

932,713.

[illegible]

Fig. 1.

CASHIER'S SLIP STATION _____ DATE _____

C&A.R.R. N° _____

FROM	CAR NO.	CONSIGNOR	SHIP TO	REFERENCE
ARTICLES	WEIGHT	RATE	FREIGHT	TOTAL

REC'D. BY _____

CASHIER'S SLIP STATION _____ DATE _____

C&A.R.R. N° _____

FROM	CAR NO.	CONSIGNOR	SHIP TO	REFERENCE
ARTICLES	WEIGHT	RATE	FREIGHT	TOTAL

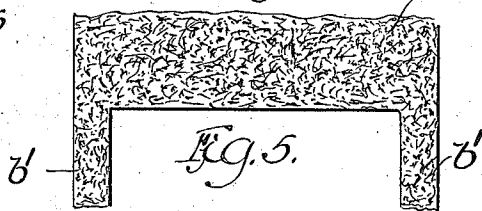
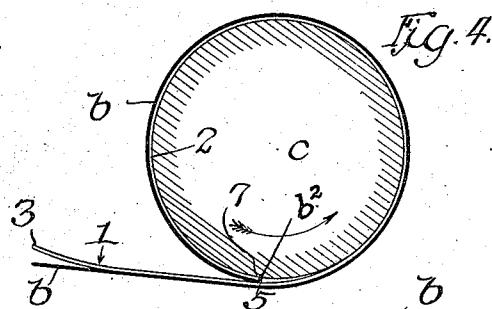
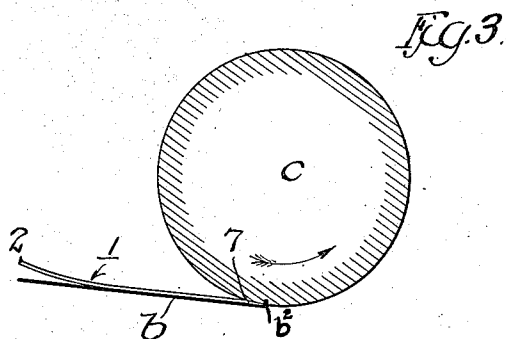
REC'D. BY _____

CASHIER'S SLIP STATION _____ DATE _____

C&A.R.R. N° _____

FROM	CAR NO.	CONSIGNOR	SHIP TO	REFERENCE
ARTICLES	WEIGHT	RATE	FREIGHT	TOTAL

WITNESSES: _____ BY _____



Witnesses:
J. H. Hume
H. R. Wilkins

Inventor:
Edward L. Lewis
by Poole & Brown
Attys

UNITED STATES PATENT OFFICE.

EDWARD Z. LEWIS, OF CHICAGO, ILLINOIS.

MULTIFORM BILLING-SHEET.

932,713.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed May 19, 1909. Serial No. 496,999.

To all whom it may concern:

Be it known that I, EDWARD Z. LEWIS, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Multiform Billing-Sheets; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to a multiform billing sheet comprising a number of printed forms upon one of which is to be typewritten the original and upon the others of which are to be imprinted carbon copies of said original. In writing on these billing sheets it is of the greatest importance that the writing on the original shall be im-
pressed upon the copies within the same lines and in the same columns. That is to say, the date must fall upon the date line on the carbon just as it does upon the original, and the several articles enumerated within the columns of the original must fall on the carbons on the same horizontal printed lines. Heretofore it has been customary to form these billing sheets with the successive forms alternately printed on opposite sides of the sheet. This sheet was then folded in a zig-zag fold with the successive forms falling one upon the other so that when the folding was finished the original rested immediately above the forms which were to receive the carbon copies, with the printed matter, such as lines, and the other printed data of each sheet in register with that of every other sheet. Carbon papers of the proper size were then placed between the folds of the sheet and the folded sheet then handed to the typewriter for filling out. The use of such multiform billing sheet is very expensive as it requires not only the folding but also the separate placing of carbon papers between the folds of each sheet before it is ready for use. This not only consumes time but also is expensive in that it requires separate employees to fold the sheets and to place the carbon papers.

It is the object of this invention to provide a multiform billing sheet in which this expense of folding and of placing the carbon sheets between the layers is dispensed with. The various advantages and the economy of time and expense resulting in the use of this

invention will appear as I proceed with my specification.

In the drawings:—Figure 1 is a top plan view of my improved sheet. Fig. 2 is a perspective view of a typewriter platen showing my improved multiform billing sheet in position to be written upon with one end in section. Figs. 3 and 4 are diagrammatic views in section of a typewriter platen showing different stages in the operation of winding my improved billing sheet thereon. Fig. 5 is a detail view in plan of a type of carbon ribbon or paper which may be used in connection with my improved billing sheet.

My improved sheet is of a length to have the required number of forms printed thereon and, unlike the forms heretofore used, has all these forms printed upon the same side in succession.

1 represents the sheet, as a whole, and 2, 3 and 4 represent the several forms printed thereon divided by perforations to permit of ready separation. I have illustrated my improved sheet with three forms but, of course, it is to be understood that it may be provided with any number of forms. In use this sheet with a carbon paper or ribbon of a length to cover all of the forms but the last one is wound upon the platen with the carbon paper or ribbon on top of the bill sheet. The typewriter platen upon which my improved billing sheet is to be used must have a circumference exactly equal to the height of the form which is first wound thereon which, as will presently appear, is less than the height of the other forms on the billing sheet.

If the several forms were all of the same height and the vertical spacing of the printed items were the same, it is apparent that on account of the increasing length of the circumference of the roll due to the thickness of the paper and of the carbon paper or ribbon interposed to make the carbon copies, the successive forms would not register with each other but the corresponding items or horizontal lines of each succeeding form would register above the same items or lines on the preceding form, considering the form at the top of the sheet as the first. To overcome this difficulty I make the several forms progressively of increased vertical dimensions, starting at the top of the billing sheet, the increase in size being just sufficient to make up for the difference in the length of the circumference of the several rolls as the

successive forms are wound upon the platen. This increase in size not only extends to the height of the form itself but also to the spacing thereon and to the printed matter. To illustrate, suppose a photograph were taken of form 4 which is printed of the actual size intended to be used for the original. Suppose then a photograph taken of this print reducing the same, in vertical dimensions only, by the amount necessary to allow for the difference in the circumference of the paper on the outside of the roll and upon the next successive layer, and another photograph then taken reducing the original photograph still more, and so on until the top form is reached which must be of the exact length of the circumference of the platen. These photographs would then be of the proper dimensions to make my improved billing sheet, if they were joined together in succession.

It will be seen that the forms 4, 3 and 2 are successively smaller in vertical dimensions. By making these differences in the vertical dimensions of the successive forms, allowance is made for the thickness of the paper of the sheet as well as the thickness of the carbon paper or ribbon which is intended to make the carbon copy, with the result that when the sheet and carbon are wound upon the platen every printed item on the top form will register right through with the several similar printed items on the form below and the top and bottom of every form will register with the top and bottom of each of the other forms.

The dividing lines between the forms are indicated by the numerals 5 and 6 and the top and bottom of the bill by the numerals 7 and 8.

In Fig. 3 is shown my improved billing sheet just as it is started to wind on the platen *c*. *b* represents the carbon ribbon or paper which is attached to the surface of the platen in any convenient manner, as indicated at *b*² where the end of the carbon ribbon is shown embedded in the face of the platen. The billing sheet 1 is placed with its top edge in the angle where the carbon ribbon or paper joins the platen, the carbon side of the ribbon or paper being against the printed side of the billing sheet. The platen is then rotated to wind the sheet with the carbon on top thereof upon the platen, as seen in Fig. 4. The winding is continued until the billing sheet is completely wound upon the platen. As the carbon sheet is not of the entire length of the billing sheet, but is short of that length by the height of the last form, it is preferable to provide marginal tapes at each side of the carbon paper or ribbon which continue to wind with the billing sheet and project beyond the last one. It is also convenient to have this tape wound upon a spring-controlled roller so as to pro-

duce the proper tension in the carbon paper or ribbon and thus cause it to wind smoothly upon the platen. These tapes are indicated in Figs. 2 and 5 by *b*¹, *b*¹.

In Fig. 2 will be seen the billing sheet completely wound upon the platen, the several forms being indicated by the same numerals heretofore used. The last or top form is shown torn away, as at *a*, *a*¹, leaving exposed the carbon ribbon or sheet *b* which is also cut away to show immediately below it the form 3.

While I have shown in the drawings of this application a carbon ribbon or sheet attached directly to the typewriter platen, and have suggested this as the most convenient way to use my improved billing sheet, it is to be understood that I make no claim upon such attachment of the ribbon to the platen in this application as it forms the subject matter of a second application.

It is apparent from what has been said, and from the description above given of my improved billing sheet, that any matter written upon the outside or bottom form of the bill will be reproduced by the carbon ribbon on the several other forms in exactly the same spaces and in exactly the same vertical columns as upon the original. After the writing is completed it is simply necessary to pull the sheets from the platen, just as in the case of an ordinary typewritten letter. We have then the original and several copies, each a duplicate of the other, with the various items written all in exactly the same spaces and in the same vertical columns, the entire billing sheet being still intact. The separate forms may be detached when desired.

I claim as my invention:—

1. A multiform billing sheet comprising a number of forms all printed on the same side of the sheet and arranged in succession thereon from top to bottom of the sheet, the successive printed forms, starting from the bottom and running upward, being successively reduced in vertical height and vertical spacing, substantially as and for the purpose described.

2. A multiform billing sheet comprising a number of forms all printed on the same side of the sheet and arranged in vertical succession thereon, the several forms being divided from each other by horizontal perforations, and each succeeding form, starting from the bottom and running upward, being proportionally reduced in vertical dimensions as to height and spacing, substantially as and for the purpose described.

3. A multiform billing sheet comprising a number of forms all printed on the same side of the sheet and arranged in progression from top to bottom thereon, the several forms being progressively increased in vertical dimensions as to height and vertical

spacing, substantially as and for the purpose described.

4. A multiform billing sheet adapted to be wound with a carbon ribbon upon a typewriter platen, said sheet comprising a number of forms all printed on the same side of the sheet and arranged in progression from top to bottom thereon, the several forms being progressively increased in vertical dimensions as to height and vertical spacing, and being so proportioned relatively to each other that when wound, one upon the other,

the tops of the forms will all fall, each upon that of the next preceding form, substantially as and for the purpose described.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 15th day of May A. D. 1909.

EDWARD Z. LEWIS.

Witnesses:

CLARENCE E. MEHLHOPE,
GEORGE R. WILKINS.