

No. 888,231.

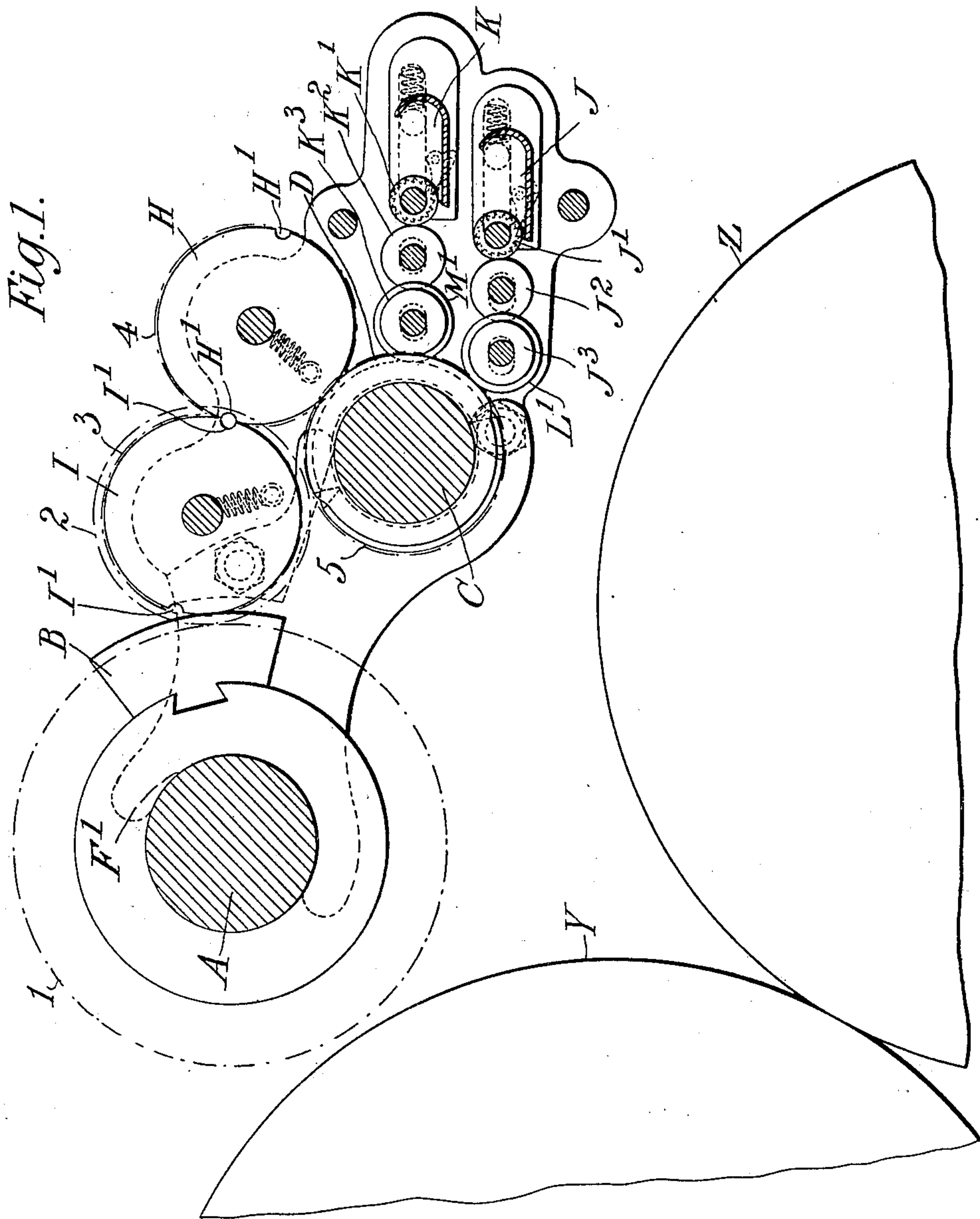
PATENTED MAY 19, 1908.

F. VON EULENFELD.

ROTARY WEB PRINTING MACHINERY FOR SIMULTANEOUS MULTICOLOR
PRINTING.

APPLICATION FILED AUG. 26, 1904.

4 SHEETS—SHEET 1



Witnesses:-
 Joseph Krusta
 W. Max Duvall

Invitation:-
From Eulenfeld
by Wilkinson & Fisher
his Attorneys

No. 888,231.

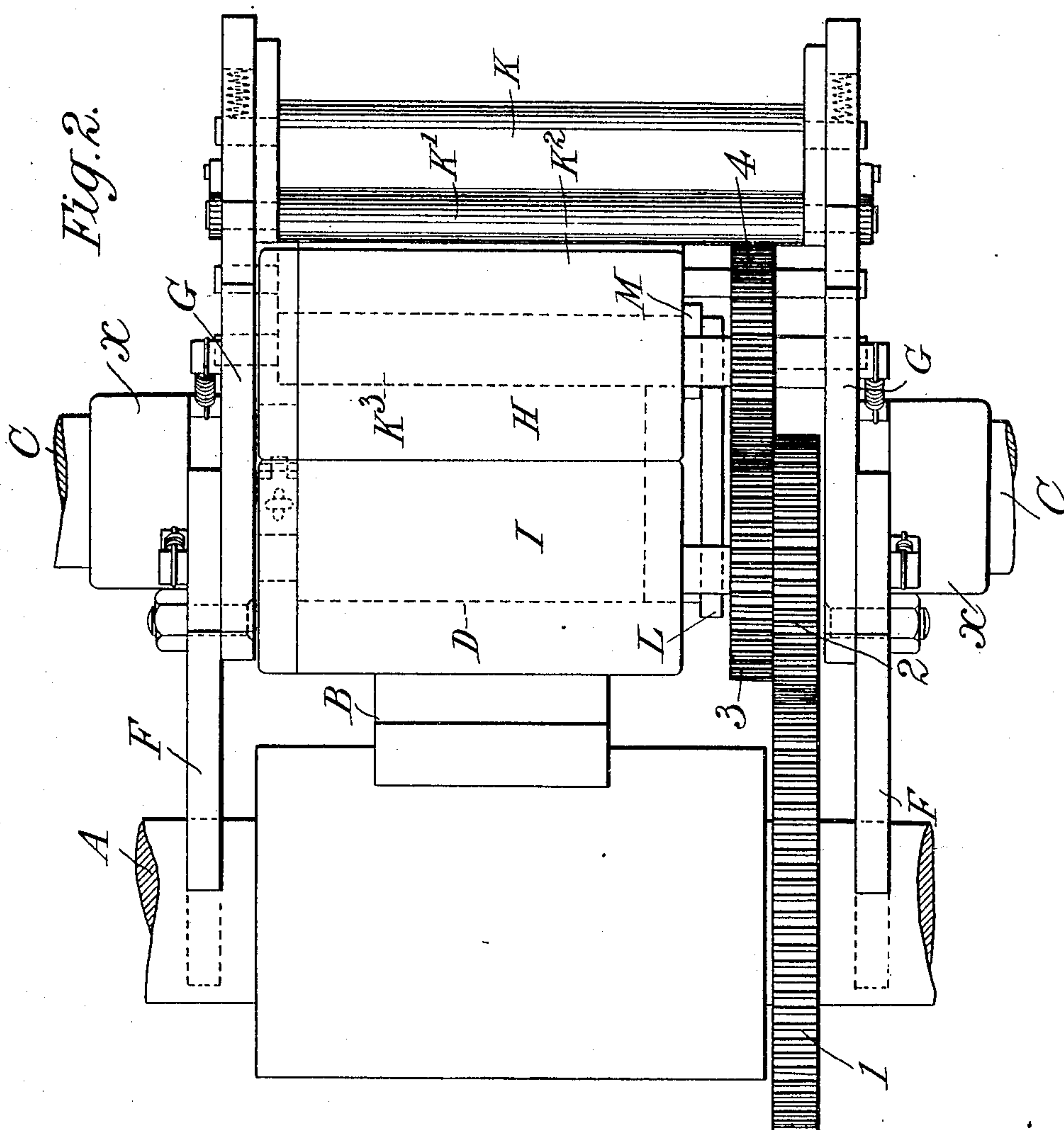
PATENTED MAY 19, 1908.

F. VON EULENFELD.

ROTARY WEB PRINTING MACHINERY FOR SIMULTANEOUS MULTICOLOR
PRINTING.

APPLICATION FILED AUG. 25, 1904.

4 SHEETS—SHEET 2.



Witnesses:-
Stephen Kinsten
W. Max. Duvall

Inventor:-
F. von Eulenfeld.
By Wilkinson & Fisher
his Attorneys

No. 888,231.

PATENTED MAY 19, 1908.

F. VON EULENFELD.

ROTARY WEB PRINTING MACHINERY FOR SIMULTANEOUS MULTICOLOR
PRINTING.

APPLICATION FILED AUG. 25, 1904.

4 SHEETS—SHEET 3.

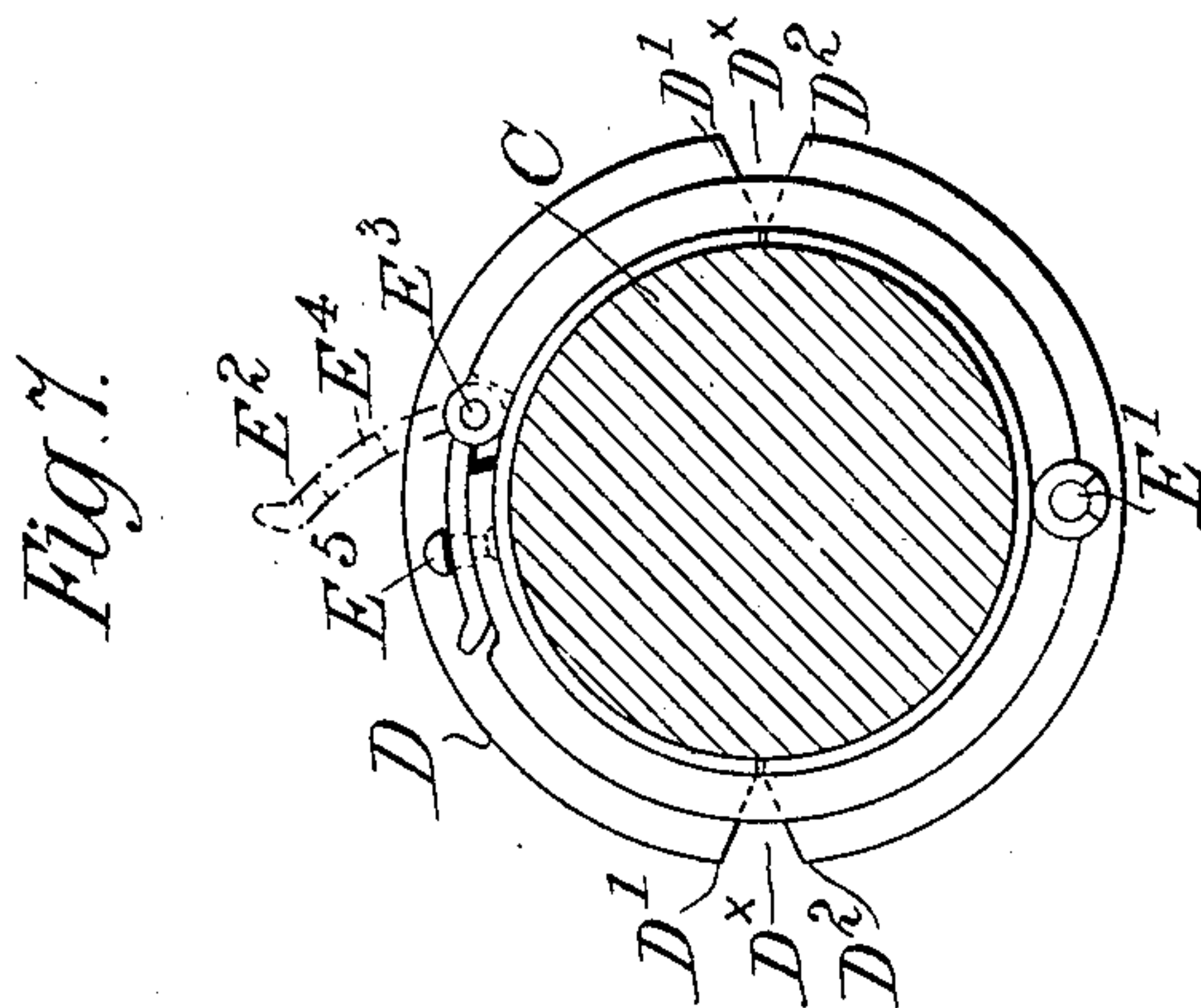


Fig. 7.

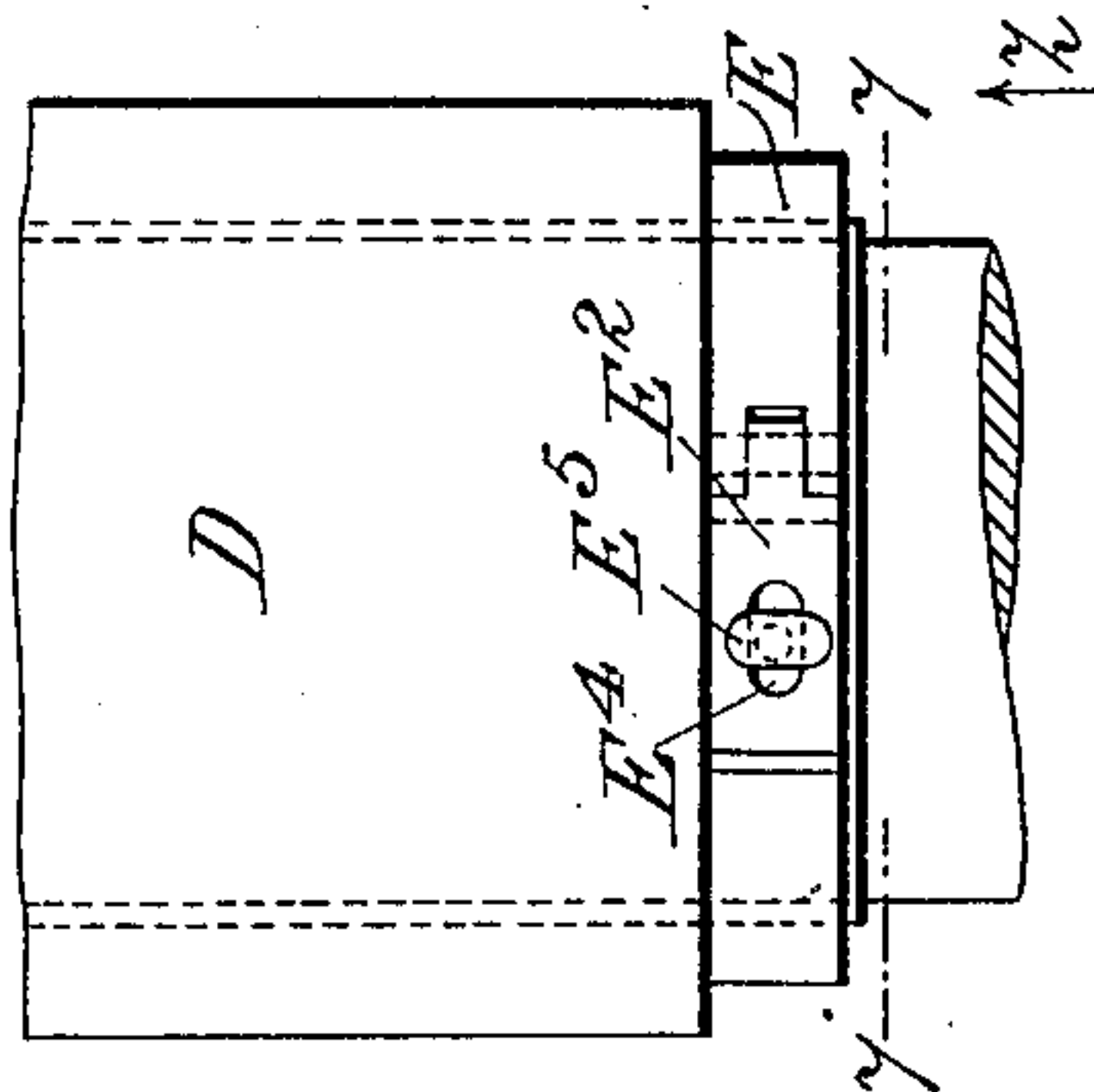


Fig. 6.

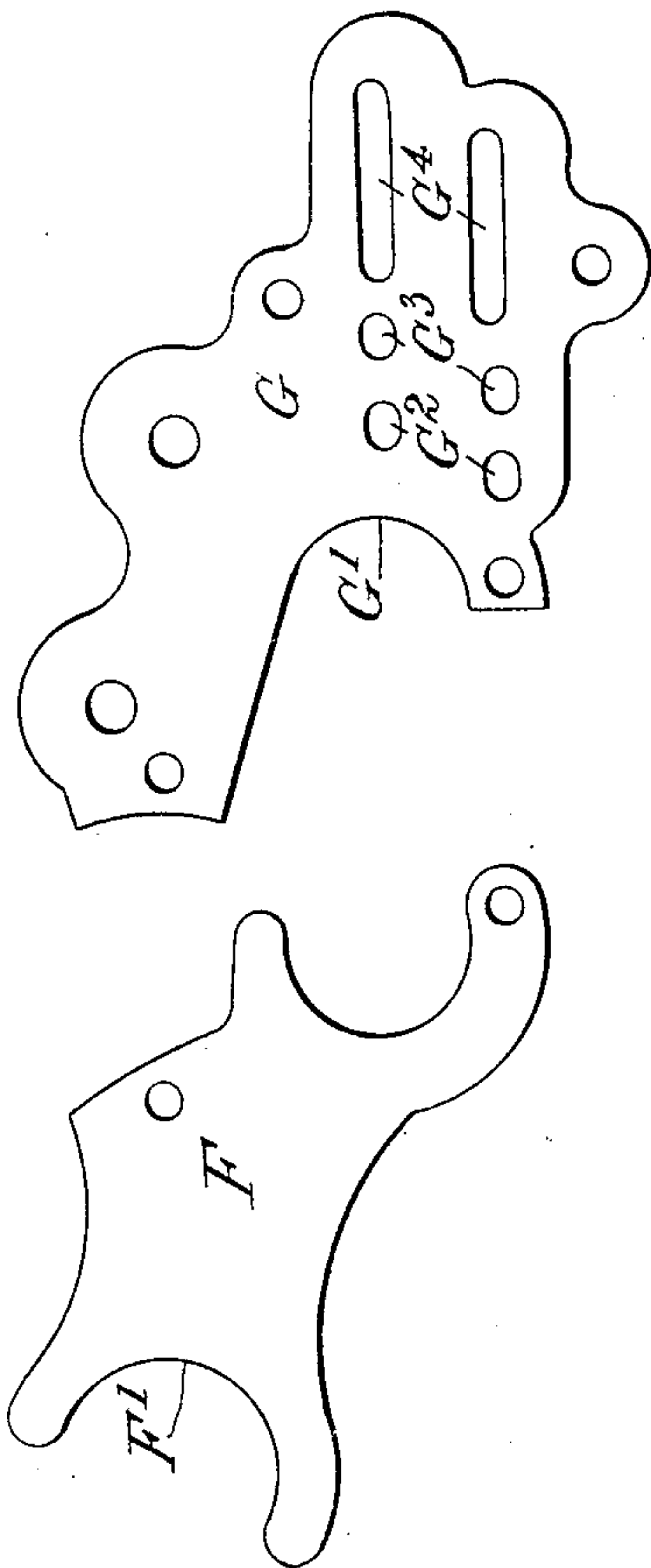


Fig. 5.

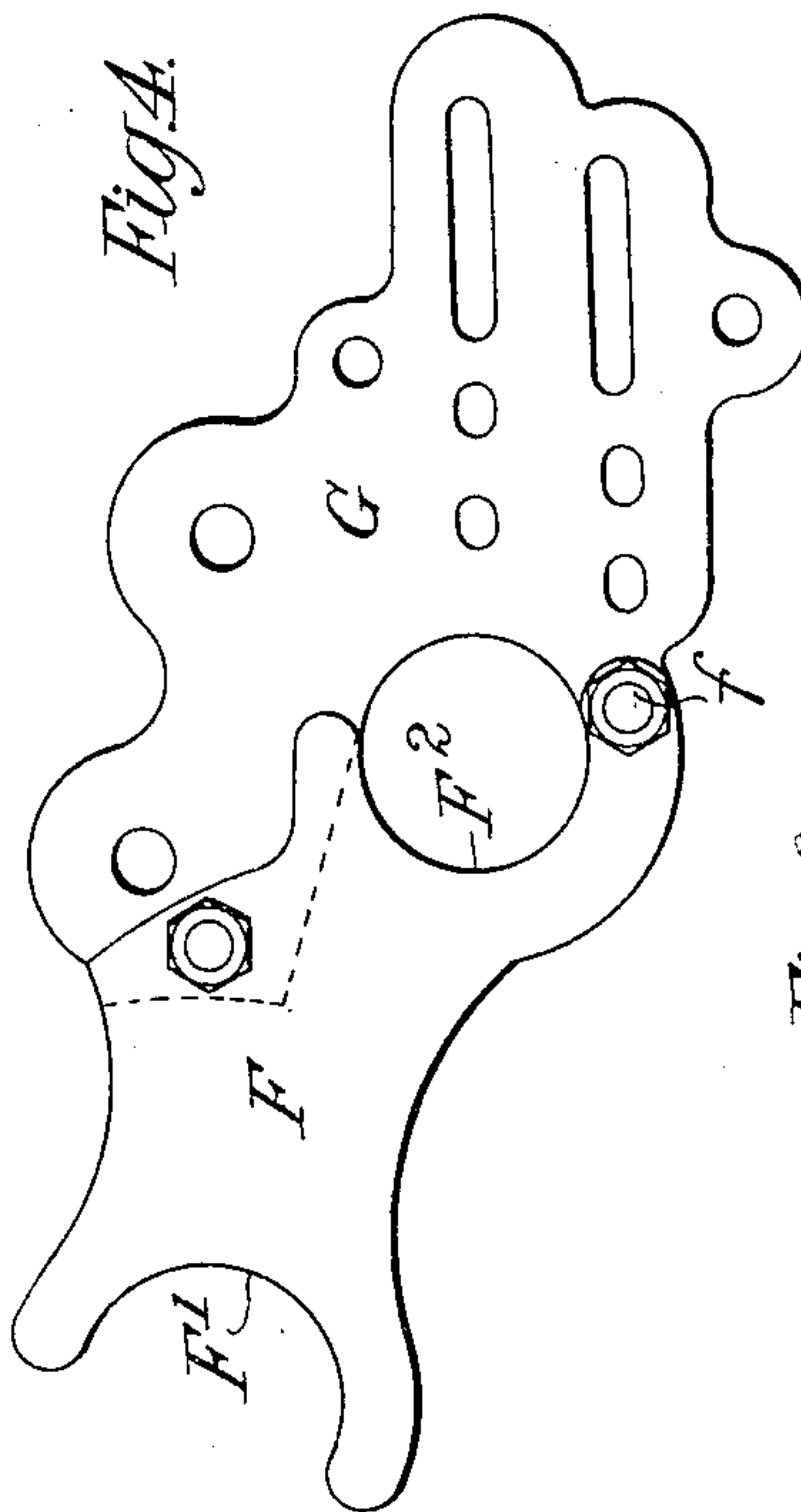


Fig. 4.

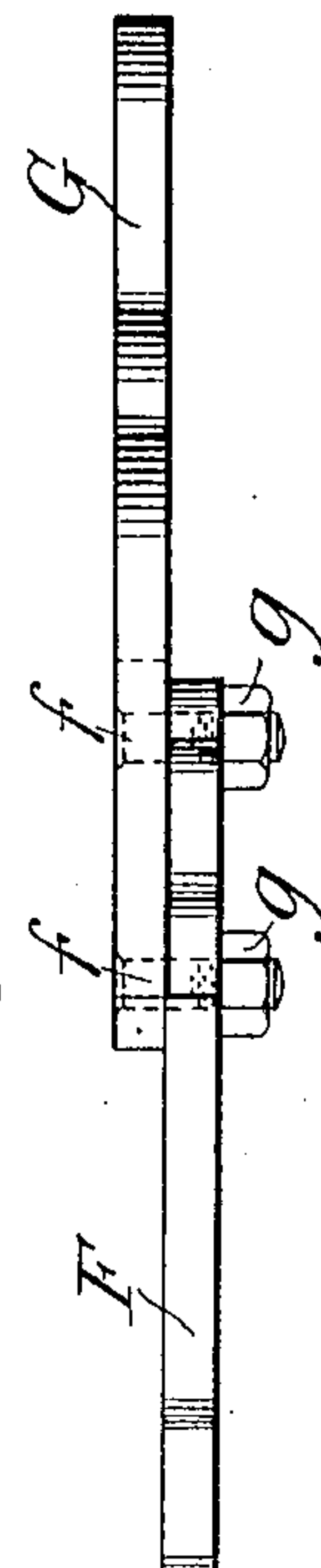


Fig. 3.

Witnesses:
Stephen Kinata
Mr. Max. Duvall

Inventor:
F. von Eulenfeld
by Wilkinson & Fisher
his Attorney

No. 888,231.

F. VON EULENFELD.

PATENTED MAY 19, 1908.

ROTARY WEB PRINTING MACHINERY FOR SIMULTANEOUS MULTICOLOR
PRINTING.

APPLICATION FILED AUG. 25, 1904.

4 SHEETS—SHEET 4.

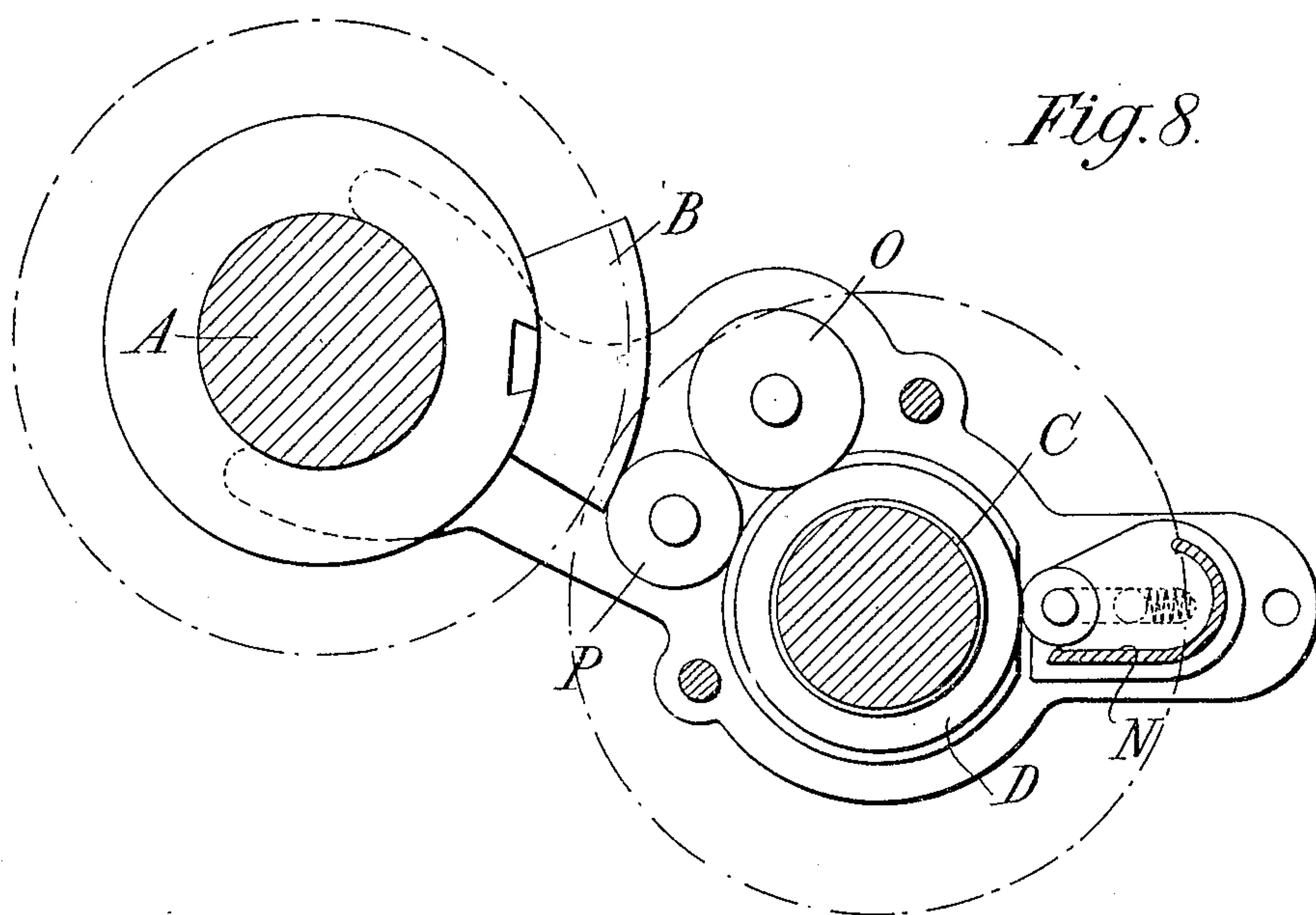


Fig. 8.

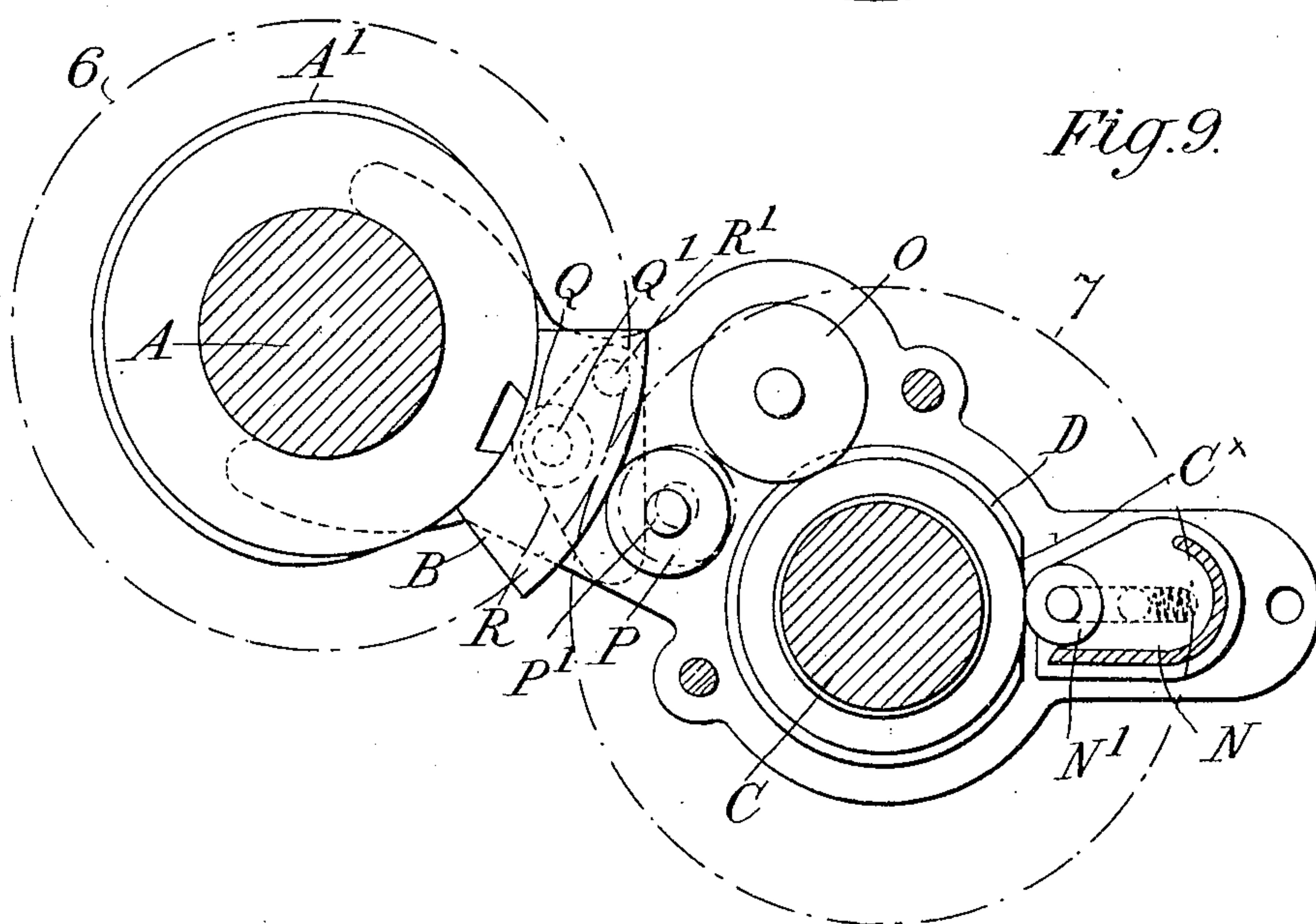


Fig. 9.

Witnesses:
Stephen Riusa
W. May. Duvall

Inventor
F. von Eulenfeld
by Wilkinson & Fisher
his Attorneys

UNITED STATES PATENT OFFICE.

FERDINAND VON EULENFELD, OF LONDON, ENGLAND.

ROTARY WEB-PRINTING MACHINERY FOR SIMULTANEOUS MULTICOLOR-PRINTING.

No. 888,231.

Specification of Letters Patent.

Patented May 19, 1908.

Application filed August 25, 1904. Serial No. 222,140.

To all whom it may concern:

Be it known that I, FERDINAND VON EULENFELD, gentleman, a subject of the German Emperor, residing at London, England, have invented certain new and useful Improvements in or Relating to Rotary Web-Printing Machinery for Simultaneous Multicolor-Printing, of which the following is a specification.

My present invention is designed for use with and for application to rotary web printing machines which are provided with what are known as fudge boxes or auxiliary printing drums or the like or other appliances of the well-known character employed in newspaper printing for printing "stop press" news wherein two revoluble axles are employed near the paper cylinder (*i. e.* the "impression" cylinder) and stereo cylinder (*i. e.* the "printing" cylinder) one of such axles carrying the so-called auxiliary printing appliance and the other axle being ordinarily provided with any suitable surface adapted to ink said auxiliary printing appliance from the stereo; but where such rotary printing machines are not already provided with such auxiliary printing appliances (all of which I will hereinafter refer to as the "auxiliary printing drum") then the latter or such-like arrangement must be provided to enable my present invention to be applied to such machines.

Description of the Drawings.

In the accompanying drawings I have illustrated two alternative ways of carrying my present invention into practice:—

Figure 1 is a vertical longitudinal sectional view *i. e.* local view of arrangement with two ink ducts for applying two or more colors (in addition to—and independently of—the ordinary black ink) to a rotary printing machine of any suitable character for printing newspapers etc. Fig. 2 is a plan view thereof. Fig. 3 is an edge view (plan) of one of the divisible side cheeks for use in carrying out my present invention. Fig. 4 is a view in elevation of said divisible cheek removed from the machine. Fig. 5 is a view showing the parts of said side cheeks separated. Fig. 6 is a local plan view of one part of the second axle on which is mounted the inking surface formed in two halves *i. e.* two half cylinders which are secured in position on said axle by a split collar. Fig. 7 is an end view on line 7—7, Fig. 6, looking in the di-

rection of the arrow *z*. Figs. 8 and 9 illustrate a modified arrangement namely with only one ink duct for applying color or colors according to my present invention. 60

Referring to the drawings:—Z represents a part of the stereo (*i. e.*, "printing") cylinder of a rotary printing machine for printing on a continuous length or web of paper; and Y represents the paper (*i. e.* the "impression") cylinder. 65

A is the axle or shaft which carries the auxiliary printing device having at least one substantially uninterrupted printing surface B. 70

C is the second shaft or axle (which in an ordinary auxiliary printing drum carries an inking surface—not shown—adapted to ink the type or printing surface on the auxiliary printing drum) which shaft C in this case is provided with an inking surface D of small diameter formed of two half cylinders D¹ D² (see Fig. 7) these semi-cylindrical parts D¹ D² being readily mounted in position on the shaft C (without removing the latter) by means of the split hinged collar or garter E 80 the two parts of which are at one end hinged or pivoted together at E¹ while the other ends are secured together by the hinged fastener E² pivoted at E³ and provided with a slot at E⁴ adapted to fit over the turn-button E⁵ 85 which latter by means of a quarter turn thus firmly secures the fastener E² see Figs. 6 and 7.

The shaft or axle A (which carries the auxiliary printing drum or device) is positively driven with the main impression cylinder in the ordinary or any suitable manner and to this shaft A there is fixed the toothed wheel No. 1 gearing with the toothed wheel No. 2 to which is attached the toothed wheel No. 3 both fixed to the inking roller I which is driven thereby and the toothed wheel 3 gears with the toothed wheel 4 on the second inking roller H and the toothed wheel 4 gears with the toothed wheel 5 fixed on the second shaft C whereby the latter with the inking surface D fixed thereon as aforesaid is positively caused to revolve. The sizes of said gear wheels 1, 2, 3, 4, and 5 being so proportioned as to cause exactly two revolutions of the inking rollers D H and I to each revolution of the shaft A. For facility of applying these gear wheels 1, 2, 3, 4, and 5, I may advantageously form same (or any of them) in two or more sections and provide said sections with means for securing and locking each of same in position so that the whole of these gear wheels can be fixed to their respec-

tive rollers without removing any of the shafts from the machine. As the portions of these split gear wheels may be secured in position to one another in any suitable manner, as for example after the well-known
 5 manner of securing split pulleys or other split wheels therefore it is not necessary to further describe same here it being necessary however to always arrange said gear wheels
 10 in suchwise that same will be perfectly clear of contact with the paper and stereo cylinders Y and Z.

The divided side cheeks employed according to this invention are shown in detail in
 15 Figs. 3, 4 and 5 and comprise the two separate plates F and G; the plate F being provided with the semi-circular recess F¹ adapted to fit round the shaft A and at the other end with a semi-circular recess F² adapted to
 20 fit round the shaft C; while the cheek G is provided with a semi-circular recess G¹ adapted also to fit round the shaft C and is further provided with slots G² G³ for the axles of the
 25 inking rollers J² J³ K² K³ so as to allow slight movement of the latter when acted on by the eccentrics and also the cheek G is provided with the prolonged slots G⁴ for receiving therein the ends or supports carrying the
 30 ink ducts J and K which latter are kept pressed forward by the springs acting thereon. It will therefore readily be seen that the side cheeks F and G can be easily placed in position on the axles A and C without removing the latter said cheeks being secured
 35 together in any suitable manner as for instance by the screw bolts *f* and nuts *g* and at same time the axes of the various inking rollers as well as the ink ducts are thus mounted and secured in position in and by
 40 means of said side cheeks

H and I are the two inking rollers which are positively driven from the axle A as aforesaid these rollers H and I being caused to rotate exactly evenly with the inking surface
 45 on the shaft C the roller H being provided at H¹ with longitudinal grooves or channels and also the roller I is provided with similar grooves or channels I¹ on opposite sides thereof the position of these grooves H¹ and
 50 I¹ being such that they will coincide as these rollers revolve together and also the grooves H¹ will in turn coincide (as they revolve) with the grooves D^x formed in the inking surface D on the shaft C as aforesaid; thus
 55 each separate color on the separate parts of the inking surface D (on the axle C) will be separately and independently conveyed through the roller H and roller I to a separate part of the printing surface B carried on the
 60 shaft A as aforesaid.

The ink is conveyed to and applied to the inking surface D on the shaft C as follows:—
 Two separate ink ducts J and K are provided—each containing a different ink or
 65 color as desired. The color from the ink

duct J is, by means of the rollers J¹ and J², conveyed to the inking roller J³ all these three rollers being “idle” rollers; and similarly the inking rollers K¹ K² convey the ink from the duct K to the inking roller K³; said
 70 rollers K¹ K² and K³ being also “idle” rollers. On the shaft C, I arrange and employ a double eccentric L M as shown in Fig. 2 it being understood that a corresponding double
 75 eccentric is arranged towards the other end of the inking surface D on the shaft C; while a disk L¹ is fixed towards each end of the inking roller J³ in such position as to bear only against the eccentric or part L of said double
 80 eccentric, and similar disks M¹ are fixed on the inking roller K³ said disks being arranged and adapted to bear only against the eccentric or part M of said double eccentric—said
 85 eccentrics or parts L and M being exactly oppositely disposed on the shaft C. Thus it will readily be seen that when the eccentric or part M of the double eccentric permits the inking roller K³ to make contact with the inking surface D, as shown in Fig. 1, at this
 90 moment the other eccentric or part L of the double eccentric will be acting on the disks L¹ and thereby forces back the inking roller J³ out of contact with the inking surface D. The said double eccentrics L M being so disposed that in this way the inking roller K³
 95 will be allowed to ink one half of the inking surface while the roller J³ will be permitted to ink the other half

It will of course be obvious that the inking surface D can be divided into more than two
 100 parts and by providing a corresponding number of separate ink ducts and eccentrics thereby more than two colors can thus be applied; or if desired the color can be applied in other than a regular manner, that is to say by
 105 modifying the parts in an obvious manner one color can be supplied to a greater portion of this surface D than the other or others.

Suitable means may be employed to adjust and fix in position the aforesaid inking
 110 arrangement for example distance pieces formed of split washers or split rings *x* such as shown in Fig. 2 may be employed on the shaft C between the outside of the side cheeks F and G and the frame or bearings supporting
 115 said axle C, so as thus to positively hold said inking devices (supported inside said cheeks F G) in position relatively to the printing surface B on the axle A.

In Figs. 8 and 9 I have illustrated a single
 120 ink duct arrangement for applying the color from the ink duct N to said printing surface B—this arrangement comprising a single inking roller N¹ which when permitted to do so, by the cut-away portion of cam C^x carried on
 125 the axle C, applies the color from said duct N to the inking surface D; and from the latter the color is transferred to the inking roller O in frictional contact therewith. P is inking roller mounted in the slot or loose bearing
 130

and which normally rests in the position shown in full lines in Fig. 9 that is out of contact with the inking roller O and in contact with or in position to make contact with the printing surface B said roller P being also adapted to be moved back to the position shown in dotted lines in Fig. 9 so as to make contact in this position with the inking roller O and for this latter purpose the shaft A is provided with an eccentric A¹ in the path of travel of which latter there is inserted the anti-frictional roller Q pivoted at Q¹ to the lever or device R pivoted at R¹ to the framework—there being a similar lever R at each end of the axle P¹ of said inking roller P, and bearing against same, so that as the eccentric A¹ comes round it acts on the roller Q and lever R and thereby forces the inking roller P into the position shown in dotted lines where it receives its quantum of ink from the constantly revolving inking roller O; and then, when released by the eccentric A¹ it is automatically returned to the position shown in full lines to make contact with and ink the auxiliary printing surface B. The shaft A has fixed thereto the toothed wheel 6 which gears direct with the toothed wheel 7 fixed on the shaft C whereby the latter is constantly revolved, and in turn revolves the inking roller O by friction or otherwise.

It will be obvious that in addition to applying one or more colors in the aforesaid manner, I can also by dividing the ink duct J or K or N and employing different colored ink in said divisions of the ink ducts, thereby apply various colors in parallel columns or stripes *i. e.* side by side in addition to or in place of applying the different colors as previously described. Also it will be obvious that I can if desired divide the auxiliary printing drum longitudinally and apply such segments or parts to the axle or shaft A in a similar or analogous manner to that described with reference to the inking surface D on the shaft C; which printing surface B may either be fixed to and revolve with the shaft A or may be so arranged as to revolve around said shaft A in which latter event said shaft A may be rigidly fixed *i. e.* non-revoluble. Thus instead of black ink being supplied to the auxiliary printing drum B as heretofore—by this invention I can apply thereto any desired color or colors and thus simultaneously print in any desired color or colors in the columns of a newspaper etc. while printing other parts of said newspaper in the ordinary black at the same time.

What I claim is:—

1. In a printing press, the combination with an impression cylinder and a main printing cylinder, of an auxiliary printing drum, inking means for said drum independent of inking means for the main cylinder and comprising an inking roller,

an ink holder and a ductor roller interposed between and operatively associated with said ink holder and inking roller, one of said rollers being provided with a cam member operatively associated with the other of said rollers for intermittently operating said ductor roller into engagement with said inking roller, substantially as described.

2. In a printing press, the combination with an impression cylinder and a main printing cylinder, of an auxiliary printing drum, inking means for said drum independent of inking means for the main cylinder and comprising an ink holder, a plurality of inking rollers interposed between said auxiliary drum and ink holder, a cam plate carried by the inking roller adjacent the ink holder, and a ductor roller interposed between said rollers and ink holder and intermittently engaging said cam plate and the inking surface of its roller substantially as described.

3. In a printing press, the combination with an impression cylinder and a main printing cylinder, of an auxiliary printing drum, an inking roller cooperating with said printing drum, means for applying differently colored inks to portions of said inking roller, comprising ink distributors, ductor rollers cooperating therewith, and means to intermittently bring said ductor rollers into operative engagement with said inking roller substantially as described.

4. In a printing press, the combination with an impression cylinder and a main printing cylinder, of an auxiliary printing drum, an inking roller cooperating with said printing drum, means for applying differently colored inks to portions of said inking roller, comprising ink distributors, ductor rollers cooperating therewith, and means to intermittently bring said ductor rollers into operative engagement with said inking roller, comprising cam members carried by said inking roller adapted to engage said ductor rollers at different intervals substantially as described.

5. The combination with an auxiliary printing drum arranged to act in conjunction with the mechanism of the ordinary main impression and printing cylinders of rotary web printing machines, of a plurality of independent ink ducts to separately supply colored inks to the type or printing surface carried on said auxiliary printing drum, an inking roller such as D adapted to receive on separate parts thereof the respective colors from said ink ducts, plural eccentrics corresponding in number to the number of the ink ducts adapted to permit the ink from each duct in turn to be received on a separate part of said inking roller and from which latter said inks are conveyed by positively driven inking rollers to the type or printing surface on said auxiliary printing drum, sub-

stantially as and for the purposes hereinbefore described.

6. The combination with an auxiliary printing drum arranged to act in conjunction with the mechanism of the ordinary main impression and printing cylinders of rotary web printing machines, of a plurality of independent ink ducts to separately supply colored inks to the type or printing surface carried on said auxiliary printing drum, an inking roller such as D adapted to receive on separate parts thereof the respective colors from said ink ducts, plural eccentrics corresponding in number to the number of the ink ducts adapted to permit the ink from each duct in turn to be received on a separate part of said inking roller, grooves dividing the separate parts of said inking roller to prevent blending of the different colored inks thereon and rollers with corresponding grooves and corresponding in size and speed with the aforesaid roller to convey said inks from the separate parts of said inking roller to the type or printing surface on said auxiliary drum, substantially as and for the purposes hereinbefore described.

7. The combination with an auxiliary printing drum arranged to act in conjunction with the mechanism of the ordinary

main impression and printing cylinders of rotary web printing machines, of a plurality of independent ink ducts to separately supply colored inks to the type or printing surface carried on said auxiliary printing drum, an inking roller such as D adapted to receive on separate parts thereof the respective colors from said ink ducts, plural eccentrics corresponding in number to the number of the ink ducts adapted to permit the ink from such duct in turn to be received on a separate part of said inking roller, grooves dividing the separate parts of said inking roller to prevent blending of the different colored inks thereon, rollers with corresponding grooves and corresponding in size and speed with the aforesaid roller to convey said inks from the separate parts of said inking roller to the type or printing surface on said auxiliary printing drum, and divided cheeks such as F and G for attachment to the machine for supporting the inking rollers and ink ducts, substantially as and for the purposes hereinbefore described.

FERDINAND VON EULENFELD.

Witnesses:

HENRY BIRKBECK,
R. WESTACOTT.