Dec. 30, 1952 A. A. JOHNSON 2,623,623

CARBON SUPPLY CONTROL FOR MANIFOLDING TYPEWRITERS

Filed Aug. 25, 1948

Fig. 1

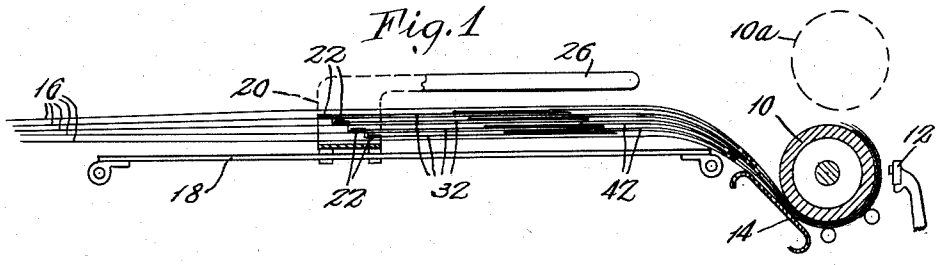



Fig. 2

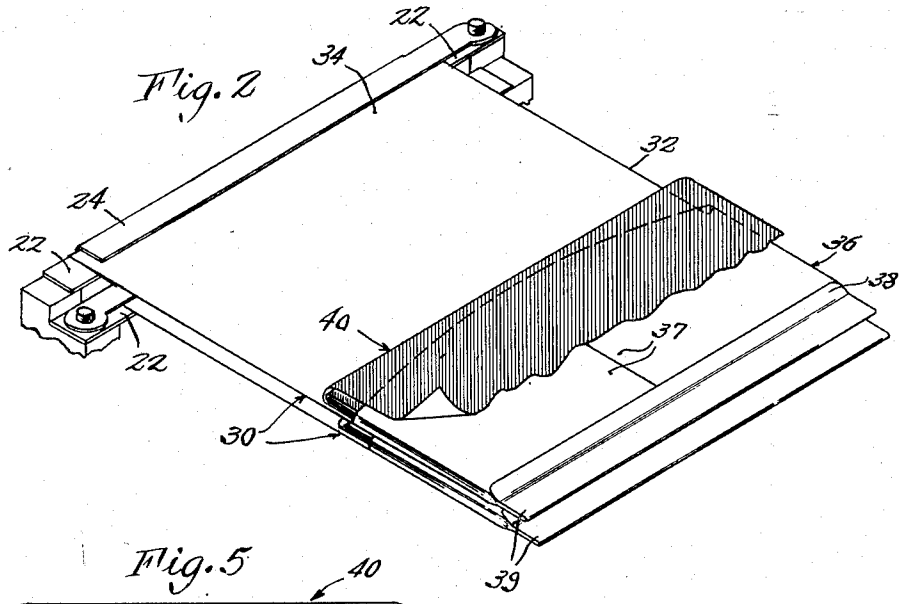



Fig. 5

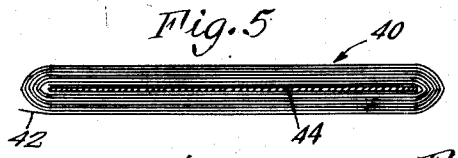
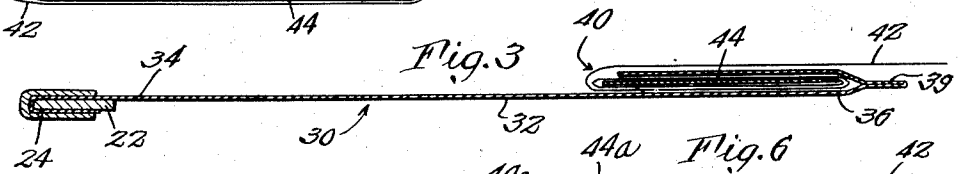



Fig. 3




44a Fig. 6

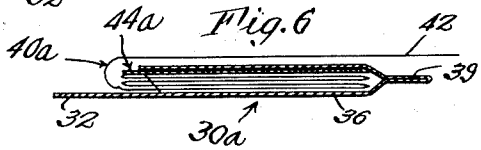
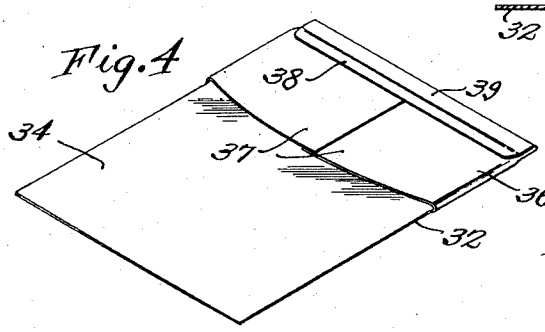



Fig. 4




INVENTOR.
Arthur A. Johnson
BY
Johnson and Kline
ATTORNEYS

Patented Dec. 30, 1952

2,623,623

# UNITED STATES PATENT OFFICE

2,623,623

## CARBON SUPPLY CONTROL FOR MANIFOLDING TYPEWRITERS

Arthur A. Johnson, Bridgeport, Conn., assignor to Columbia Ribbon and Carbon Manufacturing Company, Inc., Glen Cove, N. Y., a corporation of New York

Application August 25, 1948, Serial No. 46,090

12 Claims. (Cl. 197—126)

1

This invention relates to continuous-form manifolding typewriters, and more particularly to supplying carbon paper therefor from which the same may be withdrawn as needed.

It is an object of my invention to provide a holder which can accommodate a flat carbon supply of the type which can be used either with separate superposed record strips, or with connected, fan-folded record strips.

A further object of my invention is to provide a holder and carbon supply combination of a character such that the carbon paper may be constrained and guided by a folded side of the supply package to present itself in proper alignment and without danger of damage to the carbon web.

Another object of my invention is to provide a carbon holder designed to expedite the carbon changing operation, but which is, at the same time, extremely simple in structure and inexpensive to manufacture.

In connection with the foregoing object, it is a feature of my invention to provide, in an unusually simple manner, a hand tab for grasping and supporting the carbon holder during the carbon-changing operation, and which offers substantial assistance from the standpoint of guarding against interference with the carbon-changing operation by the hand which grasps the holder.

Other features and advantages will hereinafter appear.

In the drawing:

Figure 1 is a fragmentary section of a continuous-form manifolding typewriter, primarily the carriage thereof, and illustrating my improved carbon and holder assembly in position thereon.

Fig. 2 is a fragmentary perspective of a portion of the carbon carrying and shifting frame of the carriage of Fig. 1 showing my improved carbon pack and holder in place thereon.

Fig. 3 is an enlarged section of my improved carbon holder and carbon supply assembly showing the manner of attaching the same to its supporting arm.

Fig. 4 is a perspective view of my improved carbon holder.

Fig. 5 is an enlarged section of one form of carbon supply used in combination with my improved holder.

Fig. 6 is a partial section of my improved carbon holder and showing another form of carbon supply positioned therein.

Fig. 1 of the drawing illustrates portions of the

2

carbon-shifting carriage of a continuous-form manifolding typewriter of a well-known type, including a platen 10 around which the continuous writing strips and carbon sheets are drawn for inscription by the type-bars 12 of the typewriter. The dotted circle 10a indicates the position to which the platen 10 may be moved for the purpose of straightening the path of the writing strips and carbons to permit withdrawing the carbons after typing of the writing strips or forms has been completed. The carriage also includes the sloping paper table 14 which leads the superposed record strips 16 and the interleaved carbons into the nip of the platen feed.

Connected to and movable with the typewriter carriage which carries the platen 10 and table 14, is the usual auxiliary strip-supporting and carbon carriage frame 18 which has slidably mounted thereon for movement towards and away from the platen, the carbon shifting carriage 20.

The carriage 20 carries a plurality of transverse arms 22 each of which is adapted to extend between a pair of the record strips 16 and support an interposed carbon or transfer element. The arms 22 may be supported at both ends on frame 18 when separate record strips are to be handled, or may be supported at one end only as shown in Fig. 2. When the arms 22 are supported in the latter fashion and extend alternately from each side of the frame, either separate record strips or connected, fan-folded forms may be employed. If desired, the arms 22 may also be provided with pivoted clamps 24 (Fig. 2) for attaching thereto the leader or holder for the transfer or carbon element. The carriage 20 also has thereon a forwardly extending operating arm 26 which projects to a position near the platen and provides a means whereby the operator may conveniently retract the carriage to shift the carbons from a completed set of forms to those which are about to be typed.

My invention is concerned with the assembly which includes the carbon paper supply and the holding means therefor designated in the drawing by the character 30 or 30a. The number of these assemblies required is one less than the record strips to be used, and each is mounted on one of the arms 22 and extends therefrom towards the typewriter platen 10 between a pair of the record strips 16. In Fig. 2 the record strips 16 have been omitted for the purpose of clarity, but is to be understood that one such strip would pass between the arms 22 and the assemblies 30, and that another pair of record strips would pass

above and below the arms and assemblies shown.

The assembly of my invention, which in the form presently preferred is designated by the numeral **30**, is shown in Figs. 2 and 3. This assembly **30** consists of a holder **32**, shown in perspective in Fig. 4, having a portion **34** forming a leader or connecting strip and a portion **36** which provides a pocket for receiving a carbon supply **40**. As will be seen in Figs. 2 and 3, the pocket **36** is made shallow enough to expose a portion of the folded carbon supply used therewith for reasons to be hereinafter explained.

The holder **32** may be constructed of paper, fabric or any suitable material which is light and flexible and otherwise suited for positioning between and supporting on record strips **22**. Preferably the same may be constructed of a durable grade of paper cut in such a way as to provide flaps **37** and **38**. The pocket **36** is formed by folding the side flaps **37** towards each other and closing the end by folding up and adhering the flap **38**. For a purpose to be hereinafter described, it is also desirable to provide a relatively stiff tab which extends beyond the closed end of pocket **36**. One convenient construction which provides such a tab is arrived at by adhering together the inner surfaces near the bottom of the pocket formed by closing flaps **37** and **38**, thus spacing the bottom of pocket **36** from the end of the sheet by the width of tab portion **39**.

The folded carbon supply **40** is formed by winding a strip of carbon paper **42** on a flat, relatively stiff paper or cardboard core or support **44** to provide a flat roll or bolt. In this way a substantial supply of carbon can be stored in a restricted space and still be suitable for positioning between the superposed strips of a continuous manifold set.

In using the device of my invention, the holder **32** is suitably attached to one of the arms **22**, for example by folding the leader end **34** thereof over the arm **22** and clamping the same in place with the corresponding clamp **24**. The carbon supply **40** is unwound to an extent sufficient to provide a free end which will reach the platen when the carriage **20** is in retracted position and then is slipped into the pocket **36** of the holder **32** with the free end coming from the back as shown, and overlying the outside surface of the pocket. When a plurality of such assemblies have been installed and the record sheets **16** arranged between them, the superposed ends may be introduced under the platen **10** and the forms typed in the usual manner.

After the holders **32** have been finally adjusted for correct parallel position of the carbons extending therefrom with the record strips **16**, either by rearranging the connection of the leaders **34** with the arms **22**, or by angularly adjusting the arms **22** in a known manner, the adjustment will be substantially permanent for the life of the holder. The reason for this is that the carbon, instead of being guided over the edge of the pocket **36**, is directed by its own folds, so that any wear or damage affecting the edge of the pocket leaves the carbon direction unaltered. It will be seen that when a true parallel setting of the holder **32** has once been achieved, the bottom of pocket **36** is then perpendicular to the path of travel of strips **16**. Furthermore, a supply of carbon paper in order to be properly packaged in a bolt such as **40** must have its folds truly perpendicular to the ends of the package and parallel to each other. Thus, any such package which is thereafter inserted in the holder **32** will lead in a true parallel direction therefrom, without further adjustment. Furthermore, the fact that the carbon strip **42** is required to lead only over an edge which is formed by a part of its own package, materially reduces the chance for accidental damage to the carbon strip by eliminating those tears which might occur due to relative movement between the supply package **40** and a guiding edge formed on the holder, for example the edge of the pocket **36**. The advantage of this construction will be appreciated when it is considered that the operation of carbon-changing by retraction of the shifting carriage **20** causes the carbon guiding edge, wherever located, to be forced against a portion of the strip **42**, and if the same is carried out in a rapid manner, the carbon supply may exhibit a considerable inertia effect tending to cause movement thereof relative to the holder. Should the carbon guiding edge be formed as a portion of the holder rather than an edge of the supply itself, this tendency to relative movement is very apt to damage the carbon strip. The relative dimensions and positioning of the carbon supply and holder pocket which result in the improved character of operation are accordingly important features of my invention.

When the end of the carbon strips **42** which are being used in the manifolding operation have become worn so as to be no longer useful, they may be changed in a simple and expeditious manner now to be described. After the used ends of the carbon strips have been torn off in the usual manner, the operator moves the carriage **20** towards the platen to provide slack in carbon strips **42**. The tab **39** of one of the holders **32** is then grasped by one hand to hold the same against movement. The other hand is used to engage the supply **40** by one of its projecting corners, to flip the same over the number of times required to unwind a new desired length of carbon, and to slip the supply **40** pack into the pocket **36**. When fan-folded record strips are being utilized, the supply **40** must of course be displaced laterally of the set before unwinding can take place.

It should be noted at this point that the positioning of the tab **39** for ready grasping by the operator not only serves its immediate purpose, but further provides a location where a firm grip may be taken on the holder **32** near the pocket **36** without the danger of squeezing the pocket in such a way as to inhibit the removal of the carbon supply **40**.

A modification of the folded carbon supply which may be used in connection with my invention is illustrated in Fig. 6 and designated by the character **40***a*. A support **44***a* of the desired width is provided and one end of a carbon strip **42** is attached thereto, preferably by adhesive. The strip is folded in zig-zag fashion so that the folds lie side-by-side with the support **44***a* at one end of the stack and substantially coextensive with one face thereof. The supply **40***a* is positioned in the pocket **36** of holder **32** with the support **44***a* towards the front and the carbon strip leading from the back as shown in Fig. 6. The edge of support **44***a* and the carbon folds are thus capable of serving in a parallel-guiding capacity similar to the folded edges of the supply **40** described above.

When carbon-changing is to be effected with the supply **40***a*, it is only necessary to grasp the tab **39** with one hand, insert an instrument, for example a pencil, in the loop of carbon located near the mouth of the pocket **32**, and, by a light pressure in a direction away from the typewriter

platen, withdraw the next two layers (or multiples thereof) of carbon strip from the pocket.

While the supply **40***a* offers some practical advantages over the supply **40** in not requiring that slack be provided, that the supply be removed from the pocket for changing, nor that it be laterally displaced in fan-fold operations, the expense involved in its production at present is enough more than that for the supply **40** to offset these features somewhat, with the result that the form of the invention initially described and using the supply **40** is at present preferred.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

I claim:

1. A holder for a flat-folded carbon paper strip supply having dimensions one of which is determined by the width of the strip and the other by the fold length, comprising a leader strip substantially equal in width to said carbon paper strip and having at one end thereof a pocket the full width of said leader strip and shallower than said fold length, and opening towards the other end of said leader strip, said pocket constituting the sole means on said holder for maintaining any part of a carbon supply carried thereby against displacement therefrom.

2. A holder as claimed in claim 1 and including a projecting tab adjacent said pocket and extending substantially in the plane of said strip, said tab having a width sufficient for ready grasping by the operator's fingers without encroachment upon the pocket or pinching of its contents during tab use.

3. A holder as claimed in claim 1 and including a tab extending from and beyond the bottom of said pocket substantially in the plane of said strip, said tab having a width sufficient for ready grasping by the operator's fingers without encroachment upon the pocket or pinching of its contents during tab use.

4. A holder for a supply of carbon paper, said holder consisting of a cruciform blank of flexible fabric having four arm elements and a central body element, three arm elements of which have been folded inwardly towards said body element and connected to form a pocket the opening of which is directed towards the fourth arm element, said fourth arm element having a length substantially greater than the depth of said pocket and constituting means for attaching the device to the carbon holding arm of a manifolding typewriter, the arm element opposite said fourth arm element having a portion of its inner surface adhered to the body element adjacent their connection and near the bottom of said pocket to form a relatively stiff tab projecting beyond the pocket bottom.

5. A transfer assembly for manifolding typewriters including a holder comprising a strip of flexible fabric having a closed-bottom pocket at one end opening towards the other; and a flat package of folded transfer strip in said pocket having a fold length greater than the depth of said pocket and having its free end leading out of the pocket from that surface of said package which is adjacent the flexible fabric.

6. An assembly as claimed in claim 5 in which the package of transfer strip comprises a flat core having a strip of carbon paper wound thereon.

7. An assembly as claimed in claim 5 in which the package of transfer strip comprises a zig-zag folded strip of carbon paper.



8. An assembly as claimed in claim 5 wherein said holder includes a tab located adjacent said pocket and extending substantially in the plane defined by the remainder of the holder.

9. A transfer material supply package comprising a strip of carbon paper zig-zag folded to form a flat package, and a flat relatively stiff support and guide member substantially coextensive with a surface of said package attached to the end of said strip, said member constituting the sole carbon strip supporting, protecting and controlling means connected with said package.

10. The method of providing for the renewal of carbon paper in a continuous manifolding process using a manifolding typewriter with a platen and transverse carbon supporting arms at the rear thereof, which includes the steps of providing a relatively flat holder having a pocket and an attaching strip towards which said pocket opens; connecting said attaching strip to one of said arms with said pocket opening away from said platen; providing a flat supply package of carbon paper strip, broader in the direction of strip length than the depth of the pocket; and placing said package in said pocket with one transverse edge exposed and with the free end of the carbon strip leading out of the pocket and off from that surface of the package adjacent the holder attaching strip, in a loop embracing the exposed transverse edge of the package, and then towards the platen.

11. The method of providing for the renewal of carbon paper in a continuous manifolding process using a manifolding typewriter with a platen and transverse carbon supporting arms at the rear thereof, which includes the steps of providing a relatively flat holder having a pocket and an attaching strip towards which said pocket opens; connecting said attaching strip to one of said arms with said pocket opening away from said platen; providing a flat, wound supply package of carbon paper strip, broader in the direction of strip length than the depth of the pocket; placing said package in said pocket with one transverse edge exposed and with the free end of the carbon strip leading out of the pocket and off from that surface of the package adjacent the holder attaching strip, in a loop embracing the exposed transverse edge of the package, and then towards the platen; periodically withdrawing said package from the pocket; rotating the package about its axis to unwind a length of carbon strip therefrom; and replacing the package in said pocket.

12. The method of providing for the renewal of carbon paper in a continuous manifolding process using a manifolding typewriter with a platen and transverse carbon supporting arms at the rear thereof, which includes the steps of providing a relatively flat holder having a pocket and an attaching strip towards which said pocket opens; connecting said attaching strip to one of said arms with said pocket opening away from said platen; providing a flat, zig-zag folded supply package of carbon paper strip, broader in the direction of strip length than the depth of the pocket; placing said package in said pocket with one transverse edge exposed and with the free end of the carbon strip leading out of the pocket and off from that surface of the package adjacent the holder attaching strip, in a loop embracing the exposed transverse edge of the package, and then towards the platen; periodically engaging the looped portion of the carbon strip lead-off end embracing the exposed edge of the

package; and then urging the same away from the platen to withdraw two fold lengths from the package.

ARTHUR A. JOHNSON.


REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 1,688,264 | Carpenter | Oct. 16, 1928 |
| 2,236,155 | Petit | Mar. 25, 1941 |
| 2,292,343 | McAlvin | Aug. 4, 1942 |
| 2,343,796 | Petit | Mar. 7, 1944 |
| 2,363,661 | Feitl | Nov. 28, 1944 |
| 2,387,667 | Leibfritz | Oct. 23, 1945 |
| 2,441,622 | Doyle | May 18, 1948 |

FOREIGN PATENTS

| Number | Country | Date |
|---|---|---|
| 46,050 | Denmark | Aug. 15, 1932 |