C. A. SAWYER, JR.

LEATHER CUTTING MACHINE.

APPLICATION FILED MAY 12, 1920.

1,379,420.

Patented May 24, 1921.

5 SHEETS—SHEET 1.

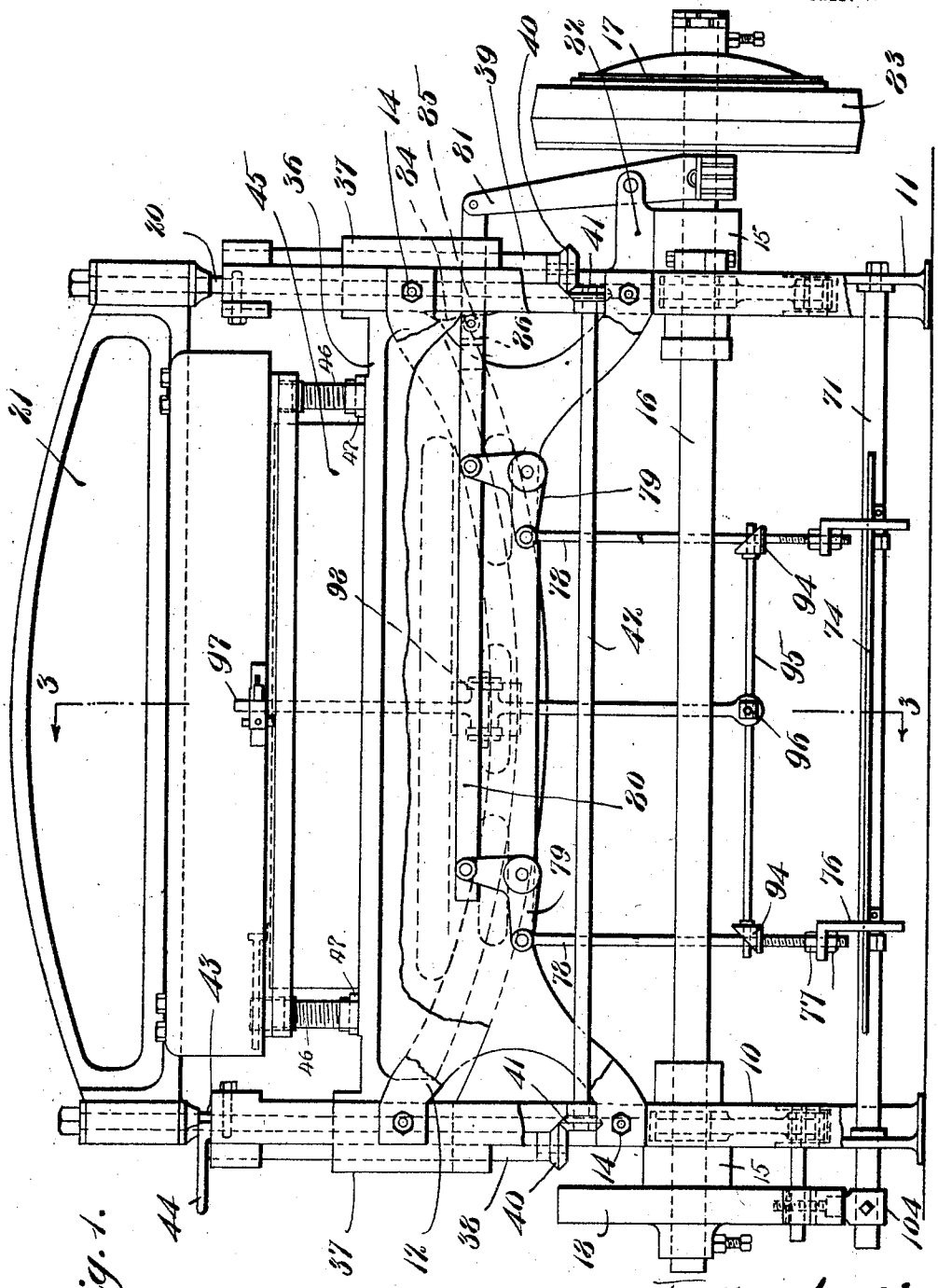


Fig. 1.

Inventor:
Charles A. Sawyer Jr.
by James R. Hodder
Atty.

C. A. SAWYER, Jr.

LEATHER CUTTING MACHINE.

APPLICATION FILED MAY 12, 1920.

1,379,420.

Patented May 24, 1921.

5 SHEETS—SHEET 2.

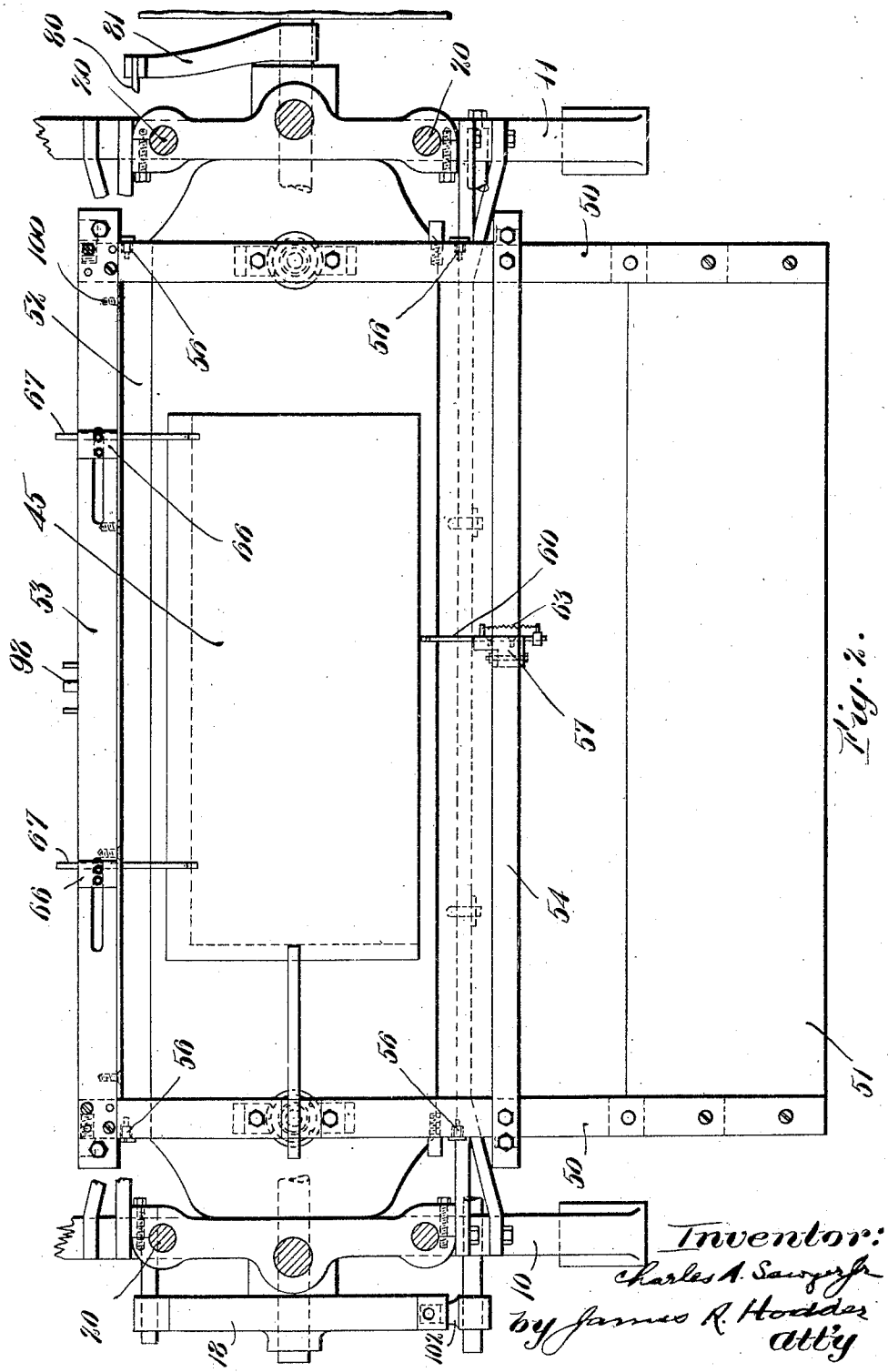


Fig. 2.

Inventor:
Charles A. Sawyer Jr.
by James R. Hodder
Atty

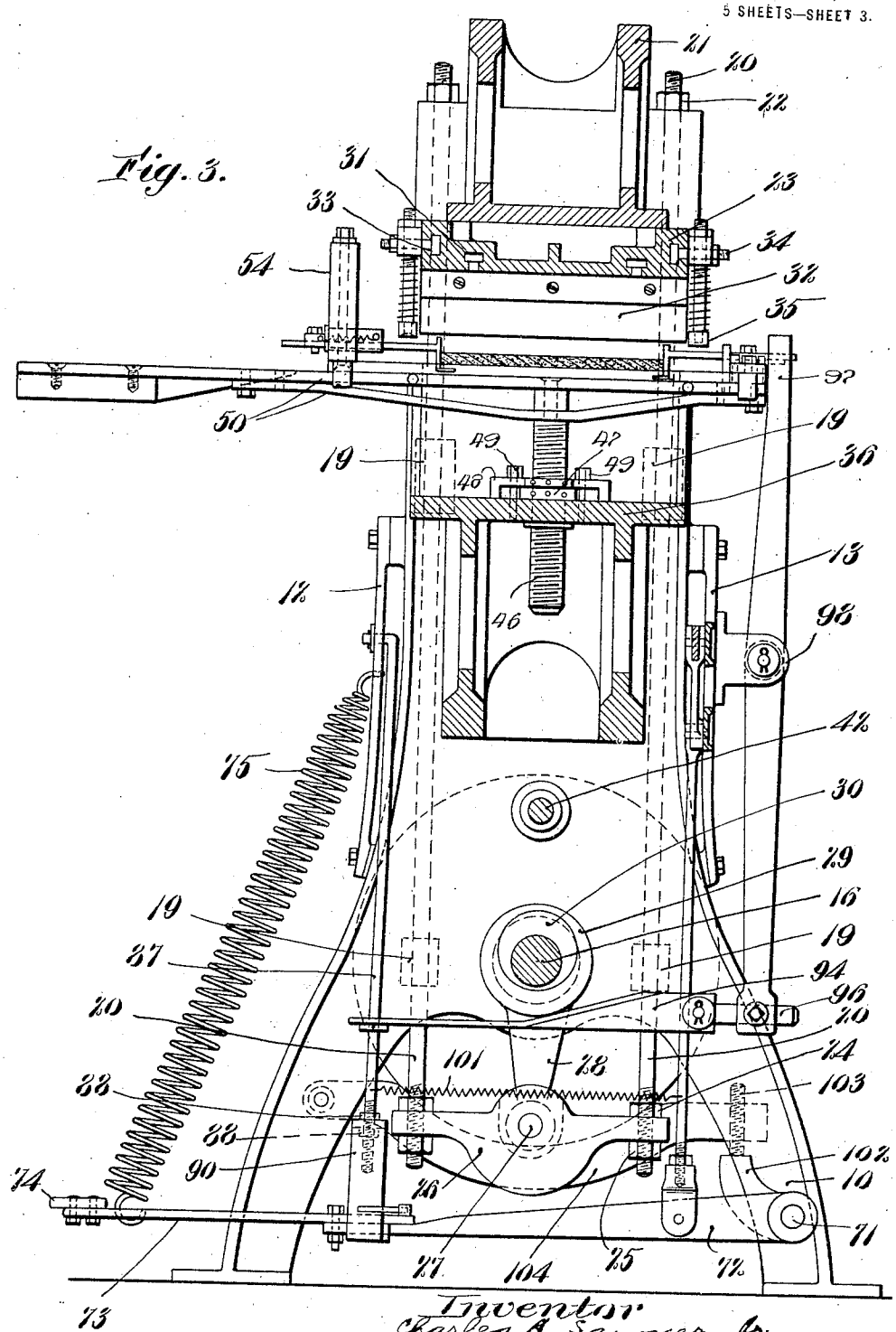
C. A. SAWYER, JR.
LEATHER CUTTING MACHINE.
APPLICATION FILED MAY 12, 1920.

1,379,420.

Patented May 24, 1921.

5 SHEETS—SHEET 3.

Fig. 3.



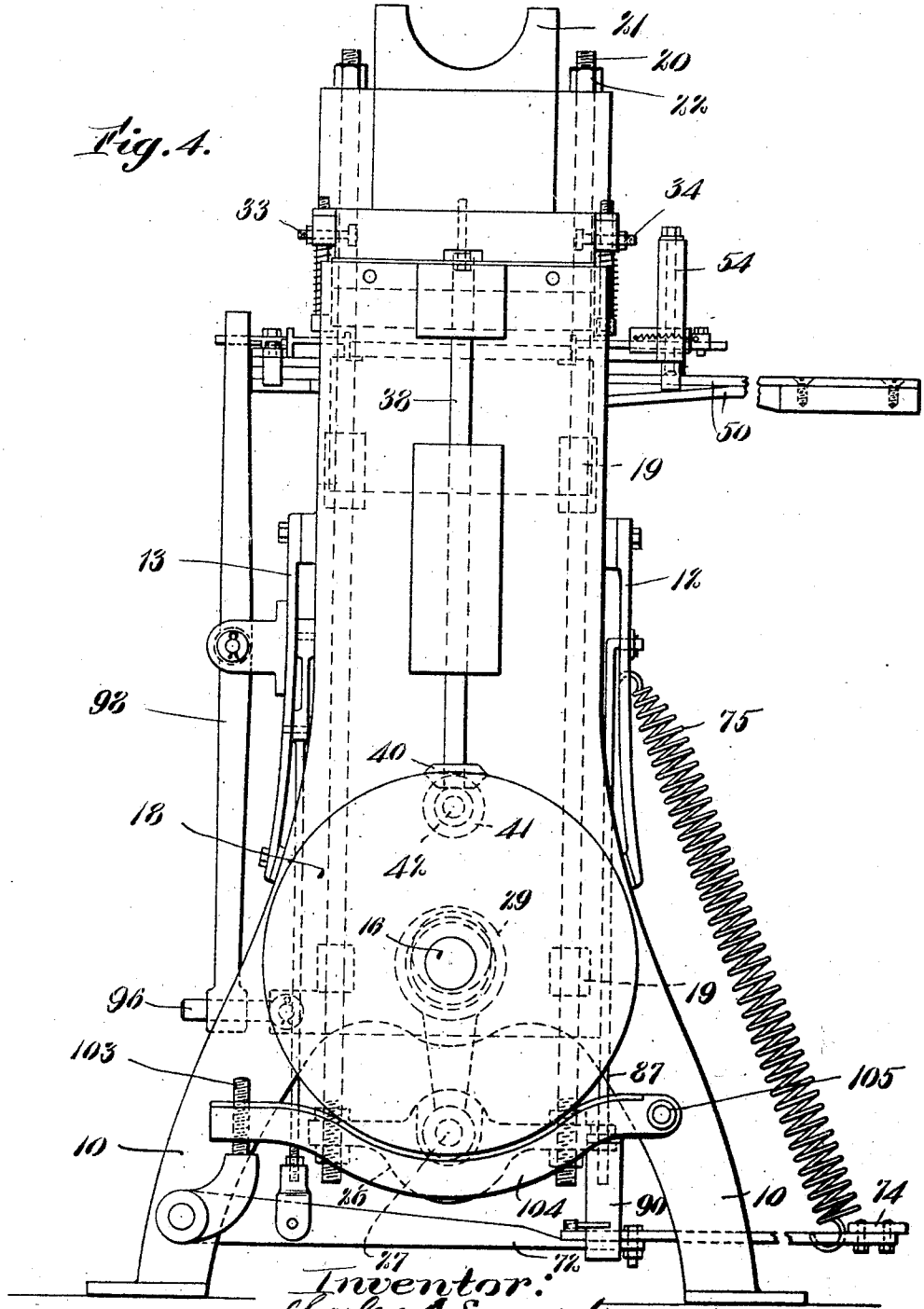
Inventor:
Charles A. Sawyer Jr.
By James R. Hodder
Atty.

C. A. SAWYER, JR.
LEATHER CUTTING MACHINE.
APPLICATION FILED MAY 12, 1920.

1,379,420. Patented May 24, 1921.

5 SHEETS—SHEET 4.

Fig. 4.



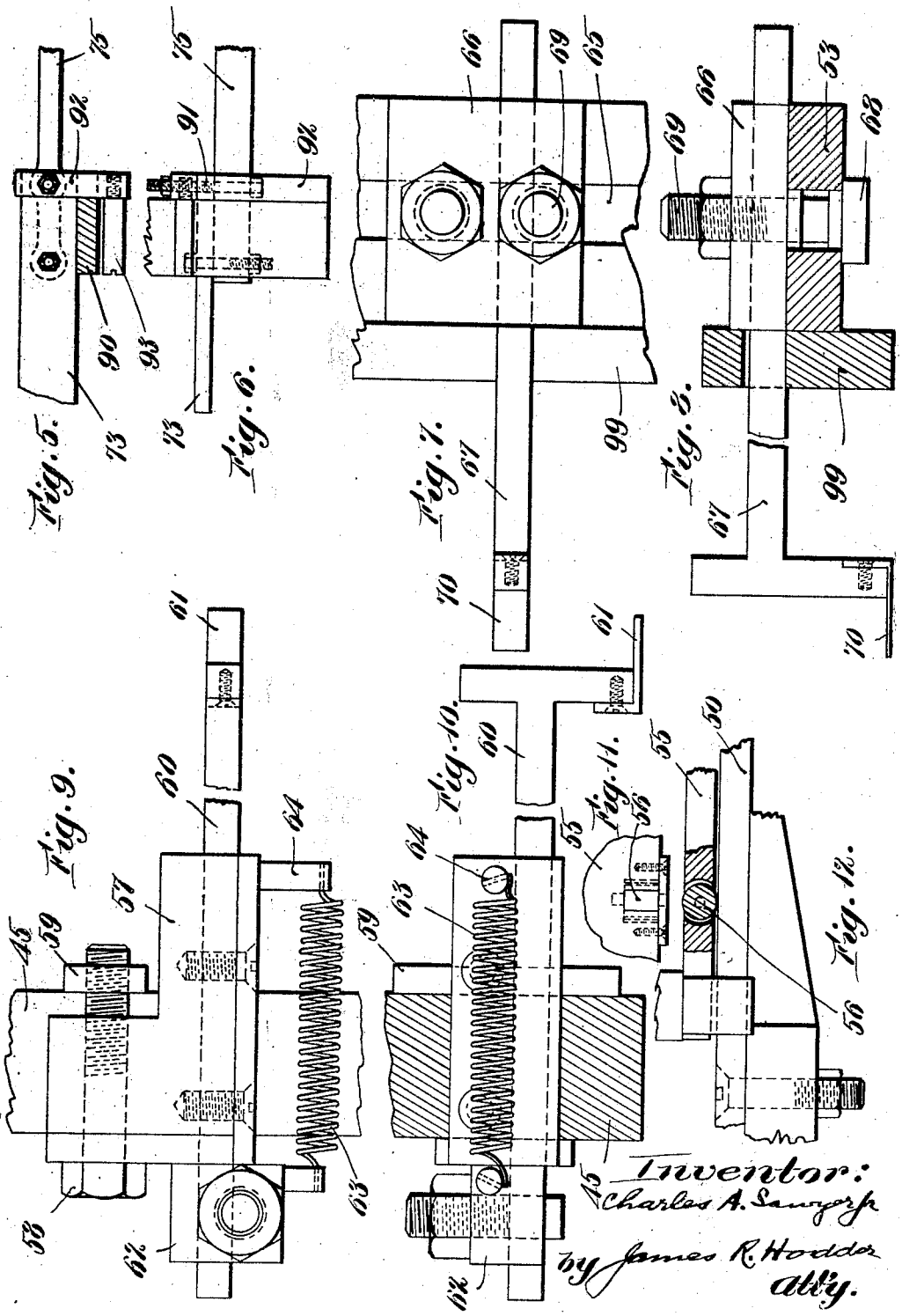
Inventor:
Charles A. Sawyer Jr.
By James R. Hadley Atty.

C. A. SAWYER, JR.
LEATHER CUTTING MACHINE.
APPLICATION FILED MAY 12, 1920.

1,379,420.

Patented May 24, 1921.

5 SHEETS—SHEET 5.



Inventor:
Charles A. Sawyer Jr.
by James R. Hodder
Atty.

UNITED STATES PATENT OFFICE.

CHARLES ADRIAN SAWYER, JR., OF NEWTON, MASSACHUSETTS.

LEATHER-CUTTING MACHINE.

1,379,420. Specification of Letters Patent. Patented May 24, 1921.

Application filed May 12, 1920. Serial No. 380,799.

To all whom it may concern:

Be it known that I, CHARLES ADRIAN SAWYER, JR., a citizen of the United States, and resident of Newton, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Leather-Cutting Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My present invention relates to leather working machines, and more particularly to leather working machines for blanking out shoe sole blanks simultaneously.

In my copending application Ser. No. 377,321, filed April 28, 1920, I have described and claimed the novel features of construction and arrangement of parts in a leather working machine known as a dinker, and have specifically claimed the use of a plurality of cutters constituting a gang of cutters for blanking out a plurality of shoe sole blanks simultaneously. In my further development of this type of machine, as exemplified in my copending application Ser. No. 379,731, filed May 8, 1920, I have found that cut shoe sole blanks, of practically all commercial sizes, have the same longitudinal outline; that is, while the length of the sole blank and its width at various points along its length will vary in accordance with the size of the sole blank, the longitudinal edges or contour of all sizes are practically identical. In my copending application above last referred to, I have described and claimed a sole blank cutting machine in which these features are emphasized.

In my further development of this art, with a view primarily to improving the machines referred to along the lines of reliability of performance, safety of operation and accessibility, I have developed a machine adapted to use either of the types of cutter gangs described and claimed in my copending applications, above referred to, besides being positively safe to operate.

The principal object of my invention, therefore, is an improved leather working machine for cutting shoe sole blanks, and in which an improved carrier device for the sheets of sole leather is combined with a treadle release device for allowing the operation of the machine.

Another object is the provision of an improved treadle action in combination with a gang of cutters.

Other objects and novel features of construction and arrangement of parts will appear as the description of the invention progresses.

In the accompanying drawings, illustrating the preferred embodiment of my invention,

Figure 1 is a front elevation, partly in section;

Fig. 2 is a plan view;

Fig. 3 is a sectional side elevation on the line 3—3 of Fig. 1;

Fig. 4 is an end elevation;

Fig. 5 is a plan view of a safety device;

Fig. 6 is an elevation of Fig. 5;

Fig. 7 is a plan view of the fixed guard;

Fig. 8 is an elevation of Fig. 7;

Fig. 9 is a plan view of the adjustable spring guard.

Fig. 10 is an elevation of Fig. 9; and

Figs. 11 and 12 are details showing the construction of the roller elements of the sliding leather carrier.

Referring to the drawings, 10 and 11 designate end frame members, tied together at the front and back by cross members 12 and 13 respectively, fastened to the members 10 and 11 by bolts 14. Rotatably mounted in suitable bearings 15 cast integral with the end frame members is a main shaft 16, to which is attached, at the end near the frame member 11, a clutch cone 17, while at the end near the frame member is a brake pulley 18.

The end frame members 10 and 11 are each provided with pairs of vertically alined bearings 19 to receive the plurality of pairs of rods 20, the upper ends of which are reduced in diameter to receive the ends of a reciprocating beam 21. The reduced ends of the rods 20 are threaded and nuts 22 are provided to hold the beam 21 in position on such rods. The under face of the reciprocating beam 21 is machined to receive the cutter holder 23 which may be bolted in position in the conventional manner. As stated above, the plurality of rods 20 are paired, one pair being provided for each end frame member, and the lower end of each rod 20 is threaded to receive the adjusting and holding nuts 24 and 25 respectively. A cross head 26 is provided for each pair of rods 20 and is held in position by the nuts 24 and 25. Each cross head has

located therein a shaft 27 to which is pivotally attached the lower end of a connecting rod 28, the upper end of which rod is provided with an enlarged bearing member 29, engaging with an eccentric 30 on the main shaft 16. Rotation of the main shaft 16 therefore, will obviously cause a vertical reciprocating movement of the beam 21. The under face of the cutter holder 23 is provided with longitudinally arranged T-slots 31 for the reception of bolts used to clamp a plurality of cutters 32 in position, and these cutters 32 may be of the kind shown and described in my copending applications, above referred to. Further, the front and rear faces of the cutter holder 23 are provided each with a longitudinally arranged T-slot, 33, for the reception of bolts 34 used to hold the stripping bars 35 in position, but, as the details of construction of these stripper bars form no part of the present invention, they will not be further described.

Mounted in the end frame members 10 and 11, and for vertical movement therein, is a table or platform 36, at each end of which is an enlargement 37 internally threaded to coöperate with correspondingly external threads on the vertically arranged shafts 38 and 39, mounted in suitable bearings in the end frame members, and each shaft 38 and 39 has a bevel gear 40 attached to its lower end, as clearly shown in Fig. 1. These bevel gears 40 mesh with corresponding bevel gears 41 on the ends of a shaft 42, mounted in the end frame members parallel to the main shaft 16. The upper end of the shaft 38, shown at the left of Fig. 1, is provided with a ratchet 43, engaged by the hand driven pawl 44 and by means of which the shaft 38, and therefore the shaft 39, may be rotated, both at the same speed, to raise or lower the table or platform 36, as desired. Mounted on the table or platform 36, in any suitable manner, is a block 45, of wood or other like material, this block being an ordinary built up, rectangular shaped block, or the type of block and holder therefor described and claimed in my copending application Ser. No. 379,731, filed May 8, 1920, may be employed.

The upper face of the table or platform 36, at each end of the block 45, is drilled to receive the vertically arranged threaded shafts 46. Each shaft 46 is provided with an adjusting nut or ring 47 above the face of the table 36 and with a locking nut below the face of the table, while the table itself is provided with a member 48, bolted to the table by bolts 49, for maintaining the adjusting nut or ring 47 in position. At the top of each shaft 46 is located, transversely of the machine, as viewed in Fig. 3, frame members 50, to the front ends of which is bolted a wooden cross member 51, while to the rear ends is bolted the cross member 52. A frame composed of a rear member 53, a front member 54 and end members 55, is mounted for sliding movement transversely of the machine, anti-friction rollers 56 in the end members 55 engaging with the top faces of the frame members 50. The front member 54 of the sliding frame is of sufficient height to block the space between the reciprocating beam 21 and the blocks 45 and thus acts as a safety guard for the operator of the machine. The member 54 is low enough, however, to allow the operator to position the sheet of sole leather on the sliding frame, when the same is in its retracted position, or the extreme left position, as viewed in Fig. 3. Approximately centrally located on the member 54, with respect to the block 45 is a spring guard composed of a guide 57 attached to the member 45 by the bolt and nut 58 and 59 respectively, in which guide is slidably mounted the member 60, the forward end of which is T-shaped and provided with a shelf 61 acting as a support for the sheet of sole leather. The rear end of the member 60 is provided with an adjustable member 62 to which one end of a coil spring 63 is attached, the other end of this spring being attached to a pin 64 on the rear end of the guide 57, all as clearly shown in Figs. 9 and 10. The rear member 53 is provided with a pair of spaced slots 65 extending longitudinally of said member, and coöperating with these slots are fixed guides, each composed of a plate 66 slotted to receive the member 67 T-shaped at its forward end, and held in adjusted position by bolts and nuts 68 and 69 respectively. The forward end of the member 67 is provided with a shelf 70, similar to the shelf 61 on the spring controlled member 60. A vertically arranged plate 99 is attached to the rear member 53 by screws 100 and extends below said rear member sufficient distance to engage with the rear edge of the shoe sole blanks to scrape the same off the block 45 when the frame is being returned to its normal position. To place a sheet of sole leather on the sliding frame, one edge of the sheet is placed on the shelf 61 and the member 60 pushed back against the tension of the spring 63 until the opposite edge of the sheet clears the forward end of the fixed guides 67 and rests on the shelves 70. A sheet of sole leather is shown in position in dotted lines in Fig. 2.

A shaft or rod 71 is mounted near the lower ends of the frame members 10 and 11 and has pivotally mounted thereon, intermediate the ends thereof a pair of spaced, forwardly extending treadle bars 72. Attached to the forward ends of these bars 72 are extensions 73, tied together at their extreme forward ends by a cross bar 74. Heavy coil springs 75, one for each bar

73 are attached, one end near the forward end of the cross-bar and the other end to any convenient place on the cross-member 12. These springs not only maintain the treadle bars 72 in their normal inoperative position but act to throw out the operating clutch. The shaft 71 extends beyond the frame member 10 and has mounted on its end an angular shaped arm 102 on the top of which rests an adjusting screw 103 on the free end of a segmental brake band holder 104 pivoted at 105 in the frame member 10. Pivotally attached to each treadle bar 72 is an angular shaped member 76, to which is adjustably attached, by nuts 77, the threaded rods 78, the upper end of which is pivotally attached to one arm of the bell crank levers 79, pivotally mounted on the cross member 13. The other arm of these bell crank levers 79 is pivotally attached to the bar 80, mounted for sliding movement parallel to the main shaft 16. The extreme right hand end of this bar 80, as viewed in Fig. 1, is pivotally attached to the upper end of a lever 81 pivotally mounted, intermediate its ends, in a bearing 82 on the end frame member 11. The lower end of this lever 81 engages with the hub of a drive pulley 83 rotatably and slidably mounted on the main shaft 16. The inner face of the rim of the pulley 83 engages with the cone clutch member 17 fast on the main shaft 16. Adjustably mounted on the pair of rods 20, in the frame member 11, is a cam 84 which, when the beam 21 moves downward, engages with a roller 85 in a bracket 86 on the bar 80 to hold said bar in its extreme position to the left, as viewed in Fig. 1, to maintain the pulley in engagement with the clutch cone 17, insuring a complete cycle of movement to said beam 21, even though the treadle may have been released.

On the front cross member 12 and substantially vertically above each of the treadle bars 72 is a loosely hung depending rod 87 threaded at its lower end to receive the adjusting and locking nuts 88, between which is clamped a safety locking bolt or plate 90, an extension or lip 91 on the lower end of this plate 90 adapted to engage with a bar 92 fastened to and extending laterally from the forward end of the treadle bar 75. This bar 92 has attached to its outer free end a rod 93 extending parallel with the treadle bar 75 and forms, with the said bar, a partial inclosure for the plate 90, as shown in Figs. 5 and 6. Intermediate the ends of the depending rod 87 is an adjustable collar, which acts as a support for the end of a bar 94, that is perforated to allow said rod to pass therethrough and extends rearwardly and is pivotally mounted on the end of a shaft 95. It is to be understood, of course, that there are two depending rods 87 and two bars 94, one for each of the treadle bars 74, so that the above description is to be read with this understanding. About midway of the ends of the shaft 95 is an adjustable rearwardly extending stub shaft 96 on which is adjustably mounted the lower end of a tripping lever 97. This tripping lever 97 is pivotally mounted, intermediate its ends, in a bracket 98 bolted to the rear cross beam 13, while the upper free end extends across the line of movement of the sliding frame so as to be engaged by the slotted bar 53 when said frame is moved rearwardly, as clearly shown in Figs. 2 and 3. A coil spring 101 attached one end to the depending rod 87 and the other end to the rod 78, tends to keep the lip 91 under the bar 92 and thus lock the treadle 74 against movement.

As shown in Fig. 2, the space between the front and rear members, 54 and 53 of the sliding frame is open, as is also the space between the rear of the member 51 and the front of the machine, and I may provide a box on the front of the machine and beneath the last mentioned space, to receive the shoe sole blanks as they are scraped off the block. In lieu of a box, I may provide an inclined chute or an endless belt carrier or conveyer for receiving and transporting the cut sole blanks away from the machine to any desired point.

The operation of my improved machine is as follows, the parts of the machine being assumed to be in normal, or inoperative position, with the pulley 83 rotating and out of engagement with the clutch cone 17. The operator grasps the member 54 and moves the sliding frame to the extreme left hand position, as viewed in Fig. 3. A sheet of sole leather is grasped in the hands, one end or edge placed on the shelf 61 on the adjustable guide 60 and said guide forced against the tension of the spring 63 until the opposite edge of the sheet of leather can be placed against the fixed guides 67 on the shelves 70. Again grasping the member 54 with both hands and the sliding frame pushed under the gangs of cutters 32 until the bar 53, engaging with the upper end of the lever 97, rocks said lever on its pivot, when the lower end causes the bars 94 to rock the depending rods 87 and free the lip 91 from engagement with the laterally extending member 92 in the treadle bar 72 and allowing the treadle to be operated. The operator now steps on the bar 74 operating the treadle bars 72 and pulling the rods 78 downward and rocking the bell crank levers 79 on their pivots, thus moving the bar 80 to the left, as shown in Fig. 1, and forcing the pulley 83 onto the clutch cone 17 through the medium of the lever 81. This action of the treadle bars also rotates the shaft 71 to

move the upper face of the angular member 102 downward out of engagement with the adjusting screw 103 on the segmental brake band holder, and the brake band carried thereby releases the brake wheel 18. The main shaft 16 now rotates, and through the medium of the eccentrics 30 and connecting rod 28 moves the beam 21 downward. As said beam moves downward, the cam 84 on one of the vertical shafts 20 moves into the path of movement of the roller 85, in the bracket 86 on the bar 80, preventing said bar from returning to its normal position, regardless of whether or not the pressure is released from the treadle bars. The beam 21, carrying the gangs of cutters 32 now goes through a complete cycle, blanking out a plurality of shoe sole blanks simultaneously and then returning to its normal, or extreme upward position. As said beam rises, the cam 84 gradually moves out of the path of movement of the roller 85, and the springs 75, acting on the treadle bars 72 force the rods 78 upwardly, rotating the bell crank levers 79 on their pivots to move the bar 80 to the right, as viewed in Fig. 1, and releasing the pulley 83 from the clutch cone 17. This return movement also rotates the shaft 71, moving the upper end of the angular member 102 into engagement with the adjusting screw 103 on the segmental brake band holder 104 causing the same to move the brake band into engagement with the brake wheel 18 and stopping further rotation of the main shaft 16. On the upward movement of the beam 21, the individual stripper bars 35 strip the cut sole blanks from the gangs of cutters 32, and said blanks rest on the top of the block 45. The operator now grasps the member 54 with both hands and returns the sliding frame to its normal position, the vertical bar 99 during this movement, forcing the cut sole blanks off the block and into a box or onto a chute or endless belt conveyer, as above described. If the block 45 requires adjustment with respect to the gangs of cutters 32, the operator, by manipulating the handle 44 rotates the shafts 38 and 39 simultaneously in the same direction and at the same speed and raises or lowers, as desired, the frame 36 carrying the block 45.

While I have necessarily described the preferred embodiment of my invention somewhat in detail, it is to be understood that I may vary the size, shape, and arrangement of parts comprising my invention or improved machine within wide limits without departing from the spirit of the invention.

My invention is further described and defined in the form of claims as follows:

1. In a leather working machine of the kind described, the combination of a reciprocable cutter head, a rotatable shaft for reciprocating said head, a slidable carrier for positioning a sheet of sole leather in the path of movement of said head, means for intermittently connecting said shaft to a source of power, and a safety device for said means operable by the slidable carrier only when the sheet of leather is in position under the cutter head.

2. In a leather working machine of the kind described, the combination of a reciprocable cutter head, a rotatable shaft for reciprocating said head, a sliding carrier for positioning a sheet of leather in position under the cutter head, a treadle operated means for connecting said shaft to a source of power, a safety lock for holding said treadle in inoperative position, means for releasing said safety lock operable by said sliding carrier only when the sheet of leather carried thereby is in position under the cutter head, and means for maintaining the connection between said shaft and source of power while the cutter head makes a complete cycle.

3. In a leather working machine of the class described, the combination of a reciprocable cutter head, a rotatable shaft for reciprocating said head, a slidable carrier for positioning a sheet of leather in the path of movement of said head, means for intermittently connecting said shaft to a source of power, a safety device for said means operable by the sliding carrier only when the sheet of leather is in position under the cutter head, and means, associated with said cutter head and with said safety device for maintaining said shaft connected to said source of power only during a complete cycle of movement of the cutter head.

In testimony whereof I have signed my name to this specification.

CHARLES ADRIAN SAWYER, JR.