

A. T. BROWN.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 9, 1906.

910,987.

Patented Jan. 26, 1909.

FIG. 1.

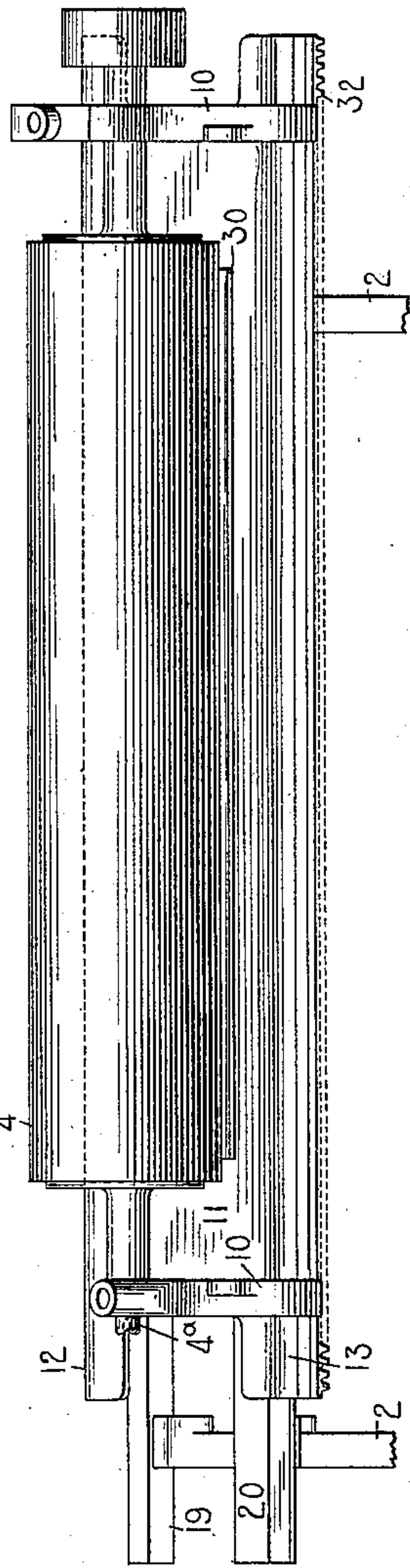


FIG. 3.

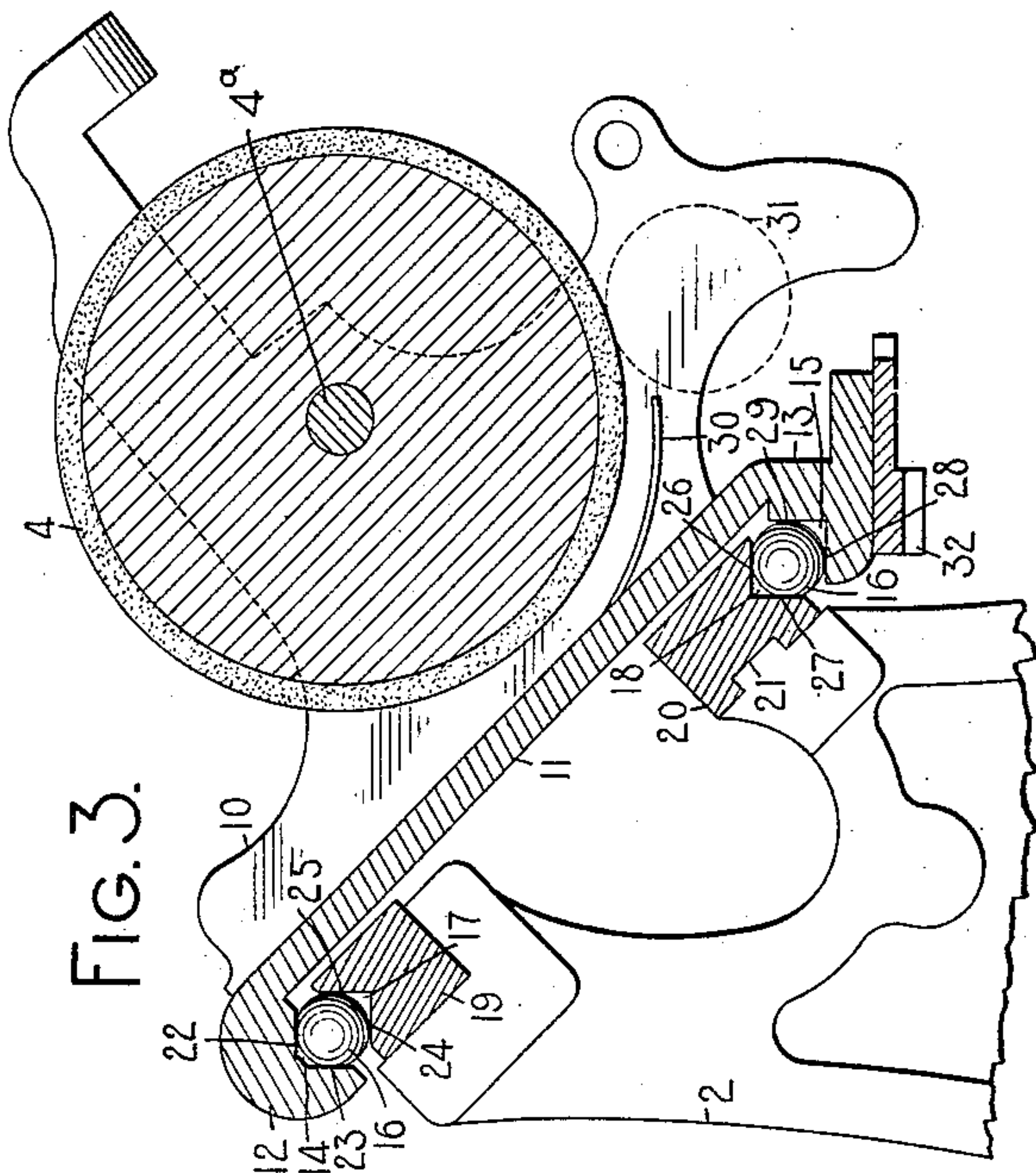
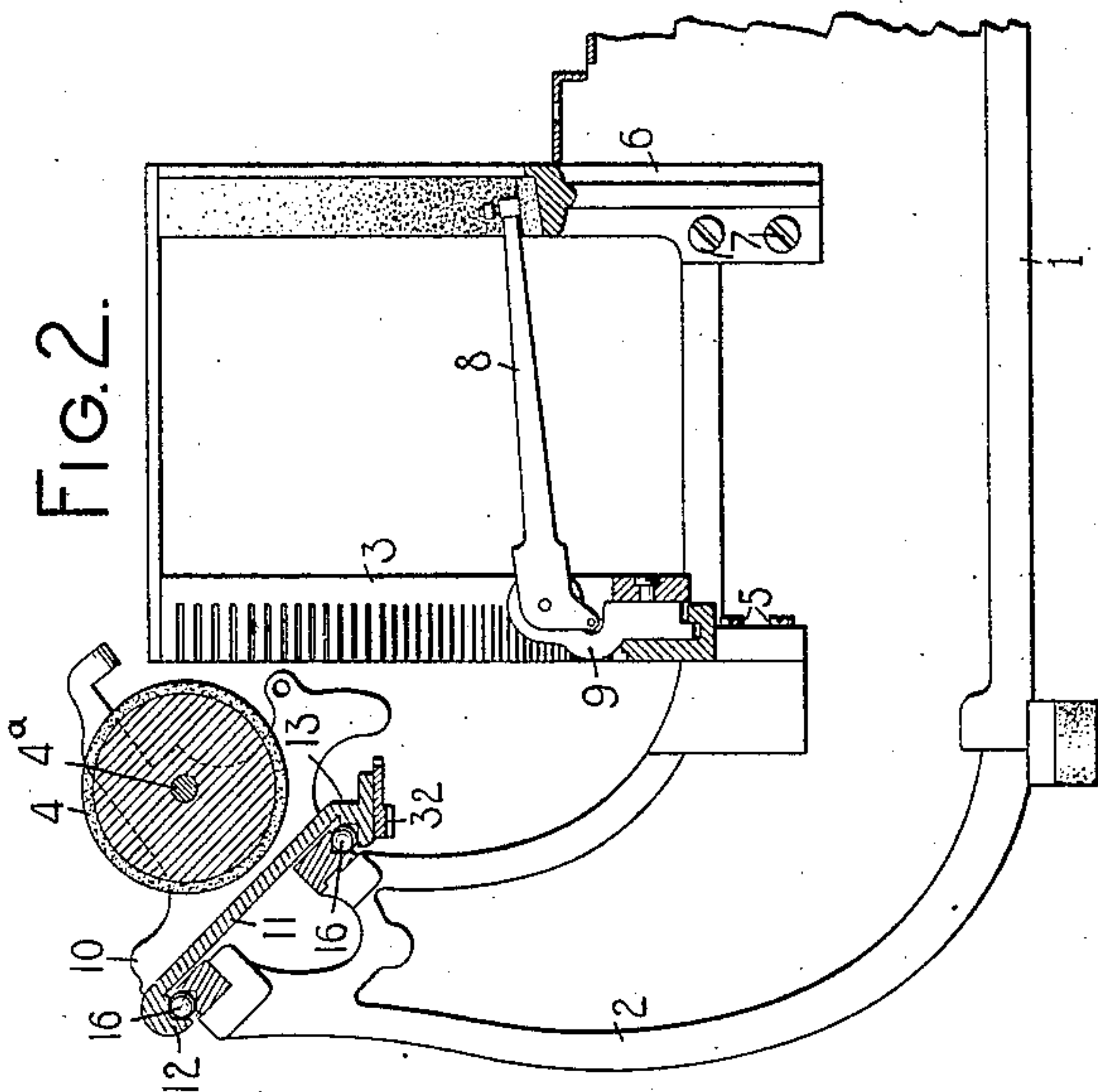


FIG. 2.



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TYPE-WRITING MACHINE.

No. 910,987.

Specification of Letters Patent.

Patented Jan. 26, 1909.

Original application filed October 16, 1902, Serial No. 127,540. Renewed June 21, 1906, Serial No. 322,699. Divided and this application filed March 9, 1906. Serial No. 305,053.

To all whom it may concern:

Be it known that I, ALEXANDER T. BROWN, citizen of the United States, and resident of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and especially to the carriages of such machines.

The principal object of my invention is to provide an improved carriage and means whereby the same is mounted.

To these and other ends that will hereinafter appear, my invention consists in certain features of construction and combinations and arrangements of parts, all of which will be fully described herein and particularly pointed out in the claims.

The present application is a division of my application Serial No. 127,540, filed October 16th, 1902, renewed June 21st, 1906, Serial No. 322,699.

In the accompanying drawings, Figure 1 is a front elevation of the carriage and the supporting means therefor of a typewriter in which my invention is embodied. Fig. 2 is a front to rear vertical sectional view of the rear portion of said typewriting machine with parts omitted. Fig. 3 is an enlarged front to rear vertical sectional view of the carriage and its supports.

I have shown my invention applied to a front strike typewriter, the main frame of which comprises side plates 1, the rear ends of which are curved upward to form rockers 2 on the upper ends of which the carriage is supported. As far as the present invention is concerned the printing mechanism and most of the other parts of the typewriter may be of any suitable construction. As here shown the machine is provided with a type bar segment 3 that stands in front of and below the platen 4 and that is secured at either side to the side plates 1 by screws 5. Said side plates are also connected together by a second segment 6 secured thereto by screws 7, said second segment serving to support a segmental pad for the free ends of the type bars 8. Said type bars are pivotally mounted in hangers 9 that are mounted in suitable slots in the segment 3. Any suitable printing keys and connections may be provided for operating the type bars 8,

which type bars at their free ends carry types adapted to strike against the front face of the platen 4.

The platen 4 is mounted in a carriage having end pieces or plates 10 in which the shaft 4^a of the platen is journaled. Said end plates 10 project upwardly and forwardly from a longitudinal body piece 11 which constitutes the base plate of the carriage and which is set at an inclination of approximately 45° upward and toward the back of the machine. The carriage is mounted to be moved back and forth across the machine on anti-friction bearings which may comprise wheels, cylindrical rollers or balls. In the present instance, for the sake of illustration, balls are shown. Rails 12 and 13 are substantially in the nature of flanges extending along the upper rear and lower front edges respectively of the plate 11 and depending from said plate, said rails preferably being integral with said plate 11. The rails 12 and 13 are formed with oppositely disposed grooves or trackways 14 and 15 respectively, which constitute raceways for anti-friction balls or rollers 16 which coöperate with grooves 17 and 18 formed in stationary rails 19 and 20 respectively, the rails being mounted near their ends on the upper ends of the rockers 2 of the main frame. One of the stationary rails, in the present instance the rail 20, is held against any lateral displacement on its support by a tenon 21 extending from the rocker 2 into a corresponding groove on the underside of the rail. The other rail 19 does not have this groove and tenon connection, so that said rail may be so mounted as to have a slight adjustment towards and away from the rail 20 and both rails may be secured to their supports by screws or any suitable means. The arrangement of the parts is such that the ball races are covered up by the plate 11 and are partly surrounded by and protected by the rails 12 and 13 formed on the plate 11 and the rails 19 and 20 are situated between the rails 12 and 13.

The groove 14 has one wall 22 that faces downwardly and is substantially horizontal and engages the uppermost points of the upper set of balls 16, if balls are used, or the uppermost element of the cylindrical roller, if such rollers are used. Said groove 14 also has a substantially vertical forwardly facing wall 23, which is tangent to the upper set of balls 16 at their rearmost points and which,

in case cylindrical rollers are used, engages the cylinder in the corresponding manner. The groove 17 in the rail 19 also has a horizontal upwardly facing wall 24 and a vertical rearwardly facing wall 25, which walls are directly opposed to the walls 22 and 23 respectively of the rail 12. The groove 18 in the rail 20 has one horizontal downwardly facing wall 26 and one vertical forwardly facing wall 27 and said walls are directly opposed by a horizontal upwardly facing wall 28 and a vertical rearwardly facing wall 29, respectively, of the rail 13.

It will readily be perceived that the center of gravity of the carriage is well forward of the rear roller bearing for the carriage. The effect of this particular carriage mounting is as follows:—The entire vertical pressure or force due to the weight of the carriage is taken by the horizontal wall 22 of the groove 14 in the rail 12 and the opposing wall 24 of the groove 17 in the stationary rail 19; but as the center of gravity of the carriage is forward of this bearing, the carriage tends to turn about the rear balls 16 as a pivot, and this turning tendency is opposed by the vertical wall 29 of the grooved rail 13 pressing against the forward balls 16 which transmit such pressure to the vertical wall 27 of the groove 18 in the rail 20. This horizontal pressure is balanced by a horizontal pressure of the vertical wall 23 of the groove 14 in the rail 12 on the balls 16 from which said pressure is transmitted to the vertical wall 25 of the groove 17 in the rail 19. It will readily be perceived that if the bearing is not tightly adjusted, there will be no pressure at all on the horizontal wall 26 of the rail 20, nor any on the horizontal wall 28 in the rail 13 except that due to the weight of the balls. These last mentioned horizontal walls serve therefore rather to prevent accidental displacement of the carriage than to take the ordinary forces due to the weight of the carriage.

To recapitulate what has just been said about the forces due to the weight of the carriage, it will be seen that there is a downward pressure of the wall 22 on the rear or upper balls 16 and a forward pressure of the vertical wall 23, and that in the forward or lower bearing there is no pressure of the carriage exerted on the balls except the rearward pressure of the vertical wall 29. It will be seen that this carriage support is of such a nature that the carriage will run true even though the bearing be adjusted loosely, and that in case of wear in the bearings, the weight of the carriage will itself take up such wear. In case of wear on either of the horizontal walls 22 and 24, or both of them, the carriage will simply drop down a distance equal to the extent of such wear; and in case of wear on the vertical walls 23 and 25, the carriage will simply move forward a distance corresponding to the extent of such wear;

and in case of wear on the vertical walls 27 and 29, the lower forward part of the carriage will drop downward and backward about the upper rear bearing as a pivot until the parts are in proper engagement. Nevertheless, the carriage is completely controlled by the roller bearings, so that in case any other force than its own weight acts on the carriage, such as some lifting or twisting force when the carriage is moved toward the right by hand, this force also is taken by said bearings in the ordinary way, so that no special safety devices to prevent accidental displacement of the carriage by such forces are necessary. Moreover, the front face of the platen projects some distance in front of the forward edge of the plate 11 so that the carriage is of a suitable sort for a front strike typewriter without having any of the supporting means for the carriage in front of the platen.

The amount of pressure on the vertical walls of the ball bearing grooves, depends on the weight of the carriage and the position of the center of gravity of the carriage fore and aft of the machine; but other things being equal, the pressure on these walls is less in this form of bearing than in most others that have an overhanging carriage, that is to say, where the sole support of the carriage is back of the printing point. Furthermore, the distribution of the pressure between the different walls of the bearings is more uniform than in most such instances. This freedom from excessive pressure on the ball bearing makes at once an easier running bearing and at the same time one less subject to wear than in the ordinary construction. This fact in addition to the fact that the bearing need not be tightly adjusted, and that the weight of the carriage automatically takes up the wear in the bearings, makes this construction, considered merely from the point of view of purely mechanical advantages, a superior mode of mounting a carriage. In addition to these advantages the disposition of the parts afforded by this arrangement is found to work out conveniently in connection with the other appliances and devices that are associated with the carriage and the platen. For example, the inclined base plate 11 of the carriage is adapted to serve as a paper table. To this end I have, in the present instance, shown a paper apron 30 secured to the upper face of said base plate and curving forward toward the platen in position to direct the paper to a feed roller 31 which may be mounted in any suitable manner. The paper apron 30 has its rear edge seated in a depression or groove in the upper face of the base plate 11, so as to bring the upper surface of said apron flush with the upper surface of the base plate.

A feed rack 32 is mounted on the lower side of the lower carriage rail 13 and said feed

rack may be geared in the ordinary or in any suitable way to an escapement wheel (not shown).

The type action and type bar segment construction partially set forth herein, are more fully described and are claimed in my application Serial No. 127,536, filed October 16th, 1902.

Various changes may be made in the details of construction and arrangements without departing from my invention.

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

1. In a typewriting machine, the combination with the main frame, of a carriage having a base or body part inclined upward toward the back of the machine and having rails depending therefrom; stationary rails mounted on the main frame and situated between said carriage rails; anti-friction rollers coöperating with said stationary and carriage rails; and a platen mounted on said carriage in front of said body portion.

2. In a typewriting machine, the combination with the main frame, of a carriage mounted on said main frame and supported by two sets of roller bearings one above and back of the other, said bearings comprising carriage rails and stationary rails and anti-friction rollers; and a feed rack rigidly mounted on the lower forward carriage rail.

3. In a typewriting machine, a carriage with a platen carried thereby, the base of the carriage being inclined and extending upwardly and rearwardly from the platen and constituting a paper table.

4. In a typewriting machine, the combination of a platen, a platen carriage which comprises an inclined base plate that constitutes a paper table which extends upwardly and rearwardly from the platen and directs the paper thereto, means carried by said base plate for supporting the platen, and means for affording a movement of said base plate from end to end of the machine.

5. In a typewriting machine, the combination of a carriage, which comprises an inclined base plate that constitutes a paper table, end plates carried by said base plate and extending forwardly therefrom for supporting a platen, and a platen supported by said end plates in position to receive the paper from the base plate, and means for affording a movement of said base plate from end to end of the machine.

6. In a typewriting machine, a carriage which comprises a plate that constitutes a paper table, trackways that are carried by said plate, end pieces carried by said plate, and a platen carried by said end pieces, the said paper table extending upwardly and rearwardly from the platen and adapted to direct the paper thereto.

7. In a front-strike typewriting machine, the combination of a carriage comprising an

inclined base plate that constitutes a paper table, end plates that project forwardly from said base plate, a platen supported by the end plates in position to receive the paper from the base plate, trackways on which said base plate is adapted to move from end to end of the machine, and means carried by the base plate that affords a movement thereof through the escapement mechanism.

8. In a typewriting machine, the combination of a carriage, comprising an inclined base plate that constitutes a paper table, end plates that project from said base plate, a platen supported by the end plates in position to receive the paper from the base plate, oppositely disposed grooved trackways formed integral with said base plate, fixed grooved trackways on the frame of the machine, anti-friction balls interposed between the grooved trackways of the base and those on the frame of the machine and on which the base plate is adapted to move from end to end of the machine, and means carried by the base plate that affords a movement thereof through the escapement mechanism.

9. In a typewriting machine, the combination with the stationary frame, of a carriage mounted on said stationary frame and wholly supported by two sets of roller bearings one above and back of the other, the rear bearing having a substantially horizontal contact wall on the carriage bearing on the rollers from above, and a substantially vertical contact wall on the carriage bearing on the rollers from the rear, and the forward bearing comprising a substantially vertical contact wall on the carriage bearing on the rollers from in front.

10. In a typewriting machine, the combination with the stationary frame, of a carriage mounted on said stationary frame and wholly supported by two sets of roller bearings one above and back of the other, the rear bearing comprising a substantially horizontal contact wall on a stationary rail bearing on the rollers from beneath, and a substantially vertical contact wall on a stationary rail bearing on the rollers from the front, and the forward bearing comprising a substantially vertical contact wall on a stationary rail bearing on the rollers from the rear.

11. In a typewriting machine, the combination with the stationary frame, of a carriage mounted on said stationary frame by two sets of roller bearings one above and back of the other, the rear bearing comprising a rigidly mounted stationary rail having one rearwardly facing vertical contact wall and one upwardly facing horizontal contact wall, and a carriage rail having one downwardly facing substantially horizontal contact wall and one forwardly facing substantially vertical contact wall; and the forward bearing comprising a rigidly mounted sta-

tionary rail having one downwardly facing substantially horizontal contact wall, and one forwardly facing substantially vertical contact wall, and a carriage rail having one upwardly facing substantially horizontal contact wall and one rearwardly facing substantially vertical contact wall; and said bearings having anti-friction rollers running therein.

10 12. In a front-strike typewriting machine, the combination with the main frame, of a carriage having a base or body part inclined upward toward the rear of the machine; roller bearings wholly supporting said carriage and
15 comprising upper rear and lower forward carriage rails and stationary rails, said rails having grooves with substantially horizontal and vertical walls, and anti-friction rollers running in said grooves; and a platen mounted in said carriage and having its front face
20 forward of said forward roller bearing.

13. In a typewriting machine, the combination of a carriage inclined upward and

backward and having a bearing at its upper rear part and one at its lower front part, and 25 a platen mounted in said carriage above the forward bearing and in front of the rear bearing.

14. In a typewriting machine, the combination of a carriage inclined upward and 30 backward, roller bearings for said carriage, one at the upper rear part and one at the lower forward part of said carriage, each of said bearings comprising a grooved rail on the carriage, a stationary grooved rail and 35 rollers free in the grooves, and the stationary rails being between the rails on the carriage.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 8th day of March, 40 A. D. 1906.

ALEXANDER T. BROWN.

Witnesses:

E. M. WELLS,
M. F. HANNWEBER.