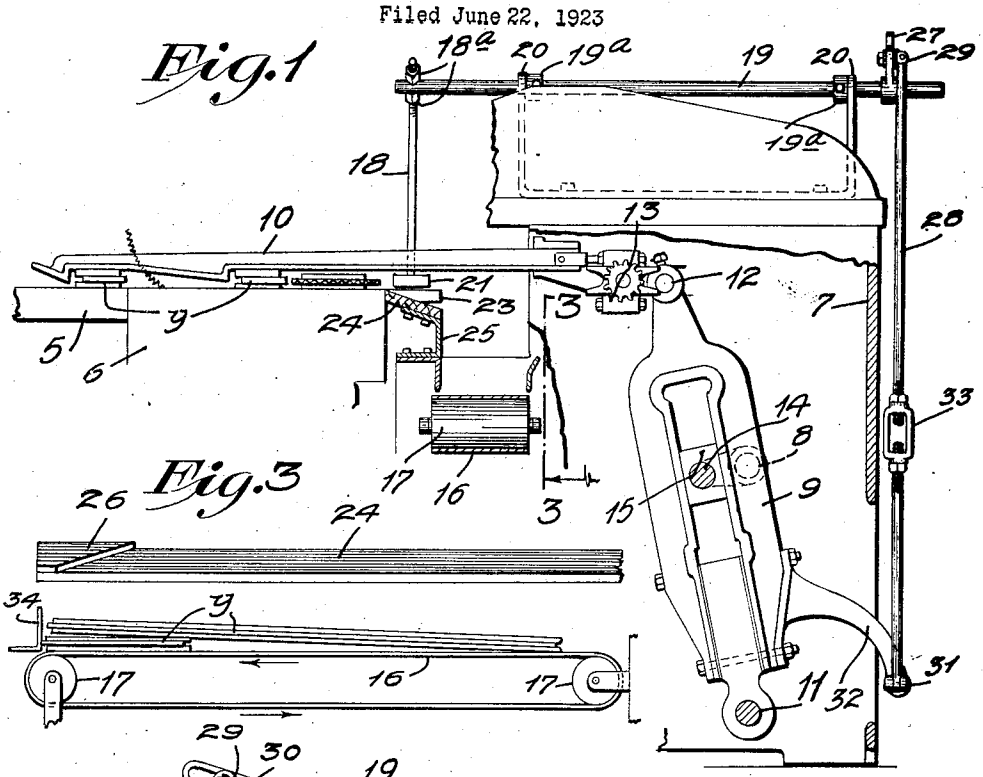


Fig. 3

Fig. 2

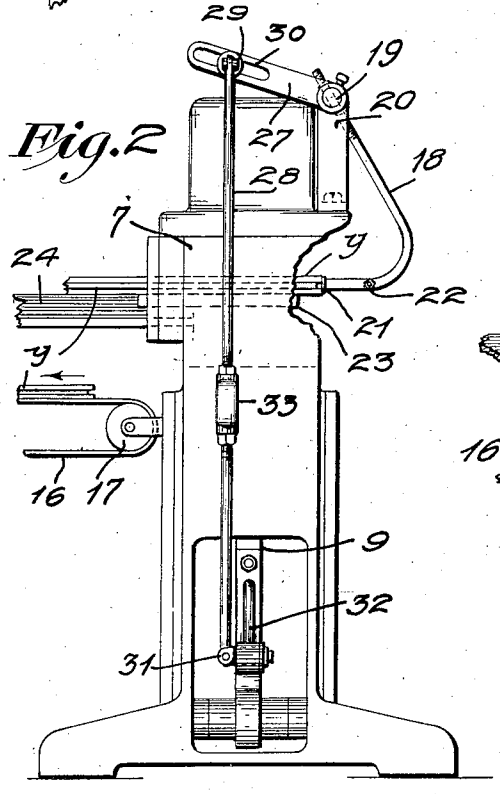
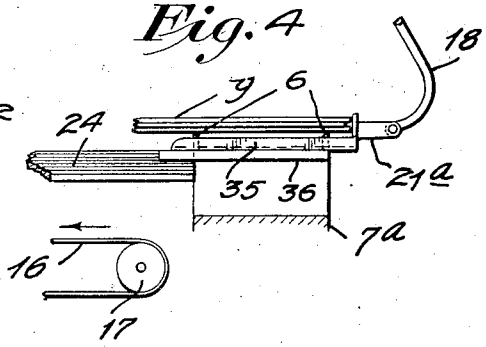


Fig. 4



Inventor
C. A. Killebrew
By his Attorneys
Marshall & Kilgore

Patented Aug. 9, 1927. 1,638,310

UNITED STATES PATENT OFFICE.

CHARLIE A. KILLEBREW, OF EASTPORT, FLORIDA, ASSIGNOR TO WILLIS S. SHERMAN, OF MINNEAPOLIS, MINNESOTA.

BOARD KICKER FOR END-MATCHING MACHINES.

Application filed June 22, 1923. Serial No. 647,030.

My present invention provides an improved device which may be appropriately designated as a board kicker and which is adapted for use in connection with various different kinds of board or strip-forming or treating machines, such, for example, as machines known as "end matching" machines for forming grooves or tongues in the ends of flooring and the like. For the purpose of illustration, my invention will be herein particularly described in its application to a machine of the type disclosed and claimed in the application of Willis S. Sherman, Serial No. 468,820, filed May 12, 1921, and entitled "Flooring end machine", but it will, of course, be understood that the invention is not limited to this particular application.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a diagrammatic view partly in side elevation and partly in vertical section, illustrating the invention applied as above indicated;

Fig. 2 is a rear end elevation, to wit: a view looking at the parts shown in Fig. 1 from the right toward the left, some parts being broken away;

Fig. 3 is a fragmentary view showing certain parts found just at the left of the line marked 3—3 on Fig. 1; and

Fig. 4 is a fragmentary view partly in rear elevation and partly in vertical section, illustrating a modified form of the kicker.

Of the parts of the machine here illustrated and also illustrated in the Sherman application above identified, it is only desirable for the purposes of this case to particularly note the feed table 5, guide rails 6, framework 7, power-driven crank shaft 8, rocker arm 9, and rake-acting feed bars 10. The rocker arm 9 is pivoted at 11 and the rake-acting feed bars 10 are pivotally connected thereto at 12, through a cross-head 13, the arrangement of which latter need not be here considered. The crank shaft 8 carries a crank 14 pivotally equipped with a block 15 that slides in a longitudinal slot of the rocker arm 9 and causes the latter to oscillate when said crank shaft is rotated.

From the delivery ends of the rails 6, the flooring boards or strips y are delivered to a transversely movable discharge belt 16 mounted to run over suitable guiding and driving rollers 17. In the flooring end matching machine, certain of the elements of which have just been described, the flooring boards or strips y, some of which are long and some of which are short, would, without my improved device, be delivered laterally onto the discharging belt 16 with the right-hand ends of all boards or strips, about at the same place on the receiving portion of the belt 16, to wit: at the extreme right in respect to Figs. 2, 3 and 4. Such an arrangement will cause the short boards or strips to bunch up or accumulate near the receiving end of the belt, which latter is usually about sixteen feet in length and would not be within reach of the operator, who should stand near the left-hand or delivery end of said belt, from which position he should be able to reach all of the boards or strips, whether long or short, and, hence, readily transfer the flooring boards or strips to a second adjacent machine. It may be here further explained that in the end grooving or matching machines, the flooring boards or strips are first grooved or formed with tongues at one end by one machine and are then delivered to a second machine, which latter or second machine puts on a tongue or groove. Hence, it is important that the boards or strips, whether long or short, should be delivered with their ends nearly even at the left-hand or delivery end of the feed belt.

My invention provides a so-called board kicker, which will now be described and which serves to perform the desired function above indicated.

This board kicker may take various different forms and may be operated in various different ways but should be timed so as to kick the boards endwise as they are delivered from the rails 6 or other guiding devices. In the construction illustrated in Figs. 1, 2 and 3, the kicker comprises a kicker arm 18 adjustably secured by nuts 18^a to a rock shaft 19 mounted in bearings 20 secured on the frame 7, and interposed adjustable collars 19^a which permit lateral adjustment of the shaft 19. At its lower end, the arm 18 is provided with a kicker head 21 which, as shown, is pivoted thereto and adapted to be clamped in different adjustments by a small nut-equipped bolt 22 or the like.

Just beyond the delivery ends of the guide

rails 6 is a suitably fixed shelf 23 on which the right-hand ends of the floor boards *y*, whether long or short, will be directly delivered and held in supported positions where they are adapted to be engaged by the kicker head 21 when the arm 18 is oscillated inward or toward the left in respect to Fig. 2. Extending toward the left from the shelf 23 and located slightly below the plane of the upper surface thereof is an inclined deflecting ledge or board 24 supported at its right-hand end by a bracket 25 and adapted to be supported at its left-hand end by suitable means, not shown. This deflecting ledge 24 is preferably made about as long as the feed belt 16 and extends parallel thereto and is preferably located at the front side of said belt, its inclination being in a direction transversely of the belt, so that the floor boards will slide off from the same onto the belt. To insure the proper delivery of the boards or strips onto the feed belt 16, the deflecting ledge 24 is shown as provided with a raised longitudinally oblique board-deflecting surface 26, which, however, is not a feature of my invention.

In machines of the general type disclosed and claimed in the Sherman application above identified, means is provided for holding the right-hand ends of the floor boards down upon the rails 6 while the boards are being fed through the machine and for supporting the left-hand ends of long floor boards during such movements. When the floor boards are fed off from the rails 6, if they are of any considerable length, their left-hand ends will drop slightly onto the inclined ledge or shelf 24.

At its outer end, the rock shaft 19 is provided with an arm 27, to which the upper end of an operating link or connecting rod 28 is pivotally connected, preferably by means of a nut-equipped wrist pin 29 that is adjustable in a longitudinal slot 30 of said arm. At its lower end, the connecting rod 28 is connected by a universal pivot 31 to a projecting arm 32 carried by the rocker 9. The connecting rod 28 is preferably provided with a turnbuckle 33 for adjusting it longitudinally.

The numeral 34 indicates a board stop suitably supported and located at the delivery end of the belt 16 in such position to stop the floor boards or strips substantially as shown in Fig. 3.

Operation.

The floor boards or strips will be raked off from the rails 6 by movements of the rocker arm 9 and the rake-acting feed bars 10 toward the right in respect to Fig. 1, and through the connections described, the kicker head 21 is so set and timed for action that it will engage the right-hand end (in respect to Fig. 2) of the board or strip as or soon after it is delivered off from said rails and will project the same endwise toward the left in respect to Figs. 2 and 3. Under this kicking action, the advanced end of the floor board, if the board is of any considerable length, will be thrust against the deflecting surface 26, and by the latter and by the inclination of the ledge 24 will be directed downward and onto the delivery belt 16. Some of the boards may not strike the deflecting surface 26 but will be kicked or projected onto the ledge 24 and will be delivered onto the belt 16 and so, in time, will be delivered to the stop 34. By the action of the belt, the floor boards or strips will be delivered against the fixed board stop 34, so that they will accumulate, substantially as shown in Fig. 3, where the operator, standing at the outer or left-hand end of the belt, may conveniently reach and quickly remove both long and short boards. Adjustments of the pivotal connection between the arm 27 and the connecting rod 28 will vary the length of stroke that will be given to the kicker head. Longitudinal adjustments of the connecting rod 28 will serve to set the kicker head in its proper normal position in a direction toward and from the end of the floor board. By radial adjustments of the kicker arm 18 or by pivotal adjustment of the head 21 in respect to said arm, the kicker head may be set at the proper elevation for action on the ends of the floor boards or strips.

In the modified construction illustrated in Fig. 4, the kicker head 21^a is formed as a raised projection of a slide 35 mounted to move on a fixed guide plate 36 secured to a projection 7^a of the frame 7. In this arrangement, the slide 35 serves as a shelf to receive the outer ends of the floor boards or strips. Otherwise, the operation of this kicker is substantially like that of the kicker shown in Figs. 1, 2 and 3.

From what has been said, it is obvious that the invention described is capable of very considerable modification, and as herein repeatedly indicated, is not limited to use in connection with any particular kind of board or strip-feeding mechanism nor to use in connection with machines for making or treating any particular kind of boards or strips. The term "boards or strips" is herein used in a broad and liberal sense.

What I claim is:

1. The combination with means for feeding boards laterally to a point of discharge, of an automatic board kicker operated by the machine itself and timed in respect to said board feeding means and operative to project the boards endwise as they are discharged from said feeding means.

2. The combination with means for feeding boards laterally to a point of discharge, of an automatic vibratory kicker timed by

the machine itself and timed in respect to said feeding means and operative on the ends of the boards to project the same endwise as they are delivered from said feeding means.

3. The combination with means for feeding boards laterally to a point of discharge, of a board kicker timed in respect to said board-feeding means and operative to project the boards endwise as they are discharged from said feeding means, and means for varying the kicking force of said board kicker.

4. The combination with means for feeding boards laterally to a point of discharge, of a vibratory kicker timed in respect to said feeding means and operative on the ends of the boards to project the same endwise as they are delivered from said feeding means, and means for varying the kicking force of said board kicker.

5. The combination with means for feeding boards laterally, and a transversely movable board-receiving conveyor, of a board kicker timed by the machine itself and timed in respect to said feeding means and operative on the ends of the boards as they are delivered from said feeding means to project the same endwise in the direction of travel of said transverse conveyor.

6. The combination with means for feeding boards laterally, and a transversely movable board-receiving conveyor, of an inclined ledge extended above said conveyor in position to receive boards delivered from said feeding means, and a kicker timed in respect to said board-feeding means and operative on the ends of the boards as they are delivered from said feeding means to project the same endwise onto said inclined ledge.

7. The structure defined in claim 5 in further combination with a board stop at the delivery end of said transverse conveyor.

8. The structure defined in claim 6 in further combination with a board stop at the delivery end of said transverse conveyor.

9. The combination with means for feeding boards laterally, and a transverse board-receiving conveyor, said board-feeding means comprising a rocker, of a board kicker comprising a rock shaft, an oscillatory kicker arm carried by said rock shaft, a kicker head carried by said kicker arm and arranged to engage the ends of the boards as they are delivered from said feeding means, a crank arm on said rock shaft, a connecting rod attached to said crank arm, and an arm projecting from said rocker and connected to and operating said connecting rod.

10. The combination with means for feeding boards laterally, and a transversely movable board-receiving conveyor, of a board kicker timed by the machine itself and operative on the ends of the boards as they are delivered from said feeding means to project the same endwise in the direction of travel of said transverse conveyor.

11. The combination with means for feeding boards laterally, a transversely movable board-receiving conveyor, of an inclined ledge extending above said conveyor in position to receive the boards delivered from said feeding means, a kicker operative on the ends of the boards as they are delivered from said feeding means to project the same endwise onto said inclined ledge.

12. The combination with a conveyor operative to feed boards or strips laterally to a point of discharge therefrom, of a kicker timed by the machine itself and operative on the ends of the boards or strips at the point of discharge to project the same endwise from said conveyor.

13. The combination with means for feeding boards laterally and a transverse board-receiving conveyor, of a board-receiving device located above and at one side of said transverse board-receiving conveyor, and having a transverse feeding action whereby the boards will be caused to move laterally off from the same onto said board-receiving conveyor, and means for projecting the boards endwise from said first noted board-feeding means and onto said board-receiving device.

14. The structure defined in claim 13 in which said board-receiving device is provided with an oblique deflecting stop at its extended end.

15. The structure defined in claim 14 in which said transverse board-receiving conveyor includes an endless belt, and in further combination with a stop at the extended portion of said belt, operative to cause the boards to stop or accumulate against the same.

In testimony whereof I affix my signature.

CHARLIE A. KILLEBREW.