Feb. 13, 1940. F. EIBERT 2,189,942

MOTOR DRIVEN CARRIAGE RETURN MECHANISM FOR TYPEWRITERS

Filed April 25, 1936 4 Sheets-Sheet 1

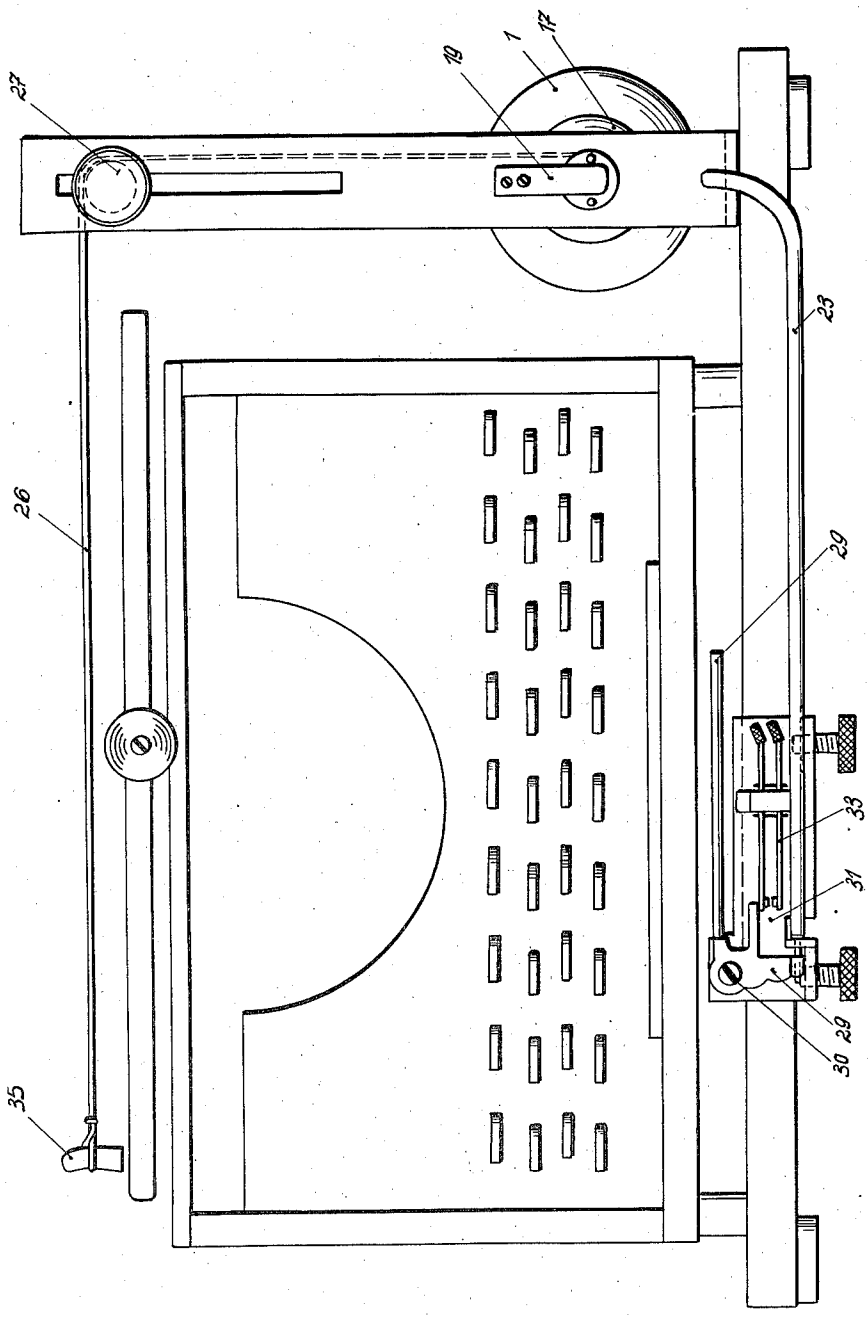


Fig. 1.

INVENTOR
FRITZ EIBERT
By Wechamtier & Groff
Attys

Feb. 13, 1940. F. EIBERT 2,189,942

MOTOR DRIVEN CARRIAGE RETURN MECHANISM FOR TYPEWRITERS

Filed April 25, 1936 4 Sheets-Sheet 2

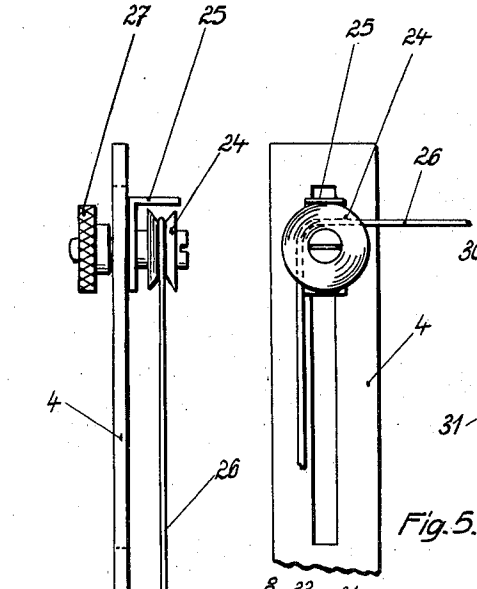


Fig. 5.

Fig. 4.

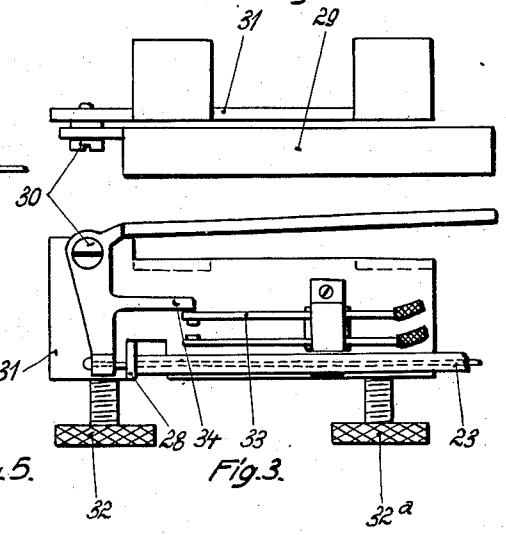


Fig. 3.

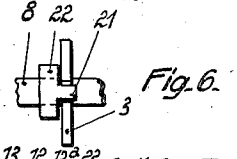


Fig. 6.

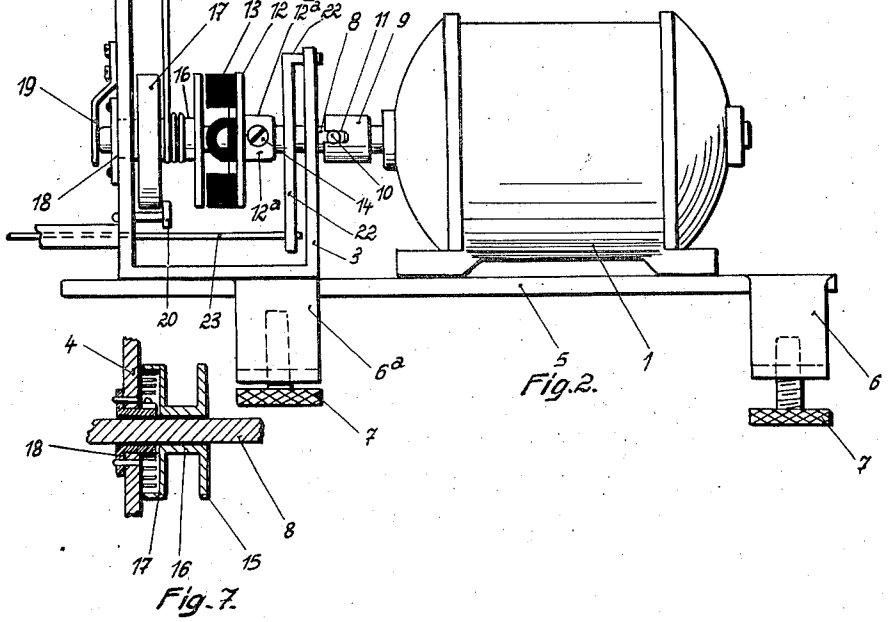


Fig. 2.

Fig. 7.

INVENTOR
FRITZ EIBERT
By Wallenstein & Groff
Attys

Feb. 13, 1940. F. EIBERT 2,189,942

MOTOR DRIVEN CARRIAGE RETURN MECHANISM FOR TYPEWRITERS

Filed April 25, 1936 4 Sheets-Sheet 3

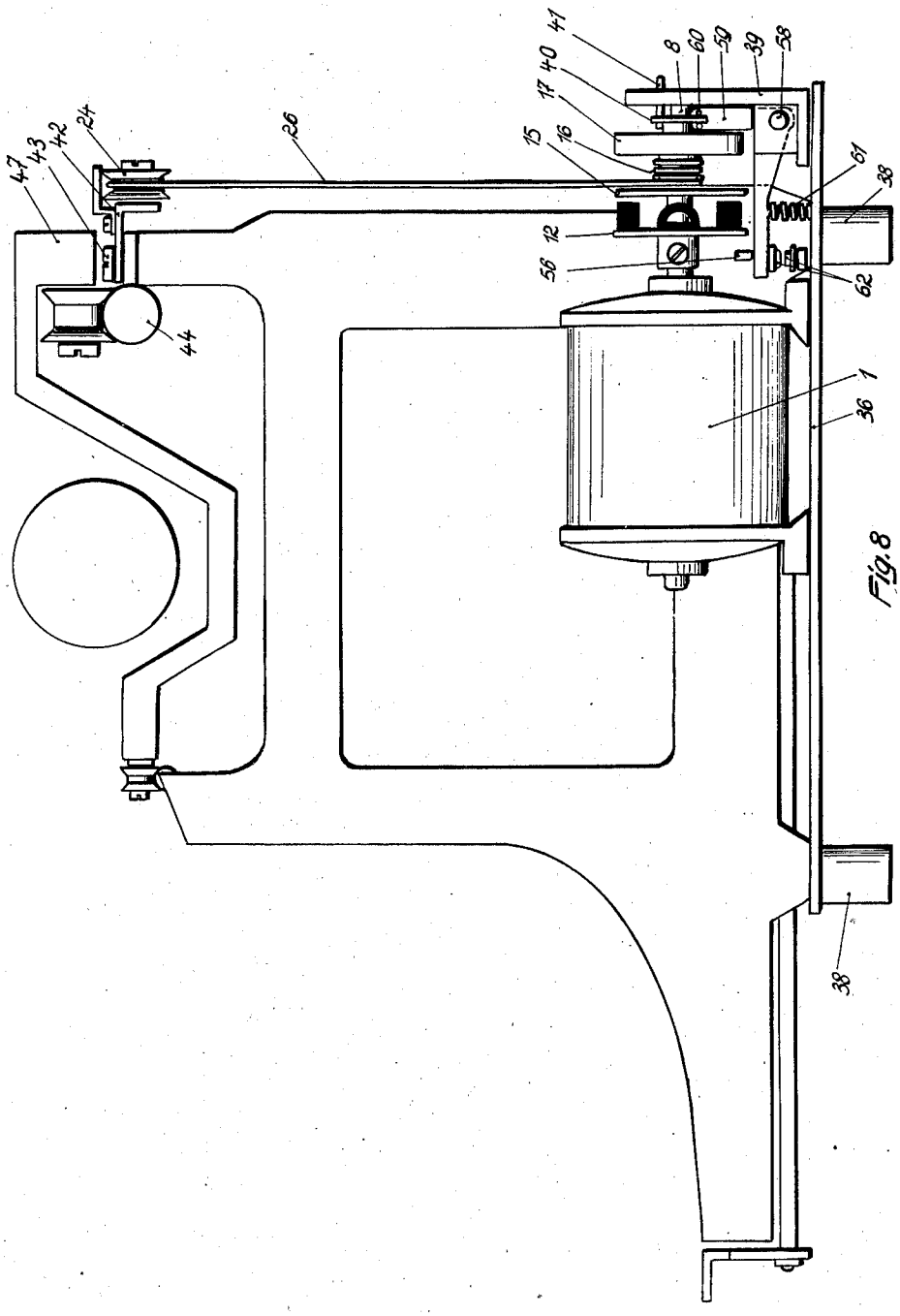


Fig. 8

INVENTOR
FRITZ EIBERT
By Wallenstein & Groff
Attys

Feb. 13, 1940. F. EIBERT 2,189,942

MOTOR DRIVEN CARRIAGE RETURN MECHANISM FOR TYPEWRITERS

Filed April 25, 1936 4 Sheets-Sheet 4

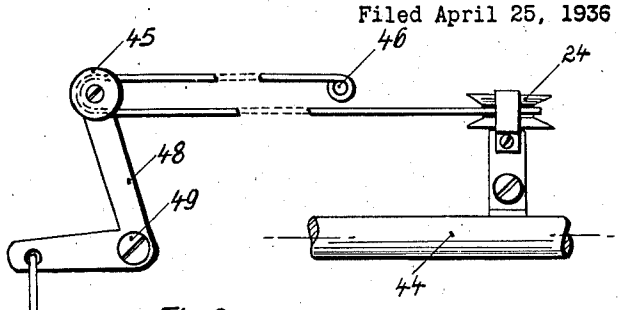


Fig. 9.

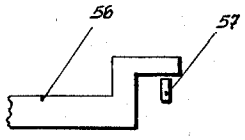
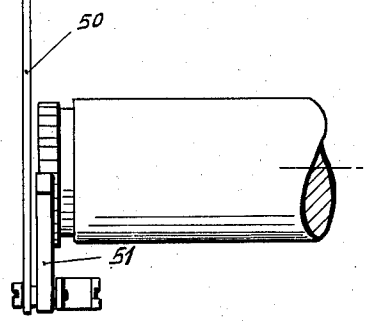


Fig. 11.



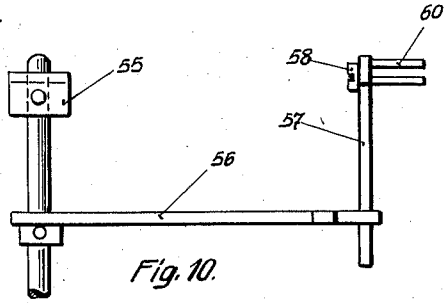
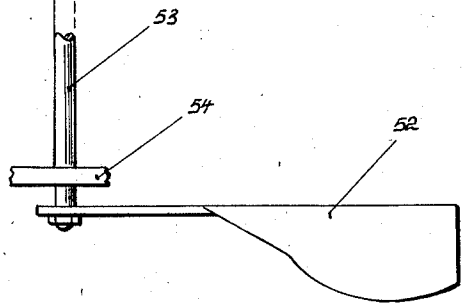


Fig. 10.



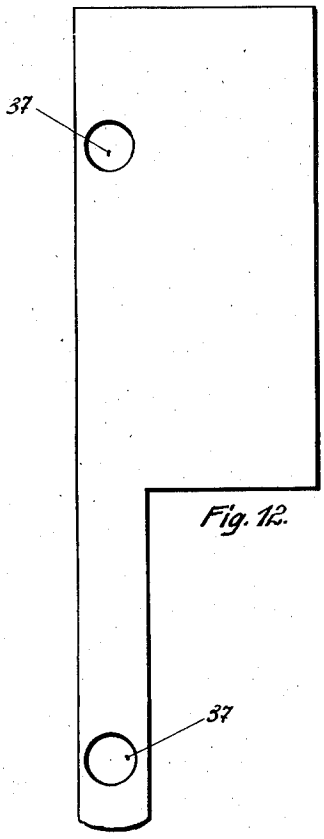


Fig. 12.

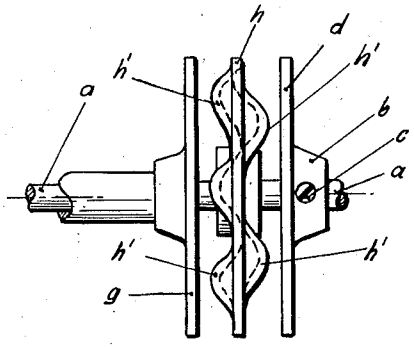


Fig. 13.

INVENTOR
FRITZ EIBERT
By Wachenfeld & Groff
Attys.

Patented Feb. 13, 1940 2,189,942

UNITED STATES PATENT OFFICE

2,189,942

MOTOR DRIVEN CARRIAGE RETURN MECHANISM FOR TYPEWRITERS

Fritz Eibert, Dresden, Germany

Application April 25, 1936, Serial No. 76,461
In Germany April 26, 1935

3 Claims. (Cl. 192—.02)

My invention relates to motor driven carriage return mechanisms for typewriters and has for its object to provide coupling members of a supple enough elasticity to render the mechanism reliable in its operation and foolproof against the shocks imparted by the force of the motor and by the carriage when suddenly stopped at the end of each return movement. Consequently no undue stresses will cause the return band to tear and the use of the typewriter is made more agreeable.

A further object of my invention is to enable the carriage to be moved to whatever position the typist wants it and that the line-spacing device can be actuated at will with or without simultaneously moving the carriage and in every position of the same be it at the beginning, in the middle, or at the end of a line.

A still further object of my invention is to provide such a device simple in construction and economical to produce.

With these objects in view I provide on the motor shaft a disk having yielding elastic friction members adapted to engage a second disk which is loose upon the same shaft and connected to the return band drum which when rotated by the said second disk winds up the return band and thereby draws the carriage towards the right hand side. The yielding elastic friction members are preferably made of rubber or like material and contain cavities of sufficient size that they will be deformed as they are subjected to a certain pressure as would occur when transmitting accelerations or retardations of a greater extent. Another case is when the carriage has reached the end of its path whilst the motor is still in action. Then the said friction members after being deformed under the impact are forced by the power of the motor to merely glide upon the second disk thus ceasing their coupling action. It is, of course, also possible to use as friction member a separate part, for example, a separate disk which is loosely positioned on the shaft between the two above mentioned disks.

In order to ensure the return band to be always under slight tension, a spring casing is provided coacting with a light spiral spring to which the band drum is connected.

For starting the motor and actuating the friction disk, a carriage-return key is provided at the front of the machine which preferably has an elongated shape for being manipulated by the ball of the hand so that the typist need not take his fingers off the keys.

The new device is applicable to any kind of typewriter on the market. One only needs to adjust it on a separate base upon which the machine can be positioned. No other connection is to be made with the machine but to secure the return band to the line spacing lever of the machine. No further adaptation work is necessary in the typewriter. For readily adjusting the device on any typewriter table it may be equipped with clamping screws.

It is on the other hand also possible to mount the device on the typewriter alone.

In the accompanying drawings showing various embodiments

Fig. 1 is a front view of a preferred form of the new device showing the body of the typewriter only schematically and likewise the line-spacing lever by which the typist usually draws the carriage towards its right end position.

Fig. 2 is a side view on a larger scale of the coupling device also showing the driving motor.

Figs. 3 and 4 are detail front and top views respectively of the carriage return key on a still larger scale.

Fig. 5 is a side view of the upper portion of Fig. 2,

Fig. 6 a top view of lever 22 in Fig. 2,

Fig. 7 a section through the drum and the spring casing.

Fig. 8 shows another embodiment of my invention in side view combined directly with the frame of the typewriter.

Fig. 9 is a top view of single parts of the carriage of the typewriter showing its connection with the return band.

Fig. 10 is a top view of the carriage return key and its connection with the coupling device alone, the typewriter being omitted and

Fig. 11 a detail side view.

Fig. 12 is a view of the plate by which the coupling device is mounted on the machine.

Fig. 13 shows a modification of the clutch device.

The numeral 1, see Fig. 2, designates a small electrical motor and 3, 4 a U-shaped frame carrying the coupling device and mounted on a base plate 5 which by means of two brackets 6, 6a and screws 7 can be fastened to the right edge of the plate of the writing table.

In the frame 3 a shaft 8 is rotatably journalled capable of axial displacement. The said shaft freely enters a slotted coupling member 9 on the motor shaft engaging with a pin 10 the slot 11 for turning connection. Secured to the shaft 8 by screws 14 is a disk 12 bearing on its face

friction members 13. The screws 14 pass through a hub member 12a of the disk. With this hub member engages a lever 22, which is guided by a nose 21 and a notch of frame part 3 and lets the shaft 8 pass through a hole. The lever 22 is connected at its free end to a Bowden wire 23 permitting the lever to be moved towards the hub member 12a thereby shifting the shaft 8 together with the disk 12 towards the left in Fig. 2. Opposite the friction members 13 upon disk 12 and loose upon the shaft 8 is a second disk 15 which is formed with a drum 16 and a spring casing 17, shown in Fig. 7. A sleeve 18 fixed in the long part 4 of frame 3, 4 constitutes a journal for the shaft 8 and is connected with the one end of the spiral spring enclosed within the casing 17. A flat spring 19 secured to the frame part 4 presses against the free end of shaft 8. 20 is a guiding member secured to the opposite side of frame part 4.

The Bowden wire 23, as shown in Fig. 1, traverses frame part 4 and is led at the front side of the plate 5 to the carriage return key 29 which is pivoted by a screw 30 to a frame 31, as shown in Figs. 3 and 4, and which has a downwardly extending arm to which the Bowden wire 23 is fastened. The sheath of the latter is fastened to an abutment 28 on the same frame. The frame 31 has four projections provided with screws 32 and 32a which allow of screwing the frame to the front edge of the writing table, or a plate 2 on which the machine can be placed. A side-arm 34 of the return key 29 engages an electrical contact 33, which when the key 29 is depressed closes the motor circuit at the same time that the Bowden wire is actuated. On the frame part 4 of the frame 3, 4 a guide-roll 24 is provided vertically adjustable by the hand screw 27. The cord 26 coming from the drum 16 is led over said guide-roll being prevented from falling off by an angle piece 25. The cord is further connected to the line-spacing-lever 35 of the typewriter, as shown in Fig. 1.

The device operates as follows:

Upon the depression of the carriage-return-key 29 preferably by the ball of the hand two impulses are effected. Firstly, a pull is inserted on the Bowden wire 26 which draws lever 22 against the hub member 12a of the disk 12 thereby shifting shaft 8 so that the friction members 13 on disk 12 will engage the opposite disk 15. Secondly, the contact 33 (Fig. 3) is actuated to start the motor 1 which because of the coupling action of the aforesaid friction members 13 then rotates drum 16 to wind up the rope 26 thereby pulling the carriage of the typewriter towards the right hand side in Fig. 1. It is evident that the typist can make use of the carriage return key 29 whenever desired, and can interrupt the movement of the carriage any desired moment by again releasing the said key.

In the other embodiment of my invention as shown in Figs. 8 to 11 a plate 36, shown in Figs. 8 and 12, has two holes 37 so positioned as to fit two of the feet 38 of the machine to pass through and at the same time to fasten the said plate 36 to the machine. This plate supports the motor 1 and the coupling device which are thus positioned outside the right hand rear corner of the machine.

The shaft 8 of the motor 1, as shown in Fig. 8, is journalled in a post 39 provided on the plate 36. The disk 12 carries the friction members, while disk 15 formed with drum 16 and spring casing 17 are loose upon shaft 8, the spring casing 17 having a collar 40 which carries a pin 41 passing through a hole in post 39 in order to prevent the casing 17 from rotating. The cord 26 is led over guide-roll 24 and a second guide-roll 45, shown in Fig. 9, to a part 46 fast on the machine frame. The guide-roll 24 carried by a bracket 42 is mounted thereby on the frame by one of the screws 43 which fasten the rail 44 supporting the carriage 47 to the machine frame. The guide-roll 45 is part of one arm of a bell-crank lever 48 pivoted at 49 to the carriage 47, the other arm of which lever is linked by a rod 50 to the line-spacing lever 51.

The carriage-return key 52, shown in Fig. 10, is fast on a shaft 53 journalled at 54 and 55 in the frame of the machine. Rigidly connected to said shaft is a lever 56 which actuates with its free end the lever 57 to tilt whenever the return key 52 is depressed. A spring 61 tends to hold the lever 57 in its inactive position. Contact members 62 on the under side of lever 57 serve to close the circuit of the motor when the lever is depressed, while an upright arm 59 of lever 57 engages by two pins 60 the collar 40 of the spring casing 17 to thus shift the disk 15 to contact with the friction members on disk 12.

The operation of the device is as follows:

Upon the depression of the carriage return key 52 the lever 56 is tilted and thereby depresses lever 57 against the action of the spring 61 thus closing the contacts 62 and shifting disk 15 to engage the friction members on disk 12. The drum 16 thus being coupled with the motor winds up the cord 26 which thus actuates the line-spacing lever 51 by means of rocking the lever 48 and also draws the carriage towards the right-hand side.

In Fig. 13 is shown a modification of the coupling device. As shown in said figure, there is provided intermediate the driving disk *d* and the driven disk *g* each provided with a flat face a separate disk *h* rotatably mounted on the shaft *a* and axially displaceable thereon. The said disk *h* is made of rubber or like yielding elastic material and on its opposite faces is formed with protuberances *h'* capable of being deformed. When the disk *g* is moved towards the disk *d*, the disk *h* with its protuberating portions *h'* will be clamped between the two disks *g* and *d* resulting in a deformation of the protuberances *h'* and a corresponding frictional engagement with the flat faces of the two disks *g* and *d*.

I claim:

1. In a motor-operated mechanism of the type described, in combination with the electric motor and its shaft, a disk secured to said shaft and having fastened thereon near its periphery spaced elastic friction elements adapted to be deformed upon pressure being applied thereagainst, a second disk loosely mounted on said shaft, a drum connected to said second disk, and means for displacing said first disk into contact with said second disk causing deformation of the friction elements on said first disk, whereby the torque of said motor is gradually transmitted to said second disk and said drum.

2. In a motor-operated mechanism of the type described, in combination with the electric motor and its shaft and an electric circuit including said motor, a disk secured to said shaft and having fastened thereon near its periphery spaced elastic friction elements adapted to be deformed upon pressure being applied thereto, a second disk loosely mounted on said shaft, means for displacing said first disk into contact with said

second disk causing deformation of the friction elements on said first disk, electric contacts in said electric circuit, and a member for closing said contacts thereby operating said displacing means.

3. In a motor-operated mechanism of the type described, a coupling device comprising relatively displaceable opposed coacting disk-shaped members and individual spaced elastic friction bodies interposed between said members, being normally out of contact with the opposed member, and adapted to be deformed upon pressure being applied thereto by the opposed member whereby a gradual coupling operation is effected firstly along lines and subsequently along broader faces until the torque of said motor is fully transmitted.

FRITZ EIBERT.