No. 829,465. PATENTED AUG. 28, 1906.

C. GABRIELSON.

PAPER FEEDING DEVICE FOR TYPE WRITERS.

APPLICATION FILED SEPT. 14, 1904.

3 SHEETS—SHEET 1.

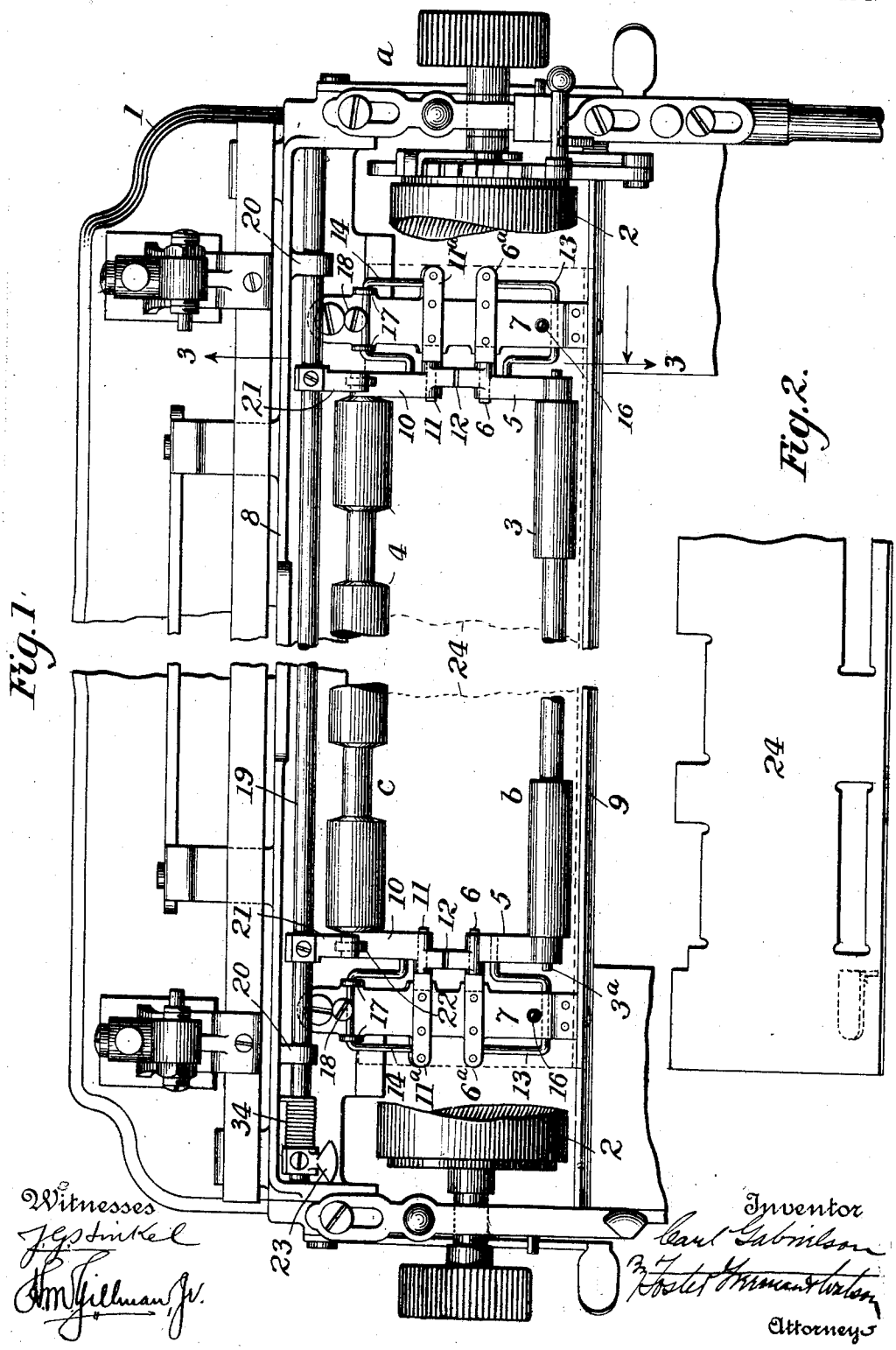

Fig. 1.

Fig. 2.

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Fig. 3.

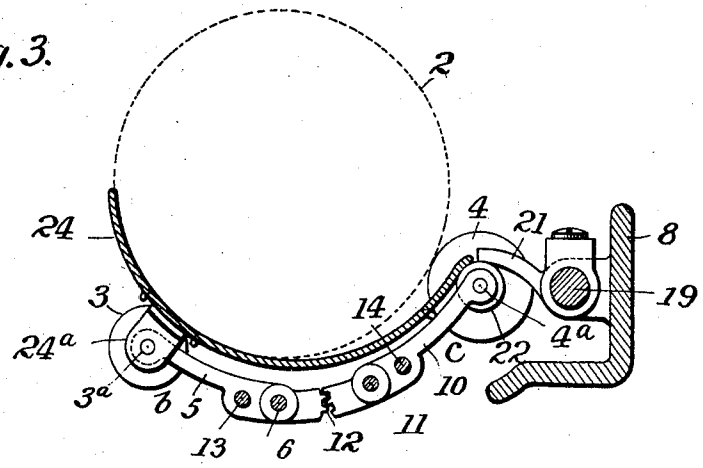


Fig. 4.

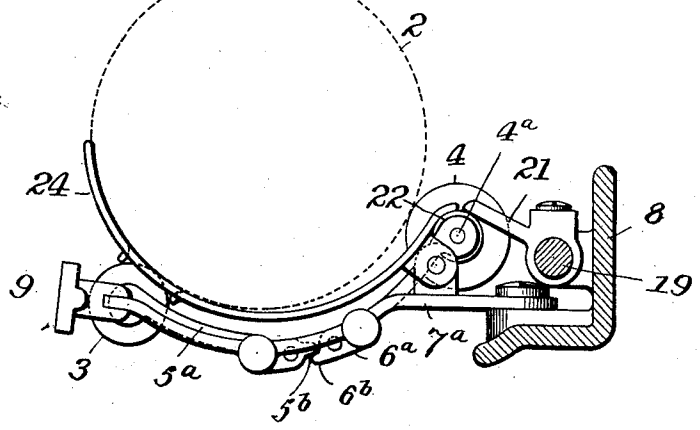
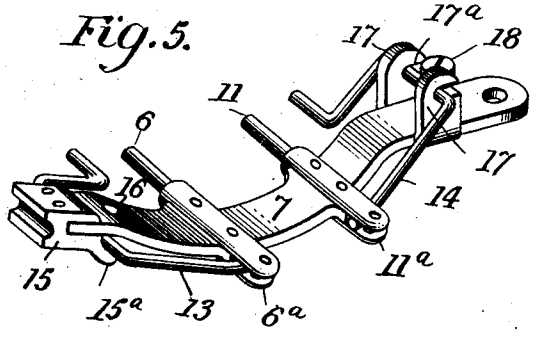


Fig. 5.



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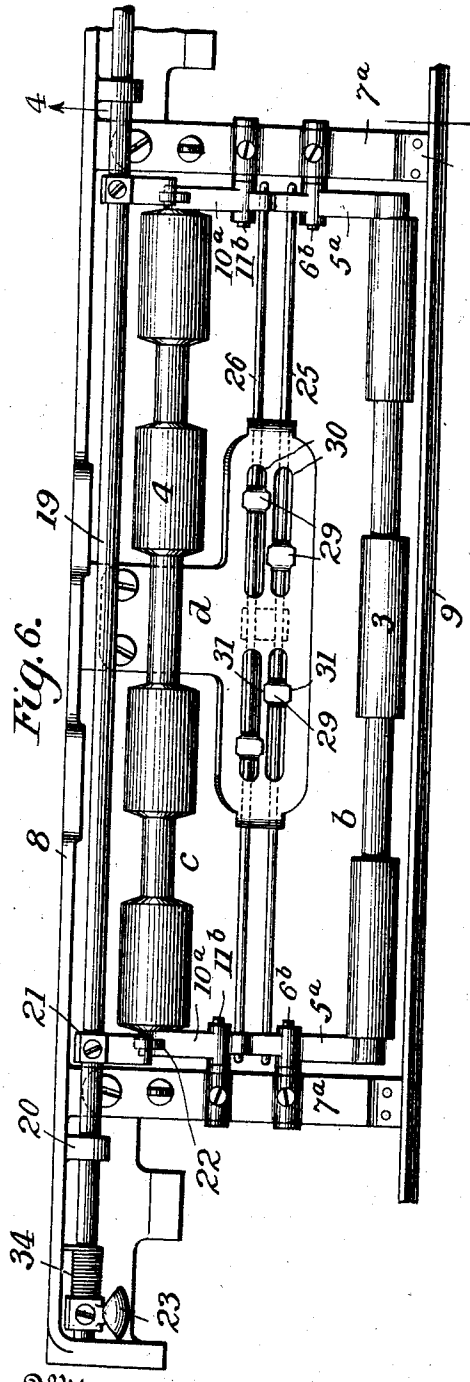

Fig. 6.

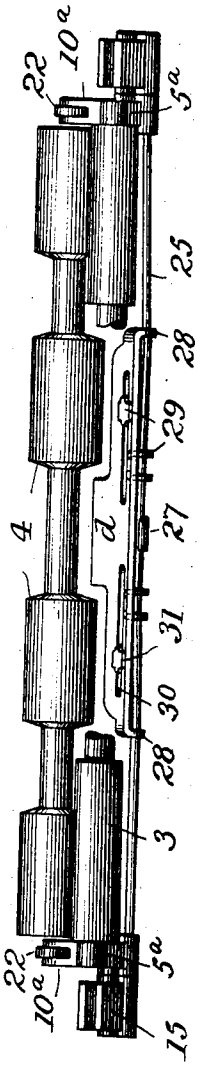

Fig. 7.

Fig. 8.

Witnesses

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UNITED STATES PATENT OFFICE.

CARL GABRIELSON, OF SYRACUSE, NEW YORK, ASSIGNOR TO L. C. SMITH & BROS. TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

PAPER-FEEDING DEVICE FOR TYPE-WRITERS.

No. 829,465. Specification of Letters Patent. Patented Aug. 28, 1906.

Application filed September 14, 1904. Serial No. 224,439.

To all whom it may concern:

Be it known that I, CARL GABRIELSON, a citizen of the United States, residing at Syracuse, Onondaga county, State of New York, have invented certain new and useful Improvements in Paper-Feeding Devices for Type-Writers, of which the following is a specification.

This invention comprises various improvements in the paper-feeding mechanism of type-writing machines.

The invention will be described in detail in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan view of part of a type-writing machine having my improvements applied thereto. Fig. 2 is a plan view of part of the paper deflector or guide. Fig. 3 is a section on the line 3 3 of Fig. 1. Fig. 4 is a section on the line 4 4 of Fig. 6. Fig. 5 is a perspective view of one of the supports for the frames which carry the paper-feed rollers and the springs which engage said frames, the construction being the same as that shown in plan view in Fig. 1. Fig. 6 is a plan view of paper-feeding mechanism, showing a modified arrangement of springs for the roller-supporting frames, the pivoted arms of the frames being shown with overlapping ends, as in Fig. 4, instead of interlocking ends, as in Figs. 1 and 3. Fig. 7 is a front view of the roller-frames shown in Fig. 6, partly broken away; and Fig. 8 is a section taken longitudinally through the spring-supporting bracket (shown in Fig. 6) on the line of one of the springs, illustrating the manner of adjusting the tension of the springs.

Referring to Figs. 1, 2, 3, and 5 of the drawings, 1 indicates the top plate of a type-writing machine frame, and *a* indicates the carriage, upon which the platen 2 and the paper-feeding mechanism are supported. The paper-feeding mechanism comprises a secondary paper-feeding roller 3, mounted upon a front-roller frame *b*, and a primary roller 4, mounted upon a rear-roller frame *c*. The front-roller frame, as shown, consists of a roller-shaft 3^a and a pair of lever-arms 5, connected at their forward ends to the ends of said shaft and pivoted adjacent to their rear ends upon pins or studs 6, which project horizontally from a pair of curved brackets or supports 7. These brackets are arranged transversely beneath the platen near its ends and are secured to the back bar 8 of the carriage and to the bar 9 at the front of the carriage. The rear-roller frame *c* consists of the roller-shaft 4^a, supported in the rear ends of a pair of lever-arms 10, which are pivoted adjacent to their forward ends upon studs 11, projecting horizontally from the brackets 7. The lever-arms 5 of the frame *b* are arranged end to end with the arms 10 of the frame *c*, and, as shown in Fig. 3, the adjacent ends of the arms are geared together by intermeshing teeth 12, so that when one of the paper-feeding rollers is rocked toward or from the platen the other roller will likewise be moved toward or from the platen. The front roller is normally pressed against the platen by springs 13, engaging the levers 5, and the rear roller is normally pressed against the platen by a pair of springs 14, engaging the levers 10. As shown in Figs. 1 and 5, the studs or pivot-pins 6 and 11 are secured to the brackets or supports 7 by forks 6^a and 11^a, which are riveted to the brackets and project outwardly beyond the sides of the brackets. These projecting portions of the forks or yokes serve as clamps or sockets in which the ends of the springs 13 and 14 are held. Each spring 13, as shown, has one end secured as stated and its opposite end extending into an opening in a lever-arm 5 near the pivotal point of the latter. The intermediate portion of each spring is bent forward and has a bearing within a recess formed between the bracket 7 and a tongue 15^a, depending from an attaching-piece 15, by which the bracket is secured to the paper finger-bar 9. The springs 13 are held against accidental displacement by screws 16, which extend through the brackets and lock the springs within the recesses. Each spring 14 is U-shaped and has one end secured within a yoke 11^a and its other end extending into an opening in a lever 10 near the pivotal point of the latter, and the intermediate portion of the spring has a bearing within recesses 17^a in lugs 17 of the adjacent bracket 7. The springs 14 are held against accidental dis-

placement by screws 18. Normally both the front and rear rollers are pressed against the platen. To move the rollers away from the platen for the purpose of releasing or adjusting the paper, a rock-shaft 19 is arranged within bearings 20 upon the carriage back bar and provided with adjustably-mounted arms 21, which project over antifriction-rollers 22 upon the rear-roller shaft 4^a. The rock-shaft is provided with a lever or finger-piece 23. By pressing the finger-piece the arms 21 will cause the rear-roller frame C to rock and move the roller 4 away from the platen, and as the arms 10 are geared to the arms 5 between the pivotal points of both roller-frames the forward roller 3 will simultaneously move away from the platen. When the finger-piece 23 is released, a spring 34 upon the rock-shaft 19 returns the parts to their normal positions. There is provided slight lost motion between the intermeshing teeth 12, which permits the roller 4 to be moved away from the platen a slight distance, as when a few sheets of paper are fed in between the rear roller and the platen without causing a movement of the forward roller away from the platen; but when a larger number of sheets of paper are fed in between the rear roller and the platen the front frame and roller will move away from the platen, but not to quite the same extent, owing to the lost motion between the teeth. Thus it will be seen that when a wad of paper which it is desired to hold firmly is fed into the machine this wad will be held, first, between the rear or primary roller and the platen by the pressure of the springs 14 and also by the pressure of the springs 13, which is transmitted from the front to the rear-roller frame. As the wad of paper is fed farther into the machine it passes between the platen and the front or secondary roller 3, which latter is at the time held away from the platen, and as soon as the wad of paper enters between the front roller 3 and the platen the spring tension becomes equalized between the two rollers, the springs 13 pressing the front roller 3 against the paper and the springs 14 pressing the rear roller 4 against the paper. The total pressure upon the wad of paper, it will be noted, is the same at all times; but while the paper is engaged by the rear roller only that roller exerts much more pressure upon the paper than when the paper is engaged by both rollers. When the wad of paper leaves the rear roller, the tension of the springs of the rear-roller frame is transmitted to the front-roller frame, and the wad of paper will then be held by the front roller alone with the combined pressures of the springs of both frames. The paper deflector or guide 24 (shown in dotted lines in Fig. 1 and in full lines in Figs. 2, 3, and 4) is pivotally connected to the front-roller shaft by lugs 24^a, Fig. 3, and its rear edge rests upon the rear-roller shaft. Hence the guide swings away from the platen with the rollers.

In Figs. 4, 6, 7, and 8 are shown substantially the same arrangement of devices as in the previously-described figures, excepting that the springs are differently formed and arranged and provided with adjusting means and the frames which support the rollers instead of being connected by intermeshing teeth are provided with overlapping parts, which permit the forward roller to be moved away from the platen independently of the rear roller. When, however, the rear roller is moved away from the platen, the front roller is also moved away. As shown in Figs. 4 and 6, the arms 5^a of the forward-roller frame and the arms 10^a of the rear frame are pivoted upon studs 6^b and 11^b, respectively, projecting from the brackets 7^a, and instead of being connected by intermeshing teeth the inner ends 5^b of the arms 5^a overlap the inner ends 10^b of the arms 10^a. This arrangement permits the forward roller 3 to be moved away from the platen independently of the rear roller 4; but when the latter is moved away from the platen it will be evident that the roller 3 will simultaneously be moved away. There is slight lost motion between the overlapping ends of the levers, permitting the rear roller to move slightly away from the platen without disturbing the forward roller when only a few sheets of paper are inserted in the machine; but a greater movement of the rear roller caused by the insertion of a wad of paper will cause the movement of the roller 3 away from the platen and transmit the tension of its springs to the roller 4, as in the previously-described construction. Likewise the two rollers may be moved simultaneously away from the platen by pressing on the finger-piece 23. The springs shown in Figs. 4, 6, 7, and 8 consist of straight rods 25 and 26, the former having its ends engaging openings in the arms 5^a and the latter having its ends engaging openings in the arms 10^a. As shown, these springs engage the shorter ends of the arms between the pivot-pins. A bracket *d* is suitably secured to the central part of the back bar of the carriage and projects forwardly beneath the platen and longitudinally between the front and rear rollers. This bracket has on its lower side midway between its ends a clip 27 and at its ends depending flanges 28. The springs 25 and 26 extend through the clip 27 and through openings in the flanges which are slightly lower than the opening in the clip, so that the springs are sprung and gripped by the clips and flanges. The ends of the springs bear downwardly upon the short ends of the arms 5^a and 10^a, and the tension of the springs is regulated by means of adjustable clips 29, consisting, as shown, of U-shaped pieces of metal extending through longitudinal slots

30 in the bracket over the springs. Two of these adjusting-clips are provided for each spring, one at each side of the center, and the spring-rods extend through the clips. The clips, as shown, have lugs 31 projecting over the edges of the slots, and it will be evident from an inspection of Fig. 8 that the movement of the clips toward the outer ends of the slots will raise the inner parts of the rods and depress their outer ends and cause greater tension on the frames which carry the paper-feeding rollers, and vice versa.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a type-writing machine, the combination with a platen and primary and secondary paper-feeding rollers, of means for pressing said rollers independently against the platen, and connections between the rollers whereby the pressure on the secondary roller is transmitted to the primary roller when the latter roller is moved away from the platen, for the purpose set forth.

2. In a type-writing machine, the combination with a platen and primary and secondary paper-feeding rollers, of springs arranged to press said rollers independently against the platen, means for supporting the rollers and connections between the roller-supporting means so arranged that a slight movement of the primary roller from the platen will not affect the secondary roller while a greater movement of the primary roller from the platen due to the insertion of a wad of paper will shift the secondary roller from the platen and transmit all of its spring-pressure to the primary roller.

3. In a type-writing machine, the combination with a platen and primary and secondary paper-feeding rollers, of levers in which said rollers are mounted, springs arranged to press said rollers independently against the platen, and connections between said levers, said connections being so constructed that the pressure of the springs on their respective rollers shall be independent while paper is passing under both rollers and shall be concentrated on either roller when heavy paper is passing under it and not under the other.

4. In a type-writing machine, the combination with a platen, of two frames pivotally mounted below the platen, front and rear paper-feeding rollers mounted in said frames, and toothed connections between said frames whereby they are interlocked and adapted to swing simultaneously to and from the platen.

5. In a type-writing machine, the combination with a cylindrical platen and front and rear paper-feeding rollers, of front and rear roller frames supporting said rollers, respectively, independent springs pressing each end of each roller against the platen, and connections between said frames whereby a movement of one roller away from the platen will cause the other of said rollers to move away from the platen, said connections having slight looseness or lost motion, substantially as described and for the purpose set forth.

6. In a type-writing machine, the combination with a cylindrical platen and primary and secondary paper-feeding rollers, of rear and front spring-pressed roller frames supporting said rollers respectively, said frames having toothed connections so arranged that a movement of the primary roller away from the platen will cause the secondary roller to move away from the platen, and springs arranged to bear against both frames independently and press the rollers toward the platen.

7. In a type-writing machine, the combination with a cylindrical platen and primary and secondary paper-feeding rollers, of rear and front spring-pressed roller frames supporting said rollers respectively, said frames having toothed connections so arranged that a movement of the primary roller away from the platen will cause the secondary roller to move away from the platen, and springs arranged to bear against both frames independently and press the rollers toward the platen, said toothed connections having slight looseness or lost motion, for the purpose set forth.

8. In a type-writing machine, the combination with a cylindrical platen and front and rear paper-feeding rollers, of front and rear spring-pressed roller frames supporting said rollers respectively, said frames being pivoted beneath the platen and connected between their pivotal points by devices providing slight looseness or lost motion, whereby a slight movement of one roller away from the platen will not affect the other while a greater movement of one roller away from the platen will cause the other roller to move away from the platen.

9. In a type-writing machine, the combination with a cylindrical platen and front and rear paper-feeding rollers, of front and rear spring-pressed roller frames supporting said rollers respectively, said frames being pivoted beneath the platen and having interlocking connections between their pivotal points, and a paper-deflector mounted on one of said roller-frames.

10. In a type-writing machine, the combination with a cylindrical platen and front and rear paper-feeding rollers, of front and rear spring-pressed roller frames pivotally mounted below the platen, and a paper-deflector pivotally connected to said front-roller frame and extending beneath the platen.

11. In a type-writing machine, the combination with a cylindrical platen, of brackets arranged beneath the platen, roller-frames

pivotally mounted on said brackets, paper-feeding rollers carried by said frames, an independent spring at each end of each frame for normally pressing said rollers against the platen, and connections between said frames, whereby the rollers move simultaneously toward and away from the platen.

12. In a type-writing machine, the combination with a carriage and a cylindrical platen thereon, of a pair of supporting arms or brackets secured to the carriage near the ends of the platen and extending transversely beneath the platen, a pair of spring-pressed roller-frames pivotally connected to said brackets and having overlapping parts between their pivotal points, and rollers carried by said frames and adapted to bear against the platen.

13. In a type-writing machine, the combination with a carriage and a cylindrical platen thereon, of a pair of supporting arms or brackets secured to the carriage near the ends of the platen and extending transversely beneath the platen, a pair of roller-frames pivotally connected to said brackets and having overlapping parts between their pivotal points, rollers carried by said frames and adapted to bear against the platen, and springs supported by said brackets and engaging said frames at their ends.

14. In a type-writing machine, the combination with a carriage and a cylindrical platen thereon, of a pair of supporting arms or brackets secured to the carriage near the ends of the platen and extending transversely beneath the platen, a pair of spring-pressed roller-frames pivotally connected to said brackets, each frame comprising a roller-shaft and a pair of spring-pressed lever-arms supporting said shaft at its ends and pivotally connected to the brackets, the arms of one frame having parts overlapping the arms of the opposing frame between the pivotal points of the arms.

15. In a type-writing machine, the combination with a carriage and a cylindrical platen thereon, of a pair of supporting arms or brackets secured to the carriage near the ends of the platen and extending transversely beneath the platen, a pair of spring-pressed roller-frames pivotally connected to said brackets, each frame comprising a roller-shaft and a pair of lever-arms supporting said shaft at its ends and pivotally connected to the brackets, the arms of one frame having parts overlapping the arms of the opposing frame between the pivotal points of the arms, and springs carried by said brackets and engaging said lever-arms.

16. In a type-writing machine, the combination with a cylindrical platen and front and rear paper-feeding rollers, of front and rear spring-pressed roller frames pivoted beneath the platen, said rear roller-frame being arranged to engage and move said front frame when the rear roller is moved away from the platen, and said front frame being movable away from the platen independently of the rear frame.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL GABRIELSON.

Witnesses:
C. M. STEVENS,
C. F. PARSONS.