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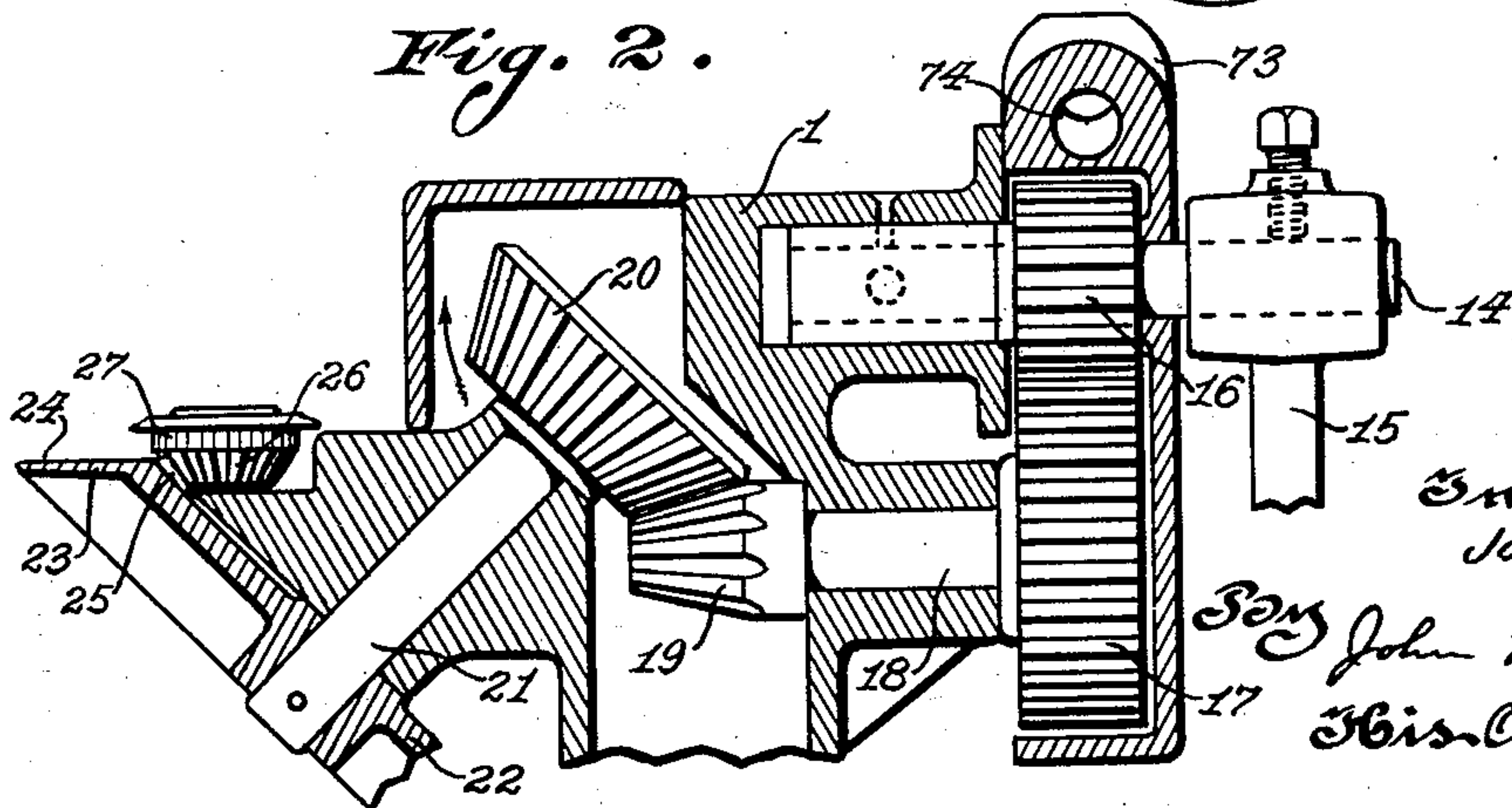
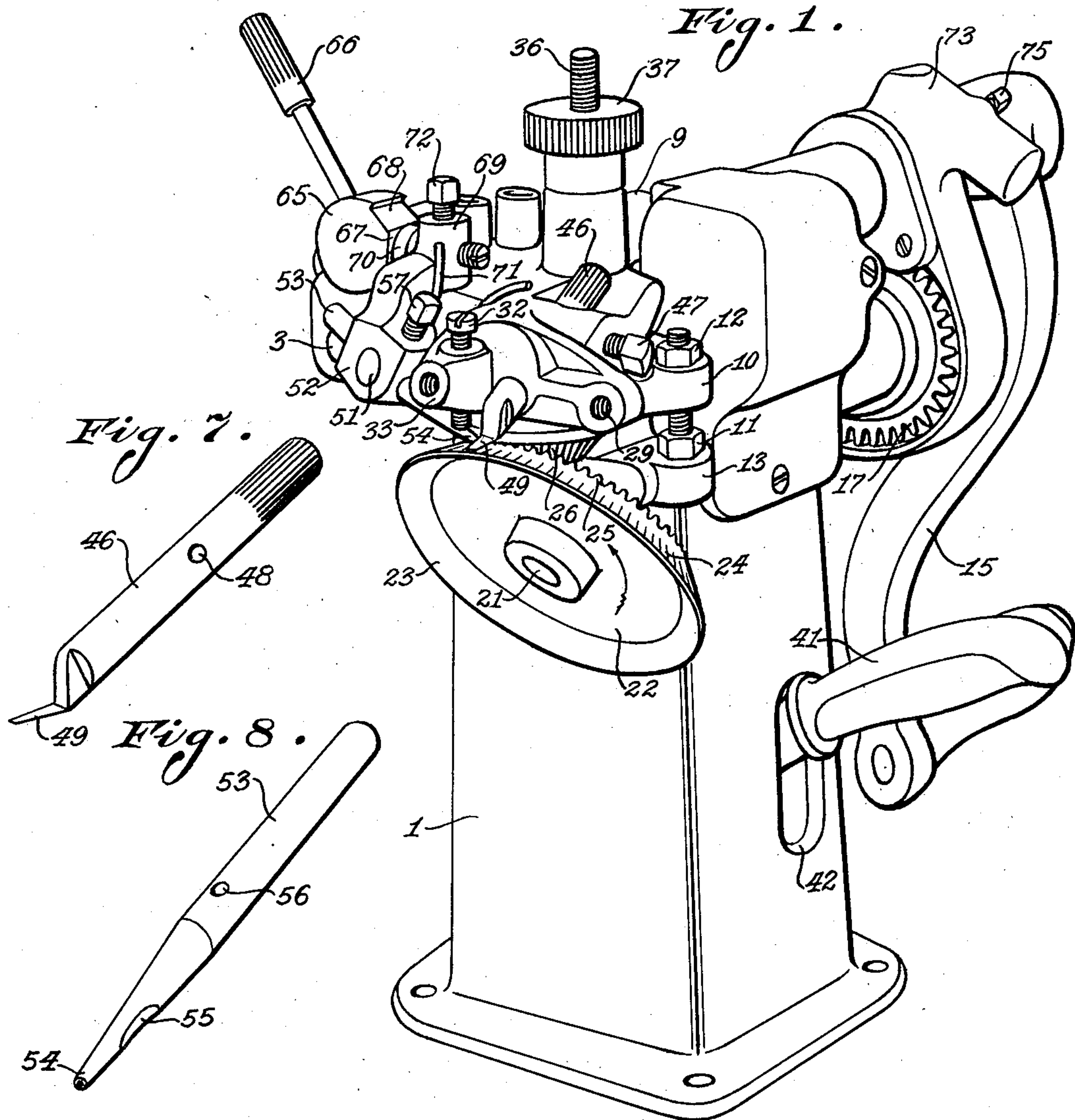
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2,012,122

SOLE CHANNELING MACHINE

Filed Dec. 3, 1932

2 Sheets-Sheet 1



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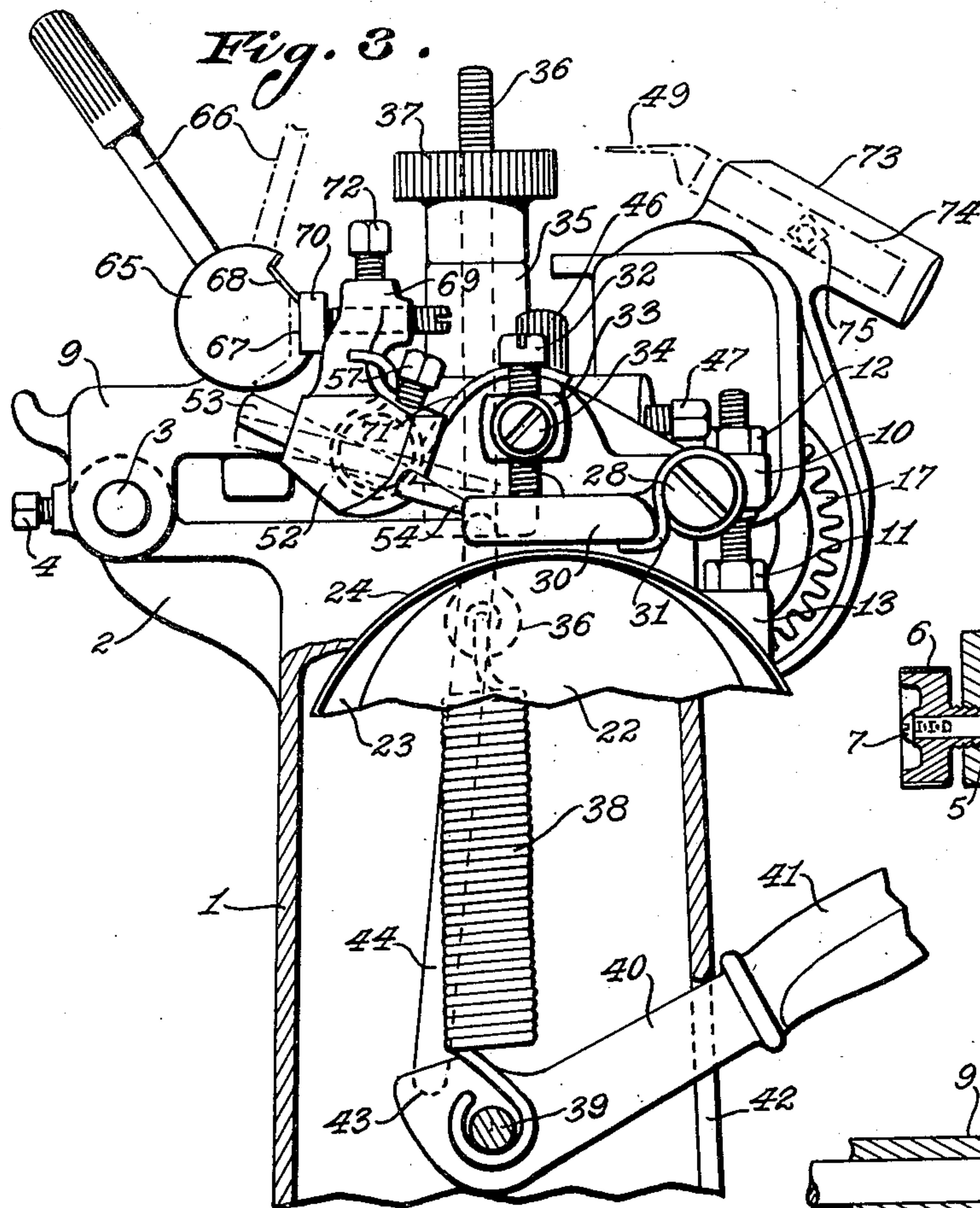
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,012,122

SOLE CHANNELING MACHINE

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6 Claims. (Cl. 12—27)

This invention pertains to machines for channeling shoe soles preparatory to stitching a sole to the upper as, for instance, in the construction of McKay shoes.

5 In repairing this type of shoe, the sole is usually applied to a shoe, the upper of which is finished, and it is desirable to place the sole on the shoe and roughly shape the outer edge before cutting the channel.

10 One of the objects of this invention, therefore, is to provide a channeling machine by means of which a sole may be channeled while in place on the shoe.

15 Another object is to provide a machine whereby the sole may be channeled and also a groove for the stitching run within the channel and on which these operations may be performed simultaneously.

20 Another object is to provide such a machine whereby the position of the channel and also of the groove with respect to the sole edge may be adjusted as desired and whereby the depth of cut of both channeling and grooving cutters may be adjusted at will.

25 A further object is to provide a simplified construction of channeling cutter, together with means provided on the machine whereby the cutter may be held in position so that its cutting edge may be stoned in a convenient manner and so as to preserve the accuracy of its cutting edge.

30 Further objects will appear from the following description taken in connection with the accompanying drawings, in which

35 Figure 1 is a perspective view of a channeling machine embodying this invention with the presser foot removed;

Figure 2 is a vertical section through the driving mechanism, showing the connections for driving the feeding device;

40 Figure 3 is a side view, partly in section, taken from the left-hand side of Figure 1;

Figure 4 is a partial plan view, illustrating the arrangement of the adjustable head;

45 Figure 5 is a vertical section on line 5—5 of Figure 4 through the head pivot, illustrating the manner of adjustment thereof;

Figure 6 is a detail vertical section on line 6—6 of Figure 4 showing the adjustment of the grooving cutter; and

50 Figures 7 and 8 are detail perspective views of the channeling and grooving cutters, respectively.

Referring now to the drawings, 1 designates a base upon which the entire mechanism is mounted. The rear portion of the base 1 has formed thereon a pair of ears 2 adapted to receive a pivot

pin 3. The pin 3 may be secured in one of the ears 2 by means of a set screw 4 or otherwise. One end of the pin 3 may be reduced in diameter, as indicated at 5, to receive a threaded sleeve 6 having a manipulating head. This sleeve is rotatable on the reduced portion 5 and may be held in place thereon by a screw 7 or other suitable means. The threaded sleeve 6 is arranged to screw into one of a pair of downwardly extending lugs 8 formed on a head 9. The pin 3 is journaled in the sleeve 6 and the other lug 8 so that it provides a pivotal mounting for the head 9 on the base 1. The forward portion of the head 9 is provided with a lug 10 adapted to receive a stop screw 11 which is threaded in said lug and secured by a jam nut 12. The stop screw 11 is arranged to engage an abutment 13 on the base 1 so as to adjustably position the head 9 on the base in a vertical direction. The head 9 may be adjusted laterally on the base by turning the sleeve 6. As said sleeve is stationary on the pin 3, such adjustment will cause the head 9 to slide along the pin.

Suitably journaled in the base 1 is a drive shaft 14 operable by a crank 15. The shaft 14 carries a pinion 16 meshing with a gear 17 on a shaft 18 also journaled in the base 1. The shaft 18 carries at its other end a bevel gear 19 meshing with another bevel gear 20 on an inclined shaft 21 which extends downwardly at an angle of about 45° and carries at its outer end a feed wheel 22 having a beveled rim 23 adapted to provide a feed roll upon which a sole edge may rest. The rim 23 may be provided with teeth, or otherwise roughened, as indicated at 24 in Figure 1, so as to frictionally engage the sole in order to feed the same. The wheel 22 is further provided with teeth 25, providing a bevel gear adapted to mesh with a complementary gear 26 formed on a roll or wheel 27. The wheel 27 has a flat face disposed vertically above the rim 23, so as to engage the edge of a sole resting on the rim 23, the wheel 27 providing an edge guide for the sole.

Pivoted on a screw 28, engaging a threaded socket 29 in the head 9 (see Figure 1), is a presser foot 30. This presser foot is held by a spring 31 against an adjustable stop screw 32 mounted in a lug 33 on the head 9 and secured by a lock screw 34. The screw 32 may be manipulated to adjust the position of the presser foot 30 with respect to the head 9. Traversing a vertical passage in a lug 35 on the head 9 is an eye-bolt 36 which carries a manipulating nut 37 resting on the lug 35. A strong spring 38 is

hung on the eye-bolt 36 and secured at its lower end to a pin 39 mounted transversely in the lower portion of the base 1. Pivoted on the pin 39 is a lever 40 having a handle 41 extending through a slot 42 in the front wall of the base 1 so as to be accessible to the operator. The rear end of the lever 40 is provided with a socket 43 adapted to receive a push rod 44 extending upwardly therefrom into a similar socket in the under face of the head 9, as indicated in Figure 3. The tension of the spring 38 pulls the head 9 downwardly, thereby forcing the push rod 44 downwardly so as to raise the lever 40 to its uppermost position, where it rests against the upper edge of the slot 42. By pressing downwardly on the handle 41, the operator may swing the lever 40 on its pivot 39 so as to force the push rod 44 upwardly to lift the head 9 on its pivot 3. The lever 40 may be moved far enough so that the socket 43 passes the "dead center" position of the spring 38 at which point the lever 40 lodges against the lower edge of the slot 42, not shown in the drawings. By these means, the operator may lift the head 9 so as to raise the presser foot 30 from the work and at the same time raise the cutters clear of the work, as will be described later. In its normal position, the presser foot 30 rests above and close to the horizontal upper portion of the rim 23 so as to press the work against said rim. It will be noted that a shoe sole may be placed on this horizontal portion of the rim 23 with its edge against the roll 27 and held against the rim 23 by the presser foot 30. With the work in this position, the operator may turn the crank 15, which will act through the gearing described in connection with Figure 2, to turn the feed wheel 22 so as to feed the sole through the machine. The roll 27 is driven in rotation during this operation.

Referring more particularly to Figure 4, the head 9 is provided with a downwardly inclined bore 45 adapted to receive the cylindrical shank of a channeling cutter 46. The cutter 46 is accurately located in the bore 45 by a set screw 47 whose tip is arranged to enter a locating socket 48 in the shank of the cutter 46 (see Figure 7). The end of the cutter 46 is ground to the form shown in Figure 7, so as to provide a channeling knife 49. When the cutter is properly located in the bore 45, the knife 49 is positioned over the horizontal portion of the rim 23 in such a way as to channel a sole being fed over said rim.

Mounted in a transverse bore 50 in the head 9 is a shaft 51. One end of the shaft 51 projects from the head on the same side as the cutter 46. This end of the shaft has secured thereto a head 52. The head 52 is provided with a bore adapted to receive the cylindrical shank of a grooving cutter 53. The grooving cutter 53 is formed as illustrated in Figure 8 with a conical sharpened tip 54 having a small axial bore communicating with a side outlet opening 55 for the discharge of the chip. This cutter is also provided with a locating socket 56 adapted for co-operation with a set screw 57 in the head 52, so as to accurately locate the cutter in said head. The end of the shaft 51 opposite to that which carries the head 52 is provided with an enlargement 58 having a circumferential groove 59. Mounted in a lug 60 on the head 9 is an adjusting screw 61 provided with a collar 62. This adjusting screw is located in such a way that the collar 62 enters the groove 59 of the shaft 51. It will be seen that by manipulating

the screw 61, the shaft 51 may be slid endwise in its bore 50 so as to adjust the position of the grooving cutter 53 with respect to the roll 27 or to the outer edge of the sole.

Journalled in a lug 63 on the head 9 is a short shaft 64 carrying a cam head 65. The head 65 is provided with a finger lever 66 by means of which it may be turned on the shaft 64. The head 65 is provided with two flat cam faces 67 and 68. The face 67 is slightly more distant radially from the center of the shaft 64 than is the face 68. The head 52 on the shaft 51 is provided with an inwardly extending arm 69 carrying a stop screw 70 whose head is positioned to engage one or the other of the faces 67 and 68, according to the position of the head 65. A spring 71 is arranged to turn the head 52 on its shaft in such a direction as to bring the screw 70 against the cam head 65. Adjustment of the screw 70 operates to vary the position of the tip 54 of the grooving cutter up and down relatively to the rim 23 of the feed wheel. The position of the screw 70 may be fixed by a set screw 72 threaded in the arm 69.

These parts may be manipulated for adjusting the machine as follows: The feed wheel 22 and the edge guide wheel 27 are stationary on the base—that is, they are not adjustable. The head 9 may be adjusted vertically on its pivot with reference to the work by adjustment of the presser foot 30 through the agency of the screw 32. As the channeling cutter 46 is fixed in position in the head 9, the adjustment of the presser foot 30 adjusts the height of the channeling cutter with reference to the work and therefore controls the depth of cut made by this cutter. The position of this cut with reference to the sole edge may be adjusted by turning the sleeve 6 so as to shift the entire head 9 along the pivot pin 3. The position of the grooving cutter 54 with reference to the sole edge, is adjusted by manipulating the screw 61 which slides the shaft 51 along its bore. The depth of cut of the grooving cutter is adjusted by the screw 70 with the cam head 65 in the position shown in Figure 3, where the screw 70 rests against the face 67 of the cam. Once this adjustment has been made, the cutter will groove the work to the proper depth. It may, however, be thrown out of operation at any time by pulling the finger lever 66 to the dotted line position of Figure 3, so as to bring the cam face 68 into position for engagement by the screw 70. As the face 68 is radially nearer to the center of the shaft 64 than the face 67, this movement will permit the head 52 to turn slightly in a counter-clockwise direction, as seen in Figure 3, and this will operate to raise the tip 54 of the grooving cutter. Accordingly, the groover may be thrown into or out of operation in an instant at any stage of the work.

It will be noted that this machine provides for the operations of channeling and grooving a shoe sole while in place on the shoe, and in a convenient and positive manner. The cutters may be adjusted each to exactly the desired position, so that the depth of the channel and its spacing from the sole edge are accurately under control, as are also the depth and spacing of the groover. Accordingly, the channeling and grooving operation may be performed in such a manner as to fit any type of shoe.

Both cutters may be thrown out of operating position and the presser foot 30 lifted from the work by depressing the handle 41. In addition to this, the groover may be separately thrown out of operation by means of the finger lever 66.

Accordingly, either channeling or grooving operations may be started at any point along the work. This is of advantage in shoe repair work, where the sole is sometimes scarfed at its rear edge, and the channeling and grooving operation should be started somewhat forward of the rear edge, so as to avoid cutting clear through the sole. It is also possible to perform a grooving operation without channeling, as is sometimes desired, simply by removing the channeling cutter from the machine and operating the groover alone.

As the channeling knife 49 is of somewhat special shape, provision is made for sharpening the same. A lug 73 is provided on the base, or other suitable part, in a convenient position. This lug is provided with a socket 74 adapted to receive the shank of the cutter 46. The cutter is inserted with the rear end first, so that the knife 49 protrudes from the upper end of the socket. A set screw 75 is provided in such a position that, when engaged with the locating socket 48 in the cutter shank, it will secure the cutter in position with the bottom face of the knife 49 uppermost and horizontal, as indicated in broken lines in Figure 3. This places the cutter in a convenient position on top of the machine, so that the operator may apply a whetstone, so as to sharpen the cutting edge. As the stone is applied in a perfectly horizontal position, the cutter may be sharpened even by unskilled labor.

While this machine has been described as a unitary device, it will be understood that individual features or sub-combinations thereof may be useful by themselves independently of other portions of the machine. It is understood that the employment of such individual features or sub-combinations is contemplated by this invention and is within the scope of the appended claims. It is further obvious that various changes may be made in the details of construction, within the scope of the appended claims, without departing from the spirit of this invention. It is understood, therefore, that the invention is not limited to the specific details shown and/or described.

Having thus described the invention, what is claimed is:

1. In a channeling machine of the character described, a base, sole-feeding means on said base, a head pivotally mounted for vertical movement on said base, means for adjusting said head horizontally along its pivotal axis, and a channeling knife on said head.

2. In a channeling machine of the character

described, a base, sole-feeding means on said base, a head pivotally mounted on said base, means for adjusting said head along its pivotal axis, a channeling knife mounted on said head, and means for raising said head on its pivot adapted to lift said knife clear of the work.

3. In a channeling machine of the character described, a base, sole-feeding means on said base, a head pivotally mounted on said base, means for adjusting said head along its pivotal axis, means for adjusting said head vertically about its pivot as a center, and a channeling knife positioned on said head for vertical adjustment relative to the work by such vertical adjustment of said head.

4. In a channeling machine of the character described, a base, sole-feeding means on said base, a head pivotally mounted on said base, means for adjusting said head along its pivotal axis, means for adjusting said head vertically about its pivot as a center, a channeling knife positioned on said head for vertical adjustment relative to the work by such vertical adjustment of said head, a grooving cutter on said head, and means for adjusting said grooving cutter vertically and horizontally on said head with respect to said channeling cutter.

5. In a channeling machine of the character described, a base, sole-feeding means on said base, a head pivotally mounted on said base, means for adjusting said head along its pivotal axis, means for adjusting said head vertically about its pivot as a center, a channeling knife positioned on said head for vertical adjustment relative to the work by such vertical adjustment of said head, a grooving cutter, a shaft on which said grooving cutter is mounted, and means for adjusting said shaft endwise on said head to adjust said grooving cutter with respect to the work.

6. In a channeling machine of the character described, a base, sole-feeding means on said base, a head pivotally mounted on said base, means for adjusting said head along its pivotal axis, means for adjusting said head vertically about its pivot as a center, a channeling knife positioned on said head for vertical adjustment relative to the work by such vertical adjustment of said head, a grooving cutter, a shaft on which said grooving cutter is mounted, means for adjusting said shaft endwise on said head to adjust said grooving cutter with respect to the work, and means for adjusting said grooving cutter rotatively on said shaft to clear the work.

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