

(No Model.)

4 Sheets—Sheet 1.

C. W. DICKINSON.
ROTARY OR COLOR PRINTING PRESS.

No. 556,740.

Patented Mar. 24, 1896.

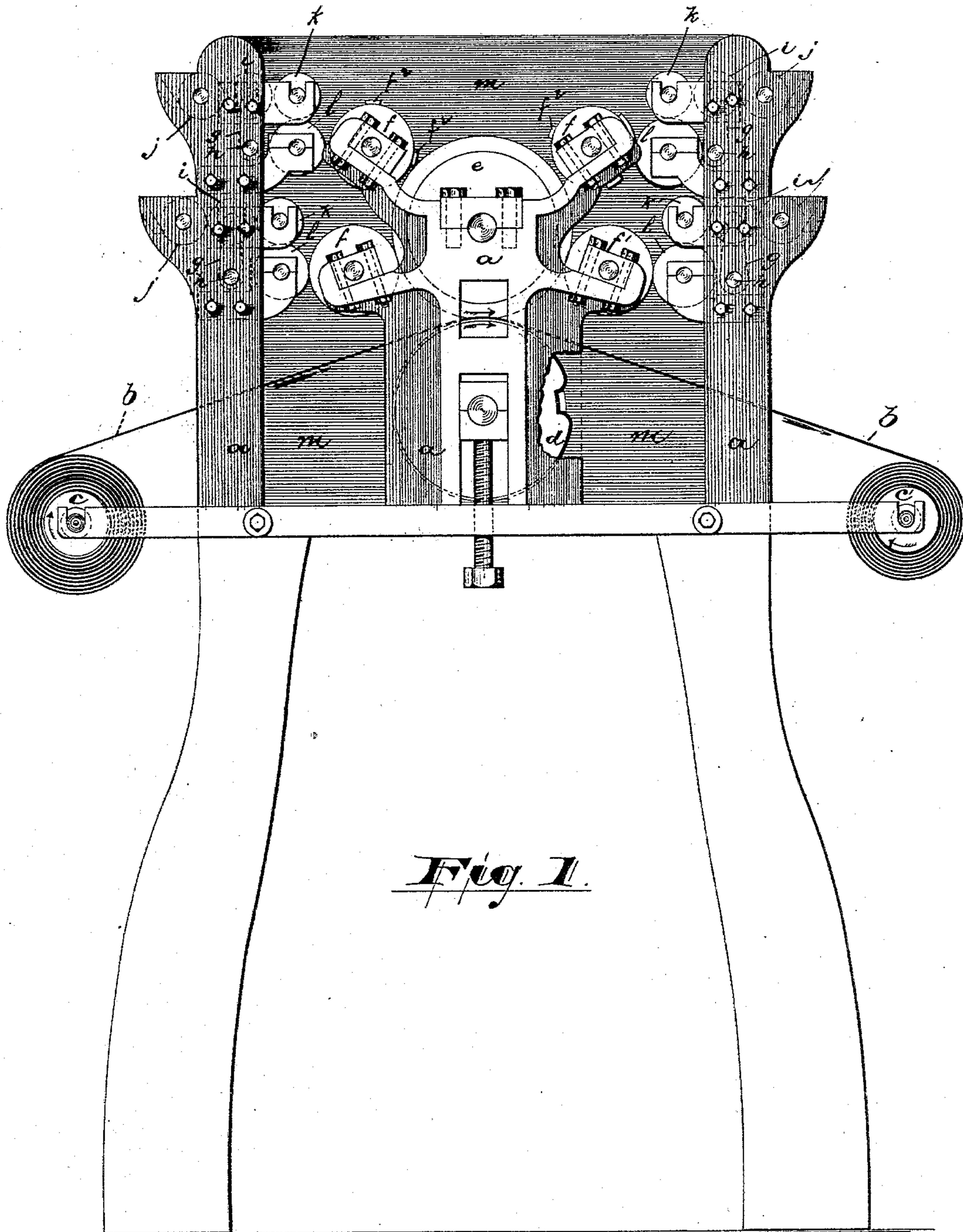


Fig. 1.

Witnesses

Inventor:

Oscar A. Michel.

Charles W. Dickinson,

E. C. Wilsleider

By *Draper & Co., Attys.*

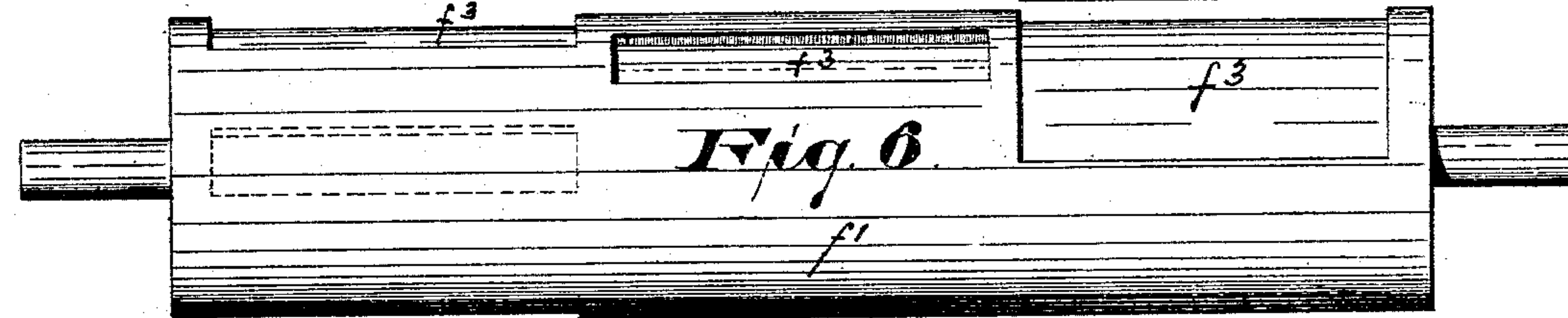
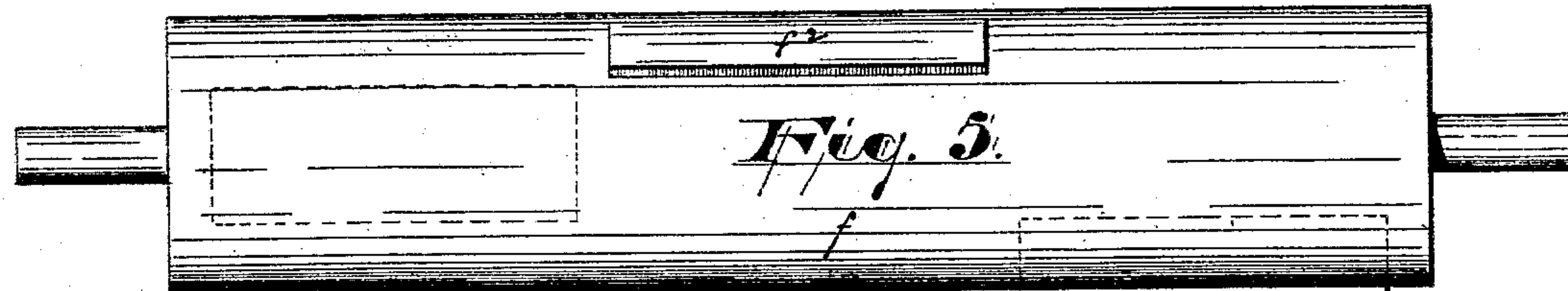
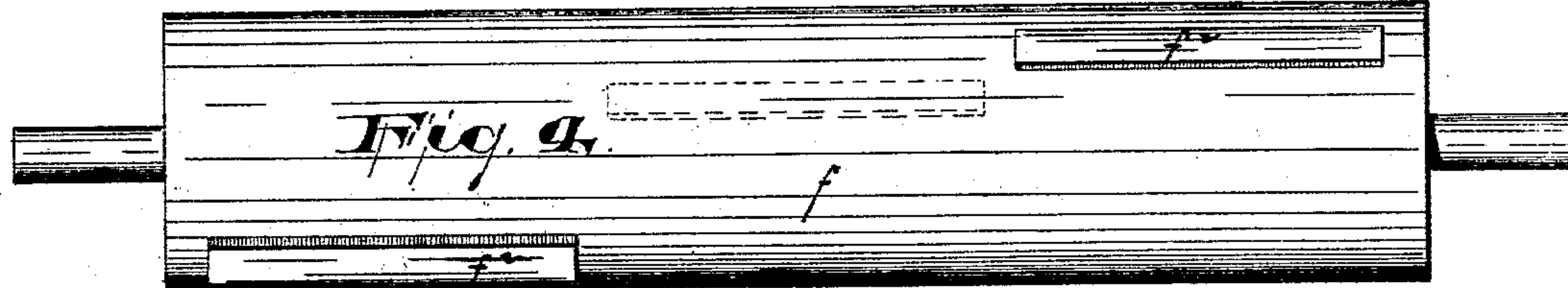
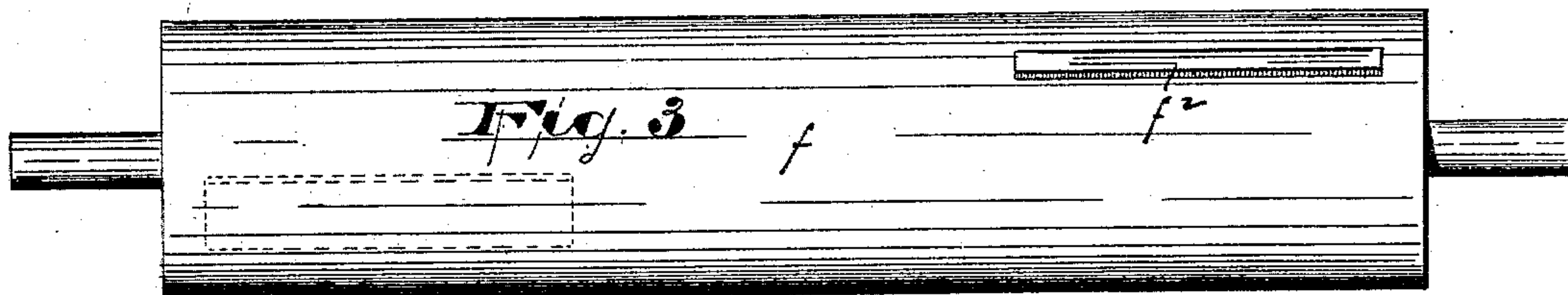
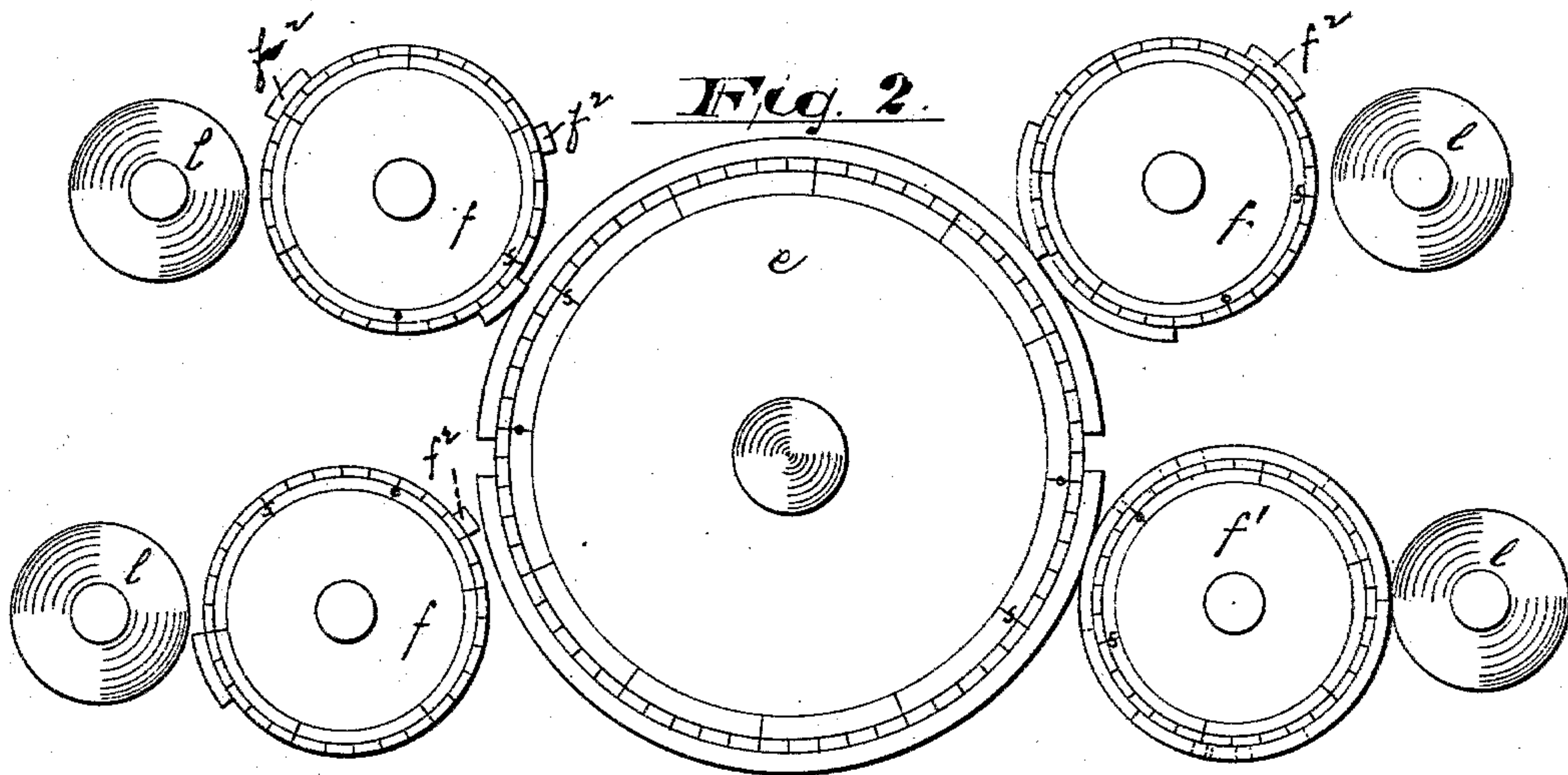
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E. P. Gilsleider

Inventor—
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By *Drake & Co. Attys*

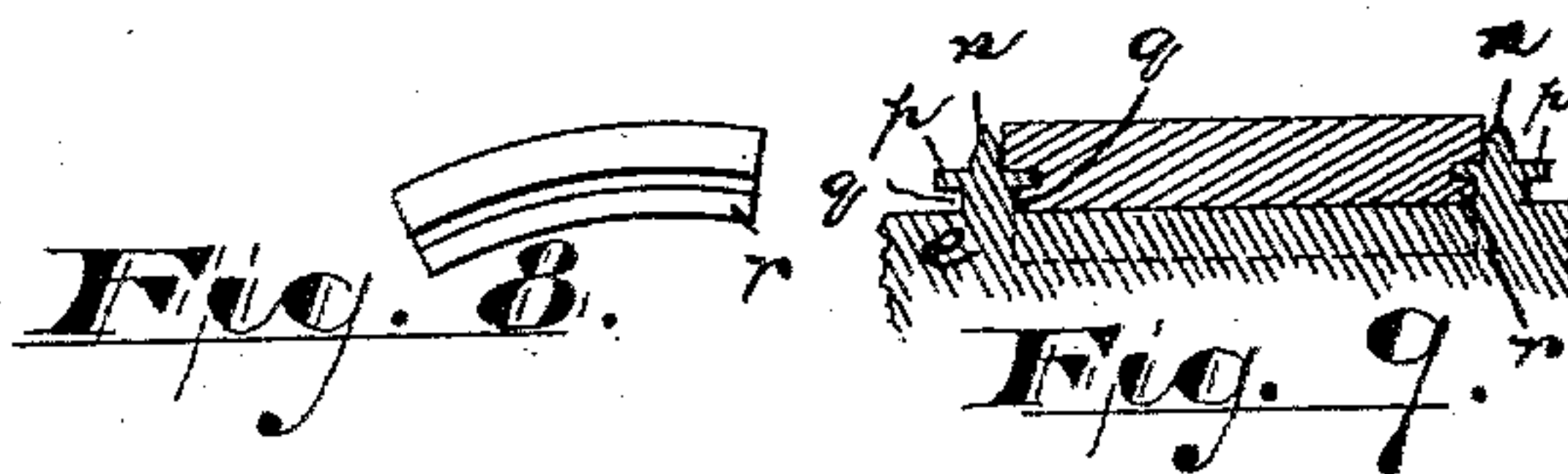
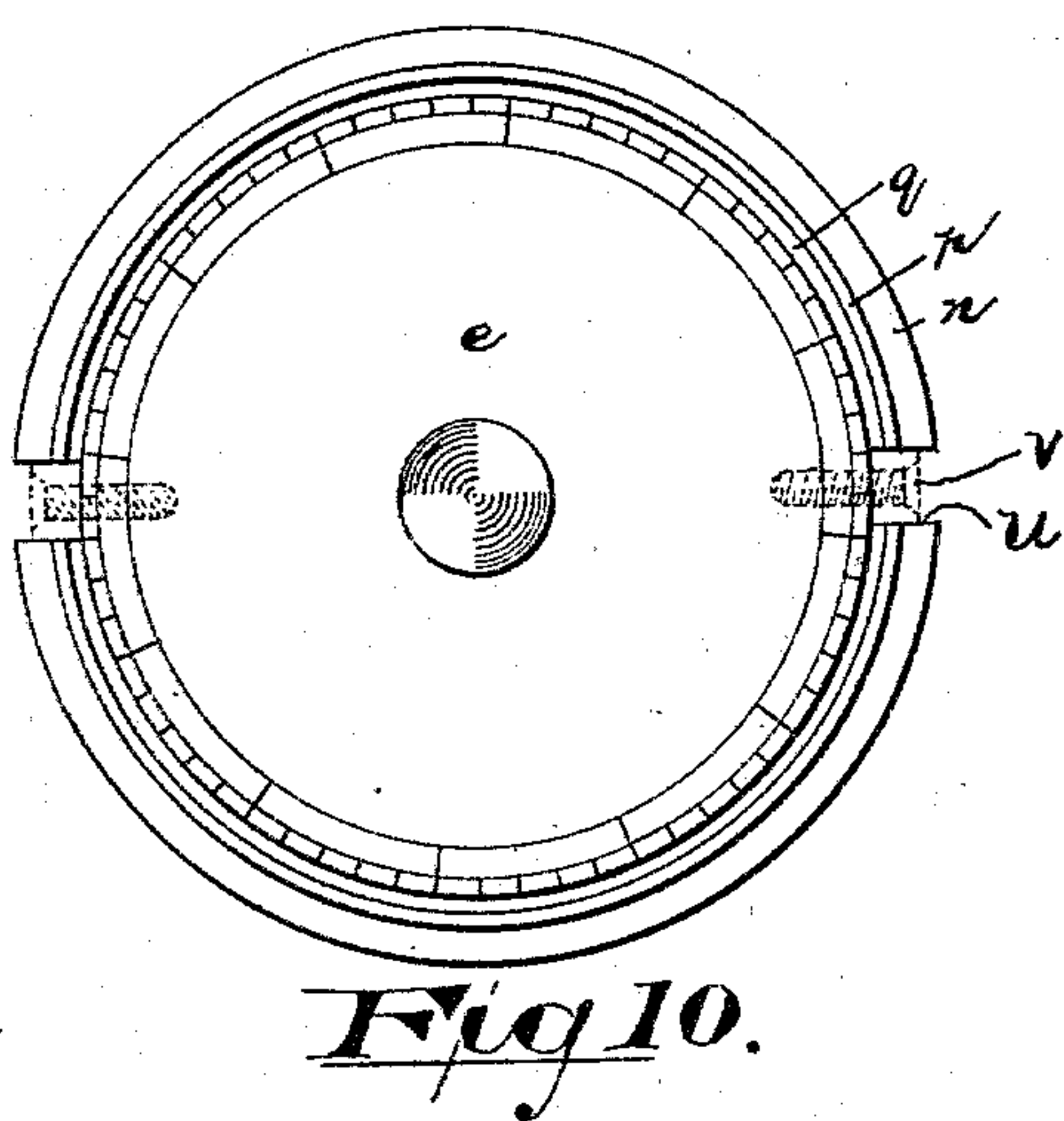
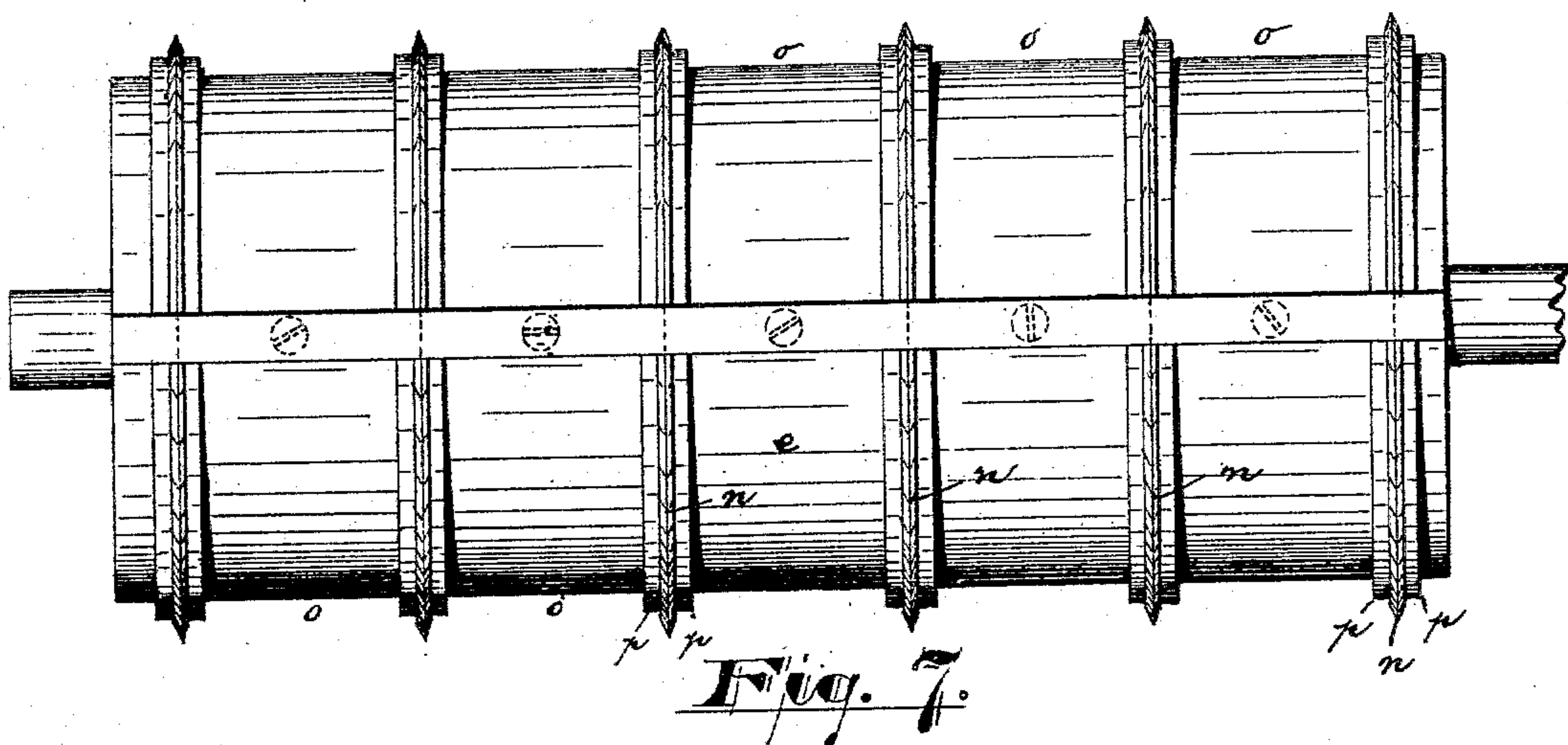
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Witnesses
Oscar A. Michel.
E. C. Kilsleider.

Inventor:
Charles W. Dickinson,
By *Drake & Co.* Attys.

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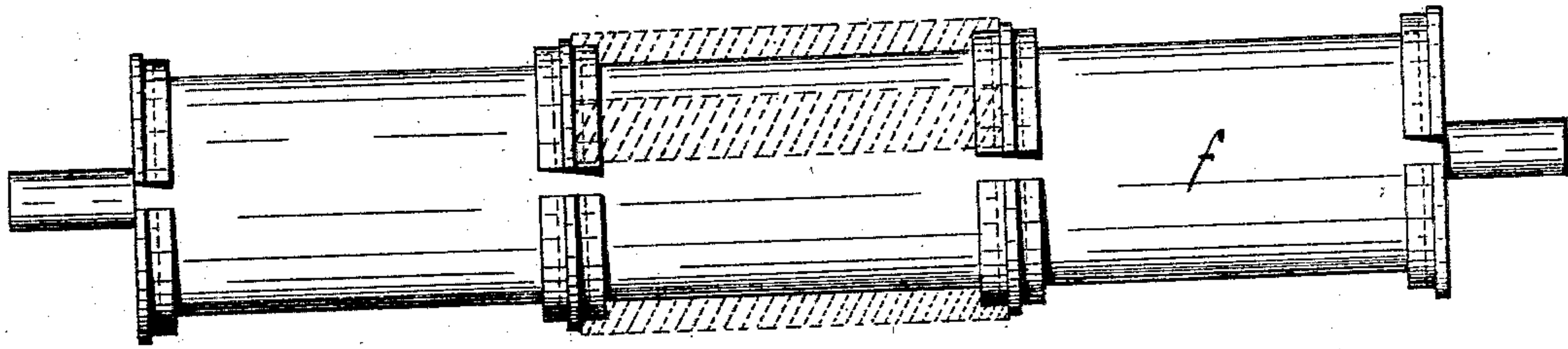


Fig. 11.

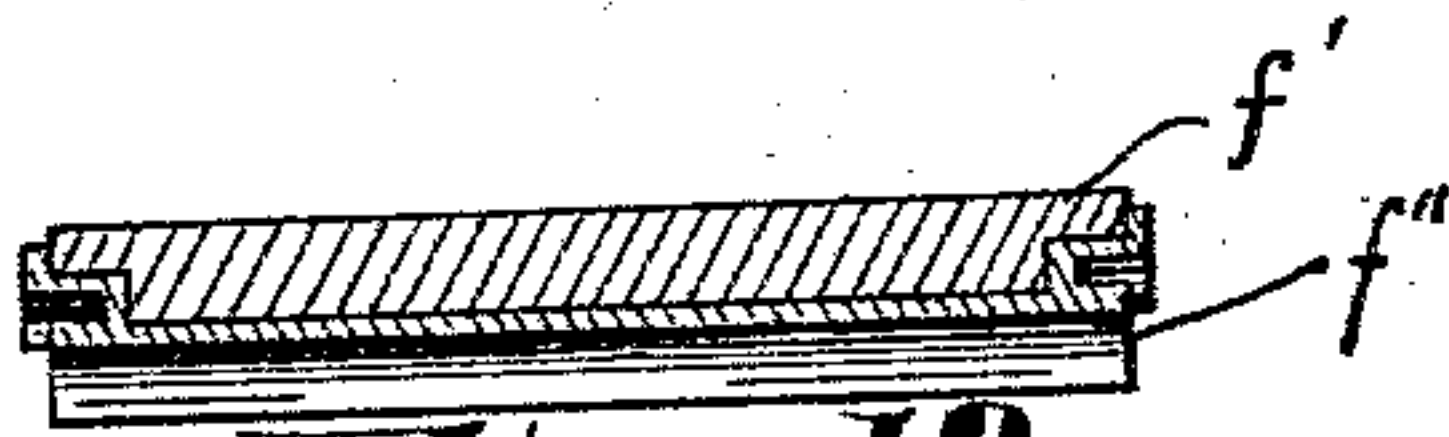


Fig. 12.

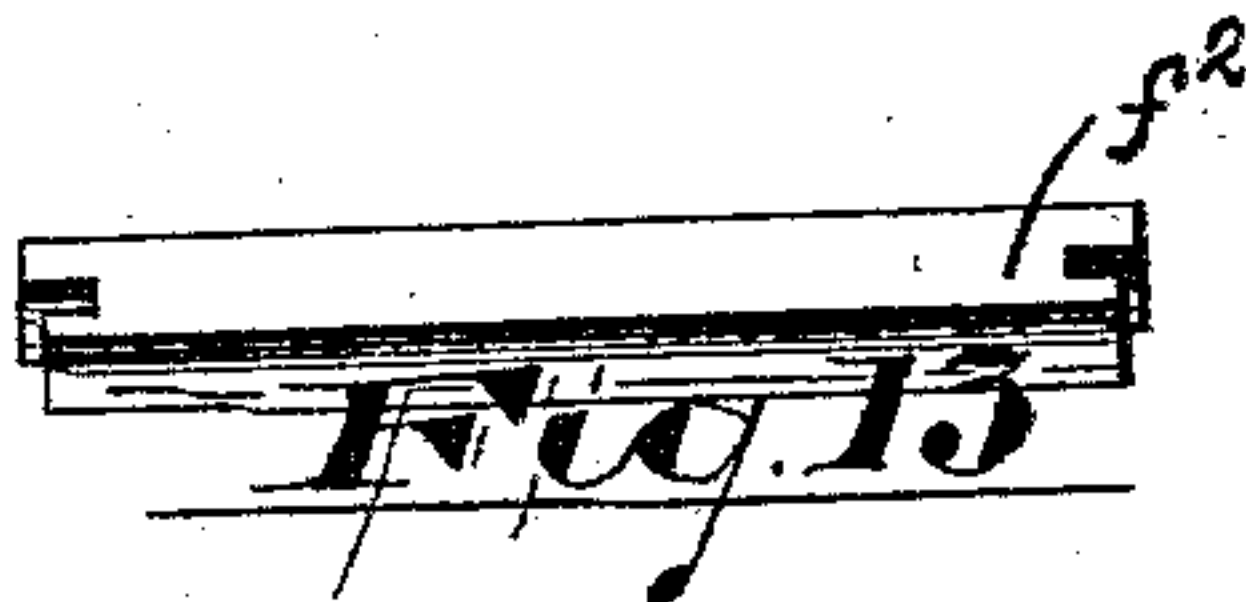


Fig. 13.

Witnesses Inventor:
Oscar A. Michel *Charles W. Dickinson.*
E. C. Laisleider *By Drake & Co. Attys.*

UNITED STATES PATENT OFFICE.

CHARLES W. DICKINSON, OF BELLEVILLE, NEW JERSEY.

ROTARY OR COLOR-PRINTING PRESS.

SPECIFICATION forming part of Letters Patent No. 556,740, dated March 24, 1896.

Application filed February 19, 1892. Serial No. 422,089. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. DICKINSON, a citizen of the United States, residing at Belleville, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Rotary or Color-Printing Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to facilitate the operation of printing in a plurality of varying colors in connection with rotary or cylinder presses, to dispense with a certain ink-transmitting roll, tending to obscure lines of union of different colors, and thus to secure more perfect impressions and other results in printing, to avoid the use of movable parts in connection with the type roll or cylinder, to secure greater durability, and other advantages and results, some of which will be hereinafter referred to in connection with the description of the working parts.

Referring to the accompanying drawings, in which like letters indicate corresponding parts in each of the several views, Figure 1 is a side elevation of a printing-press embodying the improvements. Fig. 2 is an end view indicating the relations of the rolls to one another. Figs. 3, 4, 5, and 6 are front views, in detail, of the inking-rolls. Fig. 7 is a front and Fig. 10 an end view of the type-roll. Fig. 8 is an end view of a certain peripheral section of the type-cylinder, the said section being shown wider, however, than is adapted to enter a certain longitudinal groove or opening when said groove or opening is of the proportions shown in Fig. 7. Fig. 9 is a sectional view of said peripheral section and showing details of certain portions of said roll; and Figs. 11, 12, and 13 illustrate certain modifications of construction in the inking-rolls.

In said drawings, *a* indicates a bed or frame of any suitable construction adapted to receive the inking and printing rolls, &c., and the means for operating the same.

b indicates the paper undergoing the printing operation.

c c' are rolls for the paper and *d* is a platen, roll, or cylinder over which the paper travels from one paper-roll to the other.

e is a type roll or cylinder adapted to imprint the letters or characters upon the paper, and *ffff'* are inking-rolls adapted to receive the ink from suitable fountains or ink-supply mechanisms and transmit the same to the printing or type roll. The said inking-rolls are disposed around the periphery of the type-roll and come in contact with the same at different points thereon, the ink of one roll being spread on a different part or surface of type from the part or surface inked by the other rolls.

The fountains, by which the inking-rolls are supplied with ink, are independent of one another and are supplied with various inks. Black, for example, will be contained in one fountain, red, blue, green, or other distinct colors in the others respectively.

The fountains are of ordinary construction and I deem it unnecessary to detail the constructions and operations specifically here, but I may state that I prefer to use the mechanisms shown, consisting of the ordinary forked bearings *g g g g* on rock-shafts *h h h h*, rolls *i i i i* taking the ink from the fountain-rolls *j j j j* to the traversing or laterally or longitudinally movable rolls *k k k k*, which latter feed the ink to the rolls *l l l l*, which in turn feed the ink to the inking-rolls *f f'*.

The various rolls are operated by ordinary mechanisms back of the bearing-plate *m* in any usual manner.

The cylinder or type-roll *e* carries on its periphery the forms or plates which serve to make the impressions on the paper. Said forms or plates are rigidly secured on the cylinder and may be cast in whole pages, such as are used on the cylinders of ordinary newspaper-presses. There is no mortising or cutting and letting in of plates or parts which are movable to receive the different colors, as is sometimes done in the construction of other color-printing presses.

I prefer to cast the plates or forms in sections.

When in sections, the plate-sections are

held in place by division-ridges $n\ n$, forming column-grooves $o\ o$ therebetween. Said division-ridges n have on each side thereof a laterally-projecting flange p , forming a recess
 5 q to receive a tongue or lateral projection r at the edge of the said plate-section, as will be understood upon reference to Fig. 9.

The sectional plates are inserted in the column-grooves o by sliding them circumferentially from the longitudinal groove u , Fig. 7, which corresponds with the marginal spaces at the edges of the printed page, should the ridges n be integral with the cylinder or roll e , or, should the said ridges be other than
 15 integral, the latter may be moved to admit a more direct insertion.

When the sections are inserted from the groove, they are of course narrow enough to first lie in said groove close to the periphery
 20 of the cylinder.

The sections may be held in the column-grooves, so as not to move circumferentially therein, by means of a longitudinal stay-strip v , Fig. 10, arranged in the longitudinal groove
 25 or space u and held therein in any suitable manner.

The advantages of employing interchangeable, removable, and adjustable sections, as above, will be apparent, but it may be well to
 30 state that in certain kinds of printing, the advertising page of a daily newspaper for example, where some of the advertisements, but not all, are to be printed in a subsequent edition of the paper, so that a new assembling
 35 of the various paragraphs or advertisements is necessary, the said sections may be rearranged without recasting the entire form as is now done on large daily papers, and the various articles to be printed may be changed
 40 or rearranged, to give them prominent positions, without disturbing or disarranging the entire type-form.

The inking-rolls f embrace a very important feature of novelty. They are geared to
 45 the type-cylinder so as to operate invariably therewith, the said rolls being proportionately sized and timed in their workings so that any peripheral portion or portions of the inking-rolls engaging the type-surface of the roll or
 50 cylinder e will bear on the same surface or surfaces of the said type roll or cylinder repeatedly, or at each revolution of said type roll or cylinder, as will be more fully described. The outer surfaces of the said ink-
 55 ing-rolls are of a gelatinous, gummy, or elastic substance or composition cast around the body or bed of said rolls. At desired points on the peripheries of said rolls f are cast projecting inking-surfaces f^2 , which are adapted
 60 to engage both the fountain-rolls l and the type-cylinder e and to transmit the ink from said fountain-rolls to said type-cylinder, to spread the ink on limited surfaces of type on said type-cylinder.

65 For the purpose of illustration let us suppose the three inking-rolls f are for colored

ink—one, say, for blue, another for red, and a third for purple—the fountains supplying said rolls being supplied, respectively, with the colors named. The fourth roll, f' , provides the type-roll with body color—black or brown, for example. The projections f^2 on the color-rolls are so related to one another and to the body-color roll as that the same surface of the type-roll will not be supplied
 70 by two rolls, (unless it is desired to mix colors,) but the four rolls, if four be the desired number, will be sufficient to ink the whole surface of the cylindrical type-roll and give a body color and patches of relief
 75 colors here and there on the page.

It will be understood that the body-color roll f' is recessed, as at f^3 in Fig. 6, in correspondence with the projections on the relief-color rolls, so that there will be no engage-
 80 ment with said type-roll at such recesses and no spread of body-color ink where the relief-ink is to be spread.

The relief and body color inking-rolls may have inking-sections corresponding with and
 85 interchangeable like the interchangeable sections of the type-roll and having the sections held in place by substantially like means.

To facilitate the disposition of the adjustable sections in arranging or assembling the
 90 same to complete the form, or, when the inking and printing surfaces are not sectional, as described, to simply prevent the overlapping and secure a proper disposal of colors without making nice and tedious calculations, I have
 95 provided the ends of the rolls $f\ f'$ and the cylinder e with indices or graduation-marks, as clearly indicated in Fig. 2, each space or division represented on the inking-roll having its counterpart or counterparts on the type-
 100 cylinder.

It is desirable that the surfaces of the inking-rolls and type-roll move at a uniform rate of speed, so that there will be no rubbing contact of surfaces, and consequently, to secure
 105 a repeated and exact contact of a given projection f^2 with its counterpart surface on the type-cylinder, it is necessary that the inking-rolls be of the same diameter as the type-cylinder or of a regular fraction thereof, such as
 110 one-half, one-third, one-fourth, &c., in which latter case the inking-roll will make two, three, or four contacts, respectively, at desired points.

In operating the color-press, the parts being adjusted as described and the fountains being supplied with the variously-colored inks, and the paper to be printed arranged to travel between the type-roll and platen-roll, the machine is started by the application of
 115 power in any suitable manner and the rolls and cylinders revolved. The foundation color is applied to the cylinder e by the roll f' , patches or spaces on the type-surface being left uninked because of the recesses in said
 120 roll. These patches or spaces are, however, one after the other, filled in with other relief
 125

colors by the rolls having projections, and so the type-roll is prepared, when it comes into contact with the paper, to imprint thereon a solid form of matter, the printed page presenting here and there highly-colored typographic imprints tending to display or make the subject thereof prominent. For example, the pages of a paper having the ordinary black body coloring may present at the center thereof an advertisement in purple, at the top display matter in red, and, at the bottom, a reproduced pen-sketch in blue, the colorings being repeated on other pages with display matter to suit, if such be desired.

By the construction described all movable parts on the rolls and cylinders are dispensed with and the consequent wear and tear and noise produced thereby, owing to the extremely rapid revolutions of the said rolls, are avoided. Again in my improved machine I dispense with an intermediate transferring-roll between the sectional inking-roll and the sectional printing-cylinder, and thus make a single and direct transfer from the several color-rolls to the type-form. I thus reduce the chances for imperfection of colors owing to lost motion or wear on the machine. By applying the sectional color-rolls directly to the sectional printing-cylinder, as distinguished from a flat printing-form, and applying the several colors directly to the printing-cylinder, as above, I am enabled to print with great rapidity, and yet without danger of admixture of colors, upon a continuous web of paper, thus rendering color-printing in newspaper work certain and less liable to inter-

ruption because of imperfections arising in the print.

Having thus described the invention, what I claim as new is—

1. In a printing-press, the combination with an inking-roll for spreading ink upon a type-surface, the said roll having recessed surfaces at which the said roll fails to engage and ink the type of said type-surface, of another inking roll or rolls having an inking surface or surfaces which supplement the inking-surfaces of the first said roll to complete the inking of the printing-surface, and a printing-form adapted to be variously inked by said rolls and to transmit the ink to the paper to produce a variously-colored page at one impression, the said form being arranged on a cylinder, *e*, having index or graduation marks and the said rolls having corresponding marks to enable the printer to locate the said forms and inking-surfaces with reference to one another, substantially as set forth.

2. In a printing-press, the combination with a type-cylinder having indices on said cylinder, of inking-rolls provided with adjustable inking-sections and having corresponding indices, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of February, 1892.

CHARLES W. DICKINSON.

Witnesses:

CHARLES H. PELL,
EDWARD W. JACKSON.