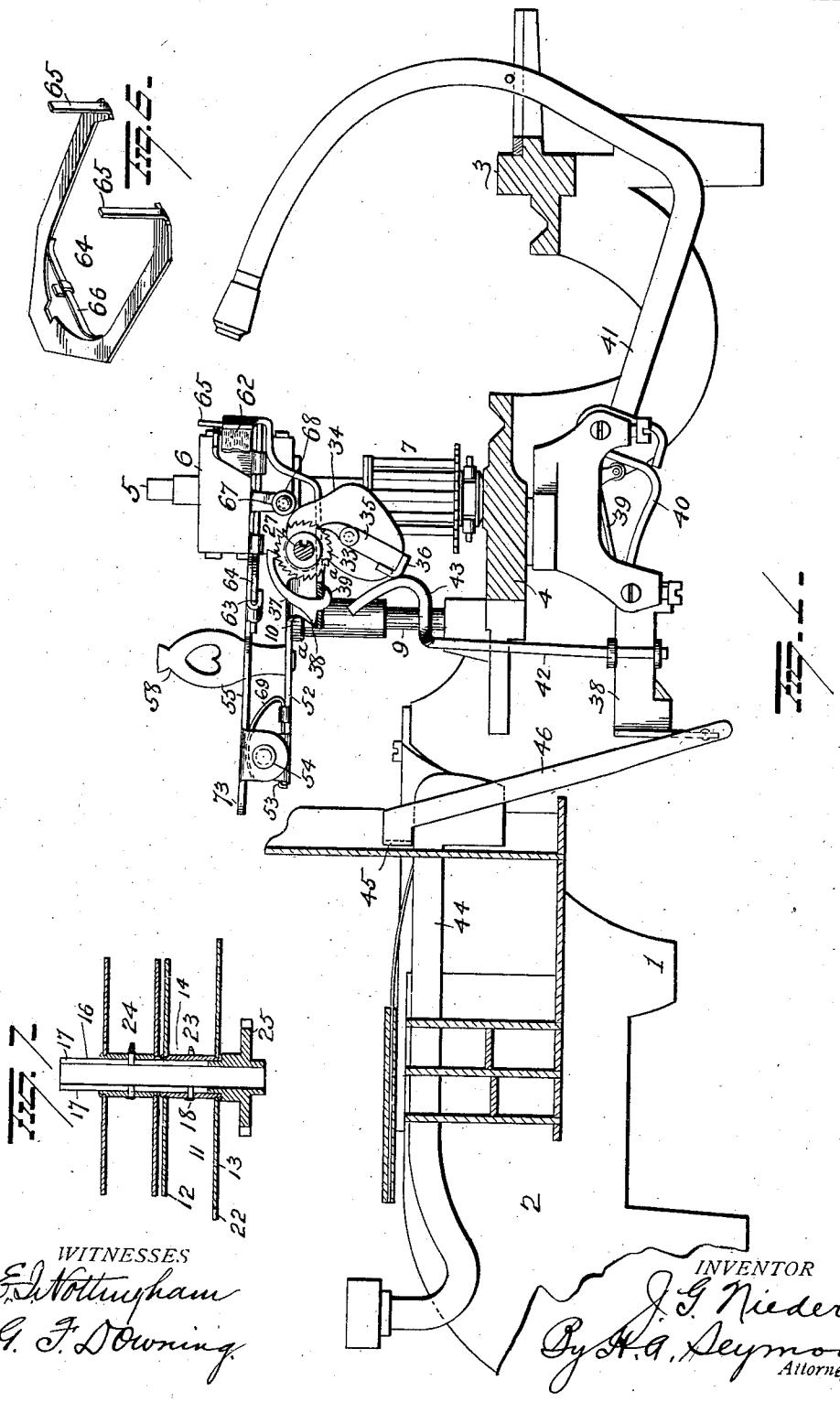
No. 761,248. PATENTED MAY 31, 1904.

J. G. NIEDERER.

TYPE WRITING MACHINE.

APPLICATION FILED FEB. 6, 1902.

NO MODEL. 2 SHEETS—SHEET 1.



WITNESSES

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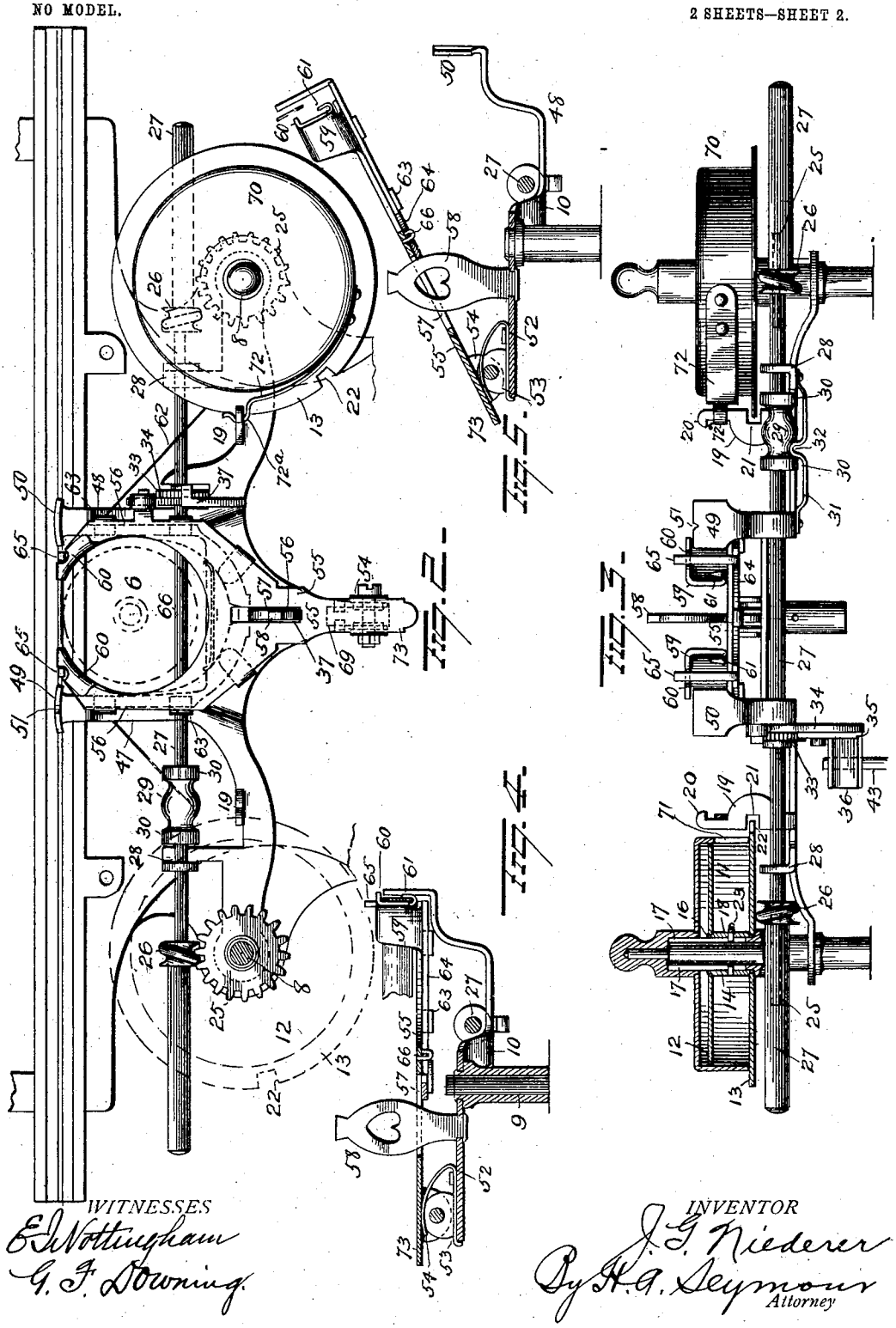

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN GEORGE NIEDERER, OF EAST RUTHERFORD, NEW JERSEY.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 761,248, dated May 31, 1904.

Application filed February 5, 1902. Serial No. 92,723. (No model.)

To all whom it may concern:

Be it known that I, JOHN GEORGE NIEDERER, of East Rutherford, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in type-writing machines, and more particularly to ribbon mechanism therefor, the object of the invention being to provide simple and efficient means for feeding and shifting the inking-ribbon.

A further object is to provide the ribbon mechanism with improved means for raising the ribbon at the instant an impression is made and then lowering it to make the writing visible to the operator.

A further object is to provide simple and efficient means for facilitating the insertion and removal of the inking-ribbon.

A further object is to improve in other respects the details of the ribbon mechanism of a type-writing machine and to enable the use of more than one pair of spools, and thus facilitate the use of ribbons charged with inks of different colors.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional view of a portion of a type-writing machine, showing parts of my improved ribbon mechanism. Fig. 2 is a plan view of the ribbon mechanism. Fig. 3 is a face or edge view of the same, partly in section. Fig 4 is a detail sectional view. Fig. 5 is a detail sectional view showing the ribbon-vibrator. Figs. 6 and 7 are views showing certain details.

1 represents the main frame of the machine, comprising a front portion 2 to accommodate the key mechanism, a rear portion 3 for the reception of the carriage, and an intermediate portion 4 by which the printing mechanism is supported.

A post 5 is located on the intermediate portion 4 of the machine, and on this post the type-wheel 6 and the pinion 7, with which it is connected, are mounted. The mechanism by which motion is transmitted to the type-wheel pinion 7 is not shown in the drawings, as it forms no part of my present invention and is not necessary to a proper understanding of the mechanism which constitutes the subject-matter of this application.

Two posts 8 8 project upwardly from the sides of the intermediate portion 4 of the frame 1, and an intermediate post 9 is located in line with the posts 8. On these posts a supplemental frame 10 is located and provided at its ends and at its center with sleeves riveted thereto and mounted on the posts 8 9, the posts 8 being made to project some distance above the frame for the reception of the ribbon-spools 11. Each spool 11 comprises an upper disk 12 and a lower larger disk 13, separated by a sleeve 14. A tubular shaft or hub 16 is mounted to rotate on each post 8 and passes upwardly through the sleeve 14 and beyond the upper disk of the spool, said shaft or hub being provided with slots 17 to receive pins 18 in the sleeve, and thus the ribbon-spools are secured to the tubular hubs or shafts 16, so as to rotate with them.

The frame 10 is provided with upright posts 19, each having a laterally-projecting lug 20 at its upper end and having a notch 21 near its lower end for the reception of the lower disks of the ribbon-spools to prevent the escape of the latter, the lower disk of each spool being made with a notch 22 to permit the disk to pass the upper portion of the post 19 and enter the notch 21 therein. The sleeve 14 of each spool is provided with pointed hooks 23 to facilitate the attachment of the ribbon thereto. The ribbon-spools are covered by removable caps 70, each having a slot 71 for the passage of the inking-ribbon. A spring-tongue 72 is secured to each cap 70, near the slot therein, and provided at its free end with curved lip 72^a to engage the adjacent post 19

for the purpose of holding the cap in place and preventing them from turning with the ribbon-spools, the lugs 20 at the upper ends of the posts 19 serving to prevent displacement of the caps in a vertical direction. It is often desired to use different colors of ink for certain classes of work, and for this reason I may provide an additional pair of ribbon-spools, 24, mounted on the tubular shafts 16 and intended to have wound thereon a ribbon with a color of ink different from that of the ribbon on the pair of spools 11, or each pair of spools may be provided with ribbons each having two colors of ink, thus giving to the machine four colors of inks. When one ribbon is in use, the other will be permitted to lie idly on the machine.

A worm-wheel or pinion 25 is secured to the lower end of each tubular shaft 16, and these wheels or pinions receive motion from worms 26 on a shaft 27, mounted in lugs 28 on the frame 10. The shaft 27 is movable longitudinally, so as to cause one or the other of the worms 26 to mesh with its pinion 25, so as to transmit motion positively to one ribbon-spool and permit the other to run free. In order to retain the shaft 27 in the position to which it may be adjusted with one of the worms to mesh with its pinion, a lock is provided. This lock comprises a spherical enlargement 29 on the shaft, having a shoulder 30 at each end of the spherical portion and a spring 31 secured at its ends to the frame 10 under said enlargement. The spring has a shoulder 32 between its ends which bears against the enlargement and normally rests in one of the grooves formed by said spherical enlargement and the shoulders 30.

For feeding the inking-ribbon from one spool to the other the devices now to be described will be employed: A ratchet-wheel 33 is secured to the shaft 27, and adjacent to this ratchet-wheel a cam-plate 34 is loosely mounted on the shaft 27. A dog 35 is pivoted to the cam-plate 34 so as to engage the ratchet-wheel, and this dog is provided with a shoulder 36 to be engaged by operating devices presently to be described. Retrograde movement of the ratchet-wheel 33 is prevented by a dog 37. This dog is provided with a shoulder 38^a to rest on the plate 10 and with a depending pin 39^a, which is passed loosely through a hole in said frame and then bent to prevent the escape of the dog. The dog 37 is thus connected to the frame 10, and its connection is loose enough to permit a slight pivotal movement sufficient to allow the teeth of the ratchet-wheel to ride under the tooth of said dog. The dog 37 projects forwardly from its support on the frame 10, and its own weight will suffice to cause it to engage the teeth of the ratchet-wheel to prevent retrograde movement of the same.

A frame 38 is pivotally supported at one end on the intermediate portion of the main frame and is provided with an arm 39 for operating a cam 40 on the hammer-arm 41. A rod 42 projects upwardly from the frame 38 and is provided at its upper end with a cam 43, adapted to engage the shoulder 36 of the dog 35, so that when said frame is tilted upwardly the dog 35 will first be made to engage the ratchet-wheel 33, and as said dog continues to be moved by the cam 43 the cam-plate 34 will be turned, and the dog 35 engaging the ratchet-wheel will turn the latter and the shaft on which it is mounted, and thus transmit motion to one of the ribbon-spools through the medium of one of the worms 26 and its pinion 25. When the pivoted frame is permitted to drop and the cam 43 to recede from the shoulder 36, the weight of the cam-plate will return the dog 35 to its normal position. These operations take place each time one of the key-levers 44 is operated, and motion is imparted by said key-levers to the pivoted frame 38 through the medium of a universal bar 45, resting on the key-lever, and rods 46, connecting said bar with the pivoted frame 38.

Arms 47 48 project rearwardly from the frame 10 and terminate in upwardly-projecting heads 49 50, disposed at respective sides of the type-wheel 6. The upper edges of these heads coöperate to constitute a line-indicator. The width of the head 49 is equal to five spaces of the carriage-feed mechanism, and thus constitutes a paragraph-indicator, and one of said heads (preferably the head 49) is provided with a notch 51 to constitute a letter-indicator.

An arm 52 projects from the central portion of the frame 10 and is provided at its free end with upwardly-projecting lugs 53, to which are pivotally connected lugs 54, depending from one end of a ribbon-vibrator 55. The ribbon-vibrator comprises a plate bifurcated to form arms 56, which embrace the type-wheel 6, and is provided in rear of said arm with a centrally-located elongated slot 57, through which a cam-arm 58 on the frame 10 projects for a purpose hereinafter explained. The arms 56 of the ribbon-vibrator are provided at their free ends with ribbon-guides 59, (preferably integral with said arms,) each of said guides having a notched flange 60 at its upper edge and an upwardly-projecting hook 61, between which the inking-ribbon 62 passes.

The arms of the ribbon-vibrator are provided at their outer edges with lugs 63, which are bent under said arms and constitute guides for a longitudinally-movable U-shaped frame 64. This frame 64 is provided at its free ends with upwardly-projecting pins 65, which lie close to the ribbon-guides and engage the notched flanges 60 thereof and are retained normally in this position by a spring

66, so as to prevent the escape of the inking-ribbon from said guides. The spring 66 may be conveniently secured between its ends to the under face of the plate or ribbon-vibrator 55.

The ribbon-vibrator is provided with a depending lug 67, carrying a small roller 68 in position to be engaged by the cam-plate 34, so that each time said cam-plate is operated in the manner before explained it will engage the roller 68 and raise the ribbon-vibrator and move the ribbon carried thereby into position to receive the hammer, said ribbon being normally disposed (by said vibrator) below the writing position, so as to make the writing visible to the operator, and the only time that the line of writing is not visible is at the instant that the ribbon is raised to effect the printing of a character on the paper.

When the cam-plate 34 returns to its normal position, the vibrator and ribbon carried thereby will be lowered by means of a spring 69, secured at one end to the arm 52 of frame 10 and bearing at its other end against the vibrator 55 at a point beyond the pivotal support thereof.

The longitudinally-movable frame 64, hereinbefore referred to, passes across the slot 57 of the vibrator, so that when the latter is raised (by pressing on the thumb-piece 73 at the front end of the vibrator) to the position shown in Fig. 5 the intermediate portion of the frame 64 will engage the cam 58 and be caused thereby to move outwardly, thus moving the pins 65, carried by said frame 64, away from the ribbon-guides, and thereby facilitating the insertion or removal of the inking-ribbon.

Having fully 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 pivoted plate having ribbon-guides, and a horizontally-movable plate carried by the pivoted plate, of vertically-disposed pins at the forward end of the horizontally-movable plate, said pins coöperating with the guides to hold the ribbon in place in the latter and means for sliding said horizontally-movable plate to move the pins away from the guides to permit the insertion or removal of a ribbon.

2. In a type-writing machine, the combination with a pivoted plate having ribbon-guides, a movable frame carried by said plate and provided with pins coöperating with the guides to hold the ribbon, and a cam for moving said frame when the plate is raised, to move the pins away from the guides.

3. In a type-writing machine, the combination with a pivoted plate provided with ribbon-guides, a longitudinally-movable frame carried by said plate, pins projecting from said plate and coöperating with the guides to hold the ribbon, and a cam-arm projecting through said plate and adapted to engage said frame and slide the same to move the pins away from the guides when said plate is raised.

4. In a type-writing machine, the combination with a pivoted plate having an elongated slot therein and provided at one end with ribbon-guides, a spring-retained longitudinally-movable frame carried by said plate and provided with pins coöperating with the guides to prevent escape of the ribbon, a portion of said frame extending across the elongated slot in the plate, and a cam-arm projecting through said slot and adapted to coöperate with said frame to move it when the plate is raised.

5. In a type-writing machine, the combination with ribbon-spools, a shaft and means for transmitting motion from the shaft to the ribbon-spools, a frame on which said shaft is mounted, a ratchet-wheel on the shaft, a dog having a shoulder mounted on said frame and a bent pin passing loosely through a hole in said frame, said dog projecting over the ratchet-wheel and engaging the same, a pivoted dog engaging the ratchet-wheel, and means for operating pivoted dog.

6. In a type-writing machine, the combination with the main frame, posts thereon, and ribbon-spools on said posts, of caps mounted over said spools and each having a slot for the passage of the inking-ribbon, a spring-tongue secured to each cap and having a curved lip at its free end, and posts engaged by said lips to hold the caps in place.

7. In a type-writing machine, the combination with the main frame and posts thereon, of a ribbon-spool on each post, each ribbon-spool comprising two disks spaced apart, the lower disk larger than the upper disk, and notched posts to receive the lower disk of the ribbon-spools to prevent the vertical displacement of said spools.

8. In a type-writing machine, the combination with the main frame and posts thereon, of ribbon-spools, each comprising two disks, a sleeve to which said disks are secured, pins projecting into said sleeve, and a tubular shaft mounted on each post and passing through said sleeve and slotted for the reception of the pins in the latter.

9. In a type-writing machine, the combination with the main frame, and posts thereon, of ribbon-spools mounted on said posts, a longitudinally-movable shaft, gearing for transmitting motion from said shaft to one or the other of the ribbon-spools, a plate loosely mounted on said shaft, a ratchet-wheel secured to the shaft adjacent to said plate, a dog pivoted to said plate to engage the ratchet-wheel, a shoulder on said dog, a cam to engage said shoulder and means for operating said cam.

10. In a type-writing machine the combina-

tion with the main frame and posts thereon, of a supplemental frame perforated at its ends, sleeves secured to the ends of said supplemental frame in line with the perforations therein, said sleeves mounted on said posts and ribbon mechanism mounted on said supplemental frame.

11. In a type-writing machine, the combination with the main frame, ribbon-spools and an inking-ribbon, of a shaft, gearing for transmitting motion from said shaft to one or the other ribbon-spool, a ratchet-wheel on said shaft, a ribbon-vibrator, a cam-plate mounted on the shaft and adapted to engage the ribbon-vibrator a dog pivoted to said cam-plate and engaging the ratchet-wheel, and means engaging said dog to turn the shaft and simultaneously operate the cam-plate and raise the ribbon-vibrator and a spring for returning said vibrator.

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

JOHN GEORGE NIEDERER.

Witnesses:
ROBERT F. SCHLEICHER,
THOS. J. FEARON.