No. 753,017. PATENTED FEB. 23, 1904.

C. W. WALKER.

TYPE WRITING MACHINE.

APPLICATION FILED NOV. 21, 1902.

NO MODEL.

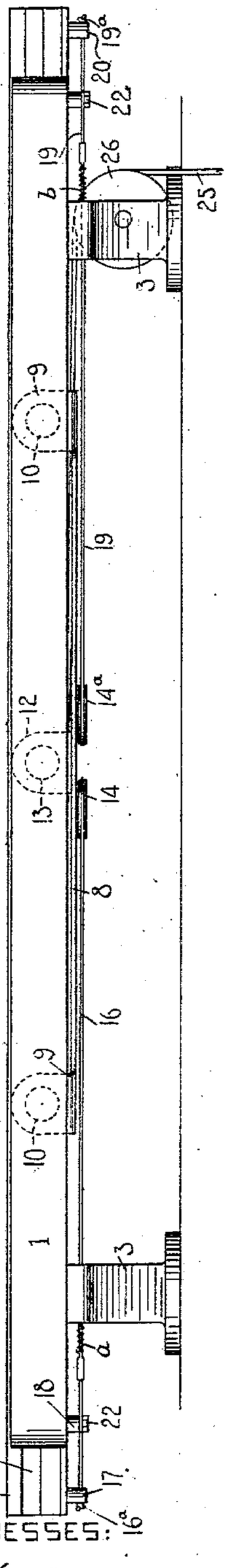

FIG. 1.

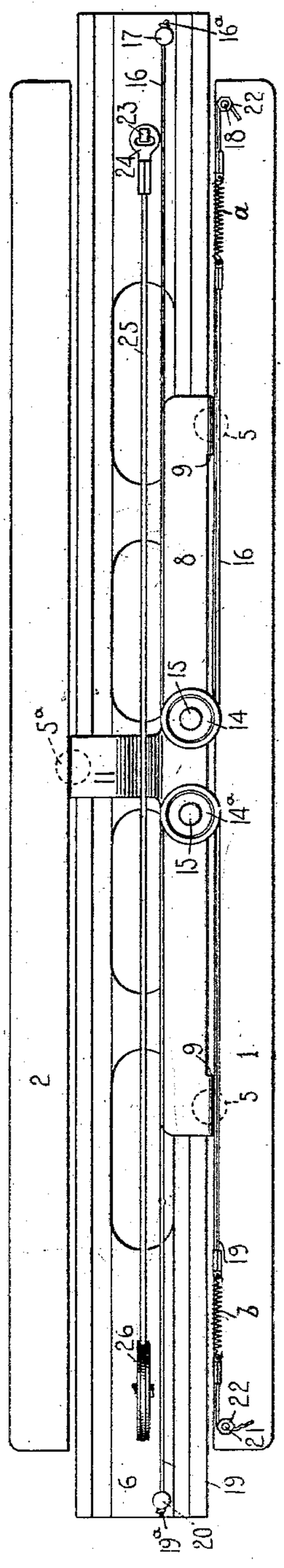

FIG. 2.

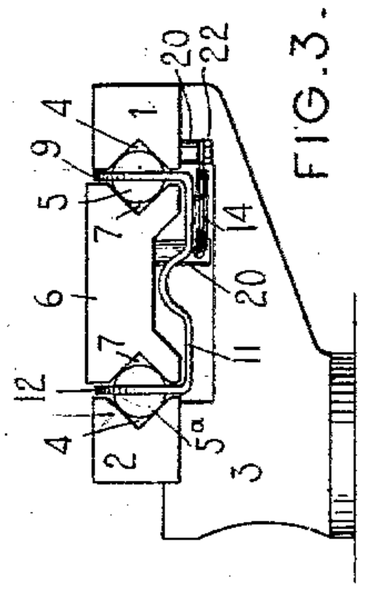

FIG. 3.

FIG. 4.

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No. 753,017. Patented February 23, 1904.

UNITED STATES PATENT OFFICE.

CHARLES W. WALKER, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO YOST WRITING MACHINE COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 753,017, dated February 23, 1904.

Application filed November 21, 1902. Serial No. 132,224. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. WALKER, a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to type-writing machines, and more particularly to carriage-supporting means of the general description shown in Letters Patent No. 568,645, granted to me September 29, 1896, and has for its main object to provide simple and efficient connections for maintaining the antifriction balls or rollers in fixed relation to the carriage.

To the above and other ends, which will hereinafter appear, my invention consists of the novel features of construction, arrangements of parts, and combinations of devices to be hereinafter described and claimed.

In the accompanying drawings, wherein like reference characters designate like parts in the various views, Figure 1 is a rear elevation of sufficient number of parts of a type-writing machine to illustrate one form or embodiment of my invention. Fig. 2 is a bottom plan view of the same. Fig. 3 is an end elevation of the parts shown in Figs. 1 and 2. Fig. 4 is a detail perspective view of the so-called "antifriction-roller carrier or separator."

In the drawings, 1 2 designate fixed rails, which are secured to the top plate of the machine by suitable brackets 3, and the inner faces of the rails are grooved, as indicated at 4, for the reception of antifriction-rollers 5 and 5^a. A carriage-bar 6 extends longitudinally of the carriage and has grooved tracks 7 upon opposite faces thereof, which are likewise adapted to receive the antifriction-rollers 5. It will be understood that this so-called "carriage-bar" 6 constitutes a part of the carriage of the type-writing machine and through the antifriction-rollers either wholly or partly supports the carriage in its movement from side to side of the machine. An antifriction-roller separator or carrier is provided, which comprises a longitudinally-extending bar 8, having upwardly-extending ears 9, that extend from one edge thereof and which are perforated at 10 to receive one set of antifriction-rollers 5. Extending at right angles to the length of the bar 8 and intermediate of the ends thereof is a cross-bar 11, which terminates in an upwardly-extending ear 12, perforated at 13 for the reception of the antifriction-roller 5^a. About midway of the length of the bar 8 are pivoted two pulleys 14 14^a, the planes of which are parallel to the plane of the bar, and their pivotal centers 15 extend at right angles to the plane of the bar. From an examination of Figs. 2 and 3 it will be observed that sufficient space is maintained between the carriage-bar 6 and the fixed rails 1 2 to permit the ears 9 and 12 to pass upwardly between the tracks on the carriage and the tracks formed in the fixed rails, so that the antifriction-rollers 5 and 5^a are loosely seated in their respective openings in the separator or carrier and are maintained thereby at fixed distances apart and support the carrier in place. A flexible connection or ligament 16 of any suitable character, such as a cord, is connected at one end to a depending pin 17, that extends from the lower face of the carriage-bar, whereas the bight or loop in the connection passes around the pulley 14, and the opposite end of the connection is secured to a depending stud or pin 18, secured to the fixed rail 1 of the machine. A second flexible connection 19 is secured in a like manner to a depending stud 20, which extends downwardly from the carriage-bar and passes around the pulley 14^a, and has its opposite end secured to a stud 21, that extends downwardly from the fixed rail 1. These connections are maintained taut, and the slack thereof may be taken up in any suitable manner. In the present instance the studs 17 and 20 are apertured, and a knot 16^a or 19^a prevents the end of the associated connection from slipping through the aperture in the stud, thus connecting one end of each of the connections to the carriage-bar. The opposite end of

each connection may be secured to its associated stud by a jam-nut 22, which provides means for taking up any slack that may exist in the connection and regulates the position of the carrier relatively to the carriage.

In addition to the means referred to for taking up the slack in the flexible connections at will, I prefer to employ means for automatically taking up any slack that may occur by reason of a stretching of the connections or through other causes. I therefore provide a contractile spring *a* or *b* at or intermediate of the ends of the flexible connections. Thus the spring *a* is connected at one end to an end of one section of the connection 16, whereas the other end of the spring is connected to one end of the other section of the connection. It will be understood that the position of the spring *a* at or near one end of the connection locates it at a point in the connection which does coöperate with the pulley 14, and therefore does not interfere with the rolling action of the connection on the pulley. The connection 19 is likewise connected to a contractile spring *b*, which is connected and acts in the same manner as the spring *a*.

From an examination of Fig. 2 it will be seen that the flexible connections extend in the general direction of the travel of the carriage and that said connections cause the rollers always to maintain their proper relationship to the carriage and to the frame of the machine. In other words, the flexible connections maintain fixed relations between the carrier and the frame of the machine (or the fixed rails 1 and 2 thereof) and between the carrier and the carriage—that is to say, the carrier will always maintain the same relative position to the carriage and to the frame of the machine when the carriage is in a given position. When, for instance, the carriage is centrally disposed, as shown in Fig. 2, the carrier will likewise be moved to a central position by the flexible connections. When the carriage is moved to the extreme left, one half of the extent of that movement will be transmitted to the carrier, so that the carriage will move on the antifriction-rollers one half the extent of its movement and the other half of its travel will be effected by a rolling action of the antifriction-rollers on their fixed tracks, and the carrier partakes of this latter movement, which is rendered positive by the positive flexible connections between the carriage, the carrier, and the fixed portion of the machine, so that the carrier will always bear the same relation to the frame of the machine and to the carriage, said relation corresponding to the position of the carriage. When the carriage is moved to the extreme right, the carrier and antifriction-rollers will in a like manner receive a movement corresponding to one-half of the travel of the carriage, and this relation will at all times be positively maintained by the flexible connections.

Depending from the lower side of the carriage-bar is a hook 23, which is adapted to receive an engaging loop 24, secured to one end of a flexible band of the ligament 25, that extends around the pulley 26, carried in bearings on the top plate of the machine and at the left-hand side thereof. The opposite end of this band extends downwardly, as represented in Fig. 1, and is connected to a suitable spring-drum, (not shown,) which affords a movement of the carriage in the direction of its feed.

It should be understood that by the term "antifriction-rollers" I contemplate either antifriction-balls of the character shown or any suitable antifriction-rollers, which, however, are preferably loosely seated in apertures in the separator or carrier.

From the foregoing description it will be seen that I have provided a simple and efficient device for supporting the carriage in place to provide a free and easy action or movement thereof without liability of the carriage binding at its bearings.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, and flexible connections for causing the said rollers always to maintain their proper relationship to said carriage.

2. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, and flexible connections for causing the said rollers always to maintain their proper relationship to the frame of the machine.

3. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, and flexible connections for causing the said rollers always to maintain their proper relationship to the frame of the machine and to the carriage.

4. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, a carrier for said antifriction-rollers, and flexible connections for said carrier to maintain fixed relations between said carrier and the frame of the machine.

5. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, a carrier for said antifriction-rollers, and flexible connections for said carrier to maintain fixed relations between said carrier and the frame of the machine and between said carrier and the carriage.

6. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, a carrier for said antifriction-rollers and flexible connections that

are operatively connected to the carriage, to the carrier and to a fixed portion of the machine.

7. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, a carrier for said antifriction-rollers, and flexible connections each secured at one end to the carriage and at the opposite end to a fixed portion of the machine and operatively connected to the carrier.

8. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, a carrier for said antifriction-rollers, pulleys on said carrier, and flexible connections which pass around said pulleys and each of which is connected at one end to the carriage and at the opposite end to a fixed portion of the machine.

9 In a type-writing machine, the combination of a carriage, fixed tracks therefor, cooperating tracks on the carriage, antifriction-rollers which run on said tracks for supporting said carriage, a carrier for said antifriction-rollers, pulleys on said carrier, and oppositely-disposed flexible connections which pass around said pulleys and extend in the general direction of the travel of the carriage, and each of which is conneeted at one end to the carriage and at the opposite end to a fixed portion of the machine.

10. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, a carrier for said antifriction-rollers and flexible connections each of which is connected to the carrier by a rolling connection and which is secured at one end to a fixed portion of the machine and at the other end to the carriage.

11. In a type-writing machine, the combination of a carriage having oppositely-disposed antifriction-roller-receiving tracks, fixed rails having oppositely-disposed antifriction-roller-receiving tracks, antifriction-rollers contained in said tracks, a separator or carrier that coöperates with the antifriction-rollers of both sets of tracks, and oppositely-disposed flexible connections each of which is connected at one end to a fixed portion of the machine and at the other end to the carriage, the bight or loop in each connection being operatively connected to and rolling on the carrier.

12. In a type-writing machine, the combination of a carriage, bearing-rollers therefor, a separator for said rollers and flexible connections for effecting a travel of the carrier of substantially one-half the extent of travel of the carriage.

13. In a type-writing machine, the combination of fixed tracks, a carriage, tracks on said carriage, antifriction-rollers interposed between the fixed tracks and the tracks on the carriage, a separator for said rollers, flexible connections that have a sliding or rolling connection with the carrier and each of which is connected at one end to a fixed portion of the machine and at the opposite end to the carriage and which are effective to move the separator substantially one-half the extent of movement of the carriage.

14. In a type-writing machine, the combination of fixed tracks, a carriage, tracks on said carriage, antifriction-rollers interposed between the fixed tracks and the tracks on the carriage, a separator for said rollers, pulleys pivoted on said separator, flexible connections that pass around said pulleys and extend in opposite directions therefrom, and each of which is connected at one end to a fixed portion of the machine and at the other end to the carriage, whereby the separator receives substantially one-half the extent of movement given to the carriage.

15. In a type-writing machine, the combination of a carriage-bar having oppositely-disposed grooved tracks one of which faces toward the front and the other toward the rear of the machine, coöperating oppositely-disposed fixed grooved tracks, antifriction-rollers interposed between the grooved tracks in the carriage-bar and the fixed grooved tracks, a separator having openings in which said antifriction-rollers are loosely seated, pulleys on said separator, flexible connections which pass around said pulleys and each of which is connected at one end to a fixed portion of the machine and at the opposite end to the carriage.

16. In a type-writing machine, the combination of a carriage-bar having oppositely-disposed grooved tracks, one of which faces toward the front and the other toward the rear of the machine, coöperating oppositely-disposed fixed grooved tracks, antifriction-balls interposed between the grooved tracks in the carriage-bar and the fixed grooved tracks, and which support the carriage-bar in place, a separator having openings in which said antifriction-balls are loosely seated, pulleys on said separator, flexible connections which pass around said pulleys and extend therefrom in opposite directions and each of which is connected at one end to a fixed portion of the machine and at the opposite end to the carriage, whereby the separator will receive substantially one-half the extent of movement given to the carriage.

17. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, flexible connections for maintaining fixed relations between said carriage and said antifriction-rollers, and means for taking up the slack in said connections.

18. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, flexible connections for maintaining fixed relations between said

carriage and said antifriction-rollers and between the antifriction-rollers and the frame of the machine, and means for automatically taking up the slack in said connections.

19. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, a carrier for said antifriction-rollers, flexible connections for said carrier to maintain fixed relations between said carrier and the frame of the machine, and springs for automatically taking up the slack in said flexible connections.

20. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, a carrier for said antifriction-rollers, pulleys on said carrier, and flexible connections which pass around said pulleys and each of which is connected at one end to the carriage and at the opposite end to a spring which is secured at one end to a fixed portion of the machine.

21. In a type-writing machine, the combination of a carriage, fixed tracks therefor, cooperating tracks on the carriage, antifriction-rollers which run on said tracks for supporting said carriage, a carrier for said antifriction-rollers, pulleys on said carrier, and oppositely-disposed flexible connections which pass around said pulleys and extend in the general direction of the travel of the carriage, and each of which is connected at one end to the carriage and at the opposite end to means for automatically taking up the slack in the associated connection.

22. In a type-writing machine, the combination of a carriage, antifriction-rollers for supporting said carriage, and means including flexible connections for causing each of said rollers always to assume a definite position along the bearing therefor at each point in the travel of the carriage.

Signed at the borough of Manhattan, city of New York, in the county of New York and State of New York, this 19th day of November, A. D. 1902.

CHARLES W. WALKER.

Witnesses:
K. V. DONOVAN,
E. M. WELLS.