

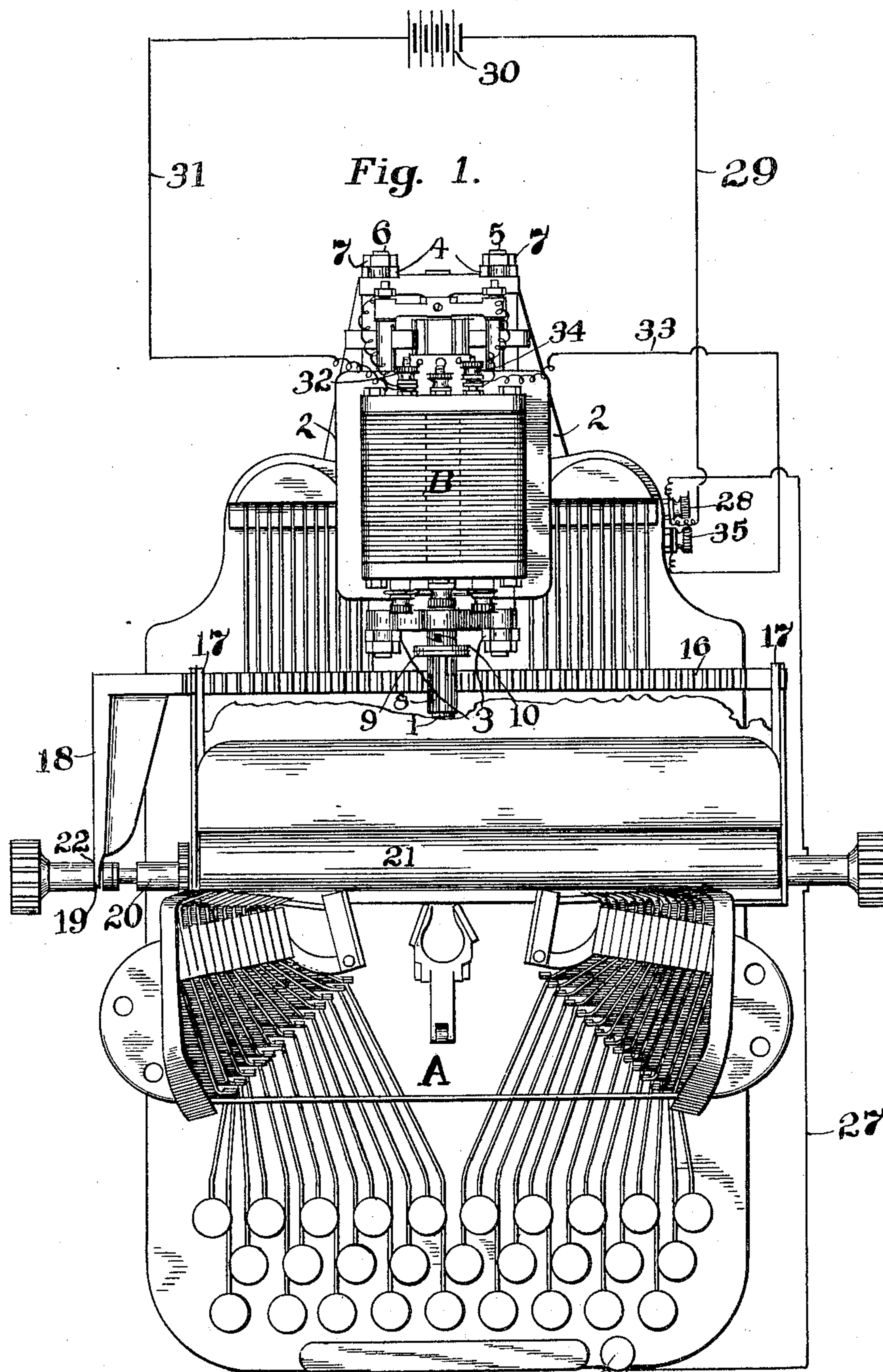
No. 770,665.

PATENTED SEPT. 20, 1904.

W. W. TORRENCE.  
TYPE WRITING MACHINE.  
APPLICATION FILED MAY 11, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses  
Milton Lenox

Watts T. Estabrook

Inventor  
William W. Torrence  
by *Samuel C. Hodges*  
his Attorney.

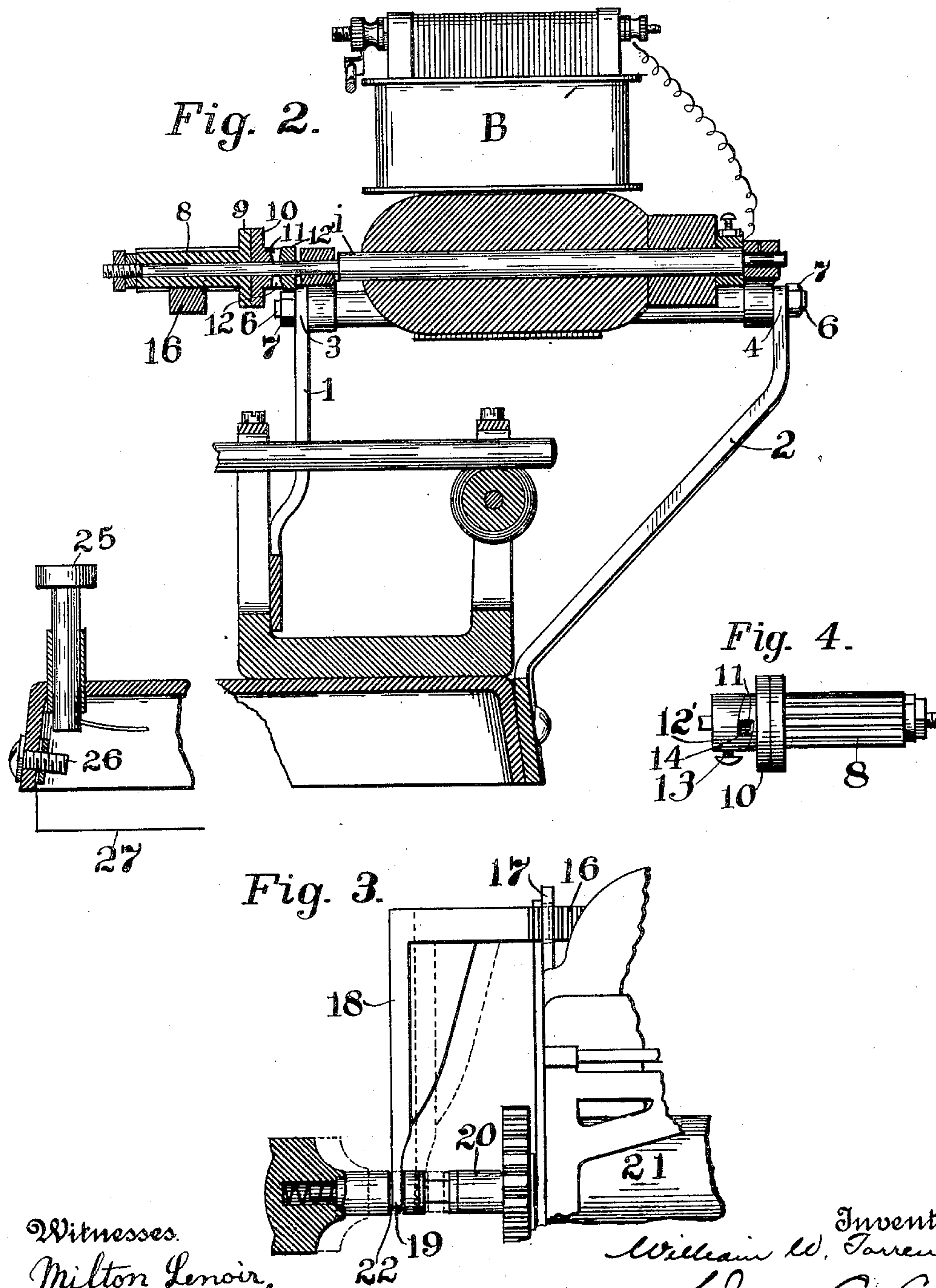
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Witnesses.  
Milton Lenoir,  
Walter T. Estabrook

Inventor  
William W. Torrence  
by *Chas. E. Hodges*  
his Attorney.



# UNITED STATES PATENT OFFICE.

WILLIAM W. TORRENCE, OF MONTROSE, COLORADO, ASSIGNOR OF ONE-HALF TO EDWIN S. KASSLER, OF DENVER, COLORADO.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 770,665, dated September 20, 1904.

Application filed May 11, 1903. Serial No. 156,687. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM W. TORRENCE, a citizen of the United States, and a resident of Montrose, in the county of Montrose and State of Colorado, have invented a new and useful Improvement in Type-Writing Machines, of which the following is a specification.

My invention relates to an improvement in type-writing machines, and more particularly to the means for returning the carriage to the starting-point through the medium of an electric impulse; and it consists in certain novel features of construction and combinations of parts, which will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of my improved machine, showing motor applied and a diagram of the currents. Fig. 2 is an enlarged transverse section through the motor, the clutch, rack, and a portion of the frame of the machine. Fig. 3 is an enlarged detail showing L-shaped end of the rack, its connection with the thumb-wheel shank, and dotted lines being employed to indicate one of the positions of the rack; and Fig. 4 is a detached view of the clutch.

A represents a type-writer, preferably an Oliver machine, although of course it might be any other standard make of machine.

B is an electric motor of any approved design, this being held in place at the rear of the machine by means of brackets 1 and 2, the forked upper ends 3 and 4 of which receive the rods or bolts 5 and 6 of the motor-frame, and nuts 7 7 being employed to clamp the motor-frame rigidly to the brackets.

The foregoing merely illustrates a convenient form of attachment which I have tried and found satisfactory, but which is by no means essential, as a variety of different modes of attachment might be chosen and serve quite as successfully.

On the armature-shaft  $i$  an elongated pinion 8 is loosely mounted. This pinion is provided on its inner or rear end preferably with a friction-disk 9. A friction-disk 10, the hub of which is provided with inclining clutch-teeth 11 and 12, is also loosely mount-

ed on the armature-shaft adjacent to the friction-disk 9 and is adapted to cooperate with the latter, as will be explained. A collar 12 is secured on the armature-shaft adjacent to friction-disk 10 by means of a set-screw 13, and this collar is provided with inclining clutch-teeth 14 and 15 in position to engage and corresponding with the inclining clutch-teeth 11 and 12 on friction-disk 10, their function being to crowd the disks 9 and 10 together as a necessary incident of their cam and wedging action when the armature-shaft  $i$  is rotated, thereby locking the pinion 8 to the armature-shaft  $i$ .

A rack-bar 16 is loosely connected with the carriage-frame, it having a limited sliding movement through guide-slots 17 17 preferably, and this rack-bar is provided with a forked arm 18 at one end, the fork 19 of which embraces the shank of the knob, which in the Oliver machine has a spring-cushioned sliding connection, as at 35, with the platen-spindle 20, a circumferential groove 22 being formed in this shank to receive the fork, the object of this construction being twofold—first, to provide a cushioning means for the rack-bar 16, and, secondly, to impart a reverse movement to the armature when the carriage is returned to the marginal stop. The teeth of pinion 8 intermesh with this rack-bar, and through it and the impulse of the motor-armature shaft  $i$  the carriage is returned to its normal position, this cushioning effect operating to save both the carriage and the motor from sudden shocks which would otherwise result in consequence of the quick start the armature is given when it receives its electrical impulse. Other means of providing this cushioning might obviously be employed, although the present method has been found to be a simple and convenient one. As an incident to this cushioning effect the spring 35 remains compressed during the entire backward movement of the carriage or until it strikes the marginal stop and the platen makes the usual space. Now when the pressure is taken from the rack-bar by the stoppage of the motor and the return of the



carriage to its initial position the pressure upon the spring being relieved the latter expands, throwing the rack-bar back about a quarter of an inch. This movement turns  
 5 the armature of the motor on a sufficient distance or, in other words, reverses it sufficiently to throw the disks on the friction-clutch apart, so that the moment the key is struck the carriage responds by the usual  
 10 step-by-step movement to the left until it is desired to again return the carriage to print another line.

The motor is started by depressing the button 25, which engages the contact 26, thereby  
 15 establishing an electrical circuit through the metallic base or frame of the machine. From this contact 26 a wire 27 extends to the binding-post 28. One wire, 29, from the battery 30 or source of electrical power is connected  
 20 to this binding-post, and the other wire, 31, from the source of electrical power is connected with the binding-post 32 of the motor, and a wire 33 extends from the binding-post 34 to binding-post 35 on the base of the machine. Thus the circuit is established by depressing the button 25 and the motor is started, the armature-shaft always rotating in one direction to return the carriage to its normal position. As soon as the carriage reaches this  
 30 normal position it stops in the usual way. Upon reaching this point the clutch is released, as previously described. In other words, as soon as the key which makes the electrical contact is removed the clutch is instantly released by the return of the rack-bar to its normal position, owing to the expansion of the spring 35 in the knob, which action results in reversing or revolving the armature in the motor ahead.

40 In this way I provide a machine of ordinary construction without material change with means for the instant return of the carriage to normal, thus saving a large percentage of the time ordinarily consumed in making the  
 45 shift, as the operator simply has to depress a button on the keyboard instead of the usual method of reaching out and pressing the thumb-wheel, as is customary in the Oliver machine, so that with my improvement the  
 50 same finger movement employed in the manipulation of the keys is utilized to shift the carriage, and the shift is accomplished with practically no loss of time.

The current may be derived from any suitable source, such as an ordinary electrical current or from a battery of from five to six dry cells.

It is evident that changes might be made such as heretofore mentioned, not to speak of  
 60 others, of a similar character in the arrangement and construction of the various parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact construction  
 65 herein set forth; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a type-writer carriage, gearing, and clutch mechanism, of an electric motor, the clutch operating to connect the gearing to or disconnect it from the armature of the motor, and means for reversing the armature whereby to release the gearing therefrom, when the carriage shall have  
 70 been returned by the motor to its normal position. 75

2. In a type-writer the combination with a carriage, and a rack-bar yieldingly connected with the carriage, of a motor having a pinion  
 80 which engages the teeth of the rack-bar.

3. The combination with the carriage of a type-writer, platen-spindle, and a thumb-wheel shank having spring-cushioned sliding connection therewith, said shank being circumferentially grooved, and a rack-bar having sliding connection with the carriage and provided with a forked arm the fork of which engages said circumferential groove, of a motor having a pinion on its armature-shaft, the  
 85 teeth of which engage said rack-bar. 90

4. The combination with a type-writer carriage, and a spring-cushioned rack-bar having sliding connection therewith, of a pinion the teeth of which engage the rack-bar and means  
 95 for rotating said pinion.

5. The combination with a type-writer carriage, and a spring-cushioned rack-bar having sliding connection therewith, of a pinion the teeth of which engage the rack-bar, a shaft on  
 100 which said pinion is carried, means for rotating the shaft in one direction at predetermined intervals, and means for locking the pinion to the shaft automatically when the shaft is actuated whereby to turn the pinion with it  
 105 and thereby move the carriage in one direction, the pinion being free at all times to turn on the shaft in the opposite direction with the forward movement of the carriage.

6. The combination with a type-writer carriage, and a motor, of gearing carried by the armature of the motor for imparting direct positive motion to the carriage in one direction and which admits of the carriage being moved independently of it in the opposite direction.  
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7. The combination with a type-writer carriage, and a rack-bar connected therewith, of a shaft, a pinion loosely mounted thereon, a friction-disk loosely mounted on the shaft, and  
 120 having clutch-teeth on its hub and a collar secured to the shaft and provided with clutch-teeth adapted to force the disk into frictional contact with the pinion when the shaft is turned in one direction. 125

8. The combination with a type-writer carriage, and a rack-bar connected therewith of a motor, an armature-shaft having a collar fixed thereon, said collar provided with clutch-teeth, a pinion loosely mounted on the arma-  
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ture-shaft and having a friction-disk thereon, a friction-disk loosely mounted on the armature-shaft between the pinion and collar and provided with clutch-teeth adapted to cooperate with the teeth on the collar.

9. The combination with a type-writer carriage, and motor, of suitable gearing for imparting motion direct from the armature-shaft of the motor to the carriage and means connected with the gearing for locking it to the armature-shaft to turn with the latter when said shaft rotates forward and capable of turning freely on said shaft when the carriage imparts an opposite movement to it.

10. The combination with a type-writer base or frame, of brackets having forked upper ends, and a motor detachably secured in the forked ends of said brackets, and means for imparting the motion of the motor-armature to the carriage of the machine.

11. The combination with the carriage of a type-writer, of an electric motor for returning the carriage to its normal position, and a spring which automatically reverses the armature of the motor upon the return of the

carriage to normal and thereby releases the carriage from the motor.

12. The combination with a type-writer carriage, a rack-bar having limited sliding connection therewith, and a spring in position to be compressed by the rack-bar when the latter is moved from its normal position and acting to return the rack-bar to its normal position when unresisted, of a motor-shaft having a gear-wheel thereon which meshes with the rack, and clutch-disks supported on the shaft which are forced together when the shaft is moved in one direction and which are thrown apart by the expansive action of the spring when unresisted or released by the stoppage of the carriage when the latter is returned to its normal position.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM W. TORRENCE.

Witnesses:

JNO. E. PELTON,  
JOHN DEEBLE.