No. 657,153. Patented Sept. 4, 1900.

W. J. BARRON.

TYPE WRITING MACHINE.

(Application filed July 1, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

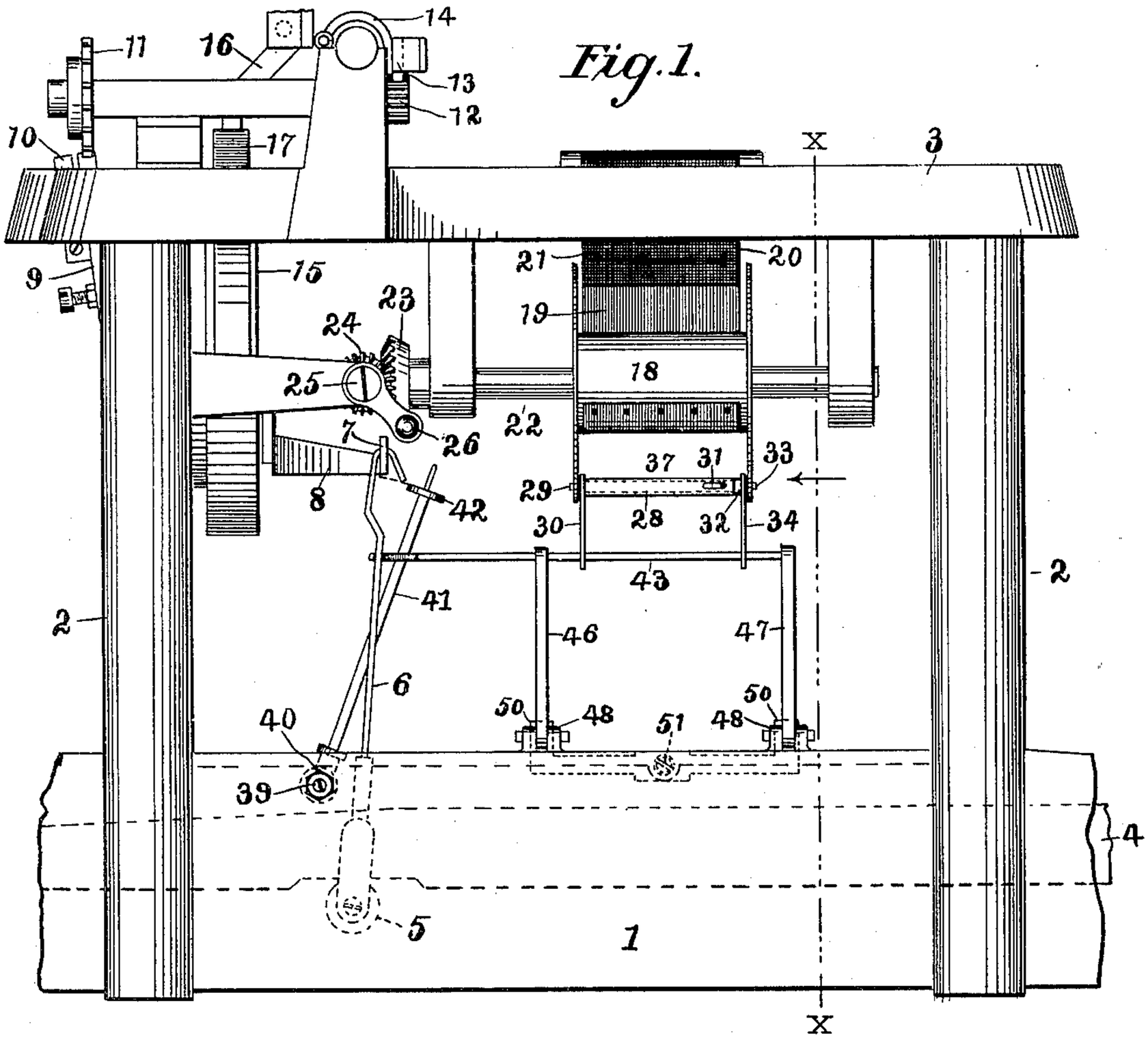

Fig. 7.

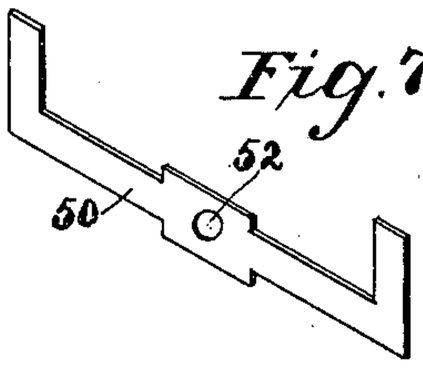

Fig. 8.

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(No Model.) 2 Sheets—Sheet 2.

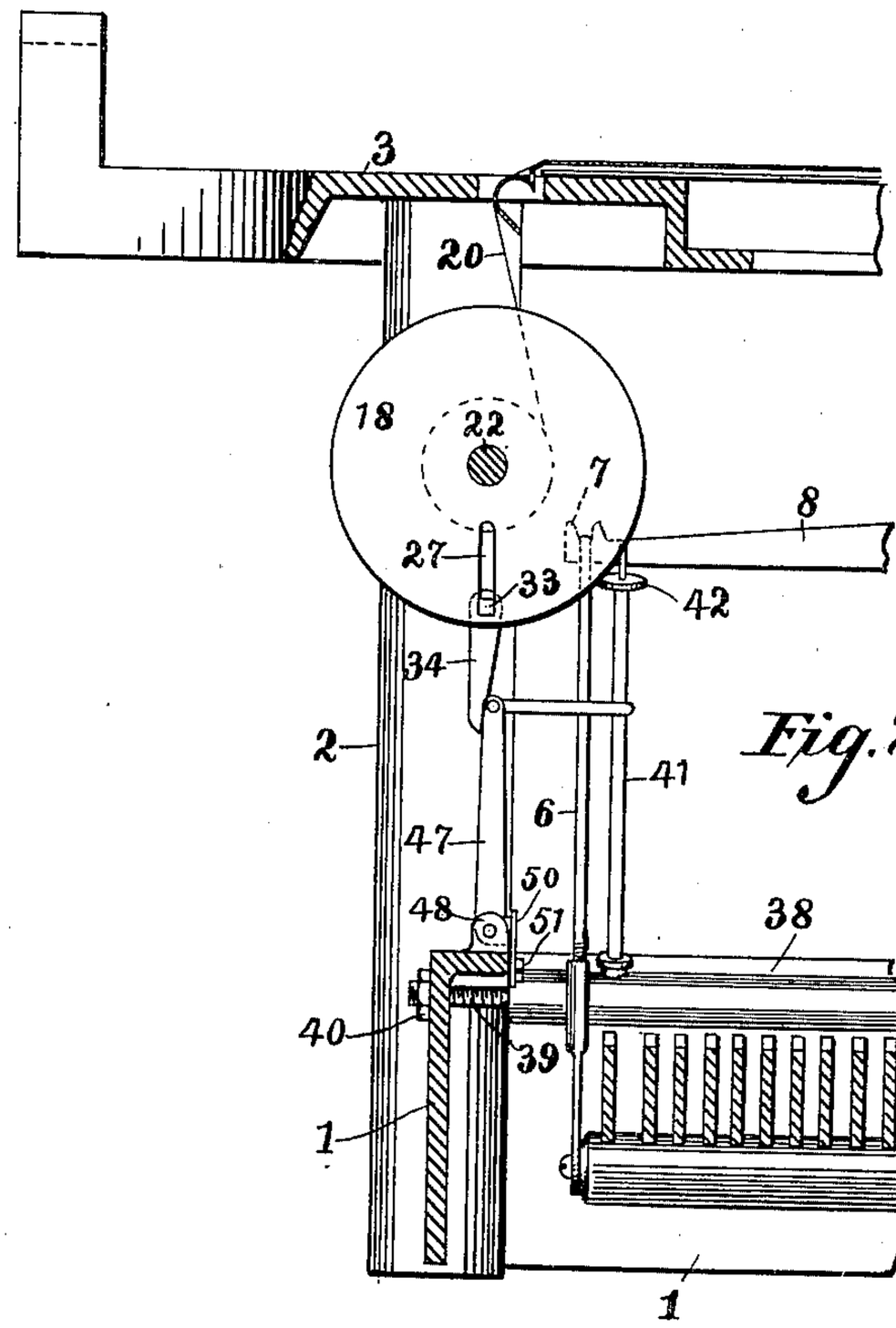


Fig. 2.

Fig. 3.

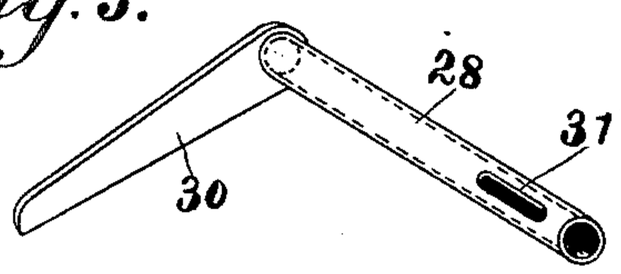


Fig. 4.

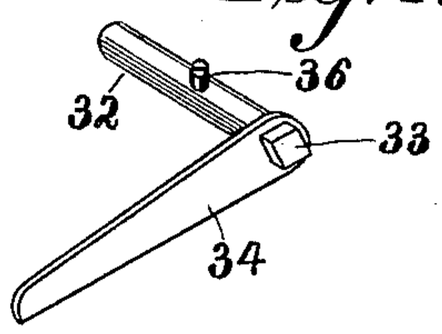


Fig. 5.

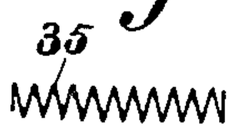
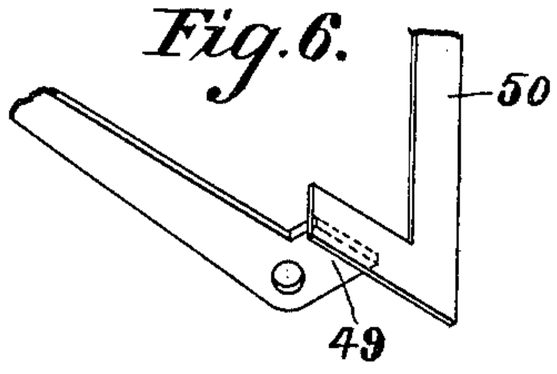


Fig. 6.



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UNITED STATES PATENT OFFICE.

WALTER J. BARRON, OF NEW YORK, N. Y., ASSIGNOR TO THE DENSMORE TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 657,153, dated September 4, 1900.

Application filed July 1, 1899. Serial No. 722,487. (No model.)

To all whom it may concern:

Be it known that I, WALTER J. BARRON, a citizen of the United States, and a resident of the borough of Brooklyn, in the city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

The present invention relates to mechanism for locking the keys and type mechanism of a type-writing machine against operation when the ribbon shall have unwound from a spool to a predetermined extent, and more especially to mechanism for locking the type-actuating mechanism of type-writing machines at any point in the ribbon travel from one spool to another, as when using different ribbons upon the same machine, and it is desired to lock the type-actuating mechanism, and thus warn the operator just previous to the point in the longitudinal travel of the ribbon when the place of attachment of one ribbon to another is approaching the printing-point, thus preventing the work from being done inadvertently partly in ink of one color and partly in an ink of a different color.

To these and other ends the invention consists of features of construction and combinations of devices hereinafter described, and more particularly pointed out in the appended claims.

The preferred form of the invention is illustrated in the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of part of the framework of a well-known form of type-writing machine and showing a ribbon, a ribbon-spool, ribbon-spool-driving mechanism, certain parts of the carriage-driving mechanism, and also my improvements. Fig. 2 is a sectional view on the line X X of Fig. 1 and looking in the direction of the arrow and showing part of the frame, a ribbon-spool, a locking mechanism, and means for actuating the same. Figs. 3 and 4 are perspective views showing two parts of a bar and arms mounted upon the ribbon-spool and shown in Figs. 1 and 2. Fig. 5 is a side view of a coiled spring forming an adjunct of said bar. Fig. 6 is a detail perspective view of a lever and a spring for holding the same in one position. Fig. 7 is a perspective view of a double spring, part of which is shown in Fig. 6. Fig. 8 is a perspective view of a cam-rod for actuating the locking mechanism and showing the ends of the supporting arms or levers therefor.

The same numeral of reference will be used to designate the same part in the various figures of the drawings.

1 indicates part of a base-frame, 2 uprights, and 3 the top plate of part of the fixed framework of a Remington No. 6 writing-machine. 4 marks key-levers, 5 a universal bar, 6 one of the two rods connecting the universal bar with the ends of a cross-bar 7, which is carried by an arm or arms 8, projecting forwardly from a rock-shaft (not shown) at the rear of the machine. 9 indicates a dog-carrier projecting upwardly from the said rock-shaft, 10 the dogs on said carrier, and 11 an escapement-wheel coacting with said dogs and connected with a shaft journaled in the framework of the machine. 12 is a toothed wheel at the forward end of said shaft with which a rack-bar 13 engages. The rack-bar is carried by arms 14, pivotally connected with the carriage. (Not fully shown.)

15 is a spring-drum, which is connected with an arm 16 of the carriage by a strap 17.

18 is a ribbon-spool to which one end of a tape or fabric 19 is connected, and 20 is an inking-ribbon connected with the other end of the fabric 19, as by a pin 21.

22 is a shaft with which the spool 18 rotates and along which it may move.

23 is a beveled gear on the shaft 22.

24 is a beveled gear on a shaft extending transversely of the machine and indicated in Fig. 1 by the screw-head 25, said screw being used to connect a crank-arm 26 with the shaft for the purpose of rotating it in either direction. The said shaft is adapted to have endwise motion to cause engagement and disengagement of the gears 24 and 23. As well known, there is a similar construction at the other side of the machine, and the said transverse shaft is adapted to drive the ribbon-spools alternately and is itself driven from the spring-drum 15.

The foregoing devices are all known constructions and are shown in conjunction with my invention merely as an example or in-

stance of the use of the invention itself in this form of type-writing machine.

My improvements are susceptible of being attached to existing machines with few additions or alterations in the framework thereof and in the ribbon-spools, said additions or alterations consisting chiefly in providing bearings in the framework and in the spool ends for the working parts of the mechanism, and of course the invention may be applied in the first instance to machines in the process of manufacture.

In the preferred form of my invention each end or head of the ribbon-spool is provided with a radial guide-slot 27, which extends from about the core of the spool to near the periphery of the end or head. A tube 28 of a length less than the distance between the spool ends is provided at one end with a squared stud or end 29, over which is forced one end of an arm 30, provided with a squared hole to grip the said squared end 29. The tube 28 is provided at its other end with a longitudinal slot 31. A rod or tube 32 of a length somewhat less than that of the tube 28 is provided with a square end 33, and over this square end is forced or slipped an arm 34, having a square hole to fit the said square end. A helical spring 35 is placed in the tube 28 and abuts at one end against the stud or part upon which the square end 29 is formed, and the rod 32 is inserted in the open end of the tube 28, after which a screw or other pin 36 is inserted through the slot 31 into a suitable hole in the rod 32. The spring 35 is of a length such that it abuts the end of the rod 32 and pushes the same outwardly of the shaft 28 to the limits allowed by the slot 31 and the pin 36. When the parts are assembled, as above described, the arms 34 and 30 are parallel with each other. The telescoping bar 37, formed by the tubes 28 and 32, is put in place in the slots 27 by compressing the same endwise against the force of the spring 35, thus shortening it up sufficiently to allow its ends to pass between the ends of the spool until the square ends of the bar 37 are opposite the slots 27, when the pressure is released and the square ends of the bar under the force of the spring 35 are entered in the slots with the arms 30 and 34 extending radially of the spool. By this construction and arrangement the bar 37 may move freely in and out or radially, as permitted by the ribbon, but it cannot turn independently of the spool 18.

As shown in the drawings, the bar 37 is placed upon the spool at a time when the ribbon is unwound therefrom and acts in the manner and through mechanism hereinafter described to lock the key-levers against actuation when the ribbon has been unwound to the extent indicated in the drawings; but an important use of the invention is provided for by the detachable connection between the bar 37 and the spool 18, in that the bar may be detached from the spool and a ribbon of one color or nature be wholly wound upon the spool shown and a ribbon of a different color or nature be wound upon the spool at the other side of the machine (not shown) and its end brought over and attached to the end of the ribbon first named in the position indicated by the pin 21 in Fig. 1. If now the bar 37 be replaced in the slots 27 of the spool shown in Fig. 1, (which is assumed to have the first-named ribbon wholly wound thereon,) the second-named ribbon may be wound upon the spool 18 to the extent allowed by its length or by a locking mechanism similar to that to be described and which is at the far side of the machine, and when the second ribbon has been rewound upon the spool at the far side of the machine and the pin 21 (shown in Fig. 1) reaches the position therein shown the type-actuating mechanism will be locked, as hereinafter described, and thus prevent the first-named ribbon or that on the spool 18 shown from being moved to the printing-point to coact with the types, thus preventing the use of inks of different colors in the same work or writing.

The connections by means of which the arms 30 and 34 lock the key-levers against actuation will next be described.

The frame of the machine is provided with a shaft 38, journaled on the points of screws 39 and engaging holes tapped in the sides of the base 1 and provided with lock-nuts 40. The shaft 38 is provided with an arm 41, which projects upwardly and frontwardly of the machine and is provided with a button or disk 42. The button 42 is attached to the rod 41 as by reducing the end of the rod to form a shoulder and providing the button with a hole to fit closely over the reduced end, the button resting against the shoulder. The button is so placed relatively to the cross-bar 7 that when shaft 38 and arm 41 are rocked rearwardly of the machine the disk or button 42 will come closely underneath the bar 7 when the latter is in its normal position, so that upon an attempt to depress any key-lever or the space-lever thereafter the descent of the cross-bar 7 and the universal bar 5 will be prevented by the button or disk 42, and thus it will be impossible to depress the key or space lever. In order to actuate this arm 41 to move the disk 42 under the bar 7, there is provided a cam bar or rod 43, comprising a straight portion 44 and a V-shaped portion 45 at the rear end of the part 44. The bar 43 is carried by equal parallel pivoted arms 46 47, these arms being pivoted in ears or lugs 48, attached to or integral with the top of the base 1. The upright levers or arms 46 47 are provided near their pivots each with a horizontal square ended part or arm 49 for a purpose presently to appear. A U-shaped spring 50 is attached at the middle of its cross portion to the frame 1, as by a screw 51, passing through a perforation 52 in the spring and engaging with a threaded hole in the inner side of the base 1. The upright ends of the

spring 50 bear flatwise against the square ends of the arms 49 and so hold the levers 46 and 47 in an upright position. Bar 43 is parallel or substantialiy parallel with the shaft 22 of the ribbon-spool and is in position such that it is caught by the arms 30 and 34 when the bar 37 is in its outer position or away from the axis of the ribbon-spool. One leg 53 of the V-shaped portion 45 of the bar 43 is adapted to cam or push the arm 41 rearward of the machine as the arms 46 47 are swung transversely of the machine, and thus bring the button or disk 42 underneath the cross-bar 7.

The operation of the devices hereinbefore described is as follows: When the parts are in the positions shown in Figs. 1 and 2, the key-levers may be depressed. If the ribbon-winding mechanism is in position such that the ribbon is being wound upon the spool 18, the bar 37 will be carried around to the left and upward in Fig. 2, and when the spool is rotated sufficiently far the bar will fall inwardly by its own weight and will be caught between the ribbon and the spool-core and will be held inwardly thereafter by the ribbon. When the bar is so held by the ribbon and the ribbon subsequently is paying off of spool 18, the bar 37 will be released in a certain position of the ribbon or will no longer be held between the ribbon and the core, and on the continued turning of the top of spool 18 to the left in Fig. 2 the slots 27 will be brought into position such that the bar 37 will slide outwardly thereof into the position shown in Fig. 2, and on the further paying off of the ribbon the arms 30 and 34 will come in contact with the bar 43 and move the same to the right (see Fig. 2) and cause the cam portion 53 to swing the rod 41 and bring the button or head 42 under the cross-bar 7, thus locking the key-levers, the type-bars, and the carriage-escapement against further operation and so notifying the operator that the ribbon-feeding mechanism needs reversing. When the keys are locked, the ribbon-moving mechanism may be reversed in the usual way to cause the ribbon to wind in the opposite direction, and this reversal restores the locking mechanism to normal position. Obviously this ribbon-locking mechanism may be duplicated at the opposite side of the machine, so that the operator will be notified when the ribbon has been unwound from the paying-off spool to such an extent that its bar 37 is released and the keyboard locked by the means hereinbefore described.

While two arms 30 and 34 for actuating the rod or bar 43 and the lock or stop bar 41 are shown, it is noted that two are not essential; but by having the two arms, one at each end of the spool, the work is distributed along the spool and its shaft and is not concentrated at one end of the spool, as would be the case were but one arm 30 or 34 used.

As far as I am aware I am the first to provide an adjustable arm or device on and movable relatively to the spool for locking the keys and the printing mechanism at any desired time in the longitudinal travel of the ribbon.

From the foregoing description it is obvious that the bar 37 may be set to cause the locking of the key-levers at any point in the unwinding of the ribbon from the spool 18, thus preventing a ribbon of an undesired color from being moved to the printing-point, as above described, and also preventing a worn-out or used-up portion of the ribbon from reaching the printing-point. It will thus be seen that the "adjustable" feature, so to say, of my improvement, is a very important one and secures results and ends not heretofore obtained.

While I have shown a telescoping rod for attachment to the ribbon-spools, I do not limit myself to such means for attaching an arm or device to the spool to be held in an inactive position by the ribbon and adapted to move to an active position when released by the ribbon.

Various changes in detail construction and arrangement suitable for the various styles of machines may be made without departing from the gist of my invention.

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

1. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, an arm or device on and movable relatively to the spool and held in an inactive position by the ribbon and adapted to move to an active position when released by said ribbon, and means for locking the keys actuated by said arm when in its active position.

2. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, an arm or device on and movable radially of the spool and held inward or toward the spool-core by the ribbon and movable outwardly when released by the unwinding ribbon, and mechanism for locking the keys and actuated by said arm during the rotation of the spool when the arm is in its outer or active position, substantially as described.

3. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool having radial guides at its ends, a bar guided by and held against turning motion in said guides, an arm on said bar pointing away from the center of the spool, said bar being held inwardly of the spool by the ribbon and movable outwardly when released by the ribbon, and mechanism for locking the keys and actuated by said arm when the bar and arm are in their outer positions.

4. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, an arm or device on and movable relatively to the spool and held in an inactive position by the ribbon and moved to an active position when released by said ribbon, a key-locking mechanism, a movable rod or bar in the path of said spool-arm when the latter is in its

active position and actuated thereby, and connections whereby said rod or bar actuates the key-locking devices.

5. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, an arm or device on and movable relatively to the spool and held in an inactive position by the ribbon and moved to an active position when released by said ribbon, a key-locking mechanism, and a movable bar or rod provided with a cam portion for actuating said locking mechanism, and said bar or rod being in the path of and actuated by said spool-arm when the latter is in its active position.

6. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, an arm or device on and movable radially of the spool and held in an inactive position by the ribbon and moved radially to an active position when released by said ribbon, a key-locking mechanism, a movable rod or bar adapted to be actuated by said spool-arm when the latter is in its active position, and connections between said bar or rod and the locking mechanism whereby the latter is operated.

7. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool provided with guides at its ends, a bar movable in said guides and prevented from turning therein and held inwardly by the wound ribbon, an arm connected with said bar, a key-locking mechanism, and means for operating said mechanism and extending into the path of and operated by said arm when the latter and its bar are released by the ribbon and are in their outer positions away from the center of the spool.

8. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool having radial slots at its ends, a bar movable along and prevented from turning by said guides, an arm on said bar extending outwardly or away from the spool's axis, a key-locking mechanism, a rod extending in the direction of the axis of the spool and in the path of and moved by said arm when the arm and its carrier-bar are in their outer positions, and connections between said rod or bar and the locking mechanism for actuating the latter.

9. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, key-levers, a vibratory bar connected to and actuated by the key-levers, a locking-arm for coaction with said vibratory bar to prevent motion of the latter and the keys, an arm or device on and movable relatively to the spool and held in an inactive position by the ribbon and movable to an outer or active position when released by the ribbon, and means for operating said locking bar or arm and actuated by said ribbon-spool arm or device when the latter is in its active position and during the rotation of the spool.

10. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, key-levers, a vibratory bar connected to and operated by the key-levers, a locking-arm adapted to coact with said vibratory bar to lock the same and the key-levers against motion, an arm or device on and movable radially of the spool and held in an inner or inactive position by the ribbon and moved to an outer or active position when released by the ribbon, and means for actuating said locking-arm and adapted to be operated by the said spool-arm when the latter is in its outer or active position and during the rotation of the spool.

11. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, a radial arm on and movable radially of the spool and held in an inner or inactive position by the ribbon and moved to an outer or active position when released by said ribbon, key-levers, a vibratory bar connected to and operated by said key-levers, a locking-arm adapted for coaction with said vibratory bar to lock the same and the levers against motion, and means for actuating said locking-arm and extending into the path of said spool-arm when the latter is in its outer or active position and actuated thereby during the rotation of the spool.

12. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, key-levers, a vibratory bar connected to and actuated by the key-levers, a movable stop-arm adapted to coact with said vibratory bar to lock the same and the key-levers against motion, a cam for actuating the stop-arm, and mechanism for actuating said cam when the ribbon is unwound to a predetermined extent or distance.

13. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, key-levers, a vibratory bar connected to and actuated by the key-levers, a movable stop-arm adapted to coact with said vibratory bar to lock the same and the key-levers against motion, a cam for actuating the stop-arm, an arm or device on and movable relatively to the spool and held in an inactive position by the ribbon and moved to an active position when released by said ribbon, and means for actuating said cam and extending into the path of said arm when the latter is in its active position.

14. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, key-levers, a vibratory bar connected to and actuated by the key-levers, a movable stop or lock arm adapted to coact with said vibratory bar to lock the same and the key-levers against motion, a cam for actuating the stop-bar, an arm or device on and movable radially of the spool and held in an inner or inactive position by the ribbon and moved to an outer or active position when released by the ribbon, and a movable bar carrying said cam and actuated by the said radial arm when the latter is in its outer position.

15. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, key-

levers, a vibratory bar connected to and actuated by the key-levers, a pivoted lock or stop arm adapted to coact with said vibratory bar to lock the same and key-levers against motion, a pivoted rod or bar connected with said lock-arm to actuate the same, and an arm or device on and movable relatively to the spool and held in an inactive position by the ribbon and moved to an active position when released by said ribbon and adapted to actuate said pivoted bar or rod when the arm is in an active position.

16. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, key-levers, a vibratory bar connected with and actuated by said key-levers, a pivoted stop or lock arm adapted to coact with the said vibratory bar to lock the same and the key-levers against motion, a rod or bar parallel or substantially parallel with the spool's axis and connected with the lock-arm to actuate the same, and an arm on and movable radially of the spool and held in an inner or inactive position by the ribbon and movable to an outer or active position in which it coacts with said movable rod or bar to actuate the same and the lock-arm during the rotation of the spool.

17. In a type-writing machine, the combination of a ribbon-spool having parallel flanges or ends provided with guide-slots, telescoping tubes slidable in and out of the spool in and held from turning by said slots, an arm or arms on said tubes radial to the spool, and keyboard locking mechanism connected to be actuated by said arm or arms when the tubes are released by the unwinding ribbon and move or drop outwardly of the spool.

18. In a type-writing machine, the combination of a ribbon-spool having guide-slots in its ends or heads, telescoping tubes slidable in and out of the spools in and held from turning by and spring-pressed into engagement with said slots, an arm or arms on the tubes, a movable cam-bar adapted to be actuated by the said arm or arms when the tubes are released by the unwinding ribbon and move or drop outwardly of the spool, and key-locking mechanism actuated by said cam-bar.

19. In a type-writing machine, the combination of a ribbon-spool having guide-slots in its ends or heads, telescoping tubes slidable in and out of the spool in and held from turning by and spring-pressed into engagement with said slots, an arm or arms on the tubes, pivoted arms, a cam-bar carried thereby and adapted to be actuated by the said arm or arms when the tubes are released by the unwinding ribbon and move or drop outwardly of the spool, and key-locking mechanism actuated by said cam-bar.

20. In a type-writing machine, the combination of a ribbon-spool having guide-slots in its ends or heads, a bar supported in said slots, an arm or arms on said bar, arms pivoted on the frame of the machine, a cam-bar borne by said pivoted arms and adapted to be actuated by said bar arm or arms when the bar is released and moves or drops outwardly of the spool, key-levers, a vibratory bar connected to the escapement and operated by the key-levers, and a pivoted arm adapted to be moved by the cam-bar into engagement with said vibratory bar to lock the same and the key-levers.

21. In a type-writing machine, the combination of a ribbon-spool having slots 27 in its ends, a bar 37 engaging said slots, arms 30 and 34 on said bar, pivoted arms 46, 47, cam-bar 43 on said arms 46, 47, spring 50 coacting with said arms 46, 47, escapement vibratory bar 7, key-levers 4, universal bar 5, and connections 6 between bars 5 and 7.

22. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, an arm or device on and movable relatively to the spool and detachable therefrom and held in an inactive position and adapted to move to an active position when released by said ribbon, whereby the said arm or device may be set to be released when any desired length of the ribbon is unwound from the spool, and means for locking the keys actuated by said arm or device when in its active position.

23. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, an arm or device detachably connected to and movable radially of the spool and held inward or toward the spool-core by the ribbon and movable outwardly when released by the unwinding ribbon, whereby the said arm or device may be set to be released when any desired length of the ribbon is unwound from the spool, and mechanism for locking the keys and actuated by said arm or device during the rotation of the spool when it is in its outer or active position.

24. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool having radial guides at its ends, a bar comprising relatively-movable sections guided by and held against turning motion in and detachable from said guides, an arm on said bar radial to the spool, said bar being held inwardly of the spool by the ribbon and movable outwardly when released by the ribbon, and mechanism for locking the keys and actuated by said arm when the bar and arm are in their outer positions.

25. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool having radial guides at its ends, a telescoping bar guided by and held against turning motion in and detachable from said guides, an arm on said bar radial to the spool, said bar being held inwardly of the spool by the ribbon and movable outwardly when released by the ribbon, and mechanism for locking the keys and actuated by said arm when the bar and arm are in their outer positions.

26. In a type-writing machine, the combination of an inking-ribbon, a ribbon-spool, key-

levers, means adapted to lock said levers, and connections intermediate said means and the spool including an actuator detachably connected to the spool and moved independently by the ribbon to an inactive or inoperative position, whereby the said actuator may be set to be released at any point by the unwinding ribbon to actuate the means for locking the keys.

27. In a type-writing machine and in a mechanism for locking the printing mechanism when the ribbon should be reversed, an actuator carried by a ribbon-spool and adapted to be set or adjusted to lock the printing mechanism at any desired point in the longitudinal travel of the ribbon.

Signed at the borough of Manhattan, in the city of New York, in the county of New York and State of New York, this 21st day of June, A. D. 1899.

WALTER J. BARRON.

Witnesses:
A. C. VAN BLARCOM,
K. V. DONOVAN.