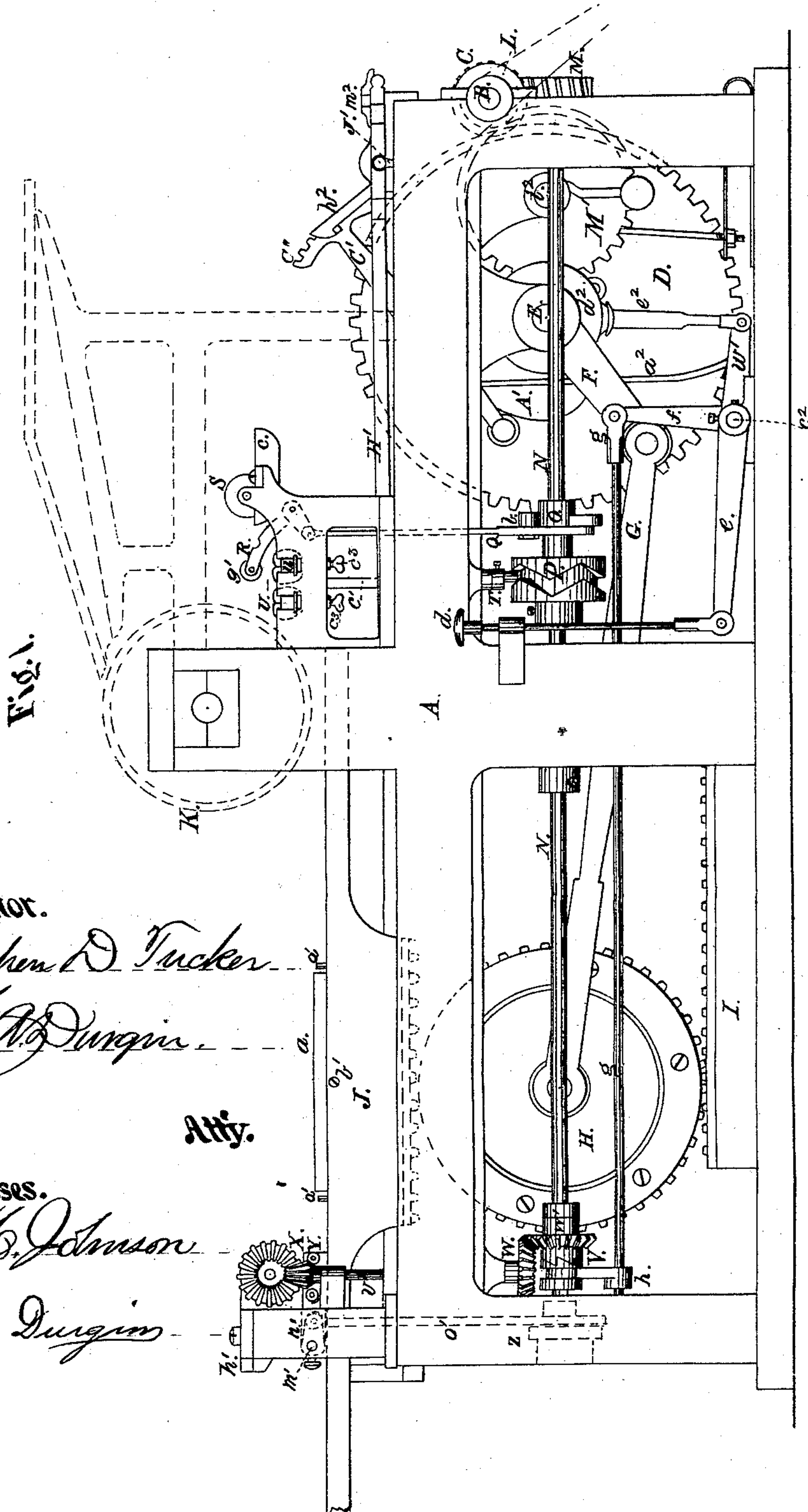


S. D. TUCKER.
Lithographic Printing-Presses.

No. 156,069.

Patented Oct. 20, 1874.



Inventor.

Stephen D. Tucker

A. D. Durgin

Att'y.

Witnesses.

E. C. Johnson

C. C. Durgin

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Fig. 2.

Inventor.

Stephen D. Tucker

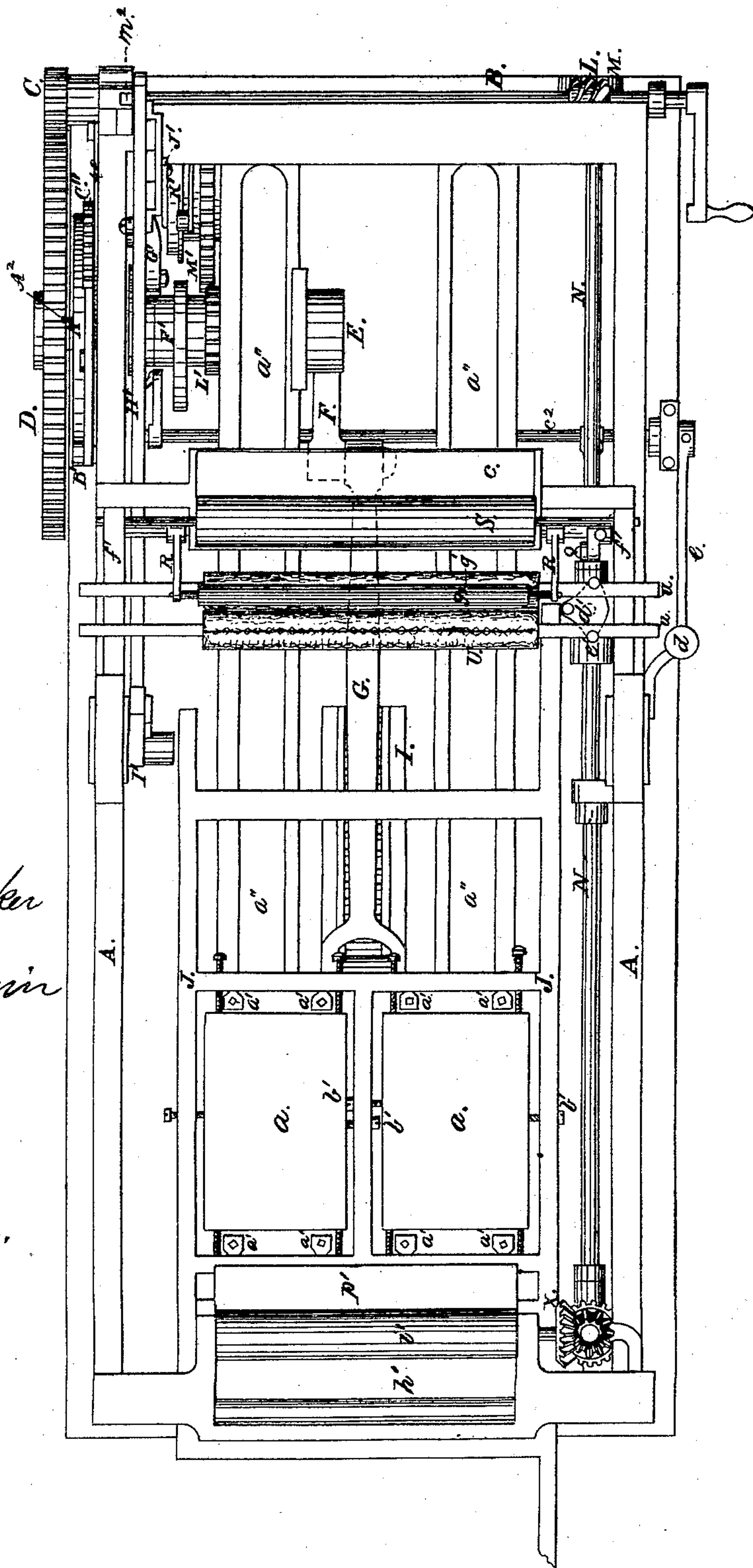
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Witnesses.

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Fig. 3.

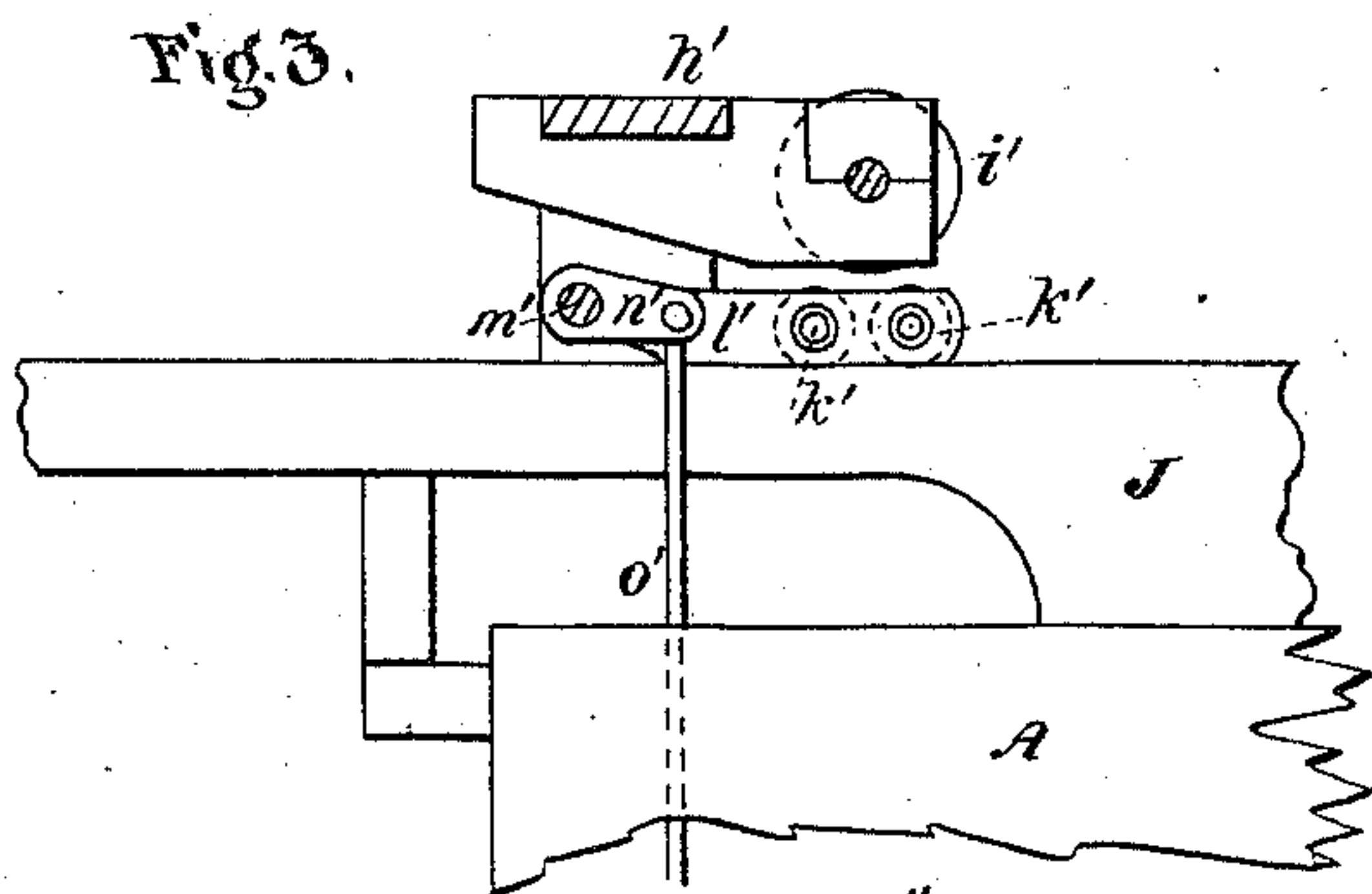


Fig. 4.

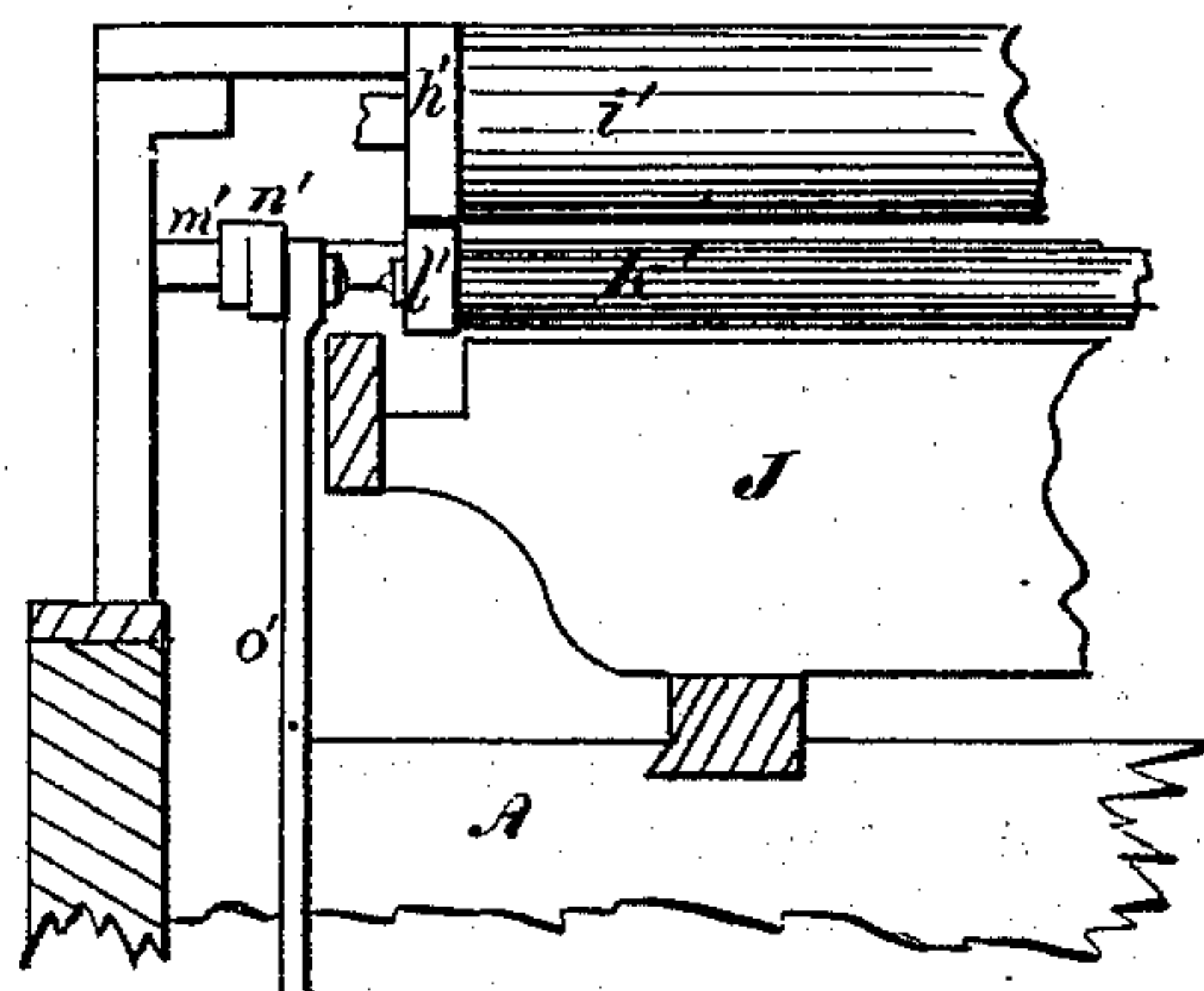
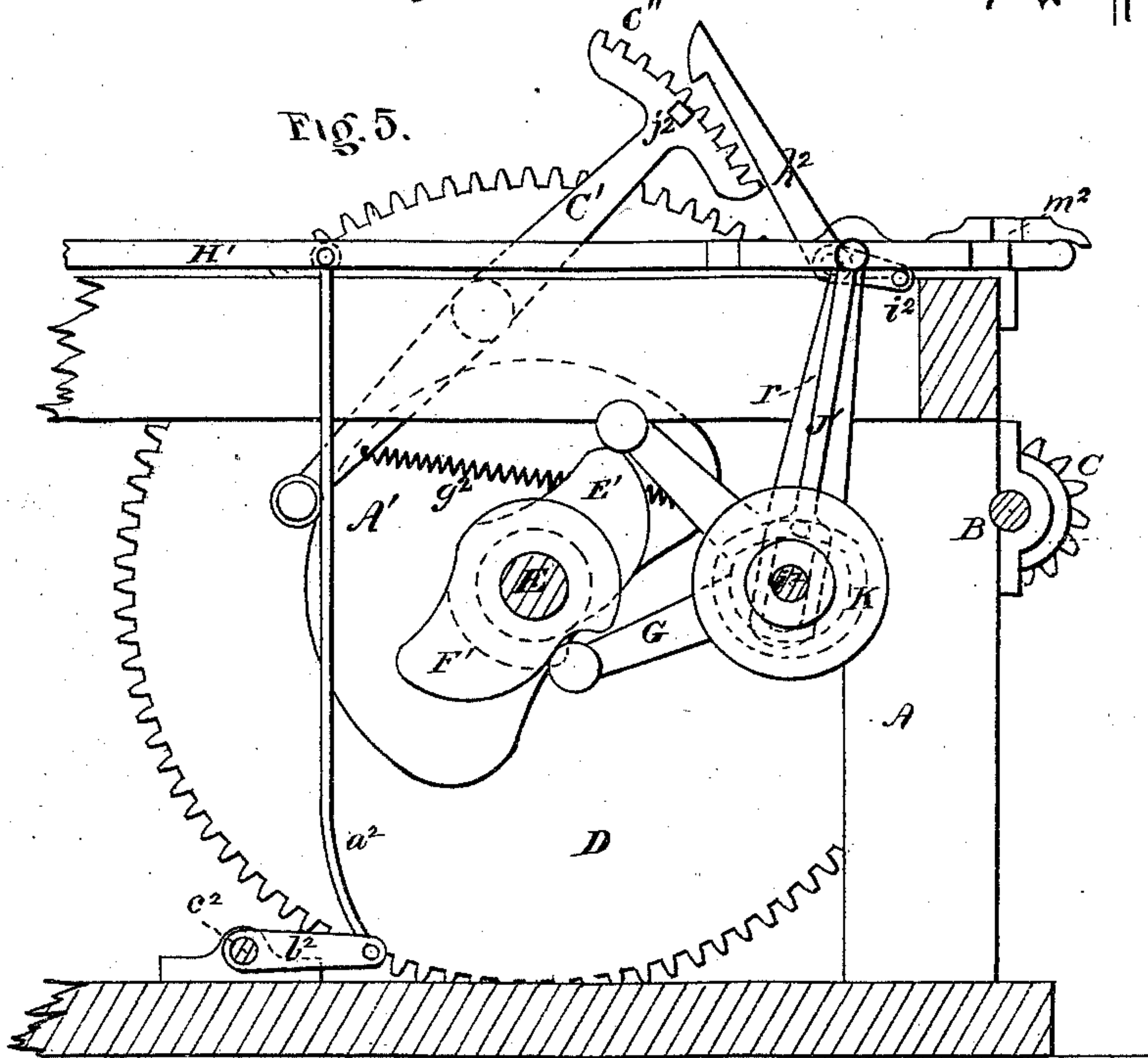


Fig. 5.



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UNITED STATES PATENT OFFICE.

STEPHEN DAVIS TUCKER, OF NEW YORK, N. Y.

IMPROVEMENT IN LITHOGRAPHIC PRINTING-PRESSES.

Specification forming part of Letters Patent No. **156,069**, dated October 20, 1874: application filed February 23, 1874.

To all whom it may concern:

Be it known that I, STEPHEN DAVIS TUCKER, of the city, county, and State of New York, have invented certain Improvements in Printing-Presses, of which the following is a specification:

My invention relates to stop-cylinder printing-machines; and consists in a novel construction, combination, and arrangement of parts which have for their object to improve the operation of the machine, as will be hereafter fully set forth.

Figure 1 is a side elevation of the machine. Fig. 2 is a top view thereof. Figs. 3, 4, and 5 are parts in detail on an enlarged scale.

A is the frame-work of the machine, provided, as usual, with bearings for the impression-cylinder, and tracks for the traveling bed J to run upon. At the rear end of the machine is the driving-shaft B, which imparts motion, by the pinion C, to the gear-wheel D, attached to the shaft E, carrying the crank F, which, by means of the forked connecting-rod G, one end of which is jointed to the crank F and the other end to the rack-wheel H, causes this latter to travel back and forth. This rack-wheel gears into a rack, I, fixed to the foundation-plate of the machine, and also into one that is secured to the under side of the traveling bed, the whole forming a well-known arrangement for giving a reciprocating movement to the beds of printing-presses.

The mechanism for automatically stopping and starting the impression-cylinder, in combination with the bed running one, two or more times under the inking-rollers to each impression, and also the mechanism by which, at the will of the operator, the cylinder can be thrown in or out of action while the machine is in motion, thus permitting the bed to pass any number of times under the inking-rollers to an impression, is the same as patented to me March 12, 1872, No. 124,460, and being in said patent fully described, need not be recited here.

In practice, it is found preferable to take ink from the fountain but once to each impression, no matter how many times the bed may pass under the inking-rollers, and this is effected in the following manner: On the driving-shaft B is keyed a worm, L, (see Fig. 2,) which works into and imparts motion to the

worm-wheel M and its shaft N. The ink-fountain h^1 is situated at the front end of the machine, and its roller i^1 receives its motion from the upright shaft U' by means of the bevel-wheel X and pinion Y, and the miter-wheels W W'. This latter gearing is thrown in and out of action by the clutch V sliding on a feather in the shaft N and its actuating-rod g , one end of which is provided with an arm, h , which takes into a groove in the clutch, and the other end is jointed to an arm, f , on the treadle-shaft c^2 . This treadle-shaft also, through the upright rod a^2 , lifts the cylinder-starting bar H' out of action, so that when the treadle is pressed down both the impression-cylinder and the fountain-roller are stopped, and no fresh ink can be taken until the cylinder is re-engaged and an impression taken. Immediately under the fountain-roller, and parallel with it, are two smaller rollers, $k' k'$, journaled in the arms $l' l'$ on the shaft m' . On this shaft is another arm, n' , connected with the cam Z on the shaft N by the rod o' , and as this rod is reciprocated by the cam the rollers $k' k'$ are alternately brought in contact with the fountain-roller and the distributing-table p' , attached to the reciprocating bed. Thus the ink necessary for one impression on the form, stone, or plate is brought down one-half on each roller, and by them put in thin films on the distributing-table, and carried by it to the distributing and inking rollers in the usual manner.

In lithographic printing-machines a considerable gain can sometimes be effected by printing from two stones at once, but their varying thicknesses have hitherto prevented this being done. To overcome this difficulty I put two separate and independently adjustable tables in the reciprocating bed-box J, and these tables are regulated in height by the set-screws $a^1 a^1$, so that both stones can readily be brought to the same level, no matter what be the difference of their thickness. The stones are held in position, as regards horizontal movement, by the set-screws $b^1 b^1$ in the sides of the bed-box.

In wetting lithographic stones with rollers in the ordinary manner it is impossible to reach all parts of the rounded edges of the

stones. In lieu of rollers, I use brushes or pads U, composed of sponge, felt, cloth, or other elastic material suitable for receiving water and applying it to the stones. These brushes or pads are attached to the bars *u u* resting in the slots in the frame *f'*, and are adjusted in height, so as to touch properly on the stone, by means of the regulating-screws *c³ c³*. The brushes are vibrated back and forth on the stone by the cam P secured on the shaft N, and having a serpentine groove on its periphery, in which the stud of the arm T projects, and as the cam revolves the upright shaft *c¹*, to which the arm T is attached, receives a continuous semi-rotary motion. On the upper end of this shaft is a cross-head, *d'*, having a stud, *e'*, at each end, which takes into a groove in the outer edge of the bars *u u*, and thus imparts a vibrating motion to the brushes or pads. *c* is a reservoir of water, in which the roller S rotates. The taking-roller *g¹*, having bearings in the arms R R, is alternately brought in contact with the roller S and the brushes U by means of the cam O on the shaft N, the stud *b* and upright rod Q taking the water from the roller S and giving it out to the brushes or pads.

The sheet-flier (see Fig. 5) is operated by the cam A' on the shaft E, giving a reciprocating motion to the lever C', the upper end of which is furnished with the segment-rack C'', which gears in a pinion on the shaft of the sheet-flier. This sheet-flier and its appurtenances are not shown in the drawing, as their arrangement and construction are generally well understood. As the cam A' throws out the lower end of the lever C' the upper end, carrying the rack, revolves the pinion on the shaft of the sheet-flier and throws the fly up in position to receive the sheet, the return motion being given by the spring *g²* acting on the lower end of the lever. The revolution of the cam A' would operate the fly at each travel of the bed; but, as it is required to be operated only at each impression taken, the motion of the fly is controlled by the cylinder-starting bar H' through the lever *h²*. The horizontal end *i²* of this lever has a pin on one side, which runs under the bar H'. Its upper and heavier end *h²* is hook-shaped, so as to drop over a pin, *j²*, in the upper end of the lever C', so that, whenever the bar H' is lifted to dis-

nect the cylinder, the hook of the lever drops over the pin in the lever C', and prevents its being thrown down; but, whenever the starting-bar H' is dropped down to re-engage the cylinder with the bed and give an impression, the hook of the lever *h²* is lifted off the pin in the lever C', and the fly is free to lay down a sheet. To prevent the spring *g²* from throwing the fly and sheet over too hard, and defacing or otherwise injuring the freshly-printed sheet, the periphery of the cam A' is made continuous, so as to guide the fly down easily and gently, the spring *g²* keeping the lower end of the lever C' always in contact with the cam A'.

From the foregoing it will be seen that, as the operator presses on the foot-bar *d* to stop the cylinder when the machine is single rolling, or when the cam K elevates the stopping-bar H' in double rolling, the catch-lever *h²* will fall on the pin of the fly-operating lever C', and hold this lever stationary, and, at the same moment, the clutch on the shaft N will be thrown back and arrest the motion of the fountain-roller *i¹*, and thus stop the supply of ink to the rollers *k' k'*.

I claim—

1. The combination, with the reciprocating stone-bed J, of two separate and independent adjustable tables and stones in one bed-box, constructed, arranged, and operating substantially in the manner described and specified.

2. The combination, with the ink-fountain *h¹* and roller *i¹*, of the two ink-taking rollers *k' k'*, working on one fountain-roller, substantially in the manner described and specified.

3. The mechanism for simultaneously stopping the impression-cylinder and the inking-roller *i¹*, consisting of the starting-bar H', connecting-rod *a²*, arm *b²*, shaft *c²*, arm *f*, connecting-rod *g*, and clutch *v*, constructed and operating substantially in the manner described and specified.

4. The mechanism for simultaneously stopping the impression-cylinder and fly-frame, consisting of the bar H', hooked lever *h²*, and segment-lever C', constructed and operating substantially as described and specified.

STEPHEN DAVIS TUCKER.

Witnesses:

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E. H. JOHNSON.