

(No Model.)

2 Sheets—Sheet 1.

C. B. COTTRELL.  
CYLINDER PRINTING MACHINE.

No. 338,392.

Patented Mar. 23, 1886.

Fig. 3.

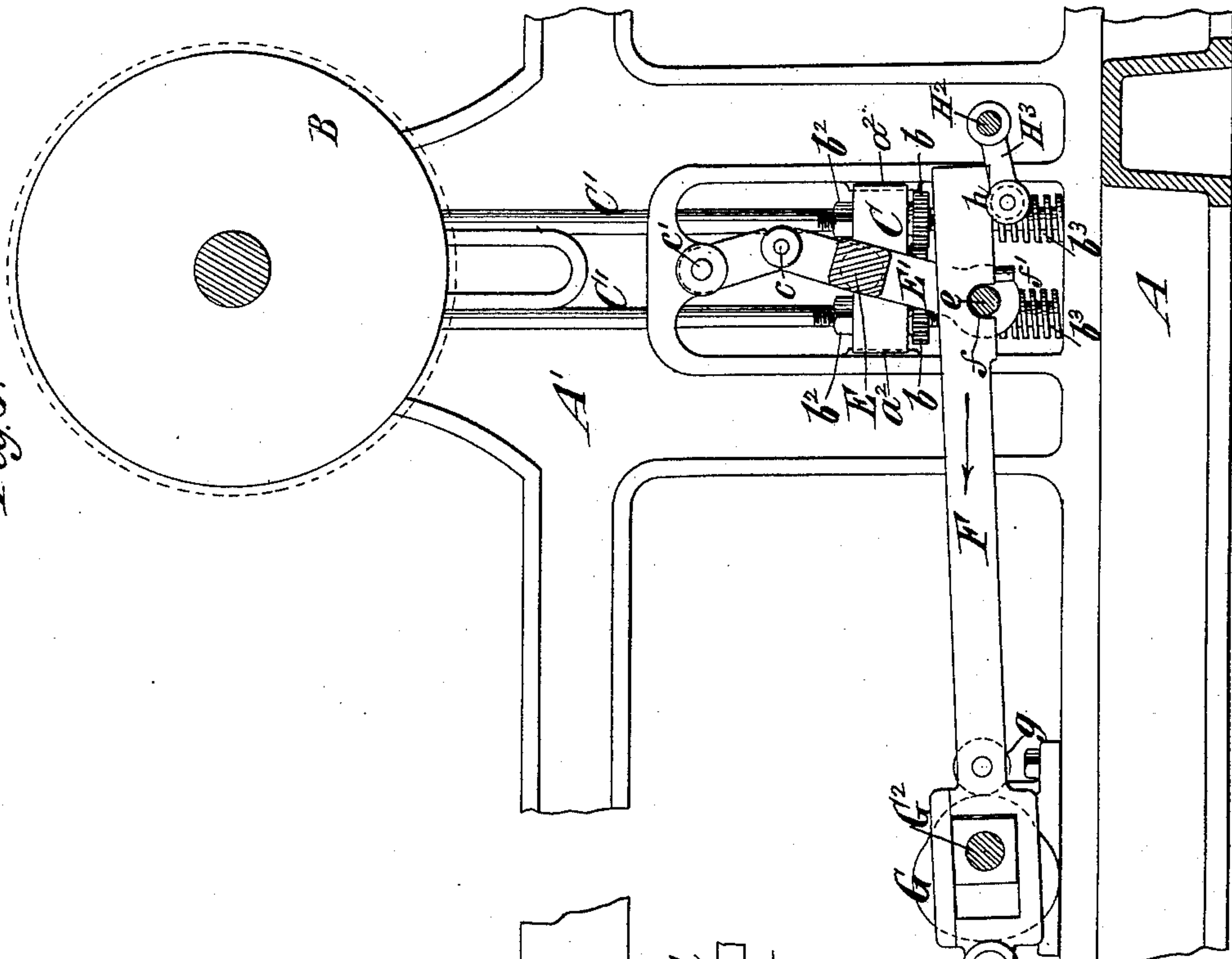
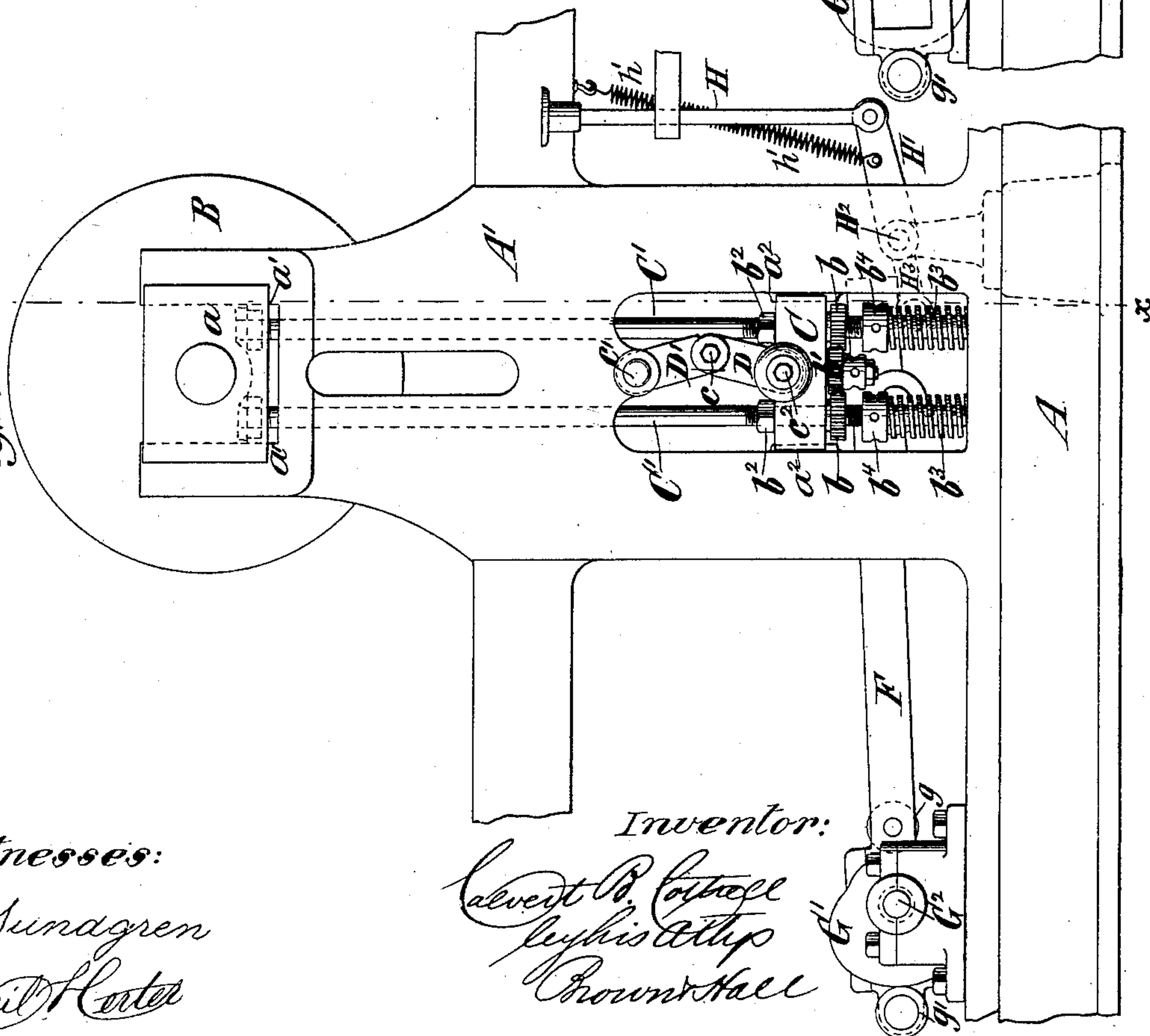


Fig. 1.



Witnesses:

Olaf Sundgren  
Emil H. Carter

Inventor:

Calvert B. Cottrell  
By his atty  
Chas. H. Hall

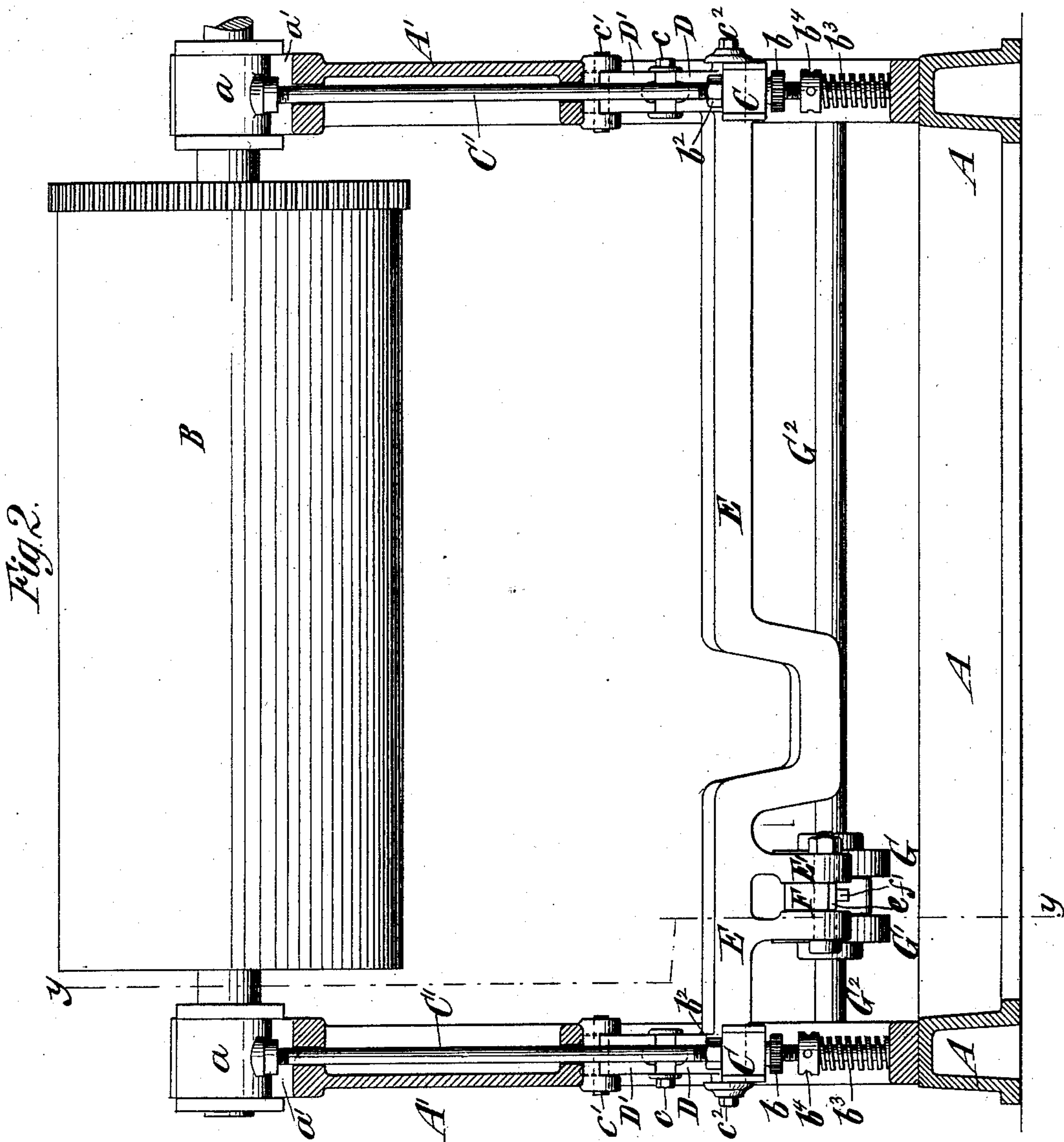
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*Olundgren*  
*Emil Hertel*

Inventor:

*Calvert B. Cottrell*  
*By his Attys*  
*Brown & Hall*



# UNITED STATES PATENT OFFICE.

CALVERT B. COTTRELL, OF STONINGTON, CONNECTICUT.

## CYLINDER PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 338,392, dated March 23, 1886.

Application filed August 17, 1885. Serial No. 174,534. (No model.)

*To all whom it may concern:*

Be it known that I, CALVERT B. COTTRELL, of Stonington, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Cylinder Printing-Machines, of which the following is a specification.

My invention relates to two-revolution presses in which the impression-cylinder is raised during the return movement of the bed, in order to avoid making contact with the form thereon. In presses of this class the cylinder-boxes have been connected by rods with a cross-head or slide on each side thereof. Springs have been arranged below the cross-head or slide, and said cross-head or slide has been connected by toggle-levers with the press-frame in such manner that when the levers are deflected or swung out of line the springs may force the cross-head or slides and the cylinder-boxes connected with them upward, and so lift the cylinder that the form may return without making contact therewith. These toggle-levers have been connected with a rock-shaft extending transversely across the press, and the rock-shaft has been operated by a cam-actuated rod or bar having a notch or gab-hook, which engages a wrist-pin on an arm depending from the aforesaid rock-shaft. By the action of the cam-actuated rod or bar the toggle-levers are alternately deflected out of line to permit of the cylinder being raised and straightened, or brought into line, so as to draw the cylinder downward. When it is desired to leave the cylinder temporarily in its raised or elevated position, so that the bed may travel backward and forward without the form coming in contact with the cylinder, the aforesaid rod or bar is lifted, so that its gab-hook or notch is out of engagement with the wrist-pin on the rock-shaft arm. In case, however, of the gab-hook or notch being raised from the wrist-pin when the levers are straightened or in line, breakage of parts of the press might ensue, and the object of my invention is to insure the deflection or bending out of line of the toggle-levers, even if the gab-hook or notch be lifted off the wrist-pin at a time when said levers are straightened or in line.

To this end my invention consists in the combination, with an impression-cylinder, and mechanism, substantially such as described,

for raising and lowering the cylinder, and comprising a rock-shaft and its arm provided with a wrist-pin, of a cam-actuated rod or bar having a gab-hook or notch for engagement with the wrist-pin, and also having a downward projection or abutment at the side of the gab-hook or notch. In case the gab-hook or notch be lifted off the wrist-pin when the toggle-levers are straightened or in line, the projection or abutment, by striking against the wrist-pin as the rod or bar is moved while in its elevated position, will deflect the toggle-levers out of line and avoid any possibility of leaving the cylinder in its lowermost position with the toggle-levers in line.

In the accompanying drawings, Figure 1 is a side view of portions of a press embodying my invention. Fig. 2 is a transverse section upon the plane of the dotted line *x x*, Fig. 1; and Fig. 3 is a vertical longitudinal section upon the plane of the dotted line *y y*, Fig. 2.

Similar letters of reference designate corresponding parts in all the figures.

A designates the base-frame of the press, and A' the side frames thereof. In these side frames are fitted cylinder-boxes *a*, which may be raised or lowered in vertical guideways *a'* in the side frames, and which support the journals of the impression-cylinder B.

In the lower part of the side frames, A', are slideways or guides *a''*, to which are fitted cross-heads or slides C, and said cross-heads or slides are connected by rods C' with the cylinder-boxes *a*. The lower end portions of the rods C' are screw-threaded, and to them are applied nuts *b*, the peripheries of which form spur-pinions, and between these pinions is an intermediate pinion, *b'*, gearing with them. By turning the intermediate pinion, *b'*, the gear-nuts *b* upon the rods will be turned simultaneously and equally, and by them the distance between the cylinder-boxes and the cross-heads may be definitely fixed, the rods being provided with other nuts, *b''*, above the cross-heads. The rods C' are prolonged downward below the cross-heads C, and have applied to them springs *b'''*, the tension of which may be adjusted by nuts *b''''*. The cross-heads or slides C are, by means of toggle levers or links D D', connected with the side frames, A', above the cross heads or slides.

*c* designates the middle joint of the toggle-



levers, and  $c'$   $c^2$  designate, respectively, the upper and lower pivotal points thereof.

From the above description it will be understood that when the toggle levers or links  $D$   $D'$  are straightened or brought into line with each other they form a strut which draws and holds the cylinder downward into its lowermost position, so that it will make contact with the form on the reciprocating bed. (Not hereshown.) When, however, the toggle levers or links  $D$   $D'$  are bent or deflected out of line, as shown in Figs. 1 and 3, the springs  $b^3$  will raise the cross-heads or slides  $C$ , and through their rods  $C'$  will raise the cylinder, so that it will not make contact with the form on the reciprocating bed.

I have not here shown the bed, as it and its operating mechanism form no part of my invention. They may be of any suitable or ordinary character. The lower pivotal centers,  $c^2$ , of the toggle-levers or links are formed by a rock-shaft,  $E$ , (best shown in Fig. 2) and the levers or links  $D$  form rigidly-projecting arms on this shaft. The shaft also has a downwardly-projecting arm,  $E'$ , on which is a wrist-pin,  $e$ .

$F$  designates a bar or rod which extends lengthwise of the press, and which has a reciprocating motion imparted to it by means of cams  $G$   $G'$ , which act alternately upon the rollers  $g$   $g'$  upon the rod. The cams  $G$   $G'$  are upon a shaft,  $G^2$ , which has a rotary motion continuously in one direction.

The rod or bar  $F$  is constructed with a notch or gap,  $f$ , to form a gab-hook which engages with the wrist pin  $e$  of the rock-shaft  $E$ . It will therefore be seen that so long as the gab-hook  $f$  is in engagement with the wrist-pin  $e$  the rock-shaft  $E$  will receive a to-and-fro swinging motion, and the toggle-levers or links  $D$   $D'$  will be alternately deflected or bent and straightened in proper time with the reciprocating movement of the bed. It will also be seen that if the gab-hook  $f$  be lifted off the wrist-pin the rock-shaft will receive no swinging movement and the toggle levers or links  $D$   $D'$  will remain bent or deflected, as shown in Figs. 1 and 3.

By means of a foot-rod,  $H$ , arranged adjacent to the platform on which the press-feeder

stands, the feeder may raise the gab-hook off the wrist-pin  $e$ . In order to accomplish this the rod  $H$  is connected with an arm,  $H'$ , upon the rock-shaft  $H^2$ , and this rock-shaft also has another arm,  $H^3$ , carrying a roller,  $h$ , which is immediately below the rod or bar  $F$ .

The foot-rod and its connections are raised normally by means of a spring,  $h'$ ; but when this rod is pressed downward the roller  $h$ , acting upon the bar or rod  $F$ , will raise the gab-hook  $f$  out of engagement with the pin  $e$ . It is obvious that with this arrangement of parts the pressman may trip the gab-hook  $f$  at any time while the bed is moving in either direction; but if he should so trip the gab-hook while the toggle levers or links  $D$   $D'$  are straightened or in line the cylinder would remain in its lowermost position and breakage of parts would ensue. To prevent this I have shown upon the under side of the bar or rod  $F$  and at the side of the gab-hook or notch  $f$  a pin or projection,  $f'$ , which is best shown in Fig. 3. The gab-hook  $f$  cannot be raised sufficiently to carry the abutment or projection  $f'$  entirely above the wrist-pin  $e$ , and hence it will be seen that if the gab-hook is so raised while the rod or bar  $F$  is moving in the direction indicated by the arrow, Fig. 3, the pin or projection  $f'$  will come in contact with the wrist-pin  $e$  and will bend or deflect the toggle levers or links  $D$   $D'$ .

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination, with the impression-cylinder, and mechanism, substantially as described, for raising and lowering the cylinder, and comprising the rock-shaft  $E$  and its arm  $E'$ , provided with a wrist-pin, of the cam-actuated bar or rod  $F$ , having a gab-hook or notch,  $f$ , engaging with the wrist-pin, and a downward projection or abutment,  $f'$ , at the side of the hook or notch, adapted to engage with the wrist-pin when the hook or notch  $f$  is raised out of engagement therewith, substantially as herein described.

CALVERT B. COTTRELL.

Witnesses:

HENRY T. BROWN,  
FREDK. HAYNES.