

C. S. LAMPHERE.
MITER MACHINE.

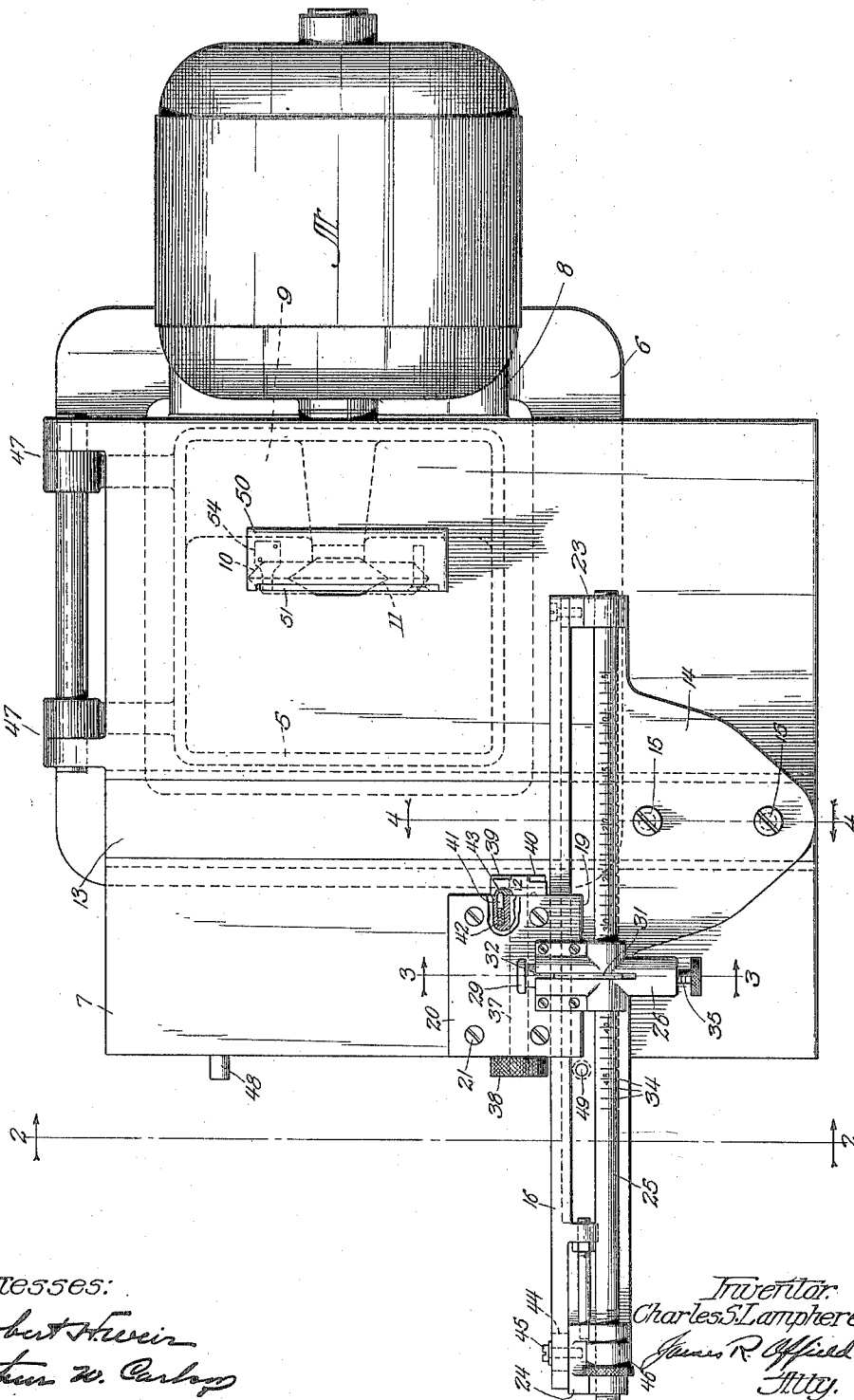
APPLICATION FILED JUNE 23, 1917.

Patented July 23, 1918.

2 SHEETS—SHEET 1.

1,273,235.

Fig. 1.



Witnesses:

Robert H. Weir
Arthur W. Carls

Inventor:
Charles S. Lamphere.
James R. Offield.
Atty.

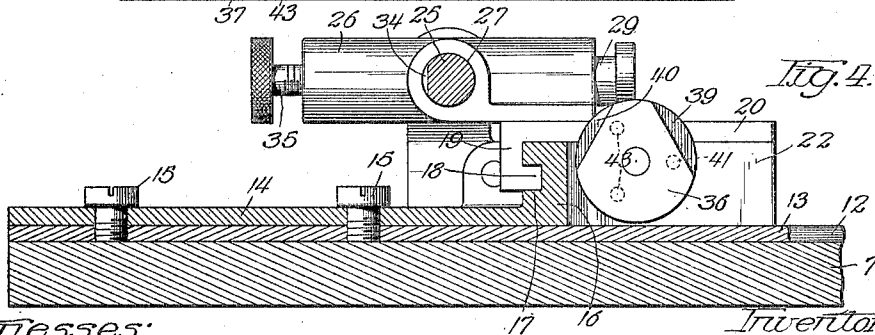
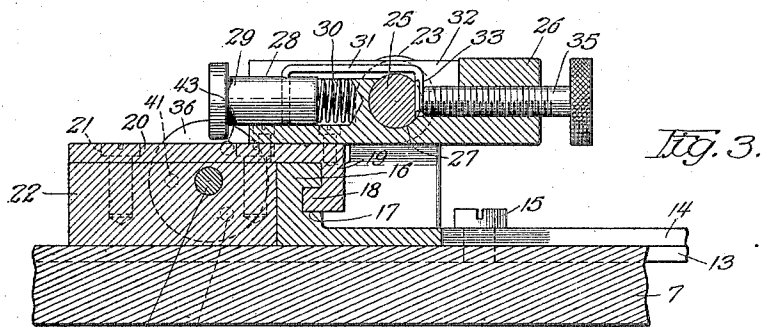
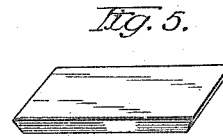
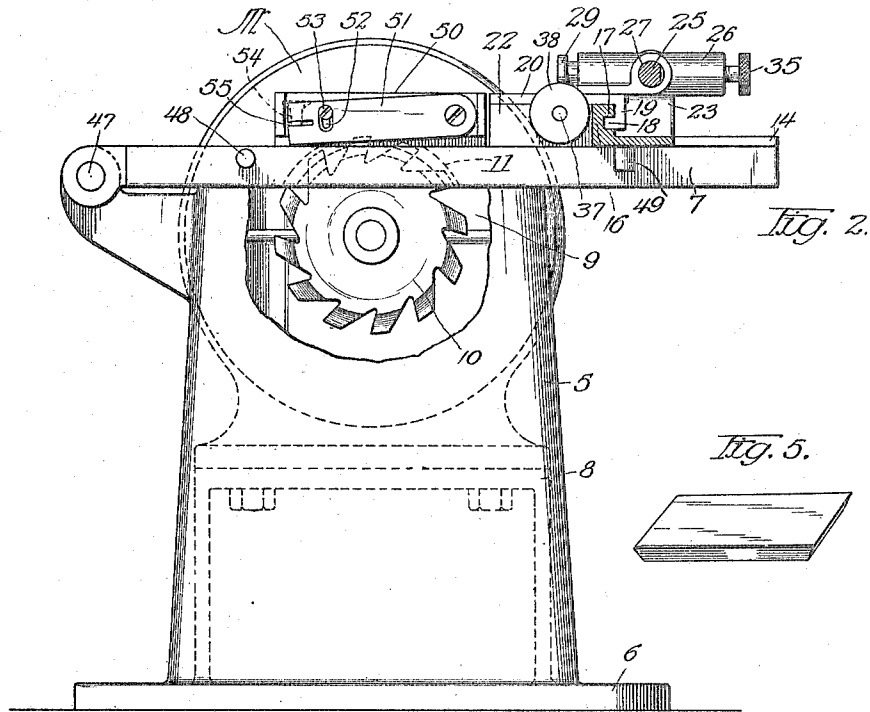
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Witnesses:

Robert H. Swin
Arthur W. Carlson

Inventor:

Charles S. Lamphere.
James R. Offord, Atty.

UNITED STATES PATENT OFFICE.

CHARLES S. LAMPHERE, OF CHICAGO, ILLINOIS, ASSIGNOR TO ILLINOIS PUBLISHING AND PRINTING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MITER-MACHINE.

1,273,235.

Specification of Letters Patent.

Patented July 23, 1918.

Application filed June 23, 1917. Serial No. 176,455.

To all whom it may concern:

Be it known that I, CHARLES S. LAMPHERE, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Miter-Machines, of which the following is a specification.

My invention relates to an improved mitering machine particularly adaptable for mitering the ends of border printing plates or slugs used in the printing art.

In the printing art advertisements in newspapers, magazines, or other publications, particularly individual advertisements, are usually surrounded by a border for the printing of which type plates are used, and these plates have beveled ends so as to accurately fit together. Heretofore mitering of the plate ends was accomplished in a more or less impractical and uneconomical manner, usually by manually operated cutting machines in which a knife is operated to trim off and miter the plates, the type-setter mitering the plates as he needed them. These hand operated machines required considerable guess work to cut off just enough to get the right length of plate and necessarily there was considerable waste of time and labor.

The object of my invention is therefore to provide a power driven machine which can be accurately set for any desired length of plate and which will quickly, accurately and efficiently miter the plate ends with absolute safety to the operator. In my improved machine a motor driven cutter is used having its cutting teeth edges at an angle of 45 degrees, and an adjustable stop is provided against which the plates are abutted at one end to be carried with their other end past and in engagement with the cutter wheel to be mitered. At the corner dimensions of the plates, that is, the distance between the outer corners of the mitered plates, means are provided for adjusting the distance between the cutter wheel and the abutment for plates of different thickness, and one of the important features of my invention is to provide an adjustable abutment head having a series of abutment steps for receiving plates of corresponding thick-

ness, or, in the words of the printing art, different point plates.

On the accompanying drawings a machine is shown which embodies the above and other features of the invention, and on these drawings—

Figure 1 is a plan view.

Fig. 2 is a view from plane 2—2, Fig. 1,

Fig. 3 is an enlarged sectional view on plane 3—3, Fig. 1,

Fig. 4 is an enlarged sectional view on plane 4—4, Fig. 1, and

Fig. 5 shows a mitered plate.

A hollow rectangular standard 5 rises from a base 6 and supports a top 7 on which the various operating parts are mounted. A shelf or bracket 8 extends laterally from the standard and supports a driving motor M whose shaft extends through and is journaled in the wall 9 of the standard and has secured to its inner end the cutter 10, the cutting edges of whose teeth are at an angle of 45 degrees. In the top 7 is the opening 11 through which the cutter teeth extend.

In the top 7 the guide groove 12 extends from front to rear at right angles with the motor shaft and slidable in this groove is the dove-tailed plate 13 for supporting the adjustable abutment mechanism. A flange 14 is secured to the plate by screws 15 and supports a longitudinally extending guide rail 16 having the guide groove 17 in its front side for receiving the rearwardly extending tongue 18 on the vertical member 19 of the horizontal carrier plate 20 which is secured by screws 21 to the block 22 engaging with the top surface of the table 7 and with the rear surface of the rail 16. Extending forwardly from the rear at the rail 16 thereof is the inner fixed bearing lug 23 and the outer adjustable bearing lug 24, a graduated adjusting rod 25 being journaled in these lugs. Detachably secured to the top of carrier plate 20 at right angles with the rail 16 is the frame 26 which has the transverse passageway 27 therethrough for receiving the graduated rod 25. In the rear end of this frame 26 is the pocket 28 for the abutment 29 between whose inner end and the base of the pocket is the compression spring 30 which tends to move the abutment rearwardly. A detent finger 31 is secured

at its rear end to the abutment and extends forwardly through the slot 32 with its end 33 deflecting downwardly to engage in the graduation notches 34 cut in the rod 25. By pressing forwardly on the abutment the detent finger is released from the rod and the carrier 20 can be shifted toward or away from the cutting plane of the cutter. A knurled thumb screw 35 threads through the front end of the frame 26 to abut against the end 33 of the detent finger to hold it securely in the notch 34 in which it engages, the carrier being then rigidly locked.

The length of a mitered plate is its outside length, that is, the distance between the acute edges of the mitered ends, and for plates of different thickness but of the same length adjustment must be made on the machine. For example, in the case of two-inch lengths the abutment carrier must be shifted toward the cutter for thicker plates. The plates are usually of standard graduation as to thickness on the basis of approximately 72 points to the inch, plates being referred to as 6 point, 8 point, or 12 point, etc., as to thickness and also as to length. On my improved machine the carrier 20 is adjusted for a certain plate length, and an adjustable abutment head 36 is provided for adjustment for plate thickness. The head 36 is cylindrical and abuts against the inner face of the block 22 and is secured to the outer end of a shaft 37 journaled in the block, the shaft at its other end having the knurled disk 38 by which it can readily be turned. The outer end of the head 36 is notched adjacent its periphery to provide a series of abutment steps 39 and 40 set axially inwardly from the front face of the head, which face also forms an abutment. Any number of such abutment steps may be provided. On the drawing the surface 36 of the head is adjacent the top of table 7 and the plate to be mitered is laid flat on the table with its inner end against the back of the rail 16, and then the carrier is shifted with the plate 13 which engages in the groove 12, and the inner end of the plate is carried past and in engagement with the cutter teeth and is mitered. Any number of plates can first be mitered at one end and then the plates are laid with their mitered ends against the abutment head and fed through the machine to have their other ends mitered. If it is desired to cut mitered plates of the same length but of greater thickness, the abutment head 36 is rotated by means of the disk 38 to bring the corresponding abutment step adjacent the table top and the plates are then abutted against the step and fed through the machine. Thus only one setting of the carrier is necessary for one length of plate and the proper abutment for different thicknesses of plate can be readily established by adjustment of the

head 36. To lock the head 36 in adjusted position I preferably provide a detent pin 41 pressed outwardly by the spring 42 with its end in one of the detent depressions 43 in the rear side of the head 36.

Owing to wear or lost motion, the graduation notches 34 in the rod 25 may not be in full accord with the distances between the cutter plane and the abutment plane after setting of the carrier 20. The rod 25 is therefore adjustable longitudinally. The lug 24 is shiftable longitudinally on the rail 16 to the extent of the length of the slot 44 through which the set screw 45 passes and threads into the lug 24. By shifting of the lug 24 rough adjustment can first be made and then final micrometer adjustment of the rod 25 can be made by turning the nut 46 which engages the outer threaded end of the rod 25 where it passes through the lug 24.

The table top 7 is preferably hinged to the back of the standard 5 as indicated at 47 in order that it may be raised to permit access to the cutter, and a stop 48 is preferably provided at the side of the table to be engaged by the pin 49 extending from the carrier in order to limit the rearward travel of the carrier.

Provision is also made to protect the operator from the cutter teeth. A guard frame 50 is therefore mounted on the table over the opening 11 through which the cutter projects. Hinged at its front end to the inner side of this frame is a plate 51 whose vertical swing is controlled by the slot 52 in the plate and the screw 53 secured to the frame. A leaf spring 54 secured at one end to the guard frame extends at its other end into the slot 55 in the plate 51 and tends to hold this plate down against the top of the table 7 and in the path of printing plates to be mitered. The plate 51 therefore serves to hold the plates against the table during the mitering operation, and also serves to prevent the operator's fingers from slipping into the guard frame into contact with the cutter teeth.

I thus provide a very simple, economical and efficient machine on which printing plates can be quickly and accurately mitered. Accurate adjustment can be made for length and also for thickness.

I do not of course desire to be limited to the precise construction, arrangement and operation shown and described as modifications are no doubt possible which would still come within the scope of the appended claims.

I claim as follows:

1. In a mitering machine, the combination of a supporting structure, a mitering cutter mounted on said structure for rotation, a carrier structure for shifting plates to be mitered through the field of said cutter, and an adjustable abutment head on said carrier

structure having a plurality of abutment steps for receiving the plates to be mitered.

2. In a mitering machine, the combination of a supporting structure, a rotatable cutter mounted thereon, a carrier structure for aligning and shifting plates to be mitered through the field of said cutter, and an abutment head having a plurality of abutment steps, said head being rotatably adjustable to bring any one of the steps into position to receive plates to be mitered.

3. In a mitering machine, the combination of a supporting table, a rotary cutter mounted below the table with its cutting teeth projecting therethrough, said table having a guide groove parallel with said cutter, a supporting plate slidable in said groove, an abutment structure secured to said plate to travel therewith and to receive plates to be shifted through the field of said cutter, and an adjustable head on said abutment structure having a plurality of abutment steps for receiving plates of different thickness.

4. In a mitering machine, the combination of a supporting table, a rotary cutter mounted below the table with its cutting teeth projecting therethrough, said table having a guide groove parallel with said cutter, a supporting plate slidable in said groove, an abutment structure secured to said plate to travel therewith and to receive plates to be shifted through the field of said cutter, an abutment head on said abutment structure having a plurality of steps of different depth for receiving plates of different thickness, said head being rotatable to bring any one of said steps in position to receive plates.

5. In a mitering machine, the combination of a supporting table, a rotary cutter mounted thereon, said table having a guide groove in its upper side parallel with said cutter, a supporting plate shiftable in said groove, a rail member secured to said plate parallel with the cutter axis, a carrier slidable on said rail toward and away from said cutter, and an adjustable cutter head on said carrier having a plurality of abutment steps for plates of different thickness.

6. In a mitering machine, the combination of a supporting table, a rotary cutter mounted thereon, said table having a guide groove in its upper side parallel with said cutter, a supporting plate shiftable in said groove, a rail member secured to said plate parallel with said cutter axis, a carrier slidable on said rail toward and from said cutter, a graduated rod secured to said rail, a frame extending from said carrier and receiving said rod, means for detachably clamping said frame to said rod to adjust for the length of plate to be mitered, and a rotary abutment head on said carrier having a series of abutment steps of different depth for plates of different thickness.

7. In a mitering machine, the combination

of a supporting table, a rotary cutter mounted on and projecting above the top surface of said table, said table having a guide groove in its upper side parallel with the cutter, a supporting plate shiftable in said groove, a rail member secured to said plate parallel with the cutter axis, a carrier mounted on and shiftable on said rail member toward and away from said cutter, a rod secured to said rail member and graduated in accordance with the distance between said carrier and said cutter, a frame extending from said carrier and receiving said rod, said rod being notched, a detent finger within said frame, an abutment secured to the rear end of said detent finger, a spring within the frame tending to force said abutment rearwardly to hold the front end of said finger in the notches of said rod whereby to lock the carrier with reference to the cutter, pressure on said abutment causing release of said abutment from said rod to permit shifting of said carrier, and means for positively locking said frame and thereby said carrier to said rod.

8. In a mitering machine, the combination of a supporting table, a rotary cutter mounted on and projecting above the top surface of said table, said table having a guide groove in its upper side parallel with the cutter, a supporting plate shiftable in said groove, a rail member secured to said plate parallel with the cutter axis, a carrier mounted on and shiftable on said rail member toward and away from said cutter, a rod secured to said rail member and graduated in accordance with the distance between said carrier and said cutter, a frame extending from said carrier and receiving said rod, said rod being notched, a detent finger within said frame, an abutment secured to the rear end of said detent finger, a spring within the frame tending to force said abutment rearwardly to hold the front end of said finger in the notches of said rod whereby to lock the carrier with reference to the cutter, pressure on said abutment causing release of said abutment from said rod to permit shifting of said carrier, and a rotatable head mounted on said carrier having a plurality of abutment steps for receiving the ends of plates of different thickness.

9. In a mitering machine, the combination of a supporting table, a rotary cutter mounted on and projecting above the top surface of said table, said table having a guide groove in its upper side parallel with the cutter, a supporting plate shiftable in said groove, a rail member secured to said plate parallel with the cutter axis, a carrier mounted on and shiftable on said rail member toward and away from said cutter, a rod secured to said rail member and graduated in accordance with the distance between said carrier and said cutter, a frame extending from said

carrier and receiving said rod, said rod being notched, a detent finger within said frame, an abutment secured to the rear end of said detent finger, a spring within the
5 frame tending to force said abutment rearwardly to hold the front end of said finger in the notches of said rod whereby to lock the carrier with reference to the cutter, pres-

sure on said abutment causing release of said abutment from said rod to permit shifting of said carrier, said rod being longitudinally adjustable.

In witness whereof, I hereunto subscribe my name this 18th day of June, A. D., 1917.

CHARLES S. LAMPHERE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."