H. S. McCORMACK.

TYPE WRITING MACHINE.

APPLICATION FILED OCT. 5, 1908.

972,706.

Patented Oct. 11, 1910.

3 SHEETS—SHEET 1.

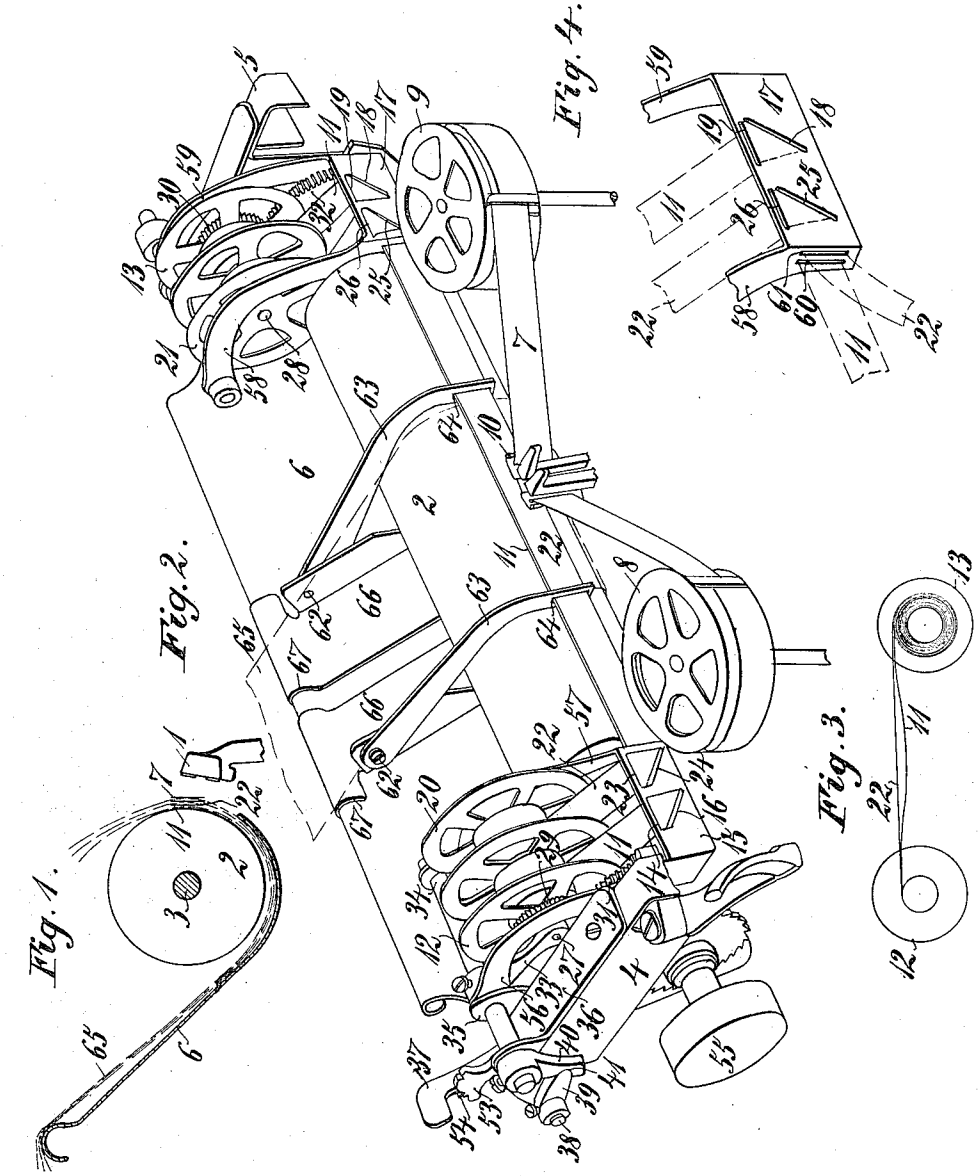

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Witnesses
R. W. Pattinson
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Inventor
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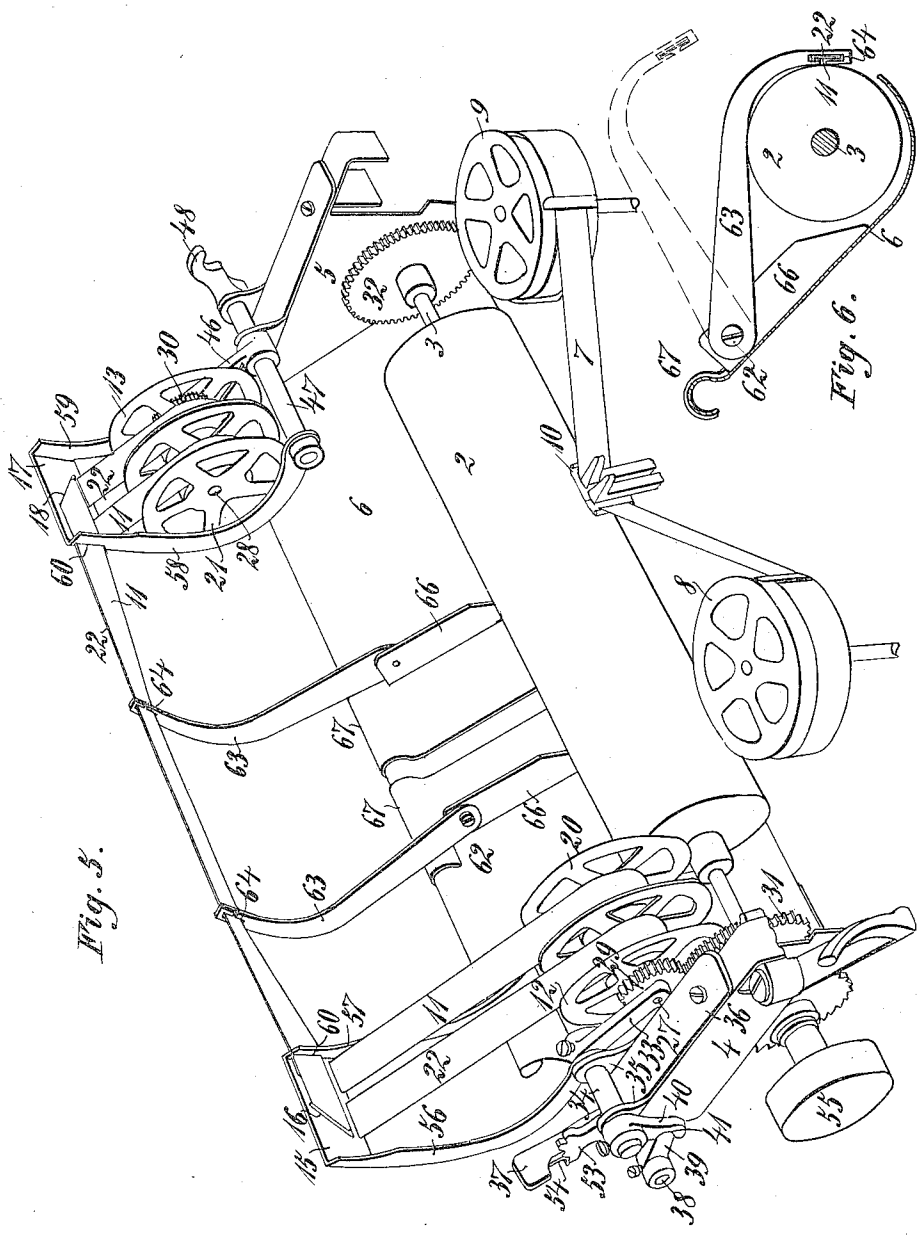

Fig. 5.

Fig. 6.

Witnesses.

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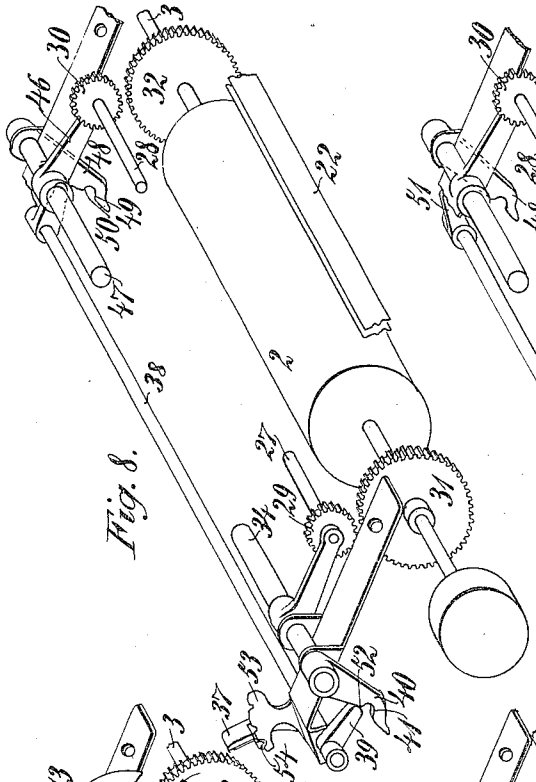

Fig. 8.

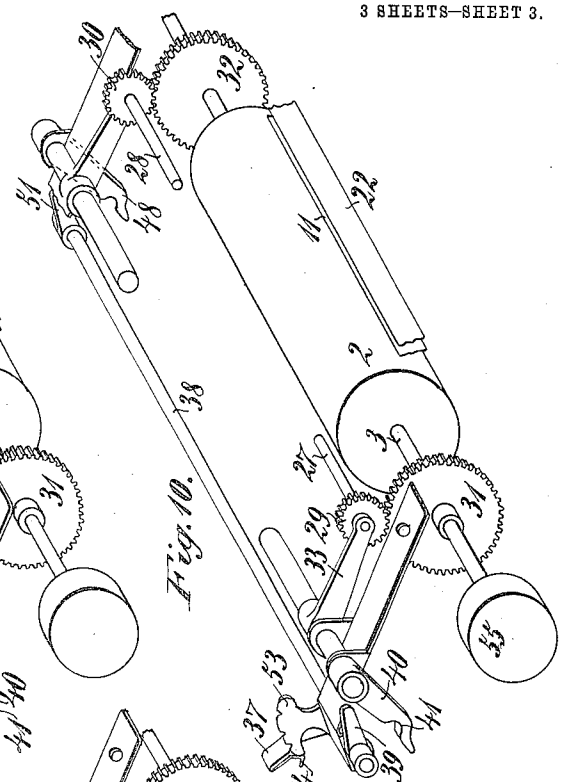

Fig. 10.

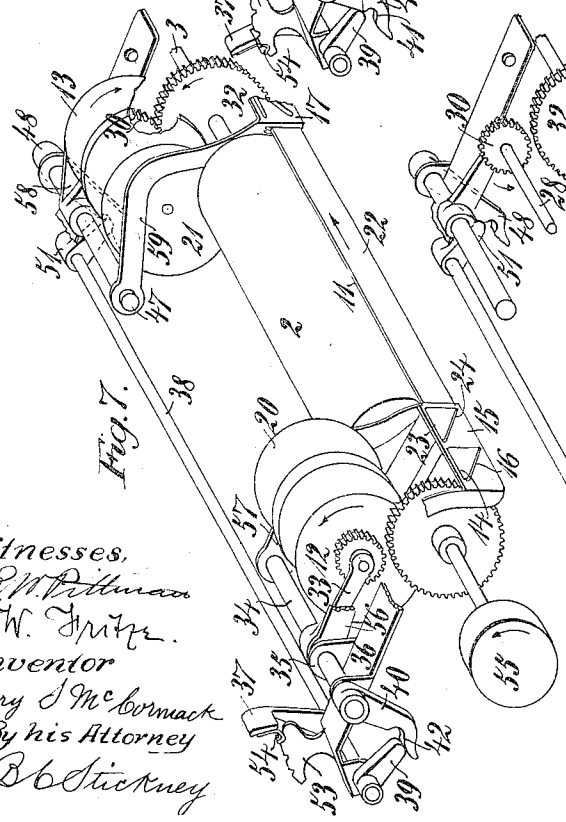

Fig. 7.

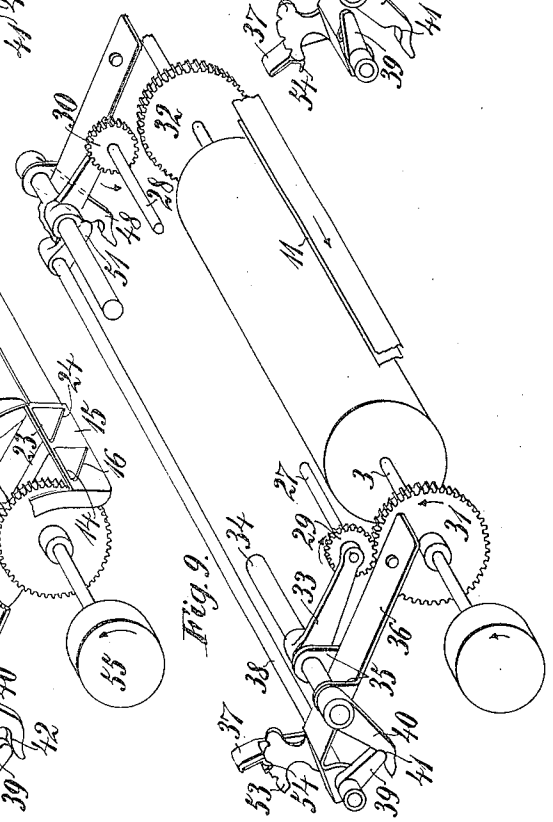

Fig. 9.

Witnesses,
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UNITED STATES PATENT OFFICE.

HARRY S. McCORMACK, OF NEW ROCHELLE, NEW YORK, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

972,706. Specification of Letters Patent. Patented Oct. 11, 1910.

Application filed October 5, 1908. Serial No. 456,123.

To all whom it may concern:

Be it known that I, HARRY S. McCORMACK, a citizen of the United States, residing in New Rochelle, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to ribbon mechanisms, and particularly to machines in which one or more ribbons are mounted upon the paper carriage, for use in writing bills of lading and other papers; it being customary to print the forms on rolls or webs of paper, and to thread the webs between the ribbons, so as to make several duplicates at one writing.

The principal object of the invention is to provide a simple, inexpensive and effective ribbon mechanism of this kind; particularly with a view to convenience in threading and other manipulation of the ribbon and spools.

In the preferred form of the invention I mount upon the platen frame at the ends of the platen, ribbon carrying spools with their axes parallel to the axis of the platen, and lead the ribbon from one spool to a diagonal guide at the front of the platen, and fold it over said guide to carry it to a similar guide at the other end of the platen, over which the ribbon is folded and led back to the other spool. Preferably two pairs of spools are employed, two spools being located side by side at each end of the platen; and separate diagonal guides are provided for the ribbons, which extend in superposed relation in front of the platen. In some cases, each carriage spool may carry a plurality of ribbons, the same being wound together as set forth in Kunath patent No. 857,635, dated June 25, 1907; thus increasing the number of available ribbons in proportion to the number of spools on the carriage.

The carriage ribbons are wound by means of gears on the ends of the platen axle and pinions on the spool axles; an adjustable finger-piece being provided for coupling either spool and simultaneously uncoupling the other. I also provide for the simultaneous uncoupling of the spools by said finger-piece to permit the platen to be rotated independently of the spools.

The invention is illustrated in connection with the Underwood writing machine, in which the types strike upon the front side of the platen. The carriage ribbons and the guides through which they must be threaded are hence necessarily placed down in an inconvenient position where they are difficult of access; and to avoid this objection I mount the diagonal guides on arms or frames from which they may swing upwardly and backwardly away from the platen, and to a position where the ribbon may be quite conveniently rove through the guides, and otherwise manipulated. I also mount the carriage spools on frames, which also may be swung up and back from the platen for convenience in attaching the ribbon ends, etc.

Intermediate the guides at the ends of the platen, around which the carriage ribbons turn, I provide auxiliary guides through which the carriage ribbons are threaded; these auxiliary guides serving to prevent the usual ribbon vibrator on said machine from accidentally lifting the carriage ribbons out of place, and also preventing the carriage ribbons from being displaced by the advancing paper sheets or webs. These auxiliary guides are preferably mounted upon a pair of gages usually provided upon the rear paper shelf for the side edges of the paper; the gages and auxiliary ribbon guides being adjustable along the platen, as required. Said auxiliary guides are preferably connected to said side paper gages by means of pivots, so that they may swing up and back together with the corner ribbon guides at the ends of the platen, for convenience in reeving the ribbons through the auxiliary guides.

Other features and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a sectional side elevation illustrating the manner of threading ribbons between paper webs which run around the platen. Fig. 2 is a perspective front view of the platen frame or carriage of an Underwood writing machine, provided with my improvements. Fig. 3 is a diagram illustrating a pair of carriage spools, upon which is wound a plurality of ribbons. Fig. 4 is a perspective fragmentary view of a guide at the end of

the platen, over which the ribbons turn corners to run from the spools along the front side of the platen. Fig. 5 is a view similar to Fig. 2, but showing both corner guides and the intermediate guides swung up for convenient access; the spools being in normal positions at one end of the platen, but being movable up as illustrated in this figure at the other end of the platen. Fig. 6 is a sectional elevation illustrating the manner of mounting an intermediate ribbon guide. Fig. 7 shows the left hand ribbon spools disconnected, and the right hand spools coupled to the platen. Fig. 8 shows both spools pinions uncoupled from the platen. Fig. 9 is a view similar to Fig. 8, but showing the left hand spool pinion connected to the platen. Fig. 10 illustrates both pinions coupled to the platen for the purpose of rendering the carriage ribbons taut by simply turning the platen knob.

In the "Underwood" machine types 1 strike against the front side of a platen 2, revolubly mounted by an axle 3 in the ends 4, 5 of a platen frame, which also comprises a rear inclined paper shelf 6. The usual ink ribbon 7 is wound upon a pair of spools 8, 9, threaded through an intermediate vibrator 10 in front of the platen.

A ribbon 11 is wound upon a pair of spools 12, 13, at the ends of the platen 2, between the ends 4, 5 of the platen frame. The ribbon is led forwardly from spool 12 through a horizontal guiding eye 14 formed in a plate 15, and runs down to a diagonal guiding eye 16 in the same plate, and folds over the diagonal guide, and runs horizontally across the front of the platen, covering the printing line thereon, to a companion diagonal guide 17 (Fig. 4) formed in a plate 18, the ribbon folding over the guide 17, and passing upwardly to a horizontal guide slot 19 and through the same and thence back to the spool 13.

Whenever desired, additional spools 20 and 21 may be employed, fixed respectively to the spools 12 and 13; and a ribbon 22 may be led from spool 20 through horizontal guide 23, around diagonal guide 24, across to diagonal guide 25, up through horizontal guide 26, and thence to spool 21; all of the guides being formed in the plates 15, 18, and the ribbon 22 lying in superposed relation in front of the platen.

The described carriage spools are revoluble respectively upon axles or studs 27, 28, upon which are also mounted respectively pinions 29, 30, to mesh with gears 31, 32 fixed upon the end portions of the platen axle 3, so that the rotation of the platen may turn the spools to wind the ribbons.

The stud 27, carrying the spools 12, 20, is mounted upon an arm 33; the pinion and two spools being fixed together and rotatable freely upon said stud. Said arm 33 extends forwardly from a rock-shaft 34, mounted in ears 35 rising from a plate 36 secured upon the top of the platen frame end 4. Upon turning the rock-shaft 34, the pinion 29 may be lifted from the gear 31, and dropped back into mesh therewith. This operation of coupling and uncoupling the spools 12 and 20 from the platen gear 31 is effected by means of a finger-piece or lever 37, fixed to a rock-shaft 38 extending back of the paper shelf 6 from end to end of the platen frame, and having at one end an arm 39, to engage a pendent cam arm 40 fixed upon said spool-carrying rock-shaft 34. When the parts are in the positions at Figs. 2 and 9, the end of said arm 39 occupies a notch 41 in the arm 40; the pinion 29 meshing with the gear 31 to wind the ribbon upon the spools 12, 20; but by moving said handle 37 forwardly to the Fig. 7 position, the arm 39 is turned downwardly and operates the arm 40 to raise the pinion 29, thus disconnecting said spools from the platen axle. In other words, the end of the arm 39 rides along a cam 42 formed on the arm 40, to force the latter forwardly to lift the pinion 29. At the same time the pinion 30, fixed to spools 13 and 21, is dropped into mesh with the gear 32 fixed upon the other end of the axle 3, so that the ribbon or ribbons may be caused to wind to the right along the platen and paid off from the spool or spools 12, 20.

It will be seen that the stud or axle 28, carrying the pinion 30 and the spools 13 and 21, is fixed upon an arm 46, the latter secured upon a rock-shaft 47, to which is attached an arm 48 having cams 49, 50 placed together to form a notch or depression in the end of the arm. When the handle 37 is pulled forwardly from the Fig. 9 position to the Fig. 7 position, an arm 51 on the opposite end of the rock-shaft 38 drops into the notch between the cams 49, 50 and permits the arm 48 to swing rearwardly and the pinion 30 to drop into mesh with the gear 32.

When it is desired to disconnect all the spools from the platen, the handle 37 is moved rearwardly from the Fig. 9 position to the Fig. 8 position; the arm 51 riding up along the rear edge of the cam arm 48, and holding up the spool frame, comprising the arm 46 and the stud 28 and rock-shaft 47; while the arm 39 rides up over the cam 52 forming the upper edge of the notch 41, and forces the arm 40 forwardly to lift the spool frame 33, 27, 34, carrying the pinion 29 out of mesh with the gear 31.

Upon the plate or bracket 36 is provided a notched plate 53 to receive a spring detent 54 provided upon the handle 37, to hold the parts in any of the Figs. 7, 8 and 9 positions. It often happens that the ribbons 11 and 22 become loose between the

spools, and in order to provide convenient means for making them taut, I arrange for both pinions 29 and 30 to be brought simultaneously into mesh with the gears 31 and 32, as at Fig. 10, so that by turning a knob 55 of the platen all the spools are rotated in one direction, and the ribbons thereby drawn taut. The simultaneous meshing of the pinions may be produced by pushing the handle 37 back, so that the detent 54 catches over the rear end of the notched plate 53, whereby both rock arms 39 and 51 are turned up to release entirely the cam arms 40 and 48, so that the spool frames may drop to permit both pinions to mesh with the gears. After the knob 55 has been turned to tighten the ribbon, the handle 37 may be pulled forwardly either to the Fig. 9 position or to the Fig. 7 position, to cause the ribbons to wind in either direction.

The ribbon guide plates 15 and 18, by the aid of which the ribbons turn corners or alter their direction of movement from longitudinal to transverse of the platen, are fixed upon the forward ends of arms, and the latter extend upwardly and rearwardly to the rock shafts 34, 47, and are pivoted thereon to swing upwardly and rearwardly from the platen, as at Fig. 5, to give convenient access to the ribbons to reeve them to the guide slots, and for other purposes. The plate 15 is carried upon and between arms 56, 57; and the plate 18 upon and between arms 58, 59.

At their lower ends the arms 57, 58 are provided with vertical guide slots 60, 61, through which the ribbons 11, 22 are respectively threaded, and by which they are supported or guided in passing along the front of the platen. These guide slots 60, 61 are of utility in preventing disarrangement of the ribbons by reason of the movements of the paper sheets or webs which are threaded between the ribbons or between the rear ribbon and the platen.

It will also be seen that the carriage spool frames may likewise be rocked upwardly and rearwardly away from the platen for convenience of access thereto, as seen at the right hand upper portion of Fig. 5; and it will be understood that the ribbon guides may be swung up either independently (as at the left hand portion of Fig. 5) or together therewith, as may be desired.

It will be seen at Fig. 5 that the ribbon is swung upwardly and backwardly over and away from the platen, to leave room for the hands between the platen and the ribbon, for convenience in manipulating the ribbon.

Intermediate the corner guiding plates 15, 18, I provide on the carriage a pair of ribbon guides in the form of arms 63 hanging down in front of the platen and at their lower ends having open eyes 64, through which the ribbons are rove. These guiding arms are arranged one on each side of the web or webs of paper 65 passing around the platen, and are effective in preventing ribbons from becoming displaced by reason of the line by line advance of the webs or from other causes. The arms 63 extend rearwardly over the top of the platen and at their rear ends are pivoted at 62 upon a pair of gages 66 for the side edges of the paper; said gages being of usual construction and having hook portions 67 to catch over the top of the paper shelf, as usual, and permit adjustment of the gages (and also of the ribbon guides) along the paper shelf and platen.

At Fig. 3, it will be seen that the ribbons 11 and 22 may be wound upon one pair of spools 12, 13; and two or three ribbons or more may be wound together or simultaneously upon the other pair of spools 20, 21, if desired; or the last-mentioned pair of spools may be omitted in some cases.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, and pinions upon the spools; each pinion being movable independently of the other into and out of mesh with its associated gear.

2. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, pinions upon the spools; each pinion being movable independently of the other into and out of mesh with its associated gear, and means for detaining both pinions simultaneously out of mesh with their gears.

3. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to

spool, gears upon the platen axle, pinions upon the spools, and a finger-piece mounted upon the platen frame and connected to move the pinions alternately into and out of mesh with their gears.

4. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, pinions upon the spools, and a finger-piece mounted upon the platen frame and connected to move the pinions either simultaneously or alternately into and out of mesh with their gears.

5. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, pinions upon the spools, a finger-piece controlling a rock-shaft extending from end to end of the platen frame, frames upon which the spools are mounted at the ends of the platen frame, and means for enabling said rock-shaft to swing either frame down and the other up simultaneously.

6. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, pinions upon the spools, a finger-piece controlling a rock-shaft extending from end to end of the platen frame, frames upon which the spools are mounted at the ends of the platen frame, and means for enabling said rock-shaft to swing either frame down and the other up simultaneously, and also to swing both frames up to disconnect the pinions from the gears.

7. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, pinions upon the spools, a finger-piece controlling a rock-shaft extending from end to end of the platen frame, frames upon which the spools are mounted at the ends of the platen frame, and means for enabling said rock-shaft to swing either frame down and the other up simultaneously, said spool frames having cams, and said rock-shaft having arms to engage said cams, said cams and arms being constructed to coöperate to swing either spool up and drop the other.

8. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, pinions upon the spools, a finger-piece controlling a rock-shaft extending from end to end of the platen frame, frames upon which the spools are mounted at the ends of the platen frame, and means for enabling said rock-shaft to swing either frame down and the other up simultaneously, said spool frames having cams, and said rock-shaft having arms to engage said cams, said cams and arms being constructed to coöperate to swing either spool up and drop the other, and also to swing both spools up simultaneously.

9. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, pinions upon the spools, a finger-piece controlling a rock-shaft extending from end to end of the platen frame, frames upon which the spools are mounted at the ends of the platen frame, means for enabling said rock-shaft to swing either frame down and the other up simultaneously, said spool frames having cams, and said rock-shaft having arms to engage said cams, said cams and arms being constructed to coöperate to swing either spool up and drop the other, and also to swing both spools up simultaneously, and means for detaining the rock-shaft in different positions to cause the ribbon to wind on either spool or to silence both spools, as required.

10. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with

their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, and pinions upon the spools; said diagonal guides being mounted for movement upwardly over and away from the platen, for convenience in manipulating the ribbon.

11. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, and pinions upon the spools; said diagonal guides being mounted on arms upon which they may swing upwardly and backwardly for convenient access to the ribbon.

12. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, and pinions upon the spools; said diagonal guides being mounted on arms upon which they may swing upwardly and backwardly for convenient access to the ribbon, said arms hinged on rock-shafts forming parts of frames upon which the spools are mounted and whereby the spools may be swung up and back over the platen.

13. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, and pinions upon the spools; a finger-piece controlling a rock-shaft extending from end to end of the platen frame, frames upon which the spools are mounted at the ends of the platen frame, means for enabling said rock-shaft to swing either frame down and the other up simultaneonsly; said spool frames being movable upwardly about their journals independently of said rock-shaft for convenience in manipulating the spools and ribbon.

14. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, and pinions upon the spools; said spools together with said diagonal guides being movable upwardly and rearwardly over the platen for convenient access to the spools and ribbon.

15. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, and pinions upon the spools; said diagonal guides being mounted for movement upwardly over and away from the platen, for convenience in manipulating the ribbon, a plurality of ribbons being wound upon said spools and passed through said diagonal guides so that one sheet of paper may be threaded between said ribbons, and another sheet may lie between the rear ribbon and the platen.

16. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, and pinions upon the spools; said diagonal guides being mounted on arms upon which they may swing upwardly and backwardly for convenient access to the ribbon; a guide for said ribbon intermediate said diagonal guides, said intermediate guide extending from the front of the platen back over the top of the same and hinged at its rear end to swing up with said diagonal guides.

17. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, and pinions upon the spools; a guide for said ribbon intermediate said diagonal guides, said intermediate guide extending from the front of the platen back over the top of the same and hinged at its rear end to swing up.

18. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, and pinions upon the spools; a guide for said ribbon intermediate said diagonal guides, said intermediate guide extending from the front of the platen back over the top of the same and hinged at its rear end to swing up, and also adjustable along the platen.

19. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle, and pinions upon the spools; said diagonal guides being mounted on arms upon which they may swing upwardly and backwardly for convenient access to the ribbon; a guide for said ribbon intermediate said diagonal guides, said intermediate guide extending from the front of the platen back over the top of the same and hinged at its rear end to swing up with said diagonal guides; said intermediate guide pivoted at its rear end upon a side paper gage which is adjustable along the platen frame.

20. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle and pinions upon the spools, frames at the ends of the platen frame upon which the spools and pinions are mounted, and means to swing either frame down and the other up simultaneously.

21. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle and pinions upon the spools, frames at the ends of the platen frame upon which the spools and pinions are mounted, and means to swing either frame down and the other up simultaneously, and also to swing both frames up simultaneously to disconnect the pinions from the gears.

22. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle and pinions upon the spools, frames at the ends of the platen frame upon which the spools and pinions are mounted, and means for detaining either frame in a depressed position and the other simultaneously in an elevated position, so that either spool may wind.

23. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle and pinions upon the spools, frames at the ends of the platen frame upon which the spools and pinions are mounted, and means for detaining either frame in a depressed position and the other simultaneously in an elevated position, so that either spool may wind, and for detaining both spool frames simultaneously in elevated positions, to permit the platen to rotate independently of the ribbon-winding devices.

24. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen over which the ribbon folds to run in front of the platen in traveling from spool to spool, gears upon the platen axle and pinions upon the spools, frames at the ends of the platen frame upon which the spools and pinions are mounted, and means for detaining either frame in a depressed position and the other simultaneously in an elevated position, so that either spool may wind; both spool frames being movable upwardly over and back of the platen for convenience in manipulating the spools and ribbon.

25. In a typewriting machine, the combination of a revoluble platen, a platen frame, a pair of ribbon spools mounted at the ends of the platen, and guides at the ends of the platen, over which the ribbon folds in trav-

eling from spool to spool; said guides being mounted for movement upwardly and backwardly over and away from the platen, to leave room for the hands between the platen and ribbon, for convenience in manipulating the ribbon.

26. In a typewriting machine, the combination of a revoluble platen, a platen frame, a pair of ribbon spools mounted at the ends of the platen, and guides at the ends of the platen, over which the ribbon folds in traveling from spool to spool; said guides being mounted on arms upon which they may swing upwardly and backwardly over and away from the platen to leave room for the hands between the platen and ribbon, for convenient manipulation of the ribbon.

27. In a typewriting machine, the combination with a platen frame and a platen journaled therein, of a pair of ribbon spools mounted on the platen frame at the ends of the platen and movable upwardly away from the platen for convenience in manipulating the spools and ribbon.

28. In a typewriting machine, the combination with a platen frame and a platen journaled therein, of a pair of ribbon spools mounted on the platen frame at the ends of the platen and movable upwardly away from the platen for convenience in manipulating the spools and ribbon, and guides at the ends of the platen over which the ribbon turns to run in front of the platen in traveling from spool to spool, said guides mounted to move up together with the spools.

29. In a typewriting machine, the combination with a platen frame and a platen journaled therein, of a pair of ribbon spools mounted on the platen frame at the ends of the platen and movable upwardly away from the platen for convenience in manipulating the spools and ribbon, guides at the ends of the platen over which the ribbon turns to run in front of the platen in traveling from spool to spool, said guides mounted to move up together with the spools, and a ribbon guide intermediate said guides and mounted to move upwardly with said guides.

30. In a typewriting machine, the combination with a platen, a platen carriage, and a pair of ribbon spools connected to the usual vibrator in front of the platen, of a pair of spools on the platen carriage to carry a supplemental ribbon between said vibrator and the platen, and guides upon the platen carriage extending forwardly over the platen and downwardly in front thereof, one on each side of said vibrator, through which said supplemental ribbon is threaded.

31. In a typewriting machine, the combination with a platen, a platen carriage, and a pair of ribbon spools connected to the usual vibrator in front of the platen, of a pair of spools on the platen carriage to carry a supplemental ribbon between said vibrator and the platen, guides for the ribbon at the ends of the platen, and guides upon the platen carriage extending forwardly over the platen and downwardly in front thereof, one on each side of said vibrator, through which said supplemental ribbon is threaded, said intermediate guides being mounted to swing upwardly away from the platen together with the first guides and said spools.

32. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, two pairs of ribbon spools mounted at the ends of the platen with their axes extending longitudinally of the platen, diagonal guides at the ends of the platen, over which the ribbons fold to run one in front of the other and both in front of the platen, gears upon the platen axle, pinions connected to the spools, one pinion at each end of the platen, and means to couple and uncouple the pinions with the gears.

33. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen, guides at the ends of the platen, over which the ribbon turns to run in front of the platen, gears upon the platen axle, pinions upon the spools, each pinion being movable independently of the other into and out of mesh with its associated gear, and means for detaining both pinions simultaneously out of mesh with their gears.

34. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen, guides at the ends of the platen, over which the ribbon turns to run in front of the platen, gears upon the platen axle, pinions upon the spools, and a finger-piece mounted upon the platen frame and connected to move the pinions alternately into and out of mesh with their gears, and to move the pinions simultaneously into mesh with their gears.

35. In a typewriting machine, the combination of a platen, a platen frame, a pair of ribbon spools mounted at the ends of the platen, guides at the ends of the platen, over which the ribbon turns to run in front of the platen, gears connected to the platen, pinions for the spools, and a finger-piece mounted and connected to move the pinions alternately into and out of mesh with their gears, means being controlled by said finger-piece to move the pinions simultaneously out of mesh with their gears.

36. In a typewriting machine, the combination of a platen, a platen frame, a pair of ribbon spools mounted at the ends of the platen, guides at the ends of the platen, over

which the ribbon turns to run in front of the platen, gears connected to the platen, pinions for the spools, and a finger-piece mounted and connected to move the pinions alternately into and out of mesh with their gears, means being controlled by said finger-piece to move the pinions simultaneously out of mesh with their gears, and to move the pinions simultaneously into mesh with their gears.

37. In a typewriting machine, the combination of a platen, a platen frame, a pair of ribbon spools mounted at the ends of the platen, guides at the ends of the platen over which the ribbon turns to run in front of the platen in traveling from spool to spool, and spool-winding means; said guides being mounted for movement upwardly over and away from the platen, for convenience in manipulating the ribbon.

38. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen, guides at the ends of the platen over which the ribbon turns, gears upon the platen axle and pinions upon the spools, frames at the ends of the platen frame upon which the spools and pinions are mounted, and means for detaining either frame in a depressed position and the other simultaneously in an elevated position, so that either spool may wind; both spool frames being movable upwardly over and back of the platen for convenience in manipulating the spools and ribbon; and arms whereon said guides are mounted to swing upwardly from the platen.

39. In a typewriting machine, the combination of a platen, a platen frame, an axle by means of which the platen is journaled in said platen frame, a pair of ribbon spools mounted at the ends of the platen, guides at the ends of the platen over which the ribbon turns, gears upon the platen axle and pinions upon the spools, frames at the ends of the platen frame upon which the spools and pinions are mounted, and means for detaining either frame in a depressed position and the other simultaneously in an elevated position, so that either spool may wind; both spool frames being movable upwardly over and back of the platen for convenience in manipulating the spools and ribbon; and arms whereon said guides are mounted to swing upwardly from the platen; said spool frames having rock-shafts whereon said arms are hinged.

40. In a typewriting machine, the combination of a revoluble platen, a platen frame, ribbon spools mounted at the ends of the platen, a plurality of ribbons wound upon said spools, diagonal guides at the ends of the platen, over which the ribbon folds in traveling from spool to spool; said diagonal guides being provided on arms upon which they may swing upwardly and backwardly away from the platen to leave room for the hands between the ribbons and the platen, for convenient access to the ribbon; each arm having a plurality or series of diagonal guides.

41. In a typewriting machine, the combination of a revoluble platen, a platen frame, ribbon spools mounted at the ends of the platen, a plurality of ribbons wound upon said spools, diagonal guides at the ends of the platen, over which the ribbon folds in traveling from spool to spool; said diagonal guides being provided on arms upon which they may swing upwardly and backwardly away from the platen to leave room for the hands between the ribbons and the platen, for convenient access to the ribbon; each arm having a plurality of diagonal guides and a plurality of vertical guides between the latter.

42. In a typewriting machine, the combination with a platen frame and a platen journaled therein, of two pairs of operatively connected ribbon spools mounted on the platen frame at the ends of the platen, each pair carrying a plurality of ribbons wound together thereon, and all of said ribbons superposed over the printing point.

43. In a typewriting machine, the combination with a platen and a platen carriage, of a pair of spools on the platen carriage to carry an ink ribbon, guides at the ends of the platen for said ribbon, and intermediate guides upon the platen carriage in front of the platen, through which said ribbon is threaded, said intermediate guides adjustable along the platen.

44. In a typewriting machine, the combination with a platen and a platen carriage, of a pair of paper gages adjustable along the platen, a pair of spools on the platen carriage to carry an ink ribbon, guides at the ends of the platen for said ribbon, and intermediate guides upon the platen carriage in front of the platen, through which said ribbon is threaded, said intermediate guides adjustable along the platen and connected to said paper gages to be adjusted therewith.

45. In a typewriting machine, the combination with a platen and a platen carriage, of a pair of spools on the platen carriage to carry a ribbon, main guides for the ribbon at the ends of the platen, and intermediate guides upon the carriage in front of the platen, through which said supplemental ribbon is threaded, said intermediate guides being mounted to swing upwardly away from the platen independently of the main guides.

46. In a typewriting machine, the combination with a platen and a platen carriage,

of a pair of spools on the platen carriage to carry a ribbon, main guides for the ribbon at the ends of the platen, and intermediate guides upon the carriage in front of the platen, through which said supplemental ribbon is threaded, said intermediate guides being mounted to swing upwardly away from the platen, either independently of or together with the main guides.

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