

No. 744,424.

PATENTED NOV. 17, 1903.

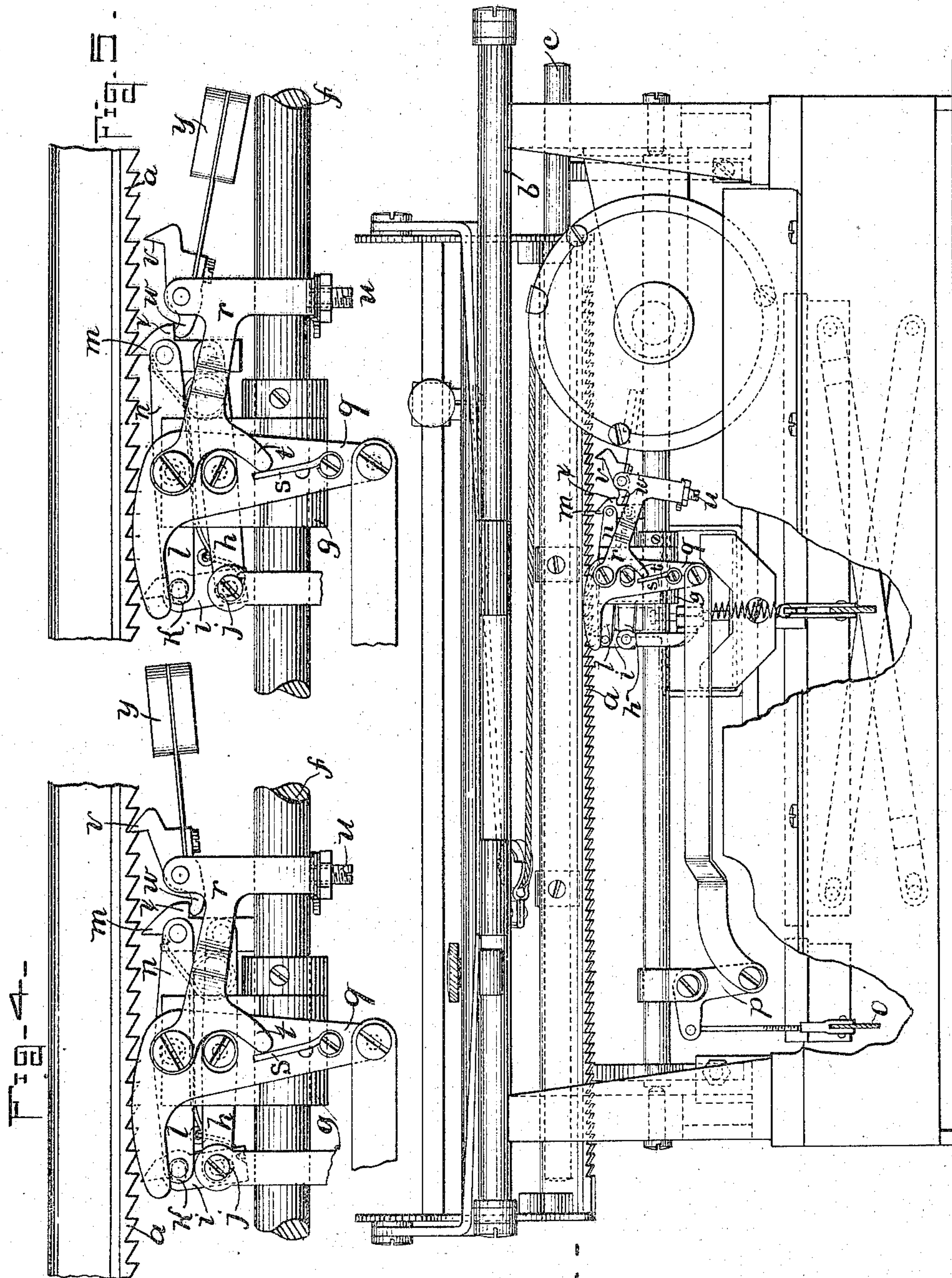
A. W. STEIGER.

RETARDING DEVICE FOR TYPE WRITER CARRIAGES.

APPLICATION FILED AUG. 20, 1900. RENEWED MAR. 25, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses
B. F. Bailey Jr.
B. J. Munsey

Fig. 1

Inventor
Andrew W. Steiger
By Chas. F. Howe
his Atty.

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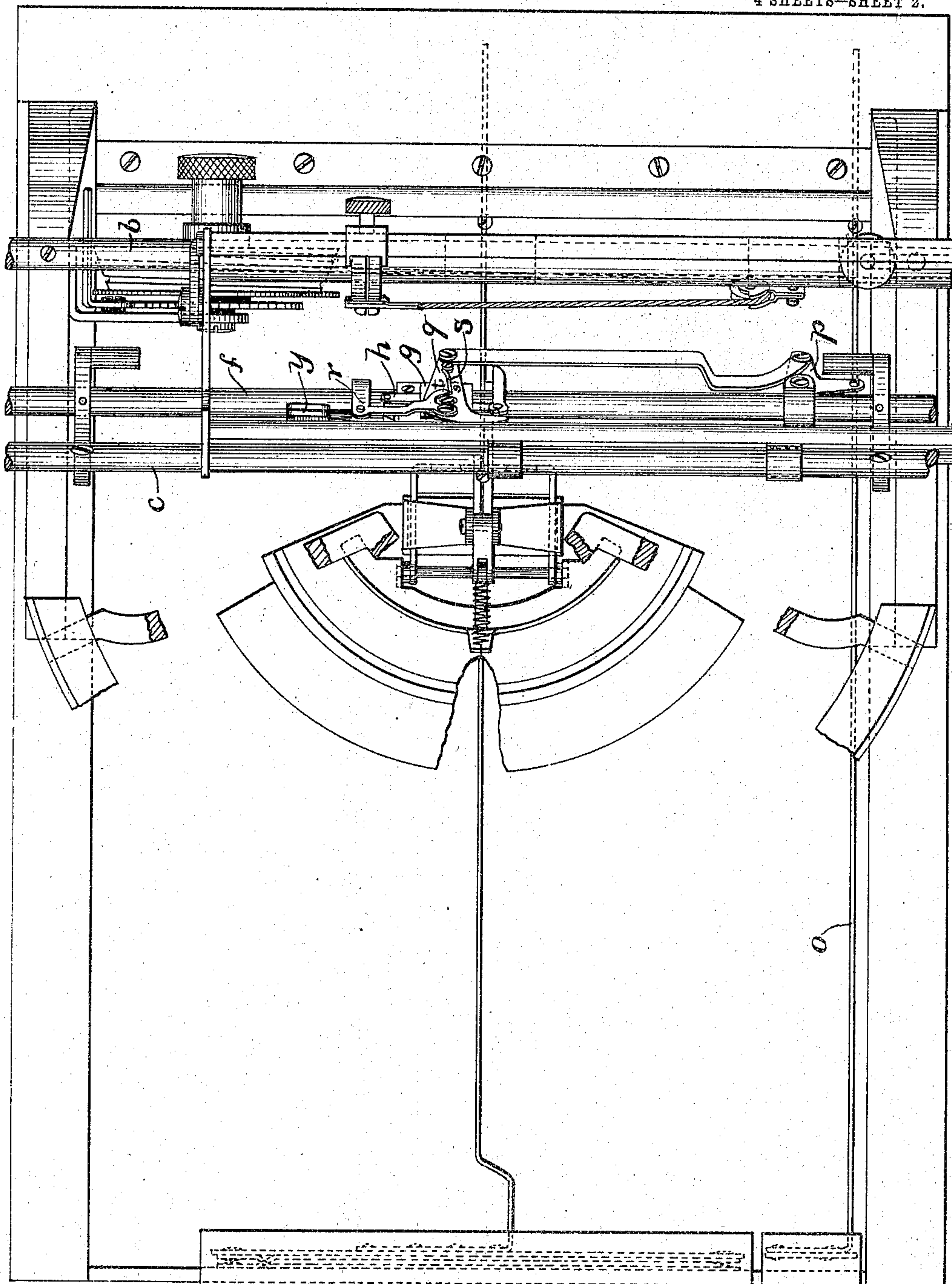
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NO MODEL.

4 SHEETS—SHEET 2.



Witnesses.

Chas. B. Crocker.

B. F. Colley Jr.

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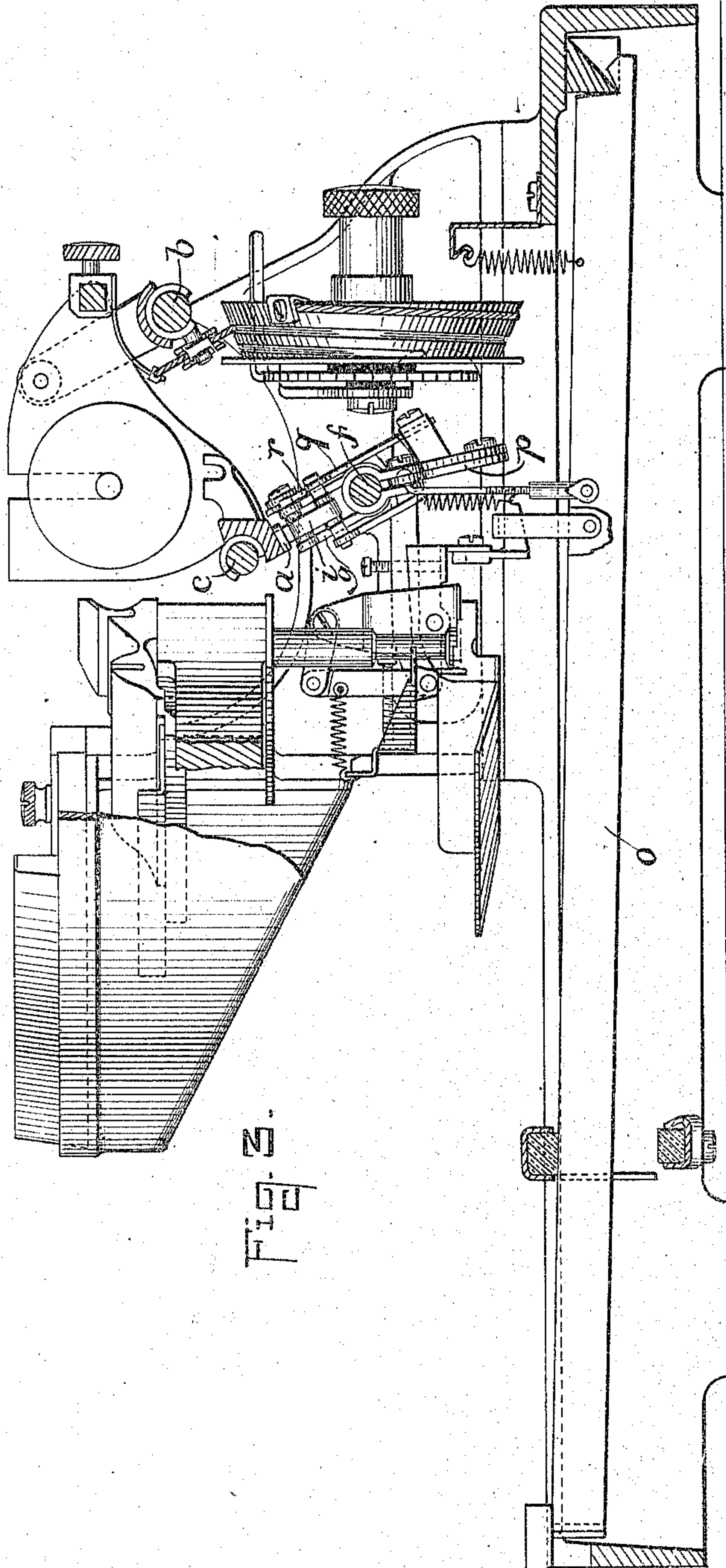
A. W. STEIGER.

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APPLICATION FILED AUG. 20, 1900. RENEWED MAR. 25, 1903.

NO MODEL.

4 SHEETS—SHEET 3.



Witnesses.
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No. 744,424.

PATENTED NOV. 17, 1903.

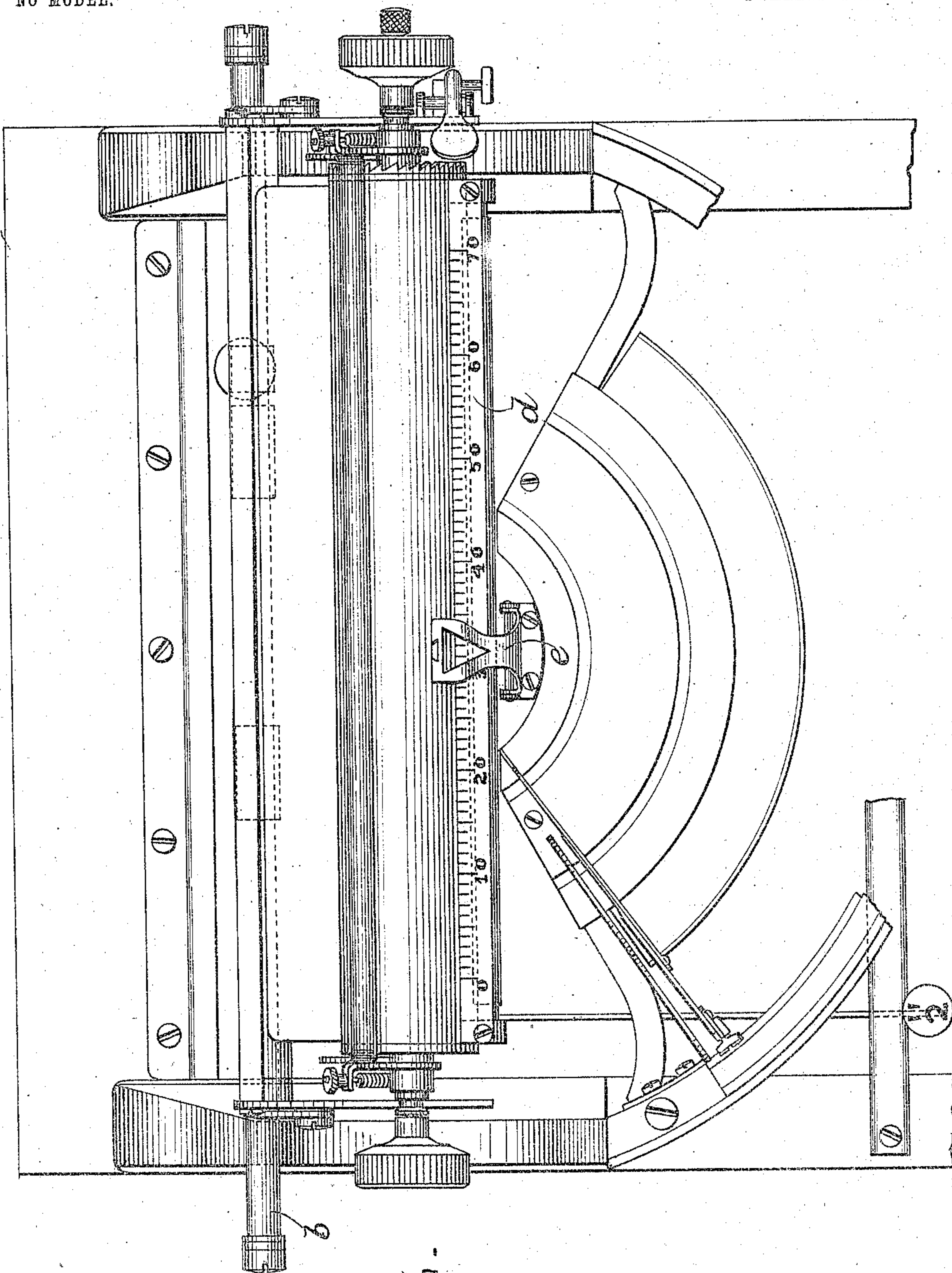
A. W. STEIGER.

RETARDING DEVICE FOR TYPE WRITER CARRIAGES.

APPLICATION FILED AUG. 20, 1900. RENEWED MAR. 25, 1903.

NO MODEL.

4 SHEETS—SHEET 4.



Witnessed -
Chas B Crocker.
P. F. Colley Jr.

Inventor
Andrew W. Striker
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UNITED STATES PATENT OFFICE.

ANDREW W. STEIGER, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AUGUSTUS L. HOFFMAN, FREDERIC S. CONVERSE, AND FREDERIC J. LEACH, TRUSTEES, OF LYONS, NEW YORK.

RETARDING DEVICE FOR TYPE-WRITER CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 744,424, dated November 17, 1903.

Application filed August 20, 1900. Renewed March 25, 1903. Serial No. 149,584. (No model.)

To all whom it may concern:

Be it known that I, ANDREW W. STEIGER, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Retarding Devices for Type-Writer Carriages, of which the following, taken in connection with the accompanying drawings, is a specification.

This improvement in type-writers relates to devices for retarding or controlling the travel of the carriage when the restraining-detent thereof (usually the feed-dog) is withdrawn from the spacing-rack and the draft mechanism pulls the carriage in its direction of feed. When the machine is to be used for filling blanks, making invoices, tabulating, cataloguing, and other like work, it has been customary to interpose in the path of the carriage devices for arresting the motion thereof at suitable intervals. As the carriage may travel many spaces and is stopped instantly, the shock is severe and very injurious to the machine. Hence some manufacturers, to protect the machines, have provided no so-called "marginal stopping" devices, but have obliged the operator to, by hand, release the carriage and stop it at the desired location. Devices have been described by others that withdraw the spacing-rack from the escapement mechanism, some of which have a brake for checking the motion of the carriage; but the effect of the brake is in all of the proposed constructions with which I am familiar dependent on the pressure of the operator on the key; so there is no certainty of the speed at which the carriage may move.

I have wholly overcome the above objections; and to this end my invention consists of an adjustable retarding device, in addition to the usual step-by-step retarding devices, acting on the carriage to regulate its motion automatically at uniform rates of speed, the carriage being released from its normal restraining-detent and put under the control of the said constant-speed-retarding device by a key in the manual.

In a machine to which I have applied my improvement the carriage supports a paper-

table having secured thereto a scale which, in connection with an indicator fixed to the frame of the machine, precisely determines the place the next symbol will occupy. In the manual I locate a release-key, which is suitably connected with the release-arm of the escapement. Pivoted to the escapement-bracket and carrying a normally inactive retarding-dog is a frame which rests against a flexible connection on the release-arm. When the release-arm is depressed, the retarding-dog is brought into contact with the spacing-rack secured to the carriage, and further motion of the release-arm withdraws the feed-dog from the rack, thus throwing the carriage under the tension of its draft mechanism onto the retarding-dog. A toe on the retarding-dog swings in contact with a shoulder on the check-dog of the escapement, and the pressure of the carriage on the retarding-dog lifts the check-dog slightly into the rack. The check-dog does not enter the rack sufficiently to stop the carriage, but acts frictionally on the edges of the rack-teeth, and hence tends to fall back into its normal position. This again causes the retarding-dog to come into the path of the rack and, yielding to the motion of the carriage, again lifts the check-dog into contact with the carriage spacing-rack, which sequence of movements continues as long as the operator holds down the release-key, and by watching the scale the carriage may be stopped at the desired place without jar or injury to any part of the machine. When parts are subjected to vibrations of substantially equal amplitude by a constant force, the number of vibrations of the parts will be in a given time constant. Now the retarding-dog and check-dog move to and fro with relation to the spacing-rack in this manner, so the motion of the carriage under the pull of the draft mechanism is uniform. If the center of gravity of the vibrating parts is varied, the rate of vibration will change; so I arrange a weight on one of the dogs that may be moved with relation to the pivot of the dog, and I adjust the weight farther from the pivot of the dog to slow up the carriage or move it nearer the pivot to quicken the motion of the carriage; but it should be under-

stood that as soon as the operator presses the key sufficiently to remove the escapement from the rack the speed of the carriage is wholly automatically controlled by the re-
 5 tarding device at the rate of motion for which the parts have been adjusted.

The illustrations show in Figure 1 a rear view of a type-writer; Fig. 2, a partial plan of a type-writer; Fig. 3, a longitudinal section of
 10 a type-writer; Figs. 4 and 5, enlarged views of the retarding mechanism; Fig. 6, a detail of the indicating devices.

The carriage provided with the spacing-rack *a* is arranged to slide along the fixed rod *b* and guide-rail *c* by any suitable draft mechanism. Supported upon the carriage is the
 15 usual plate *d*, and connected with the paper-table of the platen is the scale *e* to enable the operator to position the work with relation to the indicator *e*, secured to a fixed portion of the machine.

Upon the trunnion-rail *f* is secured the bracket *g*, in which is pivoted the rocker *h*, and at one end of the rocker the feed-dog *i*,
 25 having a slot *j* to permit vertical movement, is supported, the upper portion of the feed-dog having a slot *k*, so that the feeding vibration thereof may be limited by the strut *l*, pivoted to the bracket *g*. At the opposite
 30 end of the rocker a check-dog *m* is pivoted and connected to a link *n*, pivoted to the bracket *g*, to move only across the path of the carriage spacing-rack *a*. A spring tends to hold the feed-dog normally in contact with
 35 the spacing-rack and to depress the check-dog. Links connect the release-key lever *o* with a bell-crank *p* and the latter with a release-arm *q*, which is pivoted on the bracket *g*.

A frame *r* is pivoted to the bracket *g* and
 40 flexibly positioned by a yielding connection, as the spring *s*, fast to the release-arm *q* and in contact with a projection *t* from the frame *r*, the upward movement of which frame is limited by an adjusting-screw *u*, threaded in
 45 a yoke depending therefrom, that comes in contact at times with the trunnion-rail *f*. In the upper part of this frame *r* the retarding-dog *v* is pivoted, and the toe *w* of this dog rests under the shoulder *x* of the check-dog.
 50 To vary the rate of vibration of the dog *v*, and hence the speed of the carriage under the draft of its spring, the split weight *y* may be adjusted on a blade extending therefrom.

The above construction facilitates the accurate adjustment of the retarding-dog to the spacing-rack, which is important, as the best results follow if the dogs have but limited motion from the rack, and as the trunnion-rail is pivoted in the machine parallel to the
 60 spacing-rack the frame *r*, carrying the retarding-dog, will be maintained at constant distance from the rack by the adjusting-screw *u* when the release-key lever forces the yielding connection against the frame *r*. The yielding connection prevents the operator from improperly affecting the vibrating parts in manipulating the release-key, as when the

pressure is sufficient to position the frame *r* the feed-dog will be withdrawn from the rack, greater pressure only bends the springs *s* without changing the position of the frame *r*, and less pressure at once inserts the feed-dog to stop the carriage and allows the frame carrying the retarding-dog to fall back from the rack. When the operator strikes a symbol-
 75 key or the space-bar, the rocker causes the feed-dog *i* and check-dog *m* to alternately come in contact with the rack *a*, the effect of which is to feed the carriage one space at each stroke; but if the release-key is touched then
 80 the lever *o*, through the bell-crank *p*, turns the release-arm *q* on its center and begins to withdraw the feed-dog *i* from the rack *a*, at the same time the spring *s* on the release-arm *q*, that rests in contact with the projection *t*
 85 from the frame *r*, lifts the frame till the adjusting-screw *u* strikes the trunnion-rail *f*, causing the retarding-dog *v* to enter the rack *a*. The thrust of the carriage at once pushes the dog *v* down, thereby lifting the check-dog
 90 *m* into contact with the teeth of the rack *a* by means of the toe *w* and the shoulder *x*. The vibration thus established will continue while the release-key is depressed, and the rate of vibration may be regulated by moving
 95 the weight *y*, attached to the retarding-dog *v*. When the release-key is restored to normal position, the feed-dog *i* again enters the rack *a* and stops the carriage.

The location of the release-key in the manual is an important feature, as no awkward reaching is required. The operator simply touches the key, watches the scale and indicator, and removes the finger when the carriage reaches the desired location.
 105

Having described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a type-writer, a carriage, means to move the carriage in its feeding direction and
 110 devices to allow the carriage to advance step by step, combined with automatically-controlled constant-speed-retarding mechanism for the carriage and means to free the carriage from the step-by-step devices and to
 115 connect it to the constant-speed mechanism, without otherwise impeding the motion of the said carriage, substantially as described.

2. In a type-writer, a supporting-frame, a carriage, a connection between the carriage
 120 and frame to move the carriage along the said frame in the direction of feed, and a spacing-rack attached to the said carriage, combined with a feed-dog and a check-dog that are connected with each other and the manual so the
 125 carriage may be thereby advanced intermittently, and a retarding-dog having connections with the check-dog and the release-key so the carriage may be advanced thereby uniformly, substantially as described.
 130

3. In a type-writer, a carriage provided with a spacing-rack, a feed-dog normally in engagement therewith, a check-dog and a co-acting retarding-dog normally withdrawn

therefrom, combined with means for withdrawing the feed-dog from, and contacting the check and retarding dogs with, the spacing-rack, substantially as described.

5 4. In a type-writer, the combination with the carriage, its draft mechanism and spacing-rack, of vibratory automatic devices for feeding the carriage uniformly and means to change the number of vibrations in an interval of time of the said automatic devices, substantially as described.

10 5. In a retarding device, a bracket having a rocker, strut and link, a feed-dog movable with relation to rocker and strut, a check-dog 15 pivoted to rocker and link and means for depressing the feed-dog without affecting the check-dog, combined with a retarding-dog and means for placing the retarding-dog in operative relation to the check-dog, substantially as described.

20 6. In a type-writer, having step-by-step and uniform-speed feeding devices including retarding-dog, means for adjusting the vibra-

tory motion of the retarding-dog, substantially as described.

25 7. In a type-writer, a carriage, a spacing-rack, a retarding-dog and connected mechanism for feeding the carriage at uniform speed, combined with means for positioning the retarding-dog and spacing-rack with relation to each other, substantially as described.

30 8. In a type-writer, a carriage, a spacing-rack and retarding devices, means for limiting the approach of a member of the retarding devices and spacing-rack and a yielding 35 connection between the said member of the retarding devices and the release-key, substantially as described.

In testimony whereof I have hereunto subscribed my name this 27th day of December, 40 A. D. 1899.

ANDREW W. STEIGER.

Witnesses:

JOHN B. DALEY,
A. O. ORNE.