

No. 854,703.

W. A. RANKIN.
MANIFOLDING ATTACHMENT.
APPLICATION FILED OCT. 24, 1906.

PATENTED MAY 21, 1907.

3 SHEETS—SHEET 1.

Fig. 1.

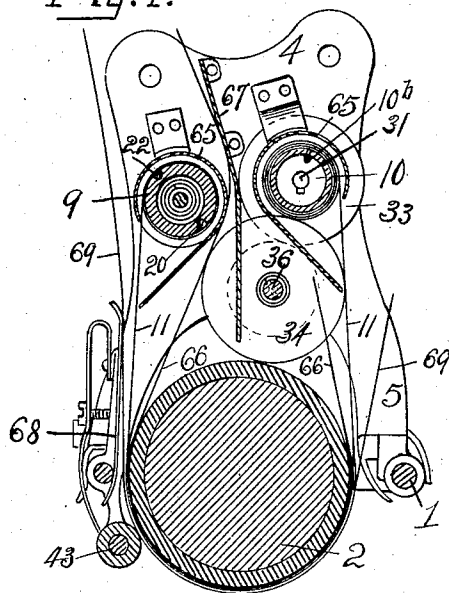


Fig. 2.

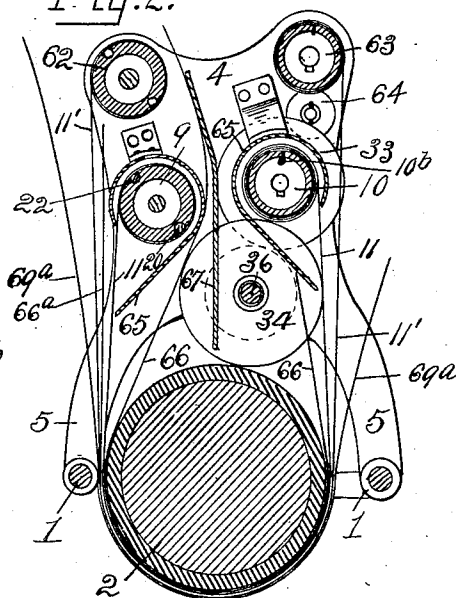


Fig. 3.

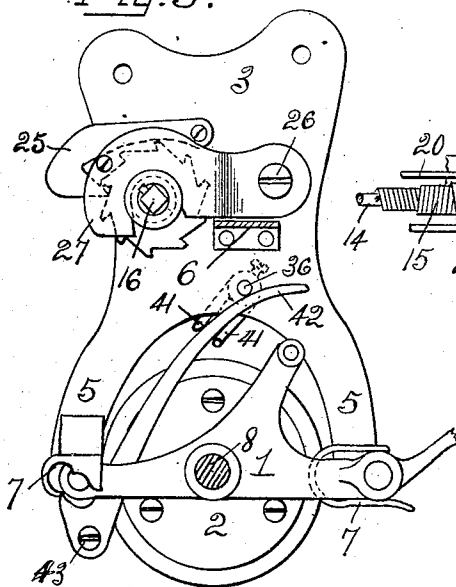
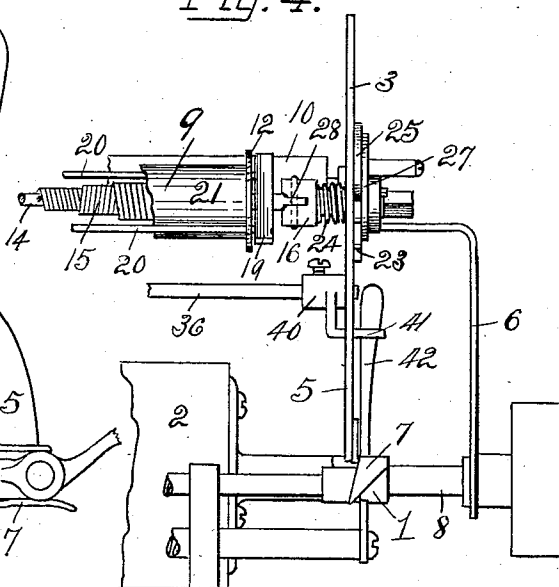


Fig. 4.



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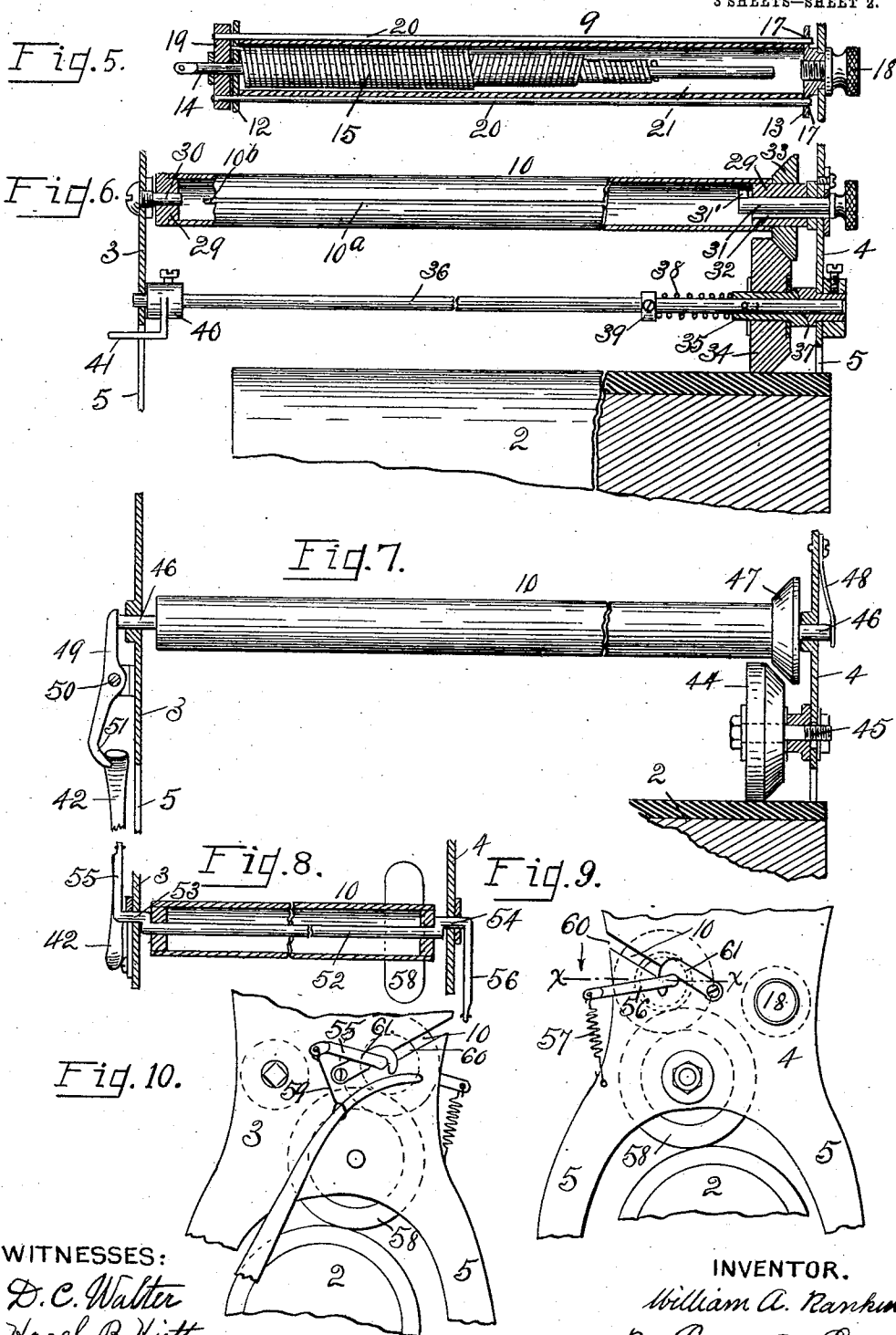
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 11.

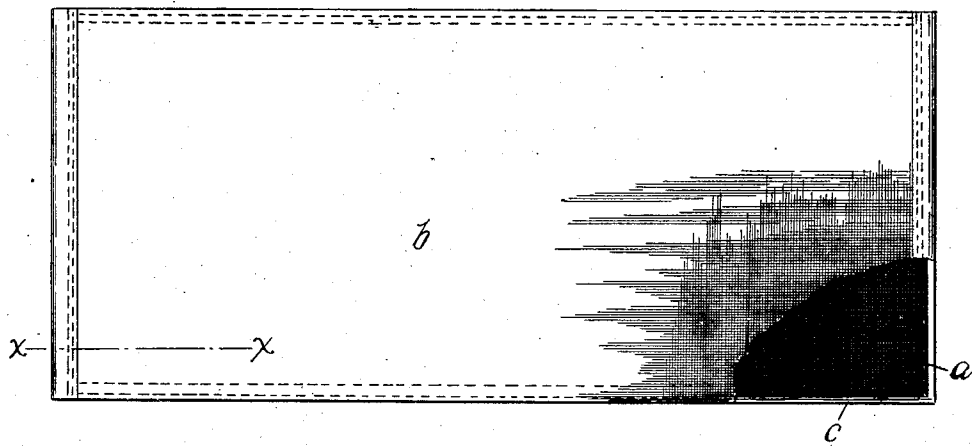


Fig. 12.

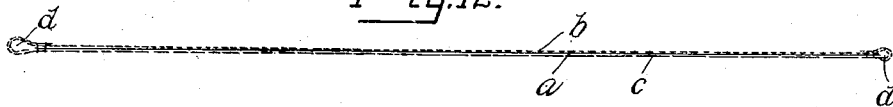


Fig. 13.



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MANIFOLDING ATTACHMENT.

No. 854,703.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed October 24, 1906. Serial No. 340,294.

To all whom it may concern:

Be it known that I, WILLIAM A. RANKIN, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Improved Manifolded Attachment for Type-Writers; and I do hereby 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 figures and letters of reference marked thereon, which form a part of this specification.

My invention relates to manifolded attachments for typewriters whereby to enable the production at the same time of one or more copies or facsimiles of the original or ribbon-impression sheet.

An object of my invention, among others, is the provision of a simple and efficient attachment of the kind, which is capable of ready attachment to any of the standard makes of machines employing a platen-roll, is automatic in its rewinding action, and controlled by the paper-release lever of the machine.

A further object is the provision in an attachment of this class of a spring-actuated rewinding roll, which is of separable construction to enable a manifolded ribbon or sheet to be easily and quickly attached thereto.

A further object of my invention resides in the construction of the manifolded ribbon or sheet preferably used in connection with attachments of this class, as is more particularly hereinafter described.

The operation, construction and arrangement of the parts of the invention are fully described in the following specification, and illustrated in the accompanying drawings, in which,—

Figures 1 and 2 are cross-sections of the attachment embodying my invention and associated platen-roll, with the former equipped with a single and the latter with duplicate manifolded ribbons. Fig. 3 is an elevation of one end of Fig. 1. Fig. 4 is a partial rear elevation thereof. Fig. 5 is a central longitudinal section of the spring-actuated rewinding roll. Fig. 6 is a front elevation with the parts partially in section and the ribbon removed. Figs. 7 and 8 are modifications of the means shown in Fig. 6

for controlling the unwinding ribbon-roll. 55
Figs. 9 and 10 are opposite end views of Fig. 8. Fig. 11 is a plan of my improved manifolded ribbon, with a portion of the gauze covering broken away, and Figs. 12 and 13 are sections thereof, the latter being an enlarged section on the line *x x* in Fig. 11. 60

Referring to the drawings, 1 designates the platen-roll-carrying frame, and 2 the platen-roll of a Smith Premier typewriter, with which, for the purpose of illustration, my invention is shown as being connected. I wish it understood, however, that I do not wish to confine the use of my invention in connection with any particular style or make of typewriter, as it is intended to be applied to any make of machine having a platen-roll. 65

Rising from the platen-roll frame 1 at the opposite ends thereof are the two uprights or standards 3, 4, each of which comprises the two legs 5, 5, and the outwardly-disposed lateral bracing leg 6, the former being provided at their ends with suitable frame securing means, as at 7, 7, and the latter provided at its lower end with a bearing for receiving the outer end portion of the platen-roll shaft 8, as shown in Fig. 4. 75

Interposed between the two standards 3 4 with their ends suitably supported thereby are the two spaced roll 9 and 10, to which the opposite ends of the manifolded ribbon 11 are secured, said ribbon passing under the platen-roll from one to the other of said rolls 9 10 as they are turned. The roll 9 is a spring-actuated rewinding roll of a similar nature to a window-shade roll and for the purpose of facilitating the securing of the ribbon thereto is made separable in its construction. As shown in the drawings, particularly Figs. 4 and 5, this roll consists of the two end disks 12 and 13, the former being loosely carried by the rod 14 to which the coiled actuating spring 15 is secured, said rod having its outer end secured to the journal member 16, which has its bearing in the standard 3, and the disk 13 being provided with the two diametrically opposed apertures 17, and having its hub portion broadened and journaled in a bearing in the standard 4, a screw 18 retaining it therein. Mounted for loose turning movement on the rod 14 on the outer side of the disk 12 is a bar 19 to which is secured one end of each of the rods 20, which pass 80 85 90 95 100 105

through alining apertures in the disk 12 and have their opposite ends normally inserted within the apertures 17 in the disk 13. Interposed between the disks 12 and 13 and surrounding the spring 15 is a cylindrical shell 21, which is retained in position by the rods 20 seating in grooves or recesses 22 provided longitudinally in opposite sides thereof. The journal member 16 is mounted for limited longitudinal movement in its bearing to permit the rods 20 and attached parts to be moved away from the disk 13 sufficiently to release their free ends from engagement with the apertures 17 in said disk. This movement is limited in one direction by the ratchet-wheel 23, which is fixed to said journal in position to abut the outer face of the standard 3, and in the other direction by the encircling coiled compression-spring 24, which coacts with the inner face of the standard 3 to yieldingly maintain the journal at its limit of inward movement, as shown in Fig. 4, and the ends of the rods 20 in the apertures in the disk 13. Pivoted to the outer face of the standard 3 in position to coact with the ratchet-wheel 23 is a pawl 25, and also pivoted thereto, as at 26, is a sear or locking-plate 27, which is adapted to coact with the outer face of the ratchet-wheel 23, as shown, to prevent an outward movement of the journal 16 and its attached parts. In order to facilitate a longitudinal withdrawal of the shell 21 from between the retaining rods 20 the spring-carrying rod 14 has its outer end pivoted within a transverse slot provided in the inner end of the journal member 16, as shown at 28 in Fig. 4, thus enabling the end of the roll 9 contiguous to the standard 4 to be swung laterally out of alinement with said standard. The actuating spring 15 is tightened by placing a winding-key on the outer end of the journal 16, which is shaped for that purpose, and turning it in the proper direction.

The roll 10, which may be of any suitable construction is shown in the drawings as comprising a shell, the ends of which are plugged, as shown at 29, and axially bored to receive the bearing studs 30 and 31 carried by the standards 3, 4, the latter stud being formed on its inner end with a spur 31' which when turned to register with a groove 32 in the associated plug 29 permits the stud to be withdrawn therefrom, as shown in Fig. 6. When this stud is removed the roll may be removed from the other stud. The roll 10 is friction driven by a turning of the platen-roll 2 due to the provision of a roll 33 on the roll 10, which contacts with an idler-roll 34 riding on the platen surface, as shown. These rolls preferably have their contacting surfaces beveled, and the roll 34 is provided with a bushing 35, which is feathered for a limited sliding movement on the shaft 36, the ends of which shaft are journaled in the

standards 3, 4. This bushing is provided at one end with a cam surface for coacting, as shown at 37, with a similar cam-faced member fixed to the standard 4, and the bushing is yieldingly retained in contact with said cam member by the coiled expansion spring 38, which has one end abutting a collar 39 fixed to the shaft 36 and its other end abutting the end of the bushing. It is apparent that by giving the shaft 36 a slight turning movement the bushing 35 is caused to turn relative to its companion cam member whereby to effect a movement of the idler-roll 34 against the tension of the spring 38, and a consequent breaking of its contact with the roll 33, thus permitting the ribbon roll 10 to have a loose turning movement.

A collar 40 is fixed to the shaft 36 adjacent the standard 3, and is provided with the two fingers 41 which project outwardly under said standard and embrace opposite sides of the usual paper-release lever 42 of the machine, thus adapting a movement of said lever designed to release the paper-releasing roll 43, to impart a limited oscillation to the shaft 36.

In Figs. 7, 8, 9 and 10 are shown two modifications of the manner employed for effecting the breaking of the contact between the idler-roll and that on the ribbon roll 10. In Fig. 7 the idler-roll, which is designated 44, is carried by a stud 45 secured to the standard 4, and the ribbon roll 10 has its end trunnions 46 mounted for a limited longitudinal sliding movement within their bearings, each projecting a short distance beyond the outer faces of the supporting standards 3, 4. The roll 47 on the ribbon roll is normally maintained in contact with the idler-roll due to the action of the spring 48, which is fixed at one end to the standard 4 and has its other end pressing normally upon the end of the contiguous trunnion 46. A longitudinal movement of the ribbon-roll 10 against the tension of the spring 48 is controlled from the releasing-lever 42 through the medium of the finger 49, which is pivoted, as at 50, to the standard 3, and has its upper end bearing against the end of the contiguous trunnion 46. The lower end of this finger is bent inwardly or formed with a cam surface, as at 51, with which the lever-arm coacts, whereby a depression of said arm effects an outward movement of the lower end of the finger and a consequent inward movement of its upper end which throws the ribbon-roll slightly to the right, thus breaking the contact between the roll 47 and idler 44.

In Figs. 8, 9 and 10, 52 designates a shaft which extends through the shell of the ribbon-roll 10 and has its end portions crooked, as at 53 and 54, and journaled in the standards 3, 4, as shown, and its terminals bent in opposite directions to form the crank-arms 55 and 56. The crank-arm 56 is connected at

its ends to the standard 4 by a tension-spring 57, which is adapted to apply tension to the shaft, whereby to maintain the ribbon-roll in contact with the idler-roll 58, which idler-roll is mounted on a stud projecting from the standard 4. The end of the arm 55 is connected by a cord or wire 59 to the lever-arm 42 so that a downward movement of the lever-arm will cause the crank-arm 55 to be depressed and a consequent raising of the ribbon-roll 10 from its idler. In these figures the standards 3, 4 are shown as being provided with slotted bearings 60 in the bases of which the crooked portions of the shaft 52 are journaled. The shaft is prevented from removal from these bearings by the hooks 61.

While the invention as heretofore described permits the making of only a single carbon copy, it will be apparent that two or more sets of the ribbon rolls 9, 10 and associated manifolding ribbons may be employed as the number of copies to be produced may require. In Fig. 2 the apparatus is shown as being equipped with two sets of ribbon-rolls, the lower set of which are shown as carrying the ribbon 11 and the upper set the ribbon 11'. The upper set comprises the ribbon-rolls 62 and 63, which are substantially duplicates of the lower set heretofore described. The roll 63 is driven by an idler-roll 64 connecting it with the roll 10 of the lower set, or in any other suitable manner.

65, 65 designate shields of thin sheet metal, celluloid or other suitable material, which are secured at their ends to the standards 3, 4 and partially surround the ribbon-rolls 9 and 10, with their lower inner portions extending in close proximity to the portions of the ribbon 11 which connect the ribbon-rolls with the platen-roll, as shown in Figs. 1 and 2. These shields are intended to serve as guides for directing the ends of the copy sheets 66 toward the center dividing plate or partition 67 as such ends are moved upwardly in either direction by a turning of the platen-roll, as the sheets would otherwise have a tendency to follow the ribbon and wind therewith upon one or the other ribbon-roll 9, 10. The plate 67 is secured at its ends to the standards 3 4 and in addition to performing the function of a division plate between the two ribbon-rolls, also serves as a rest upon which the copy 66 may be placed to facilitate the making of erasures, the upper portion of the plate being bent slightly rearwardly for that purpose, as shown.

In Fig. 1, 68 designates the usual guide plate between which and the platen-roll the sheets of paper are placed as they are inserted in the machine.

In Figs. 11, 12 and 13 are shown views of a manifolding ribbon which I preferably employ in connection with my apparatus, but I wish it understood that I do not restrict myself to its use in connection with the other

features of my invention, as other styles of ribbons can be used. This ribbon comprises the carbon or ink impregnated sheet or strip *a*, which is faced on one side with a light gauze-like covering *b* and on the other side with the heavier textile material *c* of silk, light cloth, or the like. The gauze-like sheet *b* serves to prevent the ink in the sheet or strip *a* from being transferred to a sheet of paper rubbing against or having light frictional contact therewith, but is of so light a nature as to permit an impression to be readily transferred therethrough to the copy sheet when struck on the opposite side by the type, while the covering *c* on the opposite side of the ribbon prevents an impression from backsetting upon the outer impression sheet, which is intended to receive its impression either from the primary ribbon of the machine or a manifolding ribbon 11 surrounding it in case more than one copy is made. The several sheets or strips comprising a ribbon are suitably sewed together, and the two outer sheets are shown as having their ends folded and sewed to form loops *d* for the insertion of a retaining rod carried by the ribbon rolls.

The operation of my invention is as follows:—In securing one end of the manifolding ribbon 11 to the roll 9, the sear or locking-plate 27 is raised to permit the roll to be moved slightly to the left against the tension of the spring 15 to release the rods 20 from the apertures 17 in the disk 13, after which the released end of the roll may be swung laterally in position to permit one of the looped ends of the ribbon to be easily slipped over one of the rods 20 of the roll. This being done the roll is swung back in position, the rod ends inserted in the apertures in the disk 13 and the sear or locking-plate 27 again dropped in position to lock the journal member 16 and attached roll parts against longitudinal movement. The ribbon is now wound upon the roll and the spring 15 tightened sufficiently by a turning of the journal member 16 to maintain the ribbon in a wound state thereon. The free end of the ribbon is now drawn down under the platen-roll and up on the opposite side thereof and secured to the roll 10 by being passed through the longitudinal slot 10^a therein and engaged by a rod 10^b to prevent its withdrawal from the slot, or it can be secured to the roll in any other suitable manner. The apparatus is now ready for manifolding, which is accomplished by placing the original impression sheet 69 between the ribbon 11 and the guard or plate 68 at the rear of the platen, and the copy impression sheet 66 between the ribbon and platen, so that when the platen is turned the ribbon and sheets 69 and 66 are passed down together under the platen-roll in position to receive the blow of the type, it being understood, of course, that the outer sheet 69 is retained to the platen

by the usual rollers or guiding means, (not shown in the drawings). On a continued turning of the platen the ribbon is unwound from the roll 9 and wound upon the roll 10, which is actuated by the idler-roll 34 communicating motion thereto from the platen, and the original sheet passes out at the front of the machine in the usual manner while the copy passes up between the guides or plates 65, 67, being guided thereby. When it is desired to withdraw the two impression sheets the lever 42 is depressed in the usual manner to effect a release of the pressure roll 43 therefrom and enable the sheets to be easily withdrawn. This movement of the lever also effects a slight oscillation of the shaft 36, which causes a release of the frictional contact between the cooperating idler-roll 34 and roll 33 carried by the ribbon-roll 10. Upon a release of the roll 10 the ribbon is caused to be automatically rewound upon the roll 9 by the action of the spring 15, thus placing the apparatus in readiness to receive another set of impression sheets 66, 69. Should two manifolding ribbons be employed, as shown in Fig. 2, the original impression sheet 69^a is placed between the outer ribbon and plate 68, the second copy 66^a is placed between the two ribbons, and the third copy 66 placed between the inner ribbon and the platen-roll. The operation of the modified forms of releasing means illustrated in Figs. 7, 8, 9 and 10 is apparent.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is,—

1. In combination, a platen, a set of rolls spaced therefrom, a ribbon connecting said rolls and coacting with the platen, releasable means for communicating rotation from the platen to one of said rolls, and means for effecting an automatic rewinding of the ribbon on the other of said rolls when said first means is released.

2. In combination, a platen, a set of ribbon-rolls associated therewith, a ribbon connecting the ribbon-rolls and coacting with the platen, means for imparting rotation from the platen to one of said rolls, said means being releasable to permit a loose turning of the driven roll, and a spring for actuating a rewinding of the ribbon upon the roll from which it was unwound by the driven roll.

3. In combination, a platen, a paper release lever, a set of rolls, a manifolding ribbon connecting said rolls and coacting with the platen, means for imparting rotation from the platen to one of said rolls, said means being releasable by a movement of said lever, and means for effecting an automatic rewinding of the ribbon on the other roll.

4. In combination, a platen, a set of rolls, a manifolding ribbon connecting the rolls

and coacting with the platen, a frictional drive between the platen and one of said rolls, means for effecting a release of the roll from said means, and spring means for effecting a rewinding of the ribbon on the other of said rolls when the driven roll is released.

5. A manifolding attachment for typewriters having its end standards formed with spaced legs which attach to the platen-roll-carrying frame, and provided with a lateral bracing leg which has its lower end loosely embracing the platen-roll shaft.

6. In combination a platen-roll, a set of ribbon-rolls, a manifolding ribbon having its ends connected to different of said ribbon-rolls, releasable means for effecting a winding of the ribbon from one to the other of the ribbon-rolls when the platen is turned, and means for effecting a rewinding of the ribbon on the roll from which it is unwound by the action of the platen, said latter means having its power generated by the unwinding of the ribbon from the roll on which it is normally wound.

7. In combination, a platen, a set of ribbon-rolls mounted in spaced relation above the platen, a manifolding ribbon connecting said rolls, rewinding means associated with one roll and generated by an unwinding of the ribbon from such roll, connection between the platen and the other of said rolls to effect a rotation thereof when the platen is turned, and means for effecting a release of the platen actuated roll to permit a free turning thereof and an automatic rewinding of the ribbon.

8. In combination, a platen, a paper-release lever, a set of rolls, a manifolding-ribbon connecting said rolls and passing under the platen, means for imparting rotation from the platen to one of said rolls, said means being releasable to permit a loose turning of the associated roll, connection between the release lever and said means to effect the release of the means when the paper is released, and means for effecting an automatic rewinding of the manifolding-ribbon on the other roll from the platen-actuated roll when the latter is released.

9. In a manifolding apparatus for typewriters, a separable ribbon-roll having end members provided with trunnions and one of said trunnions being provided with sockets, a plurality of rods having one end loosely seating in the sockets in said member and their other end fixed to the other member, means for yieldingly maintaining the ends of the rods in said socket, and a shell carried between the rods and provided with longitudinal grooves for receiving the rods.

10. In a manifolding attachment for typewriters, a ribbon-roll comprising a rod, a trunnion to which one end of the rod is hinged, a disk turning loosely on said rod, a second disk spaced from said first disk and

provided with sockets, rods connecting the two disks and having one of their ends removably seated in said sockets, an actuating spring secured to the first mentioned rod and its disk adapted when tightened to impart relative rotary movement thereto, a shell removably carried by the rods connecting the disks, and means for yieldingly retaining the ends of said connecting rods seated in said sockets, substantially as described.

11. An impression ribbon, comprising an impression transferring sheet or layer, and covered on one side by a thin gauze-like textile and on the opposite side by a covering to prevent backsetting of the impression.

12. In combination, a platen, a set of ribbon-rolls, a manifolding-ribbon connecting said rolls and passing under the platen, an

idler roll normally having frictional contact with the platen and one of said rolls to impart rotation from one to the other, a paper-release lever, means operated by a movement of said lever to effect a relative movement of the idler roll and the ribbon-roll with which it coacts, whereby to permit a free turning of the latter and means for effecting an automatic rewinding of the ribbon on the other of said ribbon-rolls when the platen-driven roll is released.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM A. RANKIN.

Witnesses:

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