Feb. 27, 1923.

1,446,726

H. E. SLOAN

CUTTING DEVICE

Filed Aug. 2, 1920

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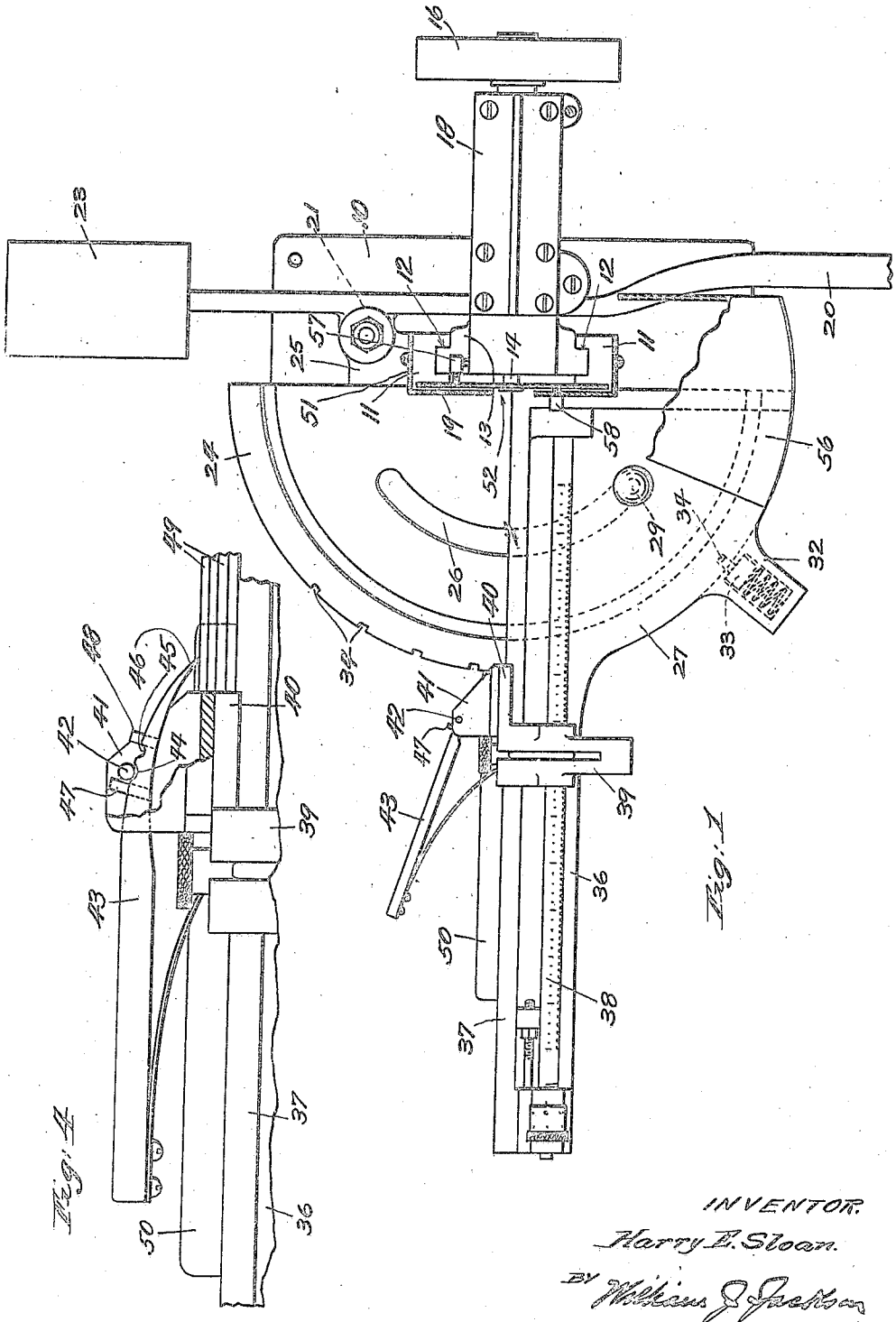


Fig. 1

Fig. 4

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Filed Aug. 2, 1920 3 sheets-sheet 2

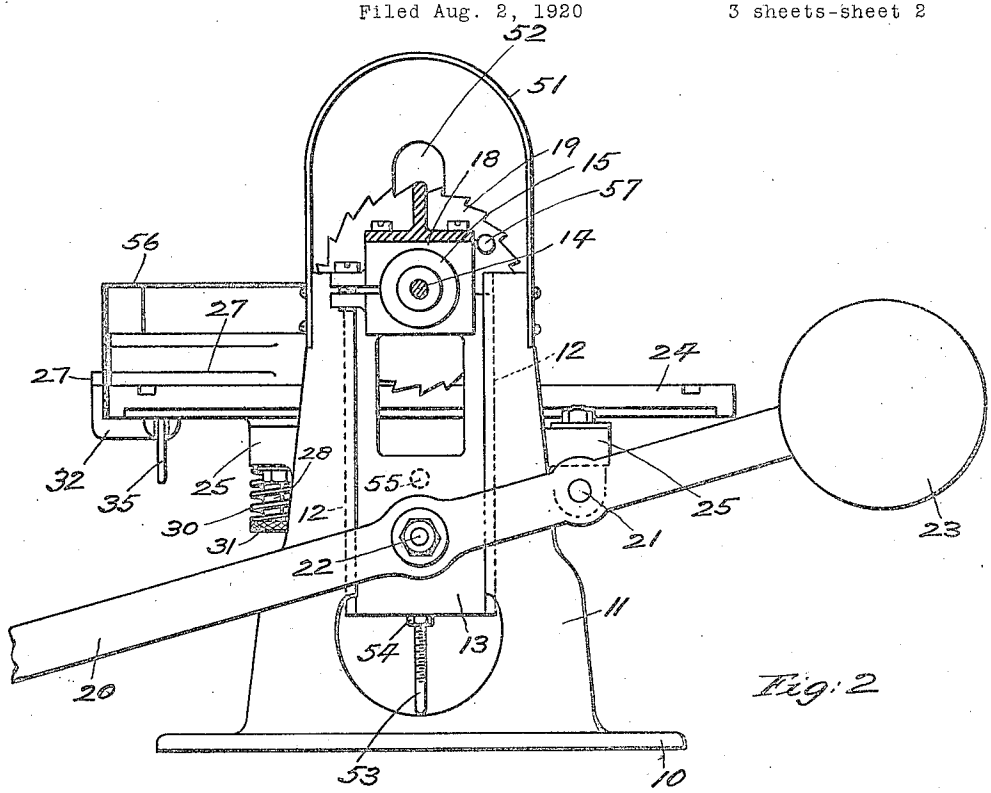


Fig. 2

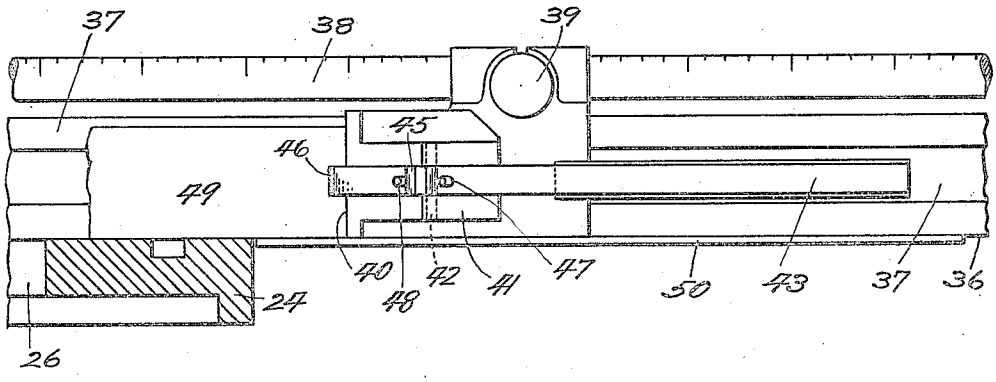


Fig. 3

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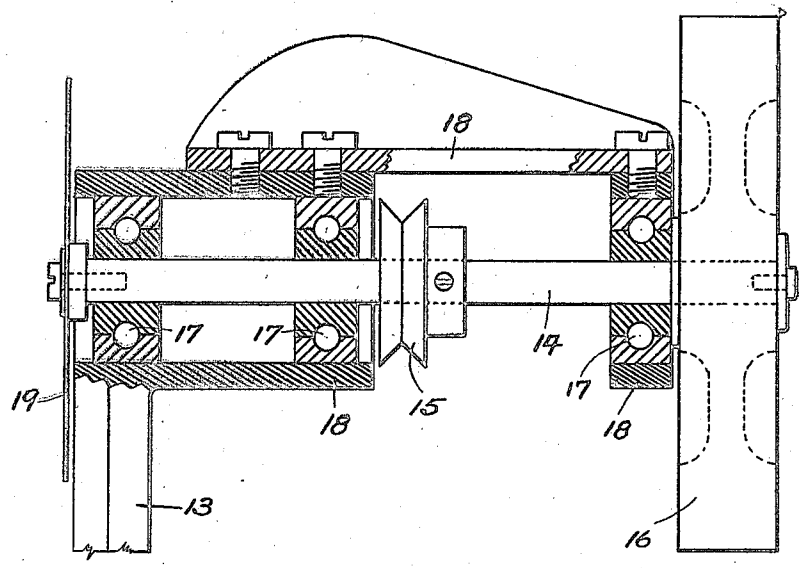


Fig. 5

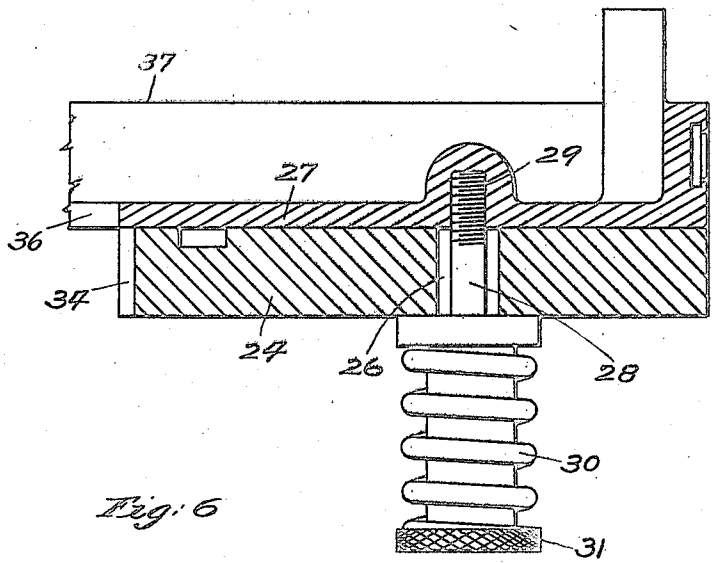


Fig. 6

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Patented Feb. 27, 1923. 1,446,726

UNITED STATES PATENT OFFICE.

HARRY E. SLOAN, OF PHILADELPHIA, PENNSYLVANIA.

CUTTING DEVICE.

Application filed August 2, 1920. Serial No. 400,856.

To all whom it may concern:

Be it known that I, HARRY E. SLOAN, a citizen of the United States, residing at the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a certain new and useful Improved Cutting Device, of which the following is a specification.

This invention generally stated relates to power-driven cutting devices and has more especial relation to apparatus for cutting to desired lengths rules, slugs and the like such as used by printers and for mitering same to required angles.

The leading object of the present invention may be said to reside in the providing of a device of this character of simple efficient and comparatively inexpensive construction which may be readily and expeditiously manipulated. A further object of the present invention is to provide improved facilities for driving the cutter; improved facilities for clamping work in position before the cutter; improved facilities for securing the guide plate with respect to the table and to provide improved facilities for guarding the operator against flying parts during a cutting operation.

With the foregoing and other objects in view as will hereinafter be more fully described, the invention consists of the improvements hereinafter described and finally claimed.

The nature, characteristic features and scope of the invention will be more fully understood from the following description taken in connection with the accompanying drawings forming part hereof, and in which:

Fig. 1, is a top or plan view, partly sectioned, of the improved cutting device of the present invention.

Fig. 2, is a view thereof in end elevation, partly sectioned.

Fig. 3, is a fragmentary view, partly sectioned, illustrating details of construction of the work holder and clamp.

Fig. 4, is a top or plan view, partly sectioned, of certain of the parts shown in Fig. 3.

Fig. 5, is a view in elevation, partly sectioned, illustrating the manner of driving the cutting device, and

Fig. 6, is a fragmentary view, partly sectioned, showing the manner of securing the guide plate with respect to the table.

For the purpose of illustrating my invention I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

In the drawings, 10 designates a base plate rising from which is a substantially U-shaped standard 11 provided with ways 12. Guided in the ways 12 for vertical reciprocation is a slide 13. Carried by the upper portion of said slide is a horizontally disposed driving head. Generally stated, the driving head comprises a horizontally disposed drive shaft 14, a drive pulley 15 and a fly wheel 16. The shaft 14 is mounted in ball bearings 17, supported by a frame 18 fixed to the slide 13. Fixed to shaft 14 is a rotatable cutter 19. In practice best results have been obtained by the employment of a circular saw. 20 designates the slide operating lever fulcrumed as at 21 to standard 11 and pivoted as at 22 to slide 13. The lever 20 is provided at one end with a weight 23 for counter-balancing purposes. The cutting device 19 may be caused to advance toward or away from table 24 by movement of lever 20 in the proper direction. Table 24, which is horizontally disposed and is of semi-circular configuration, is supported by lugs 25 carried by standard 11. Table 24 has extended therethrough an arc-shaped slot 26 for the guidance of a sector-shaped guide plate 27 forming part of a miter-angle. The plate 27 is secured with respect to the table 24 by means of a bolt 28 which passes upwardly through slot 26 and has screw threaded relation with plate 27 as at 29. A spring 30 is interposed between the head 31 of said bolt and the underside of table 24. By adjustment of bolt 28 the tension of spring 30 may be regulated to provide desired frictional en-

gagement between plate 27 and table 24. Plate 27 is provided with an outwardly and downwardly projecting extension 32, mounted in which is a horizontally disposed spring-pressed plunger 33 adapted to co-operatively engage notches 34 of table 24. By moving plunger 33, by means of finger piece 35, out of engagement with a notch of table 24 plate 27 may be moved to any desired angle. Plate 27 is provided with a horizontal extension 36 and the plate including said extension is provided with a vertical edge-bar 37. Paralleling edge-bar 37 is a toothed and graduated bar 38. Movable along edge-bar 37 and co-operatively engaging with the toothed portion of bar 38 is a conventional stop 39. The stop is provided with an inwardly extended tongue 40. Carried by tongue 40 is a work clamp comprising a bifurcated member 41 passing through which is a vertically disposed pin 42 adapted to co-operatively engage with which is a spring-pressed detent 43. The part of detent 43 adapted to engage with pin 42 is notched as at 44 and 45 and is relatively claw-shaped as at 46. Adjacent notch 44 the detent is provided with a horizontal pin 47 and adjacent notch 45 said detent is provided with a similar pin 48.

As clearly shown in Fig. 4 notch 44 of detent 43 is in engagement with pin 42 and pin 47 is in abutting relation with pin 42. In this position of parts the end of claw 46 projects beyond the end of member 41. In this position one or a plurality of rules or slugs 49 may be clamped in abutting position with tongue 40 and edge-bar 37 as clearly shown in Figs. 3 and 4. When cutting large sections of rules or slugs, it is desirable to disregard the clamp and hold the rules or slugs by hand. For this purpose, it is necessary to move the detent 43 rearwardly so that the claw end 46 thereof does not project beyond the edge of tongue 40. To accomplish this end, the operator shifts detent 43 so that notch 45 engages with pin 42 and pin 48 abuts against pin 42. The above construction provides a very simple and efficient manner in which to accomplish shifting of detent 43. Fixed to the underside of edge-bar 37 is a horizontally disposed plate 50 upon which the rules or slugs 49 may rest when in clamped position. Carried by standard 11 is an inverted U-shaped guard 51 for protecting the hands of the operator from the revolving cutter. That portion of guard 51 which faces table 24 is provided with an opening 52 so that the operator may view the cutter during its downward movement. In order to limit the downward movement of cutter 19 the bottom of slide 13 is provided with a stem 53. This stem has screw-threaded relation with slide 13 so that adjustment may be made and a lock nut 54 is present to secure the stem in adjusted position. To limit the upward movement of cutting device 19 a horizontally disposed pin 55 may be fixed to slide 13 which pin is adapted to abut against the underside of table 24. In order to accumulate flying particles of material, as severed by the cutting device, a guard 56 is carried by table 24. A lubricating device 57 carried by a fixed part of the driving head impinges against one face of cutting device 19 and a similar lubricating device 58 is carried by guard 51 for impinging against the other face of the cutter.

A description will now be given of the manner of using the above described cutting device. Power being imparted to drive shaft 14 from any suitable source, plate 27 is positioned as shown in Fig. 1 if a straight cut is to be effected or is shifted to a proper angle if a bevel is to be cut. Stop 39 is then adjusted to secure a proper length of rule or slug to be cut and a rule or slug or a plurality of them are then caused to be positioned with respect to edge-bar 37, tongue 40 and support 50 and are clamped in position by means of detent 43. The operator now depresses lever 20 so that the rotating cutter is moved downwardly upon and caused to effect a cut of the rule or slug lying in the path thereof.

It will now be apparent that I have devised a novel and useful construction which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description and while I have in the present instance shown and described the preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

What I claim is:

1. In a device of the character stated a standard, a table fixed thereto, a slide mounted unon said standard, a cutter rotatably carried by said slide and adapted to co-operate with an edge of the table top, an operating lever fulcrumed to said standard and having pivotal relation with said slide for moving said cutter toward or away from the table top, means connected with said lever for automatically returning it to normal position, and adjustable means between said slide and standard for limiting such return movement.

2. A construction as described in claim 1, characterized by a miter-angle adjustably mounted upon said table, spring pressed means for maintaining the miter-angle in frictional engagement with the table and a work clamp carried by said miter-angle.

3. A construction as described in claim 1, characterized by a miter-angle adjustably mounted upon said table, spring pressed means beneath said table, and secured with respect to said miter-angle for maintaining said parts in frictional engagement and means for regulating the tension of said spring.

4. In a device of the character stated the combination of a standard, a table fixed thereto, a slide mounted upon said standard for vertical movement before the front face of said table, a shaft rotatably carried by said slide in a plane above said table, a cutter mounted upon and rotatable with said shaft said cutter being arranged in parallelism with said table face but out of alignment therewith, and a counterbalanced lever fulcrumed to said standard and having pivotal relation with said slide for moving said cutter toward or away from the top of said table.

5. A construction as described in claim 1, characterized by a head extended horizontally from said slide and ball bearings supported by said head in which bearings said shaft is rotatably mounted.

6. A construction as described in claim 1, characterized by a guard surrounding said cutter and lubricating devices for said cutter one of which is carried by said slide and the other by said guard.

7. A construction as described in claim 1, characterized by a guard fixed to said table for collecting scrap as severed by said cutter said guard being located upon the side of the table nearest said manual means.

8. In a device of the character stated the combination of a fixed table, a slide movable in a vertical manner before the front face of said table, a rotatable cutter arranged in parallelism with said table face but out of alignment therewith, manual means for moving said cutter toward or away from the top of said table, a miter-angle adjustably mounted upon said table, a work clamp carried by said miter-angle provided with a spring pressed jaw and means for shifting said jaw endwise for throwing same into and out of clamping position.

9. A construction as described in claim 8, characterized by a horizontally disposed work support fixed to said miter-angle in a plane below said work clamp.

10. In a device of the character stated a fixed table, a miter-angle adjustably mounted upon said table, spring pressed means beneath the table and secured with respect to said miter-angle for maintaining said parts in frictional engagement, means for regulating the tension of said spring, a slide movable with respect to said table, a cutter rotatably carried by said slide and adapted to co-operate with an edge of the table top and means connected to said slide for moving said cutter toward or away from the table top.

11. In a device of the character stated a fixed table, a slide movable with respect to said table, a head fixed to said slide, ball bearings within said head, a shaft rotatable in said bearings, a cutter adapted to co-operate with an edge of the table top at right angles thereto carried by said shaft and means connected to said slide for moving the cutter toward or away from the table top.

12. In a device of the character stated a fixed table, a slide movable with respect to said table, a rotatable cutter carried by said slide and adapted to co-operate with an edge of the table top, a guard surrounding said cutter, lubricating devices for said cutter, one of which is carried by said slide and the other by said guard and means connected to said slide for moving said cutter toward or away from the table top.

13. In a device of the character stated a fixed table, a slide movable with respect to said table, a rotatable cutter carried by said slide and adapted to co-operate with an edge of the table top, a guard fixed to said table for collecting scrap as severed by the cutter and means connected to said slide for moving said cutter toward or away from the table top.

14. In a device of the character stated a fixed table, a slide movable with respect to the table, a miter-angle adjustably mounted upon said table, a work clamp carried by said miter-angle, a cutter rotatably carried by said slide, means for moving said work clamp toward or away from said cutter, means for shifting said work clamp into and out of clamping position and means connected with said slide for moving the cutter toward or away from said table.

15. In a device of the character stated a fixed table, a miter-angle adjustably mounted upon said table, spring pressed means for maintaining said miter-angle in frictional engagement with said table, means for regulating the tension of said spring, a cutter rotatably mounted above and adapted to co-operate with an edge of the table top and means for moving the cutter toward or away from the top of said table.

16. In a device of the character stated a fixed, horizontally disposed table, a cutter carrier movable in a vertical manner before the front face of said table, a cutter rotatably mounted upon said carrier in parallelism with said face but out of alignment therewith, manual means for moving the cutter from a position above said table to a position below the table top and means operative to return said cutter to normal position.

17. In a device of the character stated a fixed, horizontally disposed table, a cutter carrier movable in a vertical manner before the front face of said table, a cutter rotatably mounted upon said carrier in parallelism with said face but out of alignment therewith, manual means for moving the cutter from a position above to a position below the table top, means for adjustably limiting the downward movement of the cutter and means operative to return said cutter to normal position.

In testimony whereof, I have hereunto signed my name.

HARRY E. SLOAN.