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(54) Machine for processing peltry and footwear items

(57) A rotary tool machine (10) for processing peltry and footwear items (24) is described, comprising a base (12), at least one motor (18, 18a), and means (48, 50, 54, 56, 58, 60) for transmitting the rotary motion from said at least one motor (18, 18a) to at least one corresponding tool holder shaft (20, 20a), characterised in that it has means (30, 32, 34) for adjusting the height of said at least one tool holder shaft (20, 20a).

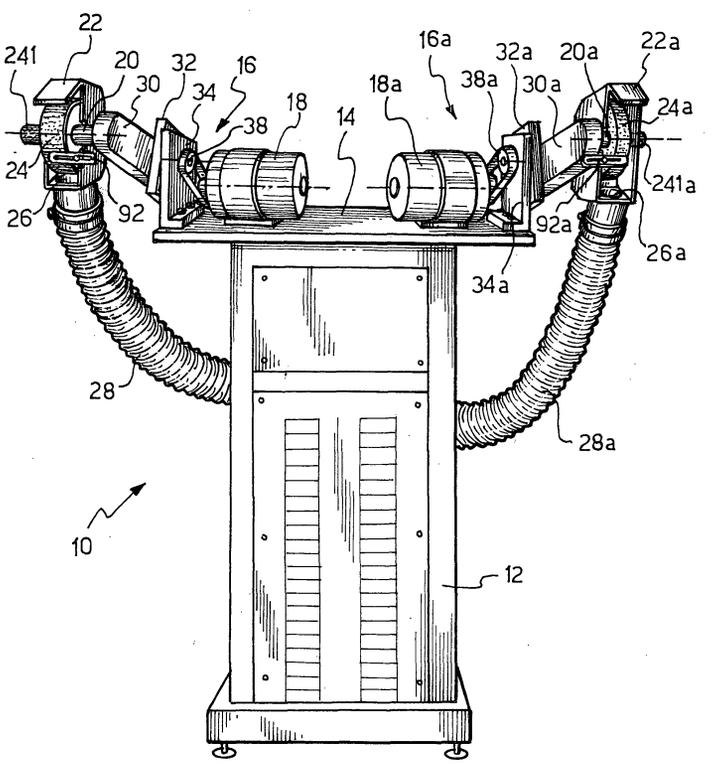

FIG. 2

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Description

[0001] The present invention refers to a rotary tool machine for processing peltry and footwear items.

[0002] In the present description and in the attached claims, the expression "peltry and footwear items" is used to indicate items such as handbags, wallets, suitcases, belts, straps, grips, handles, etc., as well as shoes, hiking boots, sandals, boots, etc., made of hide, leather, imitation leather, leathercloth, etc., as well as their parts, semifinished products and even raw pieces of the aforementioned materials.

[0003] More specifically, the expression rotary tool machine for processing peltry and footwear items is used to indicate a machine suitable for functioning as a brushing machine, smoothing machine, scouring machine, polisher, finishing machine, glazing machine, milling machine, dyeing machine, etc., according to the rotary tool used.

[0004] Rotary tool machines for processing peltry and footwear items are known. Typically, such a machine 100 comprises, as can be seen in figure 1, a column base 102 at the top of which a motor (not seen in figure 1 since it is housed inside the casing of the column base) is arranged. The motor, through direct coupling or through a gear or belt transmission, drives a tool holder shaft 104 into rotation. The tool holder shaft 104 is mounted cantilevered to have a free end, or else - as in the case of the machine 100 represented in figure 1 - is borne centrally to have both its ends free. One or more rotary tools 106, chosen from those listed at the beginning, can be fitted onto the tool holder shaft 104.

[0005] Below the rotary tools 106, powder suction mouths 108 are typically present which can be connected through hoses 110 to suction units 112, external to the base 102 as illustrated in figure 1 or included therein.

[0006] A control panel 114, carrying the command push buttons and the pilot lamps necessary for the operation of machine 100, is also typically present in a suitable position on base 102.

[0007] Machines with a pair of motors, each of which drives a respective tool holder shaft into rotation, are also known.

[0008] As can be seen in figure 1, each rotary tool 106 is housed in a shield 116, from which a small useful portion of the tool 106 protrudes. The shield 116 and the gearbox 118 or other transmission of the rotary motion from the motor to the tool holder shaft 104 are substantially at the same level in the vertical front plane of machine 100. In other words, the useful portion of the tool 106, or of each tool, protrudes only very slightly from the volume of the rest of machine 100.

[0009] The Applicant has now recognised that the rotary tool machines for processing peltry and footwear items of the prior art, such as the machine 100 illustrated in figure 1, have the drawback that the position in terms of height of the tools 106 is fixed. Consequently, operators who are particularly tall or short compared to the average must take up a less than optimal position to work at machine 100, with the result of tiring their back due to the prolonged bent-over position taken up, or tiring their arms from lifting the peltry/footwear item above chest height. Moreover, also for a same operator, according to the weight and size of the item it might turn out to be preferable to have the tool 106 at different heights.

[0010] The technical problem at the basis of the present invention is that of eliminating such a drawback of the rotary tool machines for processing peltry and footwear items of the prior art.

[0011] Such a problem is solved, according to the present invention, through a rotary tool machine for processing peltry and footwear items comprising a base, at least one motor, and means for transmitting the rotary motion from said at least one motor to at least one corresponding tool holder shaft, characterised in that it has means for adjusting the height of said at least one tool holder shaft.

[0012] Such means for adjusting the height can, for example, comprise a pantograph system commanded by a worm screw, a hydraulic or pneumatic system, a rack system, a sliding rail and suitable fixing means assembly, etc.

[0013] In a preferred embodiment of the present invention, said at least one tool holder shaft is arranged at a free end of a respective tool holder arm.

[0014] Indeed, the Applicant has recognised that, in known machines, the fact that the useful portion of the tool 106 only slightly protrudes from the volume of the rest of the machine 100 precludes the possibility of working on some peltry and footwear items. For example, it is impossible to carry out any processing, for example smoothing or scouring, etc., the thickness-side, at a recess of an item, for example in a U-shaped flap of a handbag.

[0015] According to the provision outlined above, on the other hand, since the tool is at the free end of the tool holder arm, there exists the necessary free space for receiving items of whatever shape, in particular it is possible to carry out a processing of recesses of an item, both in a vertical and horizontal arrangement, in other words both parallel and perpendicular to the rotary axis of the tool.

[0016] Preferably, said at least one tool holder arm is hinged at said base so as to be able to move angularly in a vertical plane.

[0017] The tool holder arm according to the present invention can thus be oriented with respect to the base so that its free end, carrying the rotary tool, is at any given time at the most appropriate height for the operator and for the type of item being processed, thus embodying a preferred embodiment of said means for adjusting the height of said at least one tool holder shaft.

[0018] Preferably, the tool holder arm can be moved into a continuous range of angular positions, so as to provide a continuous adjustment of the height of said at

least one tool holder shaft.

[0019] Preferably, moreover, said vertical plane is a plane which is laterally adjacent to said base.

[0020] In such a way, the tool holder arm can also be oriented upwards, towards the back of the machine, or downwards, adjacent to the base, to limit the overall size of the machine during transportation or when the machine or tool is not being used.

[0021] Typically, the free end of the tool holder arm is equipped with a shield for the tool holder shaft.

[0022] The shield is typically equipped with a side inspection door, which allows access to the tool holder shaft for removal and replacement of the tool.

[0023] The shield is typically equipped with a lower powder suction mouth.

[0024] A suction tube connected to a suction unit can be associated with the lower powder suction mouth.

[0025] The suction unit can be housed in the base or separate from it, or it can even be a part of a central suction unit.

[0026] Preferably, the tool holder shaft is borne cantilevered.

[0027] Preferably, moreover, the tool holder shaft is equipped with a mandrel for receiving an additional tool and the inspection door has a hole at the mandrel of the tool holder shaft.

[0028] Advantageously, said mandrel of the tool holder shaft is on the outer side of the tool holder shaft.

[0029] In the present description and in the attached claims, the expression "inner side" is used to indicate the side of an element of the machine facing towards the motor, whereas the expression "outer side" is used to indicate the side of an element facing away from the motor.

[0030] Preferably, said at least one tool holder arm is hinged to said base through a first plate integral with said at least one tool holder arm and a second plate integral with said base, a first shaft for transmitting the rotary motion extending in coaxial holes in said first and second plates, and means for locking the angular position of said first plate with respect to said second plate being provided.

[0031] Preferably a pair of bearings extend in each of said holes in said first and second plates.

[0032] In an embodiment, the means for locking the angular position of said first plate with respect to said second plate comprises at least one screw extending in a respective threaded hole of the first plate and abuttable against said second plate; or even vice-versa, even if this worsens the accessibility to the locking means.

[0033] In an alternative embodiment, the means for locking the angular position of said first plate with respect to said second plate comprise at least one bolt or a screw/block pair extending in a respective threaded hole of the first plate and slidable in an annular groove with a T-shaped cross-section formed in the second plate, or even vice-versa.

[0034] When it is sufficient to provide a discrete number of angular positions of the tool holder arm, the T-shaped cross-section groove can extend only along an arc of circumference.

[0035] Moreover, when it is sufficient to provide a discrete number of angular positions of the tool holder arm, the means for locking the angular position of said first plate with respect to said second plate can comprise one or more sliding slots made in the first plate and one or more screws which can be screwed into respective holes in the second plate or vice-versa, or also two series of holes arranged along a circumference in the first and second plates, suitable for receiving locking pins.

[0036] In a preferred embodiment, the means for transmitting the motion from said at least one motor to the respective tool holder shaft comprises a belt transmission extending along the respective tool holder arm.

[0037] The transmission can be a toothed belt or a trapezoidal belt transmission.

[0038] Alternatively, the transmission can, for example, be of the gear or chain type.

[0039] More particularly, said belt transmission comprises a first pulley at the end of the arm hinged to the base, a pulley at the free end of the tool holder shaft and a belt extending across the two pulleys.

[0040] Said at least one tool holder arm is, in such a case, preferably equipped with a removable protective case.

[0041] Advantageously said at least one tool holder arm embodies a belt tensioner device.

[0042] In an embodiment, the belt tensioner device comprises a sliding slot for said at least one tool holder arm with respect to said first plate and a threaded pin for controlling the sliding of said at least one tool holder arm.

[0043] Said first shaft for transmitting the rotary motion can be a drive shaft of said at least one motor.

[0044] Alternatively, said first shaft for the rotary motion can be driven into rotation by a drive shaft of said at least one motor through a suitable transmission, which can be, for example, a gear, a chain or preferably a toothed or trapezoidal belt transmission.

[0045] Advantageously, said tool holder arm has an item-supporting member below the respective tool.

[0046] Typically, said at least one motor is a 200-5000 r.p.m. electric motor.

[0047] Typically, moreover, said at least one motor is equipped with a respective speed changer or else has two or more selectable speeds.

[0048] The direction of rotation of said at least one motor can be reversible.

[0049] In a preferred embodiment, the machine has a pair of tool holder arms, each tool holder arm being independently hinged to said base.

[0050] In such a way it is possible to arrange different tools on each tool holder arm; it is possible to independently adjust the height of each arm, for example for simultaneous use by two operators; moreover, it is possible to turn one arm so as to have more free space for

processing a particularly large item with the other arm; moreover, it is possible to align the two arms to carry out the same or different processing on two distinct locations of the same item, simultaneously or sequentially by moving the item horizontally from one arm towards the other.

[0051] Advantageously, for such a purpose the machine comprises an item support centrally between the two arms, the height of which can be adjusted, for example hinged to the base of the machine.

[0052] The item support itself, or another member in the form of a T-shaped rod hinged to the base of the machine, with the top of the T extending to the two arms, can, moreover, ease the mutual alignment of the arms.

[0053] The or every processing group can, moreover, be equipped with a graduated scale or another visual indicator of the orientation of the respective tool holder arm as a function of the height in centimetres of the operator and the stopped-machine position.

[0054] In case there are two tool holder arms, such a visual indicator can consist of or be added to the aforementioned means for easing the alignment of the two arms.

[0055] Typically, when the machine comprises a pair of tool holder arms, the machine comprises a pair of motors, each driving a respective tool holder shaft of a respective tool holder arm into rotation.

[0056] Typically, the motors of the pair of motors are equipped with respective speed changers which can be independently set, or they have two or more independently selectable speeds, and are also independent in the respective directions of rotation.

[0057] Further characteristics and advantages of a rotary tool machine for processing peltry and footwear items according to the invention shall better appear from the following detailed description of a preferred embodiment, made with reference to the attached drawings. In such drawings:

- figure 1, which has already been referred to, is a front view of a rotary tool machine for processing peltry and footwear items according to the prior art;
- figure 2 is a front view of a rotary tool machine for processing peltry and footwear items according to the present invention;
- figure 3 is a partially sectioned front view of a detail of the transmission of the rotary motion to a tool holder arm of the machine of figure 2;
- figure 4 is a perspective view of a tool holder arm of the machine of figure 2, from the inner side or machine side;
- figure 5 is a perspective view of a tool holder arm of the machine of figure 2, from the outer side; and
- figure 6 is a partially cut away front view of a tool holder arm of the machine of figure 1, from the inner side, highlighting a belt tensioner device.

[0058] In figure 1 a rotary tool machine 10 for processing leather and footwear items according to a preferred embodiment of the invention is illustrated.

[0059] The machine 10 comprises a column base 12, equipped with feet or wheels to move it.

[0060] A plane 14 is arranged on the top of the base 12, slightly protruding from the two sides of the base 12. Two processing groups generally indicated with 16 and 16a are arranged on plane 14, on the two sides.

[0061] The processing groups 16, 16a are perfectly symmetrical, for which reason only the left-hand processing group 16 shall be described.

[0062] The processing group 16 comprises an electric motor 18 with a suitable power and speed. For example, the motor 18 can be a motor of between 0.25 and 2 HP with a speed changer to provide a rotational speed of between 200 and 5000 rpm, or a motor provided with two or more selectable speeds. The direction of rotation of the motor 18 is preferably selectable.

[0063] The motor 18 drives a tool holder shaft 20, at which a shield 22 is arranged, into rotation. A tool 24 can be fitted onto the tool holder shaft 20.

[0064] The shield 22 is equipped with a lower powder suction mouth. An end of a hose 28 can be connected to the suction mouth 26, said hose being connectable at the other end to a suction unit. The suction unit cannot be seen in figure 1 since it is housed in the column base 12.

[0065] The tool holder shaft 22 is arranged at the free end of a tool holder arm 30 which is hinged at the base 12 so as to be able to move angularly in a first vertical plane in the manner better described hereafter with reference to figure 3.

[0066] The tool holder arm 30 is equipped, at the hinged end, with a vertical plate 32.

[0067] The plate 32 is mounted parallel and external to a vertical plate 34 of an L-shaped bracket extending upwards from the plane 14 and fixed to it, such as through screws 36.

[0068] A shaft 38 driven into rotation by the motor 18 extends through coaxial holes 40, 42 formed in the plate 32 and in the plate 34, respectively.

[0069] A pair of screws 44 can be screwed into through holes of plate 32, to abut against plate 34 and to lock by friction the rotation of the plate 32 with respect to the plate 34.

[0070] A pair of bearings 46 is inserted in each hole 40, 42 to allow the rotation of the shaft 38 within holes 40, 42 in any angular position of the plate 32 with respect to the plate 34.

[0071] In the embodiment illustrated in the figures, the shaft 38 is more specifically driven into rotation by the motor 18 through a belt transmission made up of a first pulley 48 integral with the inner end of the shaft 38, of

a second pulley 50 integral with the drive shaft 52 and of a belt 54 extending across the pulleys 48, 50. The belt 54 can be toothed or trapezoidal.

[0072] As can be seen in figures 4-6, the shaft 38 driven into rotation by motor 18 has, at its outer end, a third pulley 56. The tool holder shaft 20 is equipped, preferably on its inner side, with a fourth pulley 58. A second toothed or trapezoidal belt 60 extends across pulleys 56, 58.

[0073] In a particularly advantageous manner, the arm 30 moreover embodies a belt tensioner device. For such a purpose the arm 30 has, in proximity to its hinged end, a slot 62. A pair of screws 64 extend in the slot 62 from the outer side of the arm 30 to be screwed into respective holes in the plate 32, thus fixing the arm 30 to it. Along the inner side of the arm 30, near to the slot 62, but slightly spaced from it towards the free end of the arm 30, a block 66 is fixed, such as through screws 68. The block 66 is provided with a threaded hole 68 extending in the longitudinal direction of the arm 30. A screw 70 equipped with an anti-loosening lock nut 72 extends in the threaded hole 68 to abut against the thickness side of the plate 32. The screwing and unscrewing of the screw 70 in the threaded hole 68 of the block 66, having loosened the screws 64, cause the sliding of the slot 62 with respect to the screws 64 and the consequent sliding of the arm 30 in its longitudinal direction with respect to the first plate 32. Such a sliding of the arm 30 causes the adjustment of the distance of the fourth pulley 58 from the third pulley 56 and, eventually, the adjustment of the tension of the second belt 60.

[0074] The arm 30 is moreover equipped with a pair of spacers 74 distributed along its length, on its inner side. The spacers 74 are provided with a threaded hole 76. A protective case, made up of an outer half-case 78 and of an inner half-case 80, can be fixed around arm 30 and belt transmission 56, 58, 60 through screws 82 extending in holes (not shown), capable of being screwed in the threaded holes 76 of the spacers 74.

[0075] The outer half-case 78 preferably has an opening 84 for allowing access to the screws 64 for fixing the arm 30 to the plate 32 without removing the outer half-case 78 itself.

[0076] A flange of a small L-shaped bracket 86 can be fixed to the shield 22 for the tool holder shaft 20 on the inner side and slightly below the tool 24, through a pair of screws 88 received in respective holes of the shield 22. The screws 88 extend in a longitudinal slot 90 of the bracket 86 to allow the protrusion of the bracket 86 from the shield 22 to be adjusted.

[0077] A second bracket 92 can be fixed to the other flange of the bracket 86 through a screw 94 received in a respective hole of the bracket 86. The screw 94 extends in a longitudinal slot 96 of the second bracket 92 to allow the position of the second bracket 92 to be adjusted.

[0078] The second bracket 92, extending parallel to the tool holder shaft 20 below the tool 20, functions as an item support.

[0079] The shield 22 is equipped, on the outer side, with a hinged inspection door 94. The door 94 is provided with a hole 96 at the tool holder shaft 20. The outer end of the shaft 20 is equipped with a mandrel 98. An additional tool 241 can be inserted into the mandrel 98, protruding from the hole 96 of the inspection door 94 of the shield 22.

[0080] It can be understood from what has been outlined that the rotary motion provided by the motor 18 is transmitted to the shaft 38 through the first belt transmission 48, 50, 54, and from the shaft 38 to the tool holder shaft 20, and therefore to the tools 24 and 241, through the second belt transmission 56, 58, 60.

[0081] Since it is hinged to the plane 14 as described, the tool holder arm 30 is free to rotate about the shaft 38, as schematically indicated with a dashed line in figure 4.

[0082] The free end of the tool holder arm 30 carrying the tool 24 can therefore be displaced in height to arrange the tool 24 at the height which is most suitable for the operator and for the type of peltry/footwear item being processed.

[0083] In particular, since the plate 34 of the L-shaped bracket is mounted in an end position on the side of the machine 10, the arm 30 is free to rotate in a continuous manner and by 360°. Consequently, the arm 30 can be moved out of the working position, for example in a vertically raised position, towards the back of the machine, or totally lowered along the side of the base 12, for example when the machine is not being used, in particular for its transportation.

[0084] As stated before, the provision of two processing groups 16, 16a with independent tool holder arms 30, 30a allows for a great versatility of processing. Such a versatility is obviously increased when there are two independent motors 18, 18a as illustrated in figure 2.

[0085] For example, it is possible to arrange different types of tools 24, 24a on each tool holder arm 30, 30a, for two operators to carry out simultaneous processings, each operator having the tool holder arm at the most suitable height; it is also possible to use a single arm at a time while arranging the second arm out of the working position to carry out a processing of particularly large items. Moreover, it is possible to arrange the arms 30, 30a in the same angular position so that the tools 24, 24a are at the same height, to carry out the same or different processing on two distinct locations of a same item, simultaneously or sequentially moving the item horizontally from one arm towards the other. To ease such an operation, in addition to the supports 92, a support (not shown) can be provided for, fixed to the base 12 in a central position with respect to the two arms 30, 30a and equally adjustable in height, for example hinged to the base 12. Moreover, means for easing the alignment of the two arms, for example a T-shaped rod hinged to the base, with the top of the T extending up to the two arms 30, can be provided for.

[0086] The or each processing group 16, 16a can, moreover, be equipped with a graduated scale or another visual indicator of the orientation of the respective arm 30, 30a as a function of the height in centimetres of the operator, and of the stopped-machine position (for example, vertically downwards).

[0087] In case there are two processing groups 16, 16a, such a visual indicator can consist of or be additional to the means for easing the alignment of the two arms 30, 30a, such as the aforementioned T-shaped rod.

[0088] Numerous changes, variations, omissions and additions, such as those listed hereafter, can be made to the previously described rotary tool machine for processing peltry and footwear items, without however departing from the scope of the invention.

[0089] The tool holder arms 30, 30a can be missing or else can be non-orientable. In such cases, means for adjusting the height of the tool holder shaft 20 shall be provided, comprising, for example, a pantograph system controlled by a worm screw, a hydraulic or pneumatic system, a rack system, a sliding rail and suitable fixing means assembly, etc.

[0090] The plane 14 does not necessarily have to protrude laterally with respect to the base 12.

[0091] The L-shaped bracket 34 does not necessarily have to be arranged at the side edge of the plane 14.

[0092] The tool holder shaft 20, and the respective shield 22 if present, can be of a size such as to hold a series of tools 24 simultaneously. This could be preferable to limit the need to replace the tool for different processing, although this is to disadvantage of the small size of the arm 30 itself, and therefore against the possibility of processing items with very sharp recesses, both in the horizontal and in the vertical arrangement.

[0093] The powder suction unit and the respective hoses 28 can also be missing or else be part of one or two unit/s distinct from the machine 10. The hoses 28 can also be connectable to a central suction unit.

[0094] The screws 44 can extend in respective holes of the plate 34 and abut against the plate 32, although accessibility thereto would be impaired. Moreover, it is clear that depending on the size and weight of the arm 30 a single screw or more than two screws 44 can be provided for locking the angular position of the plate 32 with respect to the plate 34.

[0095] Moreover, as an alternative to the screws 44 acting by abutment, other means for locking the angular position of the plate 32 with respect to the plate 34 can be devised.

[0096] For example, at least one bolt or a screw/block pair can be provided, extending in a respective threaded hole of the plate 32 and slidable in an annular groove with a T-shaped cross-section formed in the plate 34; or also vice-versa.

[0097] When it is sufficient to provide for a discrete number of angular positions of the tool holder arm 30, the a T-shaped cross-section groove can extend only along an arc of a circumference.

[0098] Moreover, when it is sufficient to provide for a discrete number of angular positions of the tool holder arm, the means for locking the angular position of the plate 32 with respect to the plate 34 can comprise one or more sliding slots made in the plate 32, and one or more screws which can be screwed into respective holes in the plate 34, or vice-versa, or else two series of holes arranged along a circumference in the plate 34 and in the plate 32, suitable for receiving locking pins.

[0099] Instead of hexagonal socket-head screws 44 as illustrated, pins with a knurled head can be provided, to ease the release and the locking of the angular position of the arm 30.

[0100] More generally, all of the elements indicated as screws can be replaced by equivalent removable fixing means. Also the number of elements indicated is always purely indicative.

[0101] Analogously, the number of bearings 46 can be different from two for each hole 40, 42 of the plates 32, 34.

[0102] Alternatively, the shaft 38 can coincide with the drive shaft 52, can be associated with it through direct coupling, just as there may be a different transmission, for example a chain or gear transmission.

[0103] Instead of the belt transmission of the rotary motion between the shaft 38 and the tool holder shaft 20, a different type of transmission, for example a chain or gear transmission, can be provided.

[0104] The bracket 92 acting as an item support could of course be missing or be replaced by a fixed or simply removable support, without its position being adjustable.

[0105] The machine 10 according to the invention can be equipped just with the processing group 16.

[0106] When there are two processing groups 16, 16a, as an alternative to two separate motors 18, 18a, there can be a single central motor. In such a case the shaft 38, 38a for hinging the two arms 30, 30a can also be common to both.

[0107] The pair of circular spacers 74 is merely exemplary and is not strictly necessary.

[0108] The opening 84 can be missing, just as a slot can be provided in the inner half-case 80 at the head of the screw 70, to be able to take care of actuating the belt tensioner device without removing the inner half-case 80.

[0109] The machine 10 can be equipped, for example on its front side, with a control panel containing switches for feeding the motors 18, 18a, pilot lamps, indicators and speed selectors.

Claims

1. Rotary tool (24) machine (10) for processing peltry and footwear items, comprising a base (12), at least one motor (18, 18a), and means (48, 50, 54,

56, 58, 60) for transmitting the rotary motion from said at least one motor (18, 18a) to at least one corresponding tool holder shaft (20, 20a), **characterised in that** it has means (30, 32, 34, 44) for adjusting the height of said at least one tool holder shaft (20, 20a).

2. Machine (10) according to claim 1, **characterised in that** said at least one tool holder shaft (20, 20a) is arranged at a free end of a respective tool holder arm (30, 30a).

3. Machine (10) according to claim 2, **characterised in that** said at least one tool holder arm (30, 30a) is hinged at said base (12) to be able to angularly move in a vertical plane.

4. Machine (10) according to claim 3, **characterised in that** said at least one tool holder arm (30, 30a) can be oriented in a continuous range of angular positions.

5. Machine (10) according to claim 1, **characterised in that** said vertical plane is a plane laterally adjacent to said base (12).

6. Machine (10) according to claim 1, **characterised in that** said at least one tool holder shaft (20, 20a) is equipped with a mandrel (98) for receiving an additional tool (241, 241a).

7. Machine (10) according to claim 6, **characterised in that** said mandrel (98) of each tool holder shaft (20, 20a) is on the outer side of the respective tool holder shaft (20, 20a).

8. Machine (10) according to claim 3, **characterised in that** said at least one tool holder arm (30, 30a) is hinged to said base (12) through a first plate (32, 32a) integral with said at least one tool holder arm (30, 30a) and a second plate (34, 34a) integral with said base (12), a first shaft (38, 38a) for transmitting the rotary motion extending in coaxial holes (40, 42) in said first and second plates (32, 32a, 34, 34a), and means (44) for locking the angular position of said first plate (32, 32a) with respect to said second plate (34, 34a) being provided.

9. Machine (10) according to claim 8, **characterised in that** a pair of bearings (46) extend in each of said holes (40, 42) in said first and second plates (32, 32a, 34, 34a).

10. Machine (10) according to claim 8, **characterised in that** the means (44) for locking the angular position of said first plate (32, 32a) with respect to said second plate (34, 34a) comprises at least one screw (44) extending in a respective threaded hole of the first plate (32, 32a) and abuttable against said second plate (34, 34a).

11. Machine (10) according to claim 2, **characterised in that** the means (48, 50, 54, 56, 58, 60) for transmitting the motion from said at least one motor (18, 18a) to the respective tool holder shaft (20, 20a) comprises a belt transmission (56, 58, 60) extending along the respective tool holder arm (30, 30a).

12. Machine (10) according to claim 11, **characterised in that** said at least one tool holder arm (30, 30a) embodies a belt tensioner device (62-72).

14. Machine (10) according to claim 13, **characterised in that** the belt tensioner device (62-72) comprises a sliding slot (62) for said at least one tool holder arm (30, 30a) with respect to said first plate (32), and a threaded pin (70) for controlling the sliding of said at least one tool holder arm (30, 30a).

15. Machine (10) according to claim 8, **characterised in that** said first shaft (38, 38a) for transmitting the rotary motion is driven into rotation by a drive shaft (52) of said at least one motor (18, 18a) through transmission means (48, 50, 54).

16. Machine (10) according to claim 2, **characterised in that** said tool holder arm (30, 30a) has an item supporting element (92, 92a) which can be arranged below the respective tool (24, 24a).

17. Machine (10) according to claim 3, **characterised in that** it has a pair of tool holder arms (30, 30a), each tool holder arm (30, 30a) being independently hinged to said base (12).

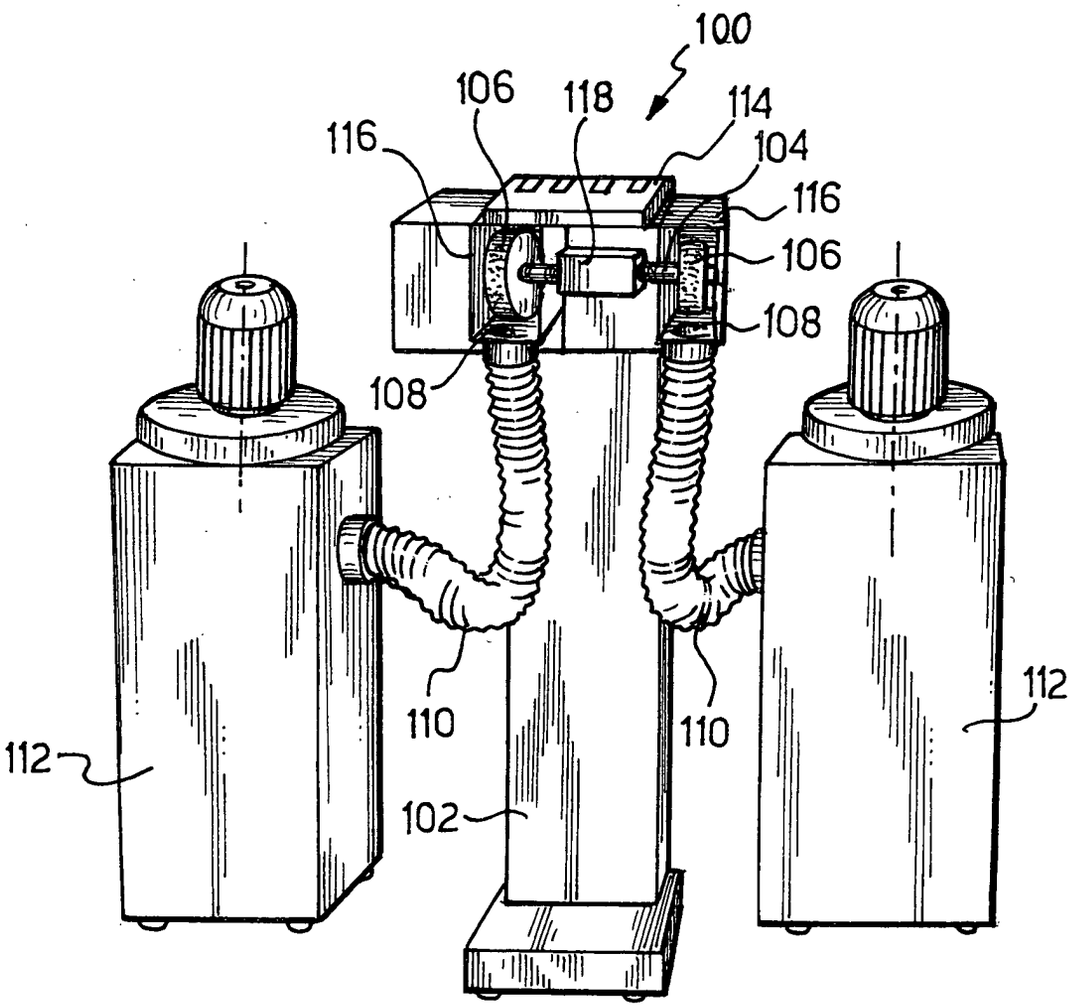
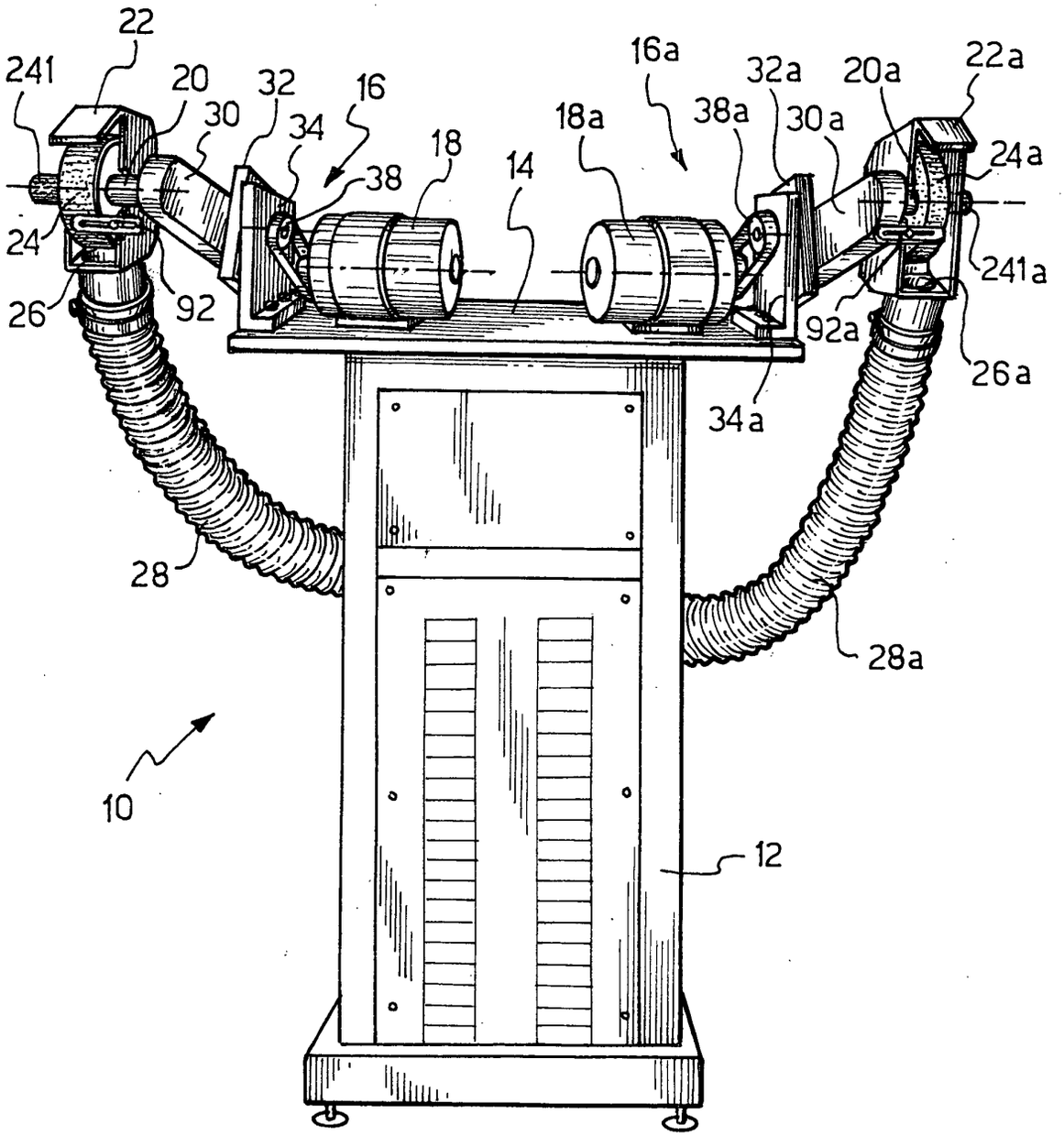


FIG.1
PRIOR ART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16
30
34
38
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18a
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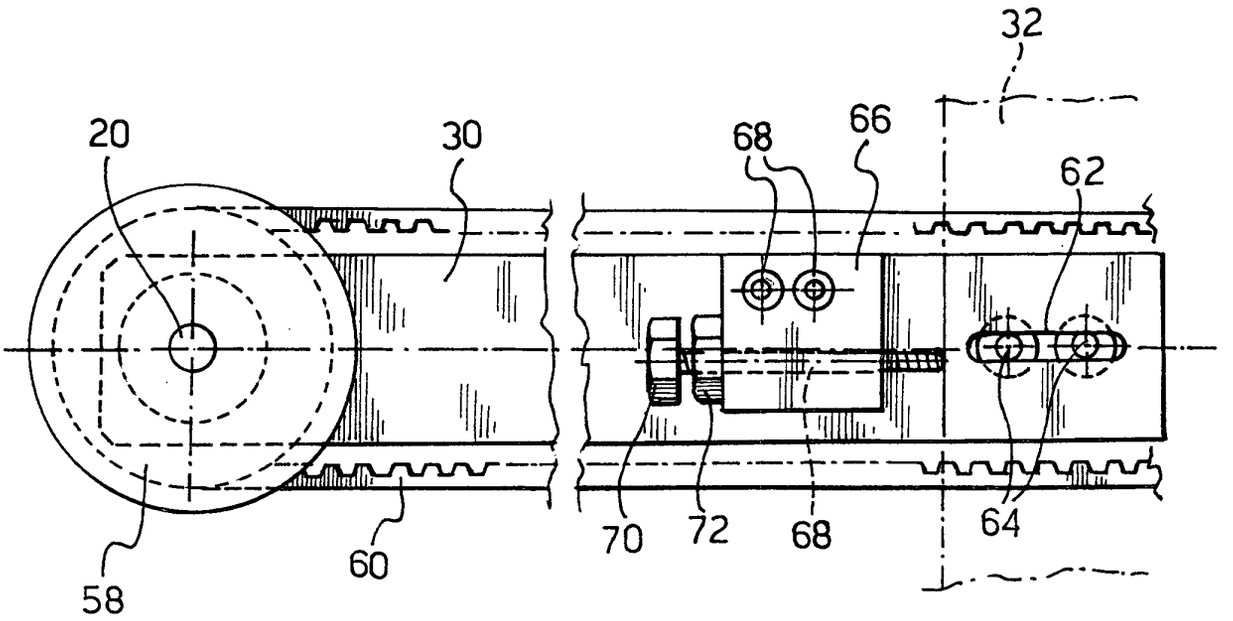
24a
24
241a
26
92
92a
26a
34a
28
28a
10
12

FIG. 2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64

FIG. 6

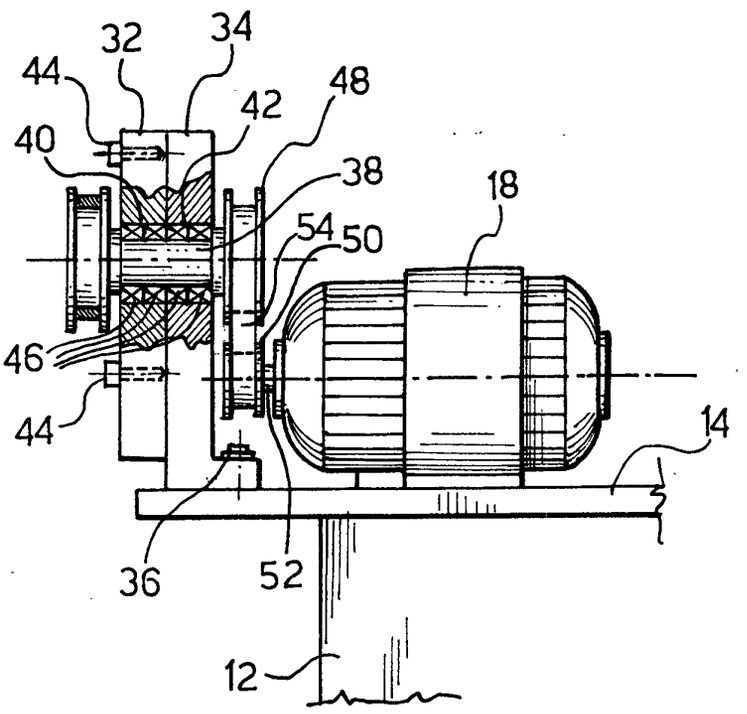
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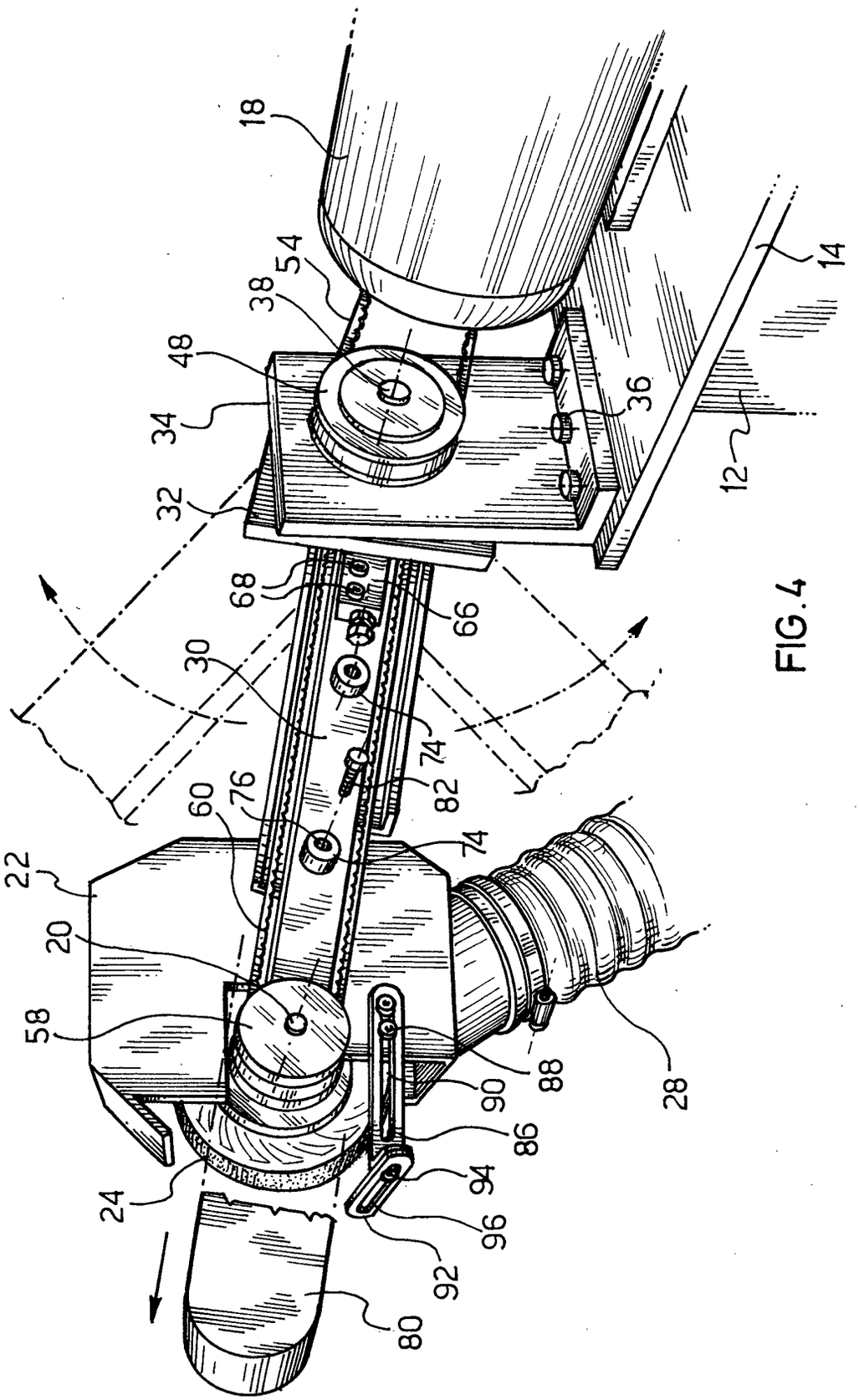
FIG. 3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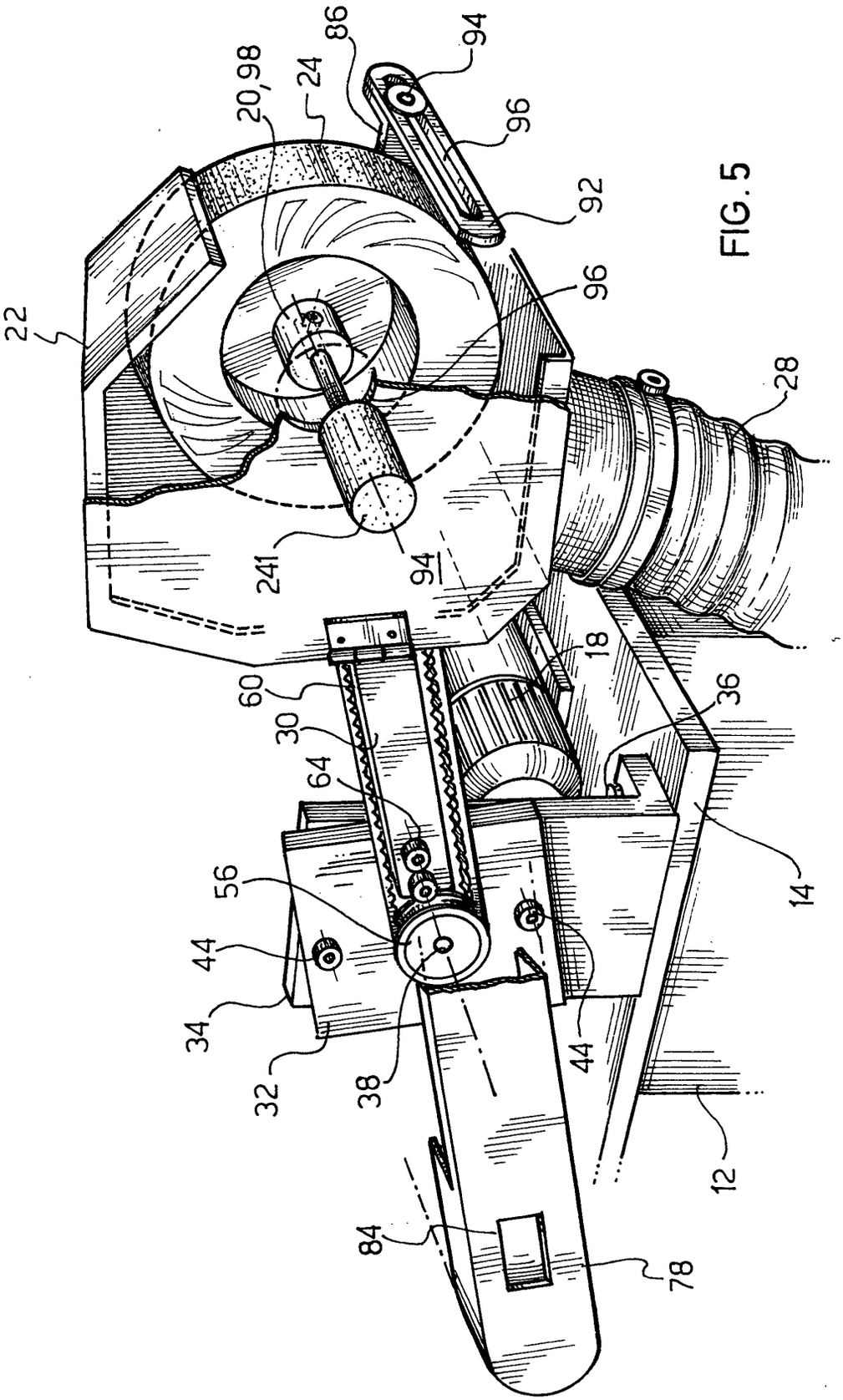
80

FIG.4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44
14
12
84
78

FIG. 5

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 42 5214

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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A	FR 1 401 559 A (BRITISH UNITED SHOE MACHINERY) 4 June 1965 (1965-06-04) * page 2, column 2, line 36 - page 3, column 2, line 35; figure 1 * -----	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A43D
A47L
B24B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	9 October 2002	Cianci, S

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09-10-2002

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82