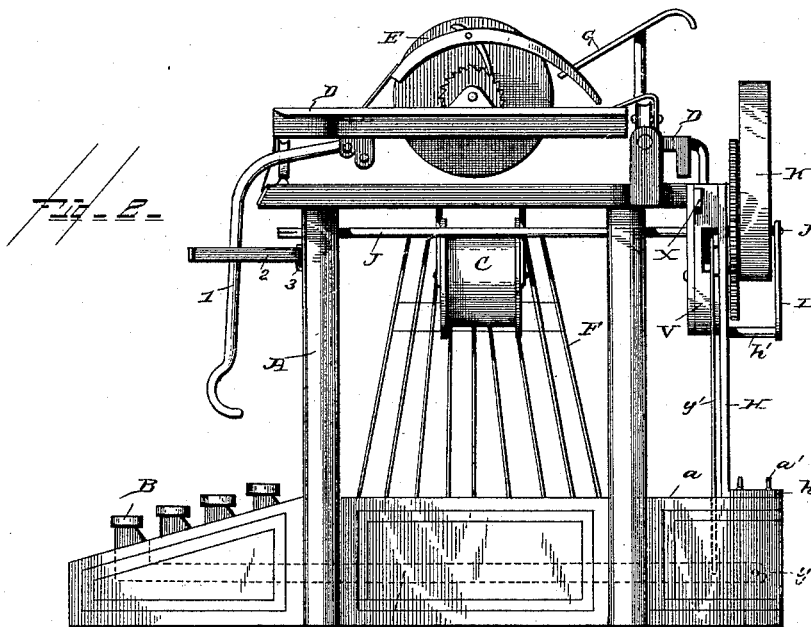
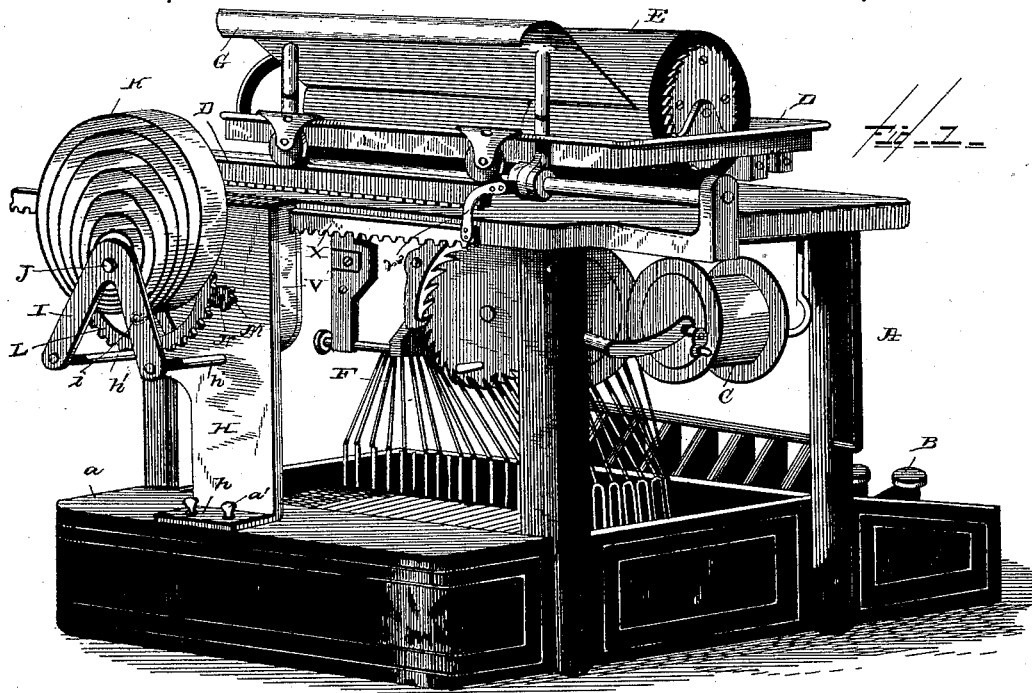


(No Model.)

2 Sheets—Sheet 1.

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No. 418,260. Patented Dec. 31, 1889.



Witnesses

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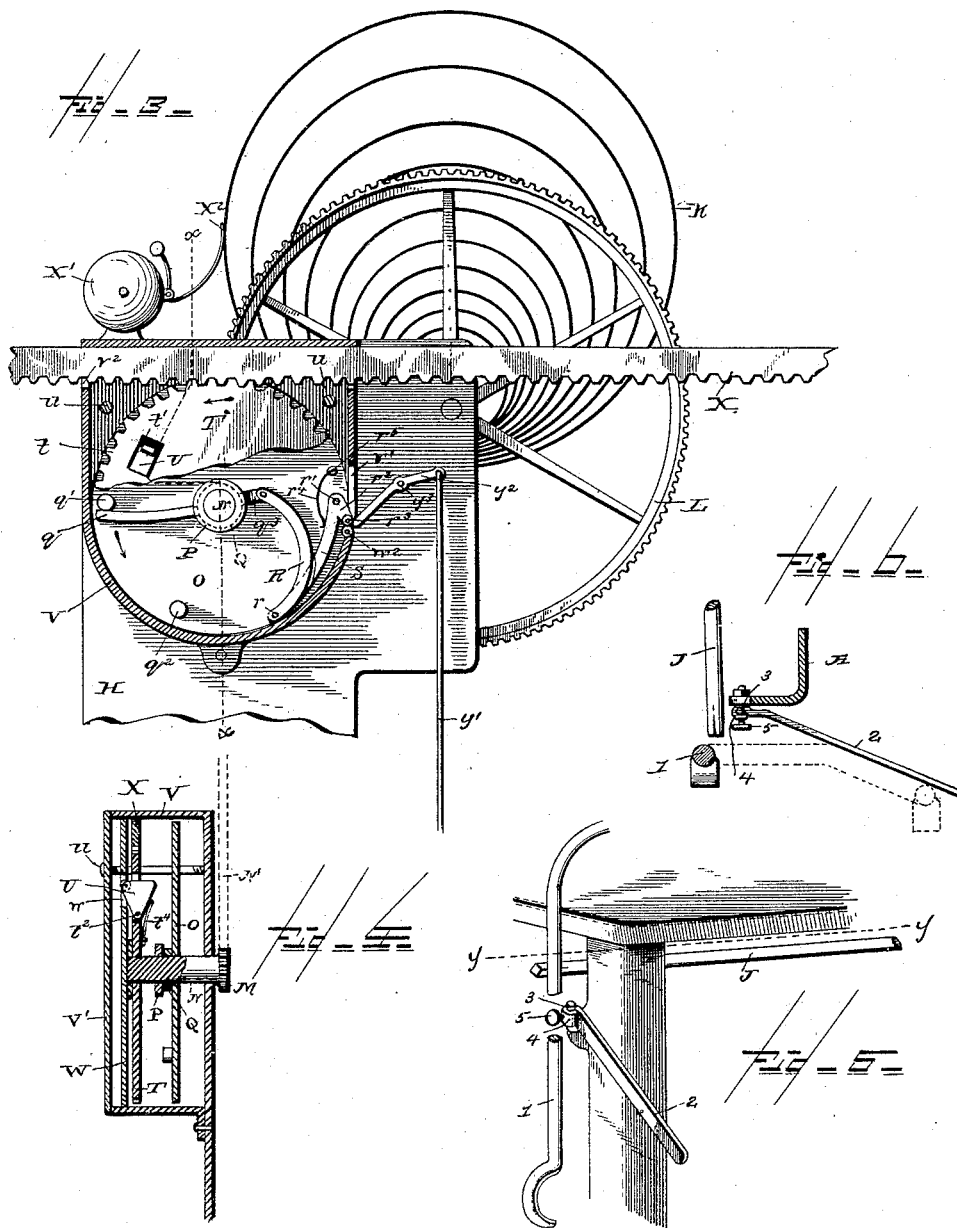
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UNITED STATES PATENT OFFICE.

ADELAIDE H. WOODALL, OF QUINCY, ILLINOIS, AND WILLIAM S. ROMME, OF
DARIEN, CONNECTICUT.

REVERSE-MOVEMENT ATTACHMENT FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 418,260, dated December 31, 1889.

Application filed February 1, 1889. Serial No. 298,310. (No model.)

To all whom it may concern:

Be it known that we, ADELAIDE H. WOODALL and WILLIAM S. ROMME, both citizens of the United States, the former residing at Quincy, in the county of Adams and State of Illinois, and the latter residing at Darien, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Reverse-Movement Attachments to Type-Writing Machines; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in type-writing machines, and more particularly to mechanism for automatically returning the traveling carriage at the end of a line and at the same time revolve the paper-carrying roller to feed the paper and bring into position for beginning a new line both the carriage and the paper.

We are aware that heretofore provisions have been made for the automatic return of the carriage at the termination of a line, and that it is not new to automatically effect the line-spacing when the traveling carriage reaches the end of a line, and therefore do not seek to cover such, broadly.

The object of our invention is to provide a simple attachment to type-writers capable of being readily attached to or removed from type-writing machines already in use, which shall be simple, cheap, and durable, and very efficient in use.

The novelty in the present instance resides in the peculiar combinations and the construction, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the drawings, and then particularly pointed out in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a perspective view of a type-writer of the Remington type provided with our improvements. Fig. 2 is a side elevation

of the same. Fig. 3 is an enlarged front elevation of the attachment, partly broken away. Fig. 4 is a section on the line *xx* of Fig. 3. Fig. 5 is a perspective view of the spacing device. Fig. 6 is a section on the line *yy* of Fig. 5.

Referring now to the details of the drawings by letter, A designates the supporting frame-work, B the key-levers, C the ribbon-spools, D the carriage, E the paper roll, F the type-bars, and G the paper-guard, of the form of type-writing machines known as the "Remington," and all of which parts are of well-known construction and are arranged and operated in a manner well understood, except as hereinafter specifically described.

Other minor details of construction of the machine proper not referred to in the following description are common to all type-writing machines of this class, and are shown simply to complete the "make-up" of the machine; but, forming no part of the present invention, they are not specifically mentioned, the description being confined to such parts as co-operate with our improvements.

H is a standard, formed with a base portion *h*, adapted to be readily attached to the ledge *a* of the supporting-frame, said standard being designed to support the "movement" of our device. This standard may be secured to the said ledge *a* in any suitable manner, preferably, however, by means of thumb-screws *a'*, as shown in Fig. 1, so as to be readily attached to or removed when desired. Projecting from the back of this standard are the rods *h'*, to which are secured the lower ends of the angular support or brace I, the apex of which forms a bearing for the shaft J. This shaft also has a bearing in the standard H, and to said shaft is secured one end of the coil-spring K, the other end of which is fastened to a fixed point on the brace I, as shown at *i*. On the said shaft is secured a cog-wheel L, which meshes with the smaller cog-wheel M on the shaft N, said cog-wheels being geared down, as shown, preferably so that one revolution of said cog-wheel L rotates the wheel M ten times; but of course we do not wish to limit ourselves to this ratio, as the same may be varied to accommodate different machines or for different purposes. On the shaft N, upon the opposite

side of the standard, is fixed the disk O, and between this disk and a collar P, also fast on said shaft, is loosely sleeved the collar Q, from one side of which projects the arm q , which is limited in its movement by means of the stops q' q'' on the face of said disk, as will be hereinafter more fully described. From the opposite side of said collar Q projects the arm q^3 , and to the said arm q^3 is pivoted one end of the curved lever R, the opposite end of which is in turn pivoted to one end of the lever S, the opposite end of which is pivoted to the disk on the pivot r' , and is formed near its pivot with an enlargement or detent r^2 , which is preferably, though not necessarily, provided with an anti-friction roller r^3 . Normally this detent or the roller thereof projects through or beyond the periphery of the disk, and is aided in assuming this position by means of the spring r^4 , fixed at one end, as at r^5 , to the face of the disk, and bearing with its free end upon said lever S near its pivot, as shown best in Fig. 3. Loosely sleeved on the shaft N, beyond the collar P, is the wheel T, provided with the teeth t on its periphery, and also formed with an aperture t' , through which works the pawl U. This pawl is pivoted to the wheel, as shown at t^2 , and is normally held projected through said aperture by means of the spring t^4 , secured to said wheel and bearing on the pawl, as shown in Fig. 4. These parts just described are inclosed in a case V, secured to the back of the standard H, and provided with a removable cap or cover V', which is held in position by means of the screws u .

W is a plate fixed within the casing and forming a bearing for the shaft N, and provided with an opening w , through which the pawl U projects at predetermined periods, as will be more fully hereinafter set forth.

The case V is provided with a slot v' , through which the detent r^2 or its roller r^3 normally projects, and longitudinally through the top of the casing is a slot or aperture v^2 , in which travels the rack-bar X, projecting downwardly from the carriage and supported therefrom in any suitable manner—for instance, by means of the bars v^3 .

The operation of this part of our improvement is as follows: The spring K is first wound up by means of a suitable key or crank, the shaft J being extended to the front of the machine and provided with a squared end for this purpose, as shown best in Fig. 2. The letter-keys are operated upon in the usual manner, as the carriage travels from right to left, being actuated in the usual manner by a spring. (Not shown.) The rack-bar X moves with said carriage and works in the teeth of the wheel T. The rotation of said wheel by means of this engagement causes the pawl U to be withdrawn from the opening w in the plate W, and depresses it so that in the further rotation of said wheel said pawl will engage with the arm q of the collar Q; and as the wheel is still further revolved in the direc-

tion of the arrow in Fig. 3 the said arm is carried around with the wheel by reason of the engagement of the pawl therewith until the detent r^2 is drawn in so as to release the same from its bearing on the casing, and as soon as said detent is released from its bearing the spring K, being connected to the shaft on which the disk is fixed, causes said disk to revolve until it is again stopped by the engagement of said detent with its bearing on the casing. At the point on the casing where the detent bears we preferably provide an anti-friction roller w^2 , to decrease the friction. When the detent is released from its bearing the wheel T is rotated in the reverse direction until the pawl U springs into the aperture in the plate W. This rotation of the wheel, through the engagement of its teeth with the rack-bar X on the carriage, causes the carriage to move from left to right and return to the commencement of a line. As another line is commenced the same operation is repeated. When the spring K runs down, it is only necessary to wind it up again; and in order to notify the operator when the spring is about run down we provide an alarm consisting of a bell X', secured to the casing, and the hammer thereof provided with a lever X², arranged in such a position that as the spring becomes distended in unwinding to a certain extent it strikes said lever and causes the hammer to strike the bell and sound an alarm.

The spring K should be stronger and more powerful than the spring which actuates the carriage from right to left, in order that it may be sure to cause the carriage to return to the right when the parts have assumed the position at the end of the line, as above described.

It often happens that in the use of the typewriter one completes a sentence before the end of the line is reached and wishes to begin a new line without going to the end of that one. In order to return the carriage under such circumstances, we provide the following mechanism: To the right-hand side of the machine we provide an extra key-lever Y, pivoted at y to the rear of the machine, and carrying an upright arm or rod y' , connected with one end of the lever y^2 , pivoted at y^3 on the standard H, and at its other end arranged to engage with the detent r^2 or its roller r^3 , as shown. When it is desired to return the carriage before the end of a line is reached, it is only necessary to depress the lever Y, when the detent r^2 will be thrown in and the carriage returned in the same manner as when the said detent is thrown in when the carriage arrives at the end of a line, as above described.

In order to feed the paper forward as the carriage is returned, we have devised the following mechanism: 1 is the spacing-lever, common in this style of type-writers, and connected with the paper-roller by means of the ratchet-and-pawl engagement, as is well

known and will be readily understood. 2 is an arm attached to the right-hand side of the frame of the machine and arranged at an angle to the travel of the carriage, as shown, and in such a position as to engage the spacing-lever as the carriage approaches the right-hand side of the machine to the commencement of a line, and as said lever rides up said inclined arm it causes the same to be raised at its forward end and therefore depress its rear end, and, by reason of the engagement of the ratchet and pawl, to feed the paper forward.

In order to regulate the space or number of notches the paper is to be fed, we connect the arm 2 to the frame as follows: 3 is a pin or pintle on the frame, and the end of the arm 2 is formed with an eye 4, sleeved on said pin, whereby it may be turned to different angles, being held in its adjusted positions by means of the set-screw 5. This arm 2 also serves to bring the carriage gradually to a standstill, lessening the shock which might otherwise be occasioned if the carriage, by the force of the spring K, were brought suddenly against its stop at the right-hand side of the machine.

The carriage-returning mechanism above described, although particularly serviceable for the purpose for which it is shown in this specification, is well adapted to other uses, and we therefore wish to be understood as not restricting ourselves to its use in connection with a type-writing machine, as it is evident that it may be applied to other analogous uses in which like results are accomplished.

Various modifications in detail may be resorted to without departing from the essence of or detracting from the merits of the invention.

Where in the following claims we refer to the term "holder" we intend to cover, broadly, mechanism for holding the spring normally inactive.

What we claim as new is—

1. The combination, with the carriage and its advancing mechanism, of a rack-bar carried by the carriage and independent of the advancing mechanism thereof, and a spring of greater power than that which advances the rack-bar and acting in opposition thereto, and a holder for said spring, which, when actuated to release the spring, actuates the rack-bar to return the carriage to its normal position, substantially as described.

2. The combination, with the carriage and its advancing mechanism, of a rack-bar carried by the carriage and independent of the advancing mechanism, and a normally inactive spring arranged to act in opposition to the power of the advancing mechanism and to be released by the rack-bar at a predetermined period to retract said bar and carriage, substantially as described.

3. The combination, with the carriage and its advancing mechanism, of a rack-bar independent of the advancing mechanism and

moving with the carriage, a normally inactive spring, and a compound lever operated through the movement of the rack-bar to release the spring, substantially as described.

4. The combination, with the rack-bar and its advancing mechanism, of the spring K, the compound lever, connections between the spring and lever, the wheel T, actuated by the rack-bar, and connections between the lever and wheel, substantially as and for the purpose specified.

5. The combination, with the carriage and its advancing mechanism, of a rack-bar independent of the advancing mechanism and moving with the carriage, the spring K, the compound lever, and connections between said spring and lever, whereby the movement of the rack-bar actuates said lever to cause the spring to return the rack-bar and carriage to their normal position, substantially as described.

6. The combination, with the carriage and its advancing mechanism, of a rack-bar independent of the advancing mechanism and moving with the carriage, the spring K, the wheel T, its shaft, the compound lever, connections between said spring and shaft, and the pawl on said wheel, substantially as and for the purpose specified.

7. The combination, with the carriage and its advancing mechanism, of the rack-bar independent of the advancing mechanism and moving with the carriage, the spring, the wheel T, the pawl thereon, the shaft of said wheel, connections between said spring and shaft, the compound lever, and a detent carried by the lever, substantially as and for the purpose specified.

8. The combination, with the rack-bar and its advancing mechanism, of the spring, the wheel T, the pawl thereon, the shaft of said wheel, connections between said spring and shaft, the disk fast on said shaft, the compound lever loose on said shaft, and a detent carried by said lever, substantially as and for the purpose specified.

9. The combination, with the rack-bar and its advancing mechanism, of the spring, the wheel T, its shaft, the disk fast on said shaft, the compound lever, the pawl on said wheel, connections between said spring and shaft, and the apertured plate W, substantially as and for the purpose specified.

10. The combination, with the rack-bar and its advancing mechanism, of the spring K, the wheel T, its shaft, connections, substantially as described, between said spring and shaft, the fixed apertured plate W, the pawl on said wheel, the disk fast on the shaft, the collar loosely sleeved on said shaft, and the compound levers carried by said collar, substantially as and for the purpose specified.

11. The combination, with the carriage and its advancing mechanism, of a rack-bar on the carriage independent of the advancing mechanism, a normally-inactive spring arranged to act in opposition to the power of

the advancing mechanism, and a holder for said spring, and mechanism for releasing said spring either at the end of a line or at any point intermediate of the ends of a line to return the carriage and rack-bar to their normal position, substantially as described.

12. The combination, with the carriage and its advancing mechanism, of a rack-bar carried by the carriage and independent of the advancing mechanism thereof, a spring of greater power than that which advances the rack-bar and acting in opposition thereto, a holder for said spring, which, when actuated to release the spring, actuates the rack-bar to return the carriage to its normal position, and a line-spacing and carriage-retarding mechanism, substantially as described.

13. The combination, with the carriage and its advancing mechanism, of the retracting mechanism, the spring K thereof, and an alarm arranged to be actuated by the contact therewith of the spring as it unwinds, substantially as shown and described.

14. The combination, with the carriage, its advancing mechanism, and the rack-bar X on said carriage, of the spring K, the cog-wheel fast on the shaft of said spring, the shaft N, the cog-wheel thereon, the wheel T on said shaft N and actuated by said rack-bar, and the levers actuated by the rotation of said wheel, substantially as and for the purpose specified.

15. The combination, with the carriage, its advancing mechanism, and the rack-bar on said carriage, of the spring K, the cog-wheel fast on the shaft of said spring, the shaft N, the smaller cog-wheel thereon, the said cog-wheels being geared down, as described, the wheel T on said shaft N and actuated by said rack-bar, and the levers actuated by the rotation of said wheel T, substantially as and for the purpose specified.

16. The combination, with the carriage, its advancing mechanism, and the rack-bar X on the carriage, of the spring K, the shaft N, the wheel T thereon meshing with the rack-bar, the levers, the disk, the pawl on the wheel, and the fixed apertured plate W, substantially as and for the purpose specified.

17. The combination, with the carriage and its advancing mechanism, of a rack-bar carried by the carriage and independent of the advancing mechanism, a spring of greater power than that which advances the rack-bar and acting in opposition thereto, a holder for the spring, which, when actuated to release the spring, actuates the rack-bar to return the carriage, a lever for actuating said holder before the end of a line is reached, and connections between said lever and holder, substantially as described.

18. The combination, with the retracting mechanism and its case, formed with a slot v' , through which the detent of the retracting mechanism normally projects, of the key-lever Y, the lever y^2 , arranged to engage said detent, and the rod y' , connecting the levers

Y and y^2 , substantially as and for the purpose specified.

19. The combination, with the case, the spring K, the casing, and its attachment to the frame of the machine, of the carriage, its advancing mechanism, the rack-bar X on the carriage, the wheel T, actuated by said rack-bar, connections between said spring and the shaft of the wheel, and the levers normally bearing on the casing to hold the spring inactive, substantially as described.

20. The combination, with the rack-bar X, its advancing mechanism, and the shaft N, of the spring K, arranged to actuate said shaft, the wheel T on said shaft and actuated by the rack-bar, the casing, the levers provided with a detent normally having a bearing on said casing, the pawl on the wheel, and the disk on the shaft, substantially as and for the purpose specified.

21. The combination, with the rack-bar X, its advancing mechanism, and the shaft N, of the spring K, arranged to actuate said shaft, the wheel T on said shaft and actuated by the rack-bar, the casing, the levers provided with a detent having an anti-friction roller normally having a bearing against an anti-friction roller on the casing, the pawl on the wheel, and the disk on the shaft, substantially as described.

22. The combination, with the supporting-frame, the casing, and the advancing mechanism, of the rack-bar, the disk, the spring, the shaft N, to which one end of said spring is attached, the cog-gearing between the shaft of the spring and said shaft N, the spring-actuated pawl, the wheel T, carrying said pawl and actuated by the rack-bar, the levers, and the detent normally bearing on the casing, substantially as described.

23. The combination, with the carriage and its advancing mechanism, of the retracting mechanism, the spring K thereof, the alarm, and the lever X^2 , connected with the hammer of the alarm and arranged to be engaged by said spring as the latter unwinds, substantially as and for the purpose specified.

24. The combination, with the carriage, the advancing mechanism thereof, and the rack-bar X on said carriage, of the spring K, the shaft N, connections, as described, between said spring and shaft, the collar Q, loose on said shaft and formed with the arm q , the disk, the stops thereon, the wheel T, the apertured plate W, and the detent normally bearing on the casing of the retracting mechanism, and the levers carried by said collar and carrying said detent, substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

ADELAIDE H. WOODALL.
WILLIAM S. ROMME.

Witnesses:

IDA RALSTON MORRIS,
O. L. PITNEY.