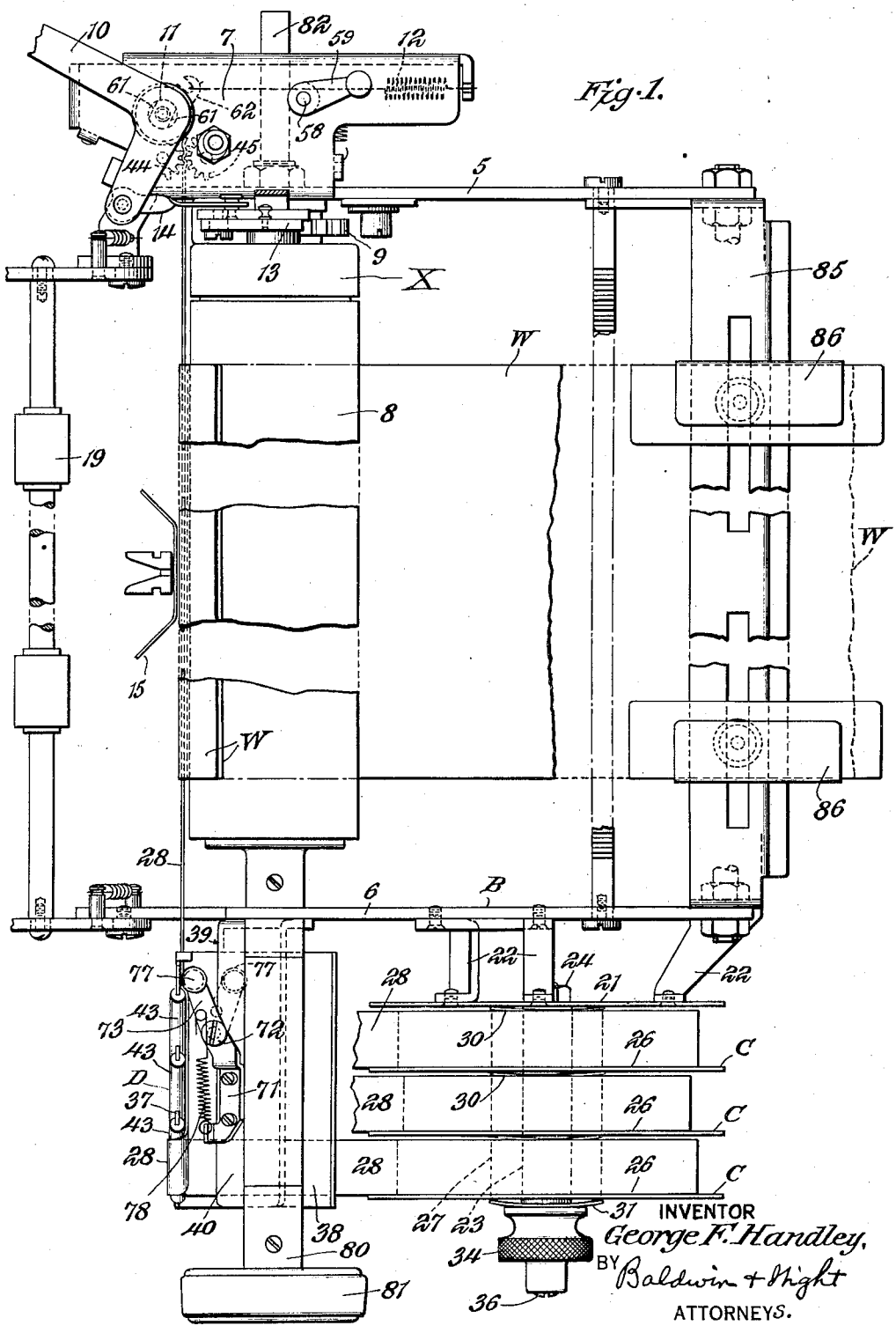
Dec. 24, 1935. G. F. HANDLEY 2,025,236

TYPEWRITING MACHINE

Filed Dec. 26, 1934 5 Sheets-Sheet 1

Fig. 1.



INVENTOR
George F. Handley,
BY Baldwin & Wright
ATTORNEYS.

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TYPEWRITING MACHINE

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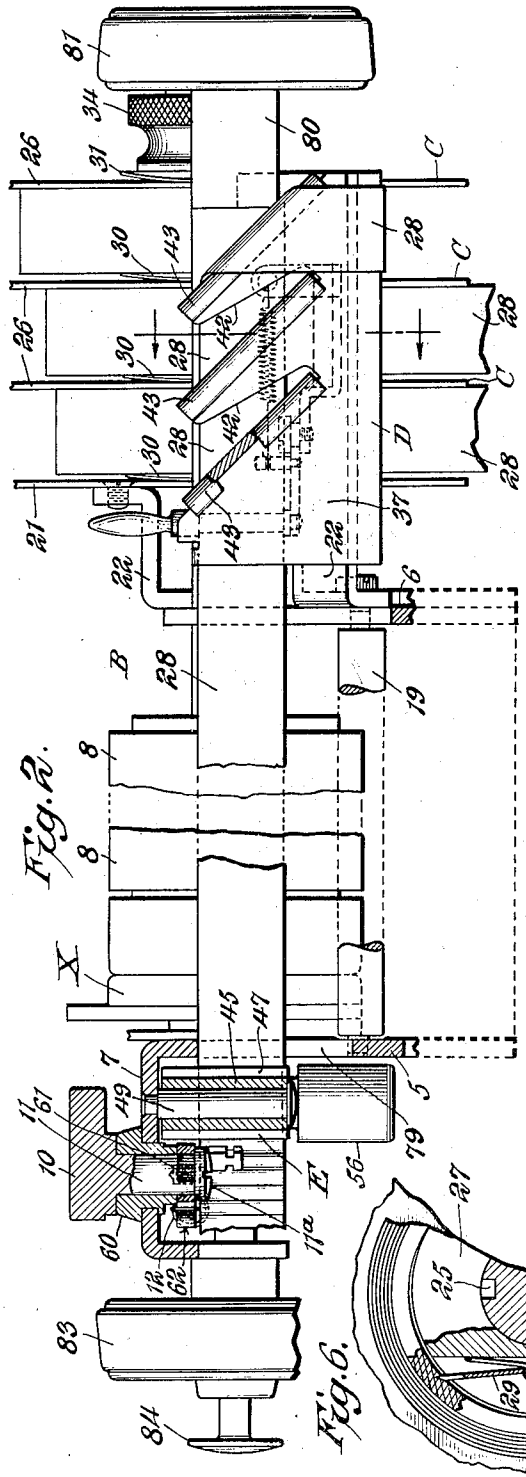


Fig. 2.

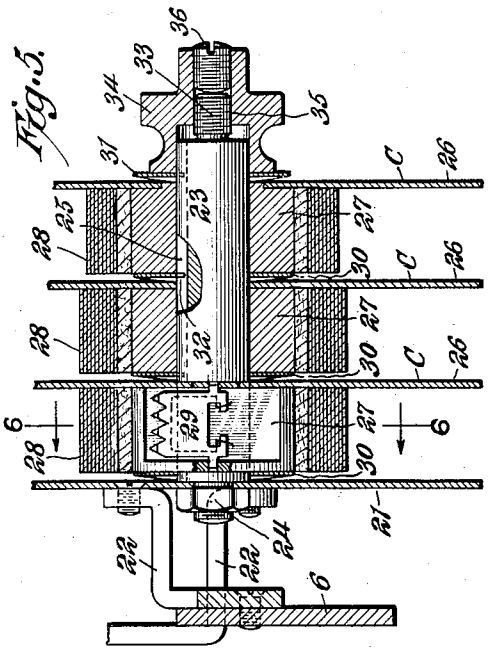


Fig. 5.

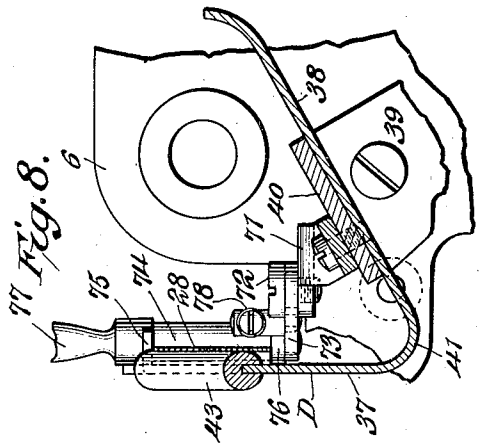


Fig. 8.

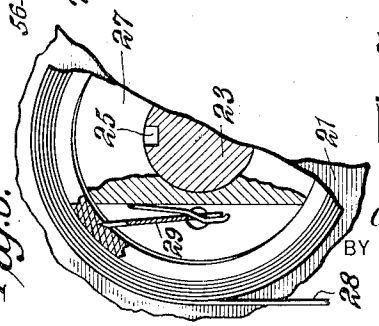


Fig. 6.

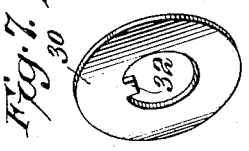


Fig. 7.

INVENTOR
George F. Handley,
BY Baldwin & Wight
ATTORNEYS.

Dec. 24, 1935. G. F. HANDLEY 2,025,236

TYPEWRITING MACHINE

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Fig. 3.

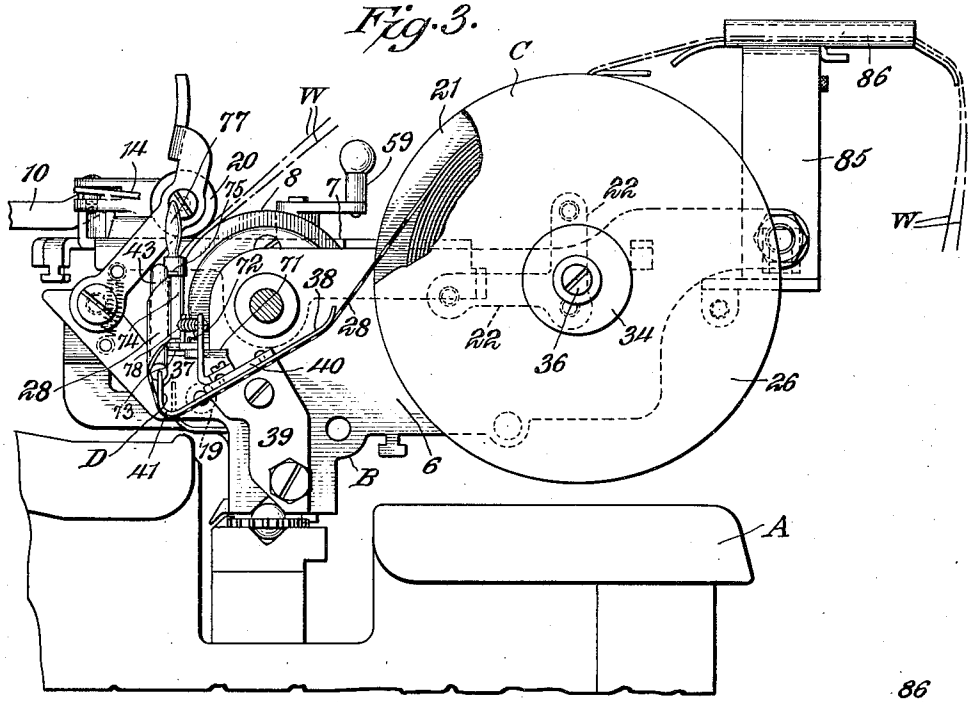
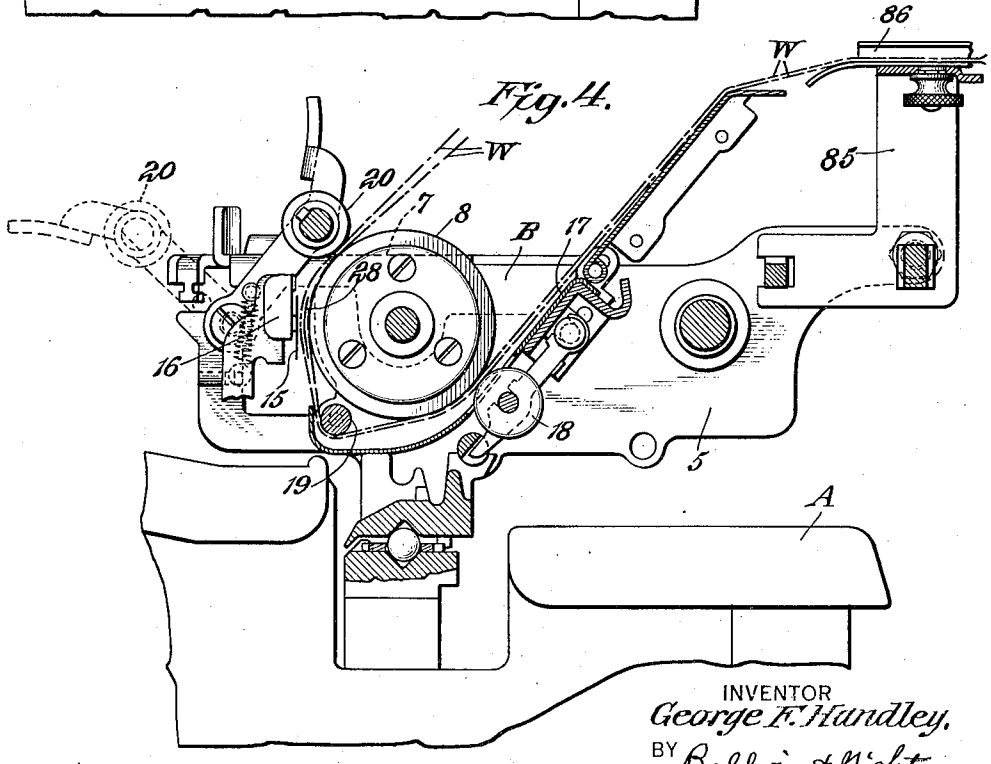


Fig. 4.



INVENTOR
George F. Handley.
BY Baldwin & Wright
ATTORNEYS.

Dec. 24, 1935. G. F. HANDLEY 2,025,236

TYPEWRITING MACHINE

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Fig. 9.

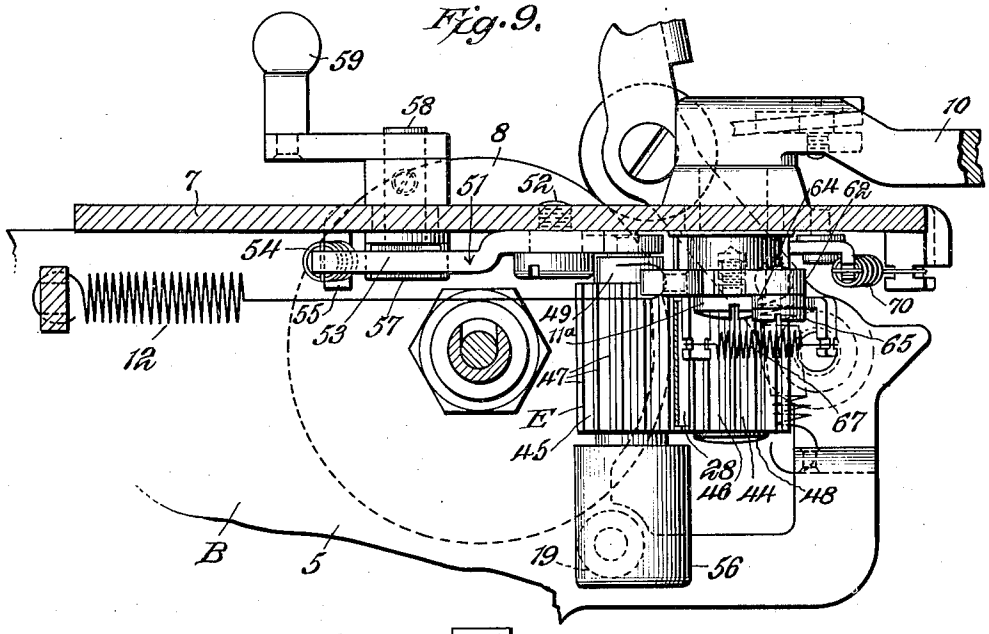
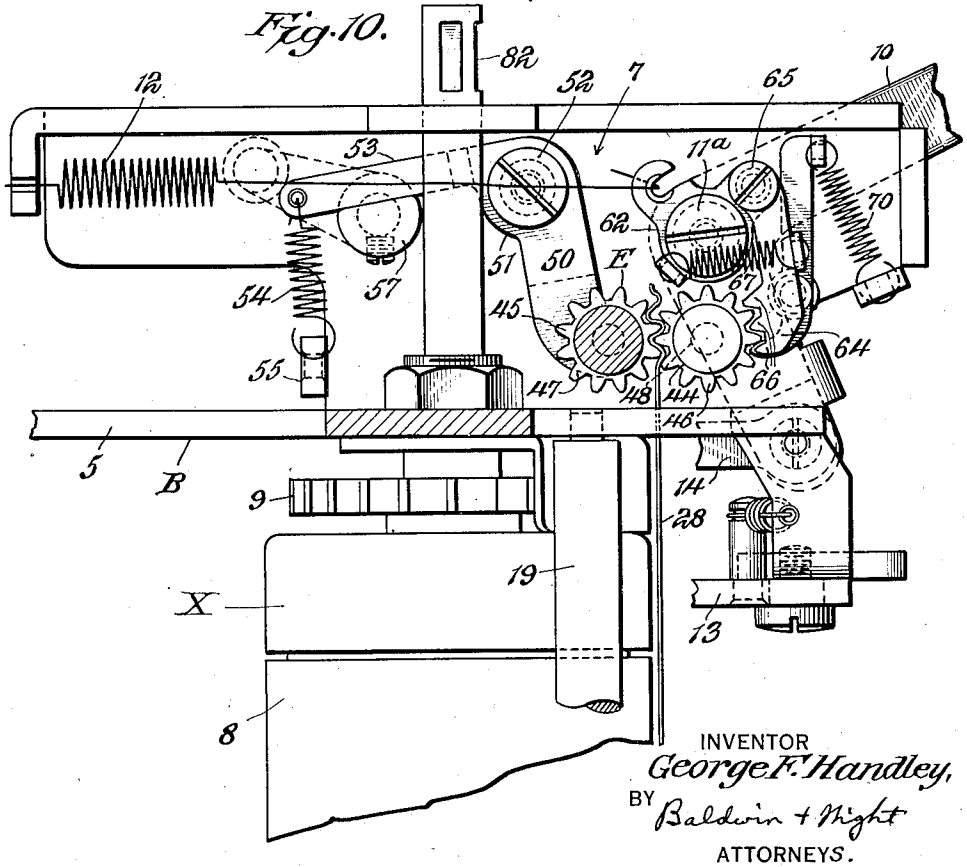


Fig. 10.



INVENTOR
George F. Handley,
BY Baldwin + Wight
ATTORNEYS.

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TYPEWRITING MACHINE

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Fig. 12.

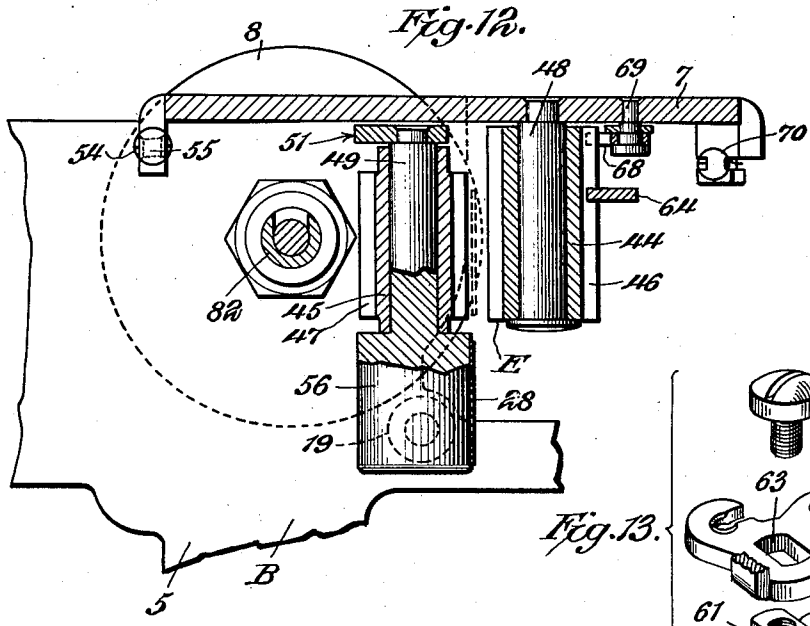


Fig. 13.

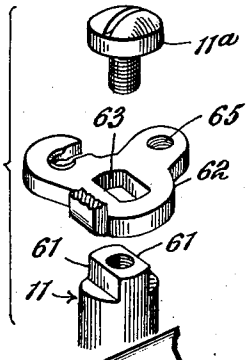
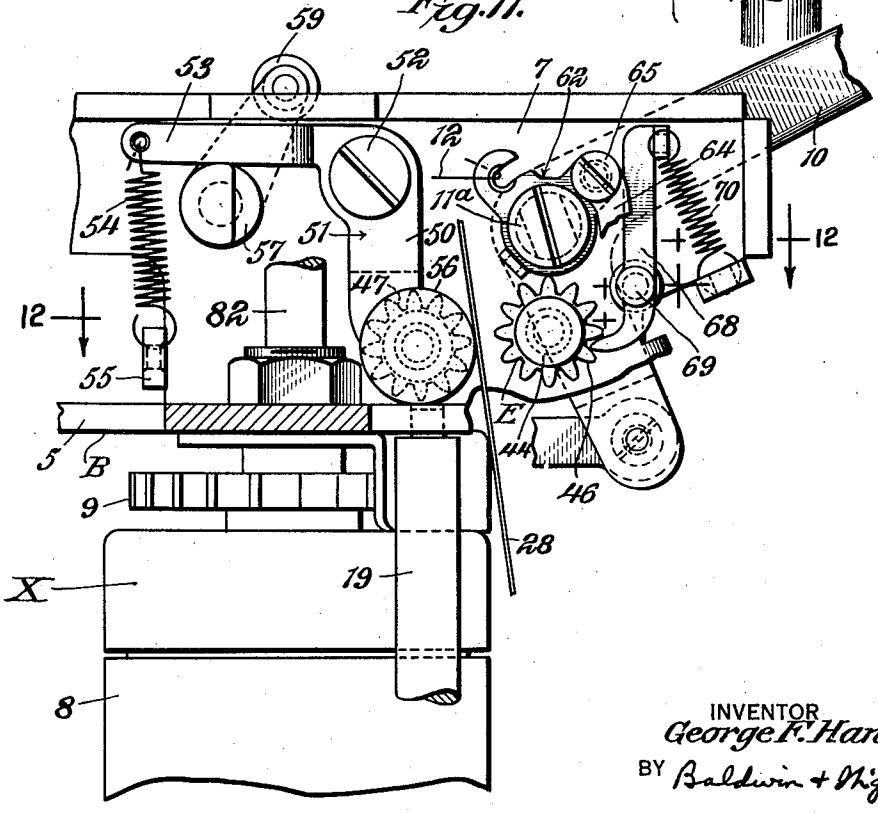


Fig. 11.



INVENTOR
George F. Handley,
BY Baldwin + Wight
ATTORNEYS.

Patented Dec. 24, 1935 2,025,236

UNITED STATES PATENT OFFICE

2,025,236

TYPEWRITING MACHINE

George F. Handley, Glendale, N. Y., assignor to Royal Typewriter Company, Inc., New York, N. Y., a corporation of New York

Application December 26, 1934, Serial No. 759,304

13 Claims. (Cl. 197—153)

This invention relates to new and useful improvements in typewriting machines generally, although more particularly to such machines employed for writing on continuous billing forms or work sheets which are frequently fed to the machine in lengths of several hundred feet.

The principal object of my invention is to provide in the nature of attachments to a standard typewriting machine which includes the usual platen and line spacing lever, one or more tensioned spools of carbon paper strips or ribbons at one end of the carriage, a corresponding number of guides for directing the strips lengthwise in front of the platen, and a feeding means for these strips or ribbons at the other end of the carriage whereby the movement of the line spacing lever will also effect a feeding movement to said strips or ribbons.

With these and other objects in view which will more fully appear, the nature of the invention will be more clearly understood by following the description, the appended claims, and the several views illustrated in the accompanying drawings.

In the drawings:—

Figure 1 is a plan view of a typewriter carriage showing the application of my invention, certain of the usual parts being omitted for the sake of clearness.

Figure 2 is a rear elevation thereof, certain of the parts being omitted and other parts being shown in section.

Figure 3 is an elevation of the right hand side of the carriage showing the same supported on the main frame of the machine.

Figure 4 is a vertical section through the carriage and showing the relation between the platen, the work sheets, the carbon paper ribbons, the inking ribbon, the upper pressure roller, and the type bar.

Figure 5 is a longitudinal section showing the carbon paper ribbons, the spools therefor, and the mounting for said spools.

Figure 6 is a transverse section taken on the line 6—6 of Figure 5.

Figure 7 is a perspective view of one of the spring washers employed in the spool assembly.

Figure 8 is a vertical section through the ribbon guide.

Figure 9 is an enlarged vertical section showing the mounting of the feeding means for the carbon paper ribbons.

Figure 10 is a bottom plan thereof showing the feed rollers in operative or feeding relation.

Figure 11 is a similar view but showing the feed rollers in separated relation.

Figure 12 is a vertical section taken on the line 12—12 of Figure 11.

Figure 13 is an inverted perspective view of the lower end of the lever pivot stud and the anchor plate, the parts being shown in separated relation.

My invention is adapted to be applied to any standard typewriting machine which as shown includes a main frame A, a carriage B supported thereon for letter space movements and including end plates 5, 6 and a shelf 7 extending laterally from the left side plate 5, a rotary platen 8 mounted on the carriage, a ratchet wheel 9 fixed to the platen, a line spacing lever 10 disposed above the shelf 7 and pivoted thereon by a depending integral stud 11, a spring 12 for normally holding the lever against movement, a driving pawl 13 for the ratchet wheel 9, driving connections 14 between the lever 10 and said pawl, the usual inking ribbon 15, type bars 16, there being only one type bar shown, a paper guide or apron 17 for directing the work sheets W forwardly under the platen, a rearwardly disposed lower pressure roller 18, a forwardly disposed lower guide roller 19, and an upper pressure roller 20 which is swingably mounted on the carriage side plates in front of the platen for movements towards and from the platen.

In carrying out my invention, I attach a disc 21 by brackets 22, 22 to the outer face of the end plate 6 of the carriage. A spindle 23 which has its inner end secured to the disc 21 by a nut 24, is provided with a longitudinal groove 25. A plurality of spools C are mounted on the spindle for independent rotation, each spool including a disc 26 and hub 27, the latter having wound thereon a carbon paper ribbon 28 which is held against rotation relative to the spool by a spring anchor 29. Spring washers 30 are respectively mounted on the spindle between the discs and the hubs, and one spring washer 31 is located on the spindle exteriorly of the outermost disc. These washers 30, 31 are each provided with an inwardly extending tongue 32 which projects into the groove 25 of the spindle, thus permitting longitudinal movements of the washers relative to the spindle but preventing rotation thereof about the spindle. The outer end of the spindle is provided with a reduced threaded extension 33, and a knurled ribbon tensioning element or nut 34 which bears against the washer 31 is provided with an axially disposed threaded bore 35 for engagement with the extension 33. Thus by means of the nut 34

the spools C are collectively pressed against the supporting disc 21 to tension the spools against ribbon feeding movement. Mounted in the outer end of the bore 35 of the nut 34 beyond the outer end 33 of the spindle is an adjustable limiting screw or stop 36 whereby the same tension to the spools may be obtained whenever full spools are substituted for empty ones.

The carbon paper ribbons 28 are directed forwardly from the spools to guides D located at the front of the carriage, and thence towards the left between the platen and the ink ribbon 15 to a feeding means E which is connected to the combined line spacing and carriage return lever 10 whereby the ribbons are fed one step each time the lever 10 is actuated.

The guide D for the ribbons 28 is substantially V-shaped in vertical cross-section as shown in Figs. 3 and 8, and includes a front vertical wall 37 and an upwardly and rearwardly extending guiding wall 38, and is secured to the outer face of the end plate 6 of the carriage by an angle bracket 39, the horizontal arm 40 being connected to the guiding wall 38. The juncture between the walls 37 and 38 is rounded as at 41 to reduce friction to a minimum between the ribbons and the guide when the ribbons are being fed. When the ribbons are unwound from the spools, the carbon surfaces are underneath, and the ribbons are directed forwardly and downwardly under the guiding wall 38, and thence upwardly in front of the wall 37. The upper portion of the wall 37 is formed with three clearance openings 42 for the ribbons and the left hand edge of each opening, as viewed in Figure 2, is disposed at a 45° angle and is provided with a cylindrical guide 43. The ribbons are turned about the guides 43 and the free ends are thence directed horizontally to the ribbon feeding means E, the ribbons being disposed in front of the platen 8 and in rear of the usual ink ribbon 15.

The ribbon feeding means E includes a pair of feed rolls 44, 45 which are formed with intermeshing corrugations 46, 47. The driving roll 44 is journaled on a stud 48 fixed to and depending from the shelf 7. The driven roll 45 is journaled on a stud 49 fixed to and depending from the end of an arm 50 of a bell crank lever 51 which is pivoted at its angle on a stud 52 to the underface of the shelf 7. The other arm 53 of the bell crank lever is connected to one end of a coil spring 54 and the other end of said spring is anchored in a lug 55 depending from the shelf 7, whereby the roll 45 is normally maintained in yieldable engagement with the roll 44. The lower end of the stud 49 is provided with a cylindrical head 56 of a height slightly greater than the width of a carbon ribbon 28, and of a diameter slightly greater than the diameter of the associated roll 45. The head 56 not only supports the roll 45 but also functions to guide the ribbons 28 into operative position between the feed rolls whenever the free ends of the ribbons are being placed between the feed rolls. In order to swing the bell crank lever 51 whenever it is desired to insert the paper ribbons between the feed rolls 44, 45, a cam 57 is provided with a shaft 58 which is journaled in the shelf 7, and an operating crank handle 59 is secured to the upper end of said shaft, as shown in Figure 9. The driving roll 44 is actuated by the line spacing lever 10, and to this end the pivot stud 11 of the lever is mounted in a bushing 60 fixed in an opening in the shelf 7. The lower end of the stud projects below the bushing and is formed with flat sides 61, 61. An anchor plate 62 is formed with a flattened opening 63 to receive the lower end of the stud, whereby the plate will be turned with the lever 10, a screw 11a being threaded into the lower end of the stud for retaining the plate 62 in position on the stud. The spring 12 is connected directly to the plate 62 and therefore to the lever 10 and functions to maintain the lever in its normal position. An actuating pawl 64 for the roll 44 is pivoted as at 65 to the plate 62 and is preferably provided with a plurality of teeth 66 for engaging the corrugations 46 of said roll. This pawl is held in yielding engagement with said corrugations 46 by a coil spring 67 which is anchored at one end to the pawl and at the other end to the plate 62. A back check dog 68 for the roll 44 is pivoted intermediate its ends on a stud 69 which depends from the shelf 7. The nose of this dog is held in yielding engagement with the corrugations 46 of the roll 44 by a coil spring 70 having its ends anchored to the tail of the dog and to the shelf 7.

Mounted on the arm 40 of the bracket 39 and therefore located directly in rear of the front wall 37 of the guide D is a supplemental bracket 71 and pivoted on this bracket by a pivot screw 72 is a horizontally swingable arm 73. Rigidly secured to the free end of this arm is an upwardly extending ribbon retainer 74 formed with upper and lower guide flanges 75 and 76 for receiving therebetween the ribbon or strip 28. Projecting upwardly beyond the upper flange 75 is a fingerpiece 77 by means of which the retainer may be moved toward and from the front guide wall 37. This retainer is normally held in operative contact with said guide wall 37 by means of a coil spring 78, one end thereof being connected to the arm 73 and the other end anchored to the supplemental bracket 71. The front wall 37 of the ribbon guide D is located in a vertical plane slightly in advance of the printing line of the platen 8 and the retainer 74 is located between the platen and the guide opening 42. The carbon ribbon or strip 28, after its turn around the curved guide 43, freely passes between the rear face of the front wall 37 of the guide D and the retainer 74. The ribbon or strip 28 is then directed laterally in front of the platen 8, thence through an opening 79 formed in the side plate 5 of the carriage, and thence to the strip feeding means E, the opening 79 being located in a vertical plane positioned slightly in advance of the printing line of the platen.

The platen 8 is provided on its right hand end with an axial extension 80 which extends laterally between the walls 37, 38 of the ribbon guide D, and fixed to the outer end thereof is a handwheel 81 by means of which the platen may be turned. The left hand end of the platen is equipped with a fractional line spacing mechanism such as for instance is shown in the patent to Myers 1,496,940, June 10, 1924, and which I have indicated generally by the reference letter X. This fractional line spacing mechanism includes a clutch which normally connects the ratchet wheel 9 with the platen whereby the platen will be intermittently rotated for line spacing purposes each time the lever 10 is actuated. The left hand end of the platen is provided with an axial extension 82 which projects laterally beyond the shelf 7 and carries a handwheel 83. This fractional line spacing mechanism includes a release rod 84 which projects laterally beyond the handwheel 83, and upon inward movement of said rod 84 the clutch will be disconnected so as to free the platen 8

from its operative connection with the ratchet wheel 9 and thereby permit the platen to be freely rotated in either direction by means of the handwheel 81.

The work sheets W are fed to the machine over a table 85 having independently and laterally adjustable edge guides 86, 86, the table being located in rear of the platen 8 and supported on the side plates 5, 6 of the carriage.

In operation the ribbon spools 26 are first mounted on the spindle 23 and one or more carbon ribbons or strips 28 are then pulled forwardly and downwardly under the guide wall 38 of the ribbon guide D, thence upwardly to the proper guide opening 42, thence around the inclined guide 43 and between the front guide wall 37 and the retainer 74. The retainer is then released to hold the strip against displacement. As the strip leaves the spool, the carbon surface is on the lower face thereof and consequently when the ribbon is turned around the guide 43 the carbon surface is positioned on the platen side of the strip. The work sheets W are then fed forwardly under the platen and the carbon strip is interleaved with these work sheets. The free ends of the work sheets are then positioned against the upper portion of the platen by means of the guide roller 20 and the free end of the carbon strip is guided into position between the feed rolls 44, 45, it being understood that the feed rolls have been previously separated as shown in Figure 11. When the rolls are thus separated, the cylindrical guide 56 which depends from the driven roll 45 assists the operator in initially positioning the free end of the strip between the rolls. A sufficient tension is applied to the ribbon spool by means of the tension nut 34 in order to insure sufficient drag on the ribbon against the action of the ribbon feeding means. The initial tension on the spools is first ascertained after backing out the adjustable stop screw 36, and after the proper tension has been ascertained the stop screw 36 is then rotated until it engages the end of the spindle 33. Thus the tension on the spools has been determined and consequently whenever it is desired to remove the spools and substitute new ones, it will be unnecessary to make any further adjustment on the tension means. Each time the line spacing lever 10 is operated, the platen 8 will be rotated for one line space distance and simultaneously the carbon strip 28 will be fed a single step. It will be also observed that the operator by pushing inwardly on the rod 80, the ratchet wheel 9 will be disconnected from the platen 8 and consequently said platen may be freely rotated by means of the handwheel fixed to the right hand end of the platen axle, and thus free rotation of the platen is accomplished without a feeding movement to the carbon strips 28 or without effecting a line spacing movement to the work sheets W.

I claim:

1. In a typewriting machine, the combination with a carriage, of a rotatable platen mounted thereon, means for imparting line space movements to the platen including a manually operable lever located at one end of the platen, a spool mounted on the end of the carriage opposite said lever and containing a strip of transfer paper, strip feeding means mounted on the carriage adjacent the lever for engaging the free end of the strip and delivering it outwardly of the carriage, means for guiding the free end of the strip from the spool longitudinally of and in front of the platen to said feeding means, and operating connections between the lever and said feeding means whereby the latter will be actuated and the platen will be rotated upon movement of said lever.

2. In a typewriting machine, the combination with a carriage, of a rotatable platen mounted thereon, means for imparting line space movements to the platen including a manually operable lever located at one end of the platen, a spool mounted on the end of the carriage opposite said lever and containing a strip of transfer paper, a pair of corrugated feed rolls mounted on the carriage adjacent the lever for engaging the free end of the strip and delivering it outwardly of the carriage, means for guiding the free end of the strip from the spool longitudinally of and in front of the platen to said feed rolls, and operating connections between the lever and said feed rolls including a spring pawl mounted on the lever and engaging one of the rolls whereby said rolls will be actuated and the platen will be rotated upon movement of said lever.

3. In a typewriting machine, the combination with a carriage, of a rotatable platen mounted thereon, means for imparting line space movements to the platen including a manually operable lever located at one end of the platen, a spool mounted on the end of the carriage opposite said lever and containing a strip of transfer paper, a pair of corrugated feed rolls including a stationary drive roll and a bodily movable driven roll, said rolls being mounted on the carriage adjacent the lever for engaging the strip and delivering it outwardly of the carriage, yieldable means for normally maintaining said rolls in driving engagement, manually operable means for moving the driven roll out of engagement with the drive roll, means for guiding the free end of the strip from the spool longitudinally of and in front of the platen to said feed rolls, and operating connections between the lever and said drive roll including a spring pawl mounted on the lever and engaging said drive roll whereby the latter will be actuated and the platen will be rotated upon movement of said lever.

4. In a typewriting machine, the combination with a carriage, of a rotatable platen mounted thereon, means for imparting line space movements to the platen including a manually operable lever located at one end of the platen, a spool mounted on the end of the carriage opposite said lever and containing a strip of transfer paper, a pair of corrugated feed rolls including a stationary drive roll and a bodily movable driven roll, said rolls being mounted on the carriage adjacent the lever for engaging the strip and delivering it outwardly of the carriage, yieldable means for normally maintaining said rolls in driving engagement, manually operable means for moving the driven roll out of engagement with the drive roll, means for guiding the free end of the strip from the spool longitudinally of and in front of the platen to said feed rolls, and operating connections between the lever and said drive roll including a spring pawl carried by the lever and engageable with the corrugations of the drive roll whereby the latter will be actuated and the platen will be rotated upon movement of said lever.

5. In a typewriting machine, the combination with a carriage, of a rotatable platen mounted thereon, means for imparting line space movements to the platen including a manually operable lever located at one end of the platen, a

spool mounted on the end of the carriage opposite said lever and containing a strip of transfer paper, a pair of corrugated feed rolls mounted on the carriage adjacent the lever, means for guiding the free end of the strip from the spool longitudinally of and in front of the platen to said feed rolls, one of said rolls being provided with a depending head having a diameter greater than the roll for initially guiding the strip into operative position between the rolls, and operating connections between the lever and said feed rolls whereby the latter will be actuated and the platen will be rotated upon movement of said lever.

6. In a typewriting machine, the combination with a carriage, of a rotatable platen mounted thereon, means for imparting line space movements to the platen including a manually operable lever located at one end of the platen, a spool mounted on the end of the carriage opposite said lever and containing a strip of transfer paper, strip feeding means mounted on the carriage adjacent the lever for engaging the free end of the strip and delivering it outwardly of the carriage, means for guiding the free end of the strip from the spool longitudinally of and in front of the platen to said feed rolls, said guiding means including a guide for the strip located in front of the spool and attached to the carriage and including a front vertical wall having an opening defined by an edge disposed at an angle of substantially 45° and having a cylindrical guide attached to said edge around which the strip is turned, and operating connections between the lever and said feeding means whereby the latter will be actuated and the platen will be rotated upon movement of said lever.

7. In a typewriting machine, the combination with a carriage, of a rotatable platen mounted thereon, means for imparting line space movements to the platen including a manually operable lever located at one end of the platen, a spool mounted on the end of the carriage opposite said lever and containing a strip of transfer paper, strip feeding means mounted on the carriage adjacent the lever for engaging the free end of the strip and delivering it outwardly of the carriage, means for guiding the free end of the strip from the spool longitudinally of and in front of the platen to said feed rolls, said guiding means including a guide for the strip located in front of the spool and attached to the carriage and including a front vertical wall having an opening defined by an edge disposed at an angle of substantially 45° around which the strip is turned, a yieldable retainer for the strip cooperating with said wall at a point between the platen and the guide opening, and operating connections between the lever and said feeding means whereby the latter will be actuated and the platen will be rotated upon movement of said lever.

8. In a typewriting machine, the combination with a carriage, of a rotatable platen mounted thereon, means for imparting line space movements to the platen including a manually operable lever located at one end of the platen, a spool mounted on the end of the carriage opposite said lever and containing a strip of transfer paper, strip feeding means mounted on the carriage adjacent the lever for engaging the free end of the strip and delivering it outwardly of the carriage, means for guiding the free end of the strip from the spool longitudinally of and in front of the platen to said feed rolls, said guiding means including a guide for the strip located in front of the spool and attached to the carriage and including a front vertical wall having an opening defined by an edge disposed at an angle of substantially 45° around which the strip is turned, a yieldable retainer for the strip cooperating with said wall at a point between the platen and the guide opening, said retainer having upper and lower flanges for receiving the strip therebetween, and operating connections between the lever and said feeding means whereby the latter will be actuated and the platen will be rotated upon movement of said lever.

9. In a typewriting machine, the combination with a carriage, of a rotatable platen mounted thereon, means for imparting line space movements to the platen including a manually operable lever located at one end of the platen, a spool mounted on the end of the carriage opposite said lever and containing a strip of transfer paper, strip feeding means mounted on the carriage adjacent the lever, means for guiding the free end of the strip from the spool longitudinally of and in front of the platen to said feeding means, said guiding means being located in front of the spool and attached to the carriage and including a front vertical wall and a rearwardly extending guide wall, the front wall having an opening defined by an edge disposed at an angle of substantially 45° around which the strip is turned, an arm pivoted on the rearwardly extending wall, a strip retainer mounted on said arm for cooperation with the vertical wall at a point between the platen and the guide opening, and a spring for yieldably holding the retainer in operative position, and operating connections between the lever and said feeding means whereby the latter will be actuated and the platen will be rotated upon movement of said lever.

10. In a typewriting machine, the combination with a carriage, of a rotatable platen mounted thereon, means for imparting line space movements to the platen including a manually operable lever located at one end of the platen, a spool mounted on the end of the carriage opposite said lever and containing a strip of transfer paper, strip feeding means mounted on the carriage adjacent the lever for engaging the free end of the strip and delivering it outwardly of the carriage, and means for guiding the free end of the strip from the spool longitudinally of and in front of the platen to said feed rolls, said guiding means including a guide for the strip located in front of the spool and attached to the carriage and including a front vertical wall having an opening defined by an edge disposed at an angle of substantially 45° and having a cylindrical guide attached to said edge around which the strip is turned.

11. In a typewriting machine, the combination with a carriage, of a rotatable platen mounted thereon, means for imparting line space movements to the platen including a manually operable lever located at one end of the platen, a spool mounted on the end of the carriage opposite said lever and containing a strip of transfer paper, strip feeding means mounted on the carriage adjacent the lever for engaging the free end of the strip and delivering it outwardly of the carriage, means for guiding the free end of the strip from the spool longitudinally of and in front of the platen to said feed rolls, said guiding means including a guide for the strip located in front of the spool and attached to the carriage

and including a front vertical wall having an opening defined by an edge disposed at an angle of substantially 45° around which the strip is turned, and a yieldable retainer for the strip cooperating with said wall at a point between the platen and the guide opening.

12. In a typewriting machine, the combination with a carriage, of a rotatable platen mounted thereon, means for imparting line space movements to the platen including a manually operable lever located at one end of the platen, a spool mounted on the end of the carriage opposite said lever and containing a strip of transfer paper, strip feeding means mounted on the carriage adjacent the lever for engaging the free end of the strip and delivering it outwardly of the carriage, means for guiding the free end of the strip from the spool longitudinally of and in front of the platen to said feed rolls, said guiding means including a guide for the strip located in front of the spool and attached to the carriage and including a front vertical wall having an opening defined by an edge disposed at an angle of substantially 45° around which the strip is turned, and a yieldable retainer for the strip cooperating with said wall at a point between the platen and the guide opening, said retainer having upper and lower flanges for receiving the strip therebetween.

13. In a typewriting machine, the combination with a carriage, of a rotatable platen mounted thereon, means for imparting line space movements to the platen including a manually operable lever located at one end of the platen, a spool mounted on the end of the carriage opposite said lever and containing a strip of transfer paper, strip feeding means mounted on the carriage adjacent the lever, means for guiding the free end of the strip from the spool longitudinally of and in front of the platen to said feeding means, said guiding means being located in front of the spool and attached to the carriage and including a front vertical wall and a rearwardly extending guide wall, the front wall having an opening defined by an edge disposed at an angle of substantially 45° around which the strip is turned, an arm pivoted on the rearwardly extending wall, a strip retainer mounted on said arm for cooperation with the vertical wall at a point between the platen and the guide opening, and a spring for yieldably holding the retainer in operative position.

GEORGE F. HANDLEY.