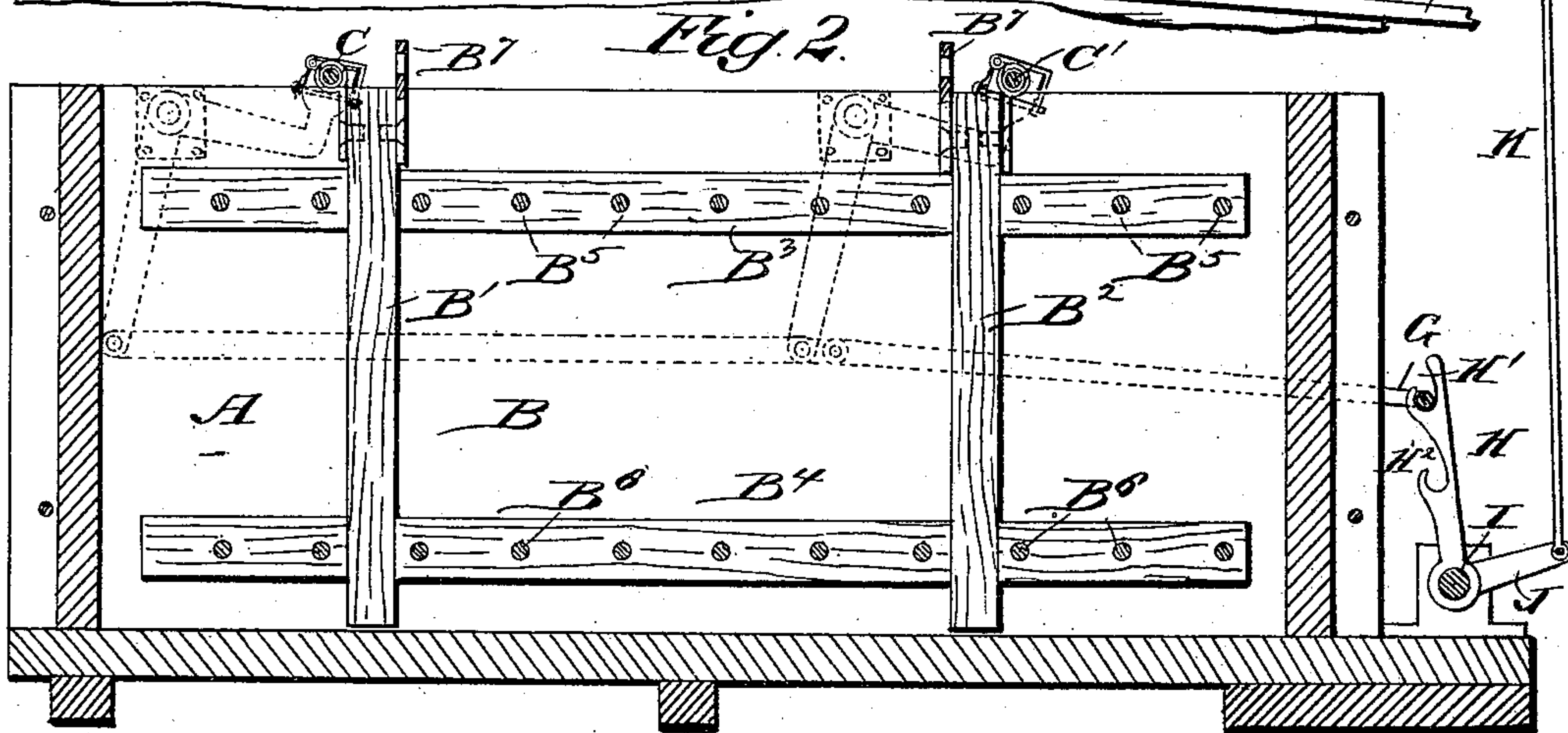
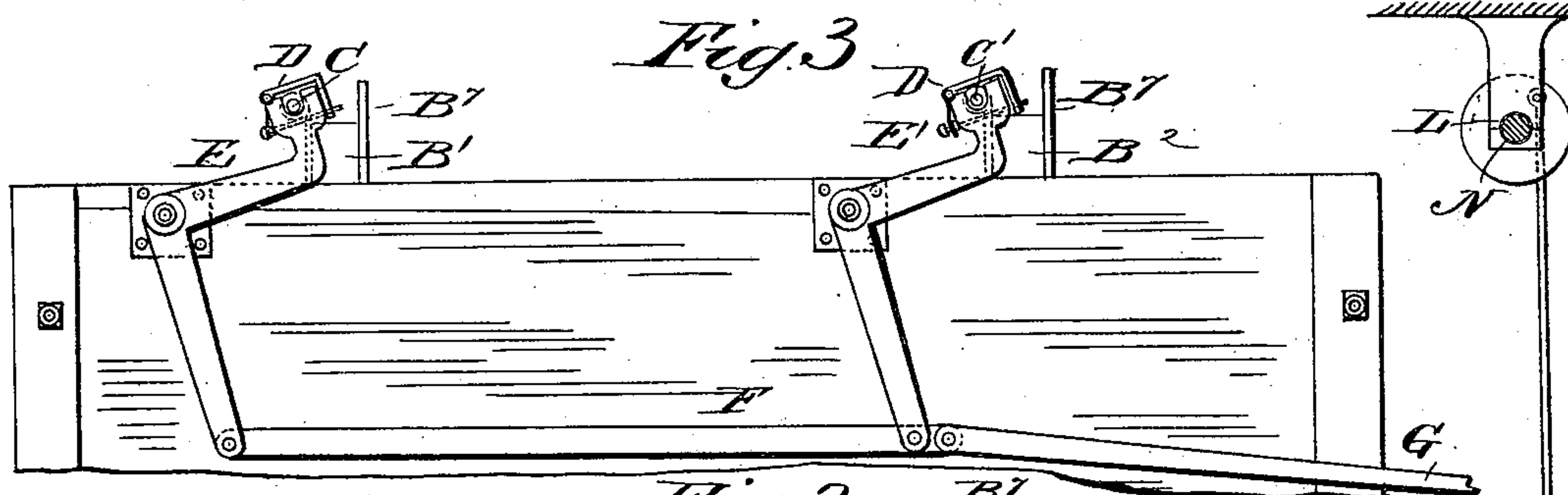
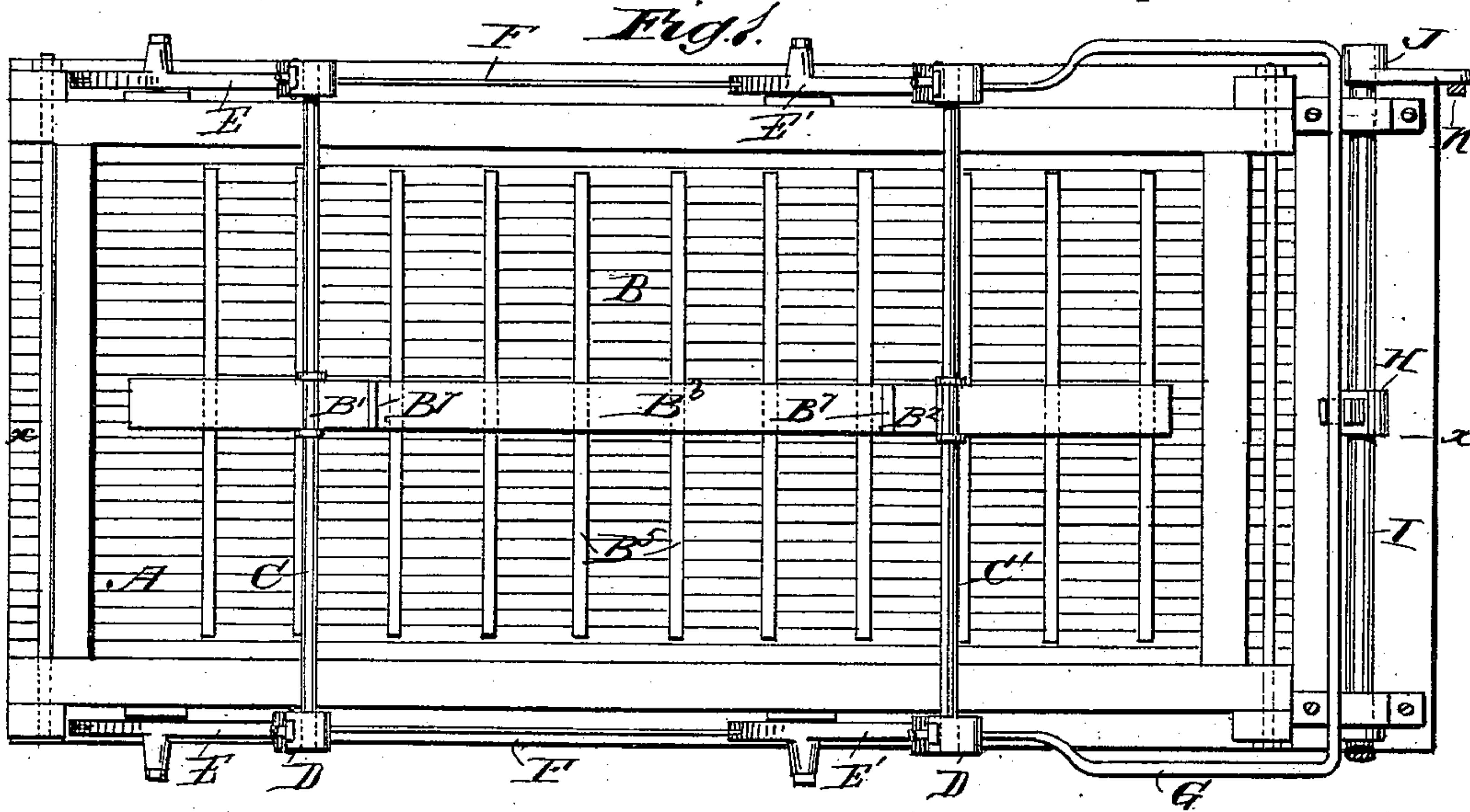


(No Model.)

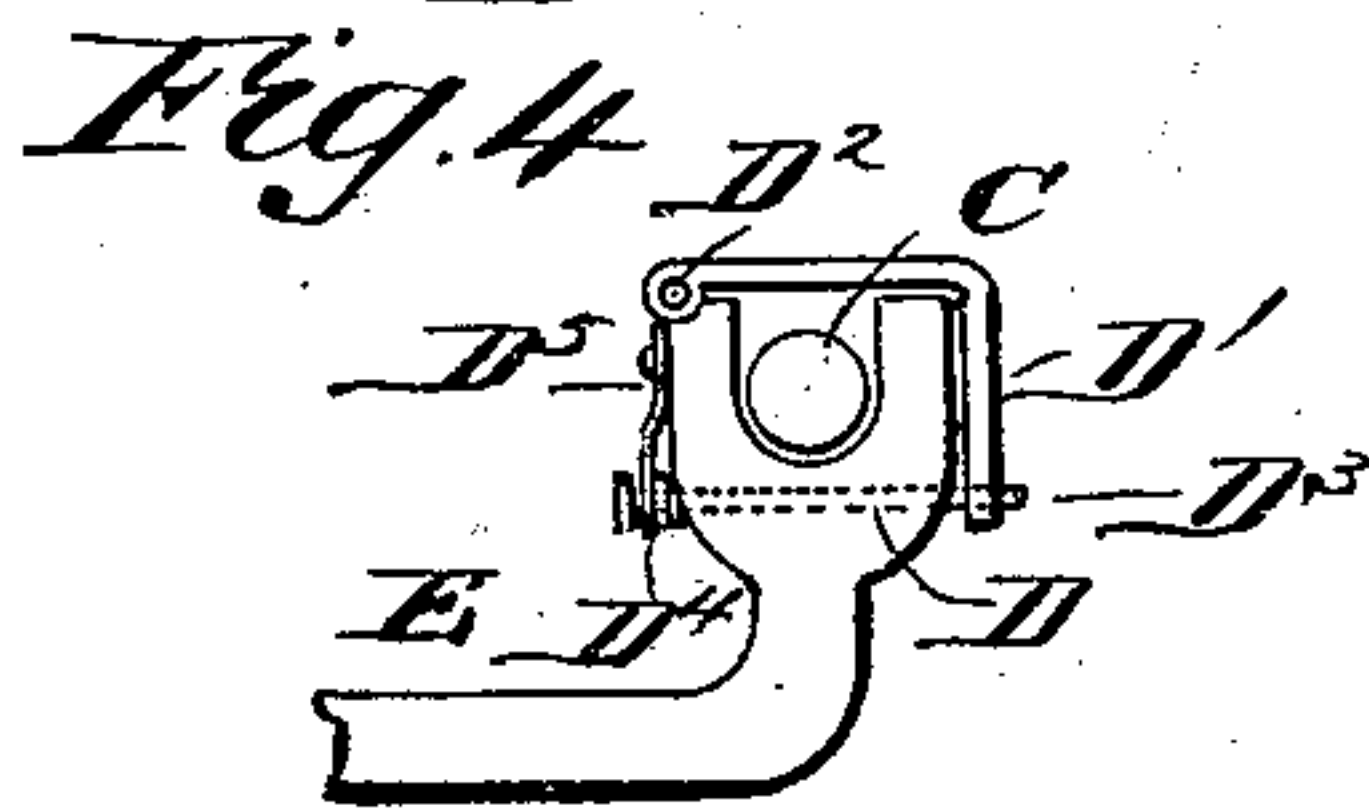
J. HUSSONG.  
DYEING MACHINE.

No. 450,020.

Patented Apr. 7, 1891.



WITNESSES:  
F. M. Cullen,  
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INVENTOR:  
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# UNITED STATES PATENT OFFICE.

JOSEPH HUSSONG, OF CAMDEN, NEW JERSEY.

## DYEING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 450,020, dated April 7, 1891.

Application filed December 3, 1890. Serial No. 373,483. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH HUSSONG, of Camden, in the county of Camden and State of New Jersey, have invented a new and Improved Dyeing-Machine, of which the following is a full, clear, and exact description.

The invention relates to dyeing-machines such as shown and described in the Letters Patent of the United States No. 394,694, dated December 18, 1888, and granted to Henry Hussong and the undersigned.

The object of the invention is to provide a new and improved dyeing-machine, which is simple and durable in construction, very effective in operation, and more especially designed for dyeing slubbing.

The invention consists of a cage adapted to be held in the vat and adapted to be connected with a series of bell-crank levers actuated from a crank-arm on a rocking shaft.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement. Fig. 2 is a sectional side elevation of the same on the line  $x-x$  in Fig. 1. Fig. 3 is a side elevation of part of the improvement, and Fig. 4 is an enlarged side elevation of one of the bearings.

The improved dyeing-machine is provided with a vat A of suitable size and construction, and in which is held to swing a cage or frame B, preferably of the construction shown, being provided with two vertical posts B' and B<sup>2</sup>, connected with each other near the top and bottom by longitudinal beams B<sup>3</sup> and B<sup>4</sup>, in which are held transversely and horizontally extending rods B<sup>5</sup> and B<sup>6</sup>, respectively, arranged opposite each other, as is plainly shown in Fig. 2, and adapted to carry the yarn to be dyed.

On the upper ends of the posts B' and B<sup>2</sup> are secured eyes B<sup>7</sup>, adapted to be hooked onto suitable means for raising the cage out of the vat or placing it therein. On the upper ends of the posts B' and B<sup>2</sup> are also secured transversely-extending rods C and C',

respectively, extending across the upper edges of the sides of the vat and a suitable distance beyond the sides, as is plainly shown in Fig. 1.

The outer ends of the rods C and C' engage bearings D, each formed or secured on one arm on a bell-crank lever E or E', respectively, pivoted on the outsides of the sides of the vat A. The two bell-crank levers E, supporting the rod C, are connected by links F with the respective bell-crank levers E', supporting the rod C'. The front ends of the links F project slightly beyond the said bell-crank levers E', and are pivotally connected with the ends of a U-shaped link G, extending at its middle part across the front end of the vat A.

The middle part of the link G is adapted to engage one of a series of notches H and H', formed in an arm H, secured on a transversely-extending shaft I, mounted to turn in suitable bearings on the bottom of the vat A at the outside thereof. On one end of the shaft I is secured a crank-arm J, pivotally connected by a link K with the crank-disk L, secured on one end of a shaft N, connected with suitable machinery for imparting a rotary motion to the said shaft N, so as to rock the shaft I and impart a swinging motion to the cage B within the vat A.

Each of the bearings D is preferably of the construction shown more clearly in detail in Fig. 4, the said bearing being provided with an L-shaped cap D', pivoted at D<sup>2</sup> to one fork of the bearing D. A pin D<sup>3</sup> passes through the bearing D below the rod C, and engages with one end the free end of the cap D'. The opposite end of the pin D<sup>3</sup> is provided with two collars or knobs D<sup>4</sup>, between which extends the free end of a spring D<sup>5</sup> to hold the said pin D<sup>3</sup> in a normal position—that is, in engagement with the cap D'—as illustrated in Fig. 4. When the operator desires to remove the cage B from the vat A, the caps D' have to be opened, and this is accomplished by the operator pulling on one of the collars D<sup>4</sup>, so as to withdraw pin D<sup>3</sup> from the respective cap D'. The latter can then be swung open to permit the rod C or C' to be lifted out of the bearings D.

The operation is as follows: The vat is filled in the usual manner with the dyeing-liquid



and the cage or frame is placed therein, the material to be dyed being hung on the sets of transverse rods B<sup>5</sup> and B<sup>6</sup>. As the latter extend equally on both sides of the beams B<sup>3</sup> and B<sup>4</sup> the cage is equally weighted. The rods C and C' are placed in the bearings D and locked therein by closing the caps D' by the pins D<sup>3</sup>, as previously described. When the main driving-shaft N is now rotated, the crank-disk L, the link K, and the arm J impart a rocking motion to the shaft I, which latter, by the notched arm H and the U-shaped link G, imparts a swinging motion to the several bell-crank levers E and E', connected with each other by links F. The bell-crank levers E and E' operate in unison, and by their bearings D engaging the rods C and C', respectively, impart an up-and-down swinging motion to the cage or frame B, so that the latter, with the material to be dyed, is moved to and fro in the dye.

It is understood that the shaft I is preferably extended along a series of vats A, so as to actuate simultaneously a number of cages or frames in the series of vats. The motion of any one of the cages or frames can be interrupted at any time by lifting the respective U-shaped link G out of the respective notch H' or H<sup>2</sup> in the arm H. When the material has been dyed, the caps D' are thrown open, and the eyes B<sup>7</sup> are connected with the hoisting machinery for lifting the cage or frame out of the vat in the usual manner. By engaging the U-shaped link G with a notch farther from or nearer to the shaft I on the arm H, more or less motion is imparted to the cage B, according to the material to be treated.

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

1. In a dyeing-machine, the combination, with the vat, of a cage adapted to be held in the said vat, sets of connected bell-crank levers pivoted on the sides of the vat and supporting the said cage, a link connected with

two of the said bell-crank levers and a rock-shaft connected with the said link, substantially as shown and described.

2. In a dyeing-machine, the combination, with the vat, of a cage adapted to be held on the said vat, sets of connected bell-crank levers pivoted on the sides of the vat and supporting the said cage, a link connected with two of the said bell-crank levers, and a rock-shaft provided with an arm having notches adapted to be engaged by the said link, substantially as shown and described.

3. In a dyeing-machine, the combination, with a cage adapted to be held in a dyeing-vat and provided with rigid cross-rods, of sets of connected bell-crank levers supporting the said cage, a U-shaped link connected at its ends with one of the said sets of bell-crank levers, a notched arm engaged at one of its notches by the middle part of the said link, and a rock-shaft carrying the said notched arm, substantially as shown and described.

4. In a dyeing-machine, the combination, with a cage adapted to be held in a dyeing-vat and provided with rigid cross-rods, of sets of connected bell-crank levers supporting the said cage, a U-shaped link connected at its ends with one of the said sets of bell-crank levers, a notched arm engaged at one of its notches by the middle part of the said link, a rock-shaft carrying the said notched arm, and means, substantially as described, for imparting a rocking motion to the said shaft, as set forth.

5. In a dyeing-machine, the combination, with a cage provided with fixed cross-rods, of levers provided with bearings engaging the said rods, each bearing being provided with a hinged cap, and a spring-pressed pin adapted to engage the said cap to lock the latter in place, substantially as shown and described.

JOSEPH HUSSONG.

Witnesses:

JAMES M. CASSADY,  
T. F. BOARDMAN.