B. P. HAYES AND F. D. LAUGHLIN.

PRINTER TABLE FOR REGISTERS AND THE LIKE.

APPLICATION FILED APR. 14, 1920.

1,362,791. Patented Dec. 21, 1920.

3 SHEETS—SHEET 1.

Fig. I.

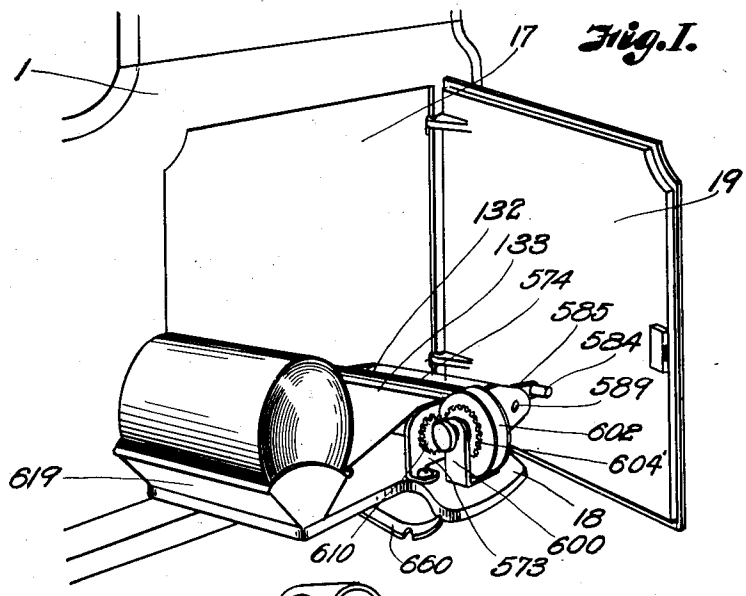
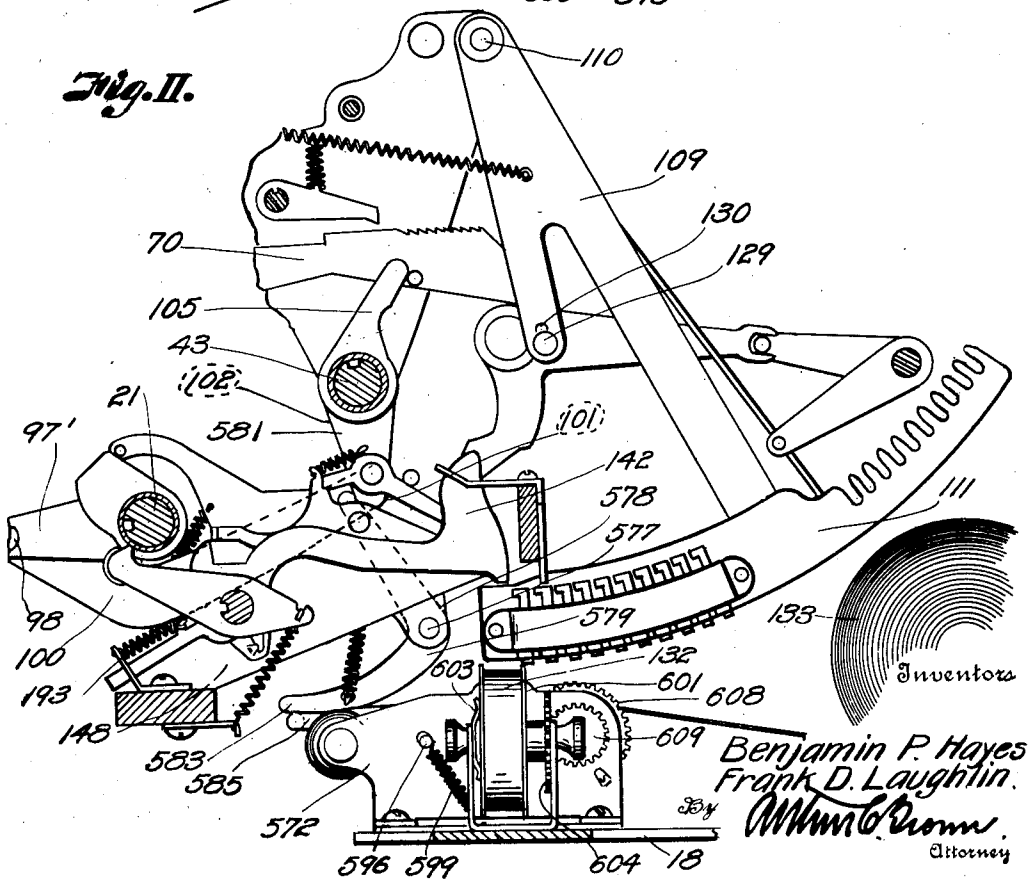


Fig. II.



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3 SHEETS—SHEET 2.

Fig. III.

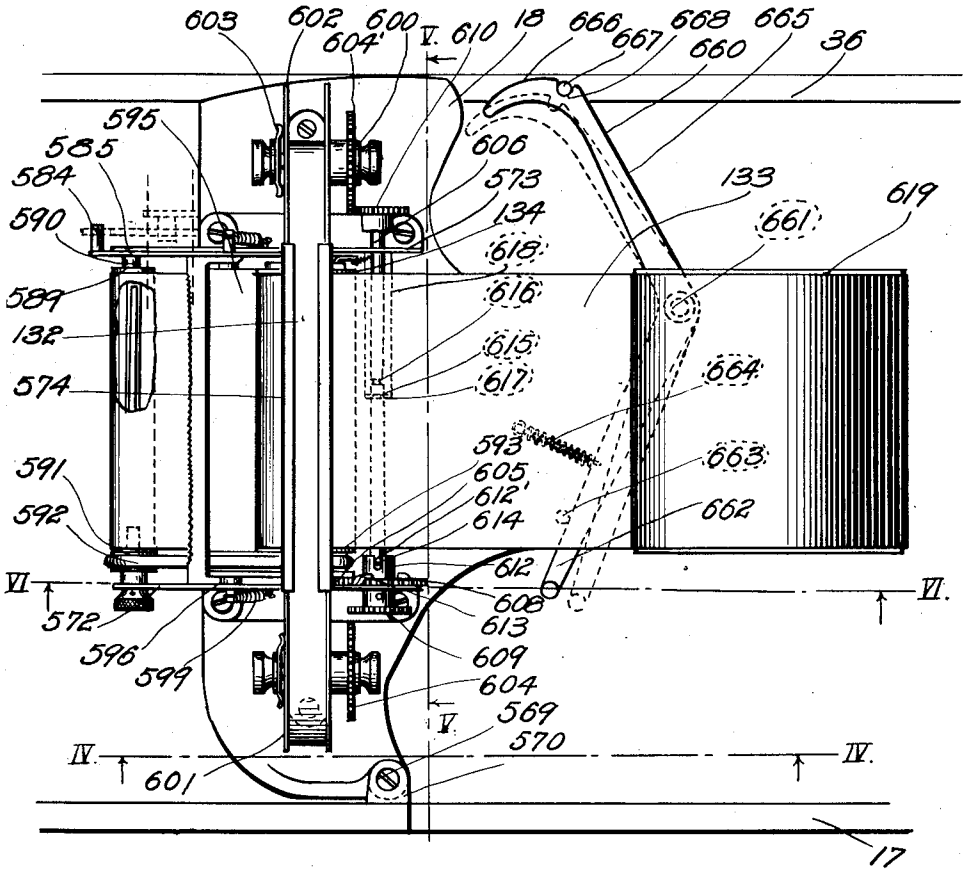
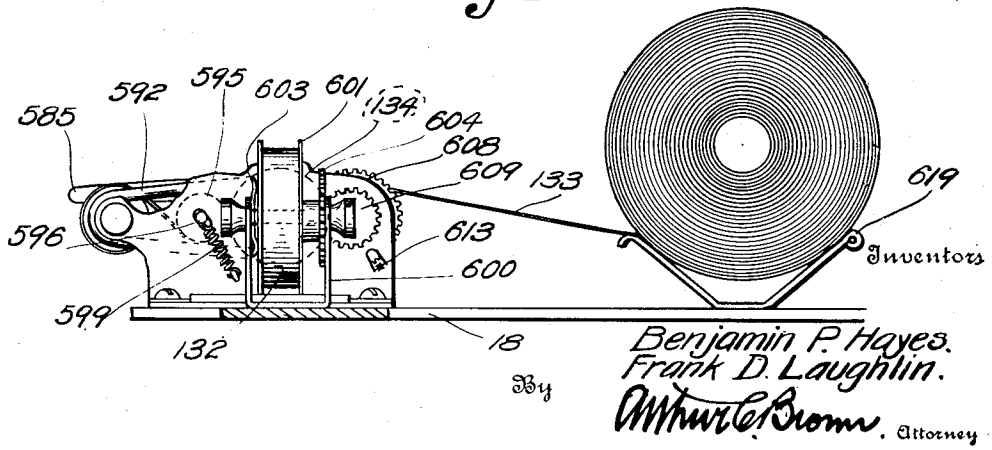


Fig. IV.



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3 SHEETS—SHEET 3.

Fig. V.

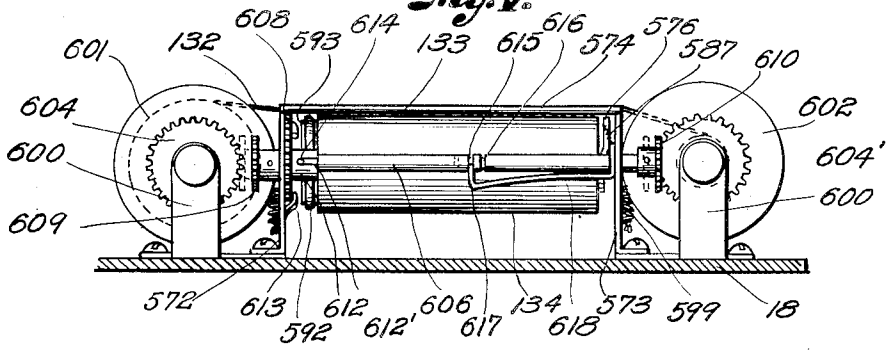


Fig. VI.

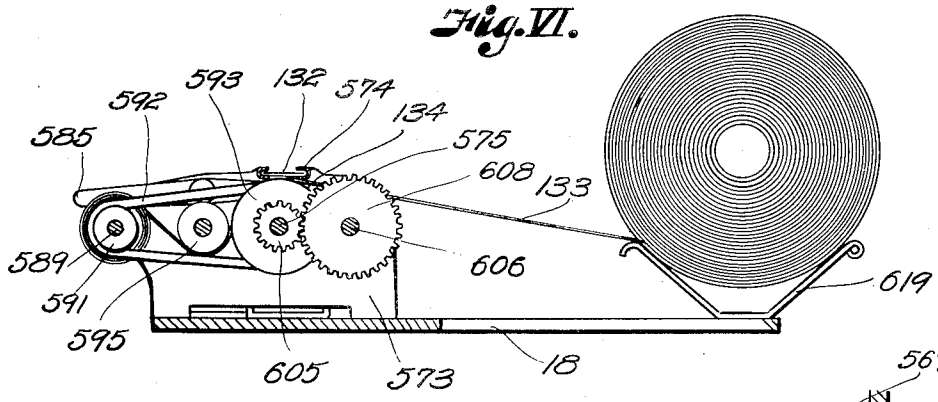


Fig. VIII.

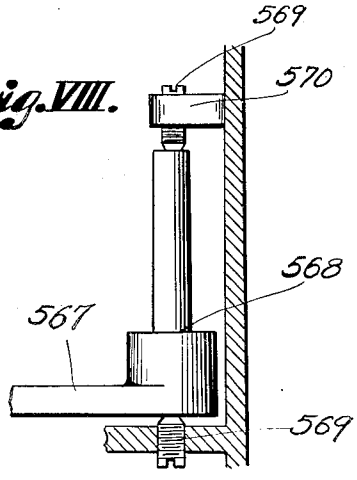
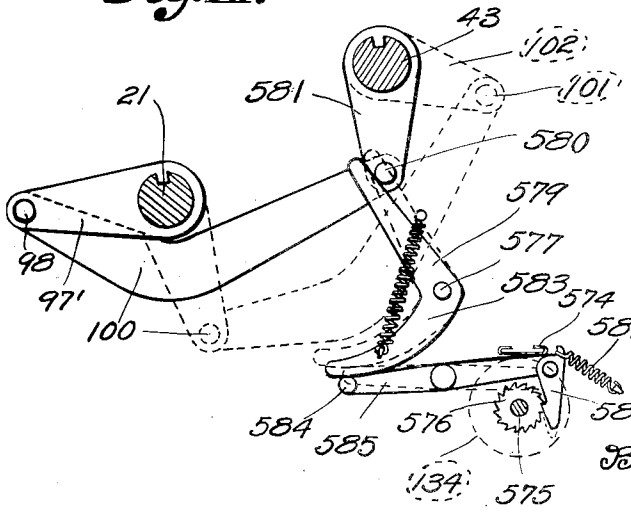


Fig. VII.



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UNITED STATES PATENT OFFICE.

BENJAMIN P. HAYES AND FRANK D. LAUGHLIN, OF KANSAS CITY, MISSOURI, ASSIGNORS TO AUTOMATIC BOOKKEEPING REGISTER COMPANY, OF KANSAS CITY, MISSOURI, A CORPORATION OF DELAWARE.

PRINTER-TABLE FOR REGISTERS AND THE LIKE.

1,362,791. Specification of Letters Patent. Patented Dec. 21, 1920.

Original application filed August 7, 1916, Serial No. 113,656. Divided and this application filed April 14, 1920. Serial No. 373,811.

To all whom it may concern:

Be it known that we, BENJAMIN P. HAYES and FRANK D. LAUGHLIN, citizens of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Printer-Tables for Registers and the like; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Our invention relates to printer tables for register or like machines, and particularly for machines of the type shown in our application for patent for "accounting machine," filed August 7th, 1916, Serial No. 113,656, of which this application is a division.

In machines of the character stated, comprising register and printing mechanisms, type for printing the entries made in the machine must be carried in substantial proximity to the operating parts, in order to form a compact machine, and consequently the paper strip and the inked ribbon, with their operating parts, forming the printer unit, must be located so close to the main portions of the machine that it is inconvenient to remove the strip after the record is made, or read the strip prior to its removal.

In machines of this character the printer unit is also usually assembled with the other operating mechanism within a closed case, in order to prevent access to the record and operating parts by unauthorized persons.

It is the object of the present invention to provide a separate printer unit which may be assembled in proper relation to the type and operating mechanisms, but capable of easy removal to a position where the record can be conveniently read and a used portion of the strip removed, the invention particularly contemplating the housing of the printer unit within the main case and its swinging travel through a door opening to expose the record strip for observation and removal of the used portion of the strip.

In accomplishing the above and other objects of the invention, we have provided improved details of structure, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Figure I is a perspective view of a portion of the case of a register or like machine, particularly illustrating the relation of the printer unit to the main operating mechanism of the register, and illustrating the printer unit in exposed position.

Fig. II is a vertical section of the printer unit and parts of the type mechanism illustrating the relation of the unit to the type carrying and striking parts.

Fig. III is an enlarged plan view of the unit, part of the rewound paper strip being broken away for better illustration.

Fig. IV is a vertical, longitudinal section on the line IV—IV, Fig. III.

Fig. V is a vertical, cross section on the line V—V, Fig. III.

Fig. VI is a vertical, longitudinal section on the line VI—VI, Fig. III.

Fig. VII is a detail elevation of the mechanism for advancing the paper strip from the register crank shaft.

Fig. VIII is a detail view of the table mounting.

Referring more in detail to the drawings, by numerals corresponding to those used for like parts in the parent case:

1 designates a case within which the register is inclosed, comprising an opening 17 through which the printer unit may be extended when the strip is to be removed or read. The door 19 normally closes the opening 17 and is locked to prevent access to the records and operating parts.

The register mechanism, with which the printer is adapted for use, comprises a main crank shaft 21. Keyed on said shaft is an arm 97', having a pin 98 at its free end. Pivotally mounted on said pin 98 is one end of an elbow lever 100, the other end of which is pivotally mounted on a pin 101 that connects the free end of the arm 102 keyed on the control shaft 43. Also keyed on the control shaft are levers 105, which control the selecting bars 70, whereby positioning of the register and type carriers is effected.

I have also illustrated the type sectors 111, which are carried on arms 109 pivoted on studs 110 carried by the machine frame and having pin and slot connection 129—130

with the selecting bars 70, whereby the type sectors are moved to and from functional position upon movement of the bars.

Hammers 142, settable from the main crank shaft 21 and throwable by the spring 193, serve to strike the type in the sectors to effect printing at a proper period in the operation of the main machine.

We have limited description of the parts in the main machine to avoid prolixity in the present description, as reference may be made to the parent case for full description of the construction and operation of such parts. Attention is, however, called to the fact that there is no fixed connection between the main operating and printing parts that would interfere with the free movement of the table as presently described.

Mounted on and extending inwardly from the side wall of the case 1, adjacent one edge of the door opening, is a boss 570 and mounted on said boss and on the bottom of the case are facing pins 569, having point bearings engaging built up bosses 568 on an arm 567 of the table 18 forming the supporting element of the printer unit.

Mounted in the front end of the table are spaced frame plates 572—573 and rotatably mounted between said plates is a platen 134 over which the inked ribbon 132 is run, the said plate carrying a guide 574 for properly locating the ribbon over the platen. The platen is carried on a shaft 575 that extends beyond the plate 572, and fixed on the shaft is a ratchet wheel 576.

Pivotally mounted on a bearing 577 on an ear 578 that extends downwardly from the frame plate 148, which carries the printing hammer mechanism is a bell crank lever 579, the upper arm of which is adapted for engagement with a stud 580 on a crank arm 581 that is fixed to the shaft 43. The lower arm 583 of said bell crank lever is adapted for engaging a boss 584 on the forward end of a lever 585 which is pivotally mounted at about its center on the ribbon frame plate 573. The rear arm of the lever 585 carries a pawl 586 which is adapted for engagement with the ratchet 576 when the pawl is lifted, the said pawl having connection at its upper end with a spring 587 which, in turn, is connected with the plate 573 so that the pawl is yieldingly urged to its locking engagement with the ratchet. With this mechanism, with each movement of the main crank shaft the platen is advanced to present constantly changing positions to the type.

Rotatably mounted in the front ends of the frame plates 572—573 is a shaft 589 carrying a roller 590 and fixed to the roller is a grooved wheel 591 for carrying the belt 592 which runs over the wheel 591 and over a wheel 593 which is fixed to the platen, so that when the platen is advanced the roller 590 is also advanced. The belt 592 is of spring construction in order to afford variance in the speed at which the roller 590 is revolved, for the reason that the roller takes up the printed web during the operation of the machine, and as the diameter of the web roll varies, while that of the platen remains fixed, there must be slippage between the parts in order to compensate for the variance in speed at which the take-up roller is advanced as the diameter of the roll increases.

Interposed between the roller 590 and the platen is a tension roller 595 beneath which the web 133 is passed during its travel to its take-up roller after running over the platen, the said tension roller being mounted on stub shafts 596 in slots 592 in the frame plates 572—573, the said shafts having springs 599 connected therewith and with the frame plates in order to constantly urge the roller downwardly and maintain a tension on the traveling web.

Located at opposite ends of the platen are yoke brackets 600 and rotatably mounted in said brackets are ribbon drums 601—602, having suitable tensioning devices 603 and provided with gear wheels 604—604′.

Extending transversely across the frame beneath the web strip, and rotatably mounted in the frame plates 572—573 is a shaft 606. The shaft 606 carries a gear wheel 608 which meshes with the gear wheel 605 that is fixed to the platen so that the shaft is rotated with the platen. The said shaft 606 is provided with pinions 609—610 which are adapted for meshing with the gear wheels 604—604′ on the respective ribbon drums. The gear wheel 608 is slidably keyed on the shaft 606 and held in mesh with the gear wheel on the platen by a tooth 613 on the frame plate 572, and the said shaft 606 is rotatably mounted in the wheel 608 and its hub 612. The hub 612 is provided with a longitudinal slot 612′ for receiving a pin 614 on the shaft 606, so that the pin and slot connection will induce rotation of the shaft though permitting longitudinal movement of the shaft in the gear wheel. The shaft 606 is of such length that when one of the pinions on the shaft is in mesh with its respective toothed wheels on a ribbon drum, the other pinion will be out of mesh with its toothed wheel so that the ribbon drums are driven independently. The shaft may, however, slide in its bearings to reverse the engagement of the pinions and the direction of travel of the ribbon drum, and as the shaft is driven for either engagement from the same point in the same direction, and as both of the pinions engage the toothed wheel on the ribbon drums at the inside of the drum axis, the drums are driven in opposite

directions. The shaft 606 has spaced peripheral grooves 615—616 adapted for receiving a latch yoke 617 on a spring arm 618 that is attached to the frame plate 573 so that when the shaft is in set position the yoke will lie in the shaft groove and hold the shaft in position.

The shift of the ribbon driving mechanism is effected manually although we do not wish to be limited to the particular shift or ribbon mechanism herein disclosed.

The table 18 is preferably provided with a transverse trough 619 for seating a roll of web strip and the roll is preferably arranged so that it will feed from the bottom and thereby provide friction that is proportionate to the weight of the roll and is sufficient to prevent slack in the record web during its feed to the printing mechanism.

To properly position the table 18 and latch it against accidental displacement, we provide a latch 660, which is preferably pivoted beneath the table on a stud 661 and has a handle arm 662 yieldingly urged toward a stop pin 663 on the bottom of the table by a spring 664. The other lever arm, 665, has a cam end 666 adapted to engage a stud 667 on an inner frame plate 36, to displace the lever and automatically locate the notched portion 668 in position to seat the stud 667 when the table is returned to the inside of the case, the notched portion of the lever being so located and shaped that it will hold the table locked, but permit manual operation of the lever to release the table.

Assuming the parts to be constructed and assembled as described, with the printer table located within the case of the machine, the operation is as follows:

Upon each operation of the crank shaft 21 the secondary shaft 43 is rocked to release the bell crank lever 579 and permit the ratchet pawl to shift downwardly and engage a tooth of the ratchet wheel of the printer platen. A type sector is positioned over the platen to locate the selected type in printing position and the hammers are struck against the type to effect the impression through the inked ribbon onto the paper strip. The return of the crank shaft to original position effects an engagement of the stud 580 with the operating arm of the bell crank lever 579 which pushes the lever downwardly onto the rocking lever 585 and lifts the ratchet pawl, advancing the platen and, because of the belt connection between the platen and the paper strip take-up roll. advancing the latter to move the strip forwardly and thereby present a fresh surface for the next impression, the advance of the paper strip being the same in each instance irrespective of the diameter of the take-up roll because of the set connection in the connecting belt.

This operation may be continued throughout the day, or for any period, but when the strip is to be taken off or observed for any purpose, the operator unlocks the door 19 to expose the interior of the case and releases the table by operation of the latch 660 and swings the table out through the door opening so that the printing on the strip may be observed or torn off and removed. The table may then be swung back into the case and locked automatically, as previously described.

Whenever the strip is advanced, the inked ribbon is also advanced to present a fresh surface to the type through the gearing 604—609, the direction of travel of the gearing being determined by the position of the yoke latch 617, which may be shifted manually when travel of the ribbon is to be reversed.

What we do claim as our invention, and desire to secure by Letters-Patent, is—

1. In combination with register mechanism including character indicia, a permanently mounted printer unit movable as a unit with respect to the register mechanism and comprising strip forwarding mechanism, operable by the register mechanism when the unit is in functional position.

2. In combination with register mechanism including character indicia having a definite impression line, a printer unit movable as a unit with respect to the register mechanism and having a platen registering with the impression line of the character indicia when the unit is in functional position, a strip advancing mechanism in said unit, and means operable by the register mechanism for actuating said strip advancing mechanism.

3. In combination with register mechanism including character indicia adapted for movement to a definite impression line, a printer unit movable as a unit with respect to the register mechanism and having a platen registering with the impression line of the character indicia when the unit is in functional position, strip advancing mechanism in said unit comprising an operating member, and a push member operable from the register mechanism engageable with the operating member in the printer unit to advance the strip.

4. In combination with register mechanism including character indicia adapted for movement to a definite impression line, a printer unit movable as a unit with respect to the register mechanism and having a platen registering with the impression line of the character indicia when the unit is in functional position, strip advancing mechanism in said unit comprising a pawl member, and a push member operable from the register mechanism independently of the unit and adapted for abutting a part of the

strip advancing mechanism when the register mechanism is operated, to advance the paper strip.

5. In combination with register mechanism including character indicia movable to a definite impression line, a printer unit comprising a pivotally mounted table, a platen on the table, registering with said impression line when the unit is in functional position, means on the table for advancing the strip, and means in the registering mechanism for actuating the strip advancing means.

6. In combination with register mechanism including character indicia, a printer unit comprising a platen, movable to and from position for receiving impressions from the character indicia, means for advancing a paper strip over the platen, and means in the register mechanism for actuating the character indicia and the platen advancing means in successive steps.

7. In combination with register mechanism including character indicia having a definite impression line, a printer unit movable independently of the register mechanism and comprising a platen adapted for registration with the impression line, a reciprocatory member for advancing the platen and means in the register mechanism adapted for abutment against the reciprocatory member to effect advance of the platen upon operation of the register mechanism.

8. In combination with register mechanism including character indicia having a definite impression line, a printer unit comprising a table movable independently of the register mechanism, a platen rotatably mounted on the table and adapted for registration with the impression line, means on the table for advancing a paper strip, a shifting member in actuating relation to the platen and strip advancing means, main operating mechanism in the register mechanism, means operable by the main operating mechanism for actuating the character indicia, and other means operable by the main actuating mechanism for abutment against the shifting member to rotate the platen and advance the paper strip.

9. In combination with register mechanism comprising character indicia, a main operating mechanism and a case inclosing said mechanism and having an opening therein, a table normally located within the case and movable through said opening, a platen on said table adapted for registration with the impression line when the unit is in functional position, paper strip supply and take-up members on the table, means on the table for actuating the take-up members and platen, and means operable from the register mechanism for operating said last named means.

10. In combination with register mechanism comprising character indicia, a main operating mechanism and a case inclosing said mechanism and having an opening therein, a table normally located within the case and movable through said opening, a platen on said table adapted for registration with the impression line when the unit is in functional position, paper strip supply and take-up members on the table, means in the register mechanism for actuating the take-up member and platen, and means operable from the register mechanism for operating said last named means.

11. In combination with register mechanism comprising an operating member and means for supplying indicia to a record strip, a printer unit comprising means for advancing the strip, and means in abutting relation to the strip advancing means and operable by the operating means in the register mechanism to advance the strip upon operation of the register mechanism.

12. In combination with register mechanism comprising operating means and means for supplying indicia to a record strip, a printer unit comprising strip advancing means, and a pivoted lever having an arm in abutting relation to the strip advancing means and a second arm operable from the register operating mechanism.

13. In combination with register operating means comprising operating means and means for supplying indicia to a record strip, a printer unit comprising strip advancing means, and a pivoted lever having an arm in abutting relation to the strip advancing means and a second arm operable from the operating means in the register mechanism, means for yieldingly urging said lever away from operating position and toward the operating means in the register mechanism.

14. In combination with register mechanism comprising operating means, including a rocking arm having an abutment stud, a printer unit comprising strip advancing means, a pivoted lever having an arm in abutting relation to the strip advancing means and a second arm located in the path of said stud and a spring yieldingly urging the lever away from the strip advancing means.

15. In combination with register mechanism including operating means and means for supplying indicia to a record strip, a printer unit movable as a unit toward and from functional position, strip advancing means including a ratchet, a lever pivoted in said unit, a pawl on said lever engageable with the ratchet, a lever fixedly pivoted intermediate the register operating means and the strip advancing lever and engageable with said lever, when the printer unit is in functional position and operable by the

register operating means upon operation of the register mechanism.

16. In a printer unit, a rotatable platen having a ratchet wheel, take-up roll having driving relation with the ratchet wheel, means for guiding a paper strip over the platen to the take-up roll, ribbon drums at the ends of the platen, selective driving connection between the drums and platen and means for advancing the platen.

17. In a printer unit, a rotatable platen and means for operating the same, a take-up roll, means for conducting a paper strip over the platen onto the take-up roll, driving connection between the platen and take-up roll, a ribbon drum at each end of the platen, drum actuating mechanism operatively connected with the platen and comprising means for selectively engaging the drum, and a latch for retaining said means in operative position.

18. In a printer unit, a rotatable platen and means for actuating the same, a take-up roll, means for conducting a paper strip over the platen onto the take-up roll, a ribbon drum at each end of the platen, a longitudinally movable shaft having means at its respective ends for operative connection with the respective ribbon drums, means keyed on said shaft for operating same from the platen, and a latch for retaining the shaft in adjusted position.

19. In a printer unit, a rotatable platen and means for actuating the same, a take-up roll, means for conducting a paper strip over the take-up roll, a ribbon drum at each end of the platen having a driving gear wheel, a longitudinally movable shaft having a pinion at each end engageable with the corresponding drum wheel, a gear wheel keyed on said shaft and having operative connection with the platen, and a latch for retaining the shaft in adjusted position.

20. A printer unit comprising a table, a trough on said table for supporting a roll of paper strip, a platen rotatably mounted on the table, a take-up roll on said table, driving connection between the platen and take-up roll, a ribbon drum rotatably mounted at each end of the platen and a gear wheel on each of said drums, a longitudinally movable shaft having spaced circumferential grooves therein, a pinion at each end of the shaft adapted for operative engagement with the gear wheel on a corresponding ribbon drum, a gear wheel keyed on the shaft having operative connection with the platen, and a spring latch having a yoke seatable in circumferential grooves in said shaft, for the purpose set forth.

In testimony whereof we affix our signatures.

BENJAMIN P. HAYES.
FRANK D. LAUGHLIN.