

(No Model.)

J. T. UNDERWOOD & W. C. BROOKES.

INK RIBBON FOR TYPE WRITING MACHINES.

No. 385,391.

Patented July 3, 1888.

Fig: 1.

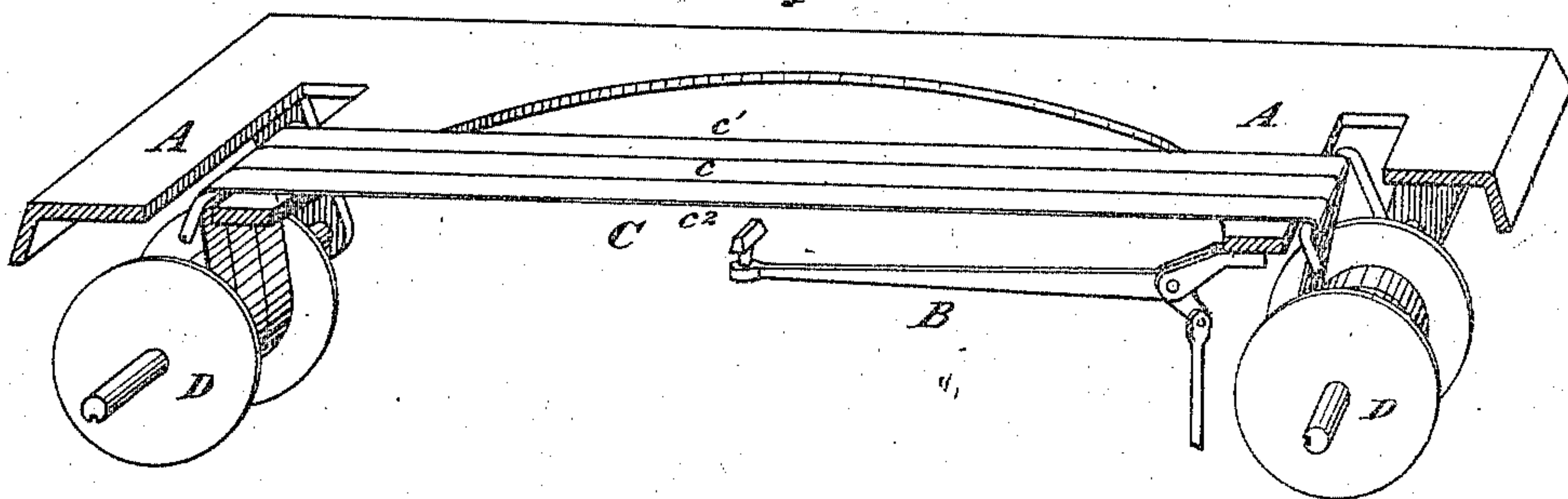


Fig: 2.

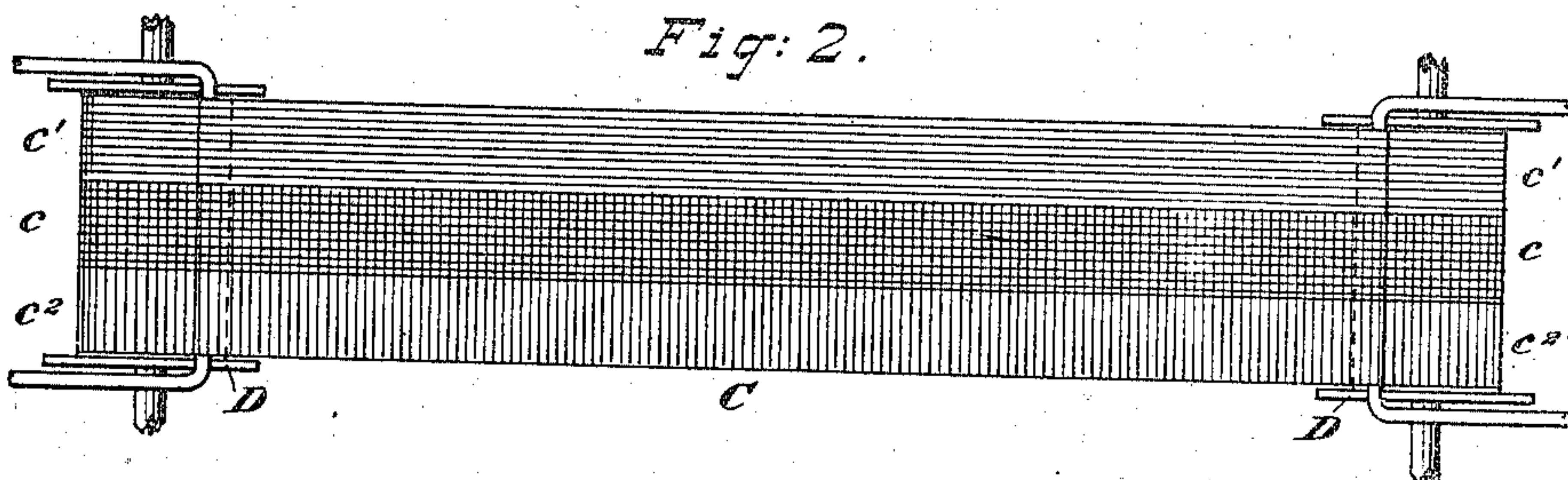


Fig: 3.

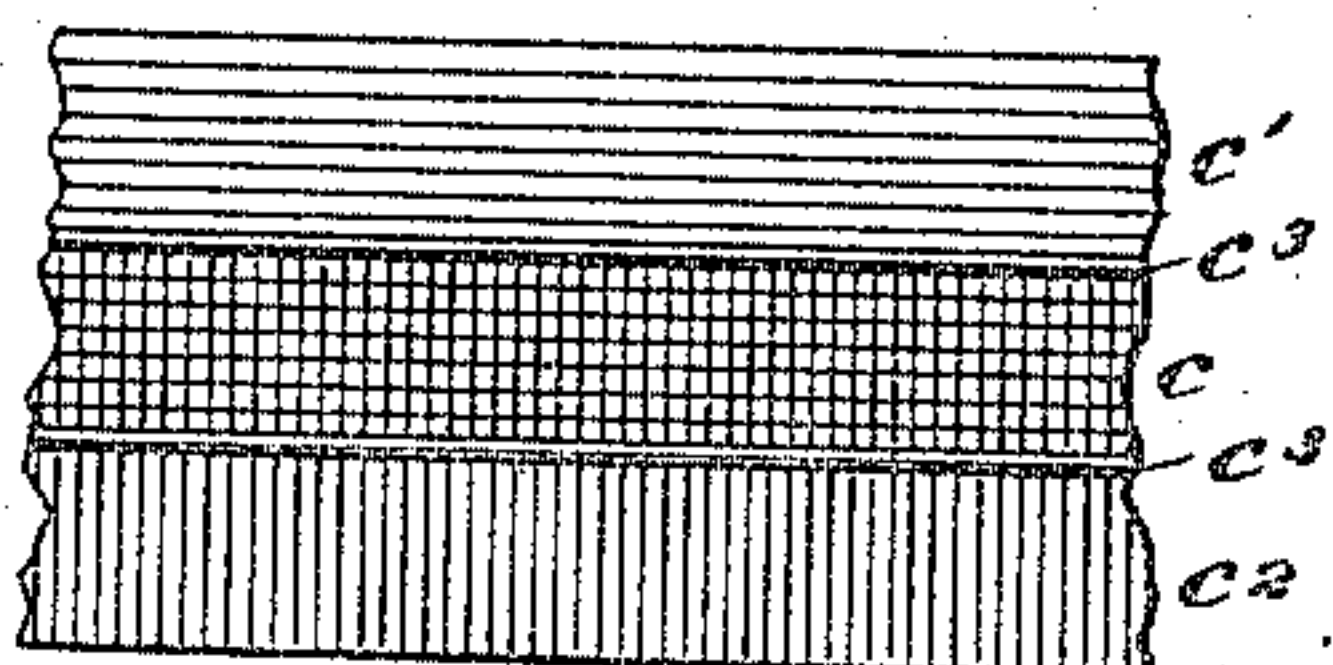


Fig: 5.

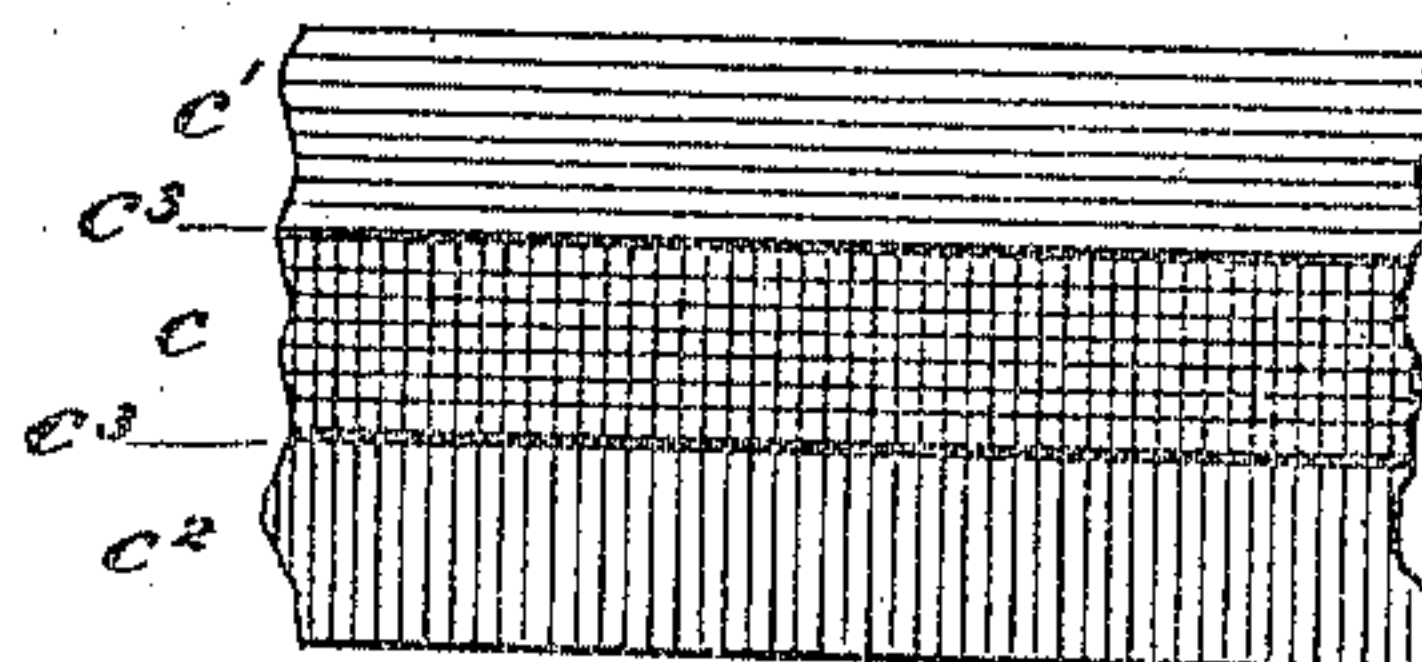


Fig: 4.

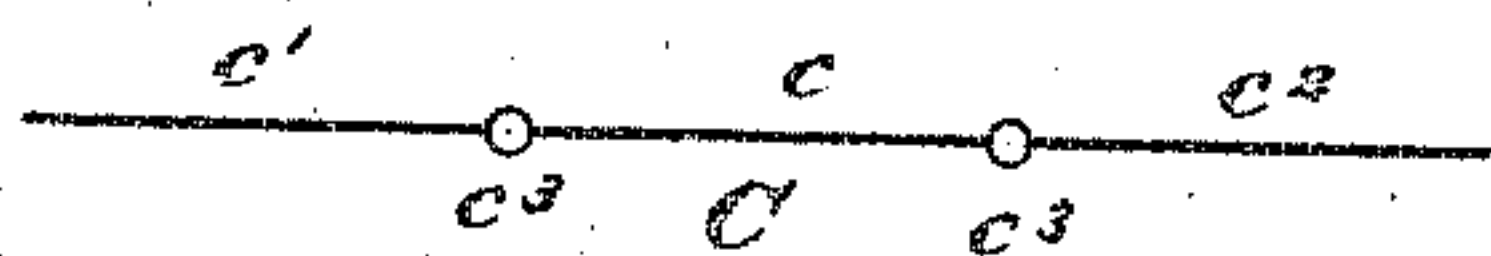
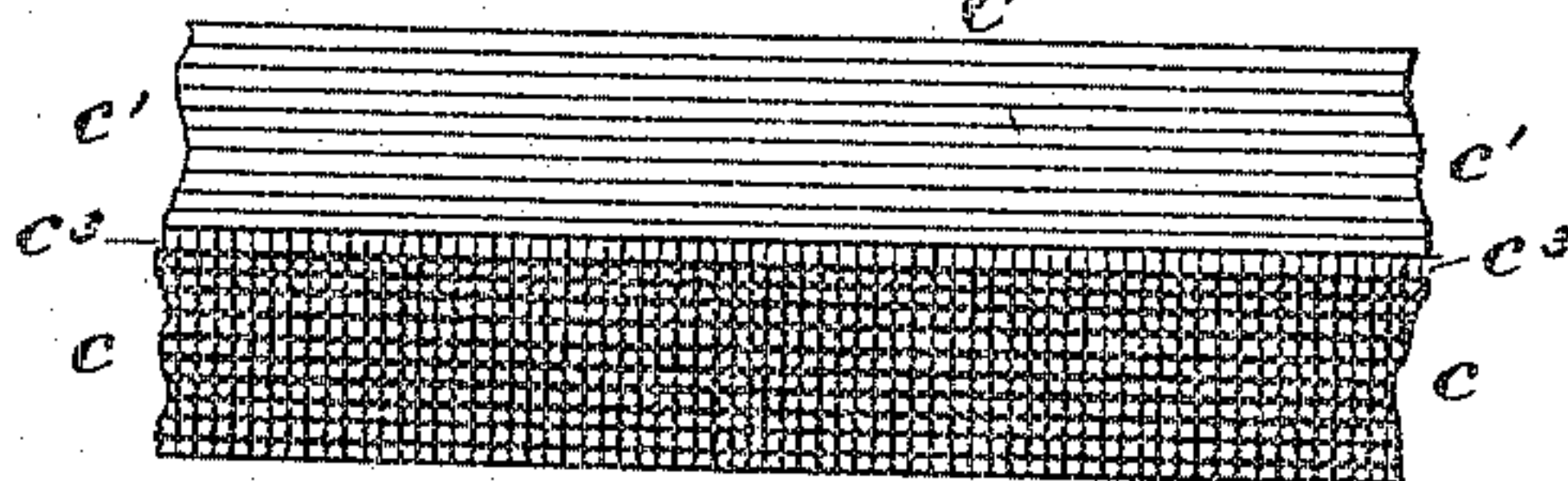


Fig: 6.



WITNESSES:—

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# UNITED STATES PATENT OFFICE.

JOHN T. UNDERWOOD, OF BROOKLYN, NEW YORK, AND W. COLBORNE BROOKES, OF JERSEY CITY, NEW JERSEY; EDITH BROOKES EXECUTRIX OF SAID W. COLBORNE BROOKES, DECEASED.

## INK-RIBBON FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 385,391, dated July 3, 1888.

Application filed November 30, 1885. Serial No. 184,238. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN T. UNDERWOOD, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, and W. COLBORNE BROOKES, a subject of the Queen of Great Britain, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Inking-Ribbons or Marking-Bands to be Employed in Writing-Machines, Type-Writers, &c., of which the following is a specification.

Our invention relates to improvements in ribbons or marking-bands adapted to be employed in writing-machines, type-writers, and other analogous machines for the production of letters, figures, or designs by the interposition between the type or marking device and the surface to be marked upon of an inked, saturated, or coated ribbon or marking-band.

The object of our invention is, first, to enable an operator on a writing-machine, type-writer, or analogous machine to produce letters, figures, designs, or marks of different colors on the same line or on different lines or portions of the same page, sheet, or portion of material without necessitating the removal of the ribbon or band used to produce one color and the substitution of another ribbon or traversing surface to produce another color.

The object of our invention is also to enable operators on writing-machines, type-writers, or other analogous machines to produce documents, writings, figures, or designs consecutively, alternately, or otherwise on different sheets of material in the same color, but of different characters and for different purposes. For instance, by the use of this invention an operator with the same machine and without removing the marking means can produce, first, a letter, document, design, &c., in permanent or record ink; second, a letter, document, design, &c., in copying-ink; and, third, a letter, document, or design in lithographic ink upon prepared paper ready to be transferred to a stone for the purpose of reproduction in large numbers.

In carrying out our invention we employ a ribbon or band having two, three, or other

number of parallel sections arranged side by side, such sections being by preference each of a different color or character from the rest. We can, however, in some cases employ two sections of the same color or character and one or more sections of a different color or character. This will be particularly the case where one color or character of marking-surface predominates in use over another color or character of marking-surface.

In some cases we employ a ribbon or band composed of two or more separate sections adapted to be employed in place of two or other number of conjoined sections.

The accompanying drawings form part of this specification and indicate some of the best means of carrying out our invention.

Figure 1 represents a perspective view of part of a type-writer with one of our improved ribbons applied thereto. Fig. 2 is a plan view of a pair of bobbins and guides supplied with one of our improved ribbons adapted to print in three colors or descriptions of marking-matter. Fig. 3 is a plan view of a portion of ribbon, illustrating one mode of manufacturing the fabric. Fig. 4 is an enlarged cross-section of Fig. 3. Fig. 5 shows a slight modification of Figs. 3 and 4. Fig. 6 shows another slight modification.

In each of the views similar letters of reference are employed to indicate corresponding parts in all the figures wherever they occur.

A represents part of the main framing of a type-writer of the style commonly known as the "Remington Type-Writer," and B one of the type-levers, which is provided with type *b*, of the ordinary or suitable character.

C represents a ribbon, which in the arrangement shown is supported on bobbins D D, and has its printing or marking surface arranged in three parallel sections, *c c' c''*, each of which is of a different color or character. For instance, the center section, *c*, may be black, the section *c'* may be red, and the section *c''* blue; or, the section *c* may be coated, saturated, or prepared with "permanent" or "record" ink, the section *c'* with "lithographic" ink adapted to produce impressions on a sur-



face ready to be transferred to a stone, and the third,  $c^3$ , may be prepared with "copying-ink."

In Fig. 2 we have shown a continuous web of fabric, the three sections of which are coated or saturated with three different colors or descriptions of marking material, which are allowed in the course of manufacture to come directly in contact one with the other. The material is supplied to the ribbon by brushes, rollers, or other suitable devices.

Figs. 3 and 4 represent a slight modification, in which the fabric is woven, with soft thick warps  $c^3$  interposed at the point of junction of the sections, the object of which thick warps  $c^3$  is to prevent the ink or other material when in a liquid state from mixing with or flowing from one section onto the other. These warps  $c^3$  are subsequently pressed down flat by rollers or other suitable means.

Fig. 5 is another modification, in which the ink or other material with which the sections of the ribbon are coated or saturated in the course of manufacture is prevented from spreading from one section to the other by the intervention of warps  $c^3$  of a non-absorbent character.

Fig. 6 shows another slight modification of our improved ribbon. In this case the ribbon is formed without any warps at  $c^3$ , the sections  $c$  being connected together simply by the weft-threads, the object of this mode of weaving the ribbon being to prevent the ink or saturating material flowing from one section onto the other in the process of coating or saturating the sections.

In place of forming our sectional marking-surface of woven fabric in some cases we form the same of paper, leather, or other suitable material adapted to receive and retransmit a marking material applied to its surface.

In use our improved ribbons or marking-bands may be controlled in position by any suitable means, so as to bring the desired section in place to be interposed between the type or marking device and the surface to be printed or marked upon; but we prefer to use a device

of a character such as described and shown in an application for Letters Patent filed by us simultaneously with this application for improvements in type-writers, &c.

Our improved ribbons or marking-bands may be used with writers employed for telegraphic purposes, and also with stamping and other analogous devices for effecting impressions by the interposition of a marking-band of ribbon between the marking device and the surface to be marked upon.

Although we have shown our ribbon or band of ribbon applied to a Remington type-writer, it is equally applicable to all other type-writers by a slight modification of or addition to their existing parts.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A printing or marking ribbon or band composed of a plurality of connected parallel sections, each section being coated or saturated with printing or marking material of different color or character, and adapted to be employed intermittently at will or continuously in position in a type-writing or marking machine to produce the desired color or description of impression, substantially as and for the purpose stated.

2. A printing or marking ribbon or band having a plurality of parallel sections provided with printing or marking material of different colors or character, each adapted to be employed intermittently at will or continuously in position in a writing or marking machine, the coated or saturated surfaces of the sections of the said ribbon or band being separated one from the other by a dividing means,  $c^3$ , substantially as shown and described.

In witness whereof we have hereunto set our hands this 28th day of November, 1885.

JOHN T. UNDERWOOD.  
W. COLBORNE BROOKES.

Witnesses:

JAMES M. TULLY,  
GEORGE HASELTINE.