

**Oct. 17, 1933.**

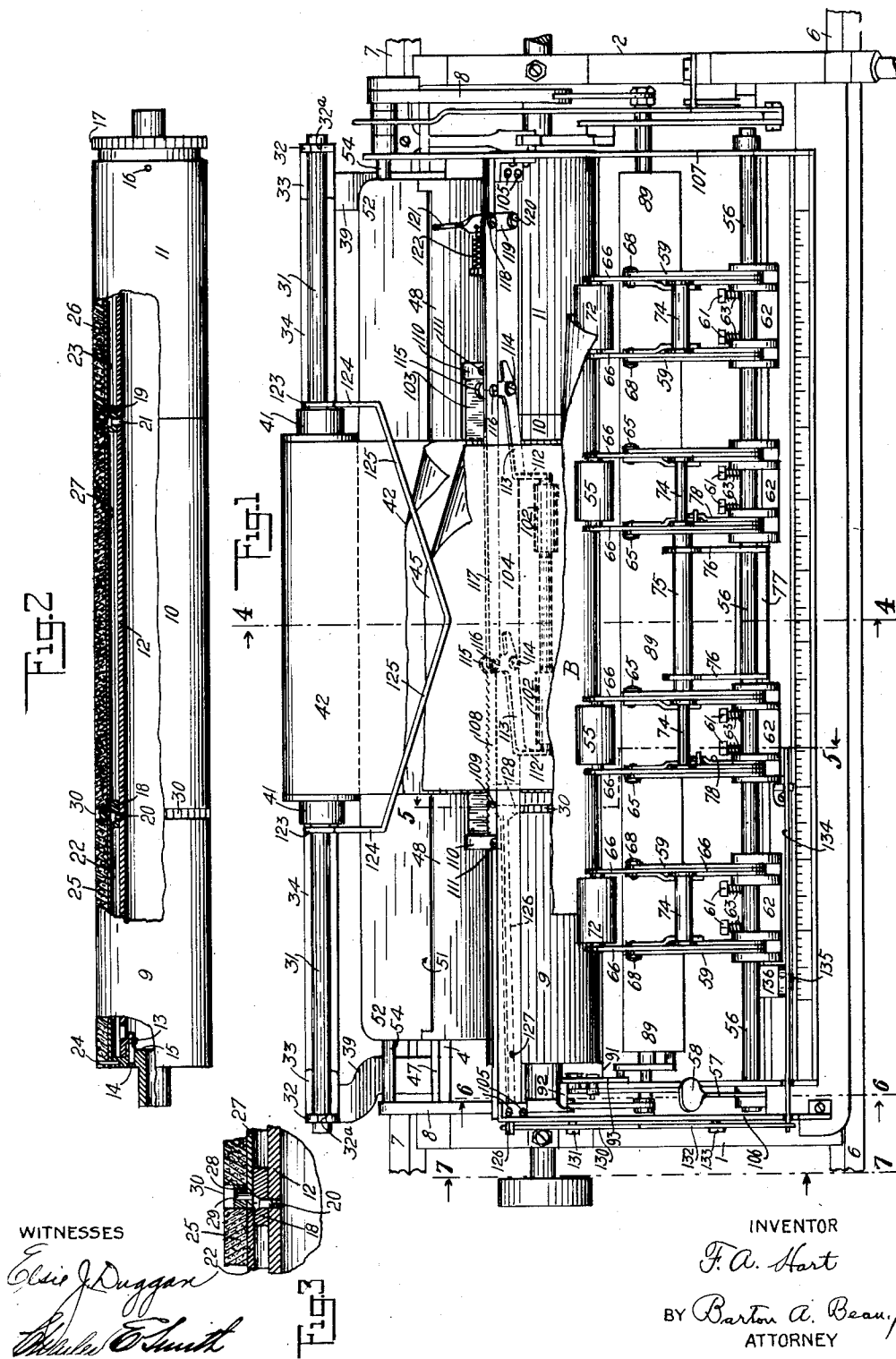
**F. A. HART**

**1,931,382**

TYPEWRITING MACHINE

Filed Nov. 17, 1928

5 Sheets-Sheet 1



**Oct. 17, 1933.**

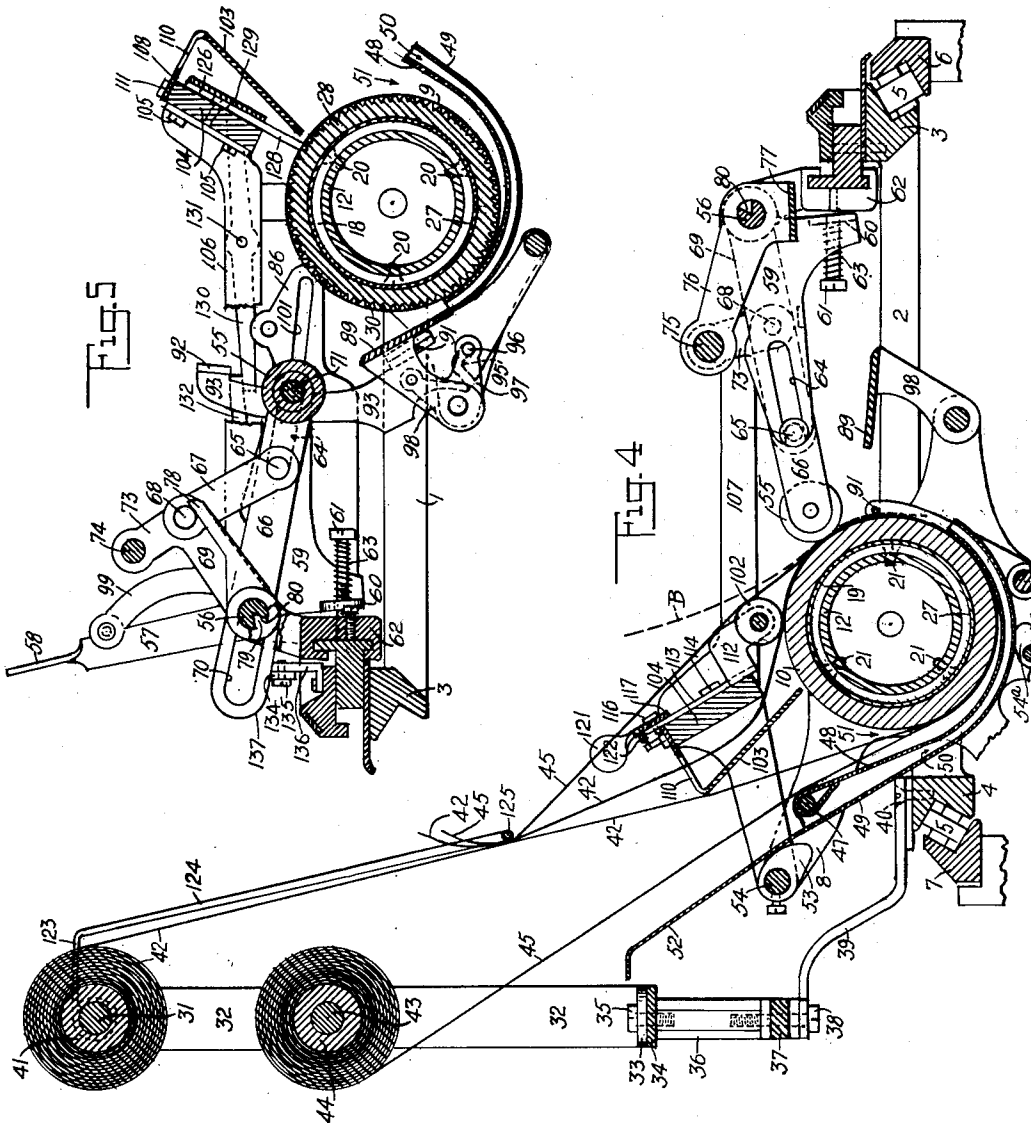
**F. A. HART**

**1,931,382**

TYPEWRITING MACHINE

Filed Nov. 17, 1928

5 Sheets-Sheet 2



WITNESSES

Elsie J. Duggan  
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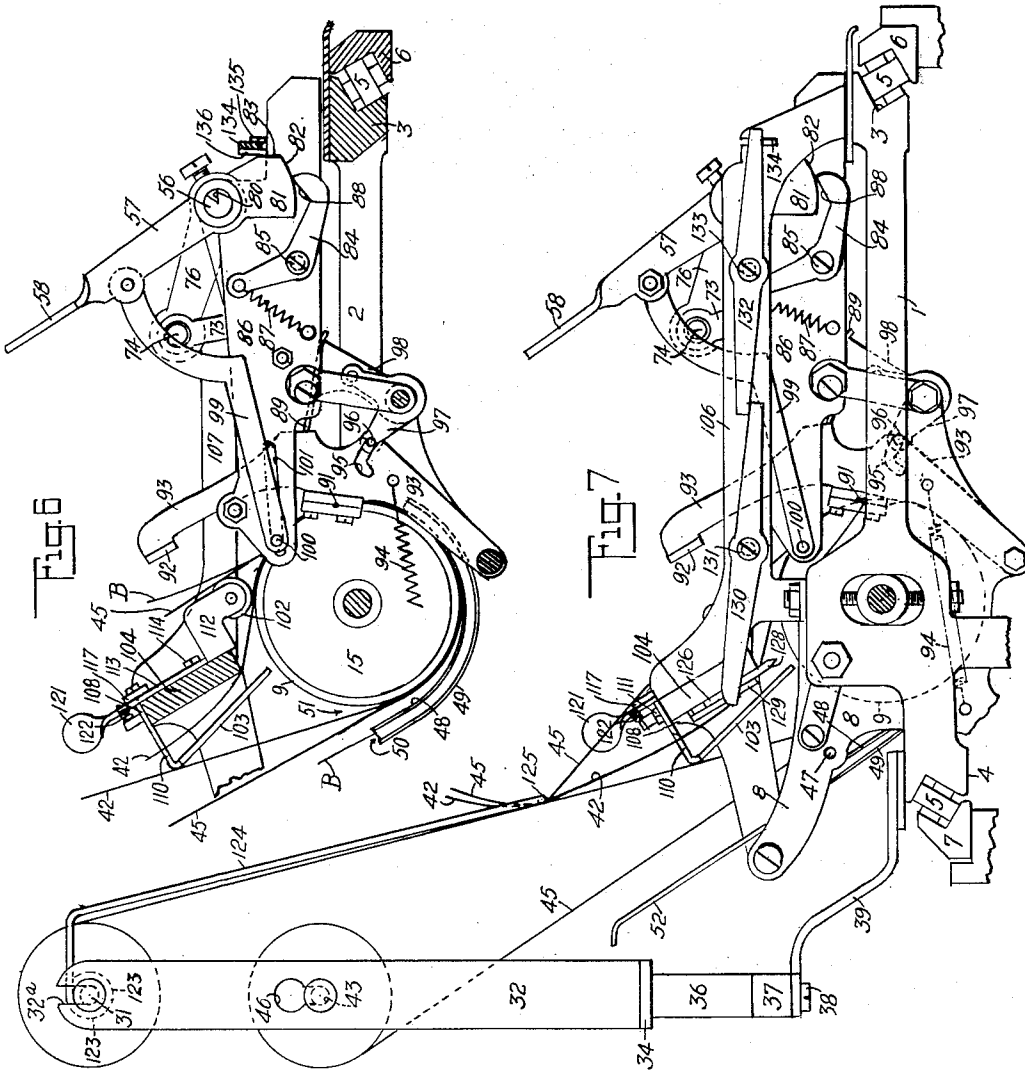
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**1,931,382**

TYPEWRITING MACHINE

Filed Nov. 17, 1928

5 Sheets-Sheet 3



WITNESSES

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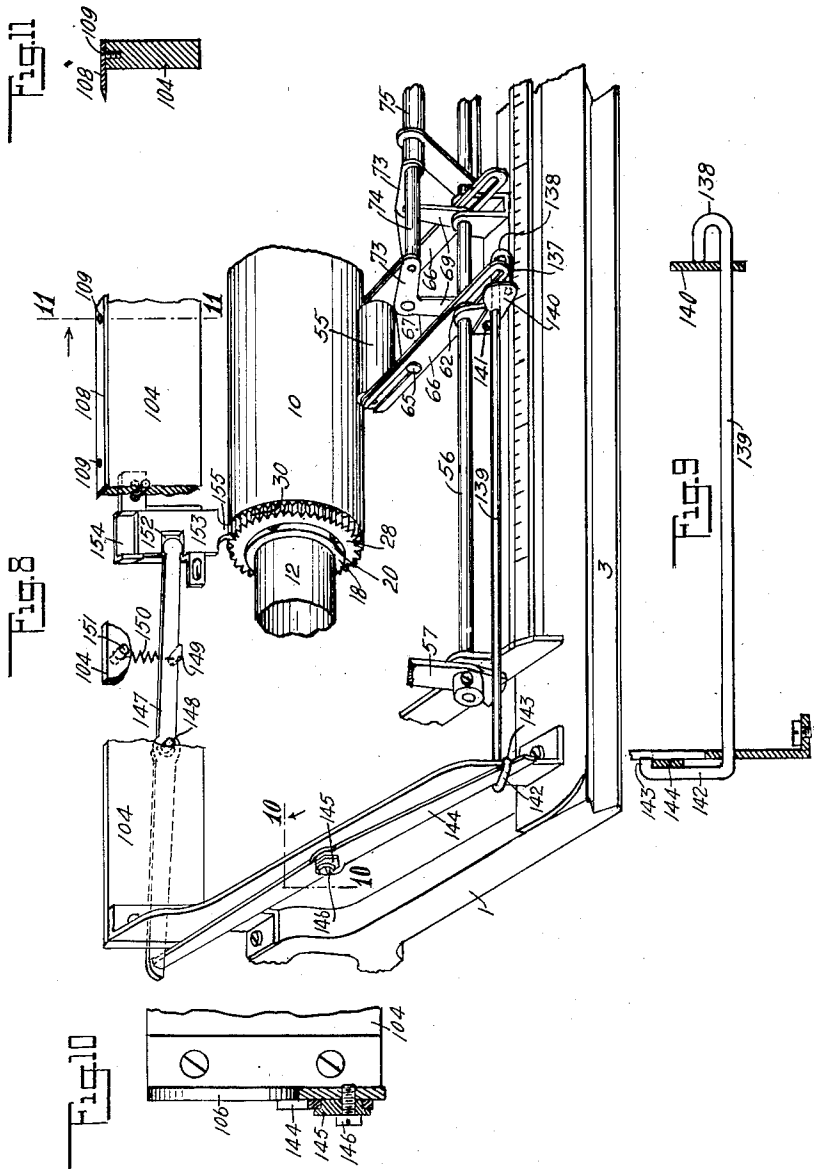
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F. A. HART  
TYPEWRITING MACHINE  
Filed Nov. 17, 1928

1,931,382

5 Sheets-Sheet 4



WITNESSES

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## UNITED STATES PATENT OFFICE

1,931,382

## TYPEWRITING MACHINE

Frederick A. Hart, New Britain, Conn., assignor  
to Remington Typewriter Company, Ilion,  
N. Y., a corporation of New York

Application November 17, 1928

Serial No. 320,179

32 Claims. (Cl. 197—129)

My invention relates to typewriting machines and more particularly to work sheet controlling means.

More specifically stated, the construction of the present invention was designed more particularly for filling in or simultaneously writing abstracts of interline way-bills as the way-bills are being written.

The main object of the invention, generally stated, is to provide a highly efficient and comparatively simple construction of the character specified, and by which the work to be done can be rapidly and effectively handled.

To the above and other ends which will herein-after appear, my invention consists of the features of construction, arrangements of parts and combinations of devices set forth in the following description and particularly pointed out in the appended claims.

In the accompanying drawings, wherein like reference characters indicate corresponding parts in the different views,—

Fig. 1 is a fragmentary, top plan view of the carriage of a typewriting machine constructed in accordance with my present invention.

Fig. 2 is a detail view of the platen, shown detached and with parts broken away and in section.

Fig. 3 is an enlarged, detail, fragmentary sectional view of the same.

Figs. 4, 5, 6 and 7 are vertical, fore and aft sectional views, taken respectively on the section lines 4—4; 5—5; 6—6; and 7—7 of Fig. 1, the arrows at the corresponding section line in each case indicating the direction from which the view is taken. These views show the parts differently disposed as will hereinafter appear.

Fig. 8 is a fragmentary detail perspective view of a portion of the mechanism with parts sectioned away or removed, and showing a modified form of construction of some of its features.

Fig. 9 is a detail, transverse sectional view showing a portion of a modified form of motion transmitting means illustrated in Fig. 8.

Fig. 10 is an enlarged, detail transverse sectional view taken on the line 10—10 of Fig. 8 and looking in the direction of the arrows at said line.

Fig. 11 is a detail cross section of the supporting bar and severing knife or cutter, the section being taken on the line 11—11 of Fig. 8 and looking in the direction of the arrows at said line.

Fig. 12 is a face view of one form of blank way-bill adapted for use in the machine, and the illustration of which is of value in arriving at

an understanding of the operation of the machine.

This invention is shown, in the present instance, embodied in what is known on the market as a "front feed" Remington machine, such as is illustrated in part at least, for example, in the application of Frederick A. Hart and Sigurd L. Walsoe, filed September 23, 1927, Serial No. 221,543. The present invention may be readily incorporated in said machine without changing, or materially changing, the structural features thereof as they now exist. It should be understood, however, that the invention is not restricted to embodiment in the machine referred to but may be employed generally in typewriting machines wherever found available.

Before describing in detail the construction and operation of the machine, its purpose and use in the present instance will be briefly outlined.

It is intended to introduce into the machine at one time, from one to, say, six of the double way-bills B shown in Fig. 12, each way-bill comprising two way-bills b folded over at one end b' of the double sheet so that the blanks thereon will be in register and an intermediate sheet of carbon sheet c may be contained within the fold and between the two bill sheets or sections b comprising the double way-bill. This double way-bill overlies a carbon strip retained in the machine and beneath which and next to the platen is a plain strip or work sheet which may be referred to as a tally strip.

When the way-bills are first introduced into the machine the latter is conditioned so that the superposed way-bills may be written on and advanced line-by-line independently of the tally strip and its associated carbon strip. This continues until approximately one-half—the upper half—of each way-bill is filled in. Then the machine is conditioned so that the stack of way-bills and the underlying carbon and tally strips will be advanced together as the platen receives its step-by-step line spacing movements. It follows therefore that different lines of writing on the lower half of each way-bill will be reproduced on the tally strip, whereas the different lines of writing on the upper half of each way-bill will not be reproduced on the tally strip.

In order to effect the above described results with great facility and despatch I have constructed a machine which will now be described.

As hereinbefore indicated the invention is embodied in a "front feed" Remington machine which has a power driven carriage. This carriage comprises a truck having end bars 1 and 2 connected together by a front cross bar 3 and

rear cross bar 4. The front and rear cross bars are oppositely grooved to provide rails which receive anti-friction crossed rollers 5 that are likewise received in and bear on oppositely grooved, fixed, front and rear guide rails 6 and 7 respectively, by which the carriage is supported to travel from side-to-side of the machine over the top plate.

The truck fixedly supports in the usual manner the platen frame which comprises end plates 8 by which a cylindrical platen is supported.

In accordance with my present invention the platen is of a type known as a divided platen and comprises three sections 9, 10 and 11 and preferably is constructed as follows:

An inner cylindrical shell 12 extends throughout the length of the platen and is provided at the left hand end portion thereof with inwardly struck-up ears 13 (see Fig. 2) tapped to receive screws 14 by which said shell and the left hand platen head 15 are fixedly connected to turn together. The right hand platen head also is fixedly connected by any suitable means to turn with the inner shell, a pin 16 being designated for this purpose. The line spacing wheel 17 may be connected by suitable means (not shown), such, for example, as the usual platen clutch employed in the Remington machines.

Surrounding the inner shell 12 are two bearing and spacing rings 18 and 19 which may be fixed to the shell by any suitable means such as screws 20 or rivets 21. These rings form supports for the inner ends of two terminal outer shells 22 and 23 coextensive in length with their respective platen sections 9 and 11. The outer ends of shells 22 and 23 are fixed to their respective platen heads by suitable means, such for example as pins 24 and 16. The usual rubber contact faces or sheaths 25 and 26 surround and are fixed to the shells 22 and 23 respectively. Between the terminal shells 22 and 23 is an intermediate outer shell 27 that also is supported on the bearing rings 18 and 19 and is axially aligned with said terminal shells. The shell 27 has a frictional engagement with said bearing rings so that said shell tends to rotate with the terminal sections of the platen, but may be held against such turning movement and permit the terminal sections to turn independently thereof, as will presently appear. The shell 27 is surrounded by a rubber sheath or contact face which is fixed thereto and extends substantially through the length thereof.

Surrounding the shell 27 at the left hand end portion thereof is a toothed engaging or locking ring member 28, which is fixed by suitable means, such as one or more pins 29, to the shell. The periphery of this ring is provided with fine teeth 30 that at their outer ends are substantially flush with the surfaces of the adjacent platen sections 9 and 10.

Suitable automatically controlled holding or locking means, to be hereinafter described, coact with the teeth 30 to hold the platen section 10 against advance movement while the terminal platen sections 9 and 11 receive an intermittent line spacing movement independently thereof. When, however, such locking means are withdrawn from the locking wheel all three platen sections are advanced together, due to the frictional connection between the section 10 and the terminal sections 9 and 11.

The main paper feed rollers, the means whereby one of the work sheets introduced from the rear of the platen and is guided forward to and beneath the platen, and the automatically con-

trolled means whereby work sheets may be readily introduced backward from in front of and beneath the platen, are substantially the same as the corresponding parts employed in the Remington front feed machine. In the present instance, however, each main terminal feed roller is adapted to coact only with its associated terminal platen section 9 or 11, whereas the main intermediate feed rollers are adapted to coact only with the intermediate platen section 10, and the automatically controlled locking means for the platen section 10 are under control of the means for shifting the intermediate main feed rollers into and out of contact with the platen.

In accordance with my present invention a spindle 31 has peripheral grooves near the ends thereof to form bearing seats to receive open-ended slotted bearing members 32<sup>a</sup> at the upper ends of side arms 32, each of which is provided with a foot-piece 33 (Fig. 4) that bears on the upper side of a cross-bar 34. A screw 35 extends through an opening in each foot-piece and through the cross-bar 34 and engages a tapped opening in an upright sleeve 36. Each sleeve 36 is secured to the usual tabulator rod 37 by a screw 38 which also secures the tabulator rod to a supporting bracket 39, which in turn is secured to the cross-bar 4 of the carriage by screws 40 and projects rearward therefrom.

A core 41 is frictionally held in place on the spindle 31 and a roll of plain paper 42 surrounds said core and extends therefrom around the intermediate section 10 of the platen, and immediately next to the surface thereof, the width of such paper corresponding approximately to the length of the platen section 10.

A corresponding spindle 43 is supported on the side or bracket arms 32 beneath the spindle 31, and said spindle 43 supports a core 44 on which is wound in the form of a roll a strip of carbon paper 45. The width of this strip of carbon paper corresponds to the width of the associated tally strip 42. The spindle 43 is supported in the reduced ends of key-hole bearing slots 46 in the arms 32. By first lifting such spindle until it is received in the enlarged portions of the slots or openings 46 and then shifting the spindle endwise it may be detached from the supporting arms.

Supported on a cross-rod 47 is a double deflector comprising two curved deflector plates 48 and 49 arranged one above the other beneath the platen and maintained spaced apart to provide a channel 50 between the two deflectors, and to provide a second channel 51 between the upper deflector 48 and the platen. The lower deflector 49 is extended upward and rearward to provide a paper table 52 in the rear of the platen. While the rod 47 constitutes a pivot on which the double deflector may be turned, the latter is held in its adjusted position around said pivot rod by adjustable means. Thus, cams 53 mounted on a cross-bar 54 bear against the paper table and hold the double deflector against pivotal movement in one direction, and adjustable cams 54<sup>a</sup> bear against the bottom of the lower deflector 49 and hold the double deflector against pivotal movement in the opposite direction. The free ends of the tally strip 42 and the overlying strip of carbon paper pass through the channel 51 and up in front of the platen section 10 beyond the printing line and beyond the point where the intermediate main paper feed rollers 55 may coact therewith. There is a pair of these feed

rollers which are adapted to coast only with the intermediate platen section 10.

Any suitable means may be employed for mounting these intermediate feed rollers 55 and for effecting an application or withdrawal of such feed rollers independently of the margin feed rollers to be later described. However, the feed roller construction disclosed in the application hereinbefore referred to is exceedingly well adapted for the purpose and I prefer to employ such construction with such slight modifications as may be disclosed herein.

This construction includes a rock-shaft 56 that extends substantially throughout the length of the carriage and is carried thereby. The left hand end of this shaft carries an arm 57 which is fixed thereto and terminates in a finger piece 58. Angular supporting levers 59 are pierced to receive the rock-shaft 56 and turn with a slight pivotal movement thereon, as indicated in Figs. 4 and 5. The depending arm of each lever has a laterally extending ear or lug 60 projecting therefrom. Each ear is pierced to receive freely there-through the stem of a headed screw 61 which is threaded into a tapped opening in a supporting block 62 carried by the carriage. A coiled expansion spring 63 surrounds each screw and bears at one end against the head of the associated screw and at its opposite end against the associated lug 60. The force of each spring is, therefore, exerted to turn its companion supporting lever in an anti-clockwise direction, as the parts are viewed in Fig. 4, and to apply the feed rollers against the platen under conditions which will hereinafter appear.

As best shown in Figs. 4 and 5 the rearwardly directed arm of each supporting lever 59 is slotted at 64 to provide a bearing in which a headed pin 65 is adapted to slide. Each pin 65 is carried by a slide 66 and constitutes an extension of a pivot pin which pivotally connects a toggle link 67 to the companion slide. The forward end of each toggle link 67 is pivoted at 68 to a companion toggle link 69. The forward end portion of each slide 66 is slotted at 70 to receive and slide at its forward end on the rock-shaft 56.

Extending between and connecting the companion slides 66 of each pair is a pivot pin 71 on which is mounted a feed roller, such as one of the intermediate feed rollers 55, or one of the terminal feed rollers 72. The toggle links 69 have upwardly extending arms 73 and such arms of each companion pair are further connected by a cross-rod 74, as shown in Figs. 1 and 5, so that the companion toggle links may move in unison and each of said cross-rods 74 constitutes a finger piece by which the companion toggles may be manipulated when desired.

Each of the toggle members 69 for the terminal feed rollers 72 is connected to the rock-shaft 56 to turn therewith, so that a rocking of said shaft by the finger piece 58 is effective to move all four toggle members 69 for the terminal feed rollers 72, thereby simultaneously straightening or breaking the toggles for the terminal feed rollers and applying such feed rollers to the terminal platen sections 9 and 11, or withdrawing such feed rollers therefrom depending in which direction the finger piece 58 is shifted. On the other hand the toggle members 69 for the intermediate feed rollers 55 are disconnected from the rock-shaft 56 (except as hereinafter explained) and are not affected by a turning of the rock-shaft to apply the terminal feed rollers 72, and may be turned on said rock-shaft as a pivot to

apply the feed rollers 55 without affecting the previously applied terminal feed rollers 72.

In order that the two sets of controlling toggles for the intermediate feed rollers 55 may be coupled together to work in unison I have, in the present construction, provided a shouldered tie-rod 75 which passes through parallel supporting arms 76 united by a cross-bar 77 to form a supporting yoke. Each of the arms 76 is pierced to receive the rock-shaft 56 on which the yoke freely turns. The outwardly extending end portions of the tie-rod 75 constitute the tie-rods 74 which unite the arms 73 of the toggles for the feed rollers 55. In this manner the controlling toggles for the rollers 55 are connected to move in unison.

From an inspection of Figs. 1 and 5 it will be seen that there are two fingers 78 each having a hub pierced to receive the rock-shaft 56 and provided with a spline projection 79 (Fig. 5) that extends into and fits the V-shaped spline groove 80 in the rock-shaft 56. Each finger 78 is thus connected to turn with said rock-shaft and projects rearward therefrom beneath the adjacent pivot 68 which is extended to form a contact with which the associated finger may coast.

This construction enables the terminal feed rollers 72 to be simultaneously applied by an actuation of the finger piece 58 while the intermediate feed rollers 55 remain cast off. It also enables the intermediate feed rollers 55 to be applied or cast off by the finger piece or tie-rod 75 while the terminal feed rollers 72 remain applied. If, however, both sets of feed rollers should be applied, then an actuation of the finger piece 58 from the Fig. 6 to the Fig. 5 position will result in shifting both sets of feed rollers 55 and 72 to the released position.

In order that the feed rollers under control of the finger piece 58 may remain against accidental displacement from the released position to which they may be shifted by said finger piece, there is provided on the arm 57 (see Fig. 6) a depending member 81 that terminates in a segmental contact face 82 at one end of which is a flattened contact face 83. A detent or latch 84 is pivoted at 85 to the left hand bracket plate 86 secured to the carriage. A contractile spring 87 exerts its force on the detent and when a turning of the member 81 brings the face 83 thereon into register with the holding face 88 on the detent, said face 83 will be engaged by the detent and hold the parts against accidental displacement.

In addition to the feed rollers and double deflector described above there are provided the usual means employed in the Remington front feed machines to aid in introducing work sheets rearwardly from in front of and beneath the platen. Such means include a deflector plate 89 automatically controlled and shiftable across the printing line from a normally ineffective position, shown in Fig. 4, to an effective position, shown in Fig. 5. In this last named position the contact face of the deflector 89 forms virtually a continuation of the lower curved deflector 49 in order to facilitate a backward introduction into the channel 50 of one or more of the superposed work sheets B, shown in Fig. 12, together with their interleaved carbon sheets c. This deflector 89, as well as the line indicating wire 91, are automatically controlled in their movements into and out of effective positions in the usual manner by the actuation of the finger piece 58 to control the terminal feed rollers 72, and in some instances the feed rollers 55. Such parts 89 and 91 also are independently controlled in the usual manner by

a finger piece 92 and all of which, for the purposes of the present invention, it is unnecessary to describe in great detail, but nevertheless will be briefly referred to.

5 The arm 93, by which the finger piece 92 is carried, is one of two connected arms at opposite ends of the platen by which the line indicating wire 91 is carried, a spring 94 tending to move said arms to the Fig. 6 position. The arm 93 has a  
10 cam slot 95 therein which coacts with a pin 96 carried by an arm 97 which in turn is operatively connected to an arm 98 to which the deflector 89 is affixed. Therefore, a forward movement of the finger piece 92 from the Fig. 6 position is effective  
15 to shift the line indicator from the line indicating position, and to shift the deflector 89 to effective position, shown in Fig. 6. These movements of the parts may be effected independently of the feed rollers 55 and 72 which at this time may remain applied or positioned close to the platen or  
20 the former may remain fully withdrawn.

The arm 57 is pivotally connected to a rearwardly extending link 99 which carries an inwardly projecting pin 100 at its inner end. This  
25 pin slides in a slot 101 in the bracket plate 86 and projects into the path of the arm 93. It follows, therefore, that when the finger piece 58 is pulled forward to the Fig. 5 position, the arm 93 will be shifted to move the deflector 89 from the in-  
30 effective to the effective position, and the line indicator 91 will be shifted from the effective to the ineffective position. This takes place while the rocking of the shaft 56 and an actuation of the fingers 78 and toggles 69, 67 are effecting a  
35 release of the feed rollers 55 and 72. The detent 84 at this time will be effective to overcome the force of the spring 94 and retain the parts in the shifted position.

As hereinbefore indicated these means for controlling the feed rollers 55 and 72, the deflector 89 and line indicator 91, as well as the construction of the double deflector 48, 49 are substantially the same as corresponding features disclosed in the application herein referred to.

40 In order to control the tally sheet 42 and its accompanying carbon sheet 45 after they pass the printing line and have passed the feed rollers 55 I have herein disclosed certain features which will now be described.

50 The leading end of the sheet 42 after passing upward beyond the range of the feed rollers 55 is brought beneath a pair of feed rollers 102 which are arranged above the platen section 10 and coact only therewith and only with the sheet 42  
55 thereon. As the leading end of said sheet 42 passes beyond the rollers 102 such end coacts with a fixed deflector plate 103 the lower end of which is situated adjacent to the platen section 10 to prevent the sheet 42 from passing into the  
60 right between the platen section 10 and the deflector 48 and being carried a second time around the platen. The deflector 103 is effective to direct the leading end of the sheet 42 upward in the rear of a supporting bar 104 arranged above  
65 the platen and extending throughout the length of the carriage. Said bar is secured by screws 105 to sheet metal brackets 106 and 107 which in turn are secured to the carriage.

A rearwardly projecting tearing blade or knife  
70 108 is secured on the upper edge of the supporting bar 104 by screws 109. This blade may have a serrated edge to more effectively sever a printed portion of the tally strip, when desired, by simply drawing said strip forward over the blade, it  
75 being understood that such blade need not be

materially longer than the width of the tally sheet 42.

I also utilize the supporting bar 104 to support the deflector 103 in place, by providing said deflector with forwardly bent ears 110 at the ends  
80 thereof which are secured by screws 111 to the supporting bar.

The carbon sheet 45, which overlies the sheet 42, after passing the feed rollers 55 does not pass with the sheet 42 beneath the feed rollers 102,  
85 but extends up in front and out of control of the rollers 102 as shown in Fig. 4.

The feed rollers 102 may be mounted, applied and released by any suitable means. In the present instance the rollers are shown mounted on a spindle which is supported at its ends in forwardly extending parallel bearing arms 112, formed as parts of angular levers 113 pivoted at 114 to the front face of the supporting bar 104. The levers 113 also have upwardly extending parallel arms 115 connected by pivot screws 116 to a connecting bar or rod 117. This bar extends to the right where it is pivoted, at 118, to an upright lever 119 pivoted at its lower end, at 120, to the bar 104 and terminating at its upper end in a  
90 finger piece 121. A contractile spring 122 is connected at one end to the bar 104 and at its other end to the lever 119, and exerts its force through the lever 119, rod 117 and levers 113 against the feed rollers 102 to apply them to the platen  
95 section 10. A rightward pressure on the finger piece 121 moves the feed rollers 102 away from the platen section 10 against the force of the spring 122.

I prefer to employ a guide which coacts with  
100 the tally sheet 42 after it has passed up beyond the cutting blade and which also receives the leading end of the carbon strip 45 after it passes up in front of the feed rollers 102. This guide in the present instance comprises a wire member  
105 bent at its upper ends, as indicated at 123 in Figs. 1 and 7, to surround and pivot on the spindle 31. The depending side arms 124 of this guide are united at their lower ends by a cross piece 125. The forward off-setting of this guide from its pivot causes it to act by the force of gravity against the outer face of the sheet 45 at the leading end portion thereof and hold it and the accompanying portion of the tally strip 42 from falling forward and compel such stretches of the  
110 sheets to pass upward parallel to the down feeding underlying stretch of the sheet 42 on which the advancing end sections of the sheets rest.

I have hereinbefore explained that while writing the first half of the bill sheet B the tally strip  
115 42, its accompanying carbon strip 45 and the intermediate platen section 10 remains at rest. In order to bring this about I have provided the following construction:

I have previously indicated that the platen section 10 is frictionally connected to turn with the terminal sections 9 and 11. Therefore, I have provided automatically operating means for holding said intermediate section 10 when the terminal sections are to be turned independently thereof. Referring more particularly to Figs. 1, 5 and 7 it will be seen that a locking lever or member 126 is pivoted at 127 on the rear of the supporting bar 104. This lever has a depending engaging member 128 at its inner end which is adapted to engage the teeth 30 of the locking wheel connected with the platen section 10. A guide plate 129 (Fig. 5) may be employed to coact with the inner end of lever 126 and hold it against backward displacement from the rear face of the supporting  
120 125 130 135 140 145 150

bar. As shown in Fig. 1, the left hand end of the lever 126 extends beyond the bracket 106 and overlies the rear end of a forwardly extending lever 130 pivoted at 131 to the bracket 106. The forward end of the lever 130 underlies the rear end of a second lever 132 pivoted at 133 on the bracket 106. This second lever 132 extends forward over the right hand end of a third lever 134 pivoted at 135 on a bracket 136 secured to the front cross bar of the carriage. The right hand end of the lever 134, as best shown in Fig. 5, extends in the path of movement of a curved cam face 137 on one of the slides 66 for the intermediate feed rollers 55 and is actuated thereby. When, therefore, the finger piece 75 is actuated to release the feed rollers 55 independently of the feed rollers 72, the slide 66 carrying the cam 137 will be projected forward, as shown in Fig. 5, and will actuate the lever 134. This will result in an actuation of the levers 132, 130 and 126, moving the engaging member 128 into locking engagement with the teeth 30 of the locking ring, as shown in Fig. 5. At this time, therefore, the platen section 10 will be held against turning movement while the terminal sections with the feed rollers 72 engaging therewith, and with the way-bill B, will be advanced line-by-line feeding the way-bill independently of the underlying tally strip 42 and carbon strip 45. This takes place during, say, the writing of the first half of the way-bill. The remainder of the bill is to contain data that should appear on the tally strip. Therefore, the feed rollers 55 are applied to the platen section 10 and against the tally strip and carbon strip partly surrounding the same and to the overlying way-bill B as well. The act of applying the feed rollers 55 results in automatically releasing the locking device 128 from the platen section 10, it being understood that a suitable spring is employed to aid in effecting this result, such a spring, for example, as is shown at 150 in Fig. 8.

The operator may now proceed to fill in the last half of the way-bill and the successive lines thus written will be reproduced as a manifold copy on the tally strip.

It may be pointed out that writing line-by-line the first half of the way-bill, or the pack of way-bills, will result in repeated manifold imprints being produced on the tally strip along the same line. This, however, will merely result in a smudged line being produced on the tally strip which acts as a division line between the manifold copy of the tally strip taken from one bill and the next succeeding manifold entry thereon taken in writing the next bill and so on.

In Figs. 8, 9 and 10 I have shown another and preferred form of connection for automatically locking the platen section 10 by releasing the feed rollers 55. As the operation and results attained are the same in this construction as in the construction previously described, I will only briefly describe this modified form of construction.

The cam 137 in the Fig. 8 construction coacts with the bent end 138 of a wire rod the body portion 139 of which constitutes a rock-shaft and the bent end 138 a crank arm thereon. The rock-shaft is adapted to rock in a bearing opening in a bracket plate 140, secured by screws 141 to one of the supporting members 62, and in an aligned bearing opening in the bracket 106. The other end of the rock-shaft is bent to form a crank arm 142 having an inwardly extending terminal 143 which overlies the forward end of a lever 144 pivoted on the bracket 106. From an inspection

of Fig. 9 it will be seen that the free end of the crank arm 138 bears against the bracket plate 140 and prevents axial movement of the shaft in one direction, whereas the arm 142 bears against the outer face of the lever 144 and prevents an axial movement of the shaft in the opposite direction.

The pivot for the lever 144 is preferably in the nature of a headed bearing member 145 received in an opening in the lever 144 and pierced eccentrically of its center to receive the stem of a headed clamping screw 146 threaded into a tapped opening in the bracket 106. By loosening the screw 146 and turning the eccentrically mounted bearing member 145 on its screw, the pivotal center of the lever 144 may be varied at will. This single adjustment is sufficient to take care of the entire train of parts between the crank arm 138 and the locking member controlled by said train. The rear end of the lever 144 underlies the outwardly extending end of a lever 147, pivoted at 148 on the rear side of the supporting bar 104. An ear 149 projects from this lever and to which is connected one end a contractile spring 150, the other end of said spring being connected to a pin 151 projecting from the supporting bar 104.

The inner end of the lever 147 is received in a recess 152 in a locking member or slide 153, guided in its up and down movement by a guide member 154 secured by screws to the rear side of the supporting bar 104. The slide 153 is reduced at its lower end to provide a locking tooth 155 adapted to engage the teeth 30 of the locking ring.

The operation of the parts disclosed in Fig. 8 is the same as in the construction previously described and need not be repeated.

In the operation of the machine it may be assumed that the tally strip 42 and its accompanying carbon strip 45 have been threaded through the machine as shown in Fig. 4, and that the feed rollers 55 and 72 are withdrawn as shown in Fig. 5. When the machine is thus conditioned the deflector 89 is in effective position as indicated in the last mentioned figure, in order to facilitate the rearward introduction of one or more of the double way-bills B. These bill sheets are of a greater width than the tally strip and when introduced into position in the machine to receive the first line of writing will overlap at opposite side edge portions the platen sections 9 and 11 and be positioned where the feed rollers 72 may coact therewith, as shown in Fig. 1. Suitable side guides (not shown) may be employed to aid in properly positioning the way-bills.

The finger piece 58 may now be pushed rearward, applying the feed rollers 72 and withdrawing the deflector 89 from the path of the type bars, not shown. This leaves the feed rollers 55 cast-off and the platen section 10 locked against turning movement. The operator may then proceed to fill in say, the upper half of the double way-bill B, and through the interleaved carbon sheet c of each double way-bill, a manifold duplicate will be produced. There may be from one to six of these double way-bills depending on the requirements; the requisite number of carbon sheets c being employed in accordance with the number of double way-bills employed.

As the platen sections 9 and 11 are turned to advance the way-bills line-by-line in filling in the upper half of each way-bill, the platen section 10, the underlying tally strip 42 and the carbon strip 45 will remain quiescent leaving a smudged line on the tally strip produced by the repeated action

of the types along one line thereon and on one line across the carbon sheet c.

When the lower half of the way-bill is reached the operator manipulates the finger piece 75 to apply the feed rollers 55. This operation results in automatically releasing the locking means for the platen section 10, and the latter at this time is free to turn with the terminal platen sections 9 and 11. The result is that all three platen sections 9, 10 and 11 will turn together during further line spacing of the platen and the sheets B, c, 42 and 45 will be fed together and the lines written on the way-bills at this time will be reproduced on the tally strip.

It will be understood that the tally strip 42 and carbon strip 45 remain in the machine while way-bills are successively introduced into the machine, written, withdrawn and new ones introduced. When a sufficient length of tally strip has been written, the feed rollers 55 coacting therewith are released and a backward turning of the carbon roll is effected to rewind the carbon strip 45 thereon, the feed rollers 102 at this time remaining applied to the tally strip 42 and preventing a backward movement thereof with the carbon strip 45. The long side extension of the spindle 43 on which the carbon roll is wound provides a convenient means for effecting a back winding of the carbon strip on its roll. The carbon strip 45 is rewound to an extent to bring the leading end thereof below the cutting blade 108. The tally strip 42 may then be severed with the aid of such blade and removed from the machine.

While I have illustrated one form of bill sheet B which the machine of my invention was designed to handle with facility, it should be understood that this is illustrated more particularly to arrive at a clear understanding of the operation of my machine and that said machine may be employed wherever found available for writing on various characters of work sheets. Especially is this true where the character of the work sheet is such that only a part of the matter written thereon is to be reproduced on the underlying tally strip.

From the foregoing description it will be seen that I have provided a comparatively simple machine by which way-bills may be very rapidly introduced into the machine, written and withdrawn and a copy of only so much of each bill as may be required is copied on the tally strip.

This machine has proved highly efficient and rapid in use, and the novel features thereof may be readily, and at comparatively small expense, embodied in a front feed Remington machine and combined with existing features of such machines without modifying, or materially modifying such existing features.

Various changes may be made in the construction, and certain features thereof may be employed without others, without departing from my invention as it is defined in the following claims.

What we claim as new and desire to secure by Letters Patent is:

1. The combination of a divided platen, a single line spacing mechanism for the platen always co-operative directly with one and the same section thereof, means for operatively connecting a second section of the platen with that actuated by the line spacing mechanism to turn the two together from said line spacing mechanism, and means operable at will for holding said second section against turning movement while the line

spaced section is turned independently thereof by the line spacing mechanism.

2. The combination of a divided platen, a single line spacing mechanism operative directly always on one and the same section of the platen to turn it intermittently, frictional means for operatively connecting a second section of the platen to turn together with the section which is turned by the line spacing mechanism, and means operable at will for positively locking said second section against turning movement so that the first mentioned section may be turned independently thereof by said line spacing mechanism.

3. The combination of a divided platen comprising two terminal sections united to turn together and an intermediate section disconnected from said terminal sections, means always operative to cause said intermediate section to turn with said terminal sections but to permit a turning of the latter independent of the intermediate section when desired, and means operable at will for positively holding the intermediate section against turning with the terminal sections.

4. The combination of a divided platen comprising two terminal sections fixedly united to turn together and an intermediate section disconnected from said terminal sections, frictional means always tending to turn said intermediate section with the terminal sections, a single line spacing mechanism effective directly on one of said terminal sections, and means for positively locking said intermediate section against turning movement when it is desired to turn the terminal sections independently thereof.

5. The combination of a platen comprising a plurality of sections, constantly applied means tending to cause said sections to turn together but permitting one to be turned independently of another, one or more feed rollers coacting with each of said sections and shiftable into and out of cooperation therewith, and automatically operating means for holding one of said sections against turning movement when its companion feed roller or rollers are shifted out of cooperation therewith.

6. The combination of a divided platen, means by which the sections of the platen turn together and when desired enable one or more sections to be turned independently of another section, one or more feed rollers cooperative with each section of the platen, the feed roller or rollers for at least one of said sections being shiftable into and out of cooperation with the platen section with which they coact, and automatically operating means controlled by the shifting of the feed roller or rollers for one of said sections out of cooperative relation therewith for holding the companion platen section against turning movement.

7. The combination of a divided platen comprising two terminal sections and an intermediate section, means that cause the sections to turn together, one or more feed rollers that coact with each section, means for shifting the feed roller or rollers for the intermediate section into and out of cooperation therewith, and automatically operating means controlled by the movement of said last mentioned feed rollers out of cooperation with said intermediate platen section for locking it against turning movement while a work sheet may be advanced by a turning movement of the terminal sections and their feed rollers independently of said intermediate section.

8. The combination of a divided platen comprising two terminal sections and an intermediate section, means that cause the sections to turn together, one or more feed rollers that coact with each section, means for shifting the feed roller or rollers for the intermediate section into and out of cooperation therewith, automatically operating means controlled by the movement of said last mentioned feed rollers out of cooperation with said intermediate platen section for locking it against turning movement while a work sheet may be advanced by a turning movement of the terminal sections and their feed rollers independently of said intermediate section, and a single line spacing mechanism for intermittently turning the platen whether the sections are turned together or the terminal sections are turned independently of the intermediate sections.
9. The combination of a divided platen comprising a plurality of sections, means which cause said sections to tend to turn together but which enable one section to turn independently of another when the last mentioned section is held against turning movement, a locking wheel connected with the section to be held against turning movement, a locking member cooperative with said locking wheel, and automatically controlled means for controlling the movement of said locking member.
10. The combination of a divided platen comprising a plurality of sections, means which cause said sections to tend to turn together but which enable one section to turn independently of another when the last mentioned section is held against turning movement, a locking wheel connected with the section to be held against turning movement, a locking member cooperative with said locking wheel, one or more feed rollers which coact with the section of the platen to be held against turning movement and which are shiftable into and out of contact therewith, and means controlled by the shifting of said feed rollers out of cooperation with the associated platen section for shifting the locking member into engagement with the locking wheel and for releasing the locking member from the wheel when said feed rollers are applied.
11. The combination of a divided platen having terminal sections and an intermediate section, means for fixedly connecting the terminal sections to turn together, means which cause the intermediate section to tend to turn with the terminal sections but enable the latter to turn independently of said intermediate section when the latter is held, a locking device connected to turn with said intermediate section, a locking member cooperative therewith, and means for shifting said locking member into and out of engagement with the locking device.
12. The combination of a divided platen having terminal sections and an intermediate section, means for fixedly connecting the terminal sections to turn together, means which cause the intermediate section to tend to turn with the terminal sections but enable the latter to turn independently of said intermediate section when the latter is held, a locking device connected to turn with said intermediate section, a locking member cooperative therewith, and automatically controlled means for shifting said locking member into and out of engagement with the locking device.
13. The combination of a divided platen having terminal sections and an intermediate section, means for fixedly connecting the terminal sections to turn together, means which cause the intermediate section to tend to turn with the terminal sections but enable the latter to turn independently of said intermediate section when the latter is held, a locking device connected to turn with said intermediate section, a locking member cooperative therewith, feed rollers which are shiftable into and out of cooperation with said intermediate section, and means controlled by the said shifting of the feed rollers for controlling the movement of the locking member into and out of engagement with said locking device.
14. The combination of a divided platen having terminal sections and an intermediate section means for fixedly connecting the terminal sections to turn together, means which cause the intermediate section to tend to turn with the terminal sections but enable the latter to turn independently of said intermediate section when the latter is held, a locking device connected to turn with said intermediate section, a locking member cooperative therewith, one or more feed rollers coacting with each terminal section of the platen, one or more feed rollers which coact with the intermediate section of the platen and are shiftable into and out of cooperation with the platen independently of the feed rollers for the terminal sections, and means controlled by the movement of the feed rollers for the intermediate section out of cooperative relation therewith for moving said locking member into engagement with its cooperating locking device and for moving the locking member out of such engagement by a movement of the last mentioned feed rollers into cooperation with said associated platen section.
15. The combination of a divided platen having terminal sections and an intermediate section, means for fixedly connecting the terminal sections to turn together, constantly applied friction means which tend to cause the intermediate section of the platen to turn with the terminal sections thereof, a locking wheel fixedly connected with the intermediate platen section, a locking member cooperative with said locking wheel, and hand actuated means for shifting said locking member into and out of engagement with said locking wheel.
16. The combination of a divided platen having terminal sections and an intermediate section, means for fixedly connecting the terminal sections to turn together, constantly applied friction means which tend to cause the intermediate section of the platen to turn with the terminal sections thereof, a locking wheel fixedly connected with the intermediate platen section, a locking member cooperative with said locking wheel, one or more feed rollers which coact with each of said terminal sections of the platen, one or more feed rollers which coact with the intermediate section of the platen and which are shiftable into and out of cooperation therewith while the feed rollers for the terminal sections remain applied, and means controlled by the said shifting of the feed rollers for the intermediate section for controlling the movement of the locking member into and out of engagement with said locking wheel.
17. The combination of a divided platen comprising terminal sections fixedly united and an intermediate section, constantly effective means which tend to cause the intermediate section to turn with said terminal sections but which may

be held while the terminal sections are turned independently thereof, means for directing a tally strip directly to the face of said intermediate platen section, means for directing a  
 5 carbon strip to and outside of said tally strip, feeding means coacting with the intermediate section for feeding said tally and carbon strips together, means for introducing and directing an  
 10 abstract blank or sheet to a position in the machine where it is outside of the tally and carbon strips and overlaps the terminal sections of the platen, feeding means coacting with the terminal  
 15 sections for feeding the abstract sheet therewith independently of the intermediate section and the tally and carbon strips which coast therewith, and locking means cooperating directly  
 with said intermediate section for holding it against turning movement when the terminal sections are turned independently thereof.

18. The combination of a divided platen comprising terminal sections fixedly united and an intermediate section, constantly effective means which tend to cause the intermediate section to  
 20 turn with said terminal sections but which may be held while the terminal sections are turned independently thereof, means for directing a tally  
 25 strip directly to the face of said intermediate platen section from the rear thereof to and beneath the same, means for directing from the rear  
 30 of the platen a carbon strip to and outside of said tally strip, feeding means coacting with the intermediate section for feeding said tally and carbon strips together, means for introducing  
 35 and directing from in front of and beneath the platen an abstract blank or sheet to a position in the machine where it is outside of the tally and carbon strips and overlaps the terminal sections  
 40 of the platen, feeding means coacting with the terminal sections for feeding the abstract sheet therewith independently of the intermediate section and the tally and carbon strips which coast  
 45 therewith, and locking means cooperating directly with said intermediate section for holding it against turning movement when the terminal sections are turned independently thereof.

19. The combination of a divided platen comprising terminal sections fixedly united and an intermediate section, constantly effective means which tend to cause the intermediate section to  
 50 turn with said terminal sections but which may be held while the terminal sections are turned independently thereof, means for directing a tally strip directly to the face of said intermediate  
 55 platen section, means for directing a carbon strip to and outside of said tally strip, feeding means coacting with the intermediate section for feeding said tally and carbon strips together, means  
 60 for introducing and directing an abstract blank or sheet to a position in the machine where it is outside of the tally and carbon strips and overlaps the terminal sections of the platen, feeding  
 65 means coacting with the terminal sections for feeding the abstract sheet therewith independently of the intermediate section and the tally and carbon strips which coast therewith, locking  
 70 means cooperating directly with said intermediate section for holding it against turning movement when the terminal sections are turned independently thereof, means for shifting said feeding  
 means which coast with the intermediate section of the platen into and out of cooperation therewith, and means controlled by said shifting means for automatically throwing said  
 75 holding means into and out of operation.

20. The combination of a divided platen com-

prising terminal sections fixedly united and an intermediate section, constantly effective means which tend to cause the intermediate section to  
 80 turn with said terminal sections but which may be held while the terminal sections are turned independently thereof, means for directing a tally strip directly to the face of said intermediate  
 85 platen section from the rear thereof to and beneath the same, means for directing from the rear of the platen a carbon strip to and outside of said tally strip, feeding means coacting with  
 90 the intermediate section for feeding said tally and carbon strips together, means for introducing and directing from in front of and beneath the platen an abstract blank or sheet to a position in the machine where it is outside of  
 95 the tally and carbon strips and overlaps the terminal sections of the platen, feeding means coacting with the terminal sections for feeding the abstract sheet therewith independently of the  
 100 intermediate section and the tally and carbon strips which coast therewith, locking means cooperating directly with said intermediate section for holding it against turning movement when  
 105 the terminal sections are turned independently thereof, means for shifting said feeding means for the intermediate section into and out of effective position independently of the feeding means  
 for the terminal section and while the last mentioned feeding means remain effective, and means  
 110 controlled by said shifting means for automatically throwing said holding means into and out of action.

21. The combination of a divided platen, means tending to cause one section of the platen to  
 115 turn with another but permitting one section to be turned independently of another, paper feed rollers shiftable into and out of contact with one of said platen sections, locking means cooperative  
 120 with one of said platen sections to hold it against turning movement while another is turned independently thereof, intermediate operative controlling connections between said shiftable  
 125 feed rollers and said locking means, and adjusting means for said controlling connections.

22. The combination of a divided platen having two terminal sections that turn together and an intermediate section, means which tend to cause  
 130 said intermediate section to turn with said terminal sections but which enable the intermediate section to be held against turning movement while the terminal sections are turned independently  
 135 thereof, terminal paper feed rollers which coast only with said terminal platen sections, intermediate paper feed rollers which coast only with said intermediate platen section, means for moving  
 140 said intermediate feed rollers into and out of contact with the associate platen section by a movement that is independent of the terminal feed rollers, and means for holding the inter-  
 145 mediate platen section against turning movement when the intermediate paper feed rollers are withdrawn therefrom.

23. The combination of a divided platen having two terminal sections and an intermediate  
 150 section, terminal paper feed rollers which coast only with said terminal platen sections above the printing line, intermediate paper feed rollers which coast only with said intermediate platen  
 155 section above the printing line, means for applying and withdrawing the intermediate feed rollers independently of the terminal feed rollers, means for directing a bill sheet backward  
 160 from in front of and beneath the platen to a position where the terminal feed rollers may press

the same against the terminal platen sections, and means for directing narrower work and carbon sheets forward from the rear of and beneath the platen only to said intermediate platen section and intermediate feed rollers.

24. The combination of a divided platen having two terminal sections that turn together and an intermediate section, means which tend to cause said intermediate section to turn with said terminal sections but which enable the intermediate section to be held against turning movement while the terminal sections are turned independently thereof, terminal paper feed rollers which coact only with said terminal platen sections, intermediate paper feed rollers which coact only with said intermediate platen section, means for moving said intermediate feed rollers into and out of contact with the associate platen section by a movement that is independent of the terminal feed rollers, means for holding the intermediate platen section against turning movement when the intermediate paper feed rollers are withdrawn therefrom, means for directing a bill sheet backward from in front of and beneath the platen to a position where said terminal feed rollers may press the sheet against the terminal platen sections, and means for directing narrower work and carbon sheets forward from the rear of and beneath the platen only to said intermediate platen section and intermediate feed rollers.

25. The combination of a platen, means for directing a work sheet backward from in front of and beneath the platen, means for directing another underlying work sheet forward from the rear of and beneath the platen, a cross bar supported on the carriage above the platen, a tearing knife or cutter carried by said cross bar, and guiding and feeding means which coact with the leading end portion of said underlying work sheet to direct and feed it upward in the rear of said cutter and into cooperative relation therewith, said guiding and feeding means being out of cooperative relation with the work sheet introduced rearward from in front of and beneath the platen.

26. The combination of a platen, means for directing a work sheet backward from in front of and beneath the platen, means for directing another underlying work sheet forward from the rear of and beneath the platen, a cross bar supported on the carriage above the platen, a tearing knife or cutter carried by said cross bar, and guiding and feeding means which coact with the leading end portion of said underlying work sheet to direct and feed it upward in the rear of said cutter and into cooperative relation therewith, said guiding and feeding means being out of cooperative relation with the work sheet introduced rearward from in front of and beneath the platen and comprising a deflector plate carried by and depending from said cross bar and terminating close to the platen.

27. The combination of a divided platen; means for directing a comparatively narrow underlying work sheet and carbon sheet forward from the rear of and beneath the platen; means for directing a comparatively wide overlying work sheet introduced rearward from in front of and beneath the platen; and controlling means for advancing both work sheets and carbon sheet together or for at will advancing the overlying wider work sheet independently of the underlying work and carbon sheets, said controlling means comprising terminal paper feed rollers which coact

only with terminal sections of the divided platen and the marginal portions of the wider overlying work sheet which bear thereon, intermediate paper feed rollers which coact only with an intermediate section of the platen, means for shifting the sets of terminal feed rollers and the intermediate feed rollers into and out of contact with their respective platen sections independently of each other, means which tend to cause the intermediate section of the platen to turn with the terminal sections, and means for holding the intermediate section of the platen against turning movement when the intermediate feed rollers are shifted away therefrom, whereby the overlying work sheet may be advanced with the terminal sections of the platen independently of the underlying work sheet and carbon sheet which are held against movement by the intermediate section of the platen held at this time against turning movement.

28. Means for handling superposed work sheets and an underlying tally strip comprising a divided platen over the sections of which the superposed work sheets overlap, means constantly effective for causing the sections of the platen to tend to turn together as one member and thus feed the superposed work sheets and underlying tally strip together but enabling one section to be turned independently of the other when said other section is held against turning movement and thus enable the work sheets to be fed independently of the underlying tally strip, and normally released means operable at will for holding one section of the platen against turning movement while another section thereof is given an independent turning movement and for freeing at will said held section to enable both platen sections to be turned together.

29. The combination of a divided platen, a single line spacing device cooperative with one of the sections of said platen to intermittently line space it, constantly effective means for causing the sections of the platen to tend to turn together as one member, but enabling the first mentioned section to be turned independently of the other by said line spacing device when said other section is held against turning movement, and holding means operable at will for holding said other section from turning with said first mentioned section but normally offering no obstruction to the turning of such sections together, said holding means being shiftable at will to and adapted to remain indefinitely in releasing position and when thus released enabling both sections to be intermittently turned together by an actuation of said line spacing device.

30. Means for feeding superposed work sheets relatively one to another or simultaneously as desired comprising a platen having a plurality of sections, constantly applied means tending to cause said sections to turn together but permitting one to be turned independently of another, a feed roller coacting with each platen section, a locking member cooperative with one of said sections to hold it against turning movement, and automatically operating means for controlling the movement of said locking member into and out of engagement with the platen section with which it coacts, the construction and arrangement of the parts being such that the automatically operating means effects an engagement of said locking member with its platen section when the feed rollers are conditioned to aid in effecting a relative feed of the work sheets and effects a release of said locking member when the feed rollers

are conditioned to effect a simultaneous feed of all of the work sheets.

31. Means for handling superposed work sheets and an underlying tally strip comprising a divided platen over the sections of which the superposed work sheets overlap, constantly maintained frictional connecting means by which one section of the platen at all times tends to turn with another as a single unit to feed the superposed work sheets and tally strip together but enables one section to turn independently of another when the latter is held locked against turning movement and thus feed the superposed work sheets independently of the tally strip, and means for locking one section of the platen against turning movement while another section is given an independent turning movement, said locking means being shiftable at will and maintained indefinitely in a releasing position to enable both sections to turn together as a single unit by said frictional connecting means.

32. Means for feeding two work sheets simultaneously and for at will feeding one of said work sheets independently of another, said means including a platen having a plurality of sections, constantly applied means tending to cause said sections to turn together and enable the sheets to be fed together but permitting one section to be turned independently of another and enable one work sheet to be fed independently of another, and normally released automatically operating locking means for independently locking one section of the platen against turning movement only when the machine is conditioned to feed one work sheet independently of another, the said conditioning of the machine automatically controlling said locking means.

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