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P. SCHULDER

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POWER TRANSMITTER

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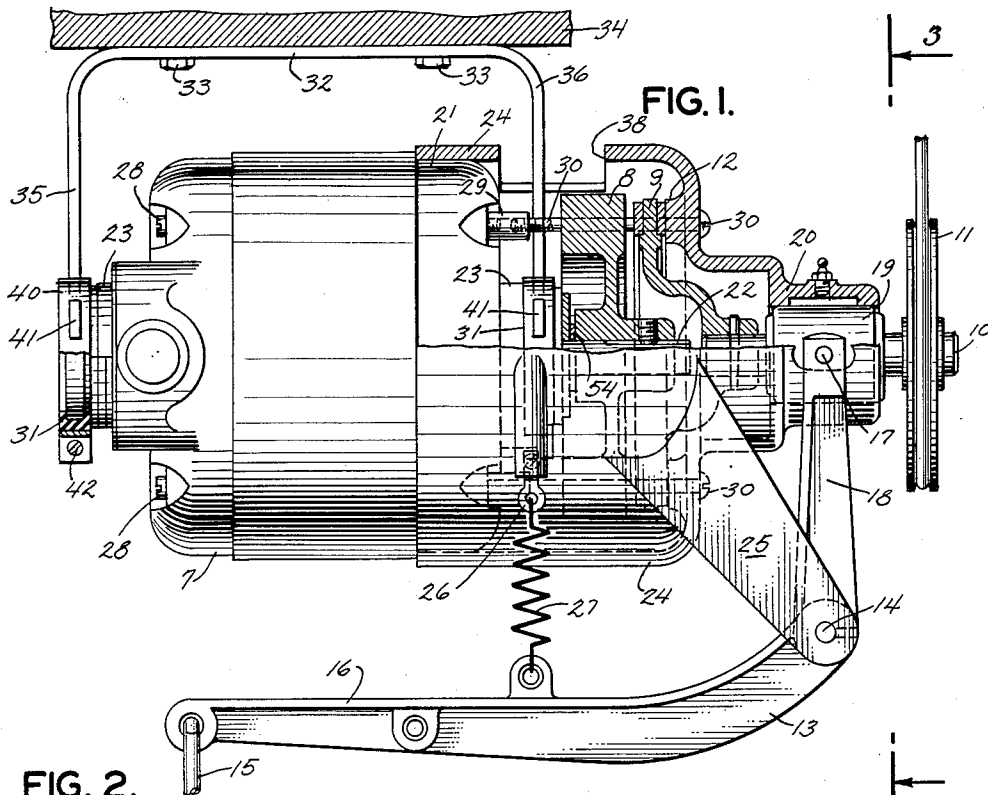


FIG. 2.

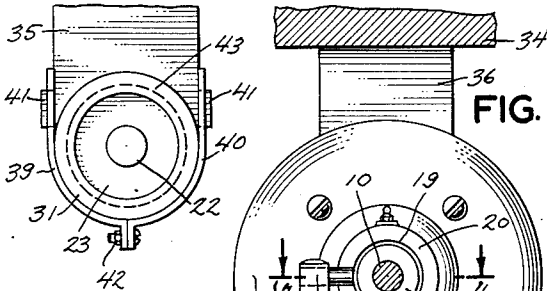


FIG. 3.

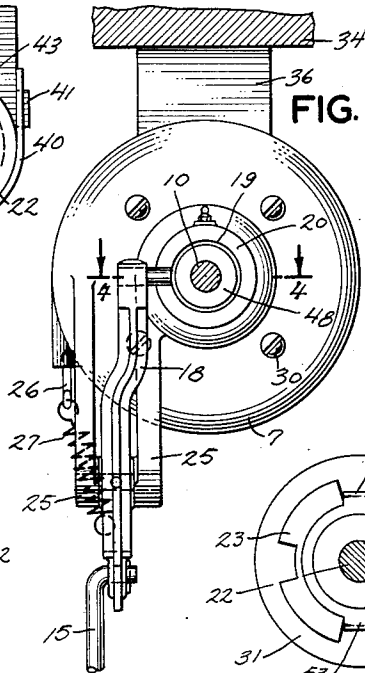


FIG. 4.

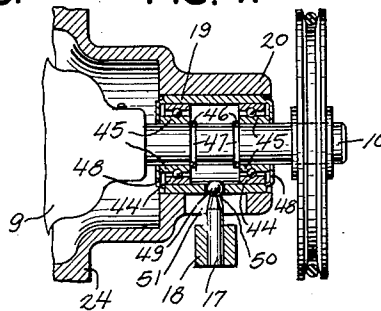


FIG. 5.

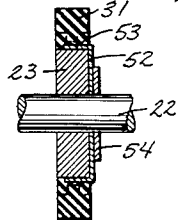
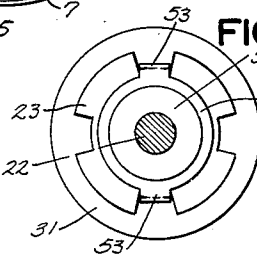


FIG. 6.



INVENTOR.
PAUL SCHULDER

BY

Philip S. McJeans
ATTORNEY

UNITED STATES PATENT OFFICE

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POWER TRANSMITTER

Paul Schulder, Brooklyn, N. Y., assignor to Consolidated Sewing Machine & Supply Co., Inc., New York, N. Y., a corporation of New York

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2 Claims. (Cl. 172—36)

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The invention here disclosed relates to power transmitters for sewing machines and the like.

Objects of the invention are to provide a transmitter of simple construction, few parts and low cost, which will not require any special attention or servicing and which will be quiet running and free from vibration.

Particular objects of the invention are to provide the transmitter in a unit form of construction including clutch, brake and treadle lever, attachable as such to an electric motor or like power source.

Another special object of the invention is to provide a simple and efficient vibration-free mounting for the motor which can be quickly and easily attached to the work table or other support with which the transmitter is to be used.

Another special object of the invention is to arrange the treadle lever so that a more nearly direct vertical pull may be applied thereto for effecting control of the clutch and brake from the usual foot treadle.

Other desirable objects and the novel features of construction, combination and relation of parts through which the purposes of the invention are attained are set forth or will appear in the course of the following specification.

The drawing accompanying and forming part of the specification illustrates a present commercial embodiment of the invention. Structure, however, may be modified and changed as regards the immediate illustration, all within the true intent and scope of the invention as herein-after defined and claimed.

Fig. 1 in the drawing is a broken and part sectional front elevation of one of the new power transmitters;

Fig. 2 is a broken end elevation of one of the resilient motor mounts;

Fig. 3 is a broken vertical sectional view as on substantially the plane of line 3—3 of Fig. 1;

Fig. 4 is a broken horizontal sectional view as on substantially the plane of line 4—4 of Fig. 3;

Fig. 5 is a broken sectional detail; and

Fig. 6 is an end view of the thrust washer combined with one of the vibration damping cushions.

In Fig. 1 the transmitter is shown as comprising an electric motor 7 equipped with a combination clutch and flywheel 8 cooperative with a driven clutch member 9 on shaft 10, having the pulley 11 for operating the sewing machine or other mechanism.

Cooperation of the driven clutch element 9 with the driving clutch member 8 or with the stationary braking surface 12, is controlled in the illustration by an angled treadle lever 13 pivotally supported intermediate its ends at 14 and having a treadle pull rod 15 connected with the lower, laterally extending arm 16 of the same

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and having a shifting pin 17 on the upper end of the upstanding arm 18 of the same in engagement with a bearing sleeve 19 for the driven shaft slidably mounted in a fixed bearing hub 20.

5 The motor may be of more or less standard construction but in particular it is shouldered at one end at 21 concentrically with the motor shaft 22. Also, it is equipped with substantially concentric bearing hubs 23 about the motor shaft.

10 The purpose of the shoulder 21 is to provide a concentric seat for the special end cap or hood 24 which forms a mounting or housing for the several power and braking elements of the transmitter.

15 Thus, this special end housing carries the stationary brake element 12, the hub 20 in which the bearing sleeve 19 is slidably mounted, the dependent bracket arms 25 between which the control lever is pivotally mounted and the anchorage 26 for the spring 27 which holds the horizontal arm of the lever normally lifted with the movable clutch element engaged with the stationary brake surface.

25 The assembly or attachment described may be handled and applied as such over the shouldered end of the motor and secured through the medium of the bolts 28 usually employed for securing the frame sections of the motor together. This is made possible by the provision of special substitute elongated screw studs 29 engaged over the ends of these bolts in place of the usual securing nuts and receiving at their outer ends the screws 30 extended inward through the housing 24 in line with the motor frame bolts 28.

35 The motor is supported in a balanced, vibrationless, quiet, free-running condition, in the present invention, through the medium of resilient vibration damping cushions 31 about the bearing hubs 23 gripped in the ends of a bracket or mounting yoke 32 secured at 33 to the underside of the table or other support 34, and having spaced, substantially parallel side arms 35, 36, arched about the ends of the motor. The inner one of these arms, 36, is shown as extending freely through a slot 38 in the top of the cap or housing member 24 so as to avoid any transmission of vibration from the housing member or motor to the supporting bracket.

40 The vibration damping cushions 31 are shown as gripped to the supporting arms 35, 36, of the mounting bracket 32 by means of encircling straps or links 39, 40, caught over projecting lugs 41 on the sides of the arms 35, 36, and adjustably secured together at the bottom by clamping screws 42. The ends of the arms 35, 36, are indicated at 43, Fig. 2, as concaved at 43 to accommodate the upper halves of the vibration damping cushions 31 so that with tightening of the strap closing screws 42 the cushions

will be compressibly held in the ends of the mounting bracket.

The supporting of the motor by gripping it at opposite ends, concentric with the shaft, balances and steadies the running of the motor and the resilient cushions insulate it against vibration in this balanced condition so that the operation is quiet and smooth.

Quiet, free-running operation of the driven or pulley shaft 10 is assured, in the illustration, by journaling it in spaced ball bearings shown in Fig. 4, as outer race rings 44 seated in opposite ends of the sliding bearing sleeve 19 and companion inner race rings 45 held positioned against the split rings 46 in grooves 47 in the shaft by the thinned, inwardly spun, annular end flanges 48 of the bearing sleeve. By engagement with the inner race rings the inturned flanges 48 close and practically seal the ends of the bearing sleeve to hold lubricant and enable this double bearing to continue in operation over long periods of use without requiring any servicing or attention.

The shifting pin 17 is shown as having a ball point 49 closely entering a circular opening 50 in the side of the bearing sleeve to hold the bearing sleeve against rotative movement as well as to impart the desired longitudinal shifting movements to the same.

To locate the control lever 13 in position where as nearly as possible vertical pull may be applied thereto, the pivotal mounting arms 25 are shown in Figs. 1 and 3 as offset forwardly of the motor axis, thus to bring the end of lever 13 more nearly over the plane of the foot treadle which is connected with the pull link 15.

Figs. 3 and 4 show how the bearing shifting pin 17 extends rearwardly from the upper end of the lever arm 13 in through an enlarged slot 51 in front of the stationary hub 20 in which the bearing sleeve is slidably supported.

In addition to the important advantages of quietness and smooth, free-running characteristics, the invention provides a particularly simple and inexpensive form of construction which can be readily combined with existing motor constructions.

While the yoke-shaped supporting bracket is shown engaged at its opposite ends with opposite end portions of the motor, it is contemplated that this yoke may be lengthened to extend completely over the motor and the power transmitter housing and be connected, through the vibration damping cushions, with the motor at one end and with the transmitter housing at the opposite end.

To take up end thrust on the motor shaft occasioned by engagement of the driven with the driving clutch element, there is provided in the illustration, a special clutch washer 52 about the motor shaft at the end of the right-hand bearing hub 23 secured non-rotatably in this position by means of extended and angularly bent lugs 53 at diametrically opposite points forced into or beneath the rubber or other resilient material of the vibration damping ring or cushion 31 at that end of the motor. Between this and the face of the flywheel clutch element 8 a smaller, loose washer 54 may be introduced, as indicated in Fig. 1.

The companion stationary and loose washers 52, 54, should be of different materials, such as

steel for the larger, fixed washer 52, and bronze for the smaller, loose washer 54.

What is claimed is:

1. A transmitter of the character disclosed comprising a motor having a projecting hub at one end, a resilient vibration damping cushion engaged about said hub, a motor supporting bracket engaged with said cushion, a thrust washer at the end of said hub and having an angularly extended lug engaged with the material of said resilient vibration damping cushion and thereby held against rotation, a driving clutch member opposed to said thrust washer and a driven clutch element engageable with said driving clutch member in a direction to thrust the latter toward said stationarily held thrust washer, and a rotatable thrust member interposed between said driving clutch element and stationary thrust washer.

2. A power transmitter as herein disclosed comprising an electric motor having a shaft carrying a driving clutch element, a housing secured over the end of said motor and forming a unitary extension of the same, said housing having an elongated bearing in line with the motor shaft and provided with a longitudinally extended slot in the side of the same, a sleeve slidably operable in said bearing and having an opening mid-length in line with the slot in said elongated bearing, ball bearings fixed in spaced relation in the opposite ends of said sleeve, a shaft journaled in said spaced ball bearings and rotatably held thereby so as to be shiftable with said sleeve toward and away from said motor shaft, a transmission pulley on the outer end of said shiftable shaft, a driven clutch element on the inner end of said shiftable shaft cooperable with said driving clutch element on the inward movement of said bearing sleeve, braking surface on the interior of said housing opposed to said driven clutch element and engageable thereby on the outward shifting movement of said bearing sleeve, a bracket on said housing, a shift lever pivotally supported on said bracket, a pin carried by said lever projecting laterally through said slot in the elongated bearing into said opening in the slidable bearing sleeve, a spring connected with said lever for normally yieldingly holding the lever in position with the sliding bearing sleeve in the outward shifting position, vibration damping cushions at opposite end portions of said motor and an inverted U-shaped supporting yoke arched over said opposite end portions of said motor and having its opposite ends connected with said cushions to thereby support said complete motor clutch-brake and shift lever as a single unit in vibration damped relation.

PAUL SCHULDER.

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