July 14, 1931. A. CARSON 1,814,366

MACHINE FOR CUTTING BORDER SLUGS

Filed June 7, 1928 2 Sheets-Sheet 1

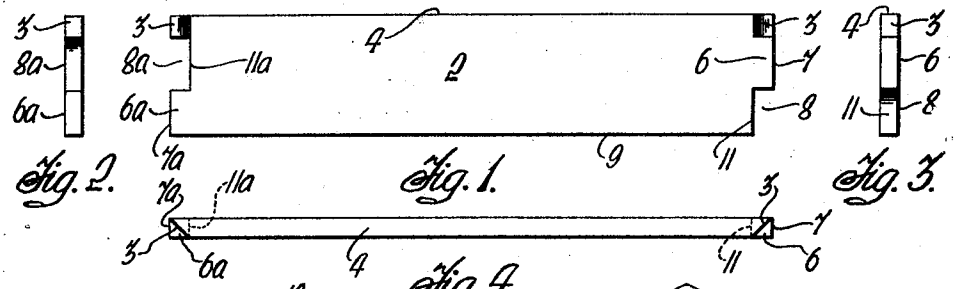


Fig. 2. Fig. 1. Fig. 3.

Fig. 4.

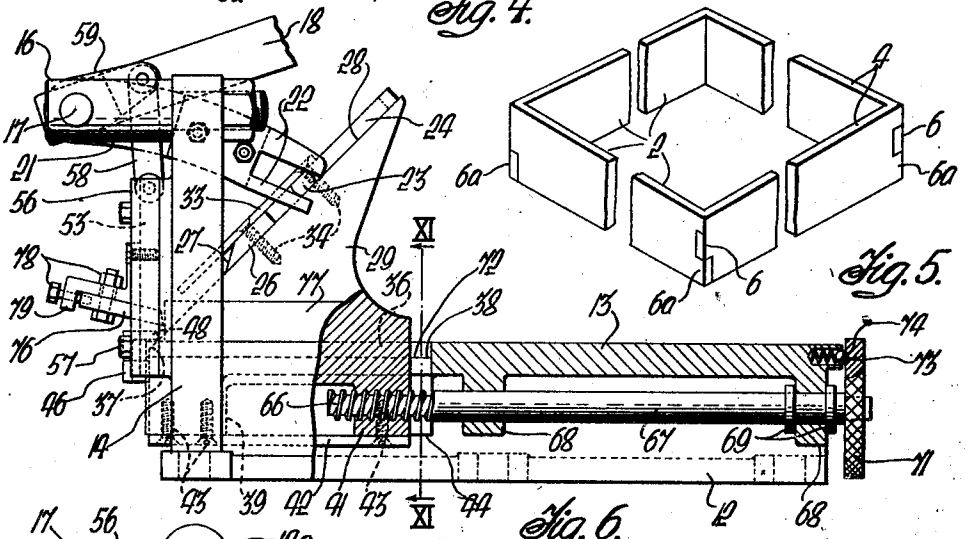


Fig. 6.

Fig. 5.

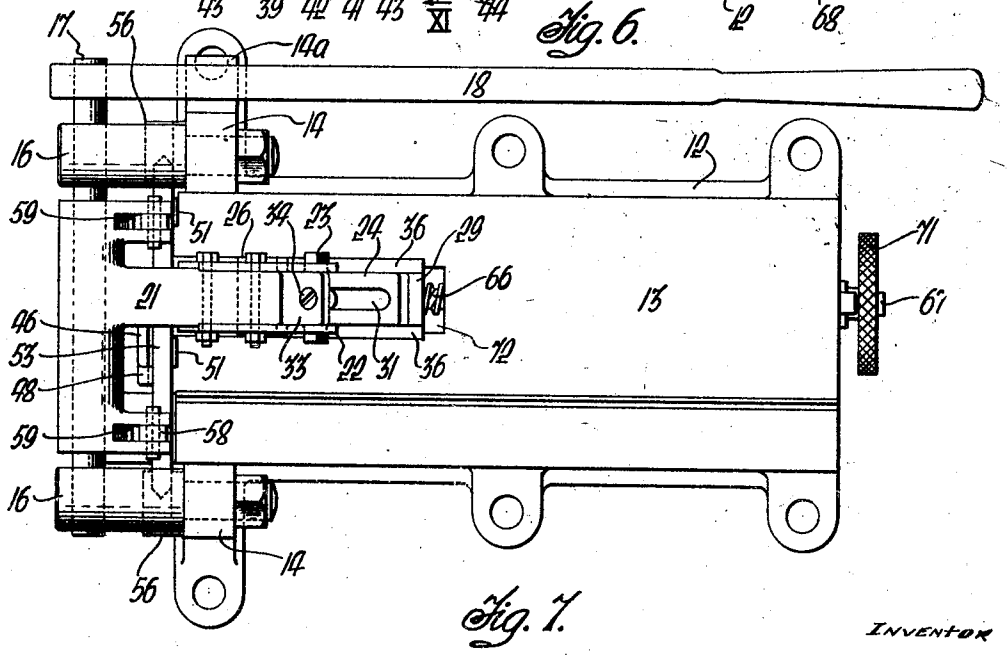


Fig. 7.

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July 14, 1931. A. CARSON 1,814,366

MACHINE FOR CUTTING BORDER SLUGS

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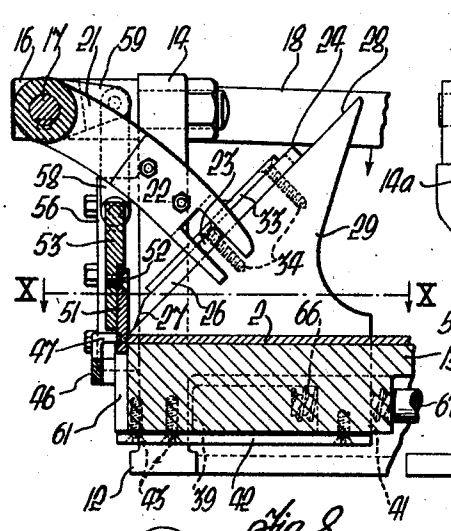


Fig. 8.

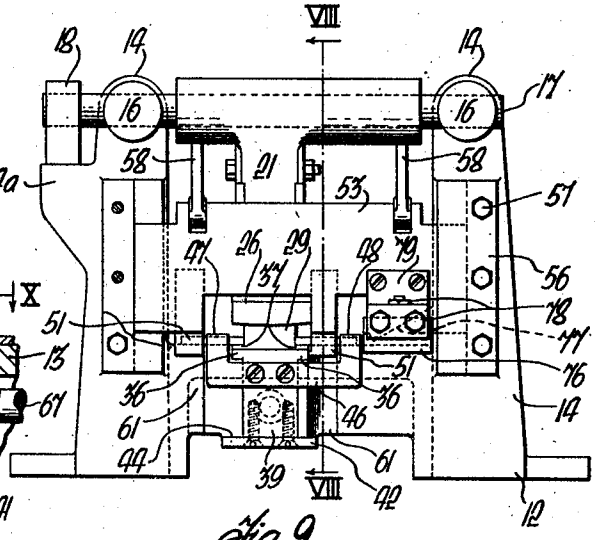


Fig. 9.

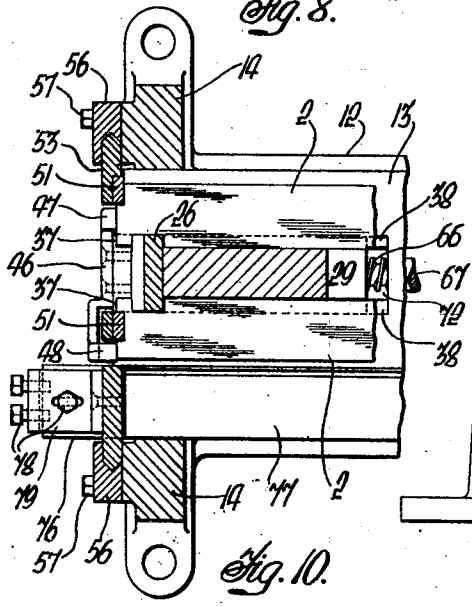


Fig. 10.

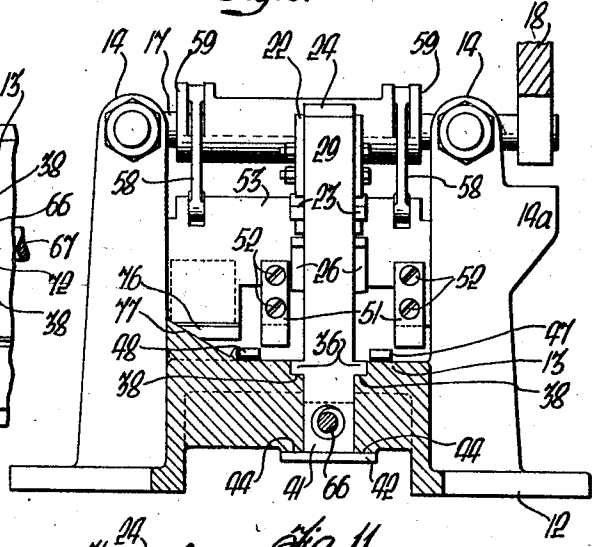


Fig. 11.

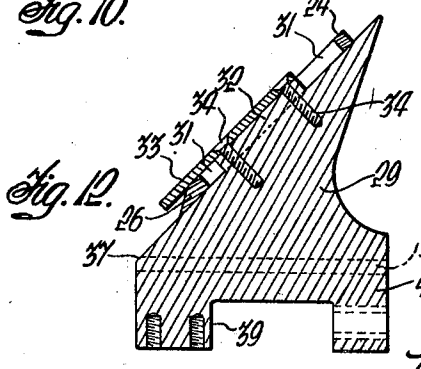


Fig. 12.

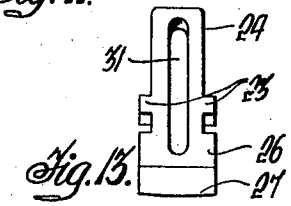


Fig. 13.

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UNITED STATES PATENT OFFICE

ARTHUR CARSON, OF SURREY HILLS, VICTORIA, AUSTRALIA

MACHINE FOR CUTTING BORDER SLUGS

Application filed June 7, 1928. Serial No. 283,627.

This invention relates to border slugs, produced by linotype or other slug casting machines, for the purpose of printing borders around advertising and other printed matter in newspapers and such like publications.

According to general practice border slugs cast by linotype machines are cut down to the required length whereupon the end edges of the slugs are mitered in a mitering machine, the cutting tool of which makes a series of shaves to trim each end face of the border slug to the required angle. In existing mitering machines only one end face of one slug can be mitered at a time and the operations are lengthy and involve skill or, at least, very careful attention on the part of the operator to ensure that the shaving operations will not be continued beyond the corner edge of the slug and thus excessively reduce its over-all length. The mitered slugs are then assembled around the advertising or other matter which is to be printed within the border and are placed upon an imposing stone which is usually provided with wedge or screw operated quoins or clamps by which the border slugs are pressed together with the object of holding them and the type matter within the border rigidly in position. This tightening action however frequently causes the border slugs to be forced out of proper relative alignment with the result that the mitered end faces do not register one with another. Thus when the border is printed the corners thereof do not join properly and detract from the appearance of the printed border.

The object of the invention is to provide a simple and effective machine for mitering the end faces of the border slugs and for forming interlocking elements at the ends of the slugs.

In order that this invention may be better understood reference will now be made to the accompanying drawings which are to be taken as part of this specification and read herewith:—

Figure 1 is a side elevation of a border slug according to this invention.

Figure 2 is a left hand end view of Figure 1.

Figure 3 is a right hand end view of Figure 1.

Figure 4 is a plan of Figure 1.

Figure 5 is a contracted view in perspective showing four of the improved slugs interlocked in border formation.

Figure 6 is a part sectional side elevation of a machine for mitering, and forming the interlocking elements of border slugs in accordance with the invention.

Figure 7 is a plan view of the machine.

Figure 8 is a fragmentary sectional elevation taken on the line VIII—VIII in Figure 9.

Figure 9 is a front view of the machine.

Figure 10 is a sectional plan taken on the line X—X in Figure 8.

Figure 11 is a cross sectional view taken on the line XI—XI in Figure 6.

Figure 12 is a vertical section of a mitering tool and a ramp or guide therefor.

Figure 13 is a face view of the mitering tool.

In Figures 1 to 5 is shown a border slug 2 provided at each end with a mitered face 3, extending a short distance below the top or printing face 4. Beneath this relatively short mitered face 3 at each end of the slug there is formed a locking element which is adapted to co-act with an appropriate locking element formed at one end of another slug.

Accordingly each border slug may be provided at one end with a tongue 6 which projects longitudinally beyond the inner extremity of the respective mitered end face 3, the outer end face 7 of this tongue coinciding with the outer extremity of the mitered face 3. Beneath the tongue 6 the slug is cut away to provide a recess or slot 8 which may extend to the bottom face 9 of the slug, the end face 11 of the slug beneath the tongue 6 coinciding with the inner extremity of the mitered end face 3.

At the opposite end of the slug, instead of a tongue being disposed intermediately of the height of the slug it is disposed at the bottom thereof as indicated by the reference 6*a*, while a recess or slot 8*a* for accommodating the tongue 6 of a slug is disposed between

the tongue 6*a* and the mitered end face 3 at the top of the slug. The outer face 7*a* of the tongue 6*a* coincides with the outer extremity of the adjacent mitered face 3, and the end face 11*a* of the slug above the tongue 6*a* coincides with the inner extremity of the mitered end face 3.

It will be evident from the foregoing that an intermediately disposed tongue 6 at one end of a border slug may be snugly fitted within an intermediate slot 8*a* formed at the meeting end of an adjacent slug, while the tongue 6*a* at the bottom of the second mentioned slug may fit closely within the slot 8 formed at the bottom of the first mentioned slug, as indicated in Figure 5. When assembled in such position the various border slugs are securely interlocked so that the mitered end faces 3 will register perfectly one with another, and the border slugs will maintain their correct relative positions notwithstanding pressure imposed thereon. Consequently the corner joints of the slugs will be perfectly formed and the joints between the mitered end faces will be invisible, and enable the printing of a perfect border.

In Figures 6 to 13 I have illustrated a machine for forming the mitered end faces 3 and the interlocking tongues 6, 6*a* and the tongue accommodating slots 8, 8*a* at the ends of the border slugs.

The machine includes a suitable frame or base 12 adapted to be rigidly secured to a suitable supporting structure, and having a platform 13 upon which two slugs may be held while undergoing treatment simultaneously. The frame may have upstanding portions 14 at its front end provided with forwardly projecting bearing members 16 for supporting a transverse shaft 17 which is adapted to be rocked by an operating lever 18. A stop 14*a* may be provided to limit the working stroke or downward movement of the lever 18.

A rearwardly projecting arm 21 adapted to turn with the rocking shaft 17 may be provided at its rear end with forked pieces or jaws 22 which embrace sideward projections 23 of a mitering tool 24 having a blade 26 with a suitable cutting edge 27 at its front end. The cutting edge may be curved as illustrated to facilitate the cutting action. This mitering tool is adapted to slide on a downwardly and forwardly inclined surface 28 of a guide member or ramp 29. In order to retain the tool in position on said ramp the rear part of the tool may have a longitudinally elongated slot 31 which fits snugly around a projection 32 of the inclined face of the ramp (see Figure 12). A retaining plate 33 may be attached by screws 34 or the like to the aforesaid projection 32 so as to hold the mitering tool closely against the inclined surface of the ramp without, however, interfering with its longitudinal motion thereon.

The ramp 29 may be provided with outstanding longitudinally extending ribs 36 the upper surfaces of which are flush with the slug supporting platform 13 at each side of the ramp, the over-all width of the ramp from the extremities of the aforesaid ribs 36, corresponding approximately to the width of the mitering blade 26. The front edges of the aforesaid ribs 36 and the intermediate portion of the ramp 29 are preferably bevelled as indicated at 37 in continuation of the inclination of the ramp, for a purpose which will be hereinafter apparent.

The ribs 36 of the ramp 29 may rest upon ledges 38 formed by slotting the frame 12 longitudinally from its front end. The ramp may have at its front and rear depending portions 39, 41, to the lower surfaces of which a plate 42 may be secured by screws 43. This plate overlaps the depending portions 39, 41 and contacts with smooth faces 44 of the frame 12 at each side of the ramp, whereby the latter is held rigid upon the frame 12. The side faces of the ramp 29 immediately above the platform 13 constitute straight edges against which the slugs 2 may rest as seen in Figure 10.

In order to ensure correct placement of the slugs 2 on the platform 13 a stop member 46 may be secured to the front of the ramp 29, this stop member having rearward projections 47, 48, which extend over the front edge of the platform 13 so that the rear faces of said projections are transversely aligned with the rear or upper edges of the bevelled faces 37 of the ribs 36 outstanding from the ramp 29. Consequently by positioning the slugs with their front ends against the rear faces of the projections 47, 48, as in Figures 8 and 10, the slugs will be correctly aligned with the bevelled ribs 36 of the ramp, and with punches or slotting tools 51 which form the slots 8, 8*a*, in the ends of the slugs.

The punches 51 may be attached, one at each side of the ramp 29 by screws 52, to a carrier 53 disposed at the front of the machine and adapted to be reciprocated vertically along slideways formed by guide members 56 attached by screws 57 or the like to the upstanding front portions 14 of the aforesaid frame. This carrier 53 may be connected by links 58 to a pair of arms 59 which are adapted to rock with the aforesaid rocking arm 21 and the transverse shaft 17. The punches 51 are set back from the projections 47, 48, of the stop member 46, and are adapted to enter appropriate vertical dies or die passageways 61 (Figures 8 and 9) formed at the front of the frame 12 and at opposite sides of the ramp 29.

In Figures 6, 7 and 11, the mitering tool 24 and the punches 51 are shown in raised posi-

tions. In Figures 8 to 10 the punches 51 are shown as having been forced downwardly to form the tongues and slots at the ends of the slugs, while the mitering blade 26 is about to commence its mitering action.

To enable the machine to deal with border slugs of different thickness provision is preferably made for longitudinal adjustment of the ramp 29 and the mitering tool 24 thereon together with the stop member 46 attached to the front of the ramp. For this purpose the rear depending portion 41 of the ramp may have a screw threaded hole to accommodate the screwed end portion 66 of a spindle 67 rotatably supported by bearings 68 in the frame 12. The spindle may be prevented from longitudinal movement by collars 69 and is fitted with a milled finger piece 71 or the like whereby it may be rotated to advance or retract the ramp 29 and parts carried thereby, the ramp travelling along a slot 72 in the frame 12 during such adjustment. Border slugs are usually of standardized thicknesses and in order to assist the operator in adjusting the ramp and associated parts into positions corresponding to the various thicknesses of the slugs, the finger piece 71 may be provided with a series of circumferentially spaced dimples or indents 73 (Figure 6) aligned with a spring pressed ball 74 or detent, whereby rotation of the finger piece and the adjusting spindle 67 is checked at various positions of the ramp 29. The spring pressed ball also prevents accidental adjustment of the ramp 29 after it has been set to deal with slugs of a particular thickness.

To ensure that the ends of the slugs are perfectly square before they are mitered and provided with the interlocking elements, an end squaring blade or shaver 76 may be affixed to the punch carrier 53 so as to be reciprocated past a platform 77 upon which the slugs may be held for such end squaring. As seen in Figures 9 and 11 this platform 77 may be inclined so as to facilitate the shaving action of the blade 76 which may be adjusted longitudinally by screws 78 on a holder 79 attached to the carrier 53, to thereby vary the amount of the cut.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

1. A machine for forming mitered faces and locking elements at the ends of border slugs comprising a platform for supporting the slugs, a mitering tool, a guide for the mitering tool inclined to said platform, a slotting tool, a guide for the slotting tool extending at right angles to said platform, means for shifting the mitering tool longitudinally of the platform to adjust it to slugs of various thicknesses, and means connected to a common operating element for reciprocating said mitering and slotting tools in relation to slugs on said platform.

2. A machine for forming mitered faces and locking elements at the ends of border slugs comprising a slug supporting platform, a mitering tool, a guide for the mitering tool, slotting tools arranged one at each side of said mitering tool, the slotting tools working at a right angle to the platform and the mitering tool working at an angle other than a right angle, guiding means for the slotting tools, and means for reciprocating said mitering and slotting tools.

3. A machine for forming mitered faces and locking elements at the end of border slugs comprising a slug support, a mitering tool, a guide for the mitering tool inclined to said support, slotting tools disposed one at each side of said mitering tool, a guide for said slotting tools extending at right angles to said slug support, means to assist in placing pairs of slugs upon the support so that an end portion of each slug is aligned with said mitering and slotting tools, and means connected to a common operating element for operating said mitering and slotting tools.

4. A machine for forming mitered faces and locking elements at the end of border slugs comprising a slug supporting platform, a mitering tool, a guide for the mitering tool, a slotting tool, a guide for the slotting tool, means for adjusting the mitering tool and guide in a direction parallel to the plane in which the guide lies, a member on the front of the mitering tool guide forming a front stop for a slug on the platform, and means for reciprocating said mitering and slotting tools.

5. A machine for forming mitered faces and locking elements at the end of border slugs comprising a slug support, a mitering tool, a guide for the mitering tool inclined to said support, a slotting tool, a guide for the slotting tool extending at right angles to the slug support, means for reciprocating said mitering and slotting tools, an end squaring blade for the slugs adapted to move with said slotting tool, and a platform for supporting the slugs while they are subjected to end squaring operations.

6. A machine for forming mitered faces and locking elements at the end of border slugs comprising a slug-support, a frame at one end of said support having vertical guides thereon, a mitering tool inclined relative to said support, a carrier mounted in the vertical guides on the frame, a slotting tool secured to said carrier, a shaft mounted in the upper portion of the frame, a crank on said shaft, a link connecting the crank with the slotting tool, and an arm extending from the shaft and engaged with the mitering tool.

In testimony whereof I affix my signature.

ARTHUR CARSON.