Jan. 29, 1924. 1,482,323

H. R. SANDERS

ROTARY FEED GANG SAW

Filed Dec. 3, 1921 2 Sheets-Sheet 1

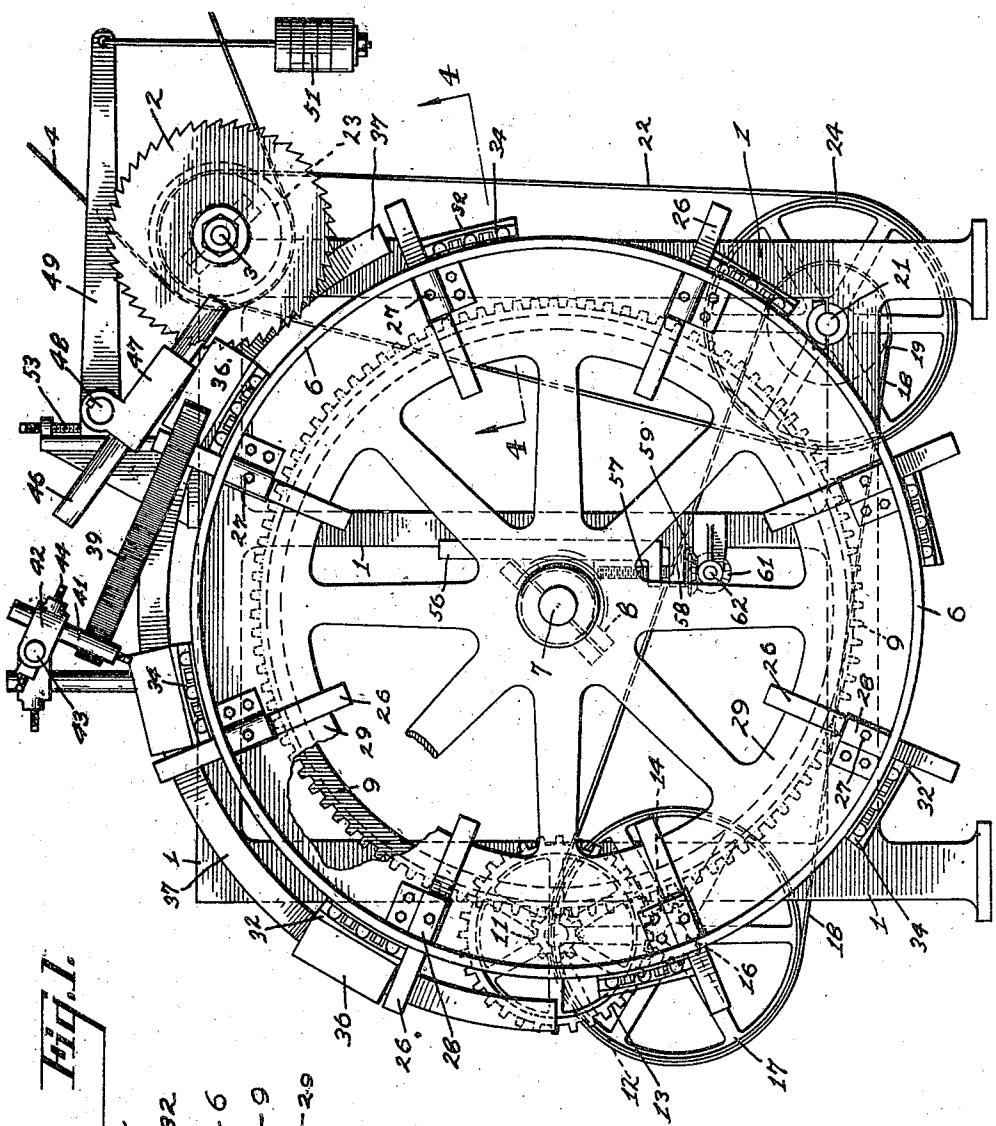


Fig. 1.

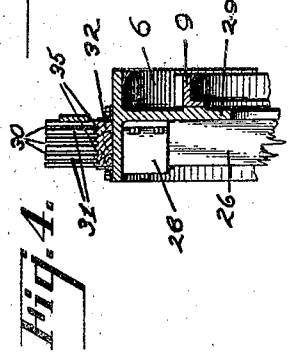


Fig. 4.

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Fig. 2.

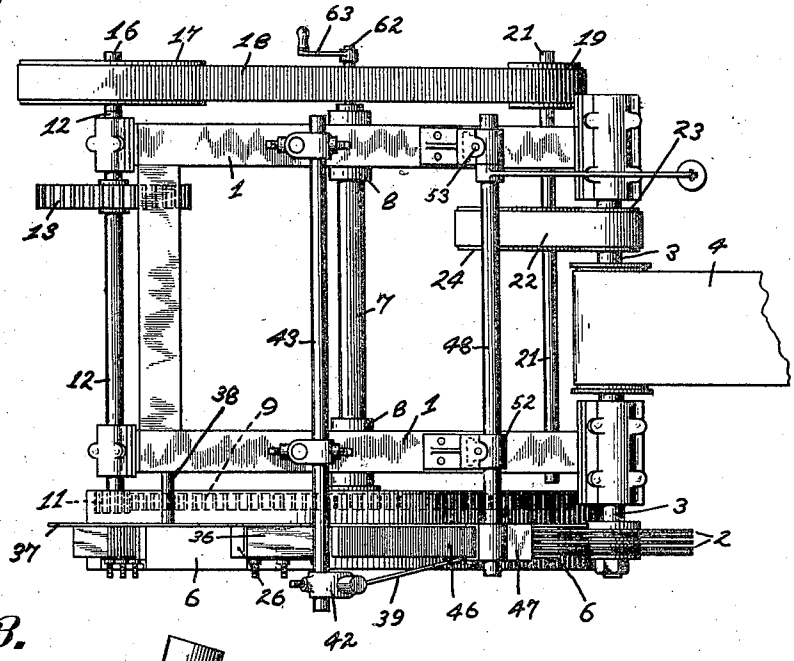
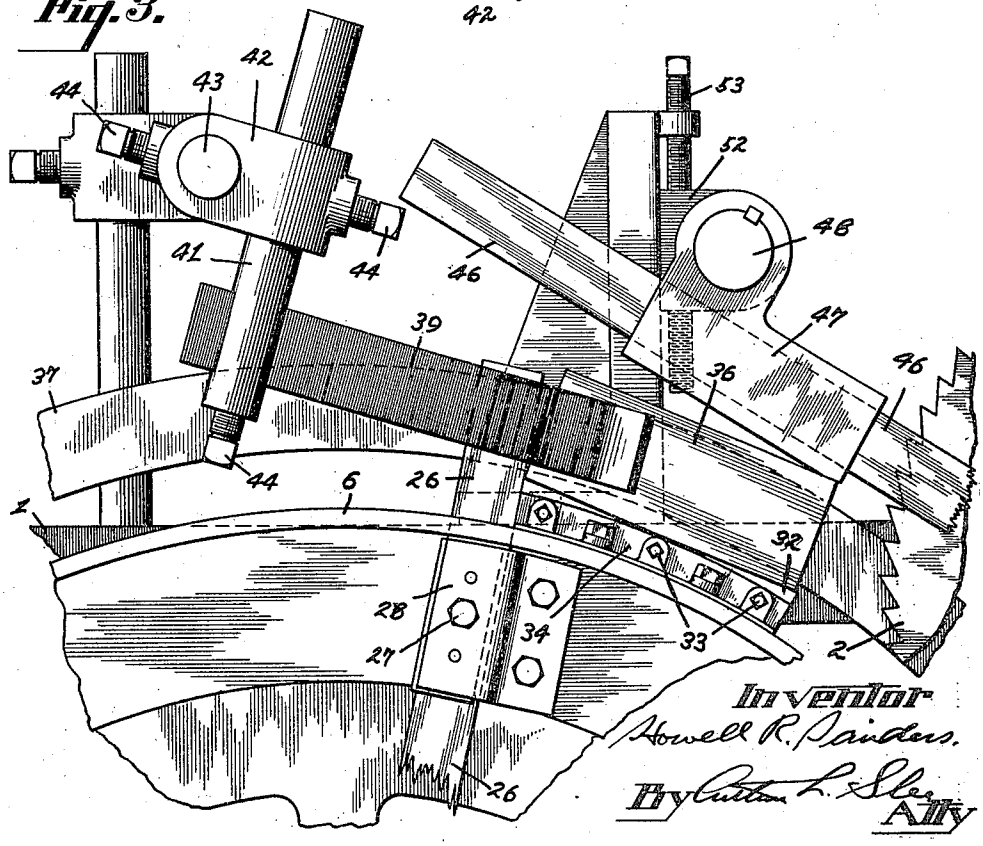


Fig. 3.



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UNITED STATES PATENT OFFICE.

HOWELL R. SANDERS, OF SACRAMENTO, CALIFORNIA.

ROTARY-FEED GANG SAW.

Application filed December 3, 1921. Serial No. 519,761.

To all whom it may concern:

Be it known that I, HOWELL R. SANDERS, a citizen of the United States, residing in the city of Sacramento, county of Sacramento, and State of California, have invented a new and useful Improvement in a Rotary-Feed Gang Saw, of which the following is a specification.

My invention relates to improvements in gang saws wherein blocks to be sawed into slats are fed to power driven saws by a rotating drum arranged to move successive blocks into engagement with the saws.

The primary object of my invention is to provide an improved rotary feed gang saw.

Another object is to provide a device adapted to reduce danger of accident to an operator.

A further object of my invention is to provide improved feeding means facilitating the feeding of blocks to power driven saws.

A still further object is to provide means for preventing the displacement of the blocks and slats sawed therefrom by action of the saws.

Another object is to provide adjustable and replaceable feed, supporting and retaining elements adapted to engage the saws and blocks supplied thereto for sawing to insure proper feeding of the blocks and to prevent irregular cutting of slats from the blocks because of vibration of the saws.

A further object is to provide means for driving a feed drum and a plurality of saws simultaneously in opposite directions from a common source of power and at speeds adapted to give a maximum efficiency.

A still further object is to provide an improved feed drum mounted and operated in connection with a gang saw and having means for adjusting the drum relatively to the saws to obtain a desired depth of cut.

Another object is to provide an improved pressure applying element actuated by a weighted lever to prevent displacement of material during and after the sawing operation.

I accomplish these and other objects by means of the device disclosed in the drawings forming a part of the present specification wherein like characters of reference are used to designate similar parts throughout said specification and drawings, and in which:

Fig. 1 is a side elevation of my improved rotary feed gang saw.

Fig. 2 is a plan view of Fig. 1, the scale being sligthly reduced.

Fig. 3 is an enlarged broken detail showing the manner in which a block is fed to the saws.

Fig. 4 is a sectional detail taken upon the line 4—4 of Fig. 1.

My invention is designed particularly for the sawing of slats from relatively small blocks of otherwise waste material, and is particularly adapted for the cutting of slats for the making of pencils. As is well known in the making of pencils, slats of wood are first cut into regular sizes and subsequently are grooved to receive the leads and submitted to subsequent shaping and finishing processes. The slats must be of accurate and uniform size and of straight grain. To facilitate the cutting of the slats and to permit the use of small pieces of otherwise waste lumber, I have devised my improved gang saw.

Referring to the drawings the numeral 1 is used to designate in general a suitable framework. A plurality of circular saws 2 are secured in regularly spaced relation upon an outwardly extending end of a shaft 3 suitably mounted upon the upper forward side of the framework, said shaft 3 being driven from a suitable source of power, not shown, by a belt 4 or other suitable driving means.

A carrier drum 6 is rotatably mounted upon one side of the framework 1 with the outer surface in alignment with and slightly spaced from the saws 2 upon a shaft 7 mounted in bearings 8 adjustably mounted upon the framework 1 in a manner hereinafter more fully described.

The drum 6 is rotated by means of a ring gear 9, secured upon the inner side of the drum, driven by a pinion 11 secured upon a shaft 12 at the back of the frame 1, said shaft being turned by a gear 13 secured thereon and arranged to be driven by a pinion 14 secured upon a shaft 16 mounted adjacent the shaft 12. The shaft 16 is driven by a pulley 17 carrying a belt 18 from a pulley 19 secured upon a shaft 21 mounted upon the forward side of the frame 1. The shaft 21 is driven from the shaft 3 upon which the saws 2 are mounted by means of a belt 22 applied over pulleys 23 and 24 secured upon the shafts 3 and 21 respectively. The relative sizes of the pulleys and gears are adapted to reduce the speed be-

tween the saw shaft 3 and the drum 6 and to rotate the drum and the saws in opposite directions to drive the drum at a speed to obtain maximum efficiency in sawing.

The drum 6 is provided with a plurality of feed arms 26 extending outwardly through apertures in the rim of the drum said arms being radially disposed and adjustably secured upon the drum by means of set screws 27 mounted upon feed arm retaining members 28 bolted or otherwise secured upon a web 29 formed within the drum. The arms 26 are made of wood and are positioned in alignment with the saws 2 so that when the saws and drum are rotated the outwardly extending end of the arms will be moved into engagement with the saws and slots 30 be thereby cut in the ends of said arms to form fingers 31 extending between the saws 2, the first rotation of the drum causing the slots to be cut and subsequent rotations causing the saws to be received by said slots without further cutting of the arms.

Block supporting members 32 are adjustably and removably secured upon the surface of the drum 6 by means of set screws 33 mounted in clamping members 34 bolted onto the surface of the drum immediately in advance of each arm 26. The supporting members 32 are made of wooden blocks of a suitable size and shape and are secured upon the surface of the drum to present a flat upper surface tangentially disposed in respect to the drum, the rearward end of said member 32 abutting against the extending end of the arms 26. The members 32 are of a thickness adapted to bring the outer surface thereof into engagement with the saws when carried therepast by the rotation of the drum, such engagement with the saws causing grooves 35 to be cut upon the surface of each member 32 to receive the edges of the saws when carried thereby during subsequent rotations of the drum 6.

The supporting members 32 and the arms 26 are arranged to receive blocks 36 to be fed to the saws, the block being placed thereon upon the side of the machine opposite the saws, rotation of the drum 6 operating to carry the blocks into engagement with the saws 2. A fixed guide 37 is secured upon the frame 1 by means of pins 38, the guide 37 being slightly spaced from the surface of the drum and extending from the forward side of the machine to a point beyond the saws. An adjustable guide 39 is pivotally and slidably mounted above the drum and arranged to extend to a point slightly in front of the saws 2, said guide 39 being slidably mounted through a slot in a pin 41 slidably and pivotally mounted in a bearing member 42 slidably and pivotally mounted upon a shaft 43. Set screws 44 are mounted at each bearing portion to secure the several elements in any desired position relative to the fixed guide 37. The adjustable guide 39 is made slightly resilient and is normally placed so that the forward end, which is slightly offset, will be spaced from the fixed guide a distance slightly less than the thickness of the blocks 36.

The blocks are placed upon the supporting member 32 by an operator so that the ends will be engaged by the arms 26, the rotation of the drum carrying the block upwardly and forwardly toward the saws 2. The blocks are normally placed with one side against the fixed guide 37, but whether so placed or not, the blocks will be carried into engagement with the adjustable guide 39, which, as shown in Fig. 2 of the drawings, is angularly disposed to form a wide entrance and as above stated, to extend toward the fixed guide so that when a block 36 is moved into engagement therewith the guide 39, said guide will be forced outwardly thereby causing a slight pressure to be applied upon the side of the block to hold the same snugly against the fixed guide 37. The saws 2 are secured upon the shaft 3 to give the desired spacing from the fixed guide 37 which thereby assures that each block will be fed to the saws in true and correct alignment. The saws are also so spaced from each other that as each block 36 is forced therepast by an arm 26 said block will be sawed into slats of uniform thickness, the sawed slats being carried downwardly past the saws by the fingers 31 formed upon the ends of the arms 26 as above described.

The saws being arranged as shown in the drawings are rotated in a clockwise direction thereby causing the teeth to move upwardly into engagement with a block being sawed. Rearward displacement of the block 36 is prevented by the feed arm 26. In order to prevent upward displacement of the block or the slats formed therefrom I have provided a pressure block 46 adjustably mounted to extend through a pressure foot 47 keyed upon one end of a pivotally mounted shaft 48 upon the other end of which is secured a lever 49 having suitable weights 51 suspended upon the free end thereof to normally move the shaft pivotally to depress the foot 47 upon the top of a block 36 when moved thereunder by the rotation of the drum 6. The blocks 36 held from lateral movement by the guides 37 and 39 are thus held against upward movement by the foot 47 when moved into engagement with the saws by the arms 26.

The pressure block 46 extends through the presser foot 47 and engages the saws 2, slots being cut in the ends thereof by the first engagement with the saws to permit said saws to rotate between fingers formed by said slots without further cutting of the

pressure block. When the block 36 is moved out of engagement with the pressure foot 47 it is engaged by the member 46 and is thereby held upon the supporting member 32. When the block 36 is entirely cut through, the slats so formed are held against upward displacement due to friction against the saws by the fingers formed upon the end of the member 46 until said slats have been carried by the fingers 31 on the arms 26 to a point where they will fall free from the saws onto any suitable receiving device such as a conveyor or the like, not shown.

The shaft 48 is mounted through bearings 52 adapted to be vertically adjusted by adjusting screws 53 whereby the clearance between the presser foot and the drum may be regulated.

In operation, blocks 36, which have been previously sawed from any suitable material to the desired length and width and of approximately the desired thickness, are placed upon the arms 26 by an operator standing upon the side of the machine opposite the saws, said blocks being carried successively into engagement with the drum and sawed into slats of a thickness equal to the clearance between the saws, the slats being delivered from the lower side of the saw as above described.

The blocks are thus sawed and delivered upon the side of the machine opposite the operator who is thus insured against accident by contact with the saws or by being struck by a block or slat thrown from the saw.

The slats will be of a uniform thickness and free from irregularities as vibration of the saw is prevented by the slots formed in the arms 26 and the block 46 and the grooves in the supporting elements 32. The arms 26 and the member 46 may be made of any convenient waste wood and when the ends become ragged by contact with the saws the ends may be sawed off and the members advanced in their respective retaining elements and new slots cut in the manner above described. The retaining members may thus be replaced with very little effort and negligible expense whenever the exposed ends become sufficiently worn to permit any vibration of the saw. The supporting elements are also easily replaced whenever the grooves thereon become excessively widened by the saw.

In order to permit the drum 6 to be adjusted to vary the clearance between its surface and the saws 2, I have provided the bearings 8 upon which said drum is mounted with shoes 56 slidably engaging the frame 1, said shoes being threaded to receive vertically disposed adjusting screws 57 carried by lugs 58 formed upon the frame. Bevel gears 59 are secured upon the screws 57 and are arranged to engage similar gears 61 secured upon an operating shaft 62 provided with a crank 63 whereby the screws 57 may be turned to raise or lower the bearings 8 to vary the distance between the saws and the drum

I have described my invention in its application to the making of slats for the manufacture of pencils; however, it is equally useful in other applications of a similar nature where it is desired to make slats of narrow width and short lengths, not readily or safely handled upon a flat feed table of the kind found in common practice. The details of construction are, of course, subject to modification without departing from the spirit of my invention.

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

1. A gang saw comprising a rotatable drum; a plurality of spaced saws mounted adjacent the periphery of the drum; means for rotating the drum and the saws; a plurality of radially disposed feed arms having one end thereof extending outwardly through apertures provided in the periphery of the drum and mounted for adjustment therethrough; a block supporting member secured adjacent each feed arm, said supporting member and feed arms being arranged to receive blocks placed thereon and to carry said blocks into engagement with the saws to saw said blocks into slats, said feed arms and supporting members being adapted to be cut by the saws during the first movement thereby to form slots and grooves adapted to receive said saws and prevent further cutting thereof during succeeding movements past the saws; and means for holding the blocks in engagement with the saws and with the feed and supporting members during sawing.

2. In a gang saw, the combination with a plurality of spaced saws and a rotatable carrier drum arranged to move blocks to be sawed into slats into engagement with said saws, of a presser foot pivotally mounted adjacent the saws and the drum; a presser block longitudinally adjustable through said foot and arranged to extend forwardly therefrom; fingers formed upon the forward end of said pressure block to extend between the saws; and means for normally depressing said foot, block, and fingers against a block to be sawed while in engagement with the saw to prevent displacement of the block and slats sawed therefrom by the saws.

3. In a gang saw, the combination with a plurality of spaced saws and a rotatable carrier drum arranged to move blocks to be sawed into slats into engagement with said saws, of a presser foot pivotally mounted upon a shaft adjacent the drum and saws; a

wooden pressure block longitudinally adjustable through the presser foot and arranged to extend forwardly into engagement with the saws, said saws cutting slots upon the end of said block to form fingers extending between the saws; and a weighted lever secured upon the shaft to normally depress the foot and the pressure block against a block to be sawed when moved thereunder into engagement with the saw to prevent displacement of the block being sawed by the saw, the fingers upon the end of the pressure block preventing displacement of the slats when the block has been sawed through.

4. In a gang saw, the combination with a rotatable carrier drum, of a plurality of inwardly projecting retaining members secured upon the inner side of the drum; feed arms longitudinally movable through said retaining members and arranged to extend outwardly through apertures in the surface of the drum in alignment with a plurality of saws, the outer ends of said arms being cut through by the saws to form feed fingers; and means for adjustably securing said arms within the retaining members whereby the arms may be moved outwardly to present uncut portions to the saws.

5. In a gang saw, the combination with a plurality of spaced saws and a rotatable carrier drum arranged to move blocks to be sawed into slats into engagement with said saws, of an apertured presser foot pivotally mounted adjacent the saws and the drum; a presser block slidably mounted within said foot and extending outwardly from both ends thereof; fingers formed upon the forward end of the block to extend between the saws, said fingers being formed by grooves cut therethrough by the saws; and means for normally depressing said foot, block and fingers against a block to be sawed while in engagement with the saws to prevent displacement of the block and slats by the saws.

In witness whereof I hereunto set my signature.

HOWELL R. SANDERS.