Oct. 14, 1941. R. P. TEMPLETON 2,259,358

MANIFOLDING STRIP

Filed Dec. 5, 1939

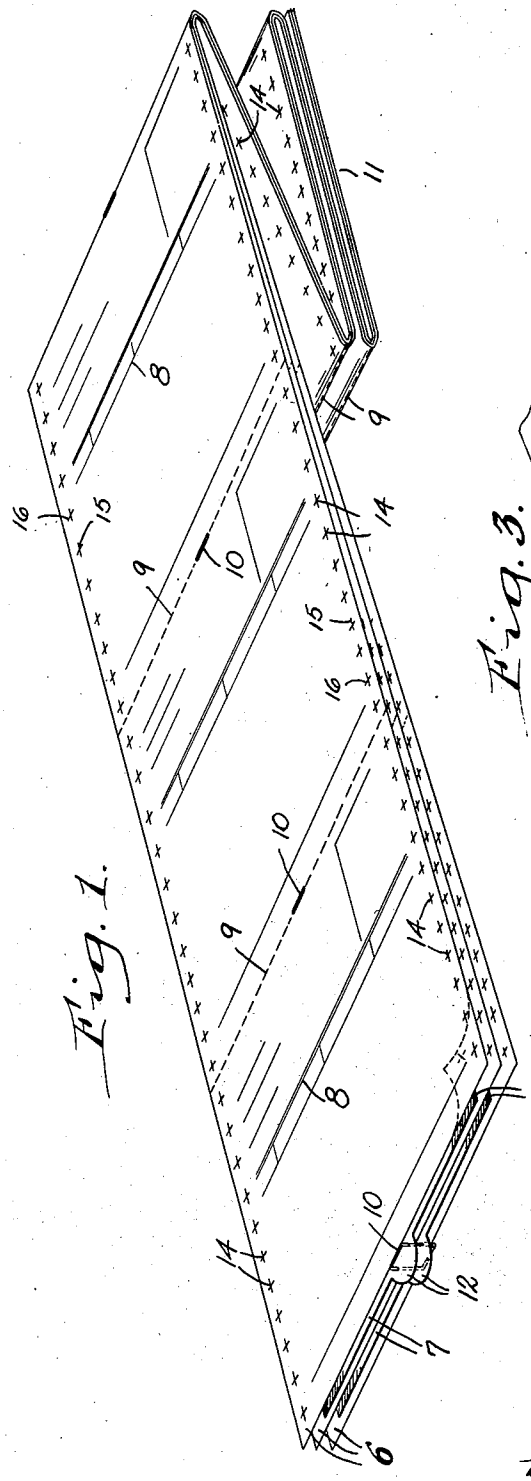

Fig. 1.

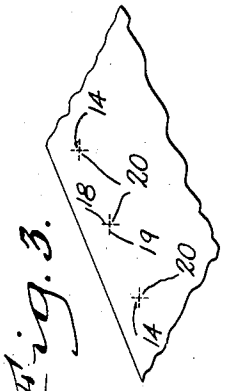

Fig. 3.

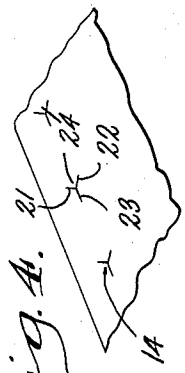

Fig. 4.

Fig. 5.

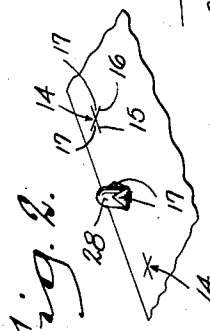

Fig. 2.

Inventor
Robert P. Templeton,
by C. W. Weeks
Attorney

Patented Oct. 14, 1941 2,259,358

UNITED STATES PATENT OFFICE

2,259,358

MANIFOLDING STRIP

Robert P. Templeton, Niagara Falls, N. Y., assignor to American Sales Book Company, Inc., Niagara Falls, N. Y., a corporation of Delaware

Application December 5, 1939, Serial No. 307,653

14 Claims. (Cl. 282—21)

This invention relates to improvements in manifolding strips, particularly those of the long continuous traveler type, such as utilized in various forms of writing machines. The invention deals more particularly with improvements in the construction of the manifolding strip enabling it to cooperate with feeding mechanism of the pin type.

It is a general object of the invention to provide, in manifolding strips of the class mentioned, an improved structure for the apertures or formations adapted for cooperation with the feed pins of the strip feeding mechanism.

A further object of the invention is to provide, in manifolding strips of the class mentioned, an improved structure for the pin feed apertures whereby the marring or mutilation of the paper strip is avoided and the freeing of loose portions of paper is prevented.

Still another object of the invention is to provide an improved structure of pin feed apertures for record and other manifolding strips so as to provide deflectable tabs or strip attaching tongues at the several apertures that may be deflected by the action of the feed pins into the apertures of adjacent strips so as to attach the superposed strips of an assembly together to retain them temporarily in their assembled superposed relation.

A further object of the invention is to provide an improved structure of the feed apertures for manifolding strips whereby portions or tongues adjacent to the feed apertures may be deflected by action of the feed pins into engagement with adjacent strips of an assembly so as to effect strip alignment and to retain the superposed strips in their correctly aligned superposed relation.

Other objects of the invention will be in part pointed out in the following detailed description of certain illustrative but preferred embodiments of the invention, and will be in part obvious as the disclosure proceeds.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts, which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the claims.

For a more complete disclosure of the nature, objects and advantages of the invention, reference is had to the following detailed description and to the accompanying drawing in which:

Fig. 1 is a perspective view of a manifolding assembly embodying the improvements of the invention and disclosing the invention as applied to a strip assembly of the long continuous traveler type;

Fig. 2 is a fragmentary enlarged perspective view showing the manner of cooperation of a feed pin in one of the improved feed apertures;

Fig. 3 is a view similar to Fig. 2 but showing a modification of the aperture structure;

Fig. 4 is another view similar to Fig. 2 but disclosing a further modified embodiment, and

Fig. 5 is a magnified perspective sectional view showing another modification of the strip feeding formation.

As shown in the drawing, the improvements are embodied in a manifolding assembly of the long continuous traveler type including a plurality of long continuous record strips 6 of paper or like material, and long continuous carbon strips interleaved in transfer relation between adjacent record strips of the assembly. There may be as many record strips and interleaved carbon strips as desired, or the invention may be embodied in a single manifolding strip, either a record strip or a carbon strip. The record strips are shown as being provided with blank forms 8 and both the record and carbon strips have longitudinally spaced transverse weakened severance lines 9 formed by scoring, perforating or otherwise weakening the strips so as to facilitate severance along these lines. Also, as shown in Fig. 1, the strips of the assembly may be attached together by any appropriate fastening means, such as staples 10 preferably located directly upon the transverse weakened lines 9 of the record strips. For some purposes, however, the fastening means for fastening the strips together may be omitted. The assembly of record and carbon strips is preferably folded in zigzag formation along transverse lines so as to dispose it in a zigzag supply pack 11 convenient for handling or for loading into various forms of writing machines.

As shown, the carbons are provided with grip tabs 12 formed by longitudinally deviating parts of the transverse severance lines of the carbon strips as fully disclosed in the Conklin Patent No. 2,083,295 issued June 8, 1937. This tab structure may be omitted if desired. The carbon strips 7 may terminate as indicated at 13, at either one or both of their longitudinal edges short of the adjacent longitudinal edges of the record strips. The marginal portions of the record strips extending beyond the adjacent edges of the carbon strips provide longitudinal feed bands in which the strip formations 14 for cooperation with the feed pins of the feeding mechanism are located. If desired, however, the carbon strips

may have their longitudinal edges flush with the record strip edges and have the strip feeding formations 14 formed in the longitudinal marginal portions thereof that are in superposed relation with the feed bands of the record strips. The feeding formations 14 are arranged in longitudinal series at longitudinal margins of the record strips and may be provided in either one or both of these longitudinal margins. The formations 14 are longitudinally spaced for cooperation with the pins of pin feeding mechanism which may be of any preferred type, such as disclosed, for example, in the Mabon Patent No. 2,171,003 granted August 29, 1939. These improved strip formations or apertures cooperate with the feed pins of the feeding mechanism for effecting strip feed in a manner similar to the ordinary feed apertures, as disclosed in the Mabon patent.

In the illustrative embodiment of the invention shown in Figures 1 and 2, the feed formations or feed apertures 14 are formed by two or more lines of weakening intersecting with each other. According to this embodiment, each feed formation includes a slit 15 extending longitudinally of the series of formations and a slit 16 lying transverse to said series, these two slits intersecting or cutting each other substantially centrally of the feed formation. As shown in this embodiment the slits 15 and 16 extend entirely through the paper strip, thus forming free ended tongues 17 having their points or apices directed toward the center of the feed formation. These intersecting lines 15 and 16 may be formed by slits extending entirely through the paper, as mentioned, or they may be formed by other means of weakening the paper, such as by providing short elongated spaced slits or perforations, as later described.

In the embodiment disclosed in Fig. 3 of the drawing, the slits or weakened lines 18 and 19 are similar in position and purpose to the slits 15 and 16 described above, but in this case the lines 18 and 19 are disposed obliquely to the longitudinal series of apertures 14. Also, as shown, the lines 18 and 19 are formed by short slits or cuts or perforations spaced apart slightly as shown, so as to weaken the paper to severance along the lines, but the severance is not completed until the short integral sections between adjacent slits are severed by action of the entering feed pins. Pointed tongues 20 are formed by the intersecting lines 18 and 19 similar to the tongues 17, above described, but the tongues 20 are positioned differently with reference to the longitudinal line of the formations 14 than are the tongues 17. In some cases where the manifolding paper is especially thin or weak or there is considerable resistance to feeding the record assembly, it is advantageous to position the base of the tongue, as the tongue 20 in Fig. 3, directly in front of the advancing feed pin. The feeding effort is thus directed against the base of the tongue rather than along the longitudinal slit 15 as in Fig. 2, and thus the tendency to tear the paper due to the feeding effort is resisted to a greater extent.

A further modified arrangement of the weakened lines of the feed formations 14 is shown in Fig. 4 where three radiating slits or cuts or similar weakening lines 21, 22 and 23 radiate from a common point at angles of about 120° with each other. The weakening line 23 is disposed substantially parallel to the line of the series of formations 14 and the pointed tongue 24 has its point or apex disposed rearwardly of the direction of strip feed while its base portions lie directly in front of the advancing feed pins, as in the case of the tongue 20 of Fig. 3. In Figures 3 and 4 the direction of feed is assumed to be to the right, while in Figures 1 and 2 it may be in either direction. The weakening along the lines 21, 22 and 23 may be effected in any of the different ways above referred to in connection with the disclosures of Figures 2 and 3, or as later described in connection with Fig. 5.

In the magnified view of Fig. 5 the weakening of the feed formations 14 is effected by slits 25 and 26 intersecting or cutting each other as in the embodiments above described, but extending only part way through the paper strip so as to leave a small integral strip portion 27 extending along one strip surface. The slits 25 and 26 will be made of sufficient depth to provide integral portions 27 sufficiently weak so as to be severed by the entry of the feed pin into feeding relation with the strip without causing any distortion or displacement of the strip.

Feeding of a strip or of an assembly of strips having the improved feed formations, as above described, will be accomplished in a manner analogous to prior arrangements as in the Mabon patent referred to, where the feed formations are formed by cutting out small disks of paper to provide the feed apertures. But in this improved structure not only is marring of the paper avoided but the feeding engagement of the strips with the feed pins is more effective to accomplish accurate strip feed because the aperture margins are always in close engagement with the periphery of the feed pins by virtue of the deflectable or swingable pointed tongues that are in constant engagement with the pins at different sides of the latter. Each of the tongues has swinging attachment with the strip in which it is located and the tongues substantially cover the spaces to be occupied by the feed pins, none of the strip material being ordinarily removed. Also, the troublesome loose disks formed by cutting out parts of the paper are entirely avoided and manufacture is simplified and less expensive. In cases where the feed formations 14 are formed by slits extending entirely through the paper, the pointed tongues will be retained in their normal positions in the plane of the paper due to the natural resiliency of the paper. There is, therefore, no tendency of the formations to catch on edges of the assembly strips as in prior known constructions. After a feeding operation the pointed tongues may be made to assume their normal positions in the plane of the paper, thus preserving its unmutilated appearance. In cases where the paper is not cut all the way through at the intersecting lines of the formations 14, as in the embodiments particularly disclosed in connection with Figures 3 and 5, the pointed tongues will be maintained in the plane of the paper by the integral or unsevered sections.

When one of the feed pins 28 of the feed mechanism, such as shown in Fig. 2, is caused to enter one of the feed formations 14, the pointed tongues, such as 17 will be deflected or swung laterally from the plane of the paper to the position shown, the tongues engaging in close relation with the pin at different sides thereof. This maintains at all times a close engagement of the pins with the peripheries of the feed formations, thus improving the accuracy of strip feed and strip positioning. When there are a plurality

of superposed strips having the superposed feed formations, as shown in Fig. 1, the entering feed pins 28 will cause deflection of the pointed tongues 17 of the lower strips into engagement within the feed formations of the overlying strip or strips. This engagement of these tongues within the apertures or formations will provide a temporary attachment for attaching the strips or sheets together. The attachment may be readily released by pulling the sheets apart to release the tongues from their engagement in the apertures. This temporary attachment is convenient where it is desired to retain the sheets in position temporarily after they have been inscribed and severed from the completed assembly along the weakened lines 9.

Also, the deflecting of the pointed tongues into adjacent strip apertures by action of the entering feed pins 28 tends to urge the strips forwardly, rearwardly or laterally into correctly aligned relation with each other and to retain them in such aligned relation. In this manner the accuracy of strip alignment is promoted.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

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

1. A manifolding strip having a longitudinal series of pin receiving formations longitudinally spaced for receiving pins of pin feed mechanism for feeding the strip, each of said formations including a plurality of intersection lines of physical strip alterations forming a plurality of adjacent pointed tongues having swinging connection with the strip, said tongues having their points adjacent to each other and adjacent to the intersection of said lines.

2. A manifolding strip having a longitudinal series of pin receiving formations longitudinally spaced for receiving pins of pin feed mechanism for feeding the strip, each of said formations including a plurality of intersecting slits, said slits extending only part way through the strip so as to weaken it for severance along the slits by entry of the feed pins.

3. A manifolding strip having a longitudinal series of pin receiving formations longitudinally spaced for receiving pins of pin feed mechanism for feeding the strip, each of said formations including a plurality of intersecting slits, said slits forming a plurality of pointed tongues, the points of which are positioned adjacent to the point of intersection of said slits.

4. A manifolding strip having a longitudinal series of pin receiving formations, each including a plurality of intersecting slits, said slits extending only part way through the strip so as to weaken it for severance along the slits, said slits forming at least one pointed tongue, the point of which is positioned adjacent to the point of intersection of said slits.

5. A manifolding strip having a longitudinal series of pin receiving formations longitudinally spaced for receiving pins of pin feed mechanism for feeding the strip, each of said formations including a plurality of intersecting slits, said slits forming at each of said receiving formations a plurality of pointed tongues the points of which are located substantially at the slit intersection, one of said slits at each pin receiving formation having its length extending along the direction of said series of formations, the point of one said tongue of each receiving formation being directed rearwardly of the direction of strip feed.

6. A manifolding assembly including a plurality of superposed manifolding strips, each having a longitudinal series of pin receiving formations longitudinally spaced for receiving pins of pin feed mechanism for feeding the assembly, each of said formations of the superposed strips being respectively approximately in depthwise alignment, each of said formations of one said strip including a plurality of adjacent tongues substantially covering the space that the feed pins are to occupy, said tongues having substantially adjacent pointed parts positioned so as to be deflected into said receiving formations of an adjacent strip, said tongues being of sufficient longitudinal extent to enter when thus deflected into strip aligning and strip attaching relation with respective receiving formations of said adjacent strip.

7. A manifolding strip having a longitudinal series of pin receiving formations longitudinally spaced for receiving pins of a pin feed mechanism for feeding the strip, each of said fromations including a plurality of lines intersecting so as to form a plurality of pointed tongues, the strip being weakened along said lines for strip severance therealong by entry of the feed pins but being sufficiently strong at the lines to hold the tongues in their original positions in the strip body prior to pin entry, one of said lines at each pin receiving formation having its length extending along the direction of said series of formations.

8. A manifolding strip having a longitudinal series of pin receiving formations longitudinally spaced for receiving pins of a pin feed mechanism for feeding the strip, each of said formations including a plurality of lines intersecting so as to form a plurality of pointed tongues, the strip being weakened along said lines for strip severance therealong by entry of the feed pins but having retaining connection at the lines to hold the tongues in their original positions in the strip body prior to pin entry.

9. A manifolding strip having a longitudinal series of pin receiving formations longitudinally spaced for receiving pins of pin feed mechanism for feeding the strip, each of said formations including a plurality of adjacent swingable tongues having substantially contiguous swingable points and substantially covering the space that the feed pin is to occupy.

10. A manifolding assembly including a plurality of superposed manifolding strips each having a longitudinal series of pin receiving formations longitudinally spaced for receiving pins of pin feed mechanism for feeding the assembly, said formations of the superposed strips being respectively approximately in depthwise alignment, each of said formations including a plurality of adjacent swingable tongues having substantially centrally disposed contiguous swingable points and substantially covering the space that the feed pins are to occupy, said tongues of one said manifolding strip being of sufficient longitudinal extent to enter in strip aligning and strip attaching relation into the respective said receiving formations of an adiacent said strip.

11. A manifolding assembly including a plurality of superposed manifolding strips each having a longitudinal series of pin receiving forma-

tions, longitudinally spaced for receiving feed pins of pin feed mechanism for feeding the assembly, said formations of the superposed strips being respectively in depthwise alignment, said formations of one said strip including tongues having swinging connections with the strip so as to be deflectable from the strip into respective adjacent said formations of an adjacent assembly strip by entry of said feed pins into feeding engagement with the respective formations, said tongues being of sufficient longitudinal extent for effecting alignment of the strips with each other and for holding them together when said tongues are thus deflected into said adjacent formations, said tongues substantially covering the spaces at the respective pin receiving formations that the feed pins are to occupy.

12. A manifolding assembly including a plurality of superposed manifolding strips each having a longitudinal series of pin receiving formations, longitudinally spaced for receiving pins of pin feed mechanism for feeding the assembly, said formations of the superposed strips being respectively in depthwise alignment, said formations of at least one said manifolding strip including tongues having swinging connections with the respective strip so as to be deflectable from the strip by pin entry into the respective said formations of an adjacent assembly strip and being of sufficient longitudinal extent to align the strips and to attach them together when the tongues are thus deflected, said tongues substantially covering the spaces at the respective pin receiving formations that the feed pins are to occupy, said tongues having severable retaining attachments for retaining them in their original positions in the bodies of the respective strips until entry of the pins.

13. A manifolding strip having a longitudinal series of pin receiving formations longitudinally spaced for receiving pins of pin feeding mechanism for feeding the strip, said formations being formed by tongues having swinging connections with the strip so as to be deflected from the strip by pin entry and having contiguous swinging end parts, said tongues substantially covering the spaces that the pins are to occupy at the respective pin receiving formations, said tongues having severable retaining attachments for retaining them in their original position in the body of the strip until entry of the feed pins.

14. A manifolding assembly including a plurality of superposed manifolding strips, each having a longitudinal series of pin receiving formations longitudinally spaced for receiving pins of pin feeding mechanism for feeding the strip, each of said formations of the superposed strips being respectively approximately in depthwise alignment, each of said formations including a plurality of intersecting line formations forming strip aligning and attaching deflectable tongues having pointed parts adjacent to the point of intersection of said line formations, said pointed parts of the tongues being respectively positioned for deflection into adjacent said receiving formations of an adjacent strip and being of sufficient longitudinal extent for attaching and aligning the superposed strips.

ROBERT P. TEMPLETON.