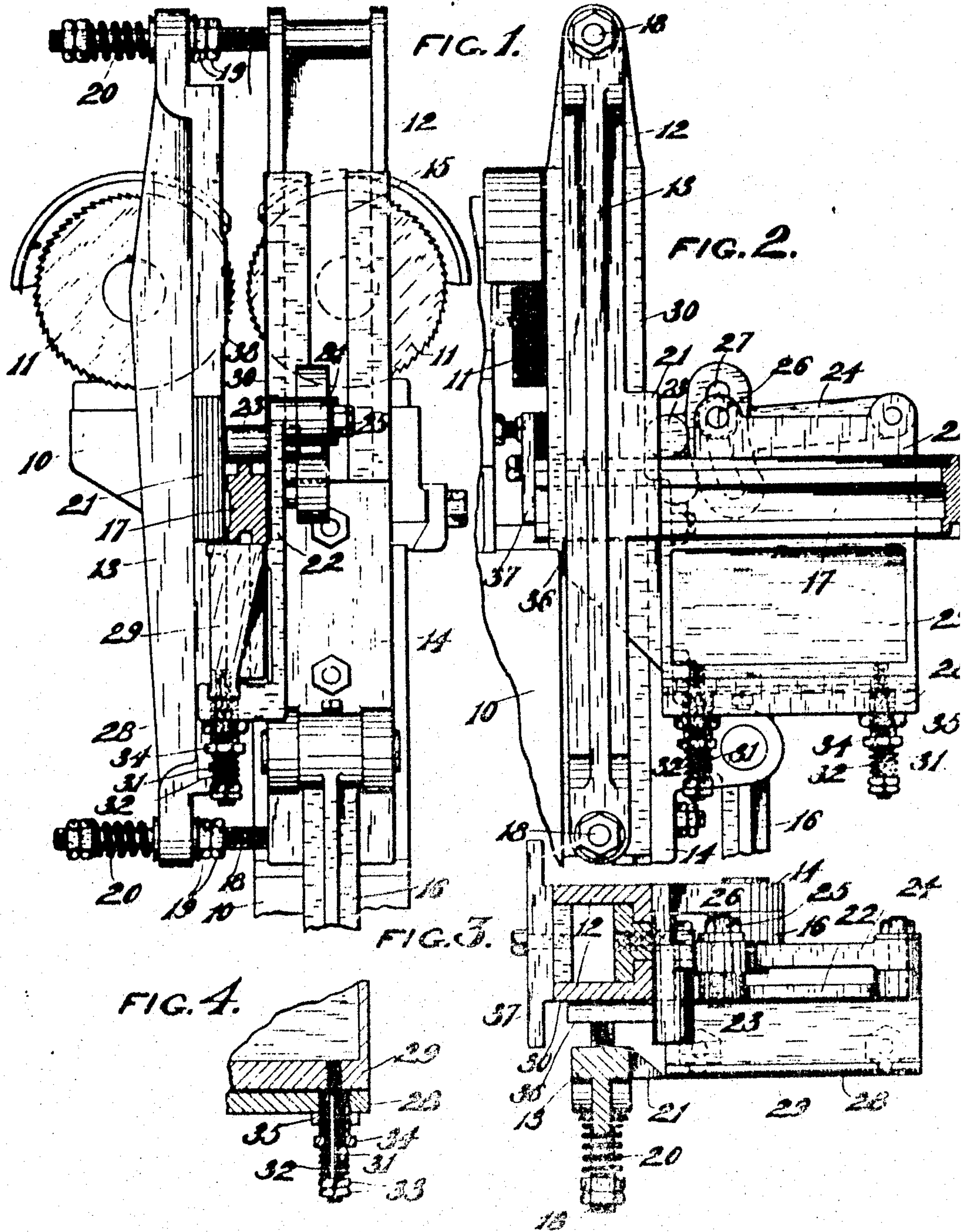


930,421.

Patented Aug. 10, 1909.



WITNESSES.

*L. O. Thayer*  
*Amack Schmitt*

INVENTOR

*Willis S. Sherman*  
*By Benedict, Russell & Caldwell*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

WILLIS S. SHERMAN, OF MILWAUKEE, WISCONSIN.

## END-MATCHER.

No. 930,421.

Specification of Letters Patent.

Patented Aug. 10, 1909.

Application filed November 23, 1906. Serial No. 464,064.

### *To all whom it may concern:*

Be it known that I, WILLIS S. SHERMAN, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in End-Matchers, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to end matchers and has for its object to provide an end matcher with means for automatically truing the work before the cutting operation.

Another object of the invention is to provide an end matcher with a rocking or tilting support for the work which will cause the work to swing into bearing with the guide surface.

With the above and other objects in view the invention consists in the end matcher herein described and claimed, its parts and combinations of parts and all equivalents.

I desire it to be understood that this invention is not limited to any specific form or arrangement of parts except in so far as such limitations are specified in the claims.

Referring to the accompanying drawings in which like characters of reference indicate the same parts in the different views; Figure 1 is a front elevation of a portion of an end matcher constructed in accordance with this invention; Fig. 2 is a side elevation thereof; Fig. 3 is a sectional plan view thereof; and, Fig. 4 is a detail sectional view of the spring connection and adjustment means for the tilting work support.

In these drawings 10 indicates the frame of an end matcher, which in this instance is a tongue cutting end matcher with the two cutter heads 11, the head block 12 and the presser bar 13, as usual, the traveling head 14 being reciprocated vertically in a guideway 15 of the head block by means of a pitman connection 16 with a driving mechanism not shown. The presser bar is held in place with spring pressure at the desired distance from the head block to permit the flooring strip 17 or other material on which the work is to be performed to be freely entered therebetween without unnecessary lateral play. This is accomplished by mounting the ends of the presser bar 13 on studs 18 projecting from the head block 12 and held against set nuts 19 thereon by

means of compression springs 20. The work is entered in the guideway between the head block and the presser bar when the traveling head 14 is in its lowermost position, being guided in place on one side by the beveled flange 21 on the presser bar and on the other side by a side plate 22 of the traveling head. On being entered the work is passed beneath a guide 23 which is carried by the traveling head and preferably constitutes a laterally projecting pin on a swinging arm 24 which is pivotally mounted to the side plate 22 and is clamped in various adjustments by means of a nut 25 on a stud 26 of the side plate, said stud traveling in an arc shaped slot 27 of the arm. The work entering the machine is also guided by bearing on a work support carried by the traveling head and constituting the distinguishing feature of this invention.

At the lower edge of the side plate 22 is a laterally extending flange 28 having a groove in its upper surface forming a seat for the lower edge of a tilting or rocking work support 29, the seat being not directly below the part of the work support on which the work rests, but to one side, so that the line connecting the bearing point of the support on its seat and the bearing point of the work on the support will be inclined in a direction toward the guide surface of the head block. The support 29, while being free to rock in its seat, is normally held in its upright position by having studs 31 projecting from it and passing through openings in the flange 28 with coil springs 32 surrounding them and bearing at one end against set nuts 33 on the studs and at the other end against bushings 34 which are threaded in the openings of the flange 28 and allow of sufficient play for the studs. The bushings 34 are to be adjusted by turning them on their screw threads so as to have the work support 29 rest on their flat upper ends and they are held by lock nuts 35. The effect of the springs 32 is to push downwardly on the studs 31 and hold the support 29 with pressure upon the ends of the bushings so that it will remain in its upright position. The slight rocking movement of the support 29 necessary to bring its upper end against the side plate 22 is permitted by the play of the studs 31 in the bushings 34, however the support is



returned to its upright position by means of the springs 32 as soon as it is permitted to do so.

The work support 29 has a slender projection 36 in the plane of the inner edge of the supporting face and extending into the opening between the head block and the presser bar as clearly shown in Figs. 2 and 3 to support the work close to the cutters.

16 The projection 26 is made slender to permit of the adjustment of the presser bar 13 for the thinnest work for which the machine is intended.

In operation the strip of flooring 17 is entered between the guide 23 and the top of the support 29 with its face toward the side plate 22, being guided in its entry by the beveled flange 21 and is pushed in until its end strikes against a stop 37 which is fixed on the head block 12. The upward motion of the traveling head 13 causes the work to move upwardly therewith with freedom in the space between the head block and the presser bar until nearing the cutter heads when a slight projection 38 on the presser bar causes it to be clamped firmly between these parts during the action of the cutter heads thereon, the face of the work being pressed against the guide face 30 of the head block. Without the rocking or tilting support 29 the upper edge of the work might be pressed into engagement with the guide face 30 by the projection 38 leaving the lower edge spaced from said guide face 30 and thereby result in the cutting of a flange at an angle to the face of the work instead of parallel therewith. However, by means of the tilting or rocking work support the engagement of the upper edge of the work with the projection 38 causes the work and the support to become a toggle in effect, their engaging edges swinging in a direction to bring the lower edge of the face of the work firmly against the guide face 30. The extent of the rocking movement of the support 29 will depend upon the position of the work thereon for if the work is in engagement with the guide face 30 at its lower edge at the start there is no rocking movement of the support while if the lower edge of the work is as far away from the guide face 30 as it can get at the start, that is in engagement with the presser bar, the rocking movement of the support is greatest, it being always sufficient to bring the work into a close engagement with the guide face 30 so that the tongue or groove cut in the end thereof, according to the number and the position of the cutter heads, will be true with relation to its face. Upon the work passing the cutter heads it is withdrawn from the machine and the traveling head returns empty to its lower position where another strip is fed thereto, the tilting support having been restored to its up-

right position as soon as the work was withdrawn therefrom.

If through the wear of the parts the angular position of the work support with relation to the line of travel of the traveling head is lost correction may be made by adjusting the bushings 31 to raise or lower one end or the other of the work support.

The guide 23 is adjusted to fit upon the upper edge of the work and when clamped in place serves to prevent the tilting of the work on the work support 29, even if it is necessary to lift the entire strip bodily in doing so. The more important function of this guide, however, is to serve as a stop to prevent the work being caught by the teeth of the cutters and drawn upwardly thereby at a faster speed than the movement of the traveling head, which would result in the cutters acting as feed rolls drawing the work up therebetween. This would probably cause a buckling of the cutters with the springing of their arbors, or the throwing of the work in a dangerous manner, but the presence of the guide 23 prevents this and necessitates the work remaining in its position on the traveling head until withdrawn after passing above the projection 38. The object in directing the teeth of the cutters so as to move with the feed of the work is to prevent the splintering of the lower edges of the flooring strip.

What I claim as my invention is:

1. An end matcher or the like having a guide face and a tilting work support for moving the work against the guide face when pressure is brought to bear thereon.

2. An end matcher or the like having a guide face and a cutter, and a tilting work support for feeding the work to the cutter, the bearing point for the work support and the bearing point for the work on the work support being so located that a line joining them is inclined with relation to the direction of the feed of the work, whereby the work will be moved by the work support into engagement with the guide face.

3. An end matcher or the like having a guide face and a cutter, a tilting work support for feeding the work to the cutter, and means for normally holding the work support in its upright position, the bearing point for the work support and the bearing point for the work on the work support being so located that a line joining them is inclined with relation to the direction of the feed of the work, whereby the work will be moved by the work support into engagement with the guide face.

4. An end matcher or the like, comprising a head block, a presser bar mounted to stand in parallel relation thereto to form a guideway between them for the work, a cutter in the path of the work in its travel through the guideway, the head block forming a



guide face for the work, a projection on the presser bar to force the advance edge of the work against the guide face, a reciprocating traveling head on the head block, and a tilting work support carried by the traveling head for moving the other edge of the work against the guide face.

5. An end matcher or the like, comprising a head block, a presser bar mounted to stand in parallel relation thereto to form a guideway between them for the work, a head block constituting a guide face for the work, a cutter in the path of the work in its travel through the guideway, a projection on the presser bar to force the advance edge of the work against the guide face, a reciprocating traveling head on the head block, and a spring seated tilting work support carried by the traveling head for supporting the work and moving its other edge into engagement with the guide face.

6. An end matcher or the like, comprising a head block, a presser bar mounted to stand in parallel relation thereto to form a guideway between them for the work, the head block constituting a guide face for the work, a cutter in the path of the work in its travel through the guideway, a projection on the presser bar to force the advance edge of the work against the guide face, a reciprocating traveling head on the head block, and a spring seated tilting work support mounted on the traveling head with a projection extending into the guideway and adapted to support the work and move the other edge thereof into engagement with the guide face.

7. An end matcher or the like, comprising a head block, a presser bar mounted to stand in parallel relation thereto to form a guideway between them for the work, the head block constituting a guide face for the work, a cutter in the path of the work in its travel through the guideway, a projection on the presser bar to force the advance edge of the work against the guide face, a reciprocating traveling head on the head block, a flange on the traveling head forming a work support seat, a spring actuated tilting work support mounted on said seat, and adjusting screws threaded in the seat and bearing on the work support for adjusting the angular position thereof with relation to the line of travel of the traveling head, the work support being adapted to support the work and move the other edge thereof against the guide face.

8. An end matcher or the like, comprising a head block, a presser bar mounted to stand in parallel relation thereto to form a guideway between them for the work, the head block constituting a guide face for the work, a cutter in the path of the work in its travel through the guideway, a projection on the presser bar to force the advance edge of the work against the guide face, a reciprocating traveling head on the head block, a flange on

the traveling head forming a work support seat, a tilting work support mounted on said seat, studs on the work support passing through openings in the seat, bushings threaded in said openings of the seat and bearing against the work support for adjusting its angular position with relation to the line of travel of the traveling head, set nuts on the studs, and coil springs between the set nuts and the bushings, the work support serving to support the work and move its other edge against the guide face.

9. An end matcher or the like, comprising a head block, a presser bar mounted in parallel relation therewith to form a guideway between them for the work, the head block serving as a guide face for the work, a traveling head traveling in ways on the head block, a side plate on the traveling head, an adjustable guide carried by the side plate, a beveled guide flange on the presser bar opposite the side plate, a flange on the side plate, a tilting work support seated on the flange and having a projection extending into the guideway, a stop in the path of the work as it is entered between the side plate and the beveled flange and between the guide and the work support, a projection on the presser bar to force the advance edge of the work against the guide face, and spring pressed studs on the work support passing through openings in the flange of the side plate to normally hold the work support upright, the work support being adapted to be tilted to move the other edge of the work against the guide face.

10. An end matcher or the like, comprising a head block, a presser bar mounted to stand in parallel relation thereto to form a guideway between them for the work, a cutter in the path of the work in its travel through the guideway, a reciprocating traveling head on the head block forming a support for the work, and an adjustable guide on the traveling block extending above the work to prevent the work tilting on its support.

11. An end matcher or the like, comprising a head block, a presser bar mounted to stand in parallel relation thereto to form a guideway between them for the work, a cutter in the path of the work in its travel through the guideway turning in the direction of the feed of the work, a reciprocating traveling head on the head block forming a support for the work, and a guide carried by the traveling head and extending over the work to prevent the work being drawn by the cutter faster than the movement of the traveling head.

12. An end matcher or the like, comprising a head block, a presser bar mounted to stand in parallel relation thereto to form a guideway between them for the work, a cut-

ter in the path of the work in its travel through the guideway, a reciprocating traveling head on the head block forming a support for the work, an arm pivotally mounted on the traveling head, means for clamping the arm in adjusted positions, and a projection on the arm extending over the work to form a guide therefor in entering

the machine and to hold the work in its place on the support.

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

**WILLIS S. SHERMAN.**

Witnesses:

**R. S. C. CALDWELL,  
ALMA A. KLUG.**