No. 760,676. PATENTED MAY 24, 1904.

C. E. YETMAN.

RIBBON MECHANISM FOR TYPE WRITING MACHINES.

APPLICATION FILED SEPT. 26, 1900. RENEWED MAR. 18, 1904.

NO MODEL. 5 SHEETS—SHEET 1.

Fig. 1.

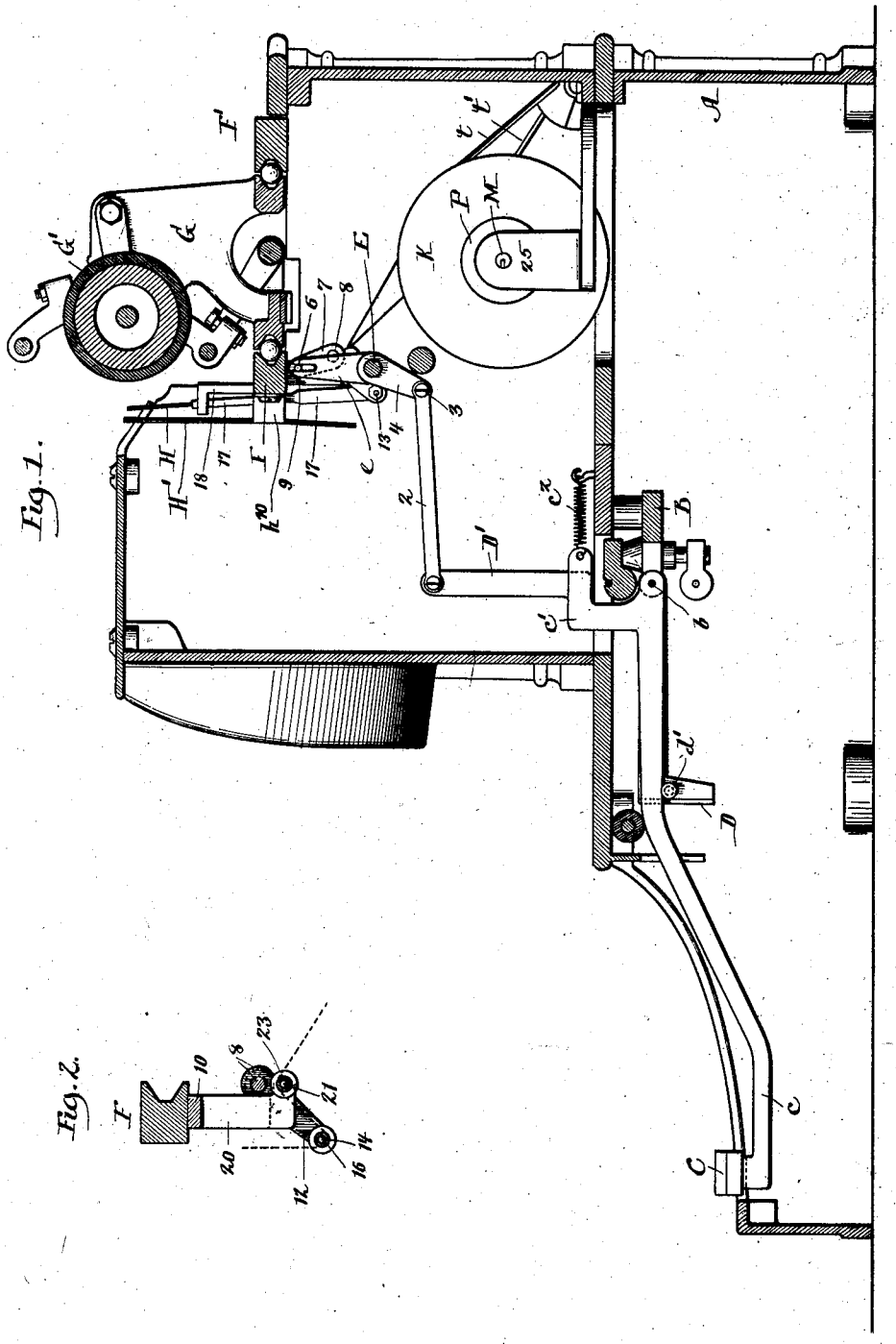


Fig. 2.

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his Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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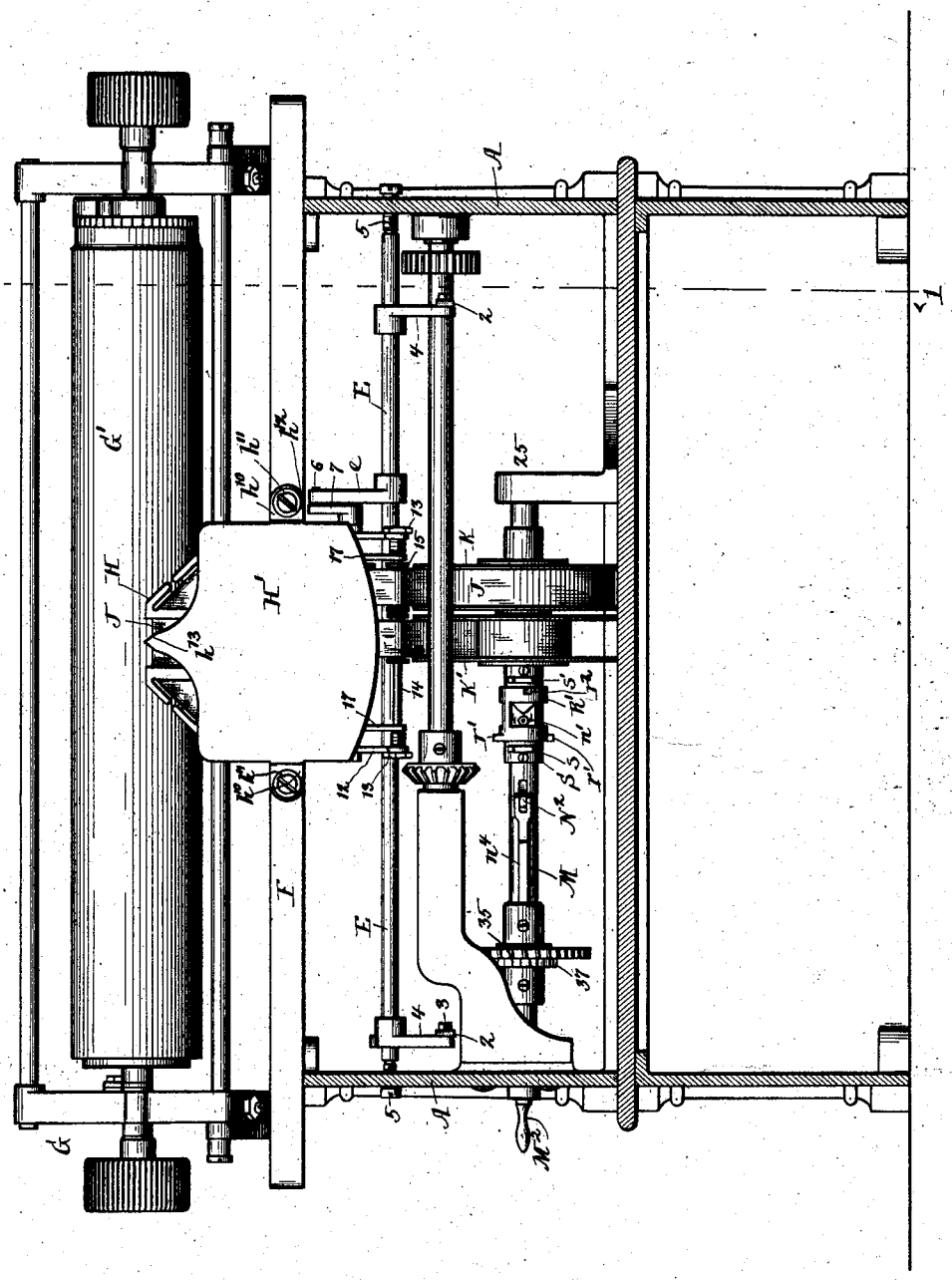
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NO MODEL. 5 SHEETS—SHEET 2.

Fig. 3.



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NO MODEL. 5 SHEETS—SHEET 3.

Fig. 5.

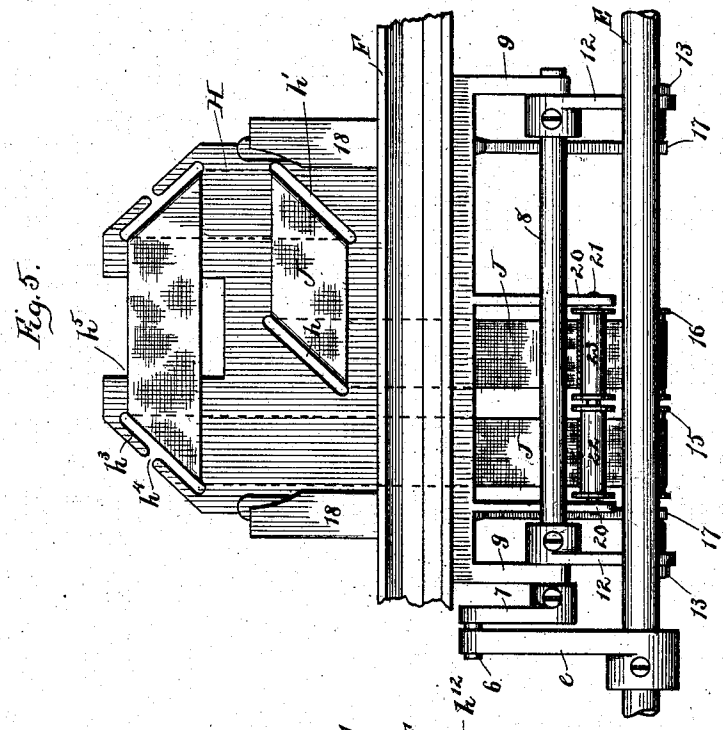
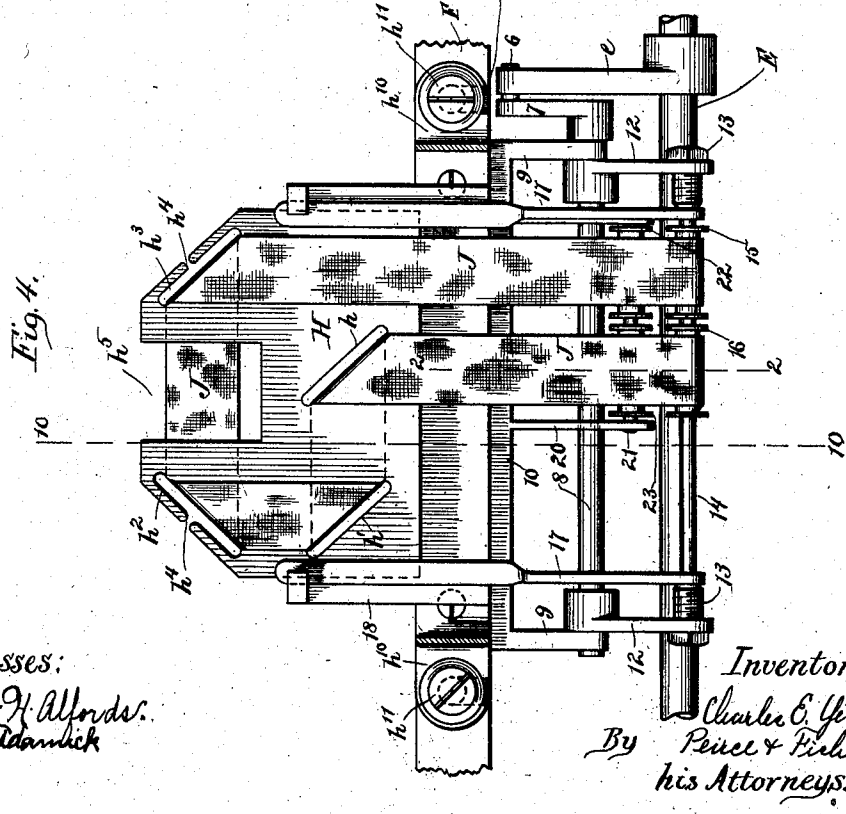


Fig. 4.



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NO MODEL. 5 SHEETS—SHEET 4.

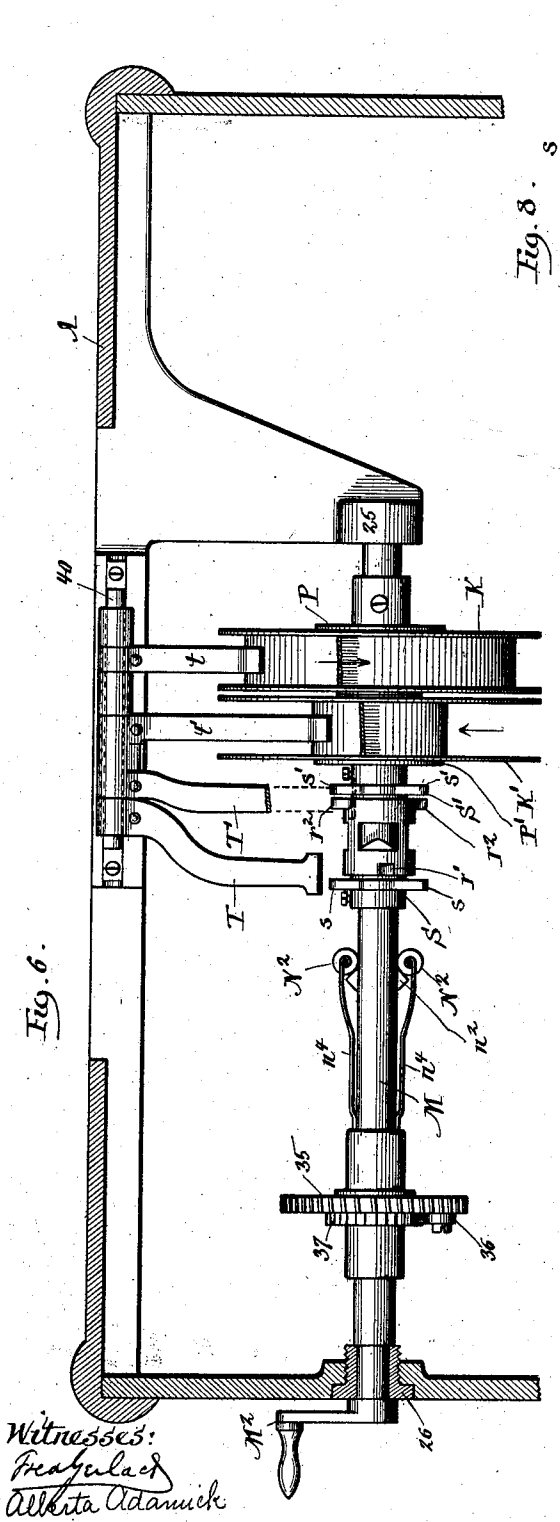


Fig. 6.

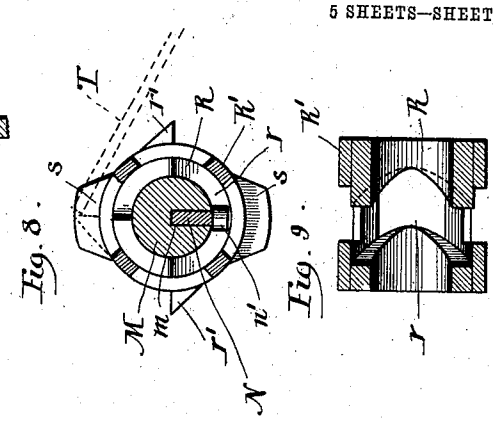


Fig. 8.

Fig. 9.

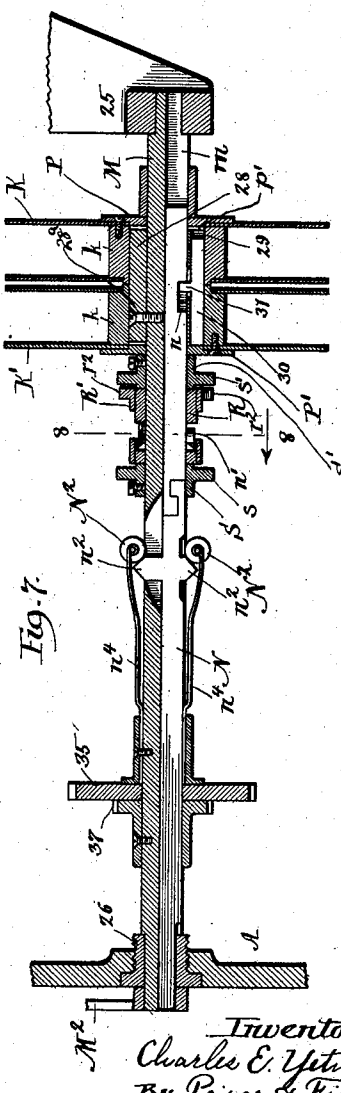


Fig. 7.

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NO MODEL. 5 SHEETS—SHEET 5.

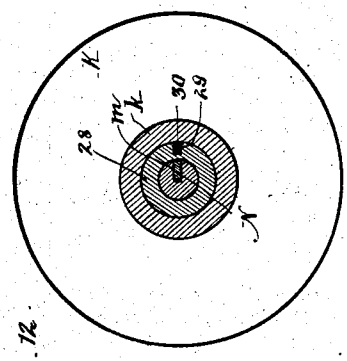


Fig. 12.

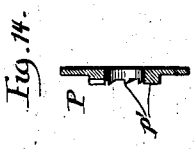


Fig. 14.

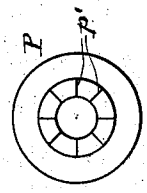


Fig. 13.

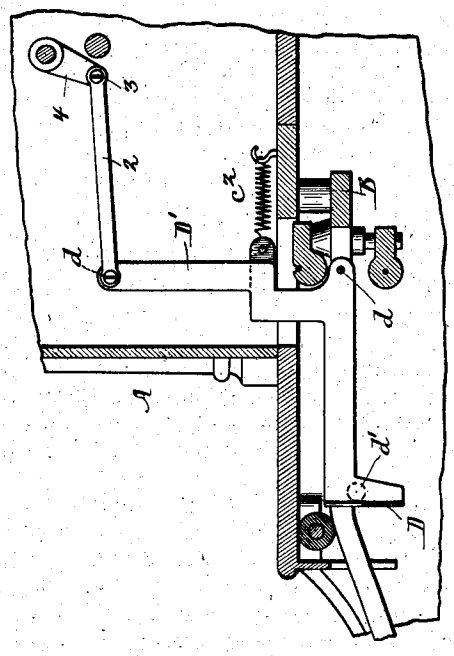


Fig. 11.

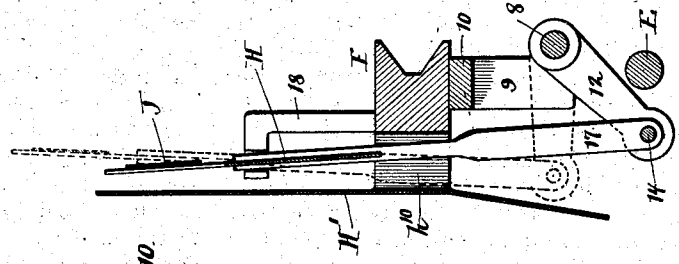


Fig. 10.

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No. 760,676. Patented May 24, 1904.

UNITED STATES PATENT OFFICE.

CHARLES E. YETMAN, OF OAKPARK, ILLINOIS, ASSIGNOR TO WORLD FLASH COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION.

RIBBON MECHANISM FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 760,676, dated May 24, 1904.

Application filed September 26, 1900. Renewed March 18, 1904. Serial No. 198,836. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. YETMAN, a resident of Oakpark, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ribbon Mechanism for Type-Writing Machines, of which the following is a full, clear, and exact description.

This invention has relation more particularly to that class of type-writing machines commonly known as "visible" type-writers; and the object of the invention is to provide improved construction of mechanism for controlling the position and feed of the ink-ribbon through which the type-bars make their impression upon the paper.

The invention consists in the features of improvement hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims at the end of this specification.

Figure 1 is a view in vertical longitudinal section on line 1 1 of Fig. 3. Fig. 2 is a detail view on line 2 2 of Fig. 4. Fig. 3 is a front view in elevation of the rear part of the machine, parts being removed. Fig. 4 is a detail front view, upon an enlarged scale, of the ribbon plate or support and adjacent parts. Fig. 5 is a rear view of the parts shown in Fig. 4. Fig. 6 is a detail plan view of the ribbon-spools, their operating-shaft and adjacent parts, the frame of the machine being shown in horizontal section. Fig. 7 is a view in horizontal section through the shaft whereon the ribbon-spools are mounted. Fig. 8 is a view in vertical section on line 8 8 of Fig. 7. Fig. 9 is a detail view in longitudinal section through the cam-sleeve that is mounted on the ribbon-spool shaft. Fig. 10 is a detail view in vertical section on line 10 10 of Fig. 4. Fig. 11 is a detail view partly in elevation and partly in section, showing the universal bar and its connections. Fig. 12 is a view in vertical cross-section through one of the ribbon-spools and the shaft whereon it is mounted. Fig. 13 is a detail inner face view of the clutch-plate that is attached to each of the ribbon-spools. Fig. 14 is a view in central vertical section through the clutch-plate shown in Fig. 13.

Inasmuch as the present invention has relation simply to the mechanism for controlling the movements of the inking-ribbon, I do not deem it necessary to describe in detail certain of the parts that are shown by the drawings, but which form no part of this invention. These parts so far as they are novel with me are embraced in the companion applications filed in the United States Patent Office of even date herewith, being Serial Nos. 31,198 and 31,199.

A designates the main frame of the machine, this frame being of any suitable construction. Across the main frame A extends a comb-bar B or other suitable support, upon which will be pivotally sustained, as at *b*, the levers *c* of the space-bar C. By reference to Fig. 1 it will be seen that the levers *c* of the space-bar are provided at their inner ends with upwardly and inwardly extending arms *c'*, to which are connected springs c^2, that serve to hold the space-bar in the normally raised position shown in Fig. 1. Between the side levers *c* of the space-bar is located the universal bar D D', (see Fig. 1,) that is also pivotally connected, as at *d*, (see Fig. 11,) to the comb-bar B or other convenient support, the sides of the universal bar D D' being shown as provided with offset pins *d'*, adapted to be engaged by the space-bar levers *c* as the space-bar is moved downwardly. It will be understood, of course, that the usual key-levers (not shown) extend above the space-bar and are pivoted at their inner end, so that the universal bar will be rocked each time that a key-lever is depressed. The rear portion D' of the universal bar extends upwardly at each side of the machine, and to these upper portions D' are pivotally connected, as at *d*, the links 2, the inner ends of these links being pivoted, as at 3, to crank-arms 4, that are fixed upon a rock-shaft E. By reference to Fig. 3 it will be seen that the rock-shaft E has its ends sustained by pointed pivot-screws 5, that extend inwardly from the side walls of the main frame A. To the rock-shaft E is keyed a rock-arm *e*, the slotted upper end of which receives a pin 6, that projects from the crank-arm 7, that is fixed to a short

shaft 8, (see Figs. 1, 4, and 5,) journaled in the arms 9 of a hanger-plate 10, that is fastened to and depends below the front carriage-rail F. This carriage-rail F and its companion rail F′ serve to support the carriage G, whereby the cylindrical platen G′ is sustained; but as the carriage mechanism forms no part of this invention it need not be more particularly described.

By reference to Figs. 4 and 5 of the drawings it will be seen that the rock-shaft 8 has fixed thereto the rock-arms 12, through the lower ends of which pass the journal-screws 13, that are chambered to receive the ends of the shaft 14, whereon are revolubly mounted the ribbon-rolls 15 and 16. The shaft 14 passes through the lower ends of the guide-bars or rods 17, to the upper ends of which bars is connected the ribbon-guide plate or carrier H. By reference to Figs. 4 and 10 it will be seen that the upper ends of the bars or rods 17 pass through guide-grooves formed in the angular end portions of the guide-arms 18, that rise from the front of the carriage-rail F. The hanger-plate 10 is provided with depending arms 20, (see Figs. 2, 4, and 5,) in the lower ends of which is mounted a shaft 21, that carries the ribbon-rolls 22 and 23.

The ribbon guide-plate or support H is shown as provided with a series of obliquely-arranged slots h, h', h^2, and h^3, through which passes the ink-ribbon J. The slots h^2 and h^3 are preferably formed with openings h^4 to permit the ready removal and replacement of the ribbon when desired. The ribbon plate or support H is formed with a cut-away space h^5, that will come opposite the printing-point of the platen, so that the type-bars may strike through the plate and against the ribbon when making their impression. By reference more particularly to Figs. 1 to 5 of the drawings it will be seen that the inking-ribbon J passes from one of the spools K over the roller 22, thence forwardly and downwardly below the roller 15, thence up through the slot h^3 of the plate H, thence across the open space h^5 of the plate, thence through the slots h^2, h', and h of the plate, thence below the roller 16 and above the roller 23 to the companion ribbon-spool K′.

From the construction of parts as thus far defined it will be seen that each time the space-bar C or one of the key-levers is depressed a corresponding depression will be given to the front portion of the universal bar D, causing the upper portion D′ of this bar to rock forwardly. This forward movement of the upper part of the universal bar will draw forwardly the crank-arm 4 and turn the rock-shaft E. The arm e of this rock-shaft by its engagement with the pin 6 will rock the crank 7 of the rock-shaft 8, thereby turning this shaft and causing its crank-arms 12 to swing forwardly and upwardly and in so doing to raise the ribbon-plate H and the ribbon carried thereby. In Fig. 10 of the drawings the ribbon-plate is shown by full lines in its normal or idle position, and by dotted lines the parts are shown in the position that will be assumed when a key-lever or the space-bar has been depressed, as last described, and it will be seen that as the ribbon-plate H is thus lifted its upper end will be swung toward the platen G, so as to bring the inking-ribbon into proximity to the surface of the paper to be printed upon. As soon, however, as the space-bar or a key-lever is released the ribbon-plate H will drop to its normal position, thereby exposing to the view of the operator the printed line.

I am aware that a visible type-writing machine has been heretofore constructed in which the inking-ribbon has been carried by a pivoted support adapted to be swung upwardly and toward the platen at each depression of a type-lever or the space-bar, the ribbon-support swinging forwardly and outwardly to normal position when the key-lever or space-bar was released; but in practice I have found that by providing the ribbon-support with means whereby it may be reciprocated at substantially right angles to the radius of the platen and in front of the printing-point a more effective exposure of the ribbon to the action of the type-bars is secured, the ribbon plate or support responding more quickly to the action of the key-levers and space-bars in securing a full exposure of the printed line.

A shield or guard H′ is arranged in front of the ribbon-plate H. This shield or guard is provided with feet or extensions h^{10}, bent at right angles to the plane of said shield and secured to the carriage-rail F by means of screws h^{11}, passing through open-ended slots h^{12} in said feet or extensions. The shield or guard is also provided with a pointer h^{13}, which serves to indicate the printing-point.

The inking-ribbon J is adapted to be wound first onto one and then onto the other of the ribbon-spools K and K′, and the mechanism whereby the automatic winding of the ribbon is effected will next be described, it being understood, of course, that in this as in all similar type-writing machines the ribbon will be given a step-by-step movement corresponding to the action of the escapement mechanism whereby the paper-carriage is controlled.

The side plates of each of the ribbon-spools K and K′ (see Figs. 6 and 7) are attached to the hubs k and are carried upon the ribbon-spool shaft M, that is journaled in a suitable bracket 25 at one end, while its opposite end is supported by a suitable bearing 26 in the side wall of the main frame. Upon the shaft M and within the hubs k of the spools K and K′ is a collar 28, secured to shaft M by screw 28^a, (see Figs. 7 and 12,) lengthwise of which is formed a slot 29, that receives a sliding pawl 30. This pawl 30 is formed with an offset arm 31, that extends through an opening

formed in the collar 28 into the slot *m*, that is formed lengthwise of the ribbon-spool shaft M. By reference to Fig. 7 it will be seen that the arm 31 of the pawl 30 enters a notch *n* of a shifter-bar N, that lies within the groove *m* of the ribbon-spool shaft M, the notch *n*, however, being formed considerably larger than the arm 31 for the purpose to be presently stated.

To the outer face of the ribbon-spool K is attached a ratchet or clutch plate P, (see Figs. 7, 13, and 14,) upon the inner face of which are disposed the annularly-arranged teeth *p'*, that face inwardly in opposition to the adjacent end of the sliding pawl 30, and in like manner also the spool K' has attached thereto the ratchet-plate P' similar in construction to the plate P, the teeth of this plate being also arranged in position to be engaged by the opposite end of the sliding pawl 30. Each of the ribbon-spools K and K' is loosely mounted upon the shaft M and travels in unison therewith only when its corresponding ratchet or clutch plate P is engaged by the pawl 30. Hence it will be seen that the ribbon J will be wound on that spool the clutch of which is in engagement with the pawl 30, that partakes of the revolution of the ribbon-spool shaft M. It will be understood, of course, that the shaft M will be driven by suitable gearing, as from the escapement mechanism of the paper-carriage, this gearing engaging with the gear-wheel 35, that is loosely mounted upon the shaft M, but is connected therewith by a pawl 36, that engages a ratchet-wheel 37, the hub of which is fixed to the shaft M. In order to automatically reverse the direction of travel of the ribbon when it has been entirely wound from off one of the spools and onto the other, I provide the improved mechanism next to be described.

Upon the shaft M is mounted the annular cam R, that is preferably sustained within a sleeve R', to the interior of which it is fixed or in piece wherewith it is formed. The annular cam R has a continuous cam-groove *r* of sinuous shape, one-half of this groove being shown in Fig. 9 of the drawings, it being understood that the opposite half is of like shape. Within the cam-groove *r* extends a stud or friction roll *n'*, that is fastened to the shifter-bar N, so that whenever the cam R has partial revolution imparted thereto a longitudinal shift of the bar N is effected by the engagement of the cam with the stud or roll *n'*. From the periphery of the cam-sleeve R' project four teeth, two of these teeth, *r'*, being arranged at diametrically opposite points at one end of the sleeve R', while the other two teeth, r^2, are similarly arranged at the opposite end of the sleeve, the teeth *r'* and r^2, however, being disposed at right angles to each other upon the surface of the sleeve. (See Fig. 6.)

Fixed to the shaft M at the ends of the cam R are the releasing-plates S and S', these plates being provided, respectively, with the extensions *s* and *s'* of a height equal to or slightly greater than the height of the teeth *r'* and r^2. The teeth *r'* and r^2 are adapted to be engaged, respectively, by the shifter-pawls T and T', that are journaled upon a shaft or support 40 at the back of the main frame A. (See Fig. 6.) The pawl T is rigidly connected by a suitable sleeve that is mounted upon the shaft 40 with its companion controlling-pawl *t*, and the pawl T' is connected to its companion controlling-pawl *t'*. The controlling-pawl *t* is adapted to rest upon the surface of the ribbon wound upon the spool K, while the controlling-pawl *t'* bears upon the ribbon that is wound upon the spool K'. The controlling-pawls *t* and *t'* are so disposed with relation to their respective shifter-pawls T and T' that when the ribbon is about exhausted from one of the spools—for example, the spool K—the corresponding controlling-pawl *t* will at such time be adjacent the hub of the spool K and will permit the free end of the shifter-pawl T to descend into such position that it will contact with the tooth *r'* (see Fig. 6) of the cam-sleeve R'. This contact of the pawl T with the tooth *r'* will detain the cam-sleeve and cam R, while the shaft M continues to revolve. As soon, however, as the inclined extension *s* of the guard S passes beneath the free end of the shifter-pawl T it will lift the pawl from engagement with the tooth *r'*, after which the cam-sleeve R' will continue to revolve with the shaft and in its protected position at the side of the guard lug or extension *s*, and manifestly so long as the tooth *r'* is in this position it cannot be struck by the pawl T. The engagement of the pawl T with the tooth *r'* will detain the cam-sleeve R' and cam R during a quarter-revolution of the shaft M. If, therefore, it be assumed that the stud or roller *n'* be in one of the portions of the cam-groove *r* nearest the right-hand releasing-plate S', then as the sleeve R' and cam R are detained by by pawl T' while the shaft M and the bar N make a quarter-revolution the stud or roller *n'* on the bar N will move along the cam-groove *r* into that part of the groove nearest the left-hand releasing-plate S and in so doing will impart a corresponding longitudinal movement to the shifter-bar N. During this initial movement of the shifter-bar the arm 31 of the pawl 30 (see Fig. 7) will not be affected, because the slot *n* of the shifter-bar is considerably larger than the arm 31. As soon, however, as the shifter-bar N is moved toward the left (see Fig. 7) a sufficient distance to cause the points of the V-shaped cam-lugs n^2 to pass slightly beyond the spring-pressed rolls N^2 these rolls bearing upon the opposite inclined sides of the lugs n^2 will cause the shifter-bar to move quickly toward the left and in so doing the bar by its contact with the arm 31 will cause the pawl 30 to pass

from engagement with the annular teeth of the clutch-plate P of the spool K and into engagement with the teeth of the clutch-plate P′ of the spool K′. Hence the spool K′ will partake of the travel of the shaft M and will cause the ribbon to be wound onto such spool and from off the spool K. The spring-arms n^4, by which the rollers N^2 are carried, are simple plate-springs that are conveniently held by a collar at one side of the gear-wheel 35.

The end of the spool-shaft which projects outside of the main casing is shown as provided with a crank-handle M^2, whereby the shaft may be turned by hand when it is desired to replace the ribbon or for any other purpose.

I am aware that a type-writing machine has been heretofore constructed in which each of the ribbon-spools has been provided at its outer face with a cam and in which the spool-shaft has been provided with a shifter-bar having two separate lugs or arms that engage the individual cams of the ribbon-spools and cause the pawl to be shifted in order to throw either of the spools into or out of clutch engagement with the spool-shaft. By my present invention, however, a single cam is caused to effect in much more satisfactory manner the function of the two cams in such prior construction, and the danger of a dead-locking of the shifter-bar against the cams is avoided.

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

1. In a type-writing machine, the combination with a platen, of a shifting, rigid ribbon-support having slots through which the ribbon passes, oppositely-disposed fixed guides for the opposite edges of said support, each of said guides having a combined sliding and swiveled connection at one point only with the edge of said support and an operating rock-arm pivoted directly to the end of said rigid ribbon-support, said rock-arm shifting said ribbon-support through said guides with a combined sliding and oscillating movement whereby said support, during its forward shift, is moved first tangentially and then radially toward the platen and, during its return movement, is moved first radially and then tangentially away from the platen.

2. In a type-writer machine, the combination with a platen, of a ribbon-support movable tangentially and radially toward said platen, said support having means for holding the used portion of the ribbon parallel to the line of print and for holding the unused portion at right angles thereto, fixed guides embracing opposite edges of said support intermediate its ends and operating means for said support comprising a rock-arm pivoted thereto.

3. In a front-strike type-writing machine, the combination with a platen, of a vertically-shiftable ribbon-support having means for holding the used portion of the ribbon parallel to the line of print and for holding the unused portion at right angles thereto, means for guiding said support intermediate its ends, an operating rock-arm pivoted to the lower end of said support and a movable guide for the ribbon carried adjacent the free end of said rock-arm.

4. In a front-strike type-writing machine, the combination with a platen, of a vertically-shiftable ribbon-support having means for holding the used portion of the ribbon parallel to the line of print and for holding the unused portion at right angles thereto, means for guiding said support intermediate its ends, a pair of operating rock-arms pivoted to the lower end of said support, movable guides for the ribbon carried between the free ends of said rock-arms and fixed guides therefor arranged adjacent the opposite ends of said rock-arms.

5. In a type-writing machine, the combination with a platen, of a ribbon-support comprising a plate H having a cut-away space h^5 adapted to come opposite the printing-point and having obliquely-arranged slots h, h', h^2 and h^3 through which the ribbon will be passed.

6. In a type-writing machine, the combination of the shiftable ribbon-support H having a cut-away space h^5, and having the oppositely-arranged diagonal slots h^2, h^3 and the parallel diagonal slots h, h', through which slots the ribbon will be passed and the pair of adjacent ribbon-spools K, K′ upon which the ribbon is alternately wound and unwound.

7. In a type-writing machine, the combination of the shiftable ribbon-support H having a cut-away space h^5, and having the oppositely-arranged diagonal slots h^2, h^3 and the parallel diagonal slots h, h', through which slots the ribbon will be passed, the duplicate pairs of ribbon-guide rolls 15, 16 and 21, 22 and the pair of adjacent ribbon-spools K, K′ upon which the ribbon is alternately wound and unwound.

8. In a type-writing machine, the combination with a platen, of a ribbon-support, arms connected to said ribbon-support, guides for said arms, a rock-shaft and rock-arms for shifting said ribbon-support, a rock-shaft and cranks for actuating said rock-arms and a universal bar suitably connected with said cranks.

9. In a type-writing machine, the combination with a platen, of a ribbon-support provided with suitable slots or openings through which the ribbon will be passed, two pairs of ribbon-rollers mounted below said ribbon-support and around which the ribbon will be passed, and means for lifting said ribbon-support and one pair of said ribbon-rollers in order to bring the ribbon opposite and near the printing-point of the platen.

10. In a type-writing machine, the combination with a platen, of a ribbon-support, a pair

of stationary ribbon-rollers below said ribbon-support, a pair of movable ribbon-rollers also arranged below said ribbon-support, and suitable rock-shafts and cranks for raising and lowering said movable ribbon-rollers and said ribbon-support.

11. In a type-writing machine, the combination with a platen, of a ribbon-support and means for shifting said ribbon-support at substantially right angles to the radius of the platen, comprising cranks and rock-shafts suitably connected to said ribbon-support, and a universal bar having upwardly-extending arms suitably connected with said cranks and rock-shafts.

12. In a type-writing machine, the combination with two ribbon-spools provided with individual clutches and with the spool-shaft, of a clutch-pawl and a single cam and shifter-bar for throwing said clutch-pawl into and out of engagement with either of said clutches.

13. In a type-writing machine, the combination with a pair of ribbon-spools and with operating means therefor, of clutch mechanism for alternately throwing said ribbon-spools into and out of engagement with said operating means and a single cam and shifter-bar for shifting said clutch mechanism.

14. In a type-writing machine, the combination with a pair of ribbon-spools and with operating means therefor, of clutch mechanism for alternately throwing said ribbon-spools into and out of engagement with said operating means, a single cam and shifter-bar for shifting said clutch mechanism and means for locking the same in its shifted positions.

15. In a type-writing machine, the combination with a pair of ribbon-spools and with operating means therefor, of clutch mechanism for alternately throwing said ribbon-spools into and out of engagement with said operating means, a single cam and shifter-bar for shifting said clutch mechanism, means for locking the same in its shifted positions comprising a V-shaped cam mounted on said shifter-bar and a coöperating spring.

16. In a type-writing machine, the combination with a pair of ribbon-spools and with operating means therefor, of clutch mechanism for alternately throwing said ribbon-spools into and out of engagement with said operating means, a rotatable shifter-bar, a cam having a continuous cam-face normally rotatable with said bar and coöperating therewith for shifting said clutch mechanism, means for holding said cam stationary, and means for releasing said cam.

17. In a type-writing machine, the combination with a pair of ribbon-spools and with an operating-shaft therefor, of clutch mechanism for alternately throwing said spools into and out of engagement with said shaft, a shifter-bar rotatable with said shaft, a cam having a continuous cam-face normally rotatable with said shaft and coöperating with said shifter-bar for shifting said clutch mechanism, means for holding said cam stationary and means for releasing said cam.

18. In a type-writing machine, the combination with a pair of ribbon-spools and with operating means therefor, of clutch mechanism for alternately throwing said spools into and out of engagement with said operating means, a single cam for shifting said clutch mechanism provided with ratchet-teeth, shifter-pawls for engaging said teeth, releasing-plates for disengaging said pawls and controlling-pawls connected with said shifter-pawls and bearing upon the ribbon on the spools.

19. In a type-writing machine, the combination with a pair of ribbon-spools and with operating means therefor, of clutch mechanism for throwing said ribbon-spools into and out of engagement with said operating means, a rotatable shifter-bar, a cam having a continuous cam-face normally rotatable with said bar and coöperating therewith for shifting said clutch mechanism, ratchet-teeth on said cam, shifter-pawls engaging said teeth, and controlling-pawls operatively connected to said shifter-pawls and bearing upon the ribbon on the spools.

20. In a type-writing machine, the combination with two ribbon-spools having individual clutches and with a pawl for engaging said clutches, of a single cam arranged at one side of said ribbon-spools and upon the spool-shaft, a clutch-bar passing through said cam and provided with a stud or offset that engages the slot of said cam, suitable teeth upon said cam, releasing-plates fixed to the spool-shaft adjacent said teeth, individual shifter-pawls for engaging said teeth of the cam and controlling-pawls connected to said shifter-pawls and bearing upon the ribbon on the spools.

21. In a type-writing machine, the combination with two ribbon-spools and with a spool-shaft, of a cam loosely mounted upon said shaft and having a continuous cam-shaped slot extending around said shaft, individual clutch mechanism whereby either of said spools may be engaged with the spool-shaft, a shifter-bar for actuating said clutch mechanism provided with a stud or extension within said cam-slot, suitable teeth projecting from said cam and whereby its movement may be temporarily arrested, shifter-pawls for engaging said teeth, releasing-plates mounted upon the spool-shaft for disengaging said shifter-pawls from said teeth and suitable controlling-pawls connected with said shifter-pawls and bearing upon the ribbon on the spools.

22. In a type-writing machine, the combination with two ribbon-spools and with a spool-shaft, of individual clutch mechanism whereby either of said spools may be caused to revolve with said shaft, a cam mounted upon said shaft at one side of said spool and provided with a continuous cam-surface and with teeth at its opposite ends, releasing-plates at

the opposite ends of said cam adjacent said teeth, shifter-pawls adapted to engage the teeth at the opposite ends of said cam and controlling-pawls connected with said shifter-pawls and bearing on the ribbon upon the spool.

23. In a type-writing machine, the combination with a platen, of a ribbon-support, a stationary shield H′ substantially covering said ribbon-support and provided with offset feet h^{10}, h^{10} by which it is secured in place, and means for shifting said ribbon-support.

24. In a "front-strike" type-writer machine, the combination with a platen, of a vertical shiftable ribbon-support, a vertical shield fixed in position and substantially covering said ribbon-support when in normal position, a printing-point indicator mounted on said shield and means for shifting said ribbon-support behind said shield and between said platen and the printing-point indicator.

25. A type-writing machine, the combination with a pair of ribbon-spools and with operating means therefor, of clamping mechanism for alternately throwing said spools into and out of engagement with said operating means, a single rotatable cam having a continuous cam-face and means operated thereby for shifting said clamping mechanism when the ribbon is unwound from either spool.

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Witnesses:

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