S. R. SHOUP.

PAPER ROLL SUPPORT FOR TYPE WRITING MACHINES.

APPLICATION FILED AUG. 27, 1909.

1,120,249.

Patented Dec. 8, 1914.

2 SHEETS-SHEET 1.

FIG. 2.

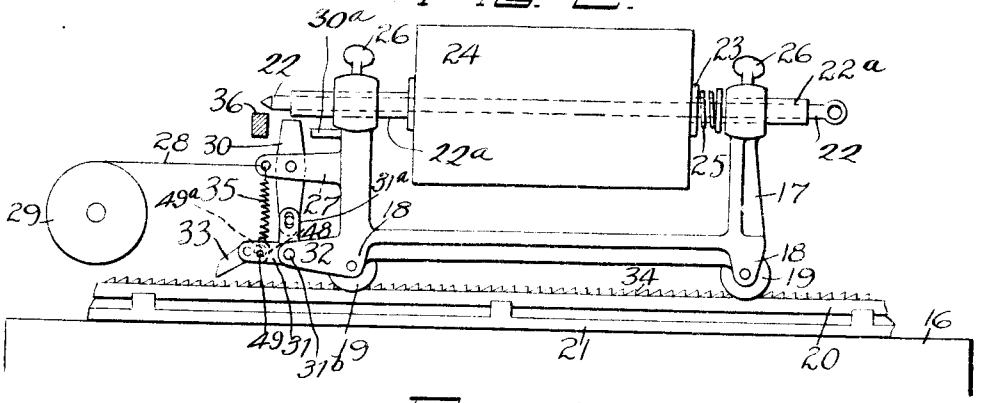
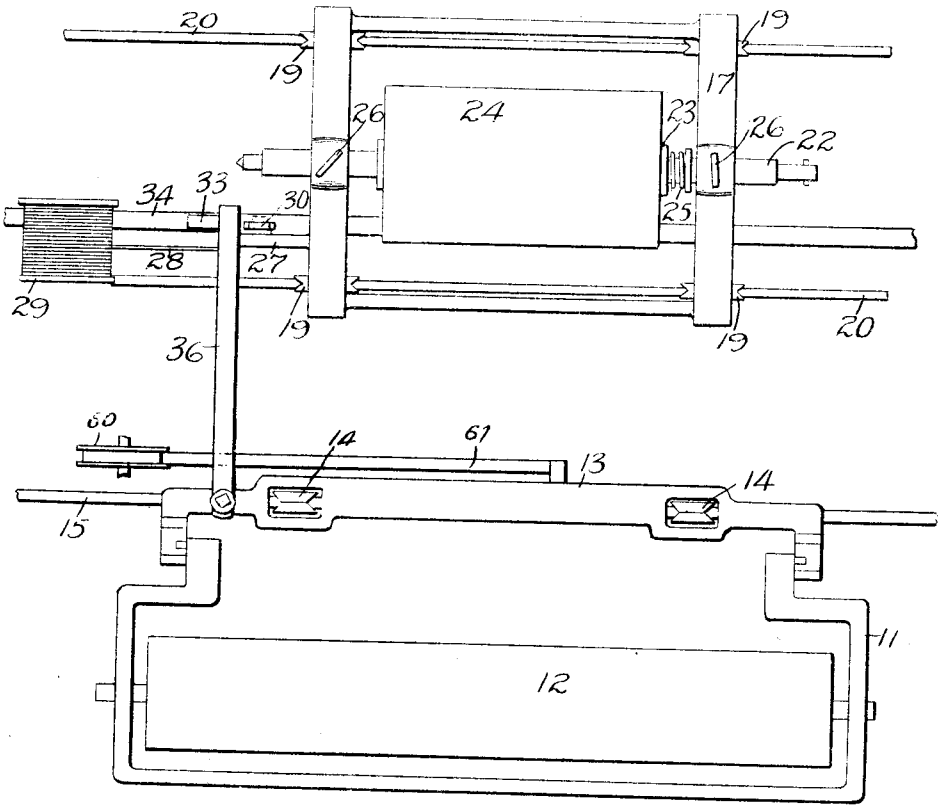


FIG. 1.



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2 SHEETS—SHEET 2.

FIG. 5.

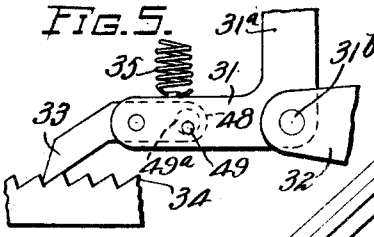
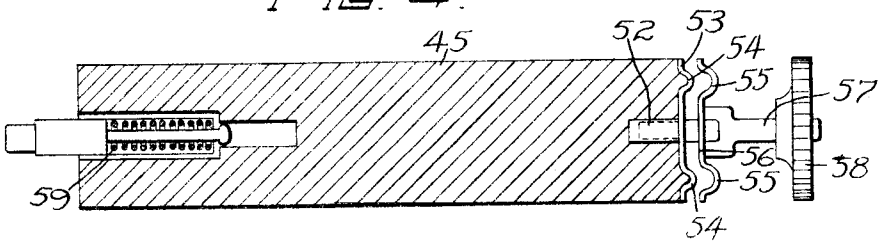


FIG. 3.

FIG. 4.



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PAPER-ROLL SUPPORT FOR TYPE-WRITING MACHINES.

1,120,249. Specification of Letters Patent. Patented Dec. 8, 1914.

Application filed August 27, 1909. Serial No. 514,875.

To all whom it may concern:

Be it known that I, SAMUEL R. SHOUP, a citizen of the United States, and a resident of Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Paper-Roll Supports for Type-Writing Machines, of which the following is a specification.

This invention relates to paper-feeding attachments for typewriting machines.

As is well known, there are certain classes of work which are facilitated by feeding one or more long strips of paper into the typewriting machine, the end portion or portions thereof usually being detached after each individual piece of work has been completed, and the newly-made ends of the strips being left in the machine for a repetition of the typewriting operations, thus doing away with the necessity for repeatedly adjusting separate sheets in the machine. When a large number of similar forms are to be filled in, and when, as usual, rapid operation is desirable, it has been the practice to provide a series of these forms printed on long strips which are wound upon spools or otherwise suitably rolled, and to so mount the spools or rolls in connection with the carriage of the typewriting machine that said strips may be fed through the machine in the usual manner. If two or more copies of the typewritten matter are desired, the requisite number of strips are superposed and suitable manifolding material interposed therebetween, in the same manner as is customary when individual sheets of paper are employed.

In feeding strips of paper from spools or rolls to the platen of a typewriting machine, it is customary for said spools or rolls to be either mounted upon or moved by the typewriter carriage, in order that the former may move in substantial uniformity with the latter to preserve suitable alinement of the written work and to insure proper direction of movement of the strips as they are fed through the machine. Where a large number of these rolls are employed, it will be apparent that, if they are mounted upon the carriage, the latter will be subjected to unusual and excessive weight, with a corresponding increase in the inertia to be overcome in advancing the carriage and in the momentum to be checked repeatedly during its advancement, while, if the rolls are so mounted that their weight is not borne by the carriage but they are advanced and stopped either directly or indirectly thereby, there will still remain the objections connected with the imposition of additional inertia and momentum upon the carriage. Manifestly, therefore, in either case, and irrespective of the number of paper rolls that may be employed, the typewriter mechanism is subjected to strains and jars which it is very desirable to obviate, in the interests of durability, ease, uniformity and rapidity of operation and general efficiency.

The principal object of the present invention is the provision of means other than the carriage for supporting the weight of the paper rolls, and means apart from any portion of the typewriting machine for receiving the strains due to the step-by-step movement of the paper-roll support, together with means for insuring substantially identical movements of the typewriter carriage and the paper-roll support.

My invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, in which,—

Figure 1 is a top plan view of a common form of typewriter carriage, with a device embodying my invention applied thereto; Fig. 2 is an elevation of the paper-roll support, with the actuating bar therefor shown in section; Fig. 3 is an enlarged end elevation of another form of removable paper-roll support embodying my invention; Fig. 4 is a sectional detail view of one of the winding rolls and its connections, hereinafter described, and Fig. 5 is a detail view, in side elevation, of the pawl and coöperating parts shown in Fig. 2.

Referring now to the drawings in detail, numeral 11 refers to the supporting frame for the platen 12 of an ordinary form of typewriting machine, said frame having the usual vertical pivotal movement in connection with the bar 13 of the carriage, which is provided with rollers 14 adapted to travel upon a suitable track or rail 15, the front of said frame 11 being similarly supported upon a forward track rail (not shown), and the platen 12 has the usual longitudinal movement imparted thereto by a cord or tape 61 which leads from the spring-actuated drum 60 and is secured to the carriage.

The platen-shifting and line-spacing mechanisms are not shown in the drawings, inasmuch as they are of common and well-known construction and form no part of this invention.

Mounted upon the table, desk or other support 16 for the typewriter, and located at the rear of the latter, is a frame 17, the four lower legs 18 of which are provided with rollers 19, which are preferably grooved, and which travel upon track rails 20 carried by a supporting plate 21 secured to the desk or table 16. Suitably journaled in the bushings 22^a in this frame 17 is the axle 22 of a spool 23, upon which is wound the roll 24 of paper to be fed through the typewriting machine. These bushings 22^a are adjustably mounted in the upper ends of the upwardly-projecting arms of the frame 17, where I have shown thumb-screws 26 for the purpose of fixing said bushings in any desired positions of lateral adjustment. I prefer that a spring 25 shall be interposed between the end of spool 23 and the adjacent one of said bushings, in order to provide a brake against too rapid unwinding of the strip from roll 24.

The frame 17 includes a laterally-projecting arm 27, to the end of which is secured the end of a wire or tape 28 wound upon a spring-actuated drum 29, so that there is a constant pull upon the entire frame 17, tending to move the same in the direction of the drum 29, which direction is the same as that in which advancement of the typewriter carriage takes place during the writing operation. Pivoted to this arm 27 is the lever 30, to the lower end of which is adjustably pivoted the vertical arm 31^a of a bell-crank lever fulcrumed at 31^b to the end of the arm 32 on the frame 17. To the end of the horizontal arm 31 of said bell-crank lever is pivoted the pawl 33, in position to coöperate with rack 34 carried by base-plate 21. A spring 35, in tension between the end of arm 27 and the rearwardly-projecting arm 48 of the pawl 33, tends to yieldingly retain said arm 48 in an elevated position, and thus said pawl in a depressed position, relative to arm 31 of the bell-crank lever, and to retain said arm 31, and thus said pawl, in an elevated position relative to rack 34, the pawl 33 being free from cooperation with rack 34 when said arm 31 is in its raised position. To facilitate lifting pawl 33 out of engagement with the teeth of rack 34, the parts are so shaped and dimensioned that, when pawl 33 is in engagement with one of said teeth, the pivot 31^b of the bell-crank lever is somewhat below a line normal to the contact face of said tooth at the point of engagement of said pawl therewith, and thus movement of the vertical arm 31^a of the bell-crank lever to the right (Fig. 2), and the consequent movement of arm 31 of said lever upward, has the effect of moving pawl 33 away from said contact face of said tooth. A stop 49 limits upward movement of pawl arm 48, and consequently downward movement of the pawl 33 relative to horizontal arm 31 of the bell-crank lever, the opening 49^a in arm 48, which embraces stop 49, being sufficiently larger than said stop to permit pivotal movement of pawl 33, as and for the purposes described hereinbefore. Also, a stop 30^a, on frame 17, limits movement of the upper end of lever 30 to the right, and consequently downward movement of said lever arm 31.

Suitably mounted on some portion of the typewriter carriage, and preferably on the rear supporting bar 13 thereof, is a rearwardly-projecting rod or bar 36, the free end of which extends to a position immediately in advance of the upper end of lever 30.

It will now be apparent that, when the typewriter carriage is advanced, the spring drum 29 will operate through the wire or tape 28 to advance the frame 17 until, advancement of said carriage having been checked in the usual manner, the upper end of lever 30 impinges against the end of the rod or bar 36. The effect of engagement between the end of said lever 30 and said bar will be to operate said lever to depress the end of the horizontal arm 31 of the bell-crank lever, against the action of the spring 35, and thus to cause the pawl 33 to engage a tooth in rack 34, thereby arresting movement of the frame 17. Thus, in stopping the heavily-loaded frame 17, no greater strain is imposed upon the bar 36, and therefore upon any portion of the typewriter frame and mechanism, than is required to actuate the lever 30 and depress pawl 33. When the typewriter carriage is moved to the right (Fig. 1) in the ordinary line-spacing operation, carrying therewith the bar 36, said bar will act against the paper-roll support to move the latter with said carriage to the right, thus automatically returning said support to what may be termed its initial position, and preserving at all times the necessary alinement between the paper roll 24 and the platen 12 of the typewriting machine. During such movement of bar 36 to the right, said bar will be in engagement with the upper end of lever 30, thereby tending to force pawl 33 into engagement with rack 34, but since said pawl is pivoted to arm 31 of the bell-crank lever, and is held yieldingly in its depressed position relative to said arm by spring 35, it is manifest that said pawl will yield pivotally upward to permit movement thereof to the right over rack 34. When a letter key or the spacing key is struck in operating the typewriting machine, the carriage is automatically re-

leased for movement forward one step, under action of the usual actuating spring, in a common and well-known manner. It will be apparent that the bar 36, rigidly secured to said carriage, will advance therewith, while movement in this direction of said bar 36 will release the frame 17 for movement under tension of the wire or tape 28. Before the inertia of said frame can be overcome, the lever 30 is released to permit action of spring 35 to withdraw the pawl 33 from engagement with a tooth in the rack 34, thus freeing the frame 17 for movement under action of the tension wire or tape 28, such movement continuing until the lever 30 impinges against the bar 36, overcoming the power of the spring 35 and again forcing the pawl 33 into engagement with a tooth of the rack 34, thus bringing the frame 17 to a stop. Hence, frame 17 is not propelled by the typewriter carriage, being subject to its own independent propelling force, and movement of the frame 17 is not checked by the typewriter carriage, but independently through reëngagement at the proper point between pawl 33 and a tooth in the rack 34. It will therefore be seen, first, that the frame 17 is advanced by forces generated entirely independent of the forces for automatically moving the typewriter carriage, whereby no additional strains are put upon the spring employed for ordinary movement of said carriage; second, that absolutely no portion of the weight of the frame 17 and the paper roll or rolls carried thereby is borne by the typewriter carriage or any other part of the typewriter frame or mechanism; third, that, while the typewriter carriage and the paper-roll support have substantially identical movements, thus continuously retaining the paper roll or rolls in suitable position to properly direct the paper strips to the platen of the machine, movement of the said paper-roll support is stopped and the momentum thereof overcome by means which form no part of and have no connection with the frame or mechanism of the typewriting machine, which thereby remains entirely free of unusual strains or strains not contemplated in the construction of the machine. In other words, all of the typewriter mechanisms perform their usual functions and nothing more, although they control the movements of the heavy traveling paper-roll support.

In Fig. 3 I have illustrated the manner of mounting a plurality of paper rolls upon the traveling support, which in turn is mounted upon the desk or table that supports the typewriting machine. In this case I have shown two paper rolls 37 and 38, the axles 39 and 40 of the spools upon which said rolls are mounted being suitably journaled in the frame 17'. Where two or more paper strips are employed, it is obvious that suitable manifolding material is intended to be interposed therebetween, and for this purpose I provide said frame with arms 41 in the ends of which is journaled the axle 42 of a spool upon which is wound a long strip of carbon or other duplicating paper to form the roll 43. The strips from the rolls 37 and 38, with the strip of manifolding material from the roll 43 therebetween, are passed over the idler roller 44, suitably journaled in said frame, and thence around the platen 12' of the typewriting machine, where the outermost strip is subjected to the action of the type bars in the usual manner.

In view of the fact that carbon or other manifolding paper is relatively expensive, particularly when provided in the form of long strips, it is manifestly undesirable to detach the written-upon end portions of the paper strips in any manner which will necessitate the detaching of the end portion of the carbon strip. I therefore prefer to provide, suitably journaled in the upper portion of the frame 17', a roller 45 to which the end of the carbon strip is directed and upon which it is re-wound to form the roll 46. The end portion of the strip from the roll 38 will project from the platen of the typewriting machine in the usual manner, and after having been written upon may be detached for use. The strip from the roll 37 may be directed toward the rear of the typewriter and there detached, or, preferably, as shown in Fig. 3, a roller 47 may be provided, suitably journaled in the frame 17', and said strip directed thereto and re-wound thereupon to form the roll 50, which may be retained for purposes of record. When either or both of the rollers 45 and 47 are employed, I prefer to provide the axles thereof and the axle of the platen 12' with suitably-constructed sprocket wheels around which the sprocket chain 49 is passed, so that, as said platen is rotated during the line-spacing operations, said rollers 45 and 47 will be positively rotated through a corresponding arc to re-wind the carbon strip and the strip from roll 37, respectively. Manifestly, re-winding said strips upon the spools or rollers 45 and 47 will result in gradually increasing the diameters of the rolls on said spools, thereby gradually increasing the peripheral velocities thereof, and, consequently, the velocities at which the strips will tend to be drawn to said spools. Inasmuch as the axles of said spools are rotated at constant velocities, it is necessary that means be provided for retarding the velocities of said spools as the rolls thereon increase in diameter. In Fig. 4 I have shown a preferred method of accomplishing this result, the spool 45 being loosely mounted upon the axle 52, and being

provided with an end-plate 53 which presents an annular series of small protuberances 54 to correspondingly-arranged depressions 55 in a relatively similar plate 56 secured to the axle 57 of the sprocket wheel 58. In the other end of roller 45 is arranged a spring 59, which tends to force said roller and the plate 54 thereon yieldingly toward the plate 56, whereby said plates 54 and 56 will be held in yielding frictional engagement. Therefore, as the diameter of the roll of paper on said spool 45 is increased, the rotative forces imparted thereto from the sprocket wheel 58 will be overcome when necessary, to make the speed of the re-winding operation conform at all times to the velocity of the moving strip as it leaves the platen 12'. To accomplish similar results, the roller 47 should be of corresponding or analogous construction.

Many modifications of minor details of my improved paper-roll support for typewriting machines will doubtless readily suggest themselves to those skilled in the art to which it appertains, and I therefore do not desire to limit my invention to the specific construction herein shown and described.

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

1. The combination, with a typewriting machine having a movable platen, and power-supply means for moving said platen, of a movable support for a roll of paper, and separate power-supply means for imparting movement to said support, whereby said roll is maintained in position to supply paper to said platen.

2. The combination, with a typewriting machine having a movable platen, and power-supply means for moving said platen, of a movable roll of paper, and separate power-supply means for imparting movement thereto, whereby said roll is maintained in position to supply paper to said platen.

3. The combination, with a typewriting machine having a movable platen, and power-supply means for moving said platen, of a movable roll of paper, separate power-supply means for advancing said roll, and means for retracting said roll by retraction of said platen, whereby said roll is maintained in position to supply paper to said platen.

4. The combination, with a typewriting machine having a movable carriage, and power-supply means for moving said carriage, of a movable paper roll, separate power-supply means for moving said roll in the same direction as that of movement of said carriage, and means for checking movement of said roll.

5. The combination, with a typewriting machine having a movable carriage, and separate power-supply means for moving said carriage, of a movable paper roll, means for moving said roll in the same direction as that of movement of said carriage, and means controlled by said carriage for checking movement of said roll, said checking means being released by advance movement of said carriage.

6. The combination, with a typewriting machine having a movable carriage, of an intermittently-movable paper roll, power-supply means for advancing said roll in the same direction as that of advancement of said carriage, and means actuated by movement of said carriage to control the intermittent movement of said roll.

7. The combination, with a typewriting machine having a movable carriage, of a movable paper roll, power-supply means for advancing said roll in the same direction as that of advancement of said carriage, means actuated by advance movement of said carriage for controlling advance movement of said roll, and means for retracting said roll by retraction of said carriage.

8. The combination, with a typewriting machine having a movable carriage, and power-supply means for moving said carriage, of an intermittently-movable paper roll, separate power-supply means for advancing said roll in the direction of advancement of said carriage, and means controlled by movement of said carriage to regulate the intermittent movement of said roll.

9. The combination, with a typewriting machine having a movable carriage, and power-supply means for advancing said carriage, of a movable paper roll, separate power-supply means for advancing said roll in the direction of advancement of said carriage, means controlled by advance movement of said carriage for regulating advance movement of said roll, and means for retracting said roll by retraction of said carriage.

10. The combination, with a typewriting machine having a movable platen, of a movable paper roll provided with power-supply means for moving said roll relative to said machine, whereby said roll is maintained in position to supply paper to said platen.

11. The combination, with a typewriting machine having a movable platen, of a movable paper roll provided with power-supply means for moving said roll relative to said machine, and means for moving said roll in one direction by movement of said platen in a corresponding direction.

12. The combination, with a typewriting machine having a movable platen, of a movable paper-roll support and means for moving said support relative to said machine, said support being provided with means for checking movement thereof, whereby said paper-roll is maintained in position to supply paper to said platen.

13. The combination, with a typewriting machine having a movable platen, of a movable paper-roll support, means for moving said support relative to said machine, said support being provided with means for checking movement thereof, and means for moving said support in one direction by movement of said platen in a corresponding direction.

14. The combination, with a typewriting machine having a traveling carriage, and power-supply means for advancing said carriage, of a traveling paper roll, a spring constantly tending to advance said roll in the direction of advancement of said carriage, and means actuated from said carriage to check advancement of said roll when advancement of said carriage is checked.

15. The combination, with a typewriting machine having a traveling carriage, and power-supply means for advancing said carriage, of a traveling paper roll, a spring constantly tending to advance said roll in the direction of advancement of said carriage, and means actuated from said carriage to check advancement of said roll when advancement of said carriage is checked, said support-checking means being released by advance movement of said carriage.

16. The combination, with a typewriting machine having a traveling carriage, and power-supply means for advancing said carriage, of a traveling paper roll, separate power-supply means for advancing said roll in the direction of advancement of said carriage, and connecting means between said carriage and said roll to check advancement of the latter when advancement of the former is checked, said connecting means serving to return said roll when said carriage is returned to initial position.

17. The combination, with a typewriting machine having a traveling carriage, and power-supply means for advancing said carriage, of a traveling paper roll, separate power-supply means for advancing said roll in the direction of advancement of said carriage, and connecting means between said carriage and said roll which actuate means for checking advancement of the latter when advancement of the former is checked, said roll-checking means being released by advance movement of said carriage, and said connecting means serving to return said roll when said carriage is returned to initial position.

18. The combination, with a typewriting machine having a movable platen, of a movable paper roll, initially-inoperative means for moving said roll, and means movable with said platen for rendering operative said initially-inoperative means.

19. The combination, with a typewriting machine having a movable platen, of a movable paper roll, means for holding said roll against movement, and means movable with said platen for releasing said holding means.

20. The combination, with a typewriting machine having a movable platen, of a movable paper roll, means for holding said roll against movement, means movable with said platen for actuating said holding means, and means controlled by said movable means for releasing said holding means.

21. The combination, with a typewriting machine having a movable platen, of a movable paper roll, means constantly tending to move said roll, means for holding said roll against movement, and means movable with said platen for controlling said holding means.

22. The combination, with a typewriting machine having a movable platen, of a movable paper roll, means constantly tending to advance said roll, and means movable with said platen which control means for holding said roll against advancement, and which control return movement of said roll.

23. The combination, with a typewriting machine having a movable platen, of a movable paper roll, initially-inoperative means constantly tending to advance said roll, and means movable with said platen which render said advancing means operative, and which control return movement of said roll

In testimony of the foregoing, I have hereunto set my hand in the presence of two witnesses.

SAMUEL R. SHOUP.

Witnesses:
F. T. WENTWORTH,
P. FRANK SONNEK.