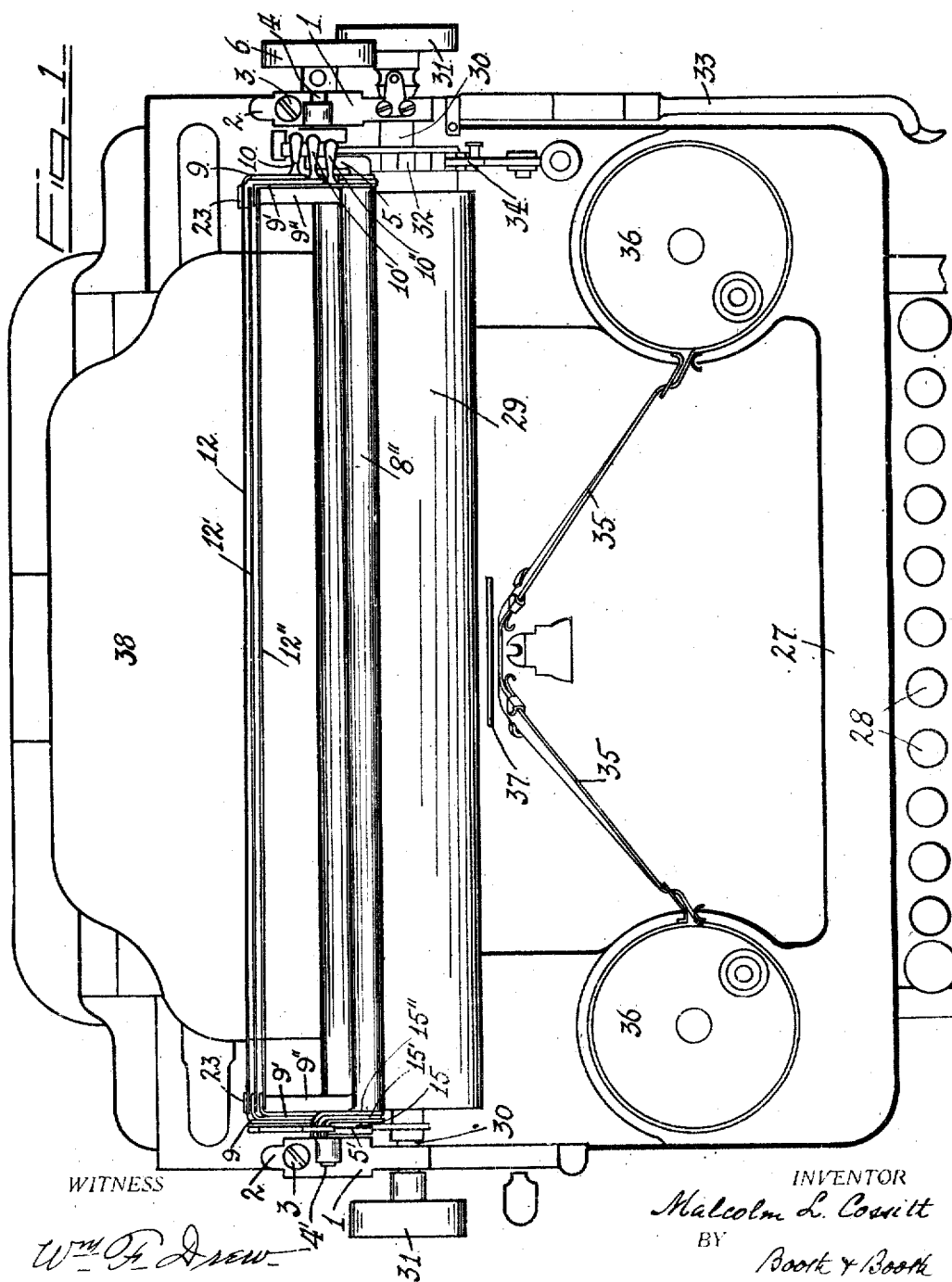


MANIFOLDING ATTACHMENT FOR TYPEWRITING MACHINES AND THE LIKE.

APPLICATION FILED AUG. 11, 1920.

Patented Feb. 28, 1922.

3 SHEETS—SHEET 1.



INVENTOR

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BY

Book 4 Book 4

ATTORNEYS

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3 SHEETS—SHEET 2.

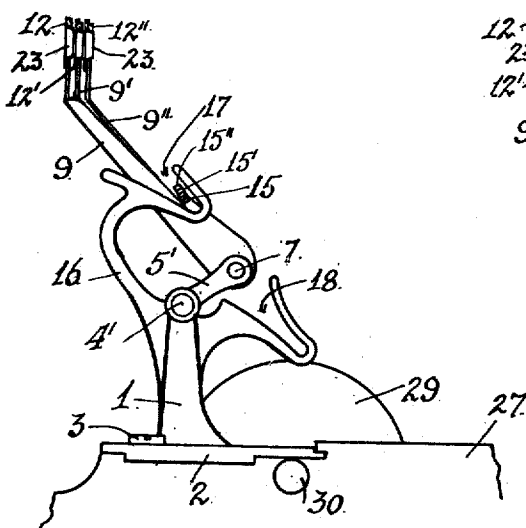


Fig-2-

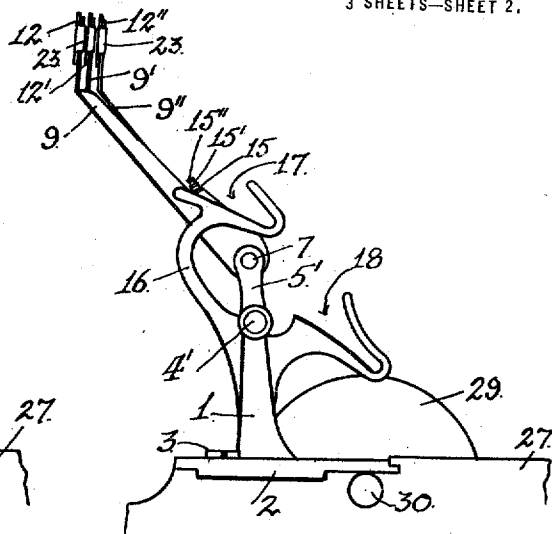


Fig-3-

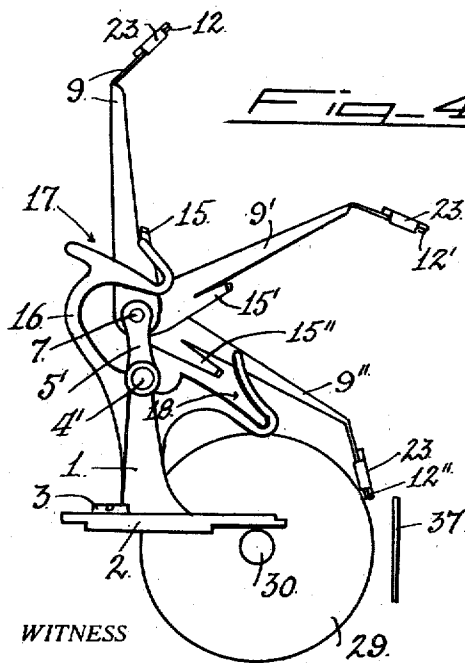


Fig-4-

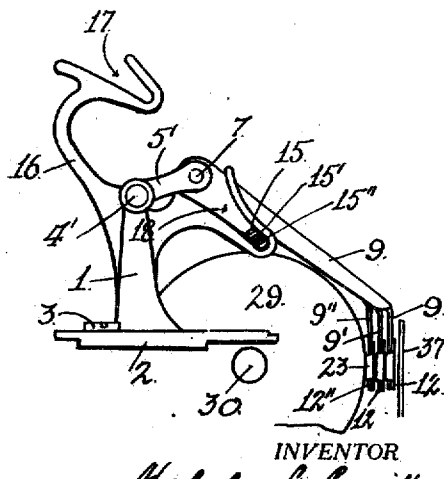


Fig-5-

WITNESS

W. C. Draw

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3 SHEETS—SHEET 3.

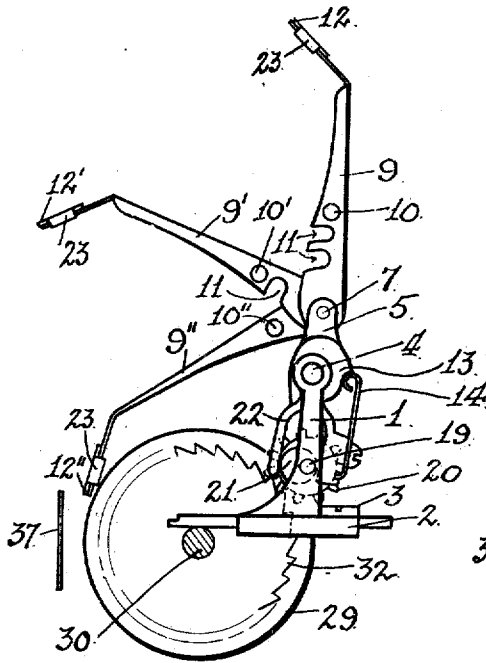


Fig. 7.

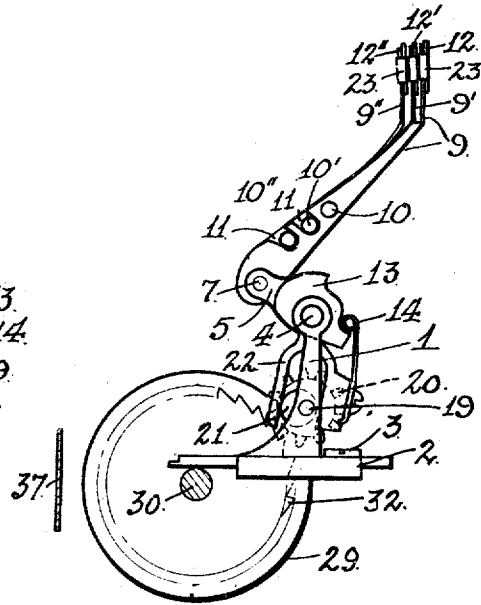
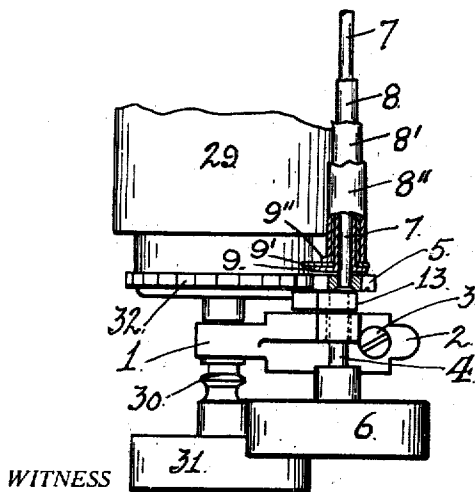


Fig. 8.



WITNESS

Fig. 9.

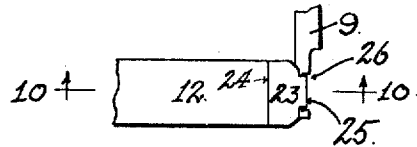


Fig. 10.

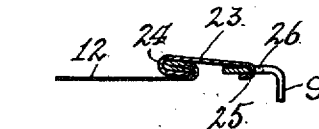


Fig. 11.

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UNITED STATES PATENT OFFICE.

MALCOLM L. COSSITT, OF ALAMEDA, CALIFORNIA, ASSIGNOR TO MANIFOLD IMPRESSIONS CORPORATION, OF CARSON CITY, NEVADA, A CORPORATION OF NEVADA.

MANIFOLDING ATTACHMENT FOR TYPEWRITING MACHINES AND THE LIKE.

1,407,931.

Specification of Letters Patent. Patented Feb. 28, 1922.

Application filed August 11, 1920. Serial No. 402,876.

To all whom it may concern:

Be it known that I, MALCOLM L. COSSITT, a citizen of the United States, residing at Alameda, in the county of Alameda and State of California, have invented certain new and useful Improvements in Manifolding Attachments for Typewriting Machines and the like, of which the following is a specification.

My invention relates to manifolding attachments to type-impression machines comprising typewriters, calculating machines and the like, and its object is to provide a simple, cheap and effective device adapted both for single and plural copies upon loose sheets of paper, without the use of ordinary carbon sheets, said attachment employing one or more manifolding members of approximately the length of the platen, and adapted to be either independently or collectively carried from an inoperative position into functional position between adjacent sheets of loose paper, in the line or region of type impact.

Another object of my invention is to lock said manifolding members independently or collectively both in inoperative and in functional position, by means requiring such deliberate operation, as will insure safety both in and out of use.

Another object is to control the movement of the manifolding members in their path to the line or region of type impact, so that they may reach their functional position and depart therefrom without interference with fixed parts of the machine.

Another object is to provide for the movement of the manifolding member with each line spacing movement of the platen, in order to change its position with each line with respect to the line of type impact, thereby lengthening the life of said member.

Another object is to provide simple and effective means for attaching and detaching the manifolding members to and from their carrying members.

With these and other objects in view my invention consists in the novel manifolding attachment which I shall hereinafter fully describe, by reference to the accompanying drawings, in which—

Fig. 1 is a top plan view of a portion of a typewriting machine, showing my attachment applied thereto, the manifolding mem-

bers being in normal position of rest, out of use.

Fig. 2 is an end view from the left of my manifolding attachment, the position being one of locked rest, out of use.

Fig. 3 is a similar view, showing the initial unlocking of the manifolding members.

Fig. 4 is a similar view showing the several members progressively moved forward about their respective individual axes.

Fig. 5 is a similar view showing all said members fully moved about their dual axes to reach a locked functional position in the line of type-impact.

Fig. 6 is an end view from the right of my attachment showing the manifolding members at locked rest, out of use.

Fig. 7 is a similar view showing said members unlocked and progressively started towards their functional position.

Fig. 8 is a detail plan view, broken and partly in section, of one end of the machine platen and of my attachment.

Fig. 9 is a detail showing the attachment of the manifolding member to the carrying arm.

Fig. 10 is a section of the same on the line 10—10 of Fig. 9.

To avoid confusion, I shall first describe my attachment independent of the machine with which it is associated.

1 are brackets, one at each end, Fig. 1. These brackets are formed with feet 2 adapted by means of screws 3 to be secured to the machine.

In the top of the bracket at the right, Figs. 6, 7 and 8, is journaled a short shaft 4, upon the outer end of which, as shown in Figs. 1 and 8, is fitted a hand wheel 6, to turn the shaft on its axis. The inner end of the shaft 4 carries a crank 5.

In the top of the bracket at the left—Figs. 2 to 5, is journaled a short shaft 4' which at its inner end has a crank 5'. Between these two cranks 5 and 5' is carried a rod 7.

Upon rod 7 as an axis is journaled a sleeve one or more, here shown as a nest of three. Fig. 8. The innermost sleeve 8 is journaled directly on the rod, the next sleeve 8' is journaled on sleeve 8, and the outermost sleeve 8'' is journaled on sleeve 8'. Each sleeve is independently turnable on its axis. The innermost sleeve 8 has fixed at each end an arm 9, the middle sleeve at each end has an

arm 9' and the outermost sleeve at each end has an arm 9''. These arms for the sake of compactness as well as stiffness are angled, as seen in Fig. 1, and those at each end are nested respectively, the arms 9 lying outside, the arms 9'' inside and the arms 9' between. A small finger-grip handle 10 is secured to the arm 9 at the right, another handle 10' to the arm 9' and another handle 10'' to the arm 9'', as shown in Fig. 1, the last named two handles fitting in open grooves 11, Figs. 6 and 7, in the middle and innermost arms respectively, so that the three arms lie nested snugly together when not in use.

Between the outer extremities of the arms 9 and carried thereby is a manifolding member, say, for example, a section of manifolding ribbon 12, a similar section of manifolding ribbon 12' being carried by and between the arms 9' and a similar ribbon section 12'' being carried by and between the arms 9''. See Fig. 1.

It will now be seen that these manifolding ribbon sections are adapted, individually and collectively, to describe movements in space on arcs of two centers, one, indirectly, about the short shafts 4 and 4' journaled in the brackets 1, and the other directly, about the rod 7 carried between the cranks 5 and 5'.

The former movement, namely that with the shafts 4 and 4' for an axis is effected by operating the hand wheel 6; and in order to limit and define this movement at each end thereof, there is secured to the short shaft 4 a two-notched stop 13, Figs. 6 and 7, with which a spring detent 14 coacts. The upper notch of the stop limits the upward and backward movement of the shaft 4, as in Fig. 7, and the lower notch limits the forward and downward movement, as in Fig. 6. The second movement of the ribbon sections, namely that having the rod 7 for an axis is controlled by stop fingers 15, 15' and 15''. Figs. 2 to 4 the finger 15 being secured to or formed with the arm 9, the finger 15' with the arm 9' and the finger 15'' with the arm 9'' (see Fig. 4) all at the left hand end. These fingers coact with a fixed stop member 16 carried by or formed with the left hand bracket 1, said member having an upper open ended guard groove 17 and a lower open ended guard groove 18, Figs. 2 to 5.

Journalled on a short stud 19 carried by and projecting inwardly from the right hand bracket 1 is a pinion 20, Figs. 6 and 7, which carries on one side a cam 21. This cam operates within a yoke 22 pivotally carried upon and depending from the short shaft 4. The movement of the pinion is adapted, through the cam 21, yoke 22, spring detent 14 and notched stop 13, to impart a slight axial oscillatory movement to the short shaft 4, for a purpose hereinafter made clear. The spring detent 14 is carried by the yoke 22, as seen in Figs. 6 and 7.

In order to provide a simple and effective means for readily attaching the ribbon sections to the arms and releasing them therefrom, there is, as shown in Figs. 9 and 10, a metallic clip 23 which at one side has a fold 24 which is pressed or crimped down upon the folded end of the ribbon section, and at the other side is provided with a bent tongue 25 which lies within and engages a notch 26 in the outer side of the arm. There is one of these clips at each end of the ribbon section, and the connection with the arms is made by slipping the tongue 25 either over or around the arm until it lies in the notch 26. The ribbon section is to be held under proper tension by any suitable means; in practice, a feasible way is by a slight yielding or resiliency of the arms so that by pressing them towards each other, the attachment of the clips may be made, and upon the release of pressure, the arms, springing back, will hold the ribbon taut.

This completes the description of my manifolding attachment. By now following its assemblage with the machine and its operation in detail, the attachment itself will be more completely understood.

In Fig. 1 I have illustrated such portion of a typewriter as will suffice for a proper understanding. 27 is the frame of the machine; 28 are some of the keys; 29 is the platen with shaft 30 and hand wheel 31 all mounted on the usual platen carriage; 32 is the spacing ratchet of the platen; 33 is the spacing and carriage-returning lever; 34 is the pawl operated by said lever and engaging the spacing ratchet; 35 is the regular typing ribbon of the machine; 36 are the ribbon drums; 37 is the index pointer; and 38 is the paper guide-apron. In fitting my attachment to any given machine the connecting members will be of such nature as to effect a proper union. It must therefore be understood that in the present case I illustrate and describe but one form of the structure and connections adapted for the union. In this case therefore, I remove the top bearings which hold down the platen shaft 30, and substitute therefor the feet 2 of the brackets 1 of my attachment, and I secure said feet to the platen carriage of the machine by the screws 3, as seen in Fig. 1. This simple connection completes the union of my attachment with the machine. As thus assembled, it will be especially noted, as seen in Figs. 6 and 7, that the pinion 20 of the attachment meshes with the spacing ratchet 32 of the machine.

It will also be noted by reference to Fig. 1, that the manifolding ribbons are independent single length sections of approximately the length of the platen and lie parallel therewith, and their dual axes of movement are parallel with the axis of the platen. The normal rest position of the parts, by

which I mean their position out of action or use, is shown in Figs. 1, 2 and 6. In this position, the short shaft 4 has been turned forwardly and downwardly, until limited by the lower notch of its stop 13 engaging the spring detent 14, as in Fig. 6. The stop fingers 15, 15' and 15'' at the left all lie in the upper guide groove 17 of the fixed stop member 16, as seen in Fig. 2, and this engagement locks all the arms and their ribbon sections from movement either forward or back, on the rod 7 as an axis. Thus the ribbon sections lie parallel and close together, in an elevated, out of the way position; their carrying arms being snugly nested as in Fig. 1, and all parts locked against any inadvertent movement.

Now let us suppose but a single carbon copy or duplicate be required. Two loose sheets of paper, not shown, are put in the machine, and turned about the platen until their upper edges are sufficiently advanced in front to be readily separated by hand. Then the hand wheel 6 is turned backward thereby rotating short shaft 4, as in Fig. 7, which movement through the crank 5 and the corresponding crank 5' at the other end, lifts the rod 7, with the arms and manifolding ribbons it carries. This withdraws the stop fingers 15, 15' and 15'' from the upper guide groove 17 of the stop member 16, as seen in Fig. 3, and this movement is limited by the upper notch of the stop 13 engaging this spring detent 14, as in Fig. 7, while the ribbon sections are still supported and prevented from falling backward about their axis on rod 7, by the stop fingers resting on the stop member 16 outside the guide groove 17. See Fig. 3. Now the ribbon sections are all free to be brought into play, but as we are assuming that only one is required, the operator takes hold of the handle 10'' of the arms 9'' of the front ribbon section 12''. This ribbon section is then turned forwardly and downwardly on its own axis on rod 7, describing an arc which carries it down close to the front of the platen, and in a plane well inside and clear of the index pointer 37 of the machine, as seen in Figs. 4 and 7, which thus presents no interference; but its position just described is still above its functional position. The operator in thus bringing the ribbon section to its first position with reference to the platen, separates the advance edges of the two sheets of paper in the machine, so that the ribbon section 12'' passes down between them.

Now the hand wheel 6 is turned forwardly again, until its short crank shaft 4 is limited by the lower notch of its stop 13 engaging the spring detent 14. This movement of the shaft 4 swings the rod 7 down again, with two effects. One effect is to carry the ribbon section 12'' still further down between

the paper sheets, to its functional position in the line of type impact, as seen in Fig. 5, and in this movement, it will be observed that as its axis is the short crank shaft 4, said ribbon is caused to move slightly outwardly, thereby, as it moves down, well clearing the platen and affording room enough for the free line spacing movement of the paper sheets. In this final or functional position the ribbon section 12'' is locked by its stop finger 15'' entering and engaging the lower guard groove 18 of the fixed stop member 16, as seen in Fig. 5. The other effect of the movement of the shaft 4 and the downward movement of the rod 7, still assuming that only the one ribbon section 12'' is to be used, is to return the stop fingers 15 and 15' of the arms 9 and 9' of the other two ribbon sections 12 and 12' down again into engagement with the upper guard groove 17 of the fixed stop 16, so that said sections are still locked securely out of the way while the ribbon section 12'' is in use. This effect can be readily seen from Figs. 3 and 2, for if we assume that only the ribbon section 12'' of Fig. 3 has been turned down to the position it occupies in Fig. 4, then the turning of rod 7 to carry said section to the functional position of Fig. 5, will carry the other two ribbon sections of Fig. 3 down to the positions they occupy in Fig. 2.

A reversal of these several operations results in returning the ribbon section 12'' to the position from which it started.

If two copies are to be made, three sheets of paper are put in the machine, and the operations above described are gone through with, except that the two ribbon sections 12'' and 12' are brought down and fitted between successive sheets, while ribbon section 12 is held locked up out of use. So, likewise, if three copies are to be made, all three ribbon sections are thrown into functional position simultaneously, as seen in Fig. 5. In order to extend the life of the manifolding ribbon sections, provision is made for changing the position of the ribbon with relation to the line of type-impact, so that a fresh ribbon surface may be presented over practically its entire area. This provision is automatic, and the change of position is synchronous with the line spacing. This effect is produced as follows. By the line spacing movement of the platen either through its hand wheel 31 or its spacing lever 33, the spacing ratchet 32 turns the pinion 20 which, in turn, through its cam 21, rocks the yoke 22 on its pivotal connection with shaft 4, and this rocking of the yoke oscillates the short crank shaft 4 through the spring detent 14 carried by said yoke, and the notched stop 13 on the shaft, said detent and stop acting as a pawl and ratchet. When the ribbon section is in use, this move-

ment of the crank shaft 4, has the effect of changing the position of the rod 7 and thus changing the position of the ribbon section with relation to the type-impact line. By proper contour of the cam, the ribbon section may be raised slightly a few times at each successive line spacing, and then lowered slightly a few times and then raised again and so on, thus presenting eventually the whole surface area of the ribbon to the type impact.

In terming the manifolding members, "ribbons" it is to be understood that said term refers to and includes strips having a general ribbon shape. They may be of any suitable material, and their preparation may vary, as, for example, they may have an impression or ink surface on one side only, or other side being a non-impression one; or if it be desired to make one ribbon produce two copies, one of which is a tissue paper sheet to be read by transmitted light, the ribbon may have both sides inked.

In the foregoing description of the operation, it will be noted that the swing of the manifolding member, in describing its initial downward movement, is such as to carry its stop finger into position above the entrance to the lower guide groove 18 of the stop member 16, thereby permitting its second or final movement to functional position relatively to the platen and to the line of type impact. Thus the manifolding member, to be used at all, must be brought into its positions correctly, for if by chance, the stop finger should be brought down to lie outside the guide groove 18, the manifolding ribbon would be held out away from the platen and could not reach its proper place.

I claim:—

1. A manifolding attachment for type-writing machines and the like comprising a plurality of manifolding members; means for mounting said members for individual and collective movement from and to a position above the platen, down to and up from a functional position in front of the platen in the line of type-impact; and means for releasably locking said members individually and collectively at the limits of their movement.

2. A manifolding attachment for type-writing machines and the like comprising a plurality of manifolding members; a carrier for each of said members, adapting them to move individually and collectively from and to a position above the machine platen, down to and up from a functional position in front of the platen in the line of type-impact; and means associated with said carriers for releasably locking them individually and collectively at the limits of their movement.

3. A manifolding attachment for type-writing machines and the like comprising a manifolding member mounted for movement

from and to a position above the machine platen, down to and up from a functional position in front of the platen in the line of type-impact; and means for automatically adjusting, at each line-spacing of the platen, said manifolding member when in said functional position, to vary the relation of its width with respect to said line of type-impact.

4. A manifolding attachment for type-writing machines and the like comprising a manifolding member mounted for movement from and to a position above the machine, platen, down to and up from a functional position in front of the platen in the line of type-impact; and means dependent upon and operated by the line spacing movement of the platen for automatically adjusting said manifolding member when in said functional position, to vary the relation of its width with respect to said line of type-impact.

5. A manifolding attachment for type-writing machines and the like, comprising a pair of end brackets adapted for connection with the machine; crank shafts journaled in said brackets; a pair of spaced connected arms pivotally carried by the cranks of said shafts; and a manifolding member carried by and between said arms.

6. A manifolding attachment for type-writing machines and the like comprising a pair of end brackets adapted for connection with the machine; crank shafts journaled in said brackets; a pair of spaced connected arms pivotally carried by the cranks of said shafts; a manifolding member carried by and between said arms; and means for supporting said arms at the limits of their movement about their pivotal connection.

7. A manifolding attachment for type-writing machines and the like comprising a pair of end brackets adapted for connection with the machine; crank shafts journaled in said brackets; a pair of spaced connected arms pivotally carried by the cranks of said shafts; a manifolding member carried by and between said arms; means for supporting said arms at the limits of their movement about their pivotal connection; and means for releasably locking said arms at said limits.

8. A manifolding attachment for type-writing machines and the like comprising a pair of end brackets adapted for connection with the machine; crank shafts journaled in said brackets; a pair of spaced connected arms pivotally carried by the cranks of said shafts; a manifolding member carried by and between said arms; means for supporting said arms at the limits of their movement about their pivotal connection; means for releasably locking said arms at said limits; and means for limiting the throw of the cranks carrying said arms.

9. A manifolding attachment for type-

writing machines and the like, comprising a pair of end brackets adapted for connection with the machine; crank shafts journaled in said brackets; a pair of spaced connected arms pivotally carried by the cranks of said shafts; a manifolding member carried by and between said arms; a fixed stop member carried by one of said brackets having upper and lower open ended guard grooves; and a stop finger on the adjacent arm coacting with said grooves to support and releasably lock the arms at the limits of their movement about their pivotal connection with the cranks.

10. A manifolding attachment for type-writing machines and the like, comprising a pair of end brackets adapted for connection with the machine; crank shafts journaled in said brackets; a pair of spaced connected arms pivotally carried by the cranks of said shafts; a manifolding member carried by and between said arms; a fixed stop member carried by one of said brackets having upper and lower open ended guard grooves; a stop finger on the adjacent arm coacting with said grooves to support and releasably lock the arms at the limits of their movement about their pivotal connection with the cranks; a two notched stop on one of said shafts, and a coacting detent for limiting the throw of the cranks.

11. A manifolding attachment for type-writing machines and the like, comprising a pair of end brackets adapted for connection with the machine; crank shafts journaled in said brackets; a pair of spaced connected arms pivotally carried by the cranks of said shafts; a manifolding member carried by and between said arms, and adapted to be moved down to functional position in front of the machine platen in the line of type-impact; a yoke associated with one of said shafts; and a cam carried by one of the

brackets and adapted for movement transmitted from the machine platen upon its line spacing, said cam operating in said yoke to oscillate the shaft and adjust the manifolding member in its functional position to vary the relation of its width with respect to the type-impact line.

12. A manifolding attachment for type-writing machines and the like, comprising a pair of end brackets adapted for connection with the machine; crank shafts journaled in said brackets; a pair of spaced connected arms pivotally carried by the cranks of said shafts; a manifolding member carried by and between said arms, and adapted to be moved down to functional position in front of the machine platen in the line of type-impact; a yoke associated with one of said shafts; a pinion carried by one of the brackets and adapted for engagement with the line spacing ratchet of the machine platen; and a cam carried by the pinion and operating in the yoke, to oscillate the shaft and adjust the manifolding member in its functional position to vary the relation of its width with respect to the type-impact line.

13. A manifolding attachment for type-writing machines and the like, comprising a pair of end brackets adapted for connection with the machine; a rod carried by said brackets, a plurality of independent concentric sleeves rotatably mounted on said rod and upon each other whereby said sleeves may turn upon said rod individually and collectively; an arm secured to each end of each sleeve; a manifolding member secured to and between the end arms of each sleeve; and means for releasably locking said arms individually and collectively at the limits of their rotative movement.

In testimony whereof I have signed my name to this specification.

MALCOLM L. COSSITT.