June 26, 1962 W. H. ODLUM ET AL 3,041,023

SEPARABLE MOUNTINGS FOR ELECTRIC MOTORS OR THE LIKE

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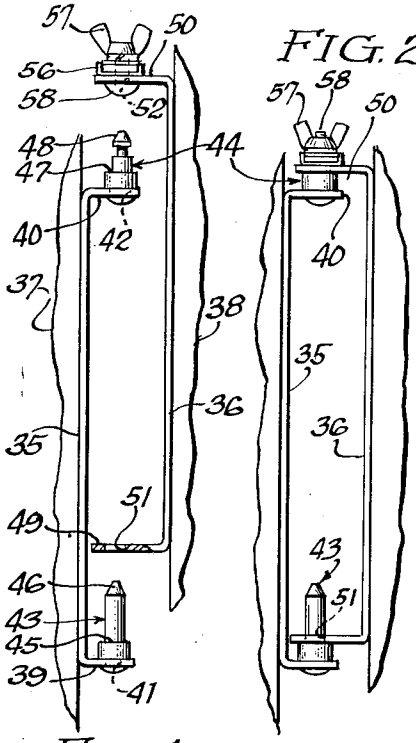


FIG. 1

FIG. 2

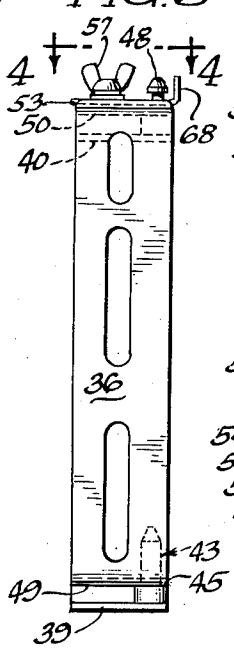


FIG. 3

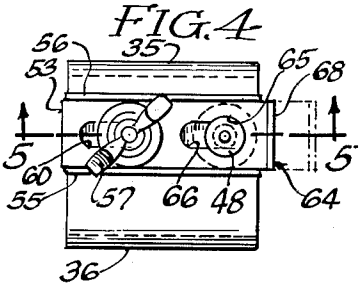


FIG. 4

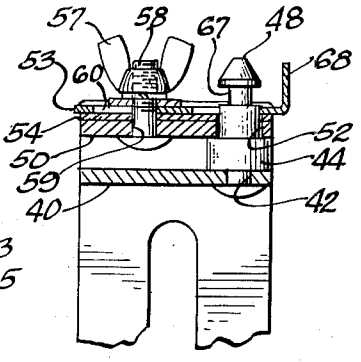


FIG. 5

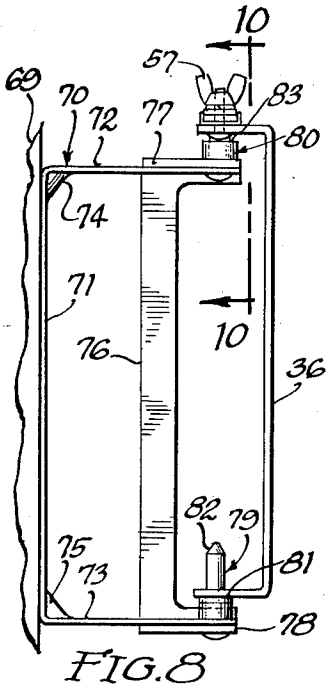


FIG. 8

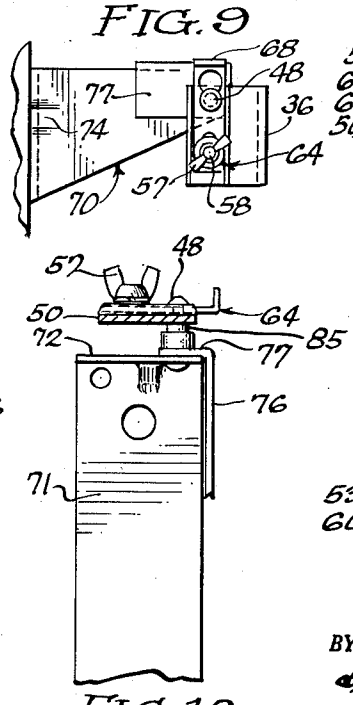


FIG. 10

FIG. 9

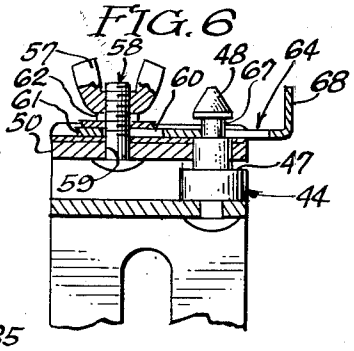


FIG. 6

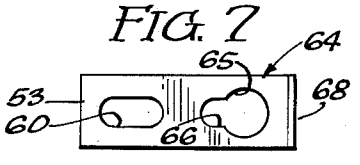


FIG. 7

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FIG. 11

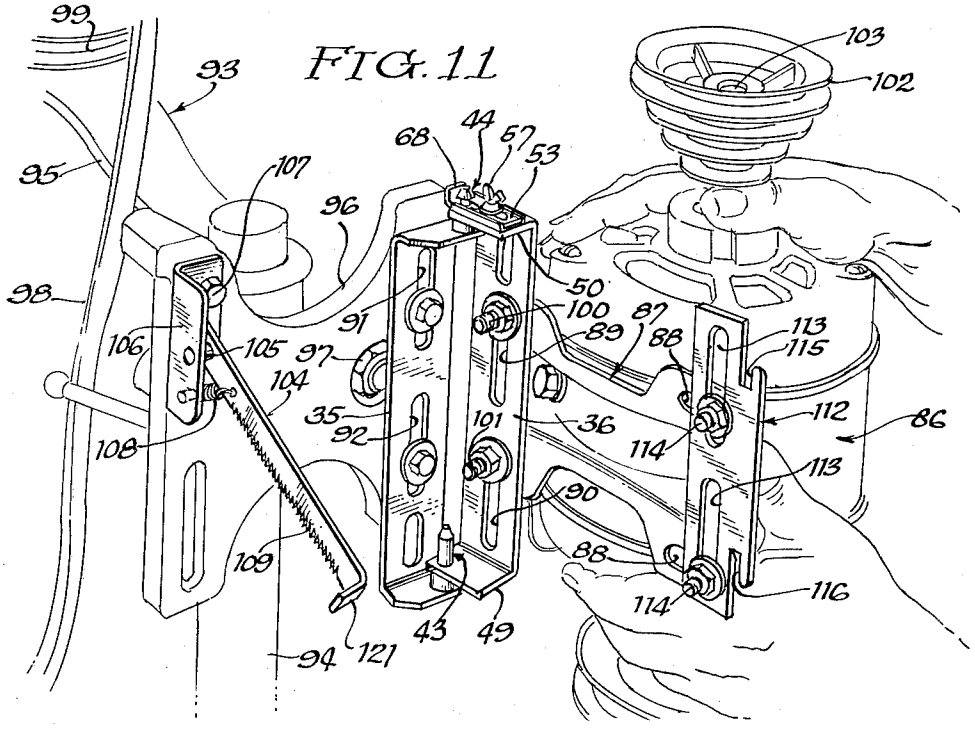


FIG. 12

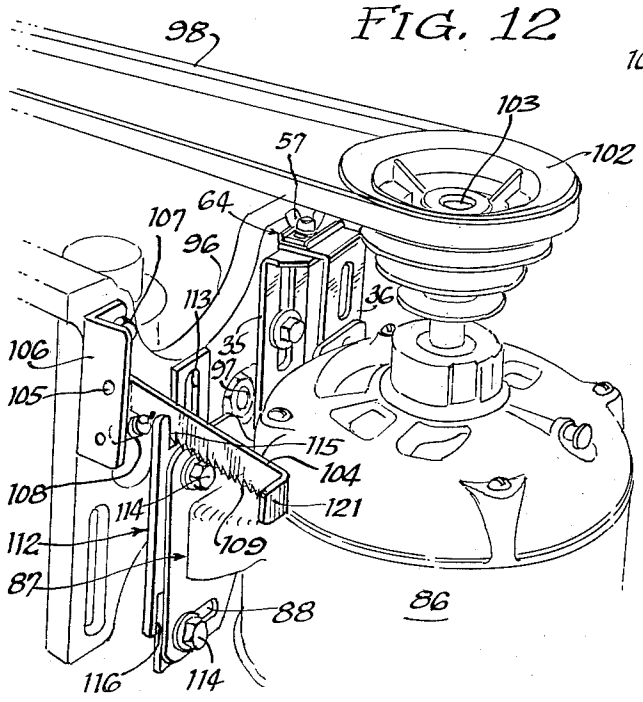
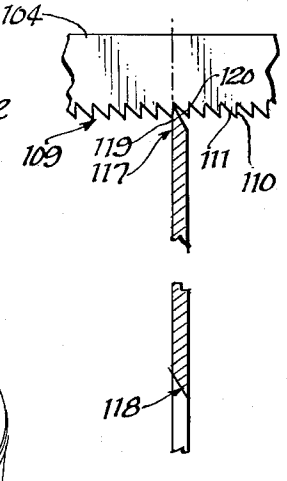


FIG. 13



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FIG. 14

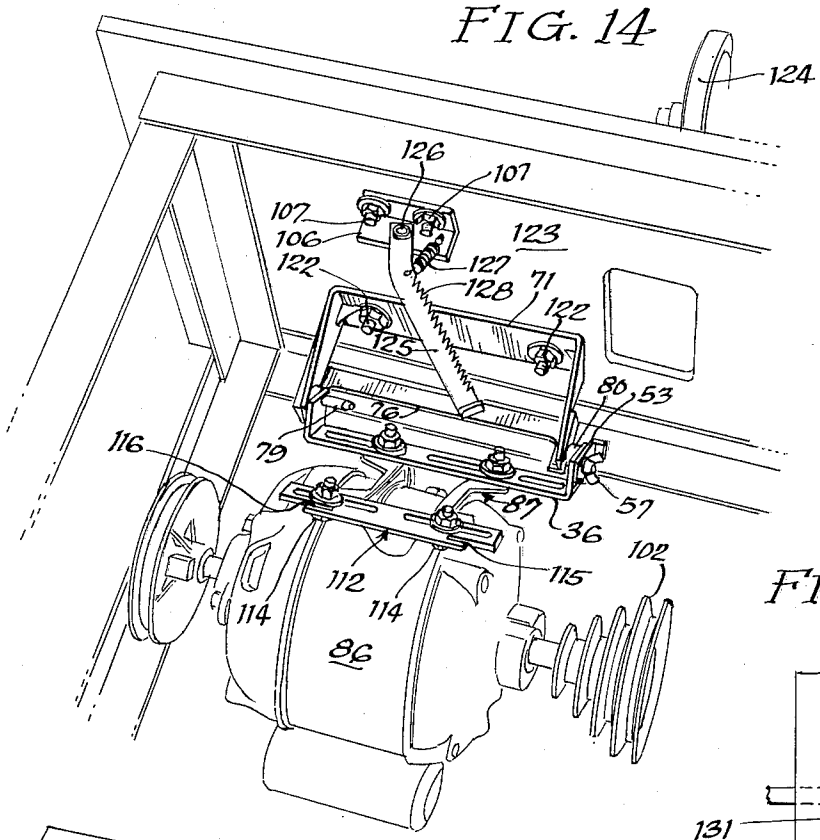


FIG. 16

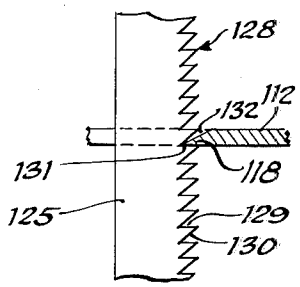
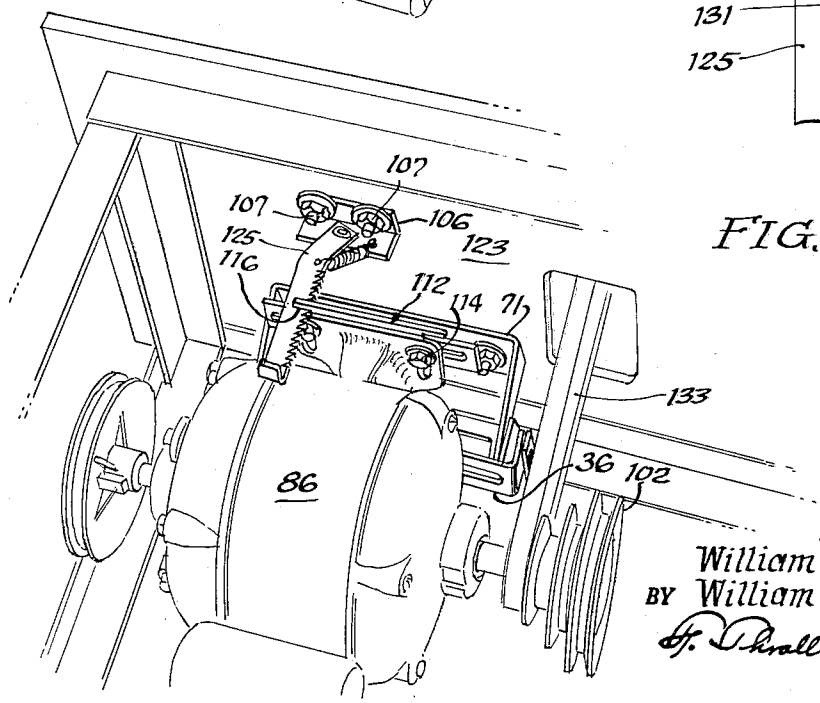


FIG. 15



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3,041,023

SEPARABLE MOUNTINGS FOR ELECTRIC MOTORS OR THE LIKE

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Original application May 13, 1954, Ser. No. 429,428, now Patent No. 2,901,767, dated Sept. 1, 1959. Divided and this application Nov. 18, 1958, Ser. No. 774,781
3 Claims. (Cl. 248—16)

This invention relates to a readily separable mounting for electric motors or the like. For purposes of illustration it will be described with reference to its application to power tools of the woodworking class, but it is understood that the invention may be applied with equal facility to any implement or appliance employing a motor which it is desired at times to remove or replace.

This application is a division of our co-pending application Serial No. 429,428, filed May 13, 1954, and entitled Separable Mounting for Electric Motors or the Like, now Patent No. 2,901,767.

A woodworking shop, whether it be a hobby shop such as one might find in a home, or a carpenter shop where the products of a carpenter's skill are used as a means of making a livelihood, should include a number of woodworking tools of different character to enable the operator of the shop to perform all of the necessary operations upon wood required of a carpenter. Thus, the shop should contain a saw of the rotary disk type, a band-saw, a jointer-planer, a lathe and a drill press. Each of these tools performs a distinctly different operation upon a piece of wood and requires the use of a different basic structure for the accomplishment of that result.

A completely equipped woodworking shop would require the purchase of some five different basic tools, each provided with a structure specifically designed for its function, and with suitable power means, preferably individual electric motors, for driving the tool. The purchase of five individual tools involves the expenditure of a considerable sum of money which, although possibly justified in the case of a carpenter, whose livelihood depends upon the tools, would hardly be justified in the case of a home-owner who uses the tools in the furtherance of a woodworking hobby.

Efforts have been made in the past to reduce the cost of a complete set of tools, the efforts being directed toward designing the tools as a single multi-purpose tool utilizing one base and one motor, with means for dismantling certain portions of the tool or assembling other portions of the tool in predetermined combinations to change the character of the tool from one basic tool to another. Although this approach to the problem results in tools which may be satisfactory for their individual purposes, nevertheless the effort required and time consumed in effecting a change from one tool to another, is so great as to render the practicability of the tool as a whole doubtful. For example, where two or three different operations such as cutting, drilling and planing are to be performed upon a single piece of wood, more time and energy may be consumed in making changes in the tool than in the actual woodworking operations involved.

Another approach to the problem has been to provide two or more tools which may or may not have multiple functions and to provide a single motor which may be taken from one tool and used on the next. This latter approach recognizes that substantially half of the cost of the tool is in the electric motor used to drive it, and that if a single motor can be used on a plurality of tools which are initially supplied without motors, a great reduction in the cost of the complete set of tools can be effected. Such single motor multiple tools as have been heretofore

proposed, however, failed to provide a mounting for the motor which would be readily separable to make possible a quick removal of a motor from one tool and its ready assembly on the next tool. It must be borne in mind that an electric motor having sufficient capacity to drive each of the tools of a woodworking shop must necessarily be rather heavy if it is to be efficient as well as powerful. A good motor as presently constructed weighs between 25 to 30 pounds, and the handling of such a motor in connection with a readily separable mounting, therefore, must be such that the operator need not be required to hold the motor with one hand while the other hand is used to manipulate the motor mounting.

It is accordingly one of the objects of this invention to provide a motor mounting for an electric motor or the like which may be readily separated and re-assembled without requiring that the weight of the motor be supported by one hand of the operator while the mounting is manipulated for assembly or disassembly.

Another object of this invention is the provision of a mounting for an electric motor or the like wherein the mounting is readily assembled and disassembled, each operation of assembly or disassembly being accomplished by the performance of two steps, the first step involving the release of a catch or latch mechanism on the mounting while the full weight of the motor is still taken by some part of the mounting and the other involving the actual physical removal of the motor from the mounting, so that the motor may be supported by both hands of the operator while the motor is being so removed.

Another object of this invention is the provision of a separable mounting for an electric motor or the like wherein said mounting may be adapted to support an electric motor with its axis either in a vertical plane or a horizontal plane, and when in a horizontal plane, with its axis either above or below the point of attachment of the motor to a frame.

A more specific object of this invention is to provide a separable motor mounting for an electric motor or the like wherein said mounting, when in use, permits the motor to swing by its own weight about an axis substantially parallel with the axis of rotation of the tool, such that a belt connecting the motor and tool may be tightened by the swinging movement of the motor.

Another specific object of this invention is the provision of a separable hinged motor mounting for power tools wherein latch means are provided for limiting the free swinging movement of the motor about said hinged mounting.

As a still more specific object, this invention seeks to provide a separable mounting for an electric motor for power tools or the like, wherein said mounting is inexpensive to make, is easy to take apart and put together again, is foolproof and is strong and durable.

These and other objects of this invention will become apparent from the following detailed description when taken together with the accompanying drawings in which:

FIG. 1 is a side elevational view of the two principal parts of a motor mounting incorporating this invention, the parts being shown in the positions they occupy as they are about to be assumbled;

FIG. 2 is an elevational view of a mounting of the type shown in FIG. 1, showing the mounting with the two parts thereof in assembled relation;

FIG. 3 is an elevational view of the assembled mounting of FIG. 2 looking towards the left of FIG. 2;

FIGS. 4 and 5 are enlarged plan and fragmentary side elevational views of the latching means for the mounting; FIG. 5 being a section taken substantially along the line 5—5 of FIG. 4;

FIG. 6 is a fragmentary side elevational view in section of the latching means, the view being similar to the

one depicted in FIG. 5, but with the latch means shown in another stage of its operation;

FIG. 7 is a plan view of the latch means of FIGS. 4 to 6 inclusive;

FIG. 8 is a view corersponding to FIG. 2, showing the separable motor mounting used with a different form of attaching bracket;

FIG. 9 is a plan view of the mounting and bracket of FIG. 8;

FIG. 10 is an end elevational view of a fragment of the mounting of FIG. 8 shown partially in section, the section being taken along line 10—10 of FIG. 8;

FIG. 11 shows the manner in which the mounting is used with an electric motor, the view being a perspective view of the motor mounting was adpated for use with a drill press and showing the mounting before the drive belt has been assembled with respect to the pulley of the motor;

FIG. 12 shows the motor and mounting of FIG. 11 with the belt in place, and shows also a separable belt tightener forming a part of this invention as it is adapted to be used when the motor mounting is in operative position;

FIG. 13 is a fragmentary front elevational view depicting a section of the belt tightening means of FIG. 12;

FIG. 14 is a bottom view in perspective of the motor mounting of FIGS. 8, 9 and 10 and a modification of the belt tightener as adapted for use with a lathe or the like;

FIG. 15 is a bottom view in perspective similar to FIG 14 showing the mounting of that figure, the belt assembled with respect to the motor pulley, and the tightener in operation; and

FIG. 16 is a fragmentary front elevational view, partly in section, of the belt tightening means of FIGS. 14 and 15.

Referring now to FIG. 1 for a detailed description of the invention, the form of the mounting shown therein is comprised of a pair of U-shaped hinge members 35 and 36, secured, for example, to a frame 37 and to a motor 38, respectively. Said hinge members are preferably made from relatively wide strips of steel or the like, the ends of which are bent substantially at right angles to the plane of the strip to form the sides of the U. Hinge member 35 has its ends 39 and 40 turned to the right as viewed in FIG. 1, substantially ninety degrees from the plane of the strip, and said ends are formed with openings 41 and 42, respectively, in which are riveted or otherwise secured hinge pins 43 and 44 respectively. Pin 43 has a shoulder 45 formed in proximity to end 39 and its free end 46 is tapered. Similarly, hinge pin 44 has a shoulder 47 formed near end 40, and its free end 48 is likewise tapered.

The sides 49 and 50 of hinge member 36 are bent substantially at right angles to the general plane of the member, each side having an opening 51 and 52 respectively (FIGS. 2 and 5), to receive hinge pins 43 and 44, respectively.

Referring to FIGS. 4 and 5, side 50 is provided with a transversely slidable latch plate 53 which is received within a shallow channel-shaped retainer 54 spot-welded or otherwise secured to side 50. The sides 55 and 56 of channel 54 are turned upwardly and serve as guides for the transverse movement of latch plate 53 across side 50. Latch plate 53 may be locked in place by a wing nut 57 cooperating with a bolt 58 passing through an opening 59 in side 50, and extending through a slot 60 in latch plate 53. A suitable washer 61 and lock washer 62 may be used to distribute the pressure of wing nut 57 and to resist inadvertent loosening of the nut, respectively.

In the right-hand region of latch plate 53 as viewed in FIGS. 4 to 6 inclusive, there is formed a keyhole slot 64 having an enlarged circular section 65 at one end and a narrow slot-like section 66 at its other end. The diameter of the enlarged circular section 65 is slightly larger than the outside diameter of hinge pin 44 over that portion of the pin extending outwardly beyond shoulder 47 thereof. A peripheral groove 67 is formed near the tapered free end 48 of hinge pin 44, the diameter of the bottom of the groove being substantially the same as or slightly smaller than the width of the narrow slot-like section 66 of keyhole slot 64. Thus, as shown in FIG. 5, the tapered end 48 of hinge pin 44 may enter opening 52 in side 50 and pass through an aligned opening in retainer 54 and into the enlarged section 65 of keyhole slot 64. Groove 67 may then be aligned with the keyhole slot, by a slight axial shifting of pin 44, if necessary, and the latch plate is then moved to the right as viewed in FIGS. 4 to 6 inclusive, until the narrow section 66 of the keyhole slot enters groove 67. Latch plate 53 may then be locked in placed by wing nut 57, thereby preventing an inadvertent withdrawal of hinge pin 44 from the keyhole slot 64.

To facilitate the transverse movement of latch plate 53 across side 50, said plate is formed with an up-turned flange 68 which may be grasped by the operator to shift the latch plate back and forth over side 50.

Assuming that hinge members 35 and 36 are separated as in FIG. 1 and that it is desired to unite them to form a hinged mounting for a motor or the like, the two members 35 and 36 are placed in substantially the positions shown in FIG. 1, wherein side 49 of member 36 is placed between sides 39 and 40 of member 35. Openings 51 and 52 in sides 49 and 50 are then aligned with the tapered ends 46 and 48 of hinge pins 43 and 44, and member 36 is moved downwardly toward the aligned pins until said pins enter the openings 51 and 52 and shoulder 45 abuts side 49 and shoulder 47 abuts side 50.

Under the foregoing conditions, pin 44 will have entered keyhole slot 64 substantially to the point where peripheral groove 67 on pin 48 is aligned with said keyhole slot. If this does not occur immediately, a slight shift of the two hinge members axially of the hinge pins will affect this alignment. With the hinge pins in their respective openings 51 and 52 the operator's hands are free to shift latch plate 53 to the right as viewed in FIGS. 4 to 6 inclusive, until the narrow section 66 of the keyhole slot engages the bottom of groove 67. At this point wing nut 57 is tightened and the hinge is then completely assembled without any possibility of an inadvertent disassembly thereof.

Because of the tapered form of the free ends of hinge pins 43 and 44, the initial alignment of openings 51 and 52 with said hinge pins need not be accurate. It may be observed that the assembling and latching operations are distinct and take place sequentially so that the operator's attention and energies need not be directed simultaneously to the performance of a dual function during the assembly of the hinge.

It may be apparent that the hinge structure described above is a basic structure which may be used to support a motor on the frame of a woodworking tool. Thus, for example, frame 37 may be the frame of a circular saw, a planer, a band saw, a lathe or a drill press. Similarly, the part 38 may be the motor itself or it may be a mounting plate having the standard NEMA motor mount slots therein, with hinge member 36 appropriately bolted or otherwise secured to said plate.

Using the basic hinge structure of FIGS. 1 to 7 inclusive, certain modifications can be made in one or both of the hinge members to adapt the construction to various woodworking tools. If the hinge member 36 is to be permanently associated with a motor, then the variation in design will be made in that portion of the hinge which is affixed to each individual tool. An example of a modification which can be made is shown in FIGS. 8, 9 and 10.

In FIG. 8 the frame of a woodworking tool is shown fragmentarily at 69, to which is secured by any suitable means a U-shaped bracket 70 having a relatively wide base portion 71 and parallel side portions 72 and 73, said U-shaped bracket preferably being made as a stamping from sheet material and having reinforcing gussets 74 and 75 formed in the inner corners thereof. It is con-

templated that for the tool to which the hinge of the FIGS. 8 to 10 modification is to be secured, the motor is to be spaced a greater distance from the frame than in the FIGS. 1 to 7 modification. The stamped form of bracket **70** normally would provide an undesirable degree of flexibility to the hinge, and hence, to stiffen the free ends of the side portions **72**, **73**, a tie-plate **76** is used. Said plate may be formed from a relatively stiff stamping having its free ends **77**, **78** embracing the outer surfaces of side portions **72**, **73** and being secured thereto by spot-welding or by hinge pins **79**, **80**, the heads of which may be upset to form rivets. Hinge pins **79**, **80** are secured to the overlapping regions of ends **77**, **78** and side portions **72**, **73** in the same manner as hinge pins **43**, **44** are secured to sides **39** and **40** of hinge member **35** (FIG. 1). Hinge pin **79** is provided with a shoulder **81** and a tapered end **82**, and, similarly, hinge pin **80** is provided with a shoulder **83** and a tapered end **48**, the latter having a peripheral groove **85** formed near the free end thereof in the same manner and for the same purpose as groove **67** of FIG. 6, for example.

The method of assembling and disassembling the hinged mounting of FIGS. 8 to 10, inclusive, is exactly the same as the method of assembling and disassembling the hinged mounting of FIGS. 1 to 7, inclusive, the hinge member **36** of FIGS. 8 to 10 being identical in all respects to the hinge member **36** of FIGS. 1 to 7.

In addition to providing a readily separable and reunitable hinged mounting for a motor, it is necessary in power tools that means be provided for properly tensioning the belt to be driven by the motor supported by one of the members of the mounting. The tension means must be similarly readily disassembled, and at the same time, must provide means for enabling the belt to be shifted from one pulley to another in order to change the speed ratio between the motor and the tool driven thereby. Several forms of belt tightening means are shown in FIGS. 11 to 18, said forms meeting the requirements for the basic types of woodworking tools.

In FIG. 11 there is shown a complete structure for mounting a motor on the frame of a drill press or the like. The motor is shown at **86** and is furnished by the manufacturer with a base **87** by which the motor may be secured to, or mounted upon, the equipment which it is to drive. Base **87** may be in the form of a stamping of generally rectangular shape having slots **88** in the four corner regions thereof, the slots being disposed with their long axes parallel to one another. The size of the slots and their spacing from one another may conform to a standard set up by the National Electrical Manufacturers Association. The corner regions of the base are preferably disposed in the same flat plane to conform to the flat surfaces generally provided as supports for motors.

It may be observed that hinge member **36** has elongated slots **89** and **90**, the long axes of which run lengthwise of the hinge member. Similiarly, hinge member **35** has elongated slots **91** and **92**, the long axes of which likewise run lengthwise of the hinge member. The drill press is indicated fragmentarily at **93** and may have a vertical post **94** upon which may be slidable a drill head **95**. A motor mounting plate **96** may be secured by bolts **97** to drill head **95** so as to be rigid therewith and therefore movable vertically with said drill head. Mounting plate **96** is preferably disposed to the rear of the drill press and is accordingly driven from the rear by a belt **98** passing over pulleys **99** directly connected to the spindle of the press.

Motor **86** is secured to hinge member **36** by attaching bolts **100** and **101** which pass through slots **88** of the motor base and slots **89** and **90** of hinge member **36**. The long axes of the slots **89** and **90** are arranged at right angles to the long axes of the slots **88** so that an adjustment may be made between motor **86** and hinge member **36** in both vertical and horizontal directions. It may be observed that with motor **86** bolted to hinge member **36**, and hinge member **36** assembled relative to hinge member **35** in a manner shown in FIG. 11, said motor **86** can swing about a vertical axis passing through the centers of hinge pins **43** and **44**. Thus the stepped pulley on motor shaft **103** may be brought closer to pulley **99** of the drill press, or farther away, merely by swinging the motor about hinge pins **43** and **44**.

When the drill press of FIG. 11 is in operation, it is necessary for belt **98** to be relatively tight on pulleys **99** and **102**. This belt tightening function is performed by a ratchet-type latch secured to motor mounting plate **96** and cooperating with an appropriate keeper on motor base **87**. As shown in FIG. 11, the latch is comprised of a bar **104** mounted on a pivot **105** secured to an angle-bracket **106**, the latter being fastened to motor mounting plate **96** by one or more bolts **107**. A spring **108** having one end connected to bar **104** and the other end connected to angle-bracket **106**, normally urges bar **104** to swing in a clockwise direction about its pivot **105**. On the lower edge of bar **104** are formed a plurality of teeth **109** which are shown more clearly in FIG. 13. Said teeth have a forward face **110** which when the latch is in operation are adapted to be disposed substantially at right angles to the circular path described by the keeper on the latch mounted on the motor. The rear face **111** of the teeth is sloped backwardly and upwardly as shown in FIG. 13.

The keeper for the latch is shown at **112** and is comprised of an elongated plate having its long dimension substantially parallel with the axis of hinge pins **43**, **44**, and having a pair of aligned longitudinal slots **113** formed therein. Said slots are adapted to overlie slots **88** of motor base 87 and plate **112** may be secured to motor base **87** by bolts **114**. Since slots **113** are arranged at right angles to slots **88**, the keeper may be adjusted both vertically and horizontally relative to base **87**. Plate **112** is also formed with notches **115** and **116** which are slightly wider than the thickness of bar **104**. As shown in FIG. 13, the bottoms of the notches are faired away to form teeth **117** and **118**. Tooth **117** has a front face **119** which is in reality an extension of the surface of the plate **112** and which is designed to abut on forward face **110** of teeth **109**. The rear face **120** of tooth **117** is inclined relative to front face **119** and is adapted to form a sharp pawl which may enter between teeth **109** of the bar **104** and ratchet over the backs of said teeth **109**.

It may be observed from FIG. 13 that bar **104** cannot move from left to right across teeth **117** as viewed in FIG. 13, but it can move in the opposite direction, assuming that it is free to oscillate vertically so that tooth **117** may ratchet over teeth **109**.

When it is desired to operate the belt tightener of FIG. 11, bar **104** is raised against the action of tension spring **108** by means of a tab **121** conveniently formed on the end of bar **104** by bending said end at right angles to the general plane of the bar. Said bar **104** is held in a raised position and motor **86** is swung around on pivot pins **43**, **44** until pulley **102** is sufficiently close to pulley **99** to permit passing belt **98** around both pulleys. Latch bar **104** is then dropped into slot **115** and is held there by tension spring **108**. After belt **98** is properly located on pulleys **102** and **99**, motor **86** is pulled back away from plate **96** until the desired tension is established in belt **98**. The motor will be held in the selected position automatically by the latch bar **104** which, as stated above, is so designed that relative movement between bar **104** and tooth **117** is impossible in the direction of loosening the belt. The position the motor occupies when it is ready to operate the drill press is shown in FIG. 12. When it is desired to remove the belt from pulley **102**, latch bar **104** is raised in slot **115** until teeth **109** clear tooth **117**, whereupon motor **86** is again swung toward plate **96** until belt **98** is removed from pulley **102**. With bar **104** still raised so that its teeth are out of contact with tooth **117**, motor

86 may be swung completely free of bar 104 and removed if desired in the manner described below.

The removal of motor 86 from the hinged mounting 35, 36 is effected by loosening wing nut 57 and sliding latch plate 53 to the left as viewed in FIG. 11 until hinge pin 44 is aligned with the larger opening 65 of the keyhole slot 64 as explained in detail in connection with FIGS. 1 to 7 inclusive, and motor 86 is then raised until sides 49 and 50 of hinge member 36 clear hinge pins 43, 44, whereupon motor 86 is then free to be transported to another machine if desired.

When motor 86 is to be used to drive a lathe or the like, wherein it is desirable to have the motor mounted below the bed of the lathe, the hinge mounting construction shown in FIG. 14 may be used. This construction is substantially identical to the one shown in FIGS. 8 to 10 inclusive. Thus the base portion 71 of the mounting is bolted as at 122 to the underside of the sub-base 123 of a lathe, a fragmentary portion 124 of which is just barely visible above bed 123 in FIG. 14. The motor in its entirety as removed from the drill press of FIG. 11, including hinge member 36 and the keeper plate 112, is then hung from hinge pins 79 and 80 in the manner shown in FIG. 14. This is accomplished by simply aligning the free ends of pins 79, 90 with the openings 51 and 52 in hinge member 36 and then sliding said hinge member to the left as viewed in FIG. 14 until latch plate 53 is aligned with the groove in pin 80. Latch plate 53 is then slid over to lock the end of pin 80 in the keyhole slot 64, and wing nut 57 is tightened upon the bar to lock it in place.

In the operation of a lathe sudden heavy loads may be placed upon the driving mechanism for the lathe when a chisel or gouge is allowed to advance too quickly into the wood, or is inclined at the wrong angle with respect to the surface being operated upon. Such sudden loads may cause the motor to ride up on the belt a short distance and then fall, thus creating a very undesirable bouncing condition of the motor. Although the weight of the motor is generally utilized to provide the desired tightness of the belt, means must be provided to restrain the motor against bouncing upon the belt as aforesaid. The restraining means is very similar to the latch mechanism 104 except that the teeth of the latch are reversed to reverse the holding and ratcheting actions of the latch. Thus, angle bracket 106 is secured by bolts 107 to the underside of sub-base 123 and has a bar 125 supported on a pivot pin 126 secured to bracket 106. A tension spring 127, having one end secured to bar 125 and its other end secured to bracket 106, tends to rotate bar 125 counterclockwise about pin 126 as viewed in FIG. 14 and normally holds bar 125 in substantially the position shown in said figure. The right-hand edge region of bar 125 (FIG. 16) is formed with a plurality of teeth 128 having front faces 129, which are substantially normal to the general axis of the bar, and rear faces 130 inclined to the left and downwardly with respect to faces 129 as viewed in FIG. 16.

It is contemplated that bar 125 will cooperate with tooth 118 on keeper plate 112. Said tooth 118 therefore has a front face 131, which is substantially parallel to front face 129 of teeth 128 when bar 125 is in operative position, and sloping rear face 132 which is faired away to provide clearance between teeth 128 and 118 and to permit teeth 128 to ratchet over tooth 118 when bar 125 is moved downwardly relative to said keeper plate 112 as viewed in FIG. 16.

With motor 86 mounted on the base portion 71 in the manner shown in FIG. 14, said motor may be swung around pins 79 and 80 in a clockwise direction as viewed in FIG. 14 to elevate said motor. Latch bar 125 is held to the left of motor 86 while the motor is being elevated, and the belt normally used with the lathe may then be passed around pulley 102. Motor 86 is then allowed to hang freely, ratchet bar 125 meanwhile still being held to the left of motor 86, and when said motor hangs freely on the belt, latch bar 125 is allowed to move to the right into notch 116 to cause teeth 128 to engage tooth 118. It may be observed that motor 86 cannot descend against the tension of the belt and hence the objectionable bouncing condition cannot arise.

When motor 86 is mounted under lathe bed 123 with the lathe belt 133 on one pulley thereof, and ratchet bar 125 engaging keeper 112, the relationship between the parts will be substantially that shown in FIG. 15. After work on the lathe has been completed and it is desired to remove motor 86 to some other tool, said motor is first elevated by rotating it in a clockwise direction as viewed in FIG. 14 about hinge pins 79 and 80 until belt 133 can be moved from pulley 102. Ratchet bar 125 is then pulled to the left until it is free of notch 116, and the motor may then be allowed to swing downwardly about hinge pins 79 and 80 to substantially the position shown in FIG. 14. Wing nut 57 is then loosened, latch plate 53 is moved toward the operator to align the larger portion of the keyhole slot 64 with hinge pin 80 whereupon motor 86 may then be slid laterally to the right until hinge member 36 completely clears hinge pins 79 and 80. Motor 86 is then free of all connection with the lathe and may be removed to another location. Ratchet bar 125 may be released just as soon as motor 86 is swung downwardly so that there is no possible contact between the teeth of latch bar 125 and keeper 112.

It may be apparent that the forms of the invention described above provide a hinged motor mounting which may be readily separated at the hinge by a sequence of operations requiring little or no skill and relatively little physical strength. By making one part of the hinge a permanent adjunct of an electric motor and duplicating the other part of the hinge at a plurality of motor driven tools, a single motor may be used to drive a plurality of distinct and permanently set up tools, thereby eliminating the cost of individual motors for all but one tool and reducing the time and effort required to change from one tool to another. It has been found, for example, that with the hinged mounting of FIGS. 1 to 10, a motor can be disassembled from one tool and assembled on an adjacent tool in as little as eight seconds. The cost of a plurality of motorless tools such as those shown in FIGS. 11 to 16 inclusive, each equipped with one portion of the separable hinge of this invention, and a single motor equipped with the other portion of the hinge, is substantially the same as the cost of a single multi-purpose tool adapted to be changed over into any one of the tools of FIGS. 11 to 16 inclusive by a reconstruction of its parts. It may be appreciated that the working area provided by a plurality of motorless single purpose tools is much greater than the area available for the work in a multi-purpose tool and such single purpose tools are therefore much more satisfactory.

It is understood that the foregoing description is merely illustrative of a preferred embodiment of this invention and that the scope of this invention is not to be limited thereto, but is to be determined by the appended claims.

We claim:

1. In combination, a motor for driving a power tool, a base for said motor, a hinge member secured to said base and a keeper bar secured to said base, said keeper bar comprising a substantially rectangular plate having a pair of notches formed therein and extending inwardly from edge regions on said plate, the bottoms of said notches being adapted to cooperate with ratchets having oppositely directed teeth such that swinging movement of the motor on said hinge member in one direction is prevented by engagement of the bottom of one notch by one ratchet member and swinging movement in the opposite direction is prevented by engagement of the bottom of the other notch by another ratchet member.

2. In combination, a motor for driving a power tool, a base for said motor, a hinge member secured to said base, and a keeper bar secured to said base, said keeper

bar comprising a substantially rectangular plate having one side extending beyond the motor base, said keeper bar having a pair of notches formed in the side extending beyond the motor base, the bottoms of said notches being adapted to cooperate with ratchets having oppositely directed teeth, such that swinging movement of the motor on said hinge member in one direction is prevented by engagement of the bottom of one notch by one ratchet member and swinging movement in the opposite direction is prevented by engagement of the bottom of the other notch by another ratchet member.

3. In combination, a motor for driving a power tool, a base for said motor having rectangularly arranged openings for the reception of fastening means, a hinge member secured to said base over a pair of said openings, and a keeper bar secured to said base over an opposite pair of said openings, said keeper bar comprising a substantially rectangular plate having a pair of notches formed therein and extending inwardly from opposite sides of said plate, the bottoms of said notches being adapted to cooperate with ratchets having oppositely directed teeth such that swinging movement of the motor on said hinge member in one direction is prevented by engagement of the bottom of one notch by one ratchet member and swinging movement in the opposite direction is prevented by engagement of the bottom of the other notch by another ratchet member.

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