

(No Model.)

C. G. HARRIS.  
PRINTING PRESS.

No. 578,739.

Patented Mar. 16, 1897.

Fig. 1.

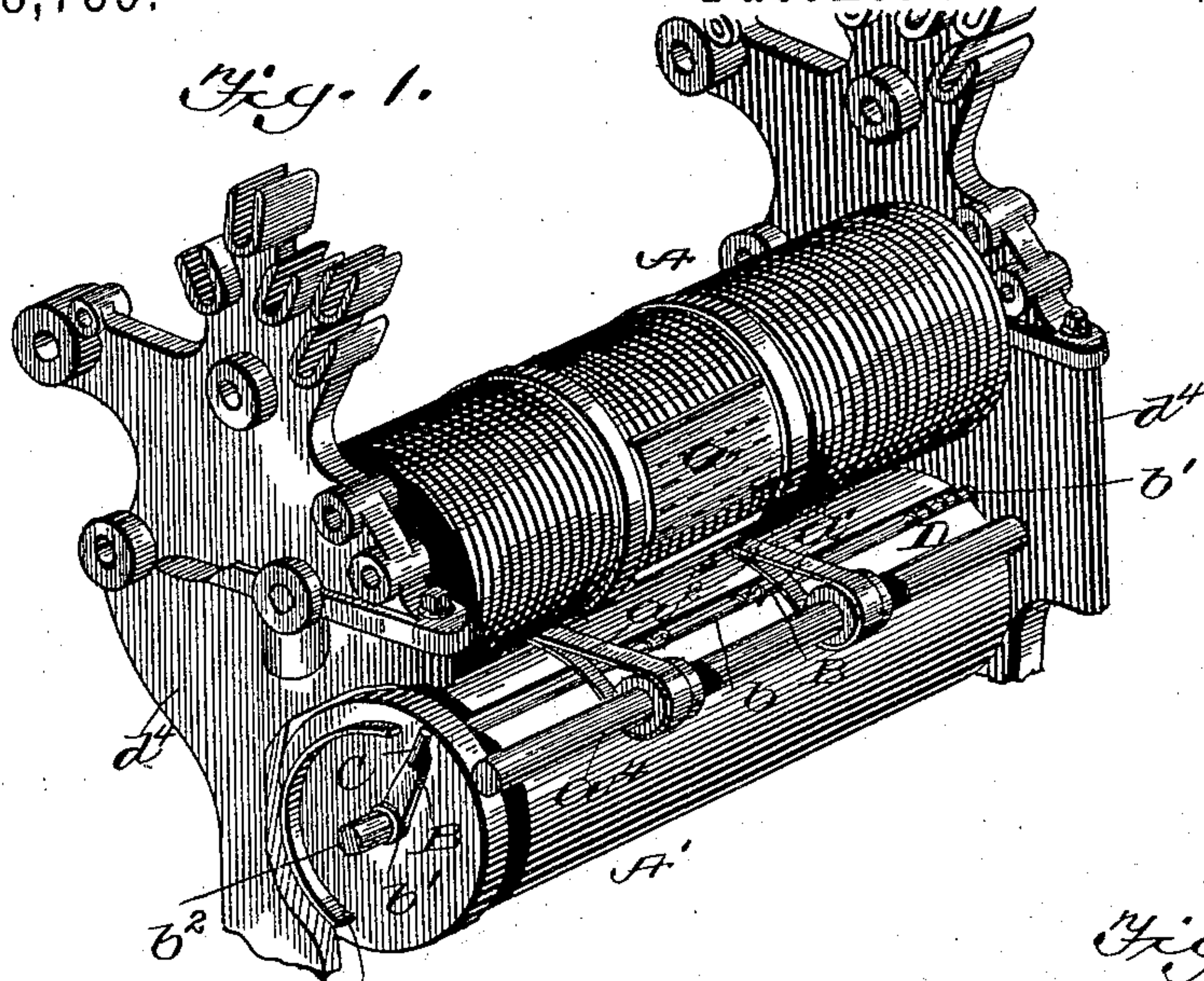


Fig. 2.

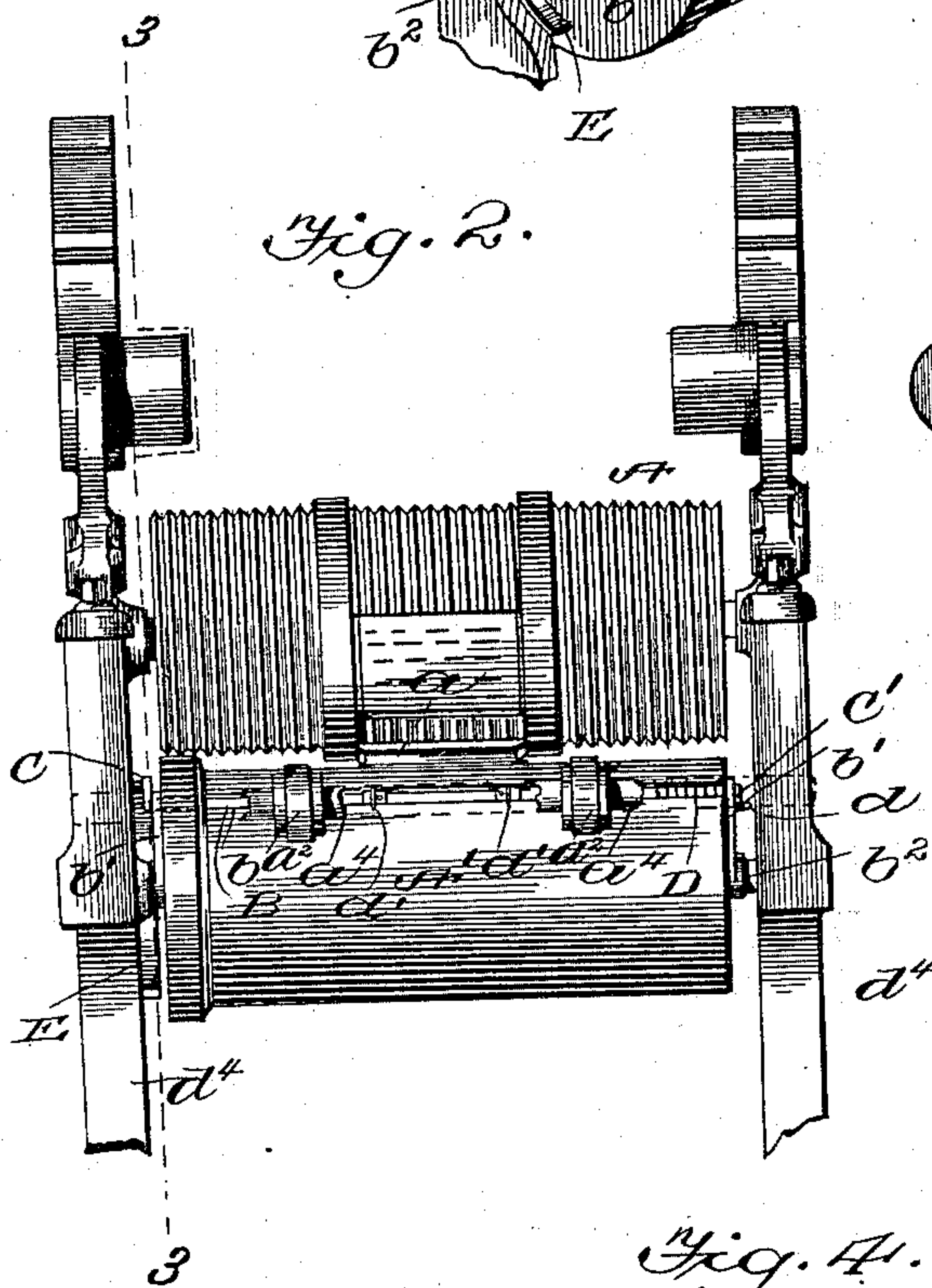


Fig. 3.

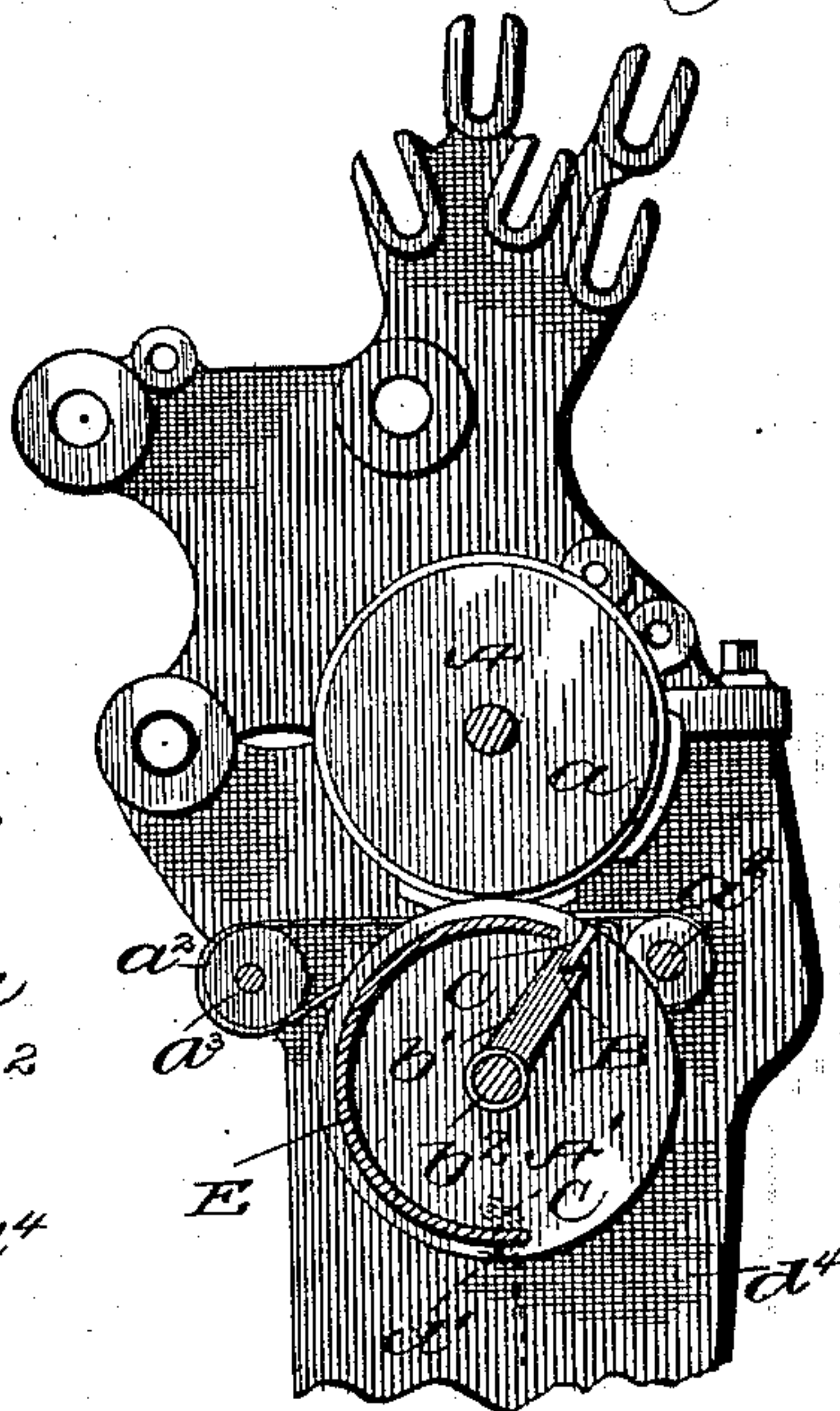


Fig. 4.

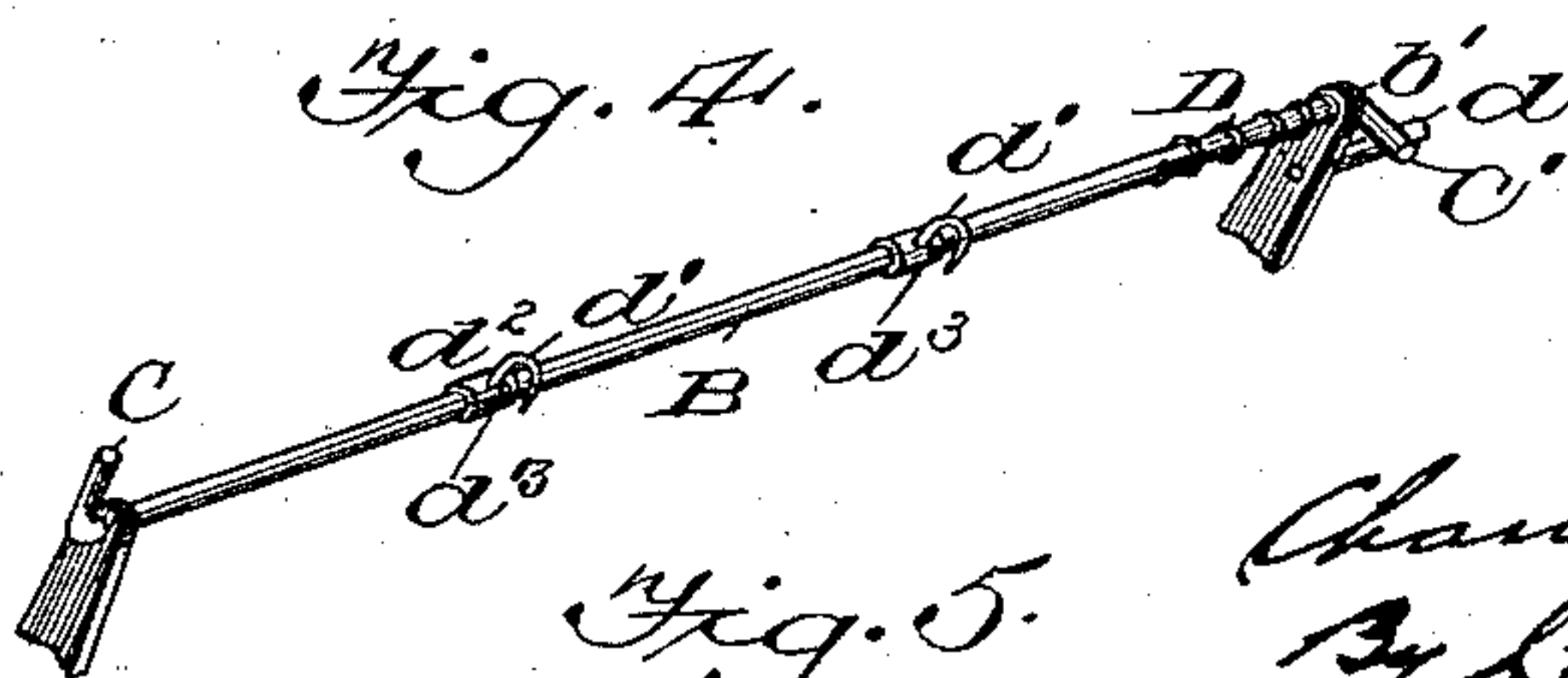


Fig. 5.



Witnesses  
*John D. Conner*  
*Wm. S. Hodges.*

Inventor  
*Charles G. Harris,*  
*By [Signature]*  
*Attorneys.*



# UNITED STATES PATENT OFFICE.

CHARLES G. HARRIS, OF NILES, OHIO.

## PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 578,739, dated March 16, 1897.

Application filed July 31, 1894. Serial No. 519,116. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES G. HARRIS, of Niles, in the county of Trumbull and State of Ohio, have invented certain new and useful  
5 Improvements in 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.

10 This invention contemplates certain new and useful improvements in printing-presses, and has for its object to provide simple and highly-efficient means for effecting the printing on both sides of a sheet of paper or the  
15 like in one feeding thereof between the press rolls or cylinders. This I accomplish by providing the lower roll or cylinder with a spring-held shaft carrying holding-pins for engaging one end of a sheet of paper or the like and  
20 holding the same while the roll or cylinder is being rotated, the other end of said sheet being free and allowed to fall away from the roll or cylinder and again be brought into contact therewith with its reverse side out-  
25 ward, the said holding-pins being released from engagement with said sheet as the sheet is about to be printed upon the second time and instantly engaging the end of a second sheet, which latter is also carried around with  
30 the roll or cylinder and reversed during the rotation thereof. The shaft is partially rotated by a cranked end thereof engaging a curved flange, and its movement under the tension of its spring is limited by the other  
35 cranked end thereof engaging a stop.

A further object is to construct a printing-press capable of effecting the result stated in which the parts shall be simple and inexpensive, efficient in operation, durable, and not  
40 liable to get out of order or be deranged.

The invention will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is  
45 a view in perspective of a portion of a printing-press with parts broken away, showing my improvements. Fig. 2 is a front view thereof. Fig. 3 is a sectional view on the line 3 3, Fig. 2. Fig. 4 is a perspective view of  
50 the rock-shaft. Fig. 5 is a detail.

Referring to the drawings, A A' designate the two rolls or cylinders, the former being

designed to carry two adjoining sets of types or impression-plates  $a$ , the impression of each of which is to be imparted to a sheet of paper 55 fed over and carried by the lower roll A', the said sheet of paper being held on said lower roll or cylinder, while being printed, by tapes or bands  $a^2$ , passing over the upper surface thereof and engaging forward and rearward 60 rollers  $a^3$   $a^4$ , such as is shown in my pending application for Letters Patent, filed March 7, 1894, Serial No. 502,738.

Extending longitudinally over the periphery of the lower press roll or cylinder A' from 65 end to end thereof is a semicylindrical groove or cut-away portion  $b$ , designed to accommodate a rock-shaft B, the ends of which latter are extended beyond the ends of said press roll or cylinder and are supported by rigid 70 arms  $b'$ , secured to the shaft  $b^2$  of the roll or cylinder A' or to the ends of the latter, said arms  $b'$  forming bearings for said rock-shaft B. The extreme ends of this shaft B are bent at angles to form crank-arms C C'. The 75 downward movement of the crank-arm C' is limited by a stop-pin  $d$ , extending outwardly from the adjacent supporting-arm  $b'$ . A coil-spring D encircles shaft B and normally holds the crank-arm C' tight against its stop-pin. 80 Upon this shaft B are fitted two or more holders, one form of which is shown as consisting of hooked pins  $d'$ , extending outwardly from collars  $d^2$ , which latter are adjustably held on said shaft by set-screws  $d^3$ . These collars 85 can be easily adjusted according to the position it is desired the holders shall occupy. The journals of the rolls or cylinders are supported in the side uprights  $d^4$  of the press-frame, the journal of the roll A' fitting in 90 sockets at the lower side of said uprights. To the inner end of one of these uprights is secured a flange or collar E, which describes a segment of a circle, the upper end thereof terminating at the side of the opening in said 95 upright.

As the lower roll or cylinder A' revolves and the crank-arm C of shaft B comes in contact with the lower end of this semicircular flange or collar E, said shaft makes nearly 100 one-half a revolution, it being turned as against the action of its spring, and is held in this position while said crank-arm remains in engagement with said flange, and when



said arm frees itself from contact therewith by passing beyond the upper end thereof said shaft B will be instantly turned to its normal position under the action of its spring, 5 its movement being limited by contact of its crank-arm C' with the stop-pin in juxtaposition thereto. In this way the paper-holders are thrown back to their normal position.

In practice just as the crank-arm C of the 10 shaft B frees itself from engagement with the upper ends of the flange E and the hooked pins of the holders carried by said shaft are thrown forward they engage the rear edge of a sheet just acted upon by one of the impres- 15 sion-plates carried by the upper roll or cylinder A, and said sheet is thus carried along by said pins with said roll or cylinder A' after it is freed from the carrying-tapes  $\alpha^2$ . The sheet being thus held at the rear end, its 20 front end drops away from the roll or cylinder A', and as the crank-arm C engages the lower end of said semicircular flange and travels along in engagement therewith the previously-printed side of the paper is pre- 25 sented toward the periphery of said roll or cylinder A', and as said crank-arm reaches the upper end of said flange or collar and the secured end (now the forward end) of the sheet is then again caught by the carrying- 30 tapes, so that the reverse side of the paper will be printed by the type or impression-plate, the rear end of another sheet printed upon by the other impression-plate is engaged by the hooked pins of the shaft B fly- 35 ing over and engaging therewith under action of the spring of said shaft, this action of said shaft freeing the pins from engagement with the first-mentioned sheet, which is now about to undergo printing on its reverse side, 40 after which it is discharged from the press. The second sheet thus engaged by the hooked pins is carried around with the roll or cylin-

der in the same manner as the first-described sheet, and its previously-printed side is pre- 45 sented to the periphery of the roll or cylinder A' as the paper is carried around and upward for printing on the reverse.

The advantages of my invention will be readily understood by those skilled in the art, and it will be specially observed that I 50 have provided simple and highly-efficient means for effecting the printing on both sides of a sheet of paper in one revolution of the paper-carrying roll or cylinder. The mechanism is positive in its operation, is simple, 55 inexpensive, and durable, and not liable to readily get out of order or be deranged.

I claim as my invention—

1. In a printing-press having an impression-cylinder, a shaft extended longitudinally 60 over said cylinder and mounted at its ends, said ends being cranked, a spring encircling said shaft, holding-pins adjustably mounted on the latter, a flange with which one of the cranked ends of said shaft is designed to en- 65 gage, and a stop adjacent to the other cranked end of said shaft, substantially as set forth.

2. A printing-press having its impression-cylinder provided with a longitudinal peripheral groove, a spring-held shaft located in 70 said groove, supports for said shaft at the ends of said cylinder, said shaft having cranked ends, holding-pins on said shaft, a curved flange with which one of the cranked ends of said shaft is designed to engage, and 75 a stop for limiting the movement of said shaft, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES G. HARRIS.

Witnesses:

W. H. SMILEY,  
GEO. W. UPTON.