

(No Model.)

2 Sheets—Sheet 1.

J. F. SCHERBER.

ZINCOGRAPHIC PRINTING MACHINE.

No. 362,320.

Patented May 3, 1887.

Fig. 1.

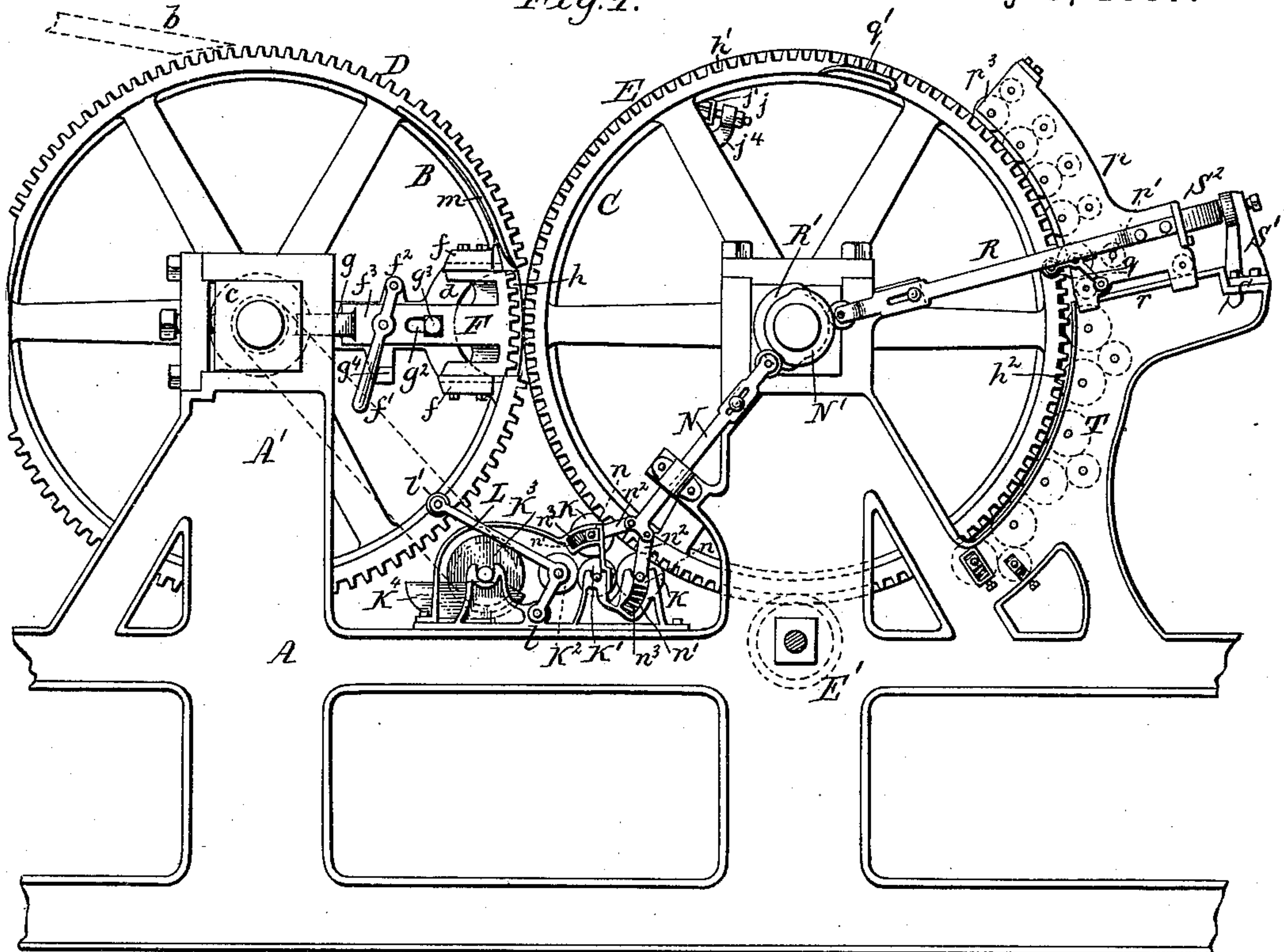
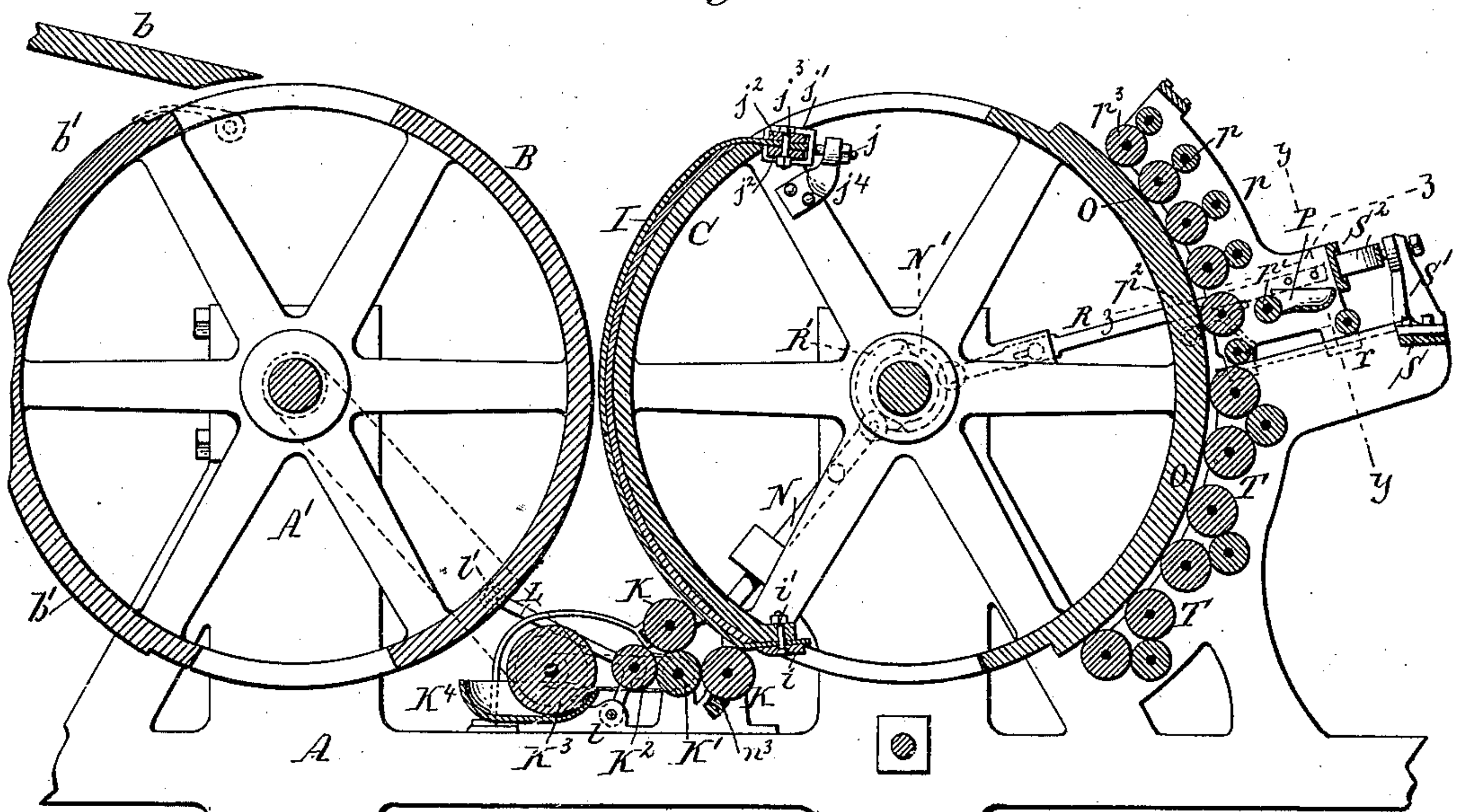


Fig. 2.



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Fig. 12.

Fig. 3.

Fig. 5.

Fig. 4.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 11.

Fig. 9.

Fig. 10.

Chas. J. Buchheit
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UNITED STATES PATENT OFFICE.

JOHN F. SCHERBER, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-FOURTH
TO HARRY G. ZELL, OF SAME PLACE.

ZINCOGRAPHIC-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 362,320, dated May 3, 1887.

Application filed April 24, 1886. Serial No. 200,030. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. SCHERBER, of the city of Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Zincographic-Printing Machines, of which the following is a specification.

This invention relates to an improvement in that class of printing-presses which contain a form-cylinder and an impression-cylinder.

The object of my invention is to adapt this kind of presses to zincographic printing; and my invention consists to that end of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation of a printing-press provided with my improvements. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a side elevation of the impression-cylinder. Fig. 4 is a side elevation of the movable gear-segment. Fig. 5 is a vertical cross-section in line $x x$, Fig. 3, on an enlarged scale. Fig. 6 is an inside view of one of the bearings in which the impression-cylinder is journaled. Fig. 7 is a fragmentary horizontal section of the gears connecting the impression and form cylinders. Fig. 8 is a cross-section in line $y y$, Fig. 2. Fig. 9 is a sectional plane view in line $z z$, Fig. 2. Fig. 10 is a fragmentary perspective view of the adjustable end of the zinc plate. Fig. 11 is a side elevation of the damping-rollers. Fig. 12 is a fragmentary sectional elevation of the ring secured to the gear-wheel of the form-cylinder.

Like letters of reference refer to like parts in the several figures.

A represents the frame of the machine, B the impression-cylinder, and C the form-cylinder.

b represents the feed-board, and b' the raised impression-segment formed on the impression-cylinder. The latter is provided with grippers in the usual manner.

c represents one of the bearings in which the impression-cylinder is journaled. This bearing is secured in a standard, A' , formed on the frame A, and is provided on the inner

side of the standard with a cylindrical collar, c' , having a recess, c^2 , on the side which faces the form-cylinder.

D represents the gear-wheel secured to the shaft of the impression-cylinder, and meshing with a similar wheel, E, secured to the shaft of the form-cylinder. The wheel E is driven by a pinion, E' .

F represents a movable gear-segment forming part of the gear-wheel D and made movable toward and from the shaft of the impression-cylinder.

f represents guides or ways secured to the gear-wheel D, and in which the movable gear-segment F slides.

f' is a hand-lever, pivoted to the arm d of the gear-wheel D at f^2 , and attached to a shank, f^3 , which extends inwardly from the segment F.

g is a tail-piece formed at the inner side of the shank f^3 , and entering the recess c^2 of the bearing c when the segment F is moved inwardly out of line with the teeth of the gear-wheel D, as represented in Fig. 1. In this position of the segment F the tail-piece g locks the impression cylinder B and prevents it from turning.

g' is a spring interposed between the shank f^3 and the hub of the gear-wheel D, so as to force the segment F outwardly. The radial movement of the segment F is limited by a slot, g^2 , formed in the shank f^3 , and a bolt, g^3 , passing through said slot and secured in the arm d of the gear-wheel D. The gear-segment F is locked in its retracted position by the lever f' being placed behind a stop, g^4 , formed on the arm d . The lever f' has sufficient lateral play to permit it being engaged with or disengaged from the stop g^4 .

The gear-segment F is provided at one side with a circular segment, h , which bears against a ring, h' , secured to one side of the gear-wheel D of the form-cylinder, so that when the segment h bears against the ring h' the teeth of the segment F are prevented from meshing with the teeth of the gear-wheel E. The ring h' is provided with a recess, h^2 , which admits the segment h , and permits the teeth of the segment F to mesh with the gear-wheel E. By

this means the form-cylinder can be disconnected from the impression-cylinder, and can be rotated independently of the same. When it is desired to gear the two cylinders together, 5 this can only be accomplished when the recess h^2 registers with the segment h , thereby insuring the proper register of the two cylinders.

I represents a zinc plate from which the impression is taken, and which is secured to the 10 form-cylinder C. The design is produced upon this zinc plate in the manner usually practiced in zincography. The zinc plate I is rigidly secured at one end to the form-cylinder by a clamping-plate, i , and bolts i' . The opposite 15 end of the zinc plate is adjustably secured to the form-cylinder, so that the plate can be tightened or stretched on the same. This adjustment of the plate is effected by adjusting screw-bolts j and clamps j' , which are secured 20 to the end of the plate I, the clamp j' hooking over metallic strips j^2 , secured to the end of the plate by bolts j^3 , as represented in Figs. 2 and 10. The screw-bolts j^3 pass through lugs j^4 , secured to the arms of the form-cylinder C, 25 and are tightened by screw-nuts.

K K represent the damping-rollers, which supply moisture to the zinc plate I. The rollers K are arranged on the lower descending side of the form-cylinder, and receive the 30 moisture from the intermediate roller, K'. The latter receives the moisture in turn from a movable roller, K², which conveys the moisture from a reservoir-roller, K³, to the roller K'. The roller K³ revolves in a reservoir, K⁴, which 35 contains the moisture. The rollers K and K² are preferably covered with felt, while the roller K' is preferably constructed of metal and the roller K³ of wood. The roller K² is journaled in elbow-levers L, which are pivoted to 40 the frame A at l , and provided at their opposite ends with rollers l' . The roller K² is held in contact with the roller K' by gravity or a suitable spring, and is swung against the roller K³ by a cam, m , secured to the gear-wheel D, 45 and a similar cam secured to the opposite end of the impression-cylinder, which cams engage with the rollers l' , as represented in Fig. 11.

When the cams m release the rollers l' , the roller K² returns to its former position and 50 conveys the moisture which it has taken from the roller K³ to the roller K'. The rollers K are capable of a movement concentric to the roller K', toward and from the form-cylinder, and are kept in rotation by the roller K', which 55 is driven in any suitable manner. In order to effect this movement of the rollers K, the bearings n of these rollers are arranged in slots n' , curved concentric with the roller K'. These bearings n are connected by links n^2 with 60 sliding rods N, which are operated by cams N', secured to the shaft of the form-cylinder.

The cams N' are so shaped as to force the rollers K back out of contact with the form-cylinder, except when the zinc plate I passes 65 these rollers, at which time the rollers are forced against the zinc plate by springs n^3 ,

placed in the slots n' . By this means the zinc plate is damped every time it passes the rollers K.

O represents the ink-segment, formed on 70 the form-cylinder C diametrically opposite the zinc plate I.

P represents the ink-fountain, mounted in a movable carriage, p , arranged on the outer side of the form-cylinder. The ink-fountain 75 is provided with a roller, p' , which removes the ink therefrom.

p^2 is a roller which conveys the ink from the roller p' to the ink-segment O. This roller is mounted in bell-crank levers q , which are 80 pivoted on both sides of the carriage p and provided at their free ends with rollers, which are operated by cams q' , secured to the form-cylinder. The cams q' swing the roller p^2 backwardly against the roller p' a short time 85 before the ink-segment reaches the roller p^2 , and hold the latter in contact with the roller p' sufficiently long to remove the requisite quantity of ink therefrom. When the roller p^2 is released by the cams q' , it drops toward 90 the form-cylinder and supplies ink to the segment O.

p' represents the distributing-rollers, mounted in the carriage p above the roller p^2 , for distributing the ink on the segment O. The 95 carriage p moves on inclined ways r , secured to the frame A, and is operated by rods R, secured to the carriage, and cams R', secured to the shaft of the form-cylinder.

S represents a cross-piece secured to the 100 frame A in rear of the carriage p , and provided at its middle with a standard, S'.

S² is a spring attached adjustably to the standard S' by a set-screw, and bearing with its free end against the rear side of the carriage 105 p , so as to hold the latter against the form-cylinder. The carriage is moved away from the form-cylinder by the rods R and cams R'. The cams R' are so shaped that the carriage p is held against the form-cylinder when the 110 ink-segment O passes by the rollers p^2 and p^3 , and that it is held away from the form-cylinder when the zinc plate I passes these rollers.

T represents the ink-rollers, mounted in the frame A below the carriage p , in the proper 115 position to take ink from the ink-segment O and apply it to the zinc plate I.

For starting the machine the impression-cylinder is disconnected from the form-cylinder by means of the sliding gear-segment F. 120 The form-cylinder is then revolved a number of times until the form has been properly damped and inked to produce a satisfactory impression. The two cylinders are then geared together by the segment F, and the paper is 125 fed between the cylinders and the impressions are taken in an obvious manner. During the revolutions of the form-cylinder the ink is removed from the fountain and applied to the ink-segment O by means of the rollers p' p^2 , 130 and is distributed upon the segment by the rollers p^3 . The segment transfers the ink to

the ink-rollers p^3 , and the latter apply the ink to the zinc plate I after it has been damped by the rollers K.

I claim as my invention—

5 1. The combination, with the form-cylinder and the form secured thereto, of rollers having their journal-supports mounted in curved slots concentric with a distributing-roller and springs which force said journal-supports in-
10 ward, thereby carrying the rollers toward the form, substantially as set forth.

2. The combination, with the form-cylinder provided with a curved zinc plate, of the stationary roller K' , the movable damping-rollers
15 K, having their bearings arranged in curved slots n' and provided with springs n^3 , links n^2 , rods N, and cams N' , substantially as set forth.

3. The combination, with the form-cylinder provided with a gear-wheel, E, of an impres-
20 sion-cylinder provided with a gear-wheel, D, having a movable segment, F, substantially as set forth.

4. The combination, with the impression-cylinder and its gear-wheel D, provided with
25 ways f , of the gear-segment F, sliding in said ways, substantially as set forth.

5. The combination, with the impression-cylinder and its gear-wheel D, provided with
30 ways f , and a stop, g^4 , of the sliding gear-segment F and the locking-lever f' , substantially as set forth.

6. The combination, with the impression-cylinder and its gear-wheel D, provided with

ways f , of the sliding gear-segment F, provided with the tail-piece g , and the bearing c ,
35 provided with a recess, c^2 , substantially as set forth.

7. The combination, with the impression-cylinder and its gear-wheel D, having a mov-
40 able segment, F, provided with a projecting guard-segment, h , of the form-cylinder having a gear-wheel, E, provided with a guard-ring, h' , constructed with a recess, h^2 , substantially as set forth.

8. The combination, with the form-cylinder
45 provided with a curved zinc plate, I, and ink-segment O, of a movable carriage, p , provided with an ink-fountain and ink-supply rollers, whereby the ink is applied to the ink-segment,
50 and ink-rollers T, which take the ink from the segment, substantially as set forth.

9. The combination, with the form-cylinder provided with a curved zinc plate, I, and ink-
55 segment O, of the frame A, provided with ways r , a carriage, p , moving on said ways and provided with an ink-fountain and ink-supply rollers, a spring, S^2 , whereby said carriage is held against the form-cylinder, and rods R and
60 cams R' , whereby said carriage is moved from the form-cylinder, substantially as set forth.

Witness my hand this 13th day of April, 1886.

JOHN F. SCHERBER.

Witnesses:

CHAS. J. BUCHHEIT,
CARL F. GEYER.