Dec. 9, 1941. C. L. WINTER 2,265,466

CARBON STRIP DELEAVING MACHINE

Filed May 20, 1940 4 Sheets-Sheet 1

Fig. 2.

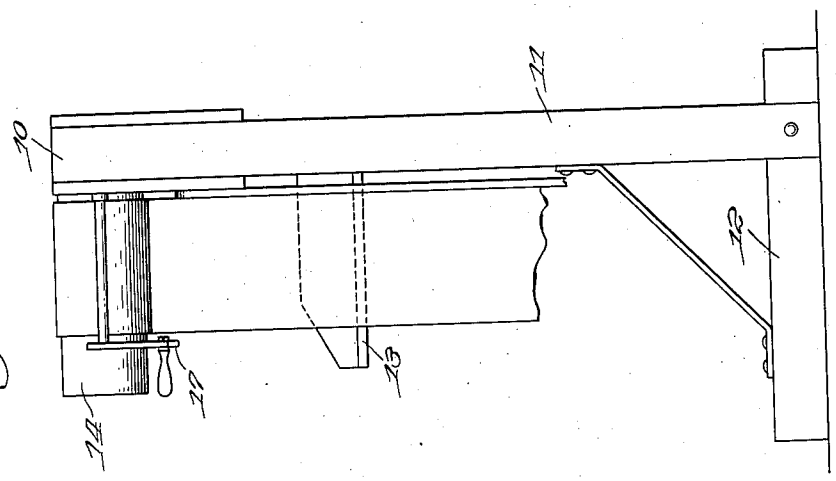
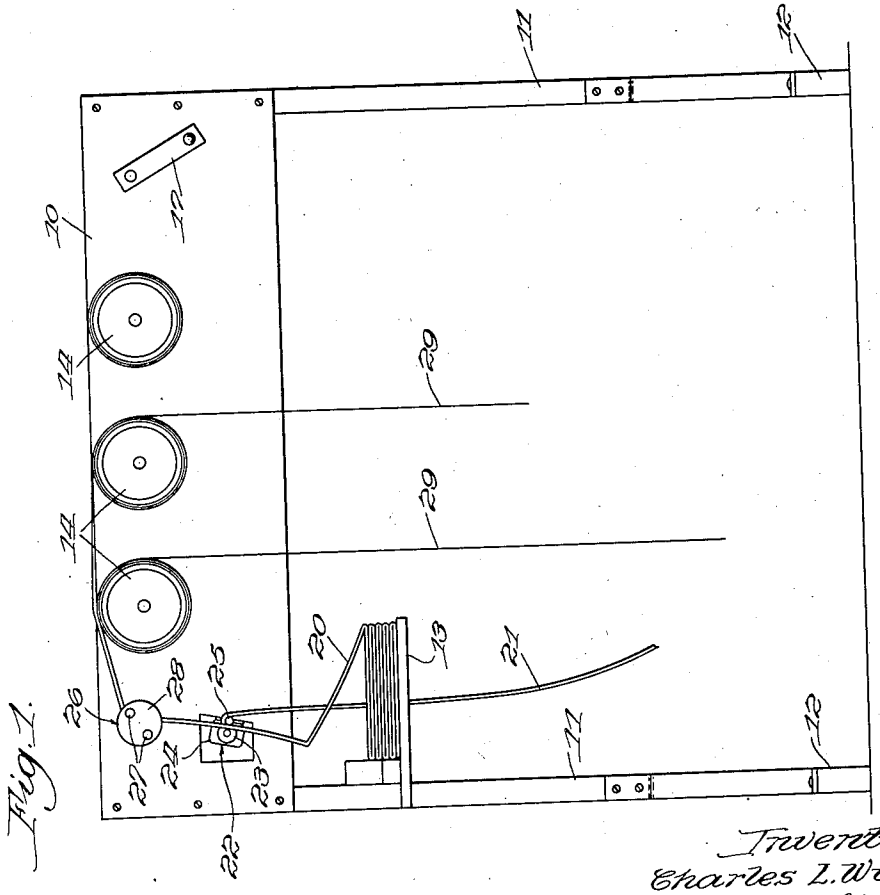


Fig. 1.



Inventor:
Charles L. Winter.
By Chritton, Wiles, Davies, Hirschler & Dawson.
Atty's.

Dec. 9, 1941. C. L. WINTER 2,265,466

CARBON STRIP DELEAVING MACHINE

Filed May 20, 1940 4 Sheets-Sheet 2

Fig. 3.

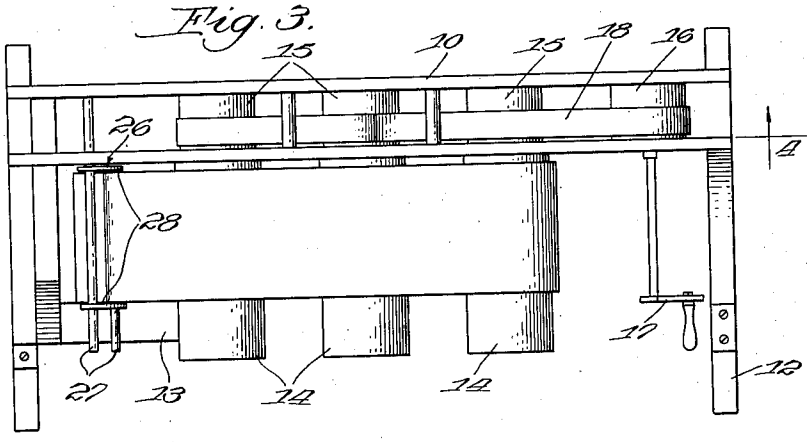


Fig. 4.

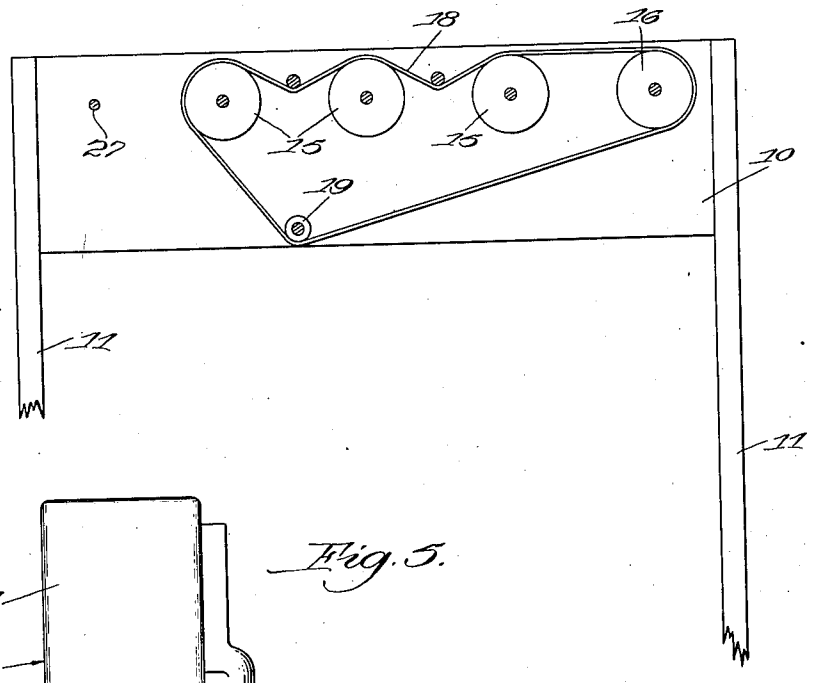
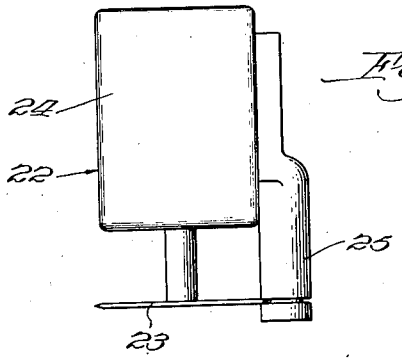


Fig. 5.



Inventor:
Charles L. Winter.
By Chritton, Wiles, Davies, Hirschler & Dawson.
Attys.

Dec. 9, 1941. C. L. WINTER 2,265,466

CARBON STRIP DELEAVING MACHINE

Filed May 20, 1940 4 Sheets-Sheet 3

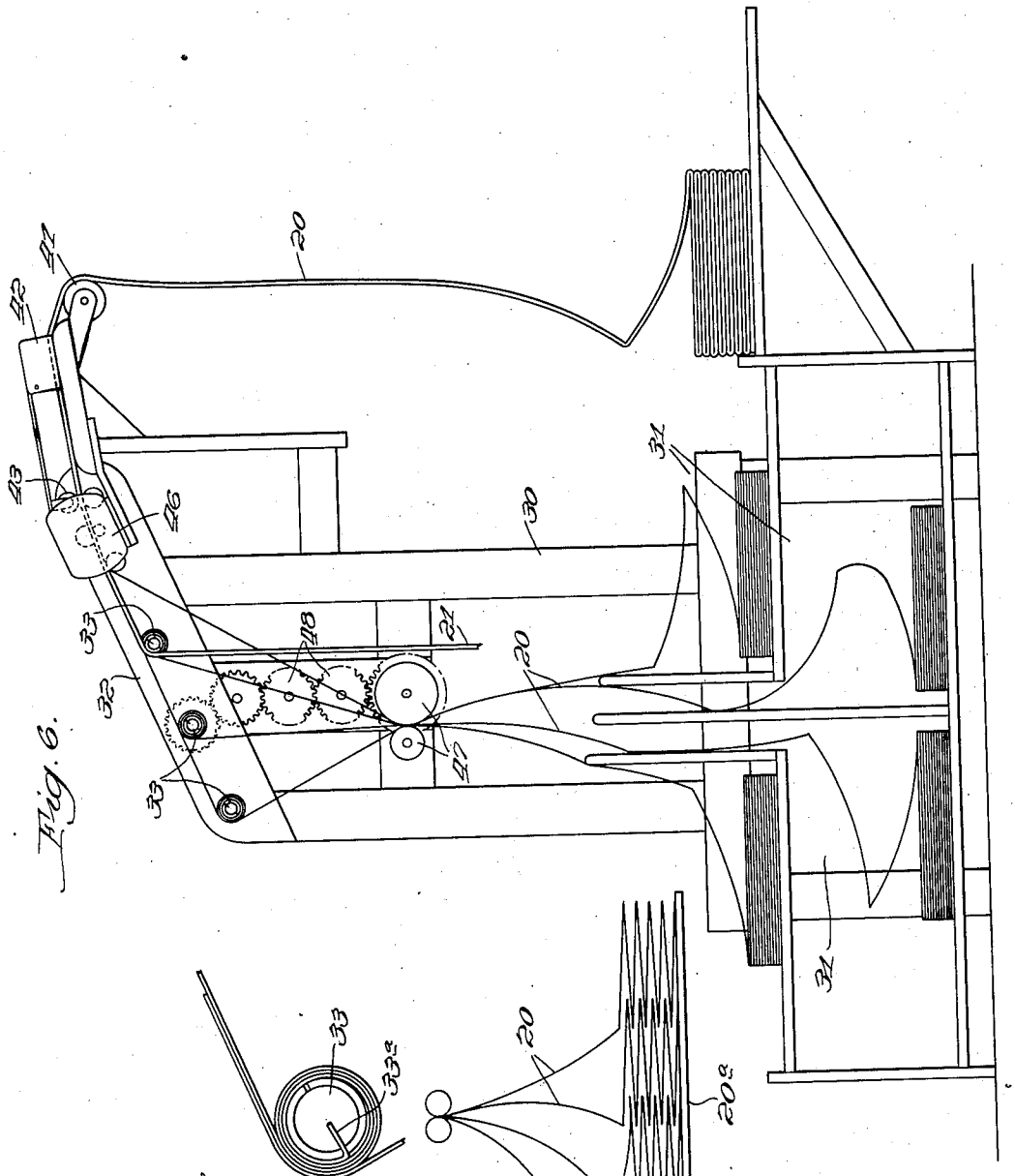


Fig. 6.

Fig. 7.

Fig. 6a.

Inventor:
Charles L. Winter.
By Chritton, Wiles, Davis, Hirschy & Dawson
Attys.

Dec. 9, 1941. C. L. WINTER 2,265,466

CARBON STRIP DELEAVING MACHINE

Filed May 20, 1940 4 Sheets-Sheet 4

Fig. 8.

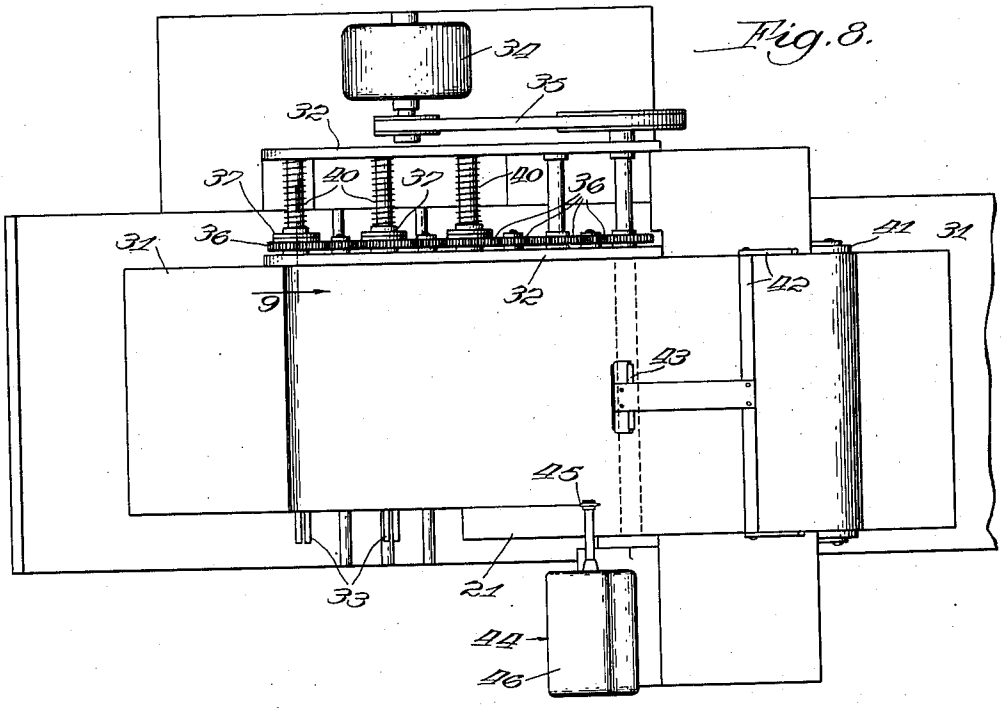
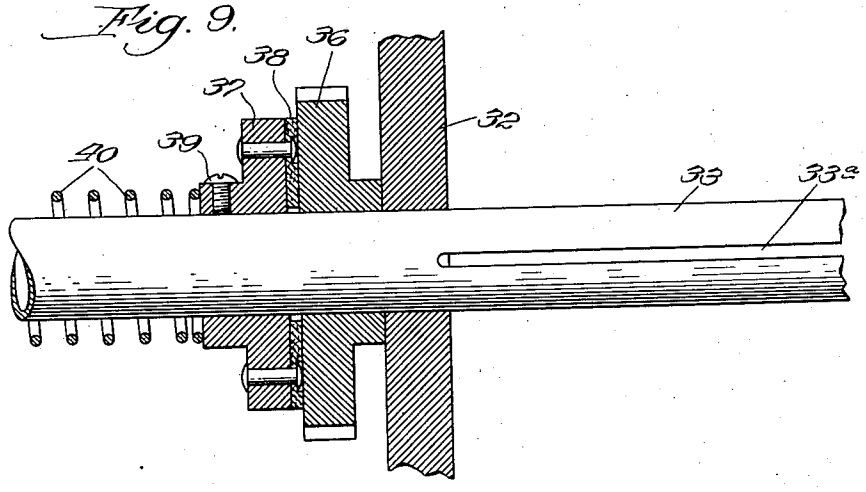


Fig. 9.



Inventor:
Charles L. Winter.
By Chritton, Wiles, Davis, Hirschler & Dawson.
Attys.

Patented Dec. 9, 1941 2,265,466

UNITED STATES PATENT OFFICE

2,265,466

CARBON STRIP DELEAVING MACHINE

Charles L. Winter, Chicago, Ill., assignor to United Autographic Register Co., a corporation of Illinois

Application May 20, 1940, Serial No. 336,287

8 Claims. (Cl. 164—61)

This invention relates to apparatus for separating stationery strips and carbon strips in continuous-form stationery after the usual writing operations have been completed. In some cases the stationery and carbon strips are connected together at one marginal edge by sewing or stitching, and the apparatus is designed to trim off the marginal portion of the assembly and thereby free the separate strips.

The primary object of the invention is to provide a simple and inexpensive apparatus which will operate at a high speed and separate the parts in an orderly manner.

A further object of the invention is to provide winding spindles with friction drives so that the tension in each strip may be adjusted individually. This feature is very advantageous in starting the deleaving action.

Another object of the invention is to separate the strips without diverting them laterally in various directions, but instead to keep their edge portions in the same plane throughout the deleaving operation.

The invention is illustrated in preferred embodiments in the accompanying drawings, in which—

Figure 1 is a side elevational view of a machine embodying the invention; Figure 2, an end elevational view of the same; Figure 3, a top plan view; Figure 4, a fragmentary sectional view, taken as indicated at line 4 of Figure 3; Figure 5, an enlarged plan view of the cutter mechanism; Figure 6, a side elevational view showing a modified form of the device; Figure 6*a*, a modified arrangement of the stationery receiving part of Figure 6; Figure 7, an enlarged end view of one of the carbon-rewinding spindles; Figure 8, a plan view of the device shown in Figure 6; and Figure 9, a broken sectional view, taken as indicated at line 9 of Figure 8.

In the embodiment illustrated in Figure 1–5, inclusive, the frame has a belt housing 10 supported on vertical standards 11 mounted on a base 12. One of the standards is provided with a shelf 13 adapted to support a zigzag folded packet of stationery which is to be deleaved by the machine. A plurality of winding spindles 14 have one end journalled in the housing 10 and are provided with smooth driving pulleys 15. While only three winding spindles have been shown, it will be understood that as many may be used as desired. A driving pulley 16 is also journalled in the housing 10 and is provided with a hand crank 17. An endless belt 18 passes around each of the pulleys and an idling pulley 19, so that rotation of the crank 17 will cause each of the spindles 14 to rotate in timed relation.

The strips of stationery in the assembly 20 are normally connected at one marginal edge by means of stitching, gluing, stapling, or the like, and in order to separate each of the individual strips, it is necessary to trim off the binding edge 21. This may be accomplished by means of a cutter mechanism 22 which, in the present form, comprises a circular saw 23 which is driven by a small electric motor 24 and operates in a groove in a guide-member 25. As best shown in Figures 1 and 3, a tensioning device 26 is provided to guide the stationery from the packet to the spindles. This device may comprise a pair of spaced rods 27 provided with lateral guide-members 28 and carried by one of the rods 27 which is adjustably supported in the housing 10. Thus it will be understood that by turning the member 26 backwardly or forwardly, the tension in the advancing strips may be regulated.

In starting this form of apparatus, the motor of the cutter mechanism is put in operation and the end of the assembled stationery is drawn through the cutter, so as to trim off the edge 21, and through the tensioning device 26. The lowermost stationery strip may be fastened to the hollow spindle 14 by means of a paper clip, or in any other suitable manner, and a superposed carbon strip 29 is permitted to drop down into a wastebasket beneath the machine. In like manner the second stationery strip from the bottom is secured to the next spindle and so on until all of the ends of the stationery strips are attached. The tension is then equalized in the stationery by manually rotating the spindles which will slip under the belt 18. After connecting up the stationery strips, it is only necessary to turn the crank 17 and all of the stationery will be trimmed and wrapped up on the spindles from which it can be readily removed by slipping it out over the free end.

In the modification shown in Figures 6, 7, 8, and 9, the frame 30 has a plurality of compartments 31 in its base to receive the deleaved stationery strips. The superstructure 32 of the frame is inclined forwardly and downwardly and contains a plurality of carbon-rewinding spindles 33 which are all driven in timed relation by an electric motor 34, a belt 35, and a train of intermeshing gears 36. As best shown in Figure 9, each of the carbon-rewinding spindles has a slot 33*a* to receive the end of a carbon strip. The spindle is driven from one of the gears 36 by means of a clutch-head 37 which may be faced with anti-friction material 38 and is fixed to the spindle 33 by means of a set screw 39. A suitable compression spring 40 urges the clutch-head against the gear 36 and maintains a yielding contact therewith.

As the interleaved stationery 20 advances over a guide-roller 41, it passes through a guide-mechanism 42 which is equipped at its front end with a presser member 43. The latter member serves to smooth out the stationery as it advances

to the cutter mechanism 44 which has a small cutter head 45 which is driven at high speed by means of a motor 46.

Instead of having each strip refolded separately, the strips that are not wound on spindles may be refolded simultaneously, in partially nested relation on a platform 20a, as illustrated in Figure 6a. The separate packs may later be pulled out of interleaved relation without difficulty.

It will be understood that one marginal edge portion of the advancing stationery is kept in engagement with one side wall of the superstructure 32 as it advances, so that the stationery will be trimmed to an even width. The feed-mechanism is disposed about midway of the frame and comprises a pair of presser rollers 47 which are driven from the gears 36 by means of a train of idler gears 48.

To start this form of apparatus, the stationery is led through the guide-mechanism and under the cutter head 45 so as to trim off the binding edge 21. The lowermost stationery strip is projected down between the presser rolls 47 and the superposed carbon strip is secured to the winding spindle 33 by passing the end of the strip through the slot 33a. In like manner, the remaining carbon strips are attached to the winding spindles and the stationery is passed through the feed-mechanism. When the motor 34 is started, the stationery strips will then be projected down into the compartments 31 and will refold into separate packets on the lines of folding and in the direction of the original pack.

It will be understood that the stationery, interleaved with "one-time" carbon, may come in roll form as well as in the zigzag folded packs illustrated. However, most of the stationery of this type has registering lines of weakening, through all the strips, between the sets of forms, and the strips are zigzag folded on those lines. As the stationery forms usually have greater tensile strength than the carbon strips, it is preferable to have the feed-mechanism pull on the stronger strips. This may be reversed in either of the devices illustrated, however, so that in the machine shown in Figures 1 to 5, the carbon would be wound and the stationery refolded, or in Figures 6 to 9, the stationery wound and the carbon refolded.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom for some modifications will be obvious to those skilled in the art.

I claim:

1. A machine for deleaving carbon strips from superposed continuous-form stationery strips, comprising: a frame provided with a lateral guide; a plurality of spaced spindles, having an end journalled in said frame and the other end free, to wind up into rolls alternate strips led over said frame and permit the remaining strips to drop by gravity below said spindles while keeping a marginal edge of all of the strips in the same plane; and frictional driving means for rotating each of the spindles independently of the others in timed relation.

2. A machine for deleaving carbon strips from continuous-form stationery strips, comprising: a frame provided with a lateral guide; a plurality of spaced spindles, having an end journalled in said frame and the other end free, to wind up into rolls alternate strips led over said frame while keeping a marginal edge of all of the strips in the same plane, each of said spindles having a driving pulley; a single driving belt engaging each of said pulleys so as to rotate each of the spindles independently of the others in timed relation; and belt guides for maintaining said belt in contact with a substantial portion of the periphery of each pulley.

3. A machine for deleaving carbon strips from interconnected continuous-form stationery strips, comprising: a frame, provided with a guide, over which manifold stationery may be led; a rotary cutting mechanism mounted on said frame so as to trim off a marginal binding edge of stationery strips drawn therethrough; a plurality of winding spindles for drawing the interleaved stationery through said cutting mechanism and winding the stationery strips in individual rolls; and frictional driving means for rotating each of said spindles independently of the others in timed relation.

4. A machine for deleaving carbon strips and continuous-form stationery strips, comprising: a frame provided with lateral guides; feed-mechanism for drawing stationery strips over said frame; carbon-winding spindles disposed between the stationery strips in rear of the feed-mechanism; and means for driving said feed-mechanism and rotating each of said carbon-winding spindles independently of the others in timed relation.

5. A device as specified in claim 4, in which a plurality of stationery compartments is provided to receive deleaved stationery, and the feed-mechanism is disposed above the entrance to said compartments.

6. A device as specified in claim 4, in which a stationery platform is provided beneath the feed-mechanism, whereon the stationery strips may refold in nested relation.

7. A machine for deleaving carbon strips from interconnected continuous-form stationery strips, comprising: a frame, provided with a guide, over which manifold stationery may be led from a zigzag folded pack; feed-mechanism mounted in said frame including winding spindles for alternate strips; and a platform, disposed beneath said feed-mechanism, whereon the unwound strips will refold in nested relation.

8. A machine for deleaving carbon strips from interconnected continuous-form stationery strips, comprising: a frame over which marginally connected interleaved stationery strips may be led; a rotary cutting mechanism mounted on said frame so as to trim off a marginal binding edge of stationery strips drawn therethrough; a plurality of spaced winding spindles to which the ends of alternate strips may be attached to propel the interconnected strips through said cutting mechanism while the remaining strips are free to drop down below said spindles; and drive mechanism making a frictional driving connection with each of said winding spindles, independently of the others, to actuate them individually in timed relation and maintain a substantially uniform tension in the strips being wound on the spindles.

CHARLES L. WINTER.

DISCLAIMER

2,265,466.—*Charles L. Winter*, Chicago, Ill. CARBON STRIP DELEAVING MACHINE. Patent dated Dec. 9, 1941. Disclaimer filed Apr. 9, 1945, by the assignee, *United Autographic Register Co.*

Hereby enters this disclaimer to claims 1 and 7 of said patent.

[*Official Gazette May 8, 1945.*]