

C. E. FOSTER.
 DUPLICATING DEVICE FOR TYPE WRITERS.
 APPLICATION FILED JAN. 26, 1907.

964,856.

Patented July 19, 1910.

3 SHEETS—SHEET 1.

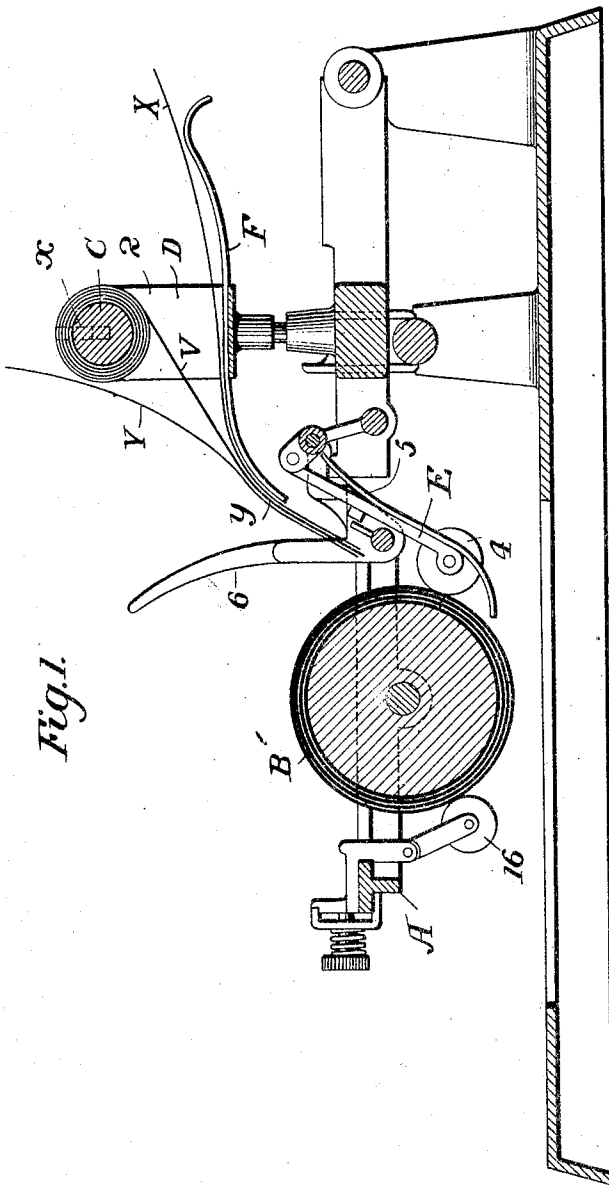


Fig. 1.

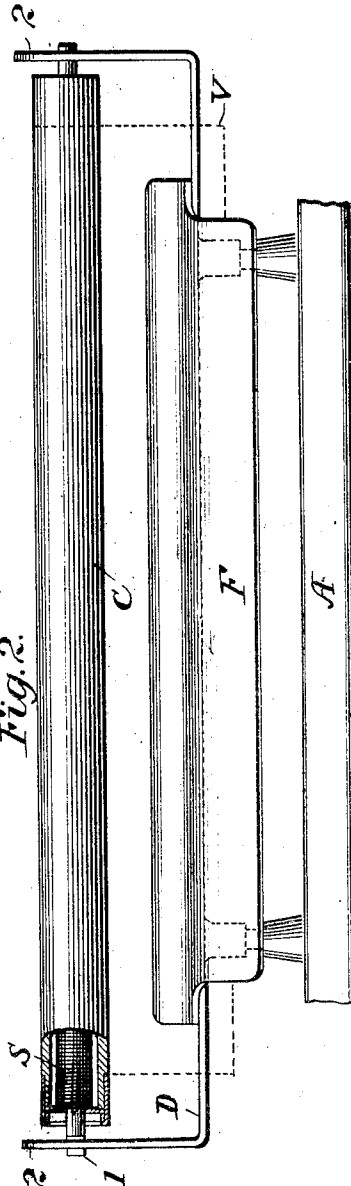


Fig. 2.

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Fig. 5.

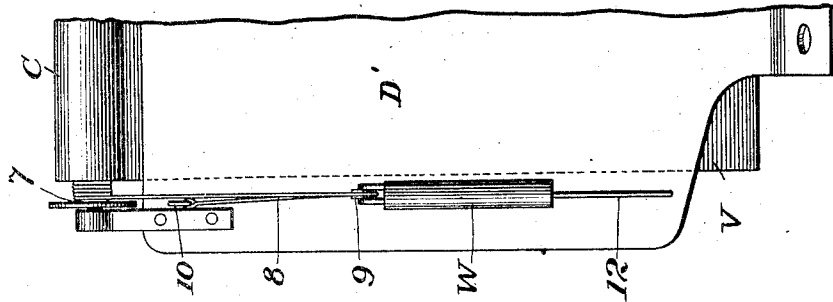


Fig. 4.

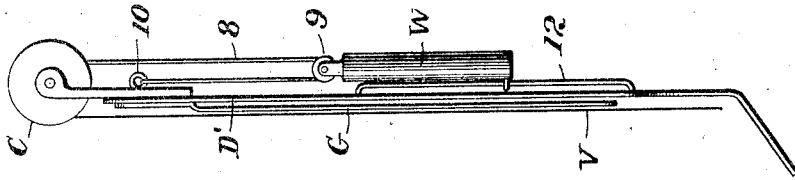
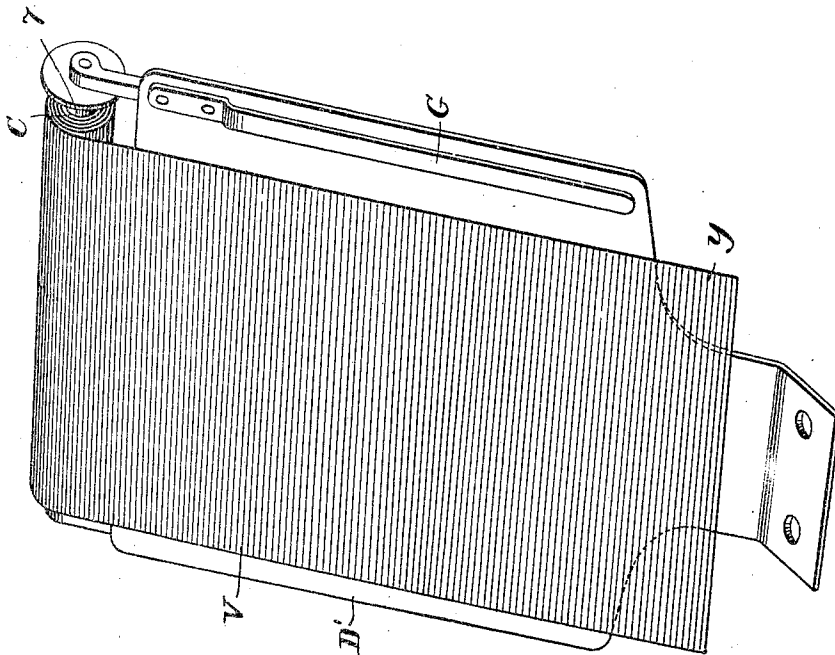


Fig. 3.



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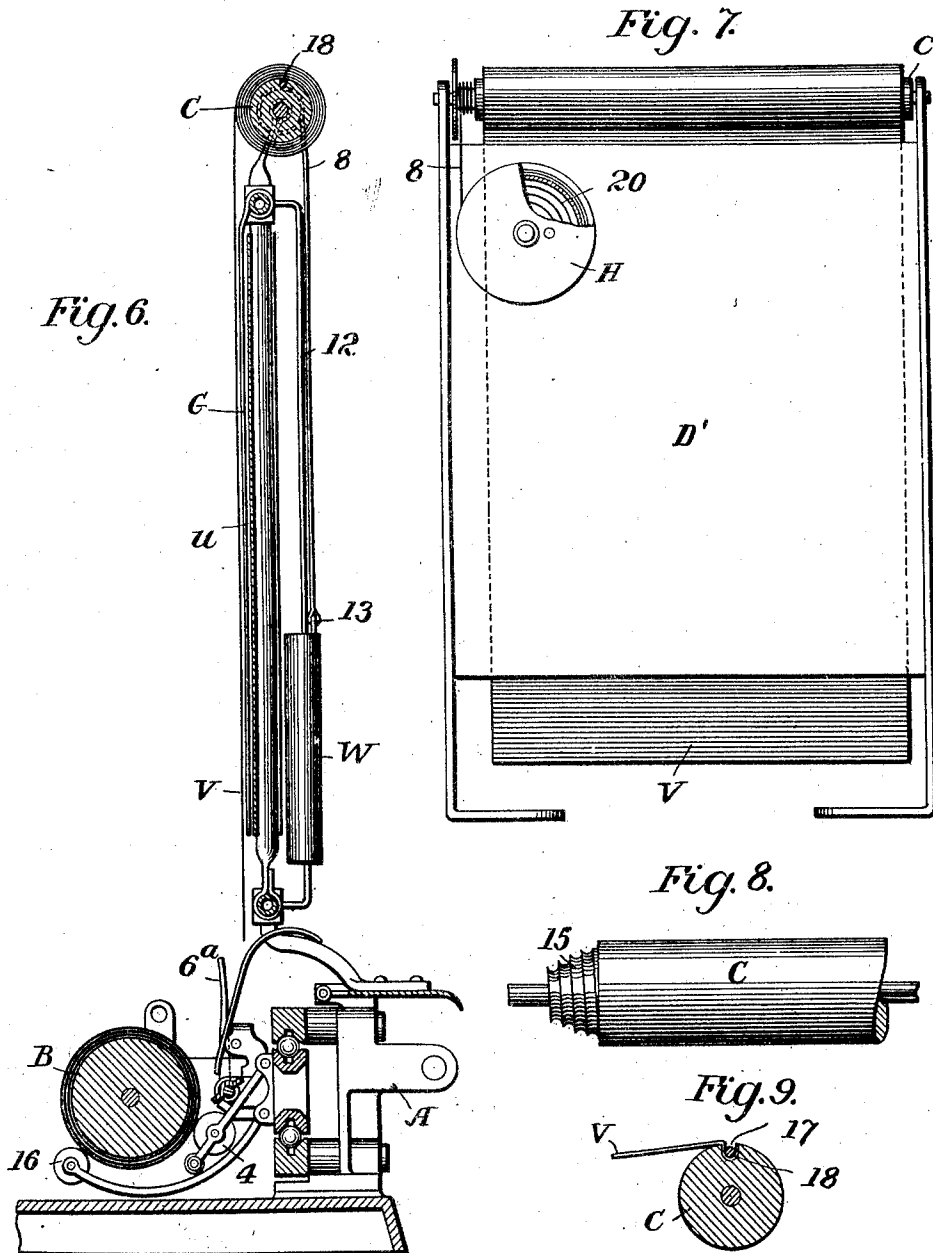
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

CHARLES E. FOSTER, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO THE SMITH PREMIER TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

DUPLICATING DEVICE FOR TYPE-WRITERS.

964,856.

Specification of Letters Patent.

Patented July 19, 1910.

Application filed January 26, 1907. Serial No. 354,276.

To all whom it may concern:

Be it known that I, CHARLES E. FOSTER, a citizen of the United States, and a resident of Washington, District of Columbia, have invented certain new and useful Improvements in Duplicating Devices for Type-Writers, of which the following is a specification.

My invention relates to typewriting machines and has for its object to avoid the necessity of the use of separate duplicating carbon sheets in printing duplicates, and more especially to avoid the delay and manipulation required for the use of such sheets in duplicating bills upon folded sheets, and to this end my invention consists of a roll supporting a duplicating strip, with means whereby the latter can be brought in proper relation to the sheets to be printed, and with means for automatically turning the roll when draft upon the duplicating strip is released, as fully set forth hereinafter and as illustrated in the accompanying drawing, in which:

Figure 1 is a transverse section of sufficient of a "Remington" typewriter to illustrate the application of my invention in connection therewith; and with the use of separate original and duplicating sheets; Fig. 2 is a face view of the device as adapted for attachment to the "Remington" typewriter; Fig. 3 is a perspective view illustrating another form of a device especially adapted for use in connection with folded billing sheets; Fig. 4 is an edge view of the device shown in Fig. 3; Fig. 5 is a back view of part of the device; Fig. 6 is a transverse sectional elevation showing the device in a somewhat different form as applied to a "Monarch" machine; Fig. 7 a back view illustrating a modification; Fig. 8 is an end view of the roll provided with a spiral cord groove at the end; Fig. 9 is a transverse section of the roll showing means for attaching the end of the duplicating strip to the roll.

The carriage A and its cylindrical platen B may be of any usual or suitable type, traveling upon the frame of the typewriting machine under the influence of the ordinary actuating devices.

The duplicating carbon ribbon is in the form of a strip V upon a roller C, which is

supported by a frame D supported in any suitable manner, preferably detachably, upon the carriage, and with the roller C is combined a spring S or weight, or other means whereby, when the duplicating sheet is drawn away from the roller, it will be re-wound thereon by the power of said spring or weight. For many purposes an ordinary spring curtain roller may be employed, the flattened end of the non-rotatable spindle 1 of the said roller fitting a slot α in one of the upturned ends 2 of the frame D. Against the platen B bears the presser roll 16 and the roll 4 carried by the rocking frame E, which is swung in one direction by a spring 5 and which can be rocked to carry the pressure roll away from the platen by means of an arm 6.

As shown in Figs. 1 and 2, the duplicating devices are supported upon the usual detachable plate F of the typewriter, which is of the Remington type.

The parts are so adjusted that when the roller is wound up to the greatest extent, there will be a free end or part of the sheet V extending from the roll to a position near the platen and adapted to be grasped at one or both edges by the operator, and as the sheet V is narrower than the platen, and wider than the plate F, which may be cut away at the sides, the usual bill sheet or original sheet X may be passed above the plate F and beneath the strip V, while the duplicating sheet Y is placed above the strip V in the position shown in Fig. 1, when the operator, by pinching the side portions of the sheets together, can pass them downward between the rolls B and 4, until properly grasped, and then by turning the platen roller B by the usual knob, the sheets are carried together into position for the original sheet X to be printed, while at the same time the duplicate will be produced.

After the printing is effected, the roller B may be turned back until the lower edges of the sheets X and Y pass from between the platen and the roll 4, when they can be readily detached, the spring of the roller C causing the strip or duplicating sheet V to be wound up and carried to its original position, leaving the end γ in position to be grasped, or the rolls 4 and 16 can be moved away from the platen when the roll C will

turn automatically and draw the strip back to its first position, allowing the sheets to be removed.

A construction in which a weight is employed, and which is especially adapted for use in connection with folded bill sheets where the duplicating sheet Y and the original sheet X are in one piece, is illustrated in the remaining figures of the drawing, where the frame may be in the form of a plate D' as shown in Figs. 3, 4 and 5, or of a frame having a light fabric stretched over it, as shown in Fig. 6, or of open-work material to reduce weight, and is of such size as to permit the folded sheet or separate sheets to be placed upon it laterally with one part or sheet below and the other above the strip V, the roller C in this case being supported at the top of the frame and having a reduced drum 7 at one end, around which is wound a cord 8, the latter passing downward beneath a pulley 9 of a weight W and upward to an eye 10 upon the frame, with the result that when the strip V is drawn upon, the weight will be raised, and will turn the roller and wind up the strip when draft upon the latter is released.

In order to properly position each folded sheet in respect to the platen, especially when it is necessary to print at successive times upon the same folded sheet, and therefore desirable that it should on each occasion occupy the same position as before in respect to the platen, I provide a guide G suitably arranged between the platen and the roller, whereby when one part of the folded sheet is passed beneath the guide and above the strip, until the folded edge of the sheet bears against the edge of the guide, the sheet will be properly positioned. The lower edge of the plate or frame D' is above the platen, or the plate or frame is so cut away at each side that the folded sheet and strip V may be grasped between the thumb and forefinger of each hand and fed down between the platen and the presser roll 4 until grasped by the same, when the printing may be done as usual. After the desired printing is effected, the removal of the printed sheet or sheets may be effected.

The device in Fig. 6 is shown in connection with a machine like the "Monarch," where there are two presser rolls 4 and 16, both of which may be carried from the platen by the operation of a lever 6^a. In the construction shown in Fig. 6, the weight hangs directly from the cord without the intervention of the pulley 9 as in Fig. 3, but in each case a suitable guide rod 12 at the rear of the frame may pass through the weight or through an eye 13 on the weight and guide the latter and prevent it from swinging.

By the use of a weight as described, the tension tending to turn the roll and lift the

sheet is uniform, while in the case of a spring it will increase as the spring is wound up, but this latter result may be prevented by forming the drum with a gradually increasing spiral groove 15, as shown in Fig. 8.

In Fig. 7 the plate carries at the rear a drum H in which is a spring 20 tending to turn the drum so as to wind up the cord 8 and turn the roller C.

In order to properly connect the strip V to the roller C, the latter may have a longitudinal groove 17, Fig. 9, above which the end of the sheet may be placed, a strip or rod 18 being then forced inward so as to double the strip around it and secure it to the roll.

It will be evident that the frame or plate between the roll and the platen may be vertical or horizontal or inclined, as may be desired, and that the plate serves as a support for the strip of duplicating material, holding it in position to permit the paper sheets to be properly applied and preventing tearing and injury. It will further be noted that the free end portion of the duplicating strip is normally so disposed on the supporting plate that not only the side edge portions but the lower end or edge portion of the said strip can be manipulated so that a bill sheet folded along its top edge may be applied top downward to the duplicating strip so that the strip will be embraced between the folds of the bill sheet and the end of the strip will lie within the horizontal bight or fold of the bill sheet.

Without limiting myself to the precise construction and arrangement of parts herein shown, I claim:

1. The combination with a carriage and platen of a typewriting machine, of a roll having a duplicating strip wound thereon, a support arranged to hold said roll above the carriage to normally present a portion of the strip between the roll and the carriage with the side edges and lower edge exposed to be manipulated, and means for turning the roll to rewind thereon any part of the strip drawn from the roll.

2. The combination with a carriage, platen and presser rolls of a typewriting machine, of a roll having a duplicating strip wound thereon, a support arranged to hold the roll above the carriage to normally present a portion of the strip between the roll and the platen with the side and lower edges exposed to be manipulated, and means for turning the roll to rewind thereon any part of the strip drawn from the roll when released by the presser rolls.

3. The combination with a carriage and platen of a typewriting machine, of a roll carrying a duplicating strip, said roll being arranged above the carriage, and means for turning the roll to wind a part of the strip thereon after the same has been unwound, a

loose or free end of the strip being left normally between the roll and the platen with the side edges and lower edge of said free end in position to be manipulated.

4. The combination with a carriage and platen of a typewriting machine, of a roll on which a duplicating strip is wound, said roll being arranged above the carriage, and means for applying a uniform power to turn the roll to wind the strip thereon.

5. The combination with a carriage, platen and presser rolls of a typewriting machine, of a roll supported on the carriage and having a duplicating strip wound thereon to normally leave a loose end extending between the roll and the platen in position to permit the lower edge and side edge portions to be grasped between the roll and the platen, and means for moving the presser rolls toward and away from the platen.

6. In a typewriting machine, the combination of a rotary material carrying device capable of a plurality of complete rotations to unwind the material, means operative automatically to turn said device through a plurality of complete rotations to rewind a portion of the material, and for controlling the parts so that the portion of the material rewound on said device shall be equal substantially to the portion previously unwound, all arranged to expose the material below the carrying device so that the lower edge and the side edge portions of said material may be caused to cooperate with a bill sheet having a horizontal folded edge.

7. In a typewriting machine, the combination of a holder for a roll of carbon paper, paper feeding devices adapted to feed together the carbon paper from said roll holder and the paper to be written upon, a

support for the paper and the carbon sheets between the platen and the roll, means for releasing said paper feeding devices, and means for rewinding on said roll holder the portion of the carbon paper that has been unwound from said roll holder by the paper feeding devices, all arranged to expose the paper below the holder so that the bottom edge and side edge portions of the paper may be brought into cooperation with a work sheet having a horizontal folded edge.

8. In a typewriting machine, the combination of a carriage, a rotary roll holder arranged above the carriage, an axle therefor, a spring connected with said roll holder, paper feeding devices operative to draw the material from said roll holder, the tension of said spring being thereby increased, and means for normally maintaining said axle in a fixed relationship with its bearings, the roll holder being arranged to support the free end of the paper exposed below said roll holder so that the bottom and side edge portions of said paper may be free and accessible.

9. In a typewriting machine, the combination of a carriage, a platen, a roll carrying a duplicating strip, and means for turning the roll to rewind the strip thereon, all arranged to expose a part of the strip above the platen between the same and the roll so that the side edges and bottom edge of the strip are free and accessible and occupy a position between the roll and the platen when the roll is in normal position.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES E. FOSTER.

Witnesses:

ARTHUR L. BRYANT,
C. HELEN TAYLOR.