

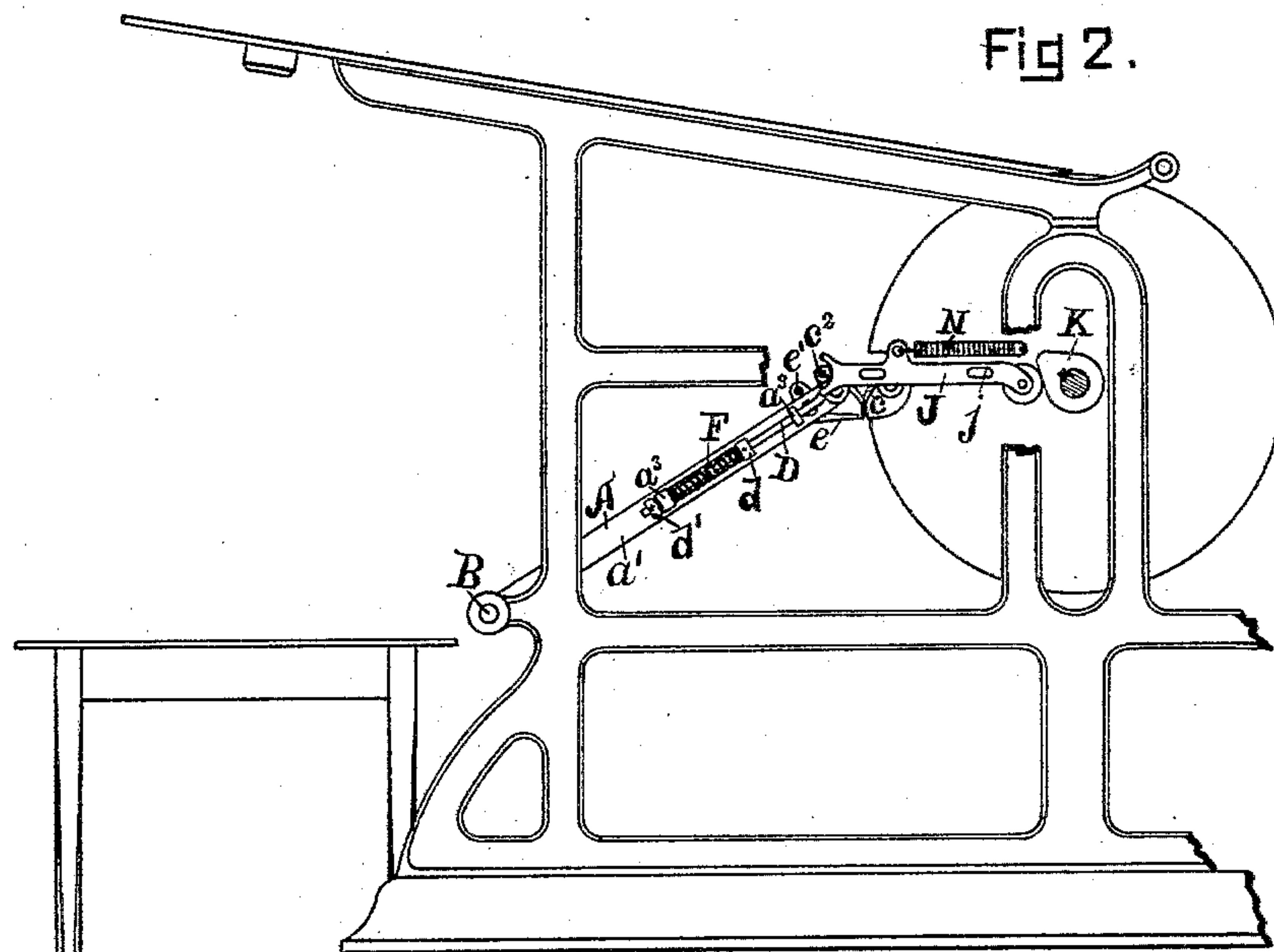
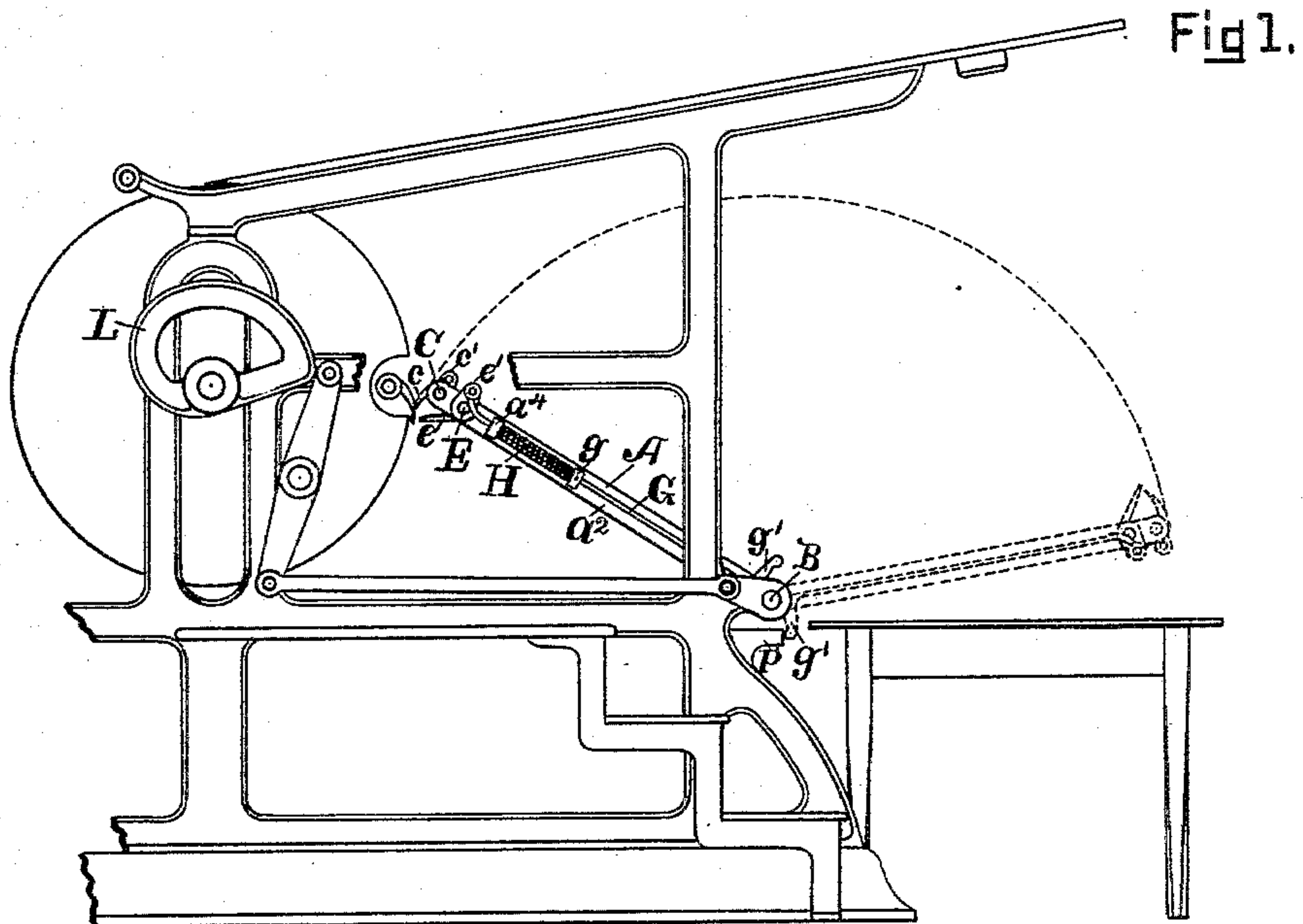
(No Model.)

3 Sheets—Sheet 1.

F. J. SEDER.
SHEET DELIVERING APPARATUS.

No. 412,003.

Patented Oct. 1, 1889.



WITNESSES.

Frank Miller.
W. J. Bainbridge

INVENTOR.

Frank J. Seder
By his attorneys
Watson & Thurston

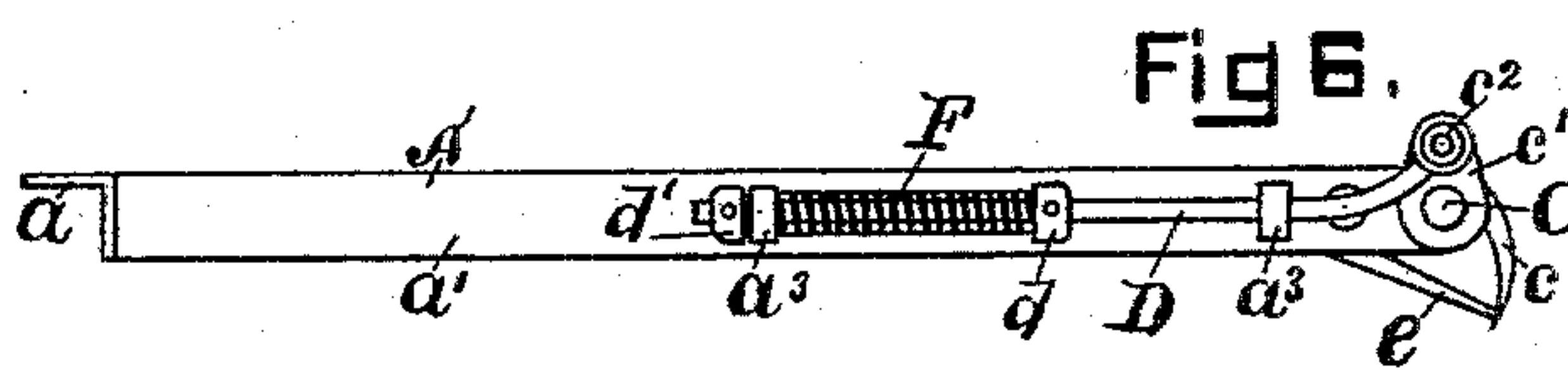
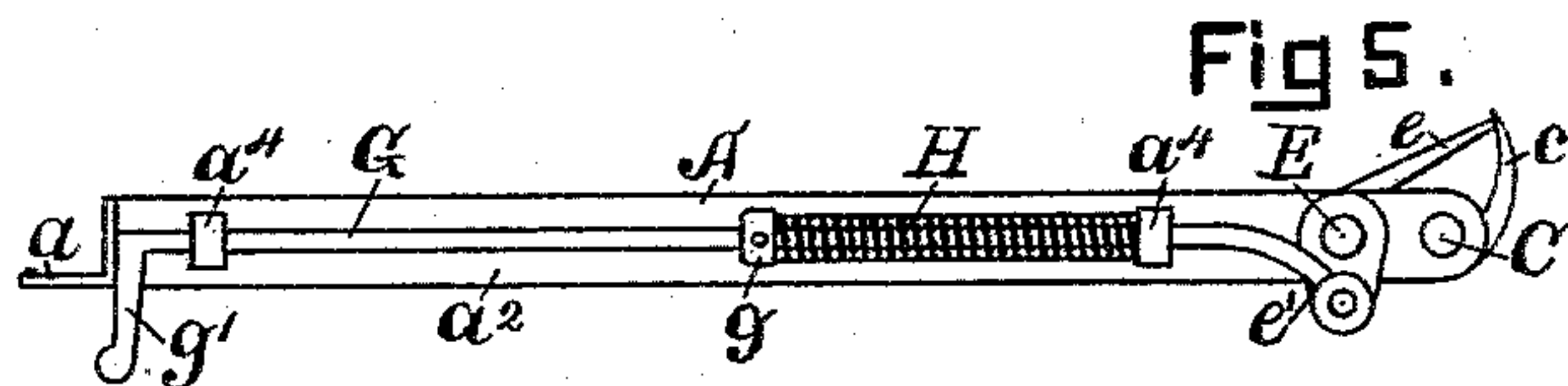
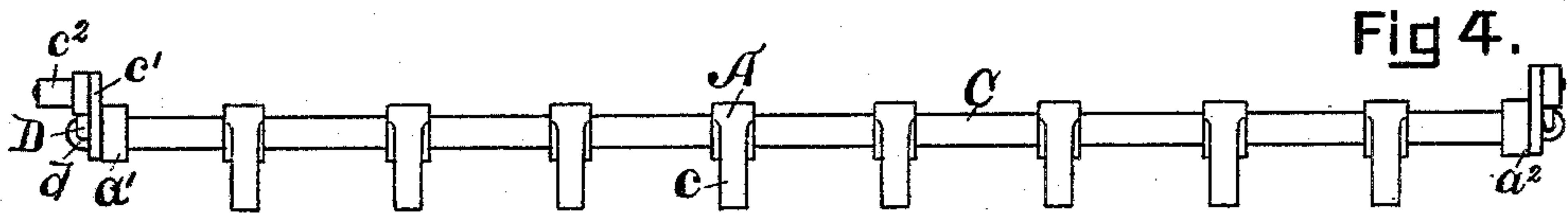
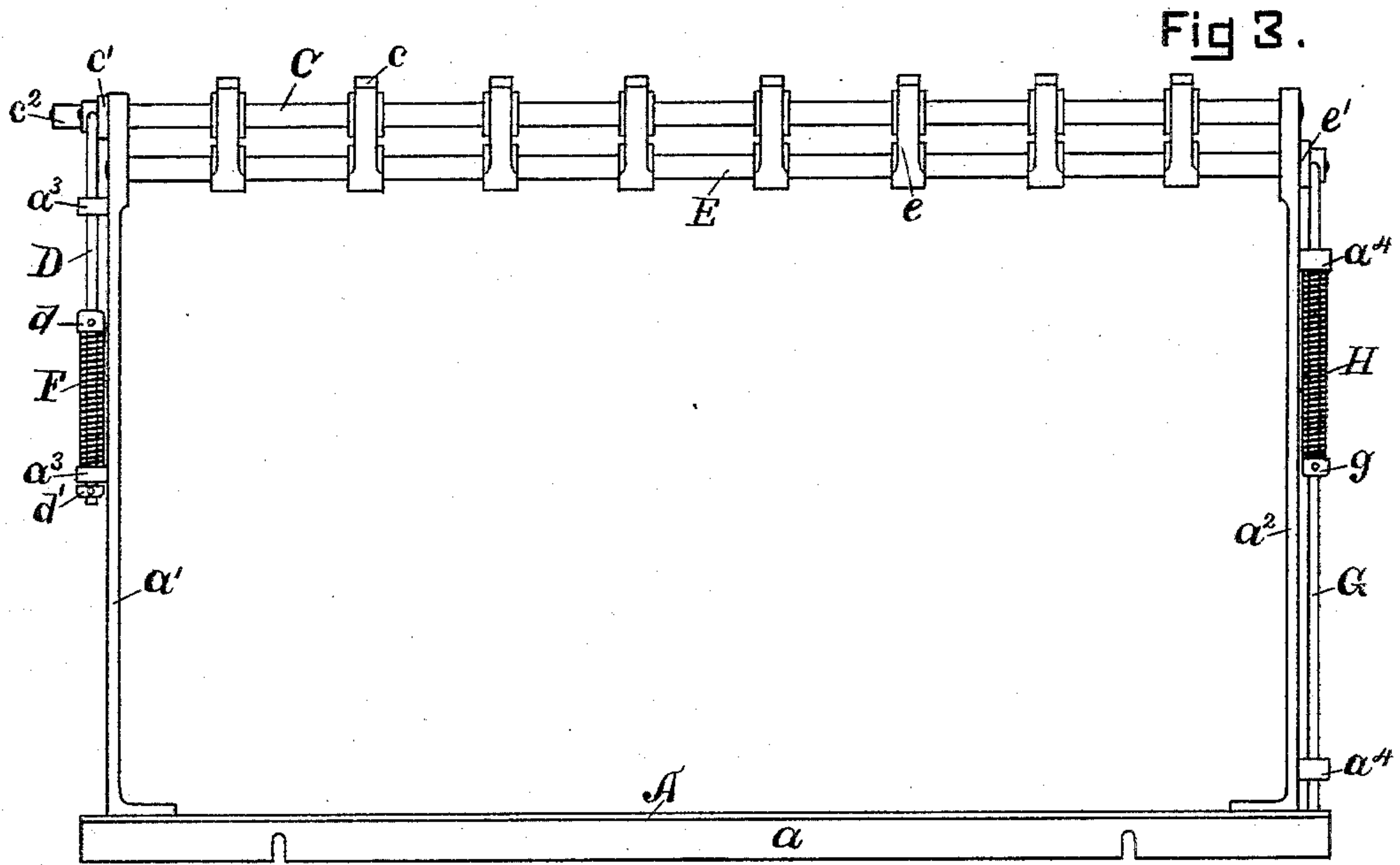
(No Model.)

3 Sheets—Sheet 2.

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3 Sheets—Sheet 3.

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Fig 7.

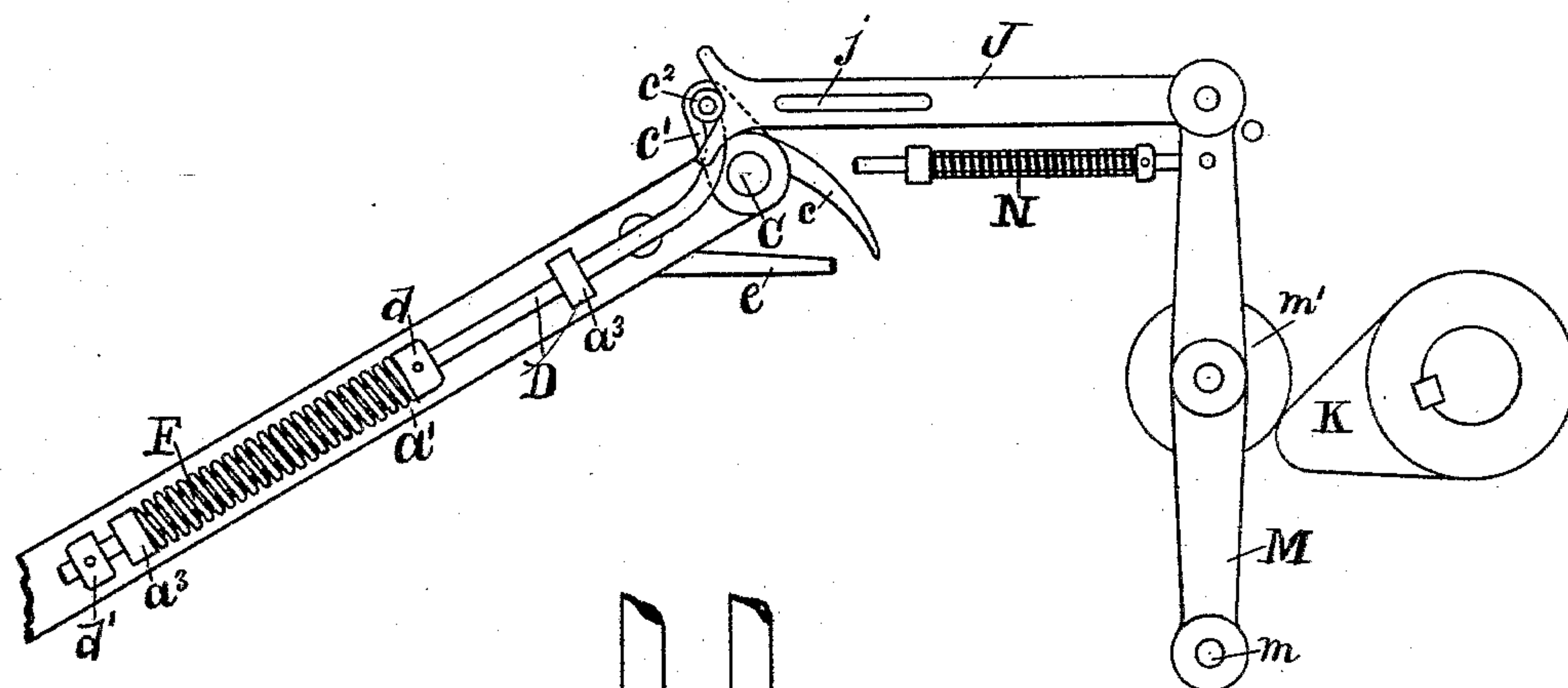
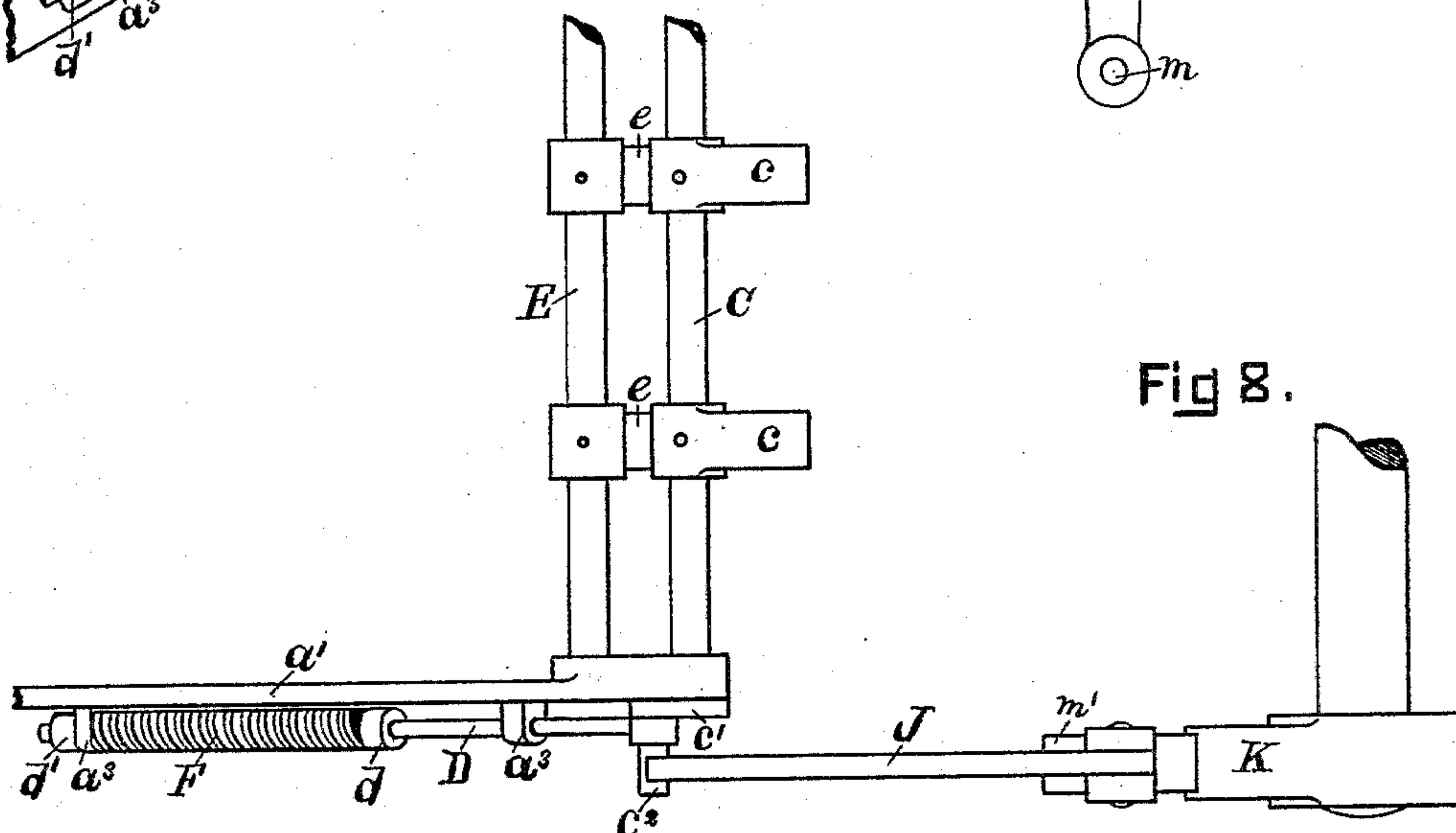


Fig 8.



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UNITED STATES PATENT OFFICE.

FRANK J. SEDER, OF CLEVELAND, OHIO.

SHEET-DELIVERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 412,003, dated October 1, 1889.

Application filed May 27, 1889. Serial No. 312,247. (No model.)

To all whom it may concern:

Be it known that I, FRANK J. SEDER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Sheet-Delivery Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the rear end of a cylinder printing-press provided with my improved apparatus. Fig. 2 is a side elevation of the reverse side of the same printing-press. Fig. 3 is an inside view of the fly-frame. Fig. 4 is a top view thereof. Fig. 5 is a detail view of one side, and Fig. 6 is a detail view of the other side, of said fly-frame. Fig. 7 is a side view of a part of the fly-frame and a modification of the mechanism for operating the upper gripper-fingers, and Fig. 8 is a plan view of the mechanism shown in Fig. 7.

My invention is particularly applicable to that class of printing-presses which are known as "drum-cylinder" presses.

In the prior devices with which I am acquainted which have been employed to deliver the printed sheet from a cylinder printing-press the sheet has been taken from the cylinder in such a manner that the freshly-printed side thereof has been brought in contact with revolving drums or with the slats of an oscillating fly-frame or other device, whereby the fresh printing becomes rubbed and blurred before it is delivered.

The object of my invention is to provide mechanism whereby the printed sheet may be taken from the press and delivered face downward upon the delivery-table without touching anything, whereby the sheet is delivered with the impression as sharp and clean as when it left the type.

To this end it consists in the construction, combination, and arrangement of the parts herein described and shown, as definitely pointed out in the claims.

Referring to the parts by letter, A represents a fly-frame, which consists of the horizontal bar a , which is attached to an oscillating fly-shaft B and side bars a' a^2 . The fly-shaft B and the means for oscillating it

intermittently are not parts of the invention herein described, and may be of any of the well-known constructions now employed for oscillating the shaft to which the common slatted fly-frame is secured. A rock-shaft C is journaled in the upper ends of the side bars a' a^2 , and gripper-fingers c are attached at suitable intervals to this shaft. At one end of the shaft a crank-arm c' is attached, which crank-arm is pivotally connected at its end with a movable rod D, which is secured to the outer side bar a' , and is guided in its movements by the perforated ears a^3 . A coiled spring F surrounds the rod D and thrusts at its ends against a collar d on the rod and the lower ear a^3 , whereby said spring exerts a constant force to press said rod upward and thereby closes the gripper-fingers c . A collar d' on the end of the rod D acts as a stop to this motion.

E represents a second rock-shaft journaled in the side bars a' a^2 , which shaft is provided with gripper-fingers e . At one end of this shaft E is a crank-arm e' . This crank-arm is pivotally connected with a rod G, which is held in engagement with the side bar a^2 by the perforated ears a^4 . A coiled spring H surrounds this rod and thrusts at its ends against the collar g on the rod and against the upper ear a^4 , whereby the spring exerts a constant force tending to close the gripper-fingers e against the fingers c . The lower end of this rod G abuts against the cross-bar a , thereby limiting the extent of the movement of said rod G.

J represents a bar, which is fastened to the frame of the press by means of bolts which pass through the slots j , whereby said bar is permitted to move longitudinally. The cam K on the shaft which carries the cylinder engages against the friction-roller upon the end of this bar J, (see Fig. 2,) whereby it is moved in one direction as said cam is revolved, while a spring N acts to move it in the other direction when the cam moves out of the way. The other end of this bar J engages with the friction-roller c^2 on the end of the crank-arm c' .

The operation of this mechanism is as follows: Just before the leading end of the sheet which has just been printed has been carried by the cylinder to the position shown in Fig.

1 the cam K has forced the bar J forward against the friction-roller c^2 , thereby rocking the shaft C and opening the gripper-fingers c . When the leading end of the sheet has reached
 5 the position shown in Fig. 1, the cam K moves out of the way, the spring draws the bar J backward, and the gripper-fingers c are closed by the spring F, thereby grasping the end of the sheet between the gripper-fingers c and e .
 10 A cam L or other instrumentality then rocks the fly-shaft B, which carries with it the frame A to the position substantially as shown by the dotted lines in Fig. 1. At this point a bent arm g' on the lower end of the bar G strikes
 15 against a shoulder P on the frame of the press and said bar is moved against the thrust of the spring H, thereby causing shaft E to be rocked. This moves the gripper-fingers e away from the gripper-fingers c and releases the sheet,
 20 whereupon the sheet drops through the open frame A onto the table. The frame A is then carried backward to its former position and this operation repeated. It will be noticed that the sheet after being taken from the cyl-
 25 inder touches nothing until it is laid face downward upon the table.

In Figs. 7 and 8 are shown a modification of the mechanism for moving the bar J, which opens the gripper-fingers preparatory to their
 30 grasping the sheet. A lever M, which is pivoted to the frame at m , is also pivotally connected with the bar J, and it is rocked upon its pivot by the engagement of the cam K with the friction-roller m' , whereby the end
 35 of the bar J is moved against the friction-roller c^2 . A spring N moves the lever M in an opposite direction, thereby withdrawing the bar J.

Having thus described my invention, what I
 40 claim as new, and desire to secure by Letters Patent, is—

1. The combination of an oscillating fly-shaft, an open fly-frame secured thereto, the rock-shaft E, bearing gripper-fingers e , and
 45 the rock-shaft C, bearing gripper-fingers c , with springs for closing said gripper-fin-

gers, and mechanism for opening one set of gripper-fingers when the frame is at one extreme of its movement and for opening the other gripper-fingers when the frame is at
 50 the other extreme of its movement, substantially as and for the purpose specified.

2. The combination of an oscillating fly-shaft and an open fly-frame secured thereto, the rock-shafts C E, each bearing gripper-fin-
 55 gers, a crank-arm attached to each of said shafts at opposite ends thereof, rods movably held against the side bars of the frame and pivotally connected to said crank-arms, springs whereby said rock-shafts are rocked
 60 to close the gripper-fingers, and stop mechanism to limit the extent of this spring-actuated movement, with mechanism, substantially as described, for rocking one shaft in the opposite direction when the frame is at
 65 one extreme of its movement and for rocking the other shaft in the opposite direction when the frame is at the other extreme of its movement, substantially as and for the purpose specified.

3. The combination of an oscillating fly-shaft and an open fly-frame attached thereto, the rock-shafts C and E, each bearing gripper-fingers, a crank-arm attached to each of
 75 said rock-shafts at opposite ends thereof, rods movably secured to the side bars of the frame and connected with said crank-arms, springs for moving said rods to close the gripper-fingers, and stops to limit the extent of this spring-actuated movement, with a sliding bar
 80 adapted to engage with the crank-arm upon the rock-shaft C, a revolving cam, and a spring for operating said sliding bar, and a shoulder for engaging with the inner end of the rod attached to the crank-arm on the
 85 rock-shaft E, substantially as and for the purpose specified.

FRANK J. SEDER.

Witnesses:

E. L. THURSTON,
 FRANK. MILLER.