May 20, 1941. M. TAIGMAN 2,242,928

SEWING MACHINE CONTROL

Filed Oct. 14, 1938 2 Sheets-Sheet 1

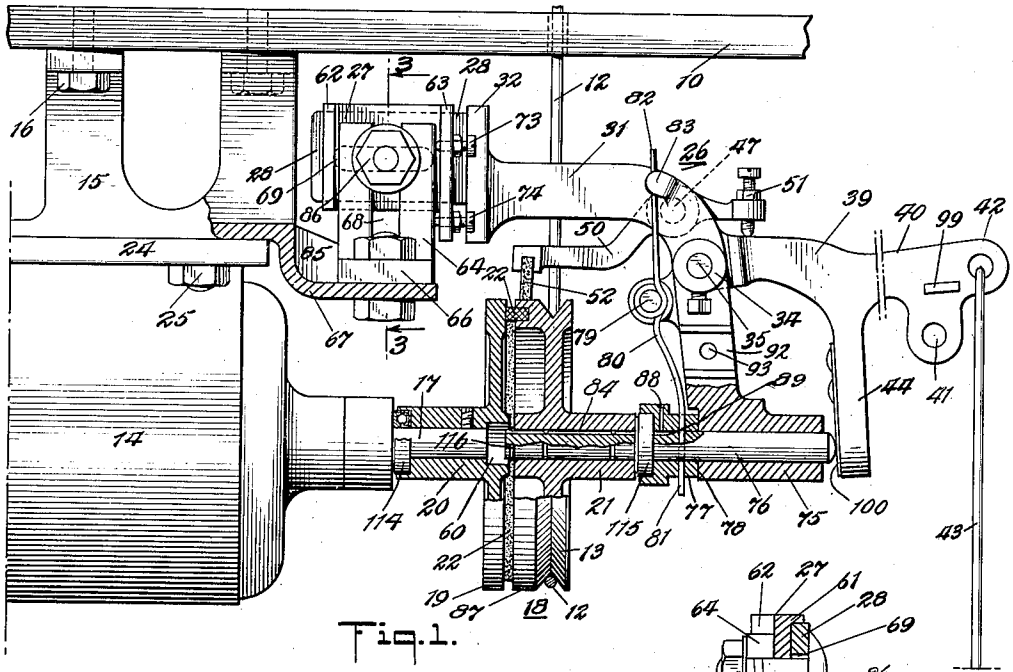


Fig. 1.

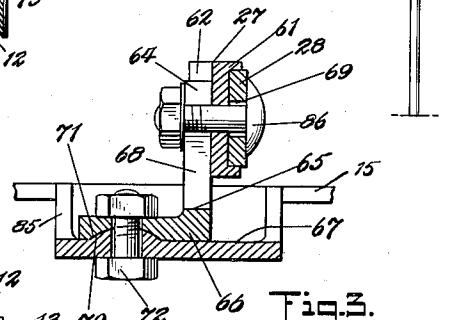


Fig. 3.

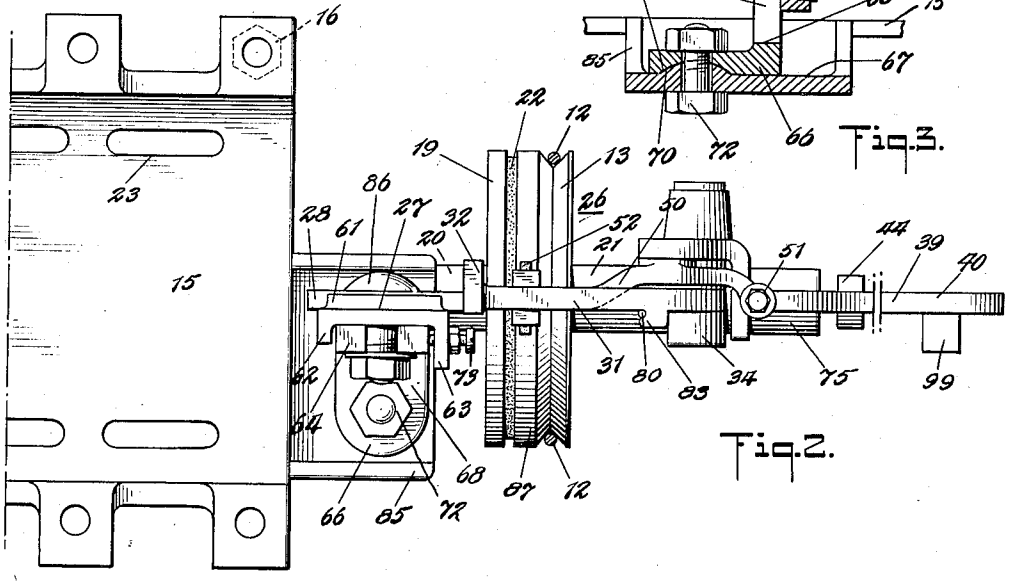


Fig. 2.

INVENTOR
MAX TAIGMAN

BY Orton and Griswold.

ATTORNEYS

May 20, 1941. M. TAIGMAN 2,242,928

SEWING MACHINE CONTROL

Filed Oct. 14, 1938 2 Sheets-Sheet 2

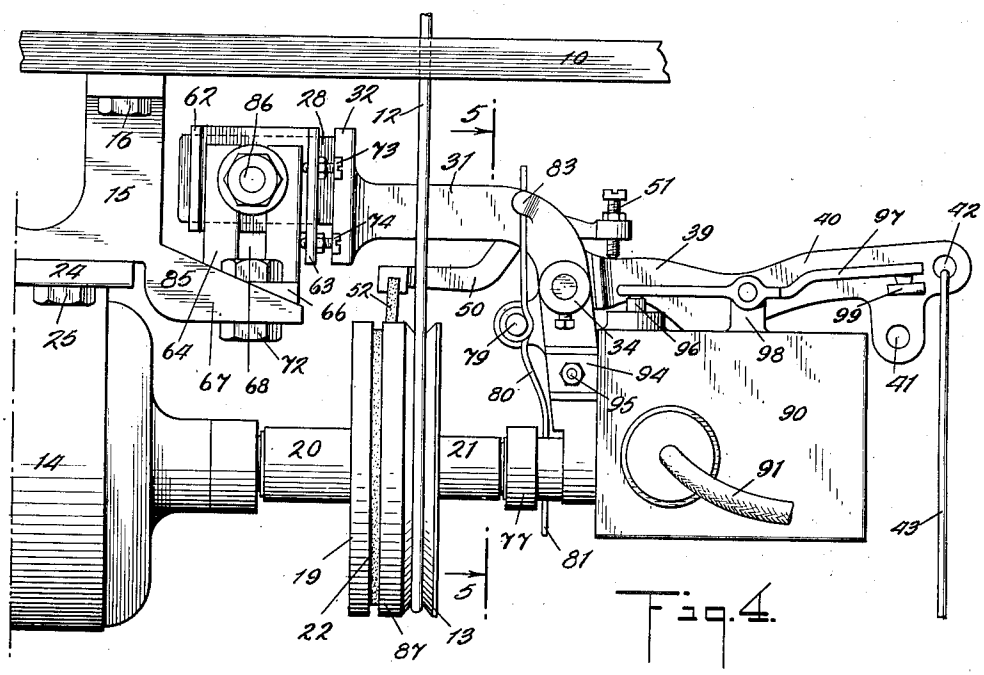


Fig. 4.

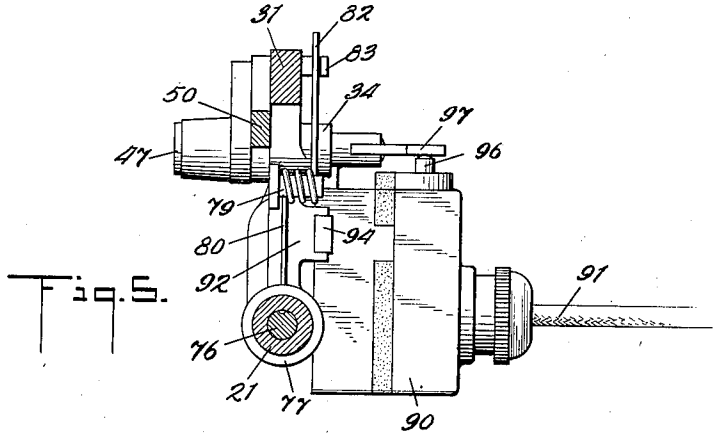


Fig. 5.

INVENTOR
MAX TAIGMAN
BY
Orton and Griswold.
ATTORNEYS

Patented May 20, 1941 2,242,928

UNITED STATES PATENT OFFICE

2,242,928

SEWING MACHINE CONTROL

Max Taigman, New York, N. Y.

Application October 14, 1938, Serial No. 235,027

24 Claims. (Cl. 192—.02)

The invention relates to a control mechanism for a motor driven transmission of the type which is subjected to rapidly re-occurring intermissions in their operation and the invention specifically relates to an attachment to a sewing machine drive. The present disclosure constitutes a development and refinement of the inventions described in applicant's prior patents including No. 1,463,449 of July 31, 1923, No. 1,931,305 of October 17, 1933, and No. 2,096,928 of October 26, 1937, and forms a companion application with Serial No. 235,028, filed October 14, 1938 and entitled "Sewing machine control mounting."

The primary object of the invention in this disclosure as was the primary object in the disclosure of the similar constructions in the above identified patents is to provide a simplified, compact, rugged construction for mounting an electric motor and associated sewing machine driving friction clutch in position relative to its component clutch elements and relative to the control mechanism therefor, so that any of the standard makes of electric motors may be equipped with one of the clutch elements and the clutch as a whole may be mounted in accurately located location to the mechanism for controlling the same and for controlling the brake usual in such constructions.

Another object of the invention is to provide a control mechanism of the type outlined which can be manufactured at low cost and with this objective the disclosure features the fabricating of the device almost entirely from parts which are simple castings substantially free of machine operation and which castings can be assembled by unskilled labor into a commercially perfected form of sewing machine drive control.

Still another object of the invention incidental to the concept of utilizing different makes of motors is to provide an easily manipulated type of universal adjustment for controlling the setting and for obtaining quickly usual frequent resetting of the clutch elements relative to each other under the varying conditions imposed where different makes or sizes of electric motors are used or where wear and other factors incidental to usage modify any previous accurate setting of the clutch elements.

The disclosure in this application relates more particularly to refinements in details which additively contribute to the perfection of the disclosure in applicant's prior patents and application and to the commercially developed construction and details herein disclosed rather than to any radical departure from the disclosure in the above identified patents and application.

The present disclosure therefore features refinements in the organization of basically known parts; in making the parts as separately constructed units; in providing for easy accessibility to adjustable and replaceable parts and in economizing in the number and size of component parts and in the disposition of metal in the structural parts to provide for maximum strength and resistance to distortion while featuring lightness in weight of material.

Still another object of the invention is to provide a form of adjustably mounted main frame which will carry the shiftable element of a clutch and which will provide for a selective accommodation thereto of either one of two types of control levers for actuating the clutch element and for braking the same and which main frame will also be provided with means for accommodating, if desired, an electric switch control unit also operatively connected to be actuated from the control lever.

In connection with one of the forms in which the device may be fabricated, it is an object of the invention to locate the parts such as the pedal manipulated control rod, the control lever actuated thereby and the brake lever actuated by the control lever in an out-of-the-way position so as not to interfere with the leg room of the operator and at the same time to dispose the motor, its associated clutch and the parts for controlling the same into a compact position in juxtaposition to the sewing machine or other form of machine controlled by the mechanism herein featured.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of mechanism embodying the invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawings:

Fig. 1 is a view in front elevation of a preferred embodiment of the invention shown in its operative relation to an electric motor and associated friction clutch driven thereby and which motor is hung from a sewing machine support and in which view part of the bracket and the friction clutch are shown partly in vertical section and the control parts in their normal pulley-braking and clutch inoperative position;

Fig. 2 is a plan view looking down on the showing in Fig. 1;

Fig. 3 is a detail view of the adjusting means shown in front elevation in Fig. 1 and taken on the line 3—3 of Fig. 1 looking in the direction indicated by the arrows;

Fig. 4 is a view similar to Fig. 1 with the several parts shown in side elevation and with a switch box mounted in position to be controlled by the main control lever; and

Fig. 5 is a vertical sectional view taken on the plane indicated by the line 5—5 of Fig. 4.

In the drawings there is disclosed a sewing machine supporting table 10 adapted to receive a sewing machine (not shown) driven by belt 12 which extends through the table 10 and is driven from pulley 13 in turn driven from electric motor 14. An anti-friction device 114 is located between the hub 20 and the frame of the motor 14. The motor and associated control unit hereinafter disclosed depend from a motor bracket 15 secured to the underside of the table by bolts 16. The motor is provided with a driving shaft 17 which carries element 19 of a side face type of friction clutch 18, the companion element of which is formed by the pulley 13. The element 19 constitutes a fixed clutch element and is provided with a long hub 20 secured to the shaft 17 and which hub projects slightly beyond the adjacent end of shaft 17 to provide a cylindrical recess 60 for a purpose hereinafter disclosed. A friction ring 22 is inserted in element 13 and provides a friction drive between clutch elements 19 and 13 when pulley element 13 is moved to the left of the showing in Fig. 1 into its frictional clutching engagement to cause the motor to drive the sewing machine.

The bracket 15 is provided with a plurality of longitudinally extending motor mounting slots 23 so located as to accommodate different size and makes of electric motors and arranged so that the base 24 of a motor may be adjustably mounted on the bracket and shifted in the direction of the lengthened slots, that is, in the direction of the axis of the motor shaft to locate the friction clutch element 19 horizontally relative to its companion and associated control elements of the unit hereinafter described as well as relative to the desired location of the machine driving belt 12. Bolts and nuts 25 are employed to secure the motor to the bracket in its horizontally adjusted position.

The control unit or attachment designated 26 as a whole is designed to be mounted upon the bracket 15 so as to permit universal adjustment in all directions of the unit relative to the bracket and thus relative to the electric motor and its prefixed associated clutch element 19. The unit 26 includes a main supporting frame 31 in the form of a rugged cantilever arm terminating at its upper, supported end in a vertically extending wide rugged bar 32. An upstanding horizontally extending side plate 28 forms an extension from the main frame beyond the bar 32 and is slidably mounted between the horizontal flanges 61 of a channel member 27 and is of some material length so as to resist tendency of the unit to sag relative to its support.

The channel member 27 is provided at its front side with a pair of vertically extending guide flanges 62—63 and within which is loosely guided the upstanding flange 64 of an angled bracket or post 65, the bottom flange 66 of which is supported on a depressed extension 67 projecting from one edge of the bracket 15 and braced therefrom by gussets or flanges 85. The upstanding flange 64 is provided with a vertically extending slot 68; a horizontally extending slot 69 is in the slide plate 28. A single nut bolt 86 passes through both slots and when in tightened position acts to secure the main frame 31 as a whole in both its vertically and horizontally adjusted positions.

It is also suggested that the main frame 31 be mounted so as to be swung relative to the bracket 15 about a vertical axis into any grossly set desired position. For this purpose the extension 67 is provided on its upper face with an integral boss 70 the upper side of which is of spherical form and the underside of the flange 66 is provided with a correspondingly shaped recess 71 fitted over the boss. The boss and the recess portion of the flange 66 are provided with aligned bolt holes and a bolt and nut 72 provides a means for locking the angled bracket or post in any rotated position about the axis of the boss and recess in which the attachment 26 as a whole may be set relative to the bracket 15.

In addition to this gross setting of the main frame 31 relative to the bracket 15, it is herein suggested that means be provided for attaining a relatively vertical adjustment of the channel member 27 on the upstanding flange 64 of the angled post 65 and also to provide for a micromically adjustable setting of the frame 31 and associated parts about a horizontal axis and independently of the setting of the slide members 27 and 28. For this purpose one of the flanges 63 is provided with a pair of vertically spaced apart set screws 73 and 74 which engage the adjacent side of the upstanding flange 64 and the parts are so arranged that by tightening one of the screws and loosening the other at least some slight microscopic raising or lowering of the outer end of the main frame 31 and associated parts is provided. By loosening both of the set screws 73 and 74 the channel member 27 and associated parts may be adjusted vertically on the post and set in such adjusted position by tightening the set screws 73 and 74.

The supporting frame 31 projects horizontally from the bar 32 and has its outer end downturned and terminating in a cylindrical and horizontally extending shaft bearing 75. A clutch element supporting shaft 76 is slidably mounted in the bearing 75 and projects from opposite sides thereof in axial alignment with the motor shaft 17. The combined pulley and coacting clutch element 13 is provided with a long hub 21 freely rotatably mounted on the shaft 76 and at all times in close juxtaposition to its companion 19. The shaft 76 projects slightly beyond the clutch element 13 and is loosely contained in the recess 60. In this way it is possible to adjust the shaft 76 so as to locate the clutch elements accurately in their parallel planes and to provide for any necessary slight angular adjustments of the shafts 17 and 76 as may be attained by the adjustments hereinbefore described in order to accurately set these shafts in coaxial relation.

The main frame 31 is provided on its downturned portion with a boss 34 in which is mounted a short stub shaft 35. A T-shaped bell crank lever 39 has one of its head forming arms journalled for rocking movement on the shaft 35. The other head forming arm constitutes a long horizontally extending arm 40 which forms a clutch and brake actuating arm and is provided with apertures 41 and 42 in which may be selectively engaged a depending pull rod 43 leading

to a foot pedal (not shown) and by means of which the device may be operated by the foot of the operator as is usual in such constructions. The bell crank lever 39 also includes a depending clutch controlling arm 44 for engaging against the adjacent protruding end of the shaft 16 to shift the shaft from right to left of the showing in Fig. 1 and thus to cause the shiftable clutch element 13 to be moved into clutching engagement with its companion 19. Fitted on the shaft 16 between the sliding hub 21 and the shaft bearing 15 is a stop collar 17 normally engaging against a stop face 18 forming the adjacent end of the shaft bearing 15.

The main frame 31 is provided on its inner side with an integral stud 79 and has wrapped about the same the midportion of a retractile spring 80 formed of a single length of wire. The spring has one end 81 intruded radially through the stop collar 17 and through the axis of the shaft 16. The other end 82 of the spring bears against the hook-like side of a stop lug 83 formed integrally and projecting from one side of the frame 31. This spring normally acts to shift the shaft 16 towards the right of the showing in Fig. 1 until stop collar 17 engages against the face 18 provided by the shaft bearing. When so engaged as shown in Fig. 1 there is no axial pressure acting on the clutch element 13 so that normally it is riding loose on its supporting shaft and free of its companion 19.

Pivoted to a pin 47 carried by the frame 31 is the Z-shaped brake lever 50 having one end overlapping the lever arm 39 and provided with a set screw 51 in bearing engagement with the lever so as to partake of its movements and at the same time to locate brake 52 at its opposite end in adjustable relation to the smooth cylindrical band 87 forming an extension from the pulley 13. The portion of the shaft 16 within the outlines of hub 21 is provided with oil grooves 84 which extend into the adjacent side of the stop collar 17 and terminate in advance of the aperture through which extends the spring 80. Stop collar 17 is provided with an oil vent 88 leading into the oil grooves 84 and into the annular oil channels 116 in shaft 16. The oil grooves 84 terminate in spaced relation to the aperture through the stop collar to form a stop 89 which prevents oil from creeping or leaking from the oil grooves out past the lower end of the spring 80.

It is known in this art to associate with the combined clutch and brake elements a control for the electric current supplied to the motor so that the pedal actuated rod 43 will also intercept the current supply to the motor simultaneously with the application of the brake 52 and close the circuit through the motor simultaneously with the closing of the clutch 18. Such an electric control switch is shown by its casing 90 in Figs. 4 and 5 and to which is connected an electric supply lead 91. In order to accommodate such a control switch, if desired by the purchaser, the main frame 31 is provided on one side thereof and just above the shaft bearing 75 as shown in Fig. 1 with a bracket 92 provided with a bolt hole 93. The casing 90 is of standard form and is provided on its rear side with a bar 94 fitted in the casing and demountably secured in place by a bolt 95.

The electric switch within the casing 90 includes a spring pressed control plunger 96 projecting upwardly out of the casing and this in turn is actuated from a switch controlling lever 97 fulcrumed on post 98 projecting upwardly from and forming part of the casing 90. For the purpose of actuating this lever 97 from the pull rod 43, arm 40 is provided with a lateral extension 99 located to underlap the end of the lever opposite the end engaging the plunger.

From this description it will be seen that the combined brake and clutch arrangement shown in Figs. 1 and 2 can be used alone without the electric switch control element but is provided with the bracket 92 and extension 99 in the event it is desired to add thereto the casing 90 and associated parts.

As the control arm 44 is subjected to considerable wear in use, it is suggested that a wear plate 100 be replaceably fitted to the portion of the arm 44 which engages the end of the sliding clutch shaft 16.

Referring first to the disclosure in the Figs. 1 and 4 showings, and assuming that the bracket 15 is properly located relative to the sewing machine, the electric motor 14 properly located in position on the bracket with its friction clutch element located approximately in position, then, by refined adjustment of the unit as a whole the several parts are accurately located relative to each other so as to bring the shafts 17 and 16 in coaxial relation and the clutch elements properly located in parallel planes. To operate the device the operator presses conventionally on the foot pedal which lowers rod 43, shifts the arm 44 to the left of the showing in Fig. 1 and thus causes it to bear on the shaft 16 which in turn shifts the stop collar 17 into bearing engagement with the adjacent end of the hub 21 of the floating clutch element so as to move the same into clutching engagement with its companion 19 on the motor shaft 17. In this way the clutch becomes active and the motor 14 drives the sewing machine through the belt 12. Simultaneously with this action of the lever 39, the brake 52 is elevated slightly out of its clutching position with the pulley, or rather, the lowering of the control arm releases pressure on the brake so that it simply hangs idly appoximately in position but without exerting any braking effect. During this shifting of the floating clutch element tension is stored in the spring 80 so that when the foot pressure is released on the lever 39, the spring tension is available to shift the shaft from its operative clutch actuating position back into its normally inoperative position shown in Fig. 1 and at the same time this spring acting through the control lever 39 elevates the right hand end of the brake lever thus pressing the brake head 52 back into its clutching engagement with the pulley. In this way the pulley is braked as soon as it is disengaged from its clutching position.

Referring to the disclosure in Figs. 4 and 5, it will be understood that the switch mechanism for controlling the current supplied to the motor is contained in the casing 90 and is provided with the necessary attaching means for engaging the bracket 92 prepared to receive the same as shown in Fig. 1. Likewise the extension 99 of Fig. 1 is designed to permit lever 97 to bear on the same when the casing 90 is properly located and as the lever 97 simply bears on the extension 99 without other connection no special tools are necessary to mount the electric control in position on the main control lever. From this construction it is seen that it is simply necessary to locate bolt 95 in bolt hole 93 to mount the casing in place with the parts so located as shown in Figs. 4 and 5. It will be understood that in addition to the shifting of the clutch

and the braking action heretofore described that the lowering of the pull rod 43 will additionally permit plunger 96 to elevate the left hand side of lever 97 and through mechanism forming no part of the present disclosure supply electric current to the motor 14. Likewise releasing the foot pedal pressure on the rod 43 permits the same to be elevated thus acting through extension 99 to elevate the right hand side of lever 97 depressing the left hand side and with its plunger 96 to intercept the current flow to the motor as is well known in this art.

It is particularly noted that shafts 17 and 76 are supported independently of each other and the several adjusting means herein featured permit of an accurate relative adjustment between the shafts to insure the coaxial setting of the two clutch elements of the side face clutch 18. The shiftable clutch element 13 is free to turn on its supporting shaft 76 while in both its clutching and free riding positions but the shaft itself does not rotate. It is locked against rotation by means of the spring end 81. Shaft 76 is simply free to shift axially for the necessary distance to cause the clutch elements to contact or release themselves. As the shaft is not rotating in its long bearing 75 this tends to minimize frictional resistance to the rotary movement of the slidable clutch element 13 and further the presence of the anti-friction means at 115 at the pushed end of the clutch element 13 further reduces any tendency of the clutch element from being braked by the shifting stop collar 77 during the instant of time when the element 13 is beginning to pick up the speed of the motor driven clutch element 19.

It is a feature of this disclosure that practically all of the parts are made of simple castings fastened together by conventional forms of bolts. Machining has practically been eliminated as the rough castings can be formed sufficiently true to their necessary dimensions. Even the shaft and clutch elements can be purchased in the open market as standard parts. All the necessary adjustments to locate the clutch parts in their necessarily accurate relation can be provided by the adjustment elements herein featured and without necessity of providing the accurately machined parts heretofore necessary with known structures in this art.

I claim:

1. In a device of the class described, the combination of a bracket, a motor mounted thereon and provided with an element of a friction clutch, a boss integral with the bracket and having its upper side in the form of a portion of a sphere and having a bolt hole extending vertically therethrough, an angle bracket having a recess in the underside of a horizontal flange and fitted over the boss to provide for rotary movement of the angle bracket about a vertical axis, said flange provided with a bolt hole extending axially through the recess and aligned with the bolt hole in the bracket, a bolt and nut form of locking means passed through the aligned bolt holes, the other and vertical flange of the angle bracket provided with a vertically extending slot, a flanged channel member adjustably mounted for vertical movement on said other flange, a main frame provided with a slide plate forming an extension slidably mounted in the flanged channel member for horizontal movement, a shaft slidably carried by the main frame, a clutch element loose on the shaft and adapted to coact with the first named clutch element, a stop collar pinned to the shaft, a retractile spring acting on the shaft, and a manually actuated lever journalled on the main frame and operatively connected to the shaft to move the clutch element into a clutching position against the tension of said spring.

2. In a device of the class described, the combination of a bracket, a motor hung from the bracket, a main frame supported from the bracket, a clutch having one element secured to and supported from the motor shaft, and a pulley constituting the coacting element of the clutch journalled for rotary and axial movement in and supported from the main frame, said pulley provided with a cylindrical extension, a brake fulcrumed on the main frame and having a braking face engaging said extension to brake the pulley, a manually actuated lever fulcrumed to the main frame and operatively connected to the pulley to move the clutch into clutching position, a spring normally acting through the lever to force the brake into braking engagement with the extension from the pulley when the clutch is in unclutched position, and universally adjustable means between the main frame and bracket for securing the clutch elements in parallel planes with their axes in relative coaxial relation and means for setting the brake relative to the extension from the pulley element of the clutch.

3. In a device of the class described, the combination of a bracket provided with means for mounting a motor thereon, a main frame, an element of a clutch carried by the main frame adapted to coact with its companion carried by the motor, means for adjusting the frame relative to the bracket, said means including setting means between the frame and bracket for securing the frame in a plurality of positions rotative about a vertical axis and also including a pair of relatively shiftable elements secured together in adjustable relation at right angles to each other for shifting the frame vertically and horizontally relative to the bracket in addition to the rotative adjustment about the vertical axis, and micrometrical means between the main frame and said adjusting means for shifting the frame slightly in a horizontal plane.

4. In a device of the class described, the combination of a bracket provided with means for mounting a motor thereon, a main frame, an element of a clutch carried by the main frame adapted to coact with its companion carried by the motor, means for adjusting the frame relative to the bracket, said means including setting means between the frame and bracket for securing the frame in a plurality of positions rotative about a vertical axis and also including a pair of relatively shiftable elements secured together in adjustable relation at right angles to each other for shifting the frame vertically and horizontally relative to the bracket in addition to the rotative adjustment about the vertical axis.

5. In a device of the class described, the combination of a motor having an element of a clutch carried by the motor shaft, a supporting bracket for the motor, a unit adjustably mounted on the bracket and including a bearing in axial alignment with the motor shaft, a clutch element supporting shaft shiftable axially in the bearing, a coacting clutch element constituting a pulley axially shiftable with said supporting shaft into and from clutching engagement with the first named clutch element, a stop collar on the supporting shaft, a spring carried by the bracket

and having one end extending through the collar and acting on the supporting shaft to shift the coacting pulley clutch element into an unclutched position, a manually actuated lever acting on the supporting shaft to shift the pulley clutch element into clutching position and a brake for the pulley clutch element.

6. In a device of the class described, the combination of a motor, a clutch element secured to the motor shaft, a frame including a bearing, a clutch element supporting shaft slidably mounted in the bearing in axial alignment with the motor shaft, a coacting clutch element loose on the supporting shaft, a stop collar on the supporting shaft between the coacting clutch element and the bearing, a spring extending through the collar and supporting shaft and tending normally to shift the supporting shaft in a direction away from the clutch, and manually actuated means acting on the supporting shaft for shifting the collar against the resistance of said spring into pressing engagement with the coacting clutch element to slide the same along the supporting shaft and into clutching engagement with its companion on the motor shaft.

7. In a device of the class described, the combination of a main frame, means at one end thereof for supporting the same in position, a shaft bearing formed at the opposite end, one end of the bearing forming a collar stop face, a shaft slidably mounted on the bearing and extending beyond opposite ends thereof, a clutch element provided with a long hub freely rotatable on one end of the shaft, a collar on the shaft between the clutch element and stop face and a spring carried by the frame and having one end extending through the collar and shaft and tending normally to shift the collar into engagement with the stop face and a lever acting on the other end of the shaft for shifting the collar away from said face and engaging the clutch element to shift the same along the shaft into a clutching position against the resistance of said spring.

8. In a device of the class described, the combination in axial alignment of a motor shaft, a bracket for supporting the same, an element of a friction clutch provided with a hub extending beyond the motor shaft, a clutch element supporting shaft having an end intruded loosely in the hub of the clutch element, a coacting clutch element loose on the supporting shaft, a bearing for the supporting shaft, a main frame for supporting said shaft and a stop collar on the supporting shaft between the coacting clutch element and the bearing, a spring engaging the collar and tending normally to shift the supporting shaft in a direction away from the clutch and a lever acting on the other end of the supporting shaft to shift the coacting clutch element into clutch relation wtih its companion and means between the bracket and main frame for setting the supporting shaft in position to form in effect a continuation in axial alignment with the motor shaft.

9. In a device of the class described, the combination of a motor having an element of a clutch secured to and supported by the motor shaft, a bearing independent of the motor in axial alignment with the motor shaft, means for adjusting the bearing relative to the motor shaft and its clutch element to bring the same into coaxial relation, a clutch element supporting shaft mounted in the bearing for movement axially of the motor shaft, a coacting clutch element carried by the supporting shaft and free to rotate thereon, a stop collar secured to the supporting shaft normally independent of the coacting clutch element and when shifted in one direction acting to move into bearing engagement with the coacting clutch element to bring the clutch into clutching condition, manually actuated means acting on the supporting shaft for moving the same in said direction to cause the stop collar to move the coacting clutch element into clutching engagement with its companion on the motor shaft, and resilient means acting directly in the stop collar and tending to move the collar away from the coacting clutch element to release pressure on the coacting clutch element and thus permit it to float axially free on the shaft and assume an unclutched position relative to its companion.

10. In a device of the class described, the combination of a motor bracket for supporting an electric motor provided with a clutch element mounted on the motor shaft, a control unit adjustable on the bracket relative to the clutch element, said unit including a main frame depending from the motor bracket, a shaft bearing forming the lower end of the main frame, a supporting shaft slidably mounted in said bearing, a coacting clutch element constituting a pulley loose on the supporting shaft for rotation about the axis of the motor shaft and free to move axially with the shaft into and out of clutching engagement with its companion, a manually actuated control lever fixedly fulcrumed to the main frame and having a depending clutch actuating arm fixed for movement in the plane containing the axis of the motor shaft and normally bearing lightly on one end of the supporting shaft and adapted to shift the same axially and with it the coacting pulley clutch element into clutching engagement with its companion, a brake actuated solely by the control lever and in one position engaging the pulley to brake the same and a spring engaging the supporting shaft tending to shift the same into bearing engagement with the control lever, and normally acting through the control lever for forcing the brake into its braking position.

11. In a device of the class described, the combination of a bracket, a motor hung from the bracket, an element of a clutch secured to the outer end of the motor shaft, said element including a hub projecting beyond the end of the motor shaft to provide an exposed recess, a main frame adjustably mounted on the bracket and having an end depending from the bracket, a clutch element supporting shaft in axial alignment with the motor shaft having one end slidably mounted in said depending end and having its other end loosely intruded into said recess and in spaced relation to the hub on the motor shaft so as not to interfere with any necessary angular adjustment between the main frame and bracket to effect an accurate setting of the supporting shaft in axial alignment with the motor shaft, a coacting clutch element freely rotatable on the supporting shaft and manually actuated means fulcrumed to the main frame for shifting said coacting clutch element into clutching engagement with its companion on the motor shaft.

12. In a device of the class described, the combination of a plurality of castings free of machine work and comprising a motor supporting bracket provided with slots for receiving the bolts for mounting the motor thereto, an angled bracket mounted thereon for rotary movement about a vertical axis, a pair of slide elements guided for rel-

ative movement at right angles to each other and collectively mounted for vertical slidable movement on the angled bracket, a bolt for connecting the angled bracket to the motor bracket, another bolt for connecting the slide elements to each other and for securing the same as a unit to the angled bracket, and another casting free of machining adjustably secured to one of the slide elements and constituting a support for an element of a friction clutch, and said support provided with means integrally cast therewith providing a spring mounting.

13. In a device of the class described, the combination of a plurality of castings free of machine work and comprising a motor supporting bracket provided with slots for receiving the bolts for mounting the motor thereto, an angled bracket mounted thereon for rotary movement about a vertical axis, a pair of slide elements guided for relative movement at right angles to each other and collectively mounted for vertical slidable movement on the angled bracket, a bolt for connecting the angled bracket to the motor bracket, another bolt for connecting the slide elements to each other and for securing the same as a unit to the angled bracket, and another casting free of machining adjustable secured to one of the slide elements and constituting a support for an element of a friction clutch.

14. In a device of the class described, the combination of a plurality of castings free of machine work and comprising a motor supporting bracket provided with slots for receiving the bolts for mounting the motor thereto, an angled bracket mounted thereon for rotary movement about a vertical axis, a pair of slide elements guided for relative movement at right angles to each other and collectively mounted for vertical slidable movement on the angled bracket, a bolt for connecting the angled bracket to the motor bracket, and another bolt for connecting the slide elements to each other and for securing the same as a unit to the angled bracket.

15. In a device of the class described, the combination of a motor supporting bracket provided at one edge with a flanged extension, an angled bracket adjustably mounted on the extension for movement about a vertical axis, a channel member provided on one face with vertically extending flanges in which an upstanding flange of the angled bracket is contained, said channel provided on the opposite face with horizontally extending flanges, a clutch element supporting bracket provided with an extension forming a slide plate fitted between said horizontally extending flanges and a single bolt passed through the slide plate, the channel member and the angled bracket to secure them in their relatively adjusted positions.

16. In a device of the class described, the combination of a motor supporting bracket provided at one edge with a flanged extension, an angled bracket adjustably mounted on the extension for movement about a vertical axis, a channel member provided on one face with vertically extending flanges in which an upstanding flange of the angled bracket is contained, said channel provided on the opposite face with horizontally extending flanges, a clutch element supporting bracket provided with an extension forming a slide plate fitted between said horizontally extending flanges and a single bolt passed through the slide plate, the channel member and the angled bracket to secure them in their relatively adjusted positions, and means between the angled bracket and one of the vertical flanges on the channel member for adjusting the clutch supporting bracket relative to the angled bracket in relative vertical relation.

17. In a device of the class described, the combination of a motor supporting bracket, an angled bracket mounted thereon for rotative adjustment about a vertical axis, means for locking the angled bracket in its rotative adjusted position on the motor bracket, a channel member guided for vertical movement on the angled bracket, a main clutch element supporting frame provided with a horizontally extending slide plate guided for horizontal movement on the angled bracket, and means for securing the slide plate to the channel member and for securing the channel member to the angled bracket.

18. In a device of the class described, the combination of a motor supporting bracket, a clutch element supporting shaft, a main frame for supporting the shaft, clutch controlling means carried by the main frame, means for mounting the main frame on the motor supporting bracket for universal adjustment relative thereto, said means including elements for securing the bracket and frame in rotative adjustable position about a vertical axis, and also including elements for securing the bracket and frame in both vertical and horizontally adjusted relation.

19. In a device of the class described, the combination of a casting free of machining forming a motor supporting bracket, a motor suspended therefrom, means for securing the motor in adjustable relation in the direction of its motor shaft, a casting free of machining forming a main bracket and including a shaft bearing, means for aligning the shaft bearing with the motor shaft, another casting free of machining forming a clutch control lever fulcrumed to the main bracket, a set of castings free of machining and including slide elements relatively adjustable on each other both vertically and horizontally for mounting the main bracket in adjusted position on the motor bracket and set screws engaging the slide elements for securing them in their set positions.

20. In a device of the class described, the combination of a clutch including an axially fixed element, and a shiftable element, a shaft on which the shiftable element is mounted for rotary movement, a bearing for the shaft, manually actuated means for moving the shiftable element into clutching engagement with the first named element, said manually actuated means including a stop collar, the portions of the shaft on which the shiftable element is mounted provided with an oil groove and said stop collar provided with an oil vent leading into said groove, the portion of the collar between the groove and the bearing snugly engaging the portion of the shaft encircled thereby to prevent oil from creeping out past the collar.

21. In a device of the class described, the combination of a clutch including an axially fixed element, and a shiftable element, a shaft on which the shiftable element is mounted for rotary movement, manually actuated means for moving the shiftable element into clutching engagement with the first named element, said manually actuated means including a stop collar, the portions of the shaft on which the shiftable element is mounted provided with an oil groove and said stop collar provided with an oil vent leading into said groove and a spring passed through the stop collar and shaft to secure one to the other in spaced relation to the groove, the

portion of the collar through which the spring passes forming a stop to prevent oil from leaking out of the grooves in the direction past the spring.

22. In a device of the class described, the combination with a motor bracket, a motor suspended therefrom and provided with an element of a friction clutch, of a main supporting frame provided with a shaft bearing, means for adjusting the frame on the motor bracket, a clutch controlling shaft slidable in the bearing, a coacting element of the clutch rotatable on said shaft, a control lever fulcrumed to the frame and provided with an arm for shifting the shaft, an electric control including a casing demountably secured to the frame adjustable therewith independently of the motor bracket and including a plunger and a plunger lever for actuating the plunger, and said control lever provided with a lug for engaging the plunger lever when the casing is in place on the frame.

23. In a device of the class described, the combination of a motor shaft provided with an element of a friction clutch, a shaft mounted in alignment with and independent of the motor shaft, a bearing in which the shaft is mounted for axial movement, a coacting clutch element mounted for free rotary movement on the end of the shaft adjacent the motor shaft, said coacting clutch element having a limited axial movement on the shaft to and from its clutching engagement with the clutch element on the motor shaft, means on the shaft and movable axially therewith for engaging the coacting clutch element to move the same into its clutching engagement and a spring acting on said means for shifting the same in a direction away from the coacting clutch element thereby to permit it to rotate free of said means and said spring acting on the shaft for holding the same against rotation.

24. A power transmission mechanism comprising a frame, a shaft slidably mounted in the frame and provided with a clutch pressing member, a clutch pulley rotatably mounted on the shaft, means mounted on the frame for moving the shaft endwise to cause said member to bear on the clutch pulley to force the same into an active position, and a spring constituting a means for holding the shaft against rotation, acting on the shaft for moving the same in a contradirection and acting to shift the clutch pressing member away from the pulley to permit it to turn idly on the shaft.

MAX TAIGMAN.