

**Aug. 20, 1935.**

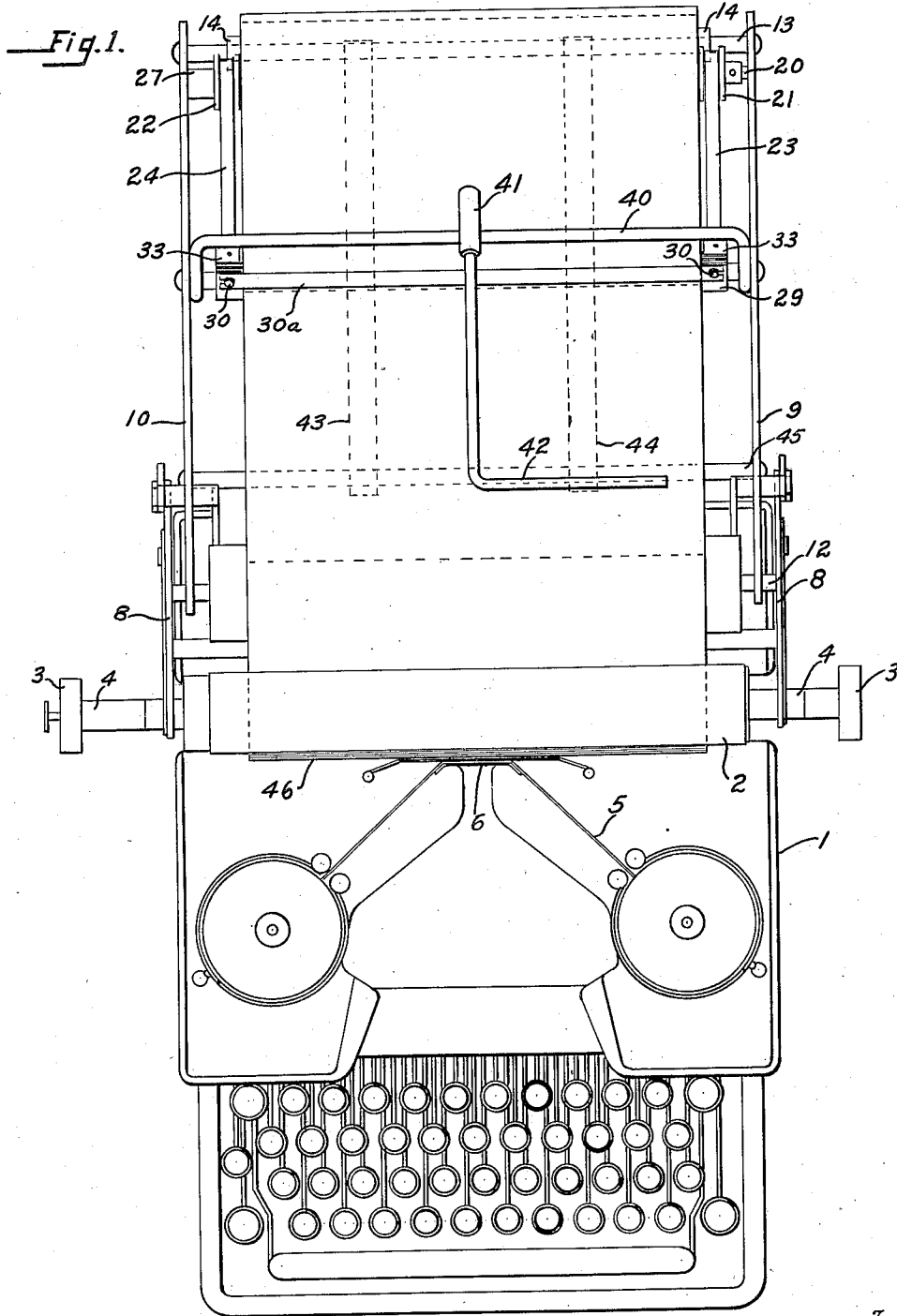
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**2,011,814**

CARBON SUPPORTING ATTACHMENT FOR TYPEWRITERS

Filed Jan. 29, 1932

5 Sheets-Sheet 1



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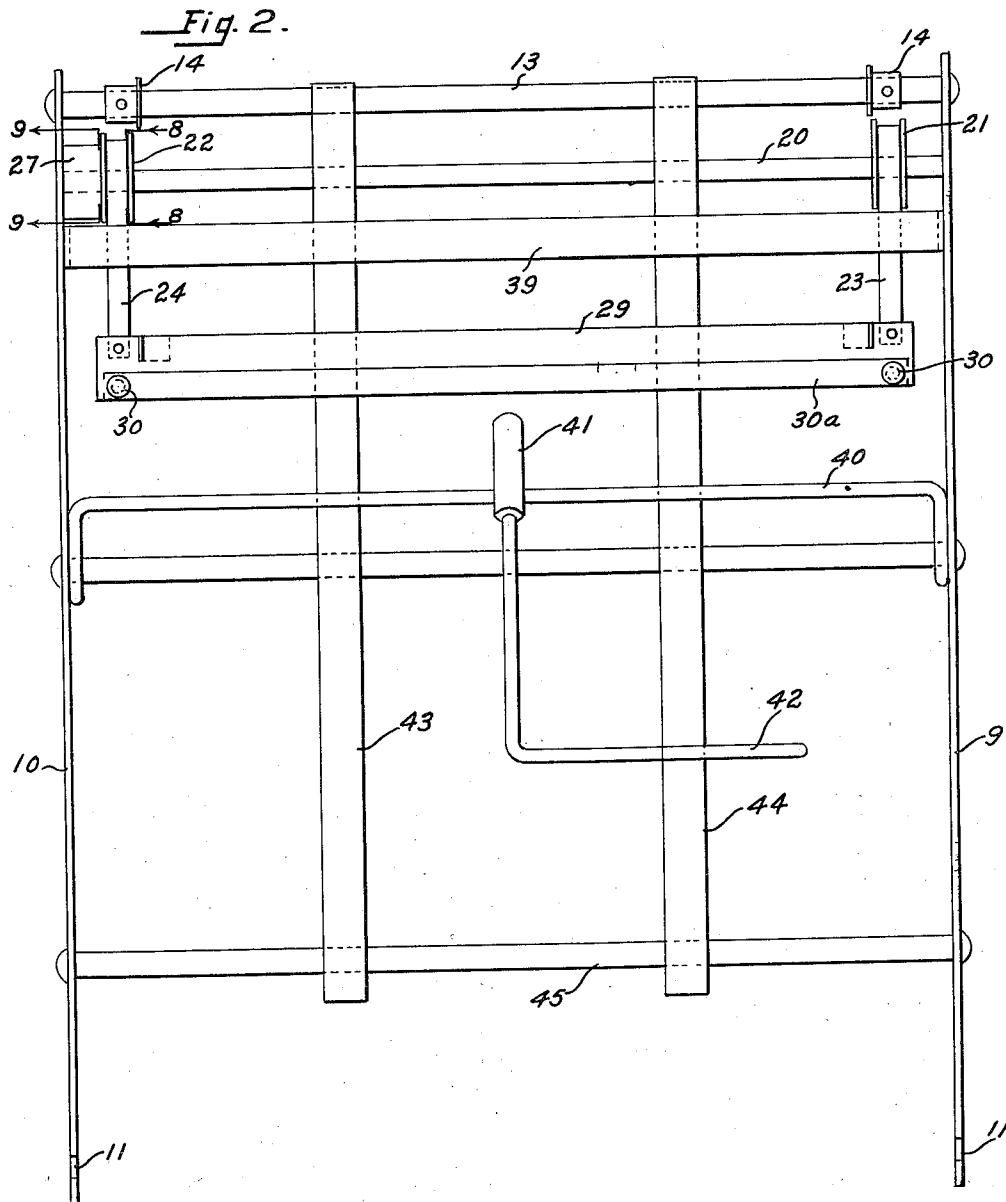
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CARBON SUPPORTING ATTACHMENT FOR TYPEWRITERS

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5 Sheets-Sheet 2



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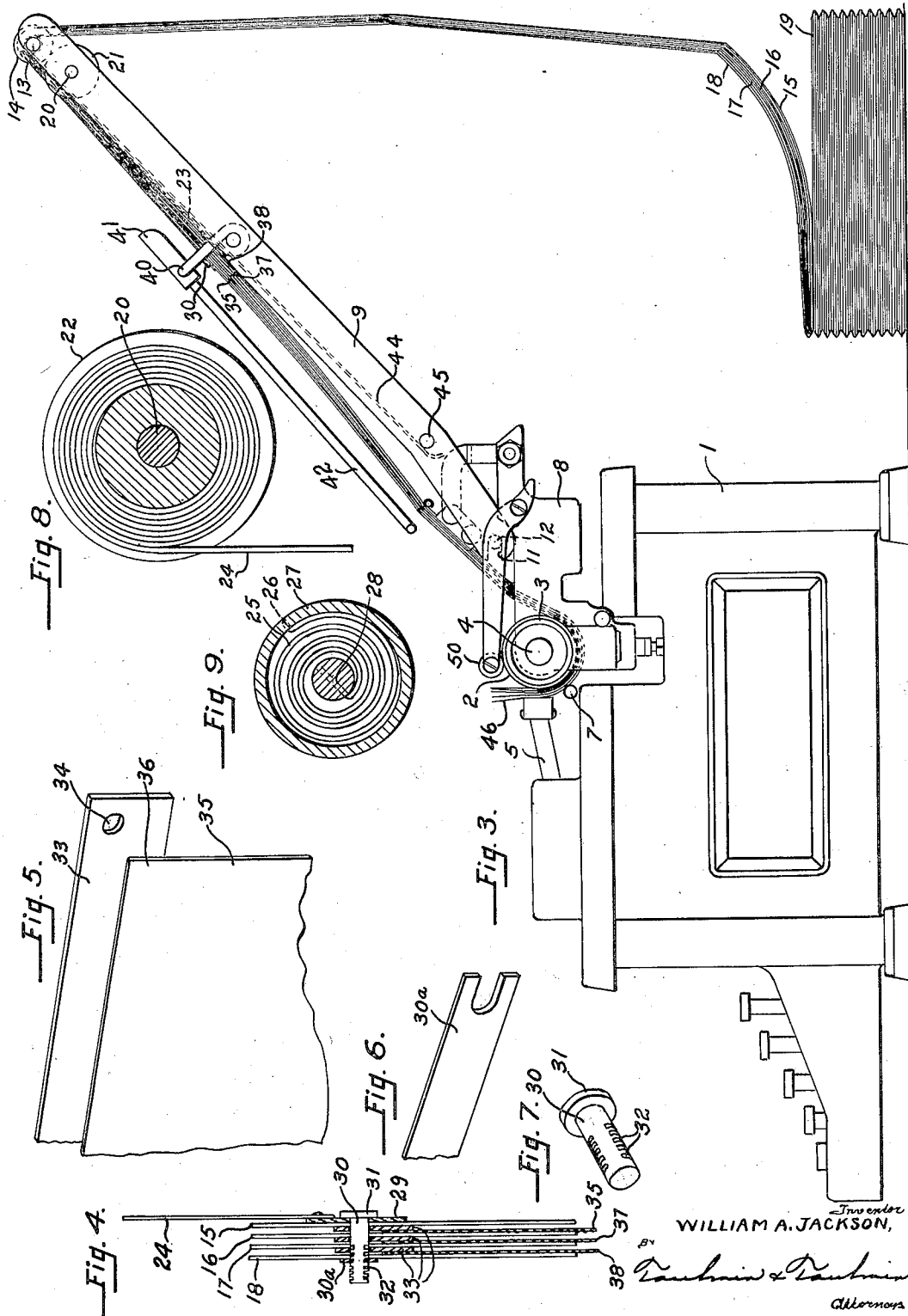
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CARBON SUPPORTING ATTACHMENT FOR TYPEWRITERS

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5 Sheets-Sheet 3



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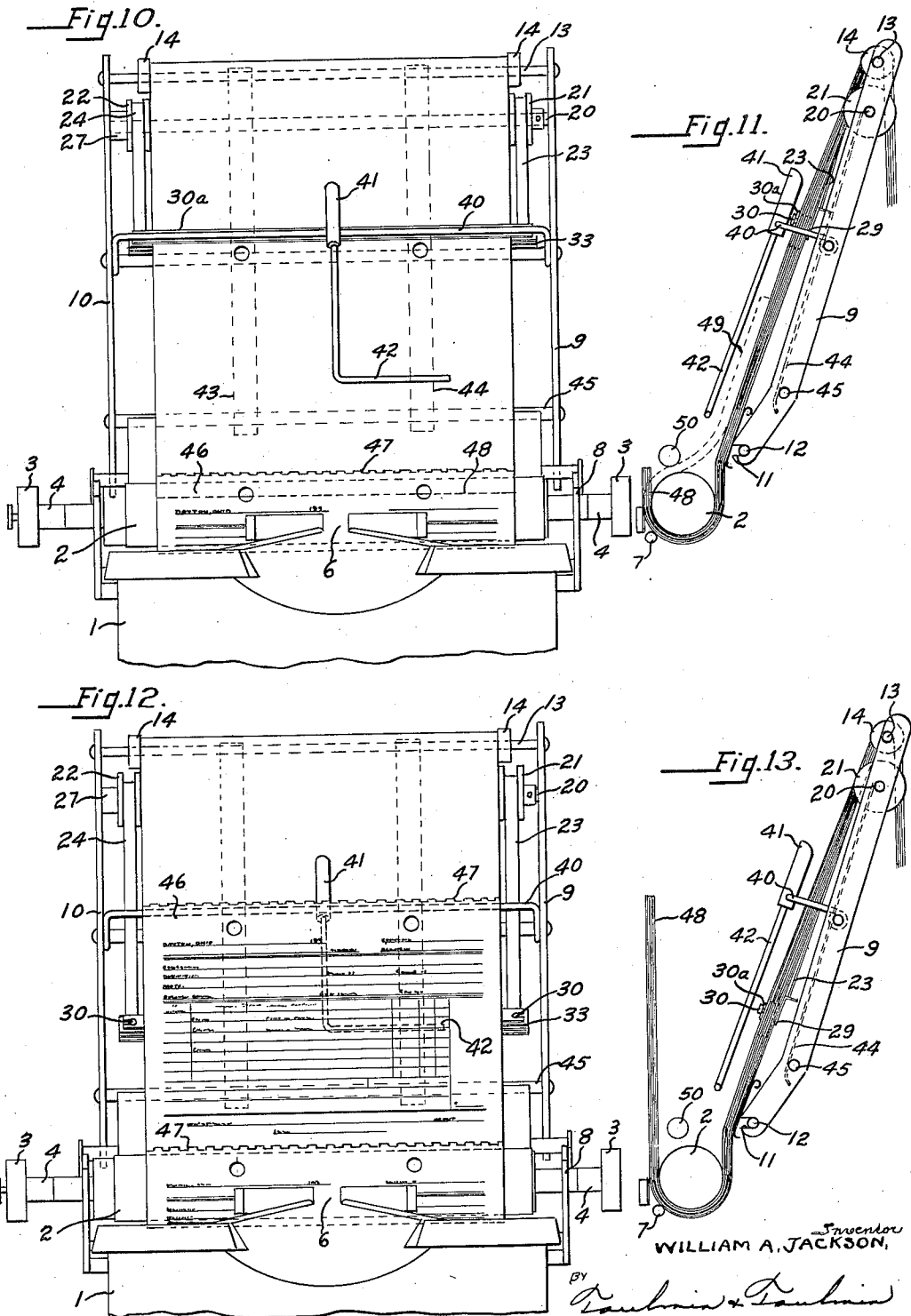
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CARBON SUPPORTING ATTACHMENT FOR TYPEWRITERS

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5 Sheets-Sheet 4



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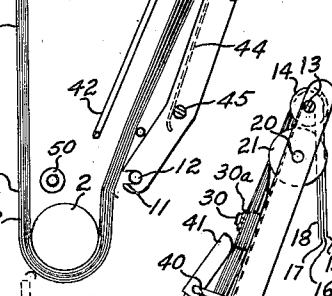
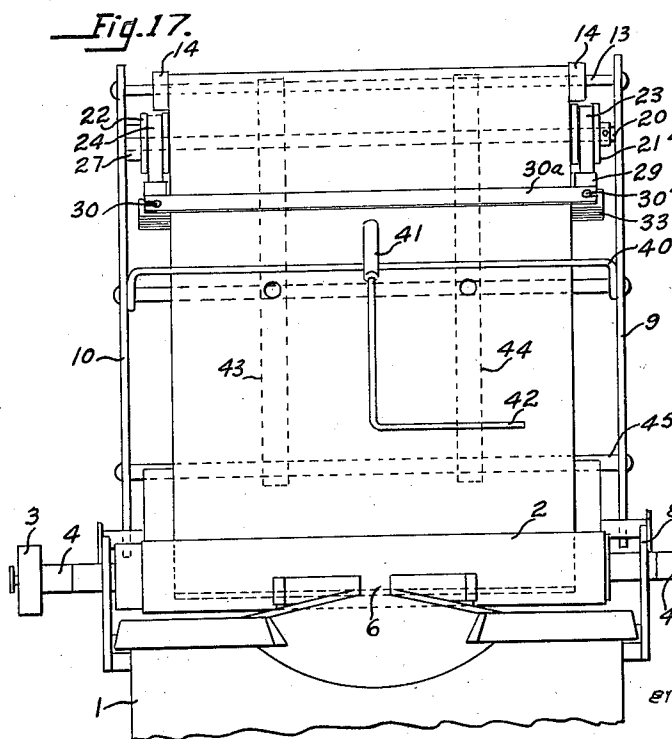
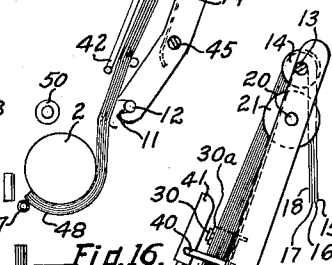
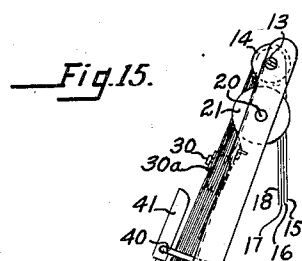
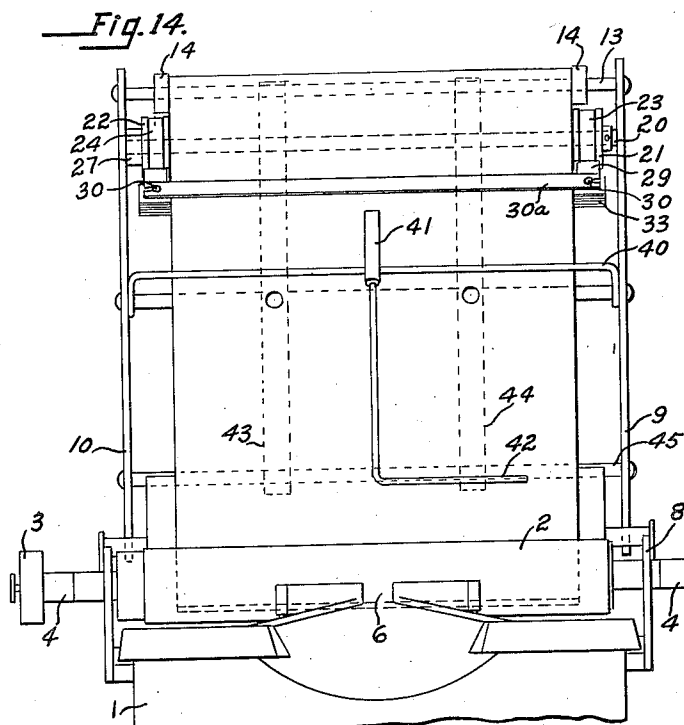
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CARBON SUPPORTING ATTACHMENT FOR TYPEWRITERS

Filed Jan. 29, 1932

5 Sheets-Sheet 5



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## UNITED STATES PATENT OFFICE

2,011,814

CARBON SUPPORTING ATTACHMENT FOR  
TYPEWRITERSWilliam Austin Jackson, Montreal, Quebec,  
Canada, assignor to The Egly Register Com-  
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Application January 29, 1932, Serial No. 589,601

9 Claims. (Cl. 197—126)

My invention relates to a carbon supporting attachment for typewriters and means of feeding carbon webs and paper webs in superimposed relationship so that the same carbon webs can be used with a large number of successive sections of paper webs.

It is my object to suspend a plurality of removable carbon webs of sufficient length to form carbon writing surfaces between sections of similar length of continuous webs of paper which are fed past the carbon webs.

It is a further object to provide means of returning the carbon webs as a unit to their initial position and to permit of the extraction of the paper web sections so that they can be torn off after having been written upon as, for instance, in a typewriter.

It is a further object to provide a method of supporting, supplying and withdrawing carbon webs between a plurality of paper webs and of employing continuous paper webs section by section thereof with the same carbon webs and of permitting the tearing off of the sections of the paper webs without tearing off the carbon webs.

In particular, my method consists of the following:

(a) Suspending a group of carbon sheets so that they can move with interleaved paper sheets as a unit and can be withdrawn to their initial position as a unit between the paper sheets while the paper sheets are either moving in the opposite direction or stationary.

(b) The delivery of the combined interleaved paper sheets and carbon sheets to a writing surface, such as a typewriter platen and the movement thereby of such sheets as the platen is actuated.

(c) The return of the paper sheets and carbon sheets backwardly over the platen until the carbon sheets are released whereupon the carbon sheets are returned by independent means to their initial position as a unit to a new position between the paper sheets.

(d) Thereupon, the paper sheets which have been written upon, which are free of carbon, can be moved outwardly over the platen so they can be torn off without tearing off the carbon sheets.

(e) Means of applying friction to cause the moving paper sheets between which the carbon sheets are located in a new position to engage with the carbons to draw them out between the fresh sections of the paper sheets into position for writing after the paper sheets, between which there

is no carbon, have been written upon and are torn off.

It will be understood that this invention of mine is applicable to various types of manifolding mechanism, such as typewriters, billing machines, autographic registers and other types of similar equipment.

Referring to the drawings:

Figure 1 is a top plan view of a typewriter with the attachment involving my invention applied thereto;

Figure 2 is a plan view of the attachment with the carbon sheets removed showing the engaging mechanism for applying friction on the sheets of paper to cause the carbon sheets to travel with them;

Figure 3 is a side elevation of the typewriter and attachment showing the carbon sheets in position where they are being fed with the paper sheets during the writing operation;

Figure 4 is a section through the carbon sheets and the paper sheets and the means of suspending the carbon sheets between the paper sheets;

Figure 5 is a perspective of one corner of the carbon sheets and the strip for supporting them;

Figure 6 is a perspective of one end of the resilient retaining plate used for the purpose of holding the carbon sheets in supported position;

Figure 7 is a perspective of the supporting pin on which the supporting plates shown in Figure 6 are mounted;

Figure 8 is a section through the spring roller showing the tape wound on the roller which supports the carbon sheets. This section is on the line 2—8 of Figure 2;

Figure 9 is a section on the line 9—9 of Figure 2 showing the arrangement of the roller on which the tape is wound and the spring which actuates the roller;

Figure 10 is a front elevation of the mechanism showing the position of the carbon sheets and the paper sheets at the beginning of the writing operation;

Figure 11 is a side elevation thereof;

Figure 12 is a front elevation showing the sheets at the end of the operation of type-writing;

Figure 13 is a side elevation thereof;

Figure 14 is a front elevation showing the position of the carbon sheets and paper sheets when they have been moved backwardly so as to release the carbon sheets after having typewritten upon the paper sheets so that the carbon sheets can return to their initial position;

Figure 15 is a side elevation of Figure 14;

Figure 16 shows the forms which have been typewritten upon being run out a second time so they can be torn off on the line 47 with the carbon sheets interleaved between the next succeeding forms where they will not be disturbed by the tearing off process but will be ready for the writing on the next succeeding set of forms;

Figure 17 is a front elevation of the carbon sheets and paper sheets in the initial stages of feeding them together by applying friction thereto so that they will continue to travel together until the combined paper sheets and carbon sheets are engaged between the platen and the feed roll associated with the platen to continue their feed together, which operation takes place simultaneously with running out the paper sheets on which typewriting has already been done but from between which the carbon sheets have been withdrawn;

Figure 18 is a side elevation of Figure 17.

Referring to the drawings in detail, 1 is a typewriter having the usual cylindrical platen 2 actuated by the hand wheel 3 through the shaft 4. The remainder of the construction of the typewriter is standard, such as the typewriter ribbon 5, on which the type face impinges, the type face being eliminated in the drawings for the purpose of clarity, but making its impression at the point indicated at 6 in the usual manner.

Associated with the platen 2 is the pressure roller 7. Mounted upon the typewriter frame 8 is the frame supporting the apparatus of this invention, which can be detachably attached to any standard typewriter.

This frame comprises side plates 9 and 10, the lower ends of which are slotted as at 11 for mounting upon the cross bar 12 of the typewriter.

The upper ends of the side bars 9 and 10 are connected by a rod 13 having guide members 14 on either end thereof for guiding a plurality of continuous paper sheets, of which there are 4 shown in superimposed relationship and designated 15, 16, 17 and 18. These sheets are supplied from either a roll or a pack 19. These sheets, after passing over the rod 13, pass downwardly over the top of the axle 20 which carries the winding drums 21 and 22 on which are wound tapes 23 and 24. This axle is spring actuated by the spring 25 fastened at one end 26 within the drum 27 which is stationarily mounted upon the side plate 10 and the other end at 28 is mounted within the axle 20 which carries the winding drums 21 and 22.

The free ends of the tapes 23 and 24 support a cross plate 29 which carries at either end thereof slotted studs 30 having heads 31 and slots 32 on the sides thereof. This stud can be seen in detail in Figure 7.

Mounted on these studs are a series of carbon supporting plates which are in the form of strips of cardboard designated 33 and having eyes 34 for mounting over the studs 30. Strips of carbon 35 are connected to these cardboard strips 33 at 36 so that the carbon strips depend from them.

A series of these carbon strips 35, 37 and 38 are interleaved between the sheets of paper 15, 16, 17 and 18 and so arranged that the paper may travel with the carbon sheets or by the carbon sheets as hereinafter described.

Returning to the frame, the frame is provided with a cross member 39. It is also provided with a rocking rack 40 carrying a pressure member 41 which has a handle 42. This is used, as will

be later described, for applying pressure to the surface of the paper sheets and the interleaved carbon sheets to cause the groups of sheets to frictionally engage and to travel together until the combined carbon sheets and paper sheets can be engaged by the pressure roller 7 and its platen 2 to insure continuity of feed of the two groups of sheets as a unit.

As the carbon sheets and paper sheets travel together, the tapes 23 and 24 are unwound on the pressure drums 21 and 22 against the resistance of the spring 25.

Upon the reverse movement of the platen, the carbon sheets may be drawn upwardly without moving the paper sheets when the carbon sheets are released from the pressure between the pressure roller 7 and the platen 2, all as will be hereinafter described in connection with the method of operation of this invention.

In order to hold a plurality of carbon sheets on the studs 30, I provide a notched spring plate 30a which can be inserted in any one of the notches 32 in order to yieldingly and tightly hold the cardboard supports 33 in close superimposed relationship one on the other on top of the main support 29 which is carried by the tapes.

The frame has two inwardly-disposed guiding plates 43 and 44 which are connected at their upper ends to the rod 13 and at their lower ends to the cross rod 45.

#### *Method of operation*

Referring to Figures 10 and 11, it will be noted that the paper sheets are provided with a plurality of superimposed forms generally designated 46 which must be maintained in superimposed condition with the carbon paper between them so that the type of the typewriter or other means may make duplicate impressions on all of the sheets. These forms are separated by transverse perforations 47 which are also in the respective sheets superimposed one over the other.

In the position of the parts shown in Figures 10 and 11 the carbon sheets are interleaved with the paper sheets so that the extreme free ends of the carbon sheets are approximately at the line 48 and the machine is ready in position to write.

As the machine is operated line by line the combined carbon and paper sheets move upwardly into the dotted line position indicated at 49 beneath the guide roller 50. This serves to draw the carbon sheets down with the paper sheets against the resistance of the spring 25. When the operation has been completed as shown in Figures 12 and 13 the combined carbon and paper sheets may assume the position shown at 48 or they may be in the position shown at 49 as the operator may prefer. In either event, the typewriting has been completed and the duplicate items have been entered on the superimposed sheets 15, 16, 17 and 18 through the agency of the typewriter ribbon 5 and the carbon sheets 35, 37 and 38.

As these carbon sheets are to be used a number of times, it is necessary to get them from between the paper sheets so that the paper sheets can be torn off along the perforated line 47, the carbon sheets introduced between the fresh group of forms and the operation repeated.

For this purpose the combined paper and carbon sheets are moved backwardly by the platen 2 through the operation of the platen by the operator actuating the hand wheel 3 in the reverse direction until the combined paper and

carbon sheets assume the position shown in Figure 14. When the carbon sheets pass the pressure roller 7 the spring 25 aids in pulling them upwardly between the paper sheets and will hold them in their uppermost position until pressure is put upon the surface of the sheets of carbon and paper to cause them to frictionally reengage to be fed out against the resistance of the spring 25, but this frictional resistance is not applied either by the hand of the operator or by the mechanical member 41 until the sheets, as shown in Figure 16 at 51, on which typewriting has been written, run out partially so they eventually can be torn off along the line 47.

Simultaneously with this action, the pressure member 41 is applied, as in Figures 17 and 18, to cause the carbon sheets to travel with the paper sheets for the next set of forms when the carbon sheets are between the new forms until the carbon sheets, the ends of which are indicated in Figures 17 and 18, as at 52, can get between the pressure roller 7 and the platen 2 and can be carried by reason of such pressure upwardly to the writing position shown in Figures 10 and 11 for the repetition of another operation.

In other words, after a set of forms has been written upon, they are moved back sufficiently far to permit the carbon sheets to be released between the pressure roller and the platen and pulled up by hand and partly by the spring 25. Then the sheets are again fed out of the machine as written upon without the carbons being between them and, as this takes place, friction is applied to the next set of forms when such forms go over the carbon sheets to cause the carbon sheets and forms to travel together so that the carbon sheets can be used for the next set of unwritten-upon forms. This permits of the same carbons to be used with a number of different sets of forms by shuttling back and forth and the forms written upon being torn off in this manner without tearing off the carbon sheets.

When a five or six copy form or more is required, a stronger tension on the spring is necessary than with a three or four copy form. The tension of the spring can be adjusted by any well known means to vary the pull according to the number of copies, as by tightening the coils on the spring, or other means.

It will be understood that I desire to comprehend within my invention such modifications as may be necessary to adapt it to varying conditions and uses.

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

1. In combination, a frame, means of guiding a plurality of superimposed paper sheets over said frame, a carrier for a plurality of carbon sheets, a spring roller having cables wound thereon connected to said carbon sheet carrier, said carrier comprising a carrier plate connected to the cables, a plurality of independent carrier plates mounted thereon suspending a carbon sheet respectively and a superimposed retaining spring plate mounted on the exterior of the paper sheets and carbon sheets and carried on said carbon sheet carrier.

2. In combination, a frame, a spring actuated roller, cables at either end thereof wound thereon, a supporting plate connected to the ends of said cables, studs on said supporting plate, a plurality of supporting strips and carbon sheets mounted on each strip mounted on said studs interleaved between the paper sheets and a spring

cover plate mounted on said studs over the top of the top paper sheet.

3. In combination, means of supporting carbon sheets comprising a back plate spring actuated support, cables at either end thereof, studs on the face thereof at either end, a plurality of paper sheets passing between said studs and over said back plate, a carbon sheet supporting plate and carbon sheets interleaved between each of said sheets extending beyond the margins of said sheets and mounted on said studs, and a superimposed spring retaining plate mounted on said studs engaging the top of said sheets.

4. In combination, a typewriter having a platen and a pressure roller, a frame supported at one end on said typewriter and extending upwardly above said typewriter for feeding a plurality of paper sheets downwardly and between the platen and the pressure roller, means on the other end of the frame for suspending on the frame between the paper sheets relatively short carbon sheets, yielding drum means forming a part of said suspension means for resisting the downward movement of the carbon sheets with the paper sheets when frictionally engaged, mechanical means associated with the frame for causing said frictional engagement so that the carbon sheets and paper sheets will travel together until frictionally engaged by the platen and the pressure roller, said yielding means being adapted, when the frictional engagement of the several means is released, to withdraw the carbon sheets backwardly between the paper sheets.

5. In combination with a typewriter, means to support a plurality of superimposed strips of paper, means to support a plurality of carbon sheets interleaved between the strips, said means comprising a plate having at each end a notched stud and means on the studs for separately holding the carbon sheets, a spring strip adapted to engage the studs in the notches, and a tape attached at one end to each end of the plate for supporting and moving the plate.

6. In combination with a typewriter, means to support a plurality of superimposed strips of paper, and means to support a plurality of carbon sheets interleaved between the strips, said means comprising a plate having at each end a notched stud and a spring plate adapted to engage the studs in the notches.

7. In combination with a typewriter, a frame for supporting strips of paper adapted to be attached at one end to the typewriter, a pair of drums on the other end of the frame, a tape attached at one end to each drum, a plate attached to the other ends of the tape, a stud on each end of the plate, said studs being adapted to support carbon sheets between the strips of paper, and means on the studs for holding the strips of paper and the carbon sheets against the plate.

8. In combination with a typewriter, an auxiliary frame, means to grip and feed forwardly a plurality of strips of paper with interleaved carbon sheets to the typewriter and to cause the strips and the interleaved carbon sheets to move backwardly, means to release the grip means, means on said frame to cause the carbon sheets to move backwardly independently of the strips, said gripping and feeding means being adapted to feed forwardly the strips of paper independently of the carbon sheets, and releasable friction-applying means on said frame to cause the



carbon sheets to move with the strips without being acted on directly by the feeding means.

9. In combination with a typewriter, means to grip and feed forwardly a plurality of strips of paper with interleaved carbon sheets to the typewriter, means to cause the strips and the interleaved carbon sheets to move backwardly, means to release the grip means, means to cause the

carbon sheets to move backwardly independently of the strips, means to feed forwardly the strips of paper independently of the carbon sheets, and pressure means to cause the carbon sheets to move with the strips without being acted on directly by the feeding means. 5

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