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APPARATUS FOR WRITING CHECKS

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7 Claims.

(CI. 197—6)

This invention relates to improvements in apparatus for indelibly filling in the blank spaces in bank checks, notes and other documents, and to so impress the written matter into the paper that it is impossible of alteration or erasure.

The principal object of the invention is the provision of apparatus of this kind which is simple, and whereby the written characters are produced on both the front and back and through the sheet.

Another object of the invention is the provision of apparatus for filling in blank spaces in a work piece by applying an ink or pigmenting medium to both sides thereof and impressing the pigment from both sides onto the surfaces of the work piece and into and through the body thereof.

Another object of the invention is the provision of a simple apparatus for feeding a work sheet between two inking devices, one of which may be the usual inking ribbon of a typewriting machine while the other is a ribbon or other inking device or carbon sheet arranged on the platen and between it and the work sheet.

Still another object of the invention is the provision of an apparatus comprising a typewriting machine arranged to feed a work sheet between two inking devices at the printing point and having means for moving the type bars to make two successive impressions at the same point thereon, one of which is made in the absence of one of said ribbons.

A further object of the invention is the provision of a device of this kind comprising a platen, an inking ribbon on the platen, a separate ribbon, means for feeding a work sheet between the separate ribbon and the platen, a ribbon vibrator for the separate ribbon, means for moving the type bars to make two successive impressions at the same point on the work sheet, means being provided for silencing the ribbon vibrator during one of said impressions so that the type bar strikes the work sheet directly.

A still further object of the invention is the provision of a device of this kind comprising a platen having an inking ribbon thereon, a ribbon separate from the platen, means for feeding a work sheet between said separate ribbon and the ribbon on the platen, means being provided on the type bars for cutting into and through the work sheet so that the ink from said ribbons penetrate into and through the body of the work sheet.

To these and other ends, the invention consists in the construction and arrangement of parts that will appear from the following description when read in conjunction with the accompanying drawings, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Fig. 1 is a transverse section showing so much of a typewriting machine as is necessary to illustrate one possible embodiment of the invention; Fig. 2 is a fragmentary inverted plan view, partly in section, of the carriage rack and escapement devices cooperating therewith; Fig. 3 is an enlarged fragmentary view of the rack and cooperating pawls; Fig. 4 is a view similar to Fig. 3 but showing parts in another position; Fig. 5 is a similar view showing the parts in still another position, the pawls being broken away and the rack omitted; Fig. 6 is a fragmentary rear elevation of the escapement pawls and operating devices associated therewith; Fig. 7 is a detail view of ribbon vibrating devices shown in Fig. 1, parts being removed for clearness; Fig. 8 is a front elevation of the platen, part being broken away to conserve space; Fig. 9 is a front elevation of the type somewhat enlarged; Fig. 10 is a side elevation of the same, also enlarged; Fig. 11 is an enlarged face view of a fragment of a work sheet, and Fig. 12 is a reverse view of the same.

This invention is in the nature of an improvement on the invention disclosed in an application filed by me on or about August 10, 1931, for Typewriting machines, Serial No. 556,095. In said application, the types are engaged successively with the same point on the work sheet, one engagement being made in the absence of the inking ribbon so that the type engages the work sheet directly to cut the surface thereof, the other impression being made through the ribbon to print on the work sheet and drive the ink therefrom into and through the body of the work sheet.

The present invention contemplates the use of a ribbon or other inking device on the platen behind the work sheet in addition to the usual ribbon, so that impressions are made therefrom on the back or reverse side of the work sheet. The type also engages the work sheet successively at the same point, at least once in the absence of the usual ribbon to cut the work sheet and drive it with greater impact against the ribbon on the platen, another impression being made.
through the usual ribbon to simultaneously impress the same printed characters from both ribbons on opposite sides of the sheet and impress the ink into the body of the work sheet. Special types are also employed which are provided with pin points adapted to cut through the work sheet and engage the ribbon in rear thereof and carry ink therefrom into the body of the sheet when the type is withdrawn. Sheen types serve to drive and carry ink from the usual ribbon into the body of the work sheet.

Referring particularly to the drawings, the invention is illustrated embodied in a power driven typewriter machine of well-known form comprising pivoted type bars 1, having types 2, and mounted in a type basket 3 for movement to and from operative engagement with a platen 4 or a work sheet arranged thereon. The usual type guide 5 is mounted on the type basket and arranged adjacent the printing point on the platen. The platen 4 is mounted on a carriage 6 movable in transverse guideways 7 on the frame for letter and word spacing.

Power driven means are provided for actuating the type bars to and from the printing point on the platen, comprising a power driven roller 8 with which a cam 9 cooperates to actuate a bell crank lever 10 on which the cam is pivoted. The bell crank lever 10 is pivoted on a common pivot rod 11 and has an arm arranged adjacent the power driven roller on which the cam is mounted. The cam 9 is normally free from the roller 8, but a spring-pressed arm 12 mounted on the bell crank 10 engages a lug or projection on the cam and tends to turn it into engagement with the roller or a stop lug 13 thereon into engagement with a stop lug 14 on a stop lever 15 pivoted on the bell crank 10. The stop lever 15 has an offset portion or lug which is engaged in the slotted end of an arm 16 on a key lever 17 pivoted on the common pivot rod 18. The key lever has a key 19 thereon whereby it may be manually operated against the tension of a spring 20 which resiliently retains it in normal elevated position. A link 21 connects an arm of the bell crank 10 with an arm of a bell crank lever 22 also pivoted on the common pivot rod 18, and operatively connected with an arm of the stop lever 15 by means of a link 23. A toggle lever 24 is pivoted on a fixed part and also pivotally connected with the type bar. A spring 26 connects the bell crank 22 with a fixed part and resiliently retains it and the parts connected therewith in normal position.

The cam 9 has two lobes so that the bell crank 10 is operated twice during each complete rotation thereof. When the key is depressed, it swings the stop lever 15 to release the cam, which turns into engagement with the power driven roller under the action of the spring-pressed arm 12. The cam turns through a complete rotation, each of its lobes engaging to swing the bell crank, and at the end of its complete rotation, the stop lug 13 again engages the stop 14 on the stop lever if the key be released, or if the key be held depressed, said lug engages a stop 27 on the stop lever which is moved from its path when the key is released and the stop 14 moved into its path. The bell crank 22 operates the bell crank 22 through the action of the spring 23 to swing the toggle lever 23 in a direction to break the toggle and swing the type bar into engagement with the platen. Since the cam 9 makes a complete rotation, during which each lobe operates the bell crank 22, the type bar will make two impressions on the work sheet when the key is depressed.

In order that the two impressions may be made in exactly the same place on the work sheet, means are provided for operating the escapement devices only once during each depression of a key or during the two operations of the bell bar, the carriage remaining at rest during such operations. The escapement devices comprise a rack 31 having teeth arranged two-letter space distance apart and secured to the carriage, which is resiliently moved for letter spacing by the usual spring drum 32. A pair of pawls 33 and 34 having elongated slots whereby they are pivotally and slidably mounted on a fixed part of the frame. Weak springs 35 connect the pawls with a fixed part and tend to slide them on their pivot over the teeth of the rack and swing them into engagement therewith. One of the pawls is longer than the other so that only one engages a tooth of the rack at one time, the tension of the carriage spring being operative to slide it into engagement with its pivot. Means are provided for disengaging the pawl from the rack to permit the other pawl to engage the rack and move said other pawl into engagement with its pivot at the end of a letter space movement. To this end, the other ends of the pawls are arranged in the path of an escapement lever 35 which is loosely mounted on an elongated stud 37 secured in a bracket 38 projecting from the frame of the machine. A spring 39 is coiled about the stud and resiliently retains the lever at one end of its bearing against the shoulder 37 and in a plane arranged at substantially right angles to the axis thereof. By this arrangement, the escapement lever swings in a plane at right angles to the axis of the stud or to an inclined position against the tension of its spring, as shown in Fig. 6 of the drawings. By reference to Fig. 5, in which position the lever 35 is shown, it will be noted that the free end of the pawl which engages the rack projects beyond the end of the other pawl and into the path of the escapement lever when said lever is in its normal position at right angles to the axis of the stud, and if the lever be actuated as above described for the pawl to release it from the rack to permit the carriage to move forwardly under the action of its spring. The escapement lever 35 is operated in the usual manner by the universal bar 41, best shown in Fig. 1. The universal bar is resiliently mounted on the type basket and projects forwardly therefrom into the paths of the type bars to be actuated thereby each time a type bar is actuated into engagement with the platen. A link 42 operatively connects the universal bar with the escapement lever so that the latter is actuated each time a type bar moves into engagement with the universal bar. Means are provided for moving the escapement lever to the inclined position shown in Figs. 6 and 4 during the first stroke of the type bar, in which position its path of movement is free of the path of the other. It is not actuated thereby to space the carriage and consequently the carriage is not moved for letter spacing and the second stroke of the type bar engages the work sheet in exactly the same place.

The position of the escapement lever is brought about by the following devices. The pawls are provided with shoulders 43 and 44 at or adjacent their free ends, which are arranged to engage an arm 45 formed by a U-shaped opening
in the free end of an interponent 46 pivoted on a fixed part. A coiled spring 47 connects the interponent with a fixed part and tends to resiliently swing the interponent in a direction to move the rack 45 toward the shoulders on the end of the pinned lever 44. The parts may be depressed to operate a type bar, the escapement lever moves off the arm 45 but does not engage the free end of the pawl which engages the rack. The spring 35, however, operates to swing the escapement lever on its pivot toward the ends of the pawls and over the pointed edge of the arm 44 so that when it returns under the action of the universal bar it enters the U-shaped opening in the interponent and occupies the position shown in Fig. 3, this being its normal free position against the shoulder 37. Upon the second actuation of the type bar, the escapement lever is again actuated and now moves into engagement with the free end of the pawl which engages the rack and releases it therefrom to permit the carriage to move for letter spacing. At the same time, the pawl is moved forwardly over the action of its spring 35, and the interponent moves with the pawl under the action of the spring 47 to the position shown in Fig. 5, in which the pawls and interponent are in their extreme positions and the escapement lever has returned to a position on the outer side of the arm 44. The escapement lever being then in its normal free position against the shoulder 37, when the rack on the carriage engages the other pawl, it moves the pawl and with it the interponent in the direction of the carriage movement and swings the escapement lever to a position between the end of the pawl which now engages the rack or to the position shown in Figs. 4 and 6. It will be noted that the pawls 33 and 34 and the interponent 45 are relatively light weight while the carriage is relatively heavy and offers considerable resistance to movement under the action of the spring drum due to inertia. As a result, when the parts are in the Fig. 3 position and the lever 35 is operated, the spring 35 operates to move the pawl 34, and the spring 41 swings the interponent to the Fig. 5 position before the spring drum overcomes the inertia of the carriage to move it for letter spacing.

In filling in the blank spaces in checks and similar papers, better results are to be had if the type strikes the work sheet once in the absence of the ribbon so that it may freely cut through, perforate or shred the work sheet, and other impression being made through the ribbon to apply the pigment to the cut, perforated or shredded portion of a character which penetrates the body of the work sheet at or adjacent such portion and prints the character on the face of the sheet. To this end, means are provided for rendering the ribbon vibrator ineffective upon one stroke of the type bar and operating it to interpose the ribbon between the printing point on the work sheet and the type bar during another stroke of the type bar. The ribbon vibrator 51 is slidable mounted on the type basket or the type guide thereon to move to a point above the type guide to project the ribbon carried thereby over the printing point on the platen or a work sheet thereon. The ribbon vibrator has a downwardly projecting arm 52 pivoted at its lower end to the free end of a lever 53 pivoted at 54 on a fixed part of the frame. The lever 53 is operatively connected with a stud 55 by means of the link 56. The stud 55 is arranged in the slot of a slotted actuator 57 pivotally mounted on a stud 50 and having an open-branchcd slot 58. The arm 53 is limited in its movement by a stop arm or post 59 projecting upwardly from a fixed part. When the parts are adjusted for printing from the lower band of a bichrome ribbon, as shown in Fig. 1, the stud 55 occupies its outermost position in the slot, which is farthest from the axis of the actuator, so that a given movement of the actuator imparts the greatest throw to the vibrator at this point to move the ribbon through the greatest path to move its lower band to the printing point. Manual means are provided for adjusting the stud in its slot for printing from the upper band of the ribbon or for altering the vibrator, as for stencilling. The stud 55 is connected with an arm 61 fixed on a rock shaft 62 by means of a link 63. An arm 64 is also fixed to the rock shaft 62 and has its free end pivotally connected with the rear end of a push rod 65 slidably mounted in the frame and extending forwardly to a position adjacent the keyboard and has a button or key 66 mounted on its forward end whereby it may be manually operated. A spring-pressed detent 67 is mounted on the frame and resiliently engages one or another of a plurality of notches in the push rod for retaining it in adjusted position. When the push rod is moved inwardly from the position shown in Fig. 1, the rock shaft 62 is turned in a direction to move the stud inwardly in its slot to a position in alignment with its lower branch 68, at which time the actuator is ineffective to move the vibrator, and the types strike the work sheet directly, as in stencilling. Further inward movement of the push rod serves to swing the stud 55 into the upper branch 69 of the slot nearer the axis of the actuator, so that when the actuator is operated the vibrator is moved to a less extent to move the upper band of the ribbon to the printing point on the platen, which band may be of a different color from the lower band. A universal bar 71 is arranged in the paths of the bell crank levers 22 and pivoted on a fixed part so that it swings each time a bell crank is actuated to operate a type bar. The universal bar has a rearwardly projecting arm 72 which is operatively connected with devices for swinging the actuator 57 on alternate strokes of the universal bar. A spring 73 connects an arm 70 on the universal bar with a fixed part and resiliently presses the universal bar into engagement with the bell crank lever 22. The arm 72 is operatively connected with an arm 74 pivotally mounted on the stud 60 concentric with the actuator by means of a link 76. Mounted on the same stud or pivot rod 60 is a cam or star wheel 77 having a ratchet wheel 78 secured to or formed integral therewith. A spring-pressed detent 79 engages the ratchet wheel and retains the star wheel against free rotation on its pivot. A spring-pressed pawl 81 is mounted on the arm 74 and arranged to engage the teeth of the ratchet wheel. When a bell crank lever 22 is actuated, it operates to swing the arm 74 in a clockwise direction, as seen in the drawings, and the pawl 81 turns the ratchet wheel through a distance of one tooth upon the return stroke, the pawl moves idly over the tooth of the ratchet. A bell crank lever 82 is pivoted on a fixed part and has one
arm connected with the actuator by means of a link 83. The other arm of the bell crank has a 
25 wiper or follower 84 on its free end which is ar-
30 ranged in the periphery of the star wheel 
35 77. A spring 85 connects the bell crank 82 with 
40 a fixed part and resiliently engages its wiper 
45 with the star wheel. A fixed stop 86 arranged in 
50 the path of the bell crank limits its movement under 
55 the action of the spring. When the universal bar 
60 is operated to turn the star wheel, the wiper 
65 moves over the arms of the star wheel and swings 
70 the bell crank, which in turn swings the actuator 
75 to operate the ribbon vibrator. From an inspec-
80 tion of Fig. 1 of the drawings, it will be noted 
85 that the arrangement of the teeth of the ratchet 
90 wheel is such that the arms on the star wheel 
95 are two-teeth distance apart, so that upon one 
100 actuation of the universal bar the star wheel 
105 moves a depression between two arms past the 
110 wiper and any movement imparted to the latter 
115 is ineffective to operate the actuator and the 
120 ribbon vibrator; upon the next tooth movement 
125 of the ratchet wheel, however, an arm of the star 
130 wheel moves past the wiper and it is actuated 
135 to swing the actuator to operate the ribbon vi-
140 brator.

The apparatus thus described is operative to 
145 make two successive impressions from the same 
150 type on the work sheet and in exactly the same 
155 place on the work sheet, so that they are super-
160 imposed upon each other. During the first of 
165 these impressions, the ribbon is absent from the 
170 printed point and the type strikes the work sheet 
175 directly and cuts or perforates it; during the sec-
180 ond of these impressions the ribbon vibrator is 
185 operated to move the ribbon to the printing point 
190 to print on the face of the work sheet and at the 
195 same time penetrate the ink from the ribbon into 
200 the previously perforated parts of the work 
205 sheet. In the present embodiment, the types 2 
210 are shown as perforating types comprising spaced 
215 points 91 which cut entirely through or perforate 
220 the work sheet when engaging the latter in the 
225 space of the ribbon, and which cut through the 
230 ribbon when engaging the work sheet there-
235 through and carry the ink or pigment from the 
240 ribbon to the work sheet and into the previously 
245 cut portions thereof. While in the embodiment 
250 shown and described the first impression of the 
255 type bar is made in the absence of the ribbon, 
260 good results are possible if the first impression 
265 is made through the ribbon, and the ribbon vi-
270 brator may be operated on either stroke of the 
275 type bar without departing from the spirit of 
280 the invention.

In order to make alteration of the printed 
285 check or other work sheet even more difficult, 
290 the present invention contemplates the simultaneous 
295 printing of the reverse side of the work sheet. 
300 To this end, a ribbon is arranged to the rear 
305 of the work sheet and between it and the platen 
310 so that the type impressions are printed on the re-
315 verse side of the work sheet simultaneously with 
320 the printing on the front side thereof, as shown 
325 in Fig. 12 of the drawings. In the illustrated em-
330 bodiment, a ribbon 87, see Figs. 1 and 8, is mount-
335 ed directly on the platen and secured thereto so 
340 that the work sheet is arranged thereon with its 
345 reverse side directly in contact therewith. By 
350 this arrangement, the type impressions are pro-
355 duced simultaneously on both front and reverse 
360 sides of the work sheet and the ink or pigment 
365 from the ribbon on the platen also enters those 
370 perforations of the work sheet which the type cuts 
375 therethrough. Moreover, the pointed types pass 
through the work sheet and into the ribbon on 
380 the platen, and when withdrawn carry ink from 
385 said ribbon onto the reverse side of the work 
390 sheet and into the perforations produced thereby. 

Although only one type bar and key lever for 
395 operating the same are shown in the drawings, 
400 it will be understood that the usual or any de-
405 sired number of type bars and key levers may 
410 be employed without departing from the spirit 
415 of the invention.

In writing in the amounts in the blank spaces 
420 of a number of checks, it is frequently desirable 
425 to keep a record of the total of the amounts writ-
430 ten, and to this end a totalizer of well known 
435 form may be arranged to be operated once dur-
440 ing a depression of a key lever. Such a device 
445 will be specifically described in an application 
450 to be filed.

Although only one embodiment of the inven-
455 tion is shown and described herein, it will be 
460 understood that this application is intended to 
465 cover such changes or modifications as come 
470 within the spirit of the invention or scope of 
475 the following claims.

I claim:

1. A machine for writing checks or the like by
ink-printing on both sides of the paper and 
impregnating the paper with the ink from both 
sides thereof comprising a frame, a platen there-
on, an inking ribbon secured to the platen to 
move therewith and arranged to engage the re-
verse side of a work sheet thereon, a type bar 
removable to and from printing engagement with 
the platen or the work sheet thereon, a second 
ingking ribbon positioned between the type bar 
and the work sheet, and perforating types on 
the type bar for perforating the work sheet and 
penetrating the ribbon on the platen and opera-
tive to carry ink from said ribbons to the work 
sheet when withdrawn therefrom.

2. A machine for writing checks or the like by 
ingk-printing on both sides of the paper and 
impregnating the paper with the ink from both 
sides thereof comprising a frame, a platen there-
on, an inking ribbon secured to the platen to 
move therewith and arranged to engage the re-
verse side of a work sheet thereon, a type bar 
movable to and from printing engagement with 
the platen or the work sheet thereon, a second 
ingking ribbon, a ribbon vibrator for mov-
ing the second inking ribbon to ink from the 
printing point on the platen, and perforating 
types on the type bar for perforating the work 
sheet and penetrating the ribbon on the platen 
and operative to carry ink from the ribbons to 
the work sheet and into the perforations formed 
therein.

3. The combination with a frame, a carriage 
movable thereon for letter spacing, a platen on 
the carriage, an inking ribbon positioned between 
the platen and the work sheet, a type bar, means 
for operating the type bar to make at least two 
successive engagements with the platen, a second 
ingking ribbon, a ribbon vibrator for moving the 
last mentioned ribbon to and from the printing 
point on the platen, means for effectively operat-
ing the ribbon vibrator on alternate strokes of the 
type bar, escapement devices for controlling the 
movement of the carriage for letter spacing, 
means for operating the escapement devices on 
alternate strokes of the type bar so that the type 
bar engages the same portion of the work sheet 
at least twice in succession, and perforating types 
on the type bar for perforating the work sheet on 
one operation thereof and printing the work sheet
and transferring ink from the ribbons to the perforations formed therein on another operation thereof.

4. The combination with a frame, of a carriage thereon, a platen on the carriage, an inking ribbon positioned between the platen and the work sheet, a type bar movable into printing engagement with the platen, perforating types on the type bar, a second inking ribbon, a ribbon vibrator for moving the last mentioned ribbon to and from the printing point on the platen, means operable to move the ribbon vibrator to the printing point on the platen on alternate strokes of the type bar, escapement devices for the carriage, and means for actuating the escapement devices on alternate strokes of the type bar.

5. The combination with a frame, of a carriage thereon, a platen on the carriage, an inking ribbon positioned between the platen and the work sheet, a type bar, perforating types on the type bar, means for moving the type bar into printing engagement with the platen, a second inking ribbon, a ribbon vibrator for moving the last mentioned ribbon to and from the printing point on the platen, a universal bar, means connecting said universal bar with the ribbon vibrator effective to move the ribbon vibrator to the printing point on the platen on alternate operations of the universal bar, escapement devices for the carriage, and means for actuating the escapement devices on alternate strokes of the type bar.

6. The combination with a frame, of a carriage movable thereon for letter spacing, a platen on the carriage, an inking ribbon surrounding and secured to the platen, a type bar movable to and from printing engagement with the platen, perforating types on said type bar, escapement devices for controlling the movement of the carriage for letter spacing, a universal bar operatively connected with said escapement devices, and means for rendering said universal bar ineffective to operate the escapement devices on alternate strokes thereof.

7. The combination with a frame, of a carriage thereon, a platen on the carriage, an inking ribbon surrounding and secured to the platen, a type bar, perforating types on said type bar, means for moving the type bar successively into engagement with the platen, escapement devices for controlling the movement of the carriage for letter spacing, and means for rendering said escapement devices ineffective on alternate strokes of the type bar.

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