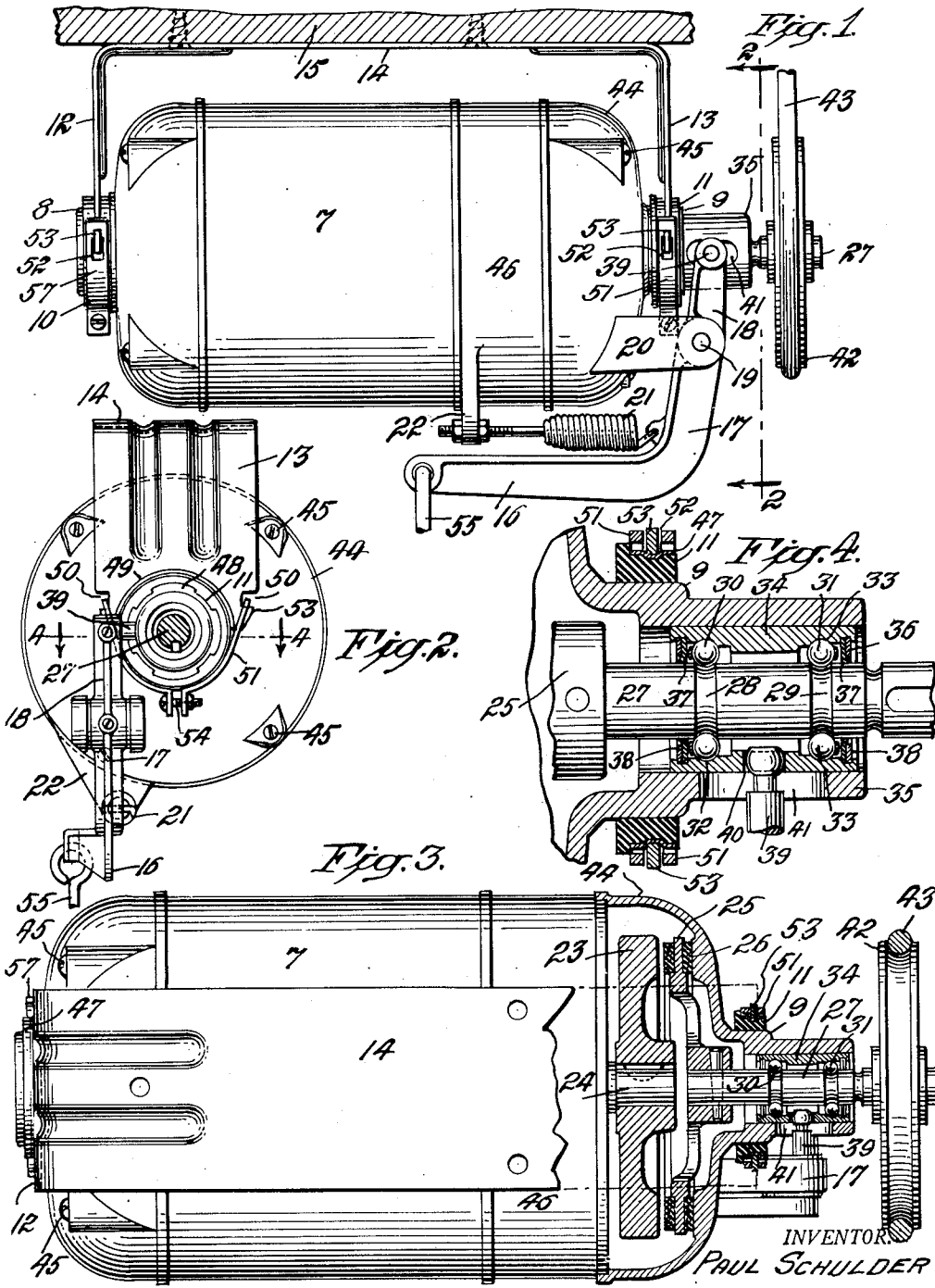


Sept. 2, 1952

P. SCHULDER  
POWER TRANSMITTER  
Filed Nov. 9, 1950

2,609,075



INVENTOR  
PAUL SCHULDER  
BY  
Philip S. W. Dean  
ATTORNEY

# UNITED STATES PATENT OFFICE

2,609,075

## POWER TRANSMITTER

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

Application November 9, 1950, Serial No. 194,920

2 Claims. (Cl. 192-18)

1

The invention disclosed herein relates to power transmitters for sewing machines and the like, and is in the nature of an improvement on the transmitter disclosed in copending application Serial No. 81,643, filed March 16th, 1949, issued as Patent No. 2,544,768, March 13th, 1951.

Objects of the present invention particularly are to provide a cushion mounted transmitter completely enclosed and protected against dust, lint, threads and the like, which will be small in size and compact in character so as not to take up much space below the table and be entirely out of the way of the operator.

Other important objects of the invention are to reduce cost of construction and simplify assembly and mounting of the unit.

The foregoing and other desirable objects are attained by the novel features of construction, combination and relation of part as set forth in the following specification.

The drawing accompanying and forming part of the specification illustrates a present practical embodiment of the invention. Actual 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 side elevation of the transmitter as mounted in operating position, with parts broken away and shown in section;

Fig. 2 is an end and vertical cross sectional view as taken on substantially the plane of line 2-2 of Fig. 1;

Fig. 3 is an enlarged plan and broken sectional view;

Fig. 4 is a further enlarged broken sectional detail of the sliding shaft bearing construction as taken on substantially the plane of line 4-4 of Fig. 2.

As shown in Figs. 1 and 3, the transmitter comprises an electric motor 7 having hubs 8, 9, at opposite ends of the same, carrying rubber or like cushions 10, 11, clamped in the dependent arms 12, 13, of a U-form of bracket 14 which is attached by screws or other fastenings to the under side of the table 15.

This constitutes the sole mounting means for the unit.

The motor is of relatively small diameter and is set up high between the arms of the mounting bracket so as to project only a small distance below the table and hence be entirely out of the way of the operator.

These purposes are further carried out in the illustration by having the lower arm 16 of the

2

angled control lever 17 lie close in substantially parallel relation to the under side of the motor, accomplishing this partly by pivoting the upright arm 18 of the lever at 19 by short bracket arm 20 projecting substantially horizontally from the end of the lower housing and by connecting the spring 21 in a substantially horizontal relation between the upright arm of the lever, and a short bracket lug 22 projecting a slight distance below the motor housing.

The clutch and brake mechanism is shown in Fig. 3 as made up of a driving clutch plate 23 on the motor shaft 24, and a driven clutch plate 25 engageable therewith by movement in one direction and engageable with the brake surface 26 by movement in the opposite direction.

The driven clutch plate 25 is fixed on a shaft 27 and this shaft, as shown more fully in Fig. 4, is grooved to form spaced, parallel ball races 28, 29, for balls 30, 31 running in outer ball races 32, 33, in the ends of a sleeve 34 slidable in the tubular extension 35 of the mounting hub 9.

The ball bearings described are shown in Fig. 4 as including ball retainers 36, dust excluding and lubricant sealing rings 37 and snap rings or like retainers 38.

By this combination and assembly the requirement for inner race rings is avoided and the over-all diameter of the bearings, the bearing sleeve and the hub in which the bearing sleeve slides, is kept down to a minimum without sacrifice of strength or running qualities.

The sleeve 34 is slid back and forth in the hub 35 by a stud 39 having a rounded or ball shaped inner end engaged in an opening 40 in the side of the bearing sleeve, this stud projecting through a slot 41 in the side of the supporting hub and being carried by the upper end of the control lever 17.

The outer end of the driven shaft 27 carries the pulley 42 which drives the sewing machine by belt 43.

The provision of the inner ball races by integral grooves in the shaft permits the use of a short, rigid, large diameter shaft without increasing over-all dimensions of the ball bearings and mounting structure.

The ball shaped housing 44 for the clutch and brake may be a completely closed, circular casting machined to fit the end of the motor frame and attached thereto by the four screws 45 shown in Fig. 2. This end housing may be integral with or formed separately from the motor end bell 46 which is shown in Fig. 1 as carrying the anchorage lug 22 for the spring 21.

The resilient cushions 10 and 11 are shown as rings of rubber or like material encased in metal rings 47 and forced over the motor end hubs, which latter are shown in Fig. 2 as ridged at 48 to effect an interlocking engagement of the cushions on the motor hubs. In practice the cushioning washers may be molded in complementary fashion to fit the ridged or ribbed end hubs of the motor structure.

The motor is shown as suspended in the arms of the mounting bracket by forming the lower ends of the arms with substantially semi-circular recesses 49, Fig. 2, to accommodate the upper halves of the metal covers 47 of the cushions, and by notching the sides of the bracket arms at 50 to provide appropriate shoulders over which the upper ends of the short links 51 are hooked, said links slotted at their upper ends at 52 to engage over the shoulders 53, and angled at their lower ends to accommodate the clamp screws 54.

This simple construction provides a firm, secure mounting for the cushions, which can be quickly applied or released and which, as shown in the end view, Fig. 2, does not add any bulk, since it comes within the width of the arms of the supporting bracket.

With the construction described both the over-all length and the over-all diameter of the complete unit are kept to a minimum, providing compactness for shipping as well as for actual use. The simple clamp construction permits quick detachment of the motor and clutch structure from the mounting bracket, and both these clamps are fully accessible so that in case of need the motor part of the unit may be quickly removed from the mounting bracket or, in reverse, the motor assembly be mounted in the bracket.

The supporting of the motor assembly is effected entirely at the outside, leaving the motor, clutch and brake structures completely enclosed and protected.

The cushion support at the clutch end of the motor is located substantially in line with the sliding sleeve carrying the driven clutch shaft, effecting a balanced support for all the parts.

The construction as a whole is simple in design, consisting of but few, readily assembled parts which can be produced at low cost. The close coupled relation between the control lever, sliding sleeve and return spring enables operation by means of a small size lever such as shown in Fig. 1, which will lie close and take up but small space over the side and end of the motor housing. This small size lever may be actuated in the customary manner by means of a link 55 extending from the long arm of the lever to a foot pedal or other such controlling element.

What is claimed is:

1. A power transmitter of the character disclosed comprising an electric motor having a shaft carrying a driving clutch element at one end of the motor, a closed clutch housing secured over said end of said motor, said closed clutch housing completely enclosing the end of the motor and

the driving clutch element and having a braking surface on the inner wall of the same and having an elongated bearing in line with the motor shaft, said elongated bearing having a longitudinally extended slot in the side of the same, said clutch housing having a mounting hub at the outer end portion of the same adjoining the inner end of said slot and the opposite end of the motor having a companion mounting hub, vibration damping cushions on said mounting hubs, an inverted U-shaped mounting bracket having dependent side arms embracing the motor and clutch housing and connected with said cushions, a bearing sleeve slidably operable in said elongated bearing, a shaft journaled in said sleeve and carrying at the inner end a driven clutch member for cooperation with the driving clutch member and with the braking surface and at the outer end a transmission pulley and a shift lever pivotally supported on the clutch housing and having an operating connection extending through said elongated slot at a point adjoining the mounting cushion on the hub of the clutch housing, into engagement with the bearing sleeve and whereby the clutch and brake mechanism is completely enclosed and supported substantially wholly between the cushioned mounting hubs and the clutch shift mechanism is immediately adjoining one of the cushioned mounting hubs.

2. A power transmitter of the character disclosed comprising an electric motor having a shaft carrying a driving clutch element, a clutch housing secured over the end of said motor and having an elongated bearing in line with the motor shaft, said elongated bearing having a longitudinally extended slot in the side of the same, a bearing sleeve slidably operable in said elongated bearing, a shaft journaled in said sleeve and carrying at the inner end a driven clutch member for cooperation with the driving clutch member and at the outer end a transmission pulley and a shift lever pivotally supported on the clutch housing and having an operating connection extending through said elongated slot into engagement with the bearing sleeve, said slidable sleeve having integral ball race grooves in the opposite ends of the same, the shaft journaled therein having companion ball race grooves spaced in line with said ball race grooves in the sleeve and balls operating in the companion ball race forming grooves in the sleeve and shaft thereby rotatably keying said shaft to shift longitudinally with said sleeve.

PAUL SCHULDER.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
2,037,644	Voigt	Apr. 14, 1936
2,074,136	Welch	Mar. 16, 1937
2,408,808	Paulus et al.	Oct. 8, 1946