

No. 692,171.

Patented Jan. 28, 1902.

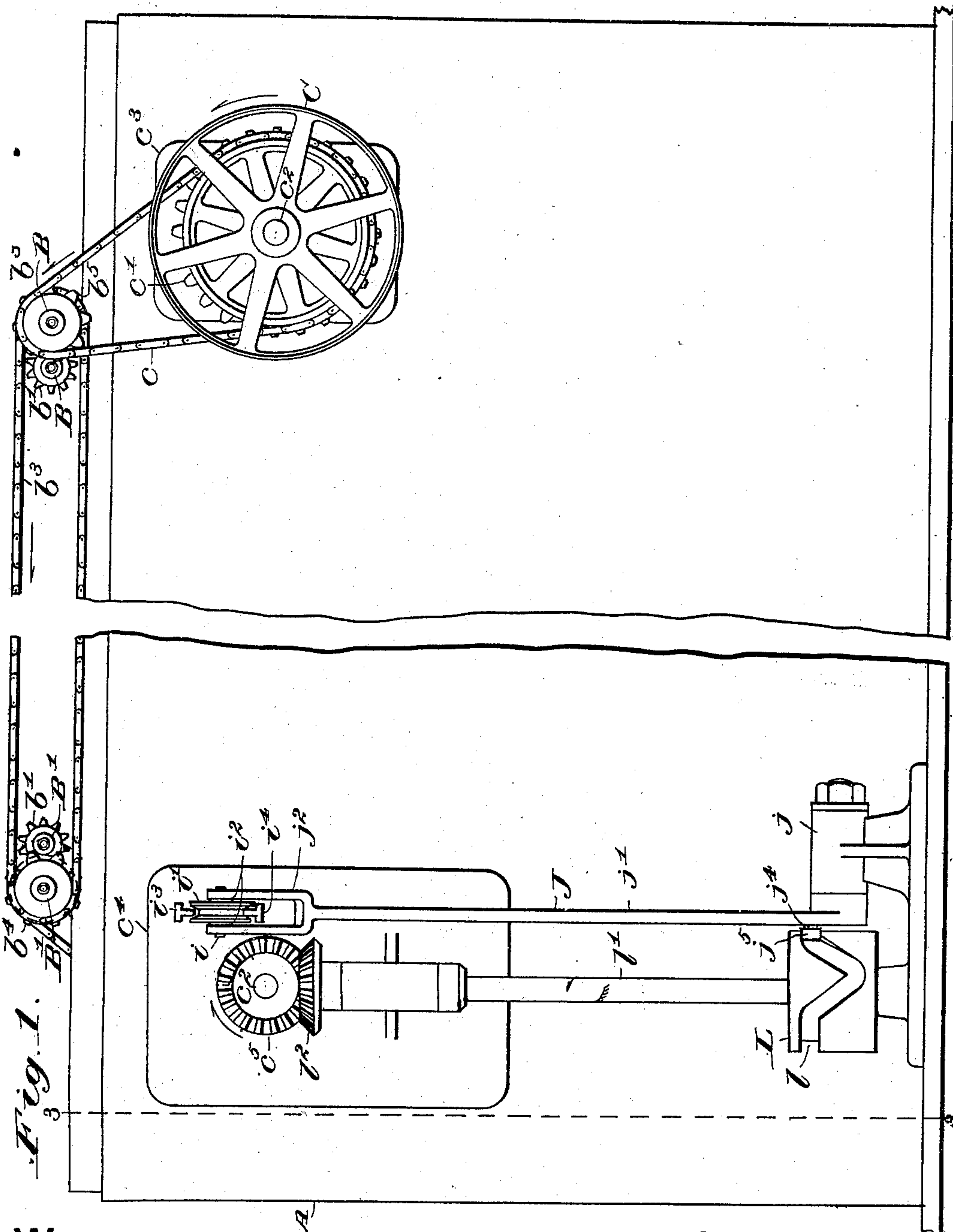
T. WALSH.

APPARATUS FOR STEAMING FABRICS, &c.

(Application filed Sept. 22, 1897.)

(No Model.)

5 Sheets—Sheet 1.



WITNESSES.

Kirkley Hyde.  
Grace E. Hibbert.

INVENTOR  
Thomas Walsh,

By Albert M. Moore,  
His ATTORNEY.

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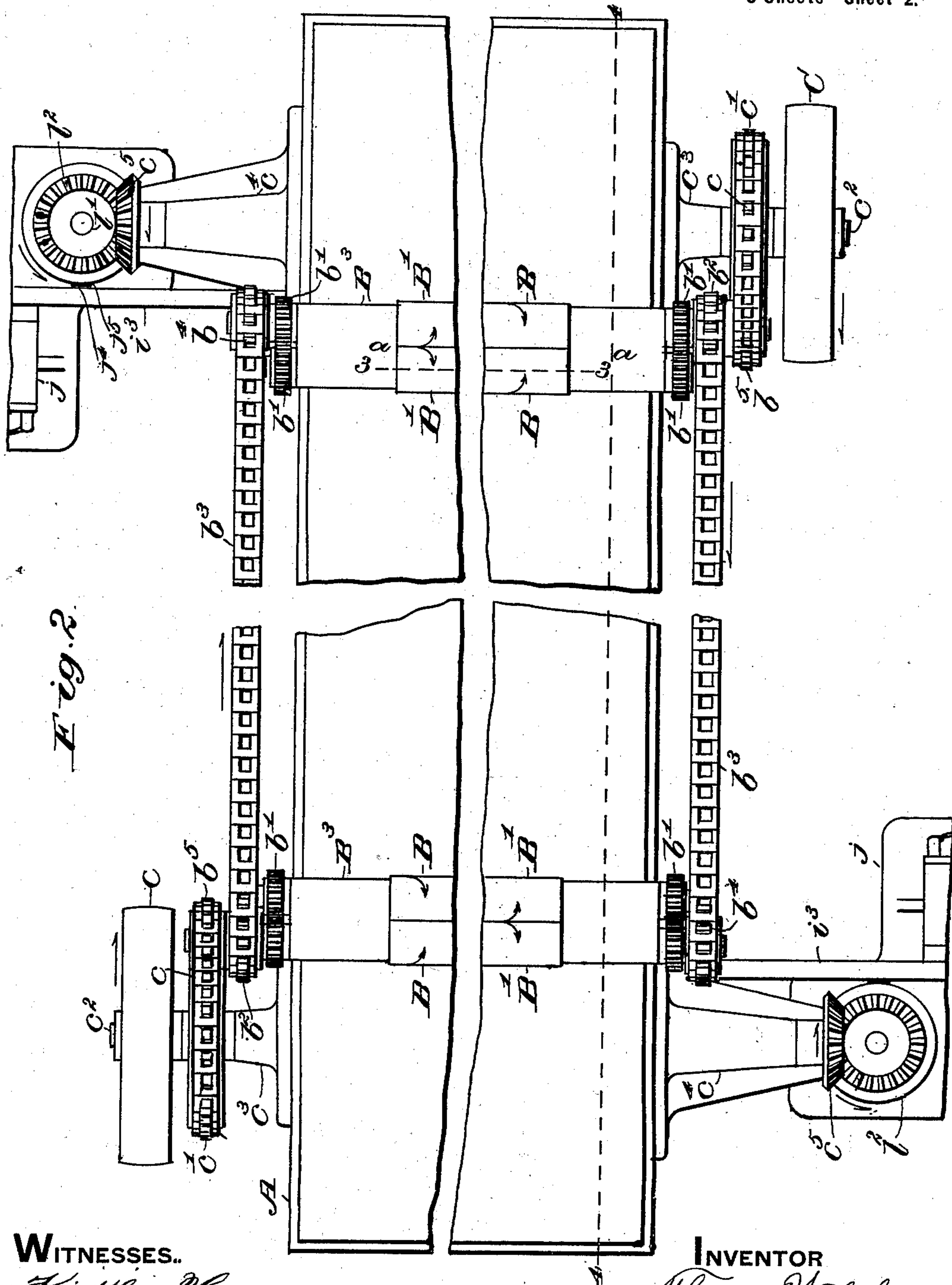
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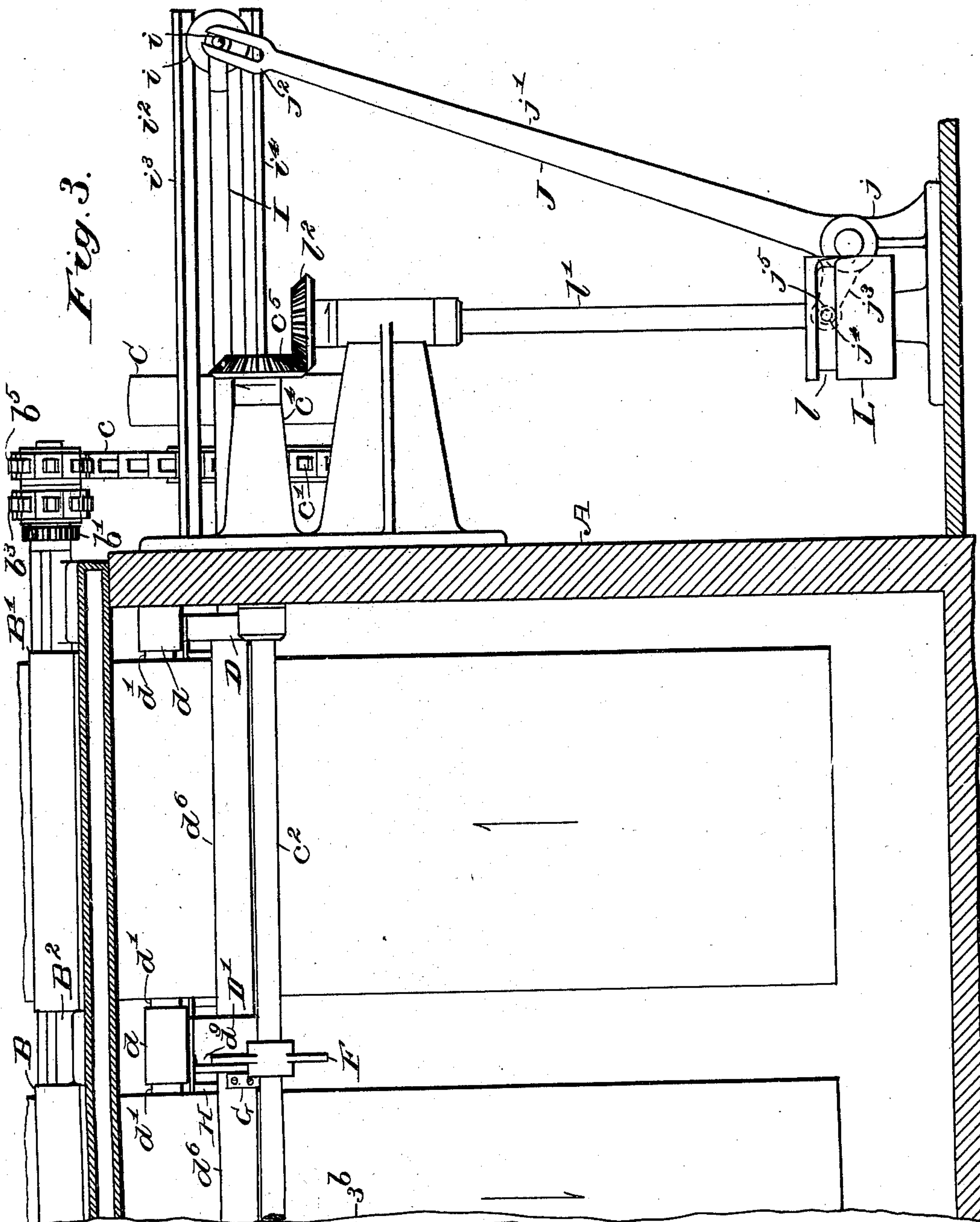
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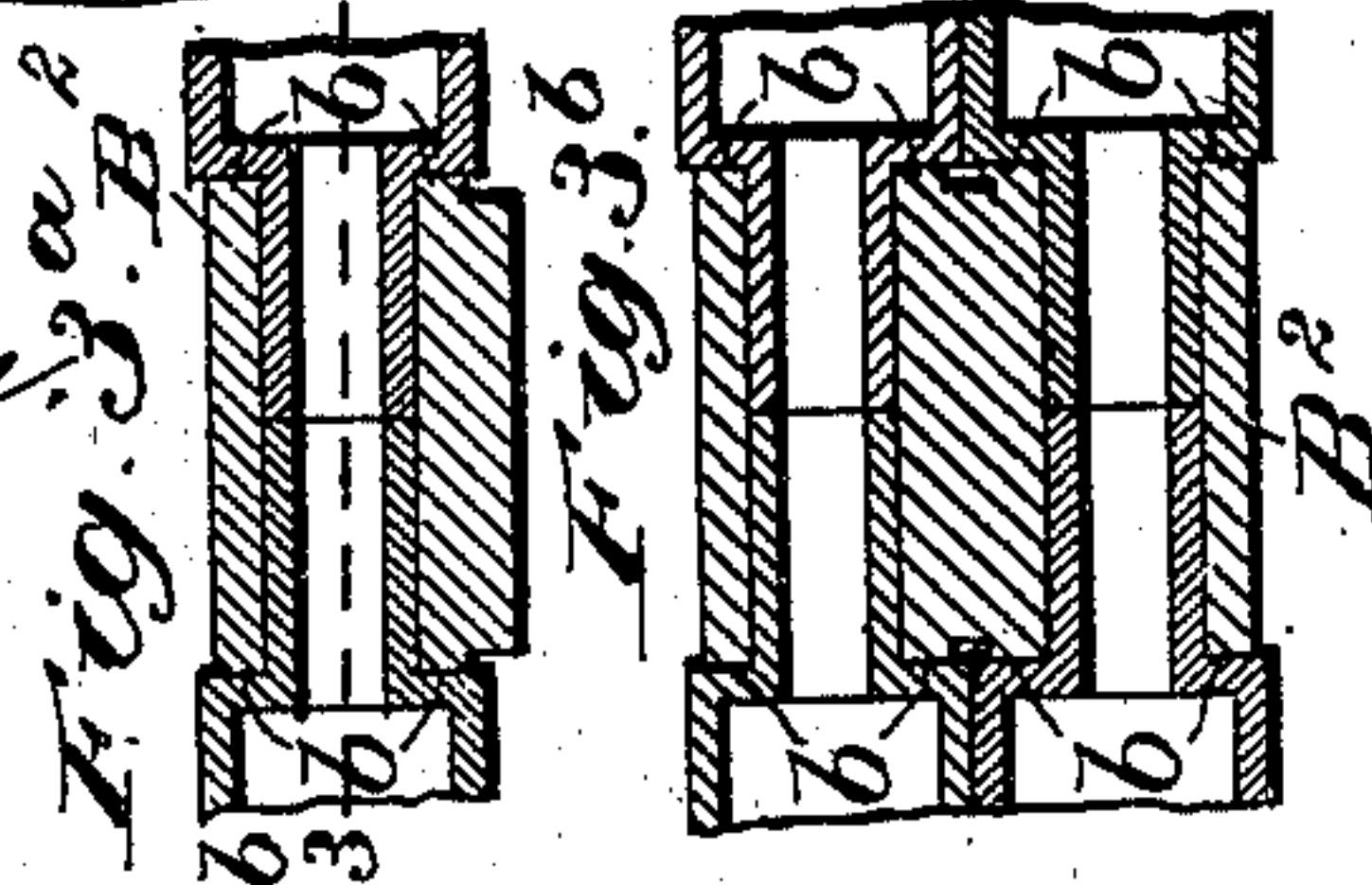
(No Model.)

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WITNESSES.

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INVENTOR

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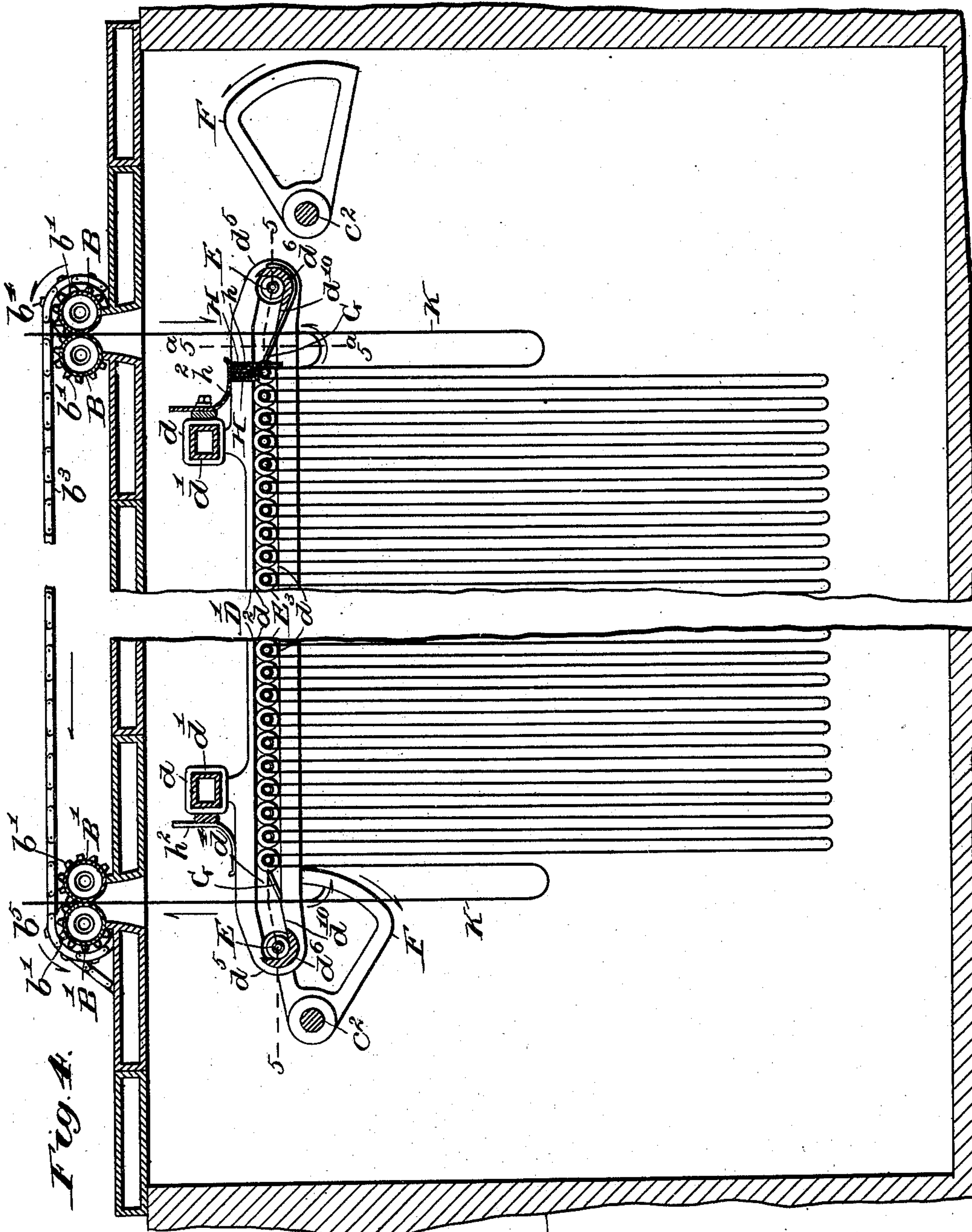
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**5 Sheets—Sheet 4.**



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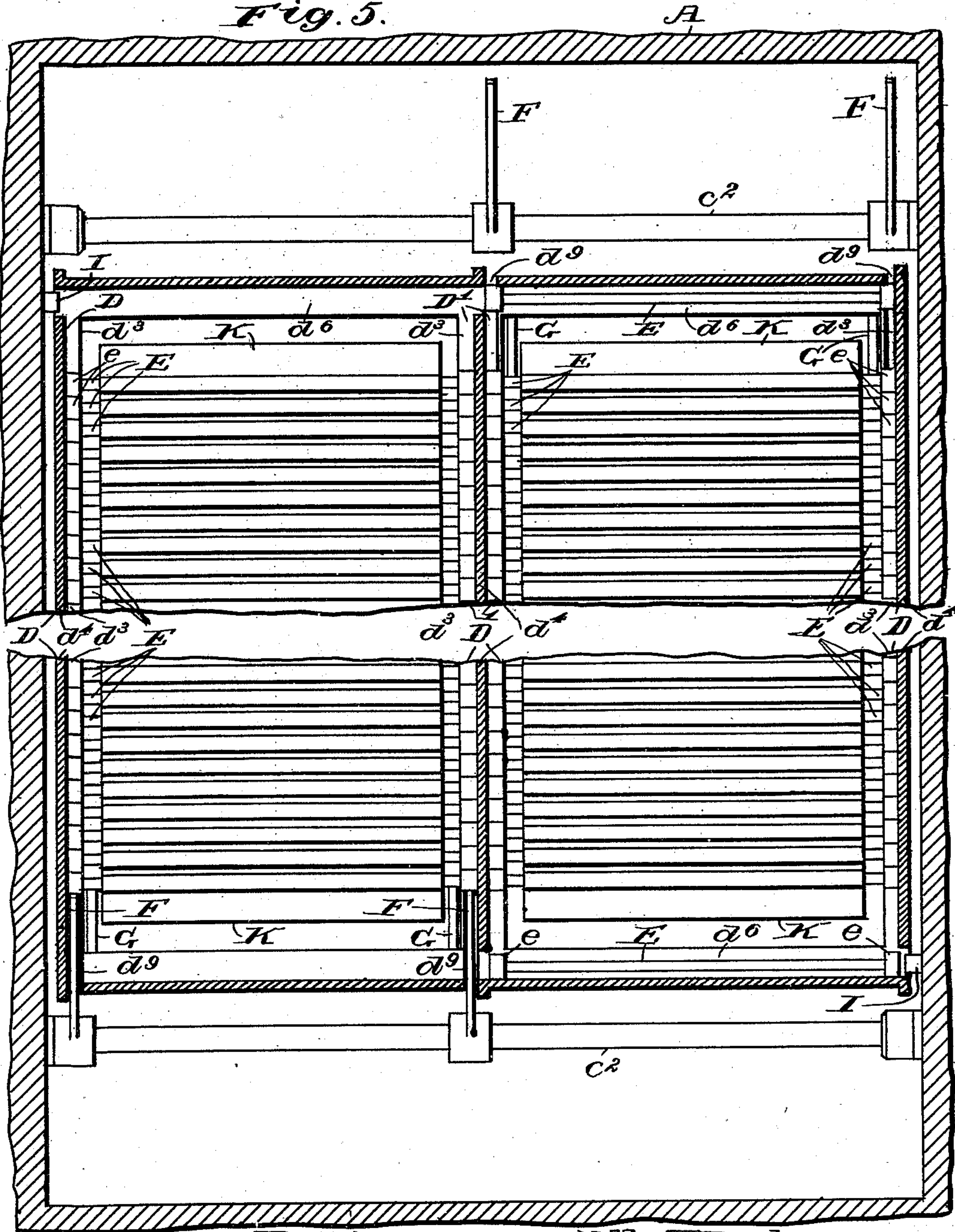
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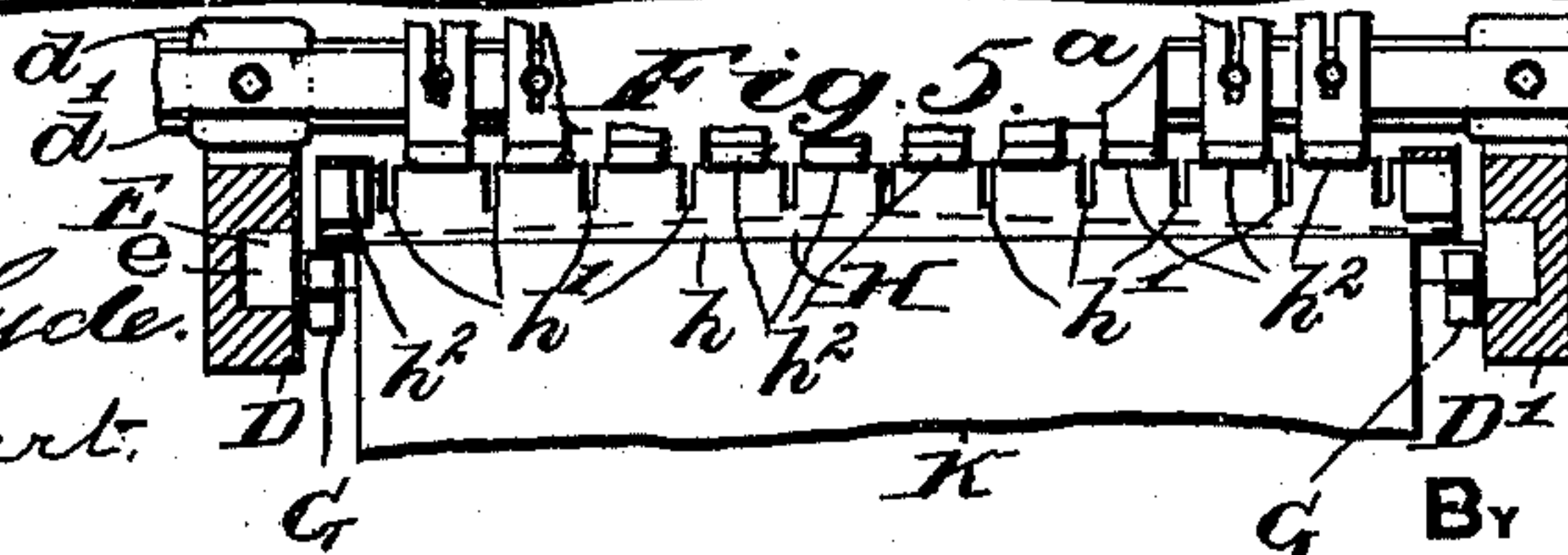
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Fig. 5.



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# UNITED STATES PATENT OFFICE.

THOMAS WALSH, OF LOWELL, MASSACHUSETTS.

## APPARATUS FOR STEAMING FABRICS, &c.

SPECIFICATION forming part of Letters Patent No. 692,171, dated January 28, 1902.

Application filed September 22, 1897. Serial No. 652,563. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS WALSH, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Apparatus for Steaming, Aging, and Drying Fabrics, of which the following is a specification.

My invention relates to that kind of apparatus for steaming, aging, and drying fabrics in which the fabric or cloth is hung in folds on rods which travel on rails, said folds being kept apart by collars fixed on said rods and said rails being arranged wholly within a chamber supplied with steam or hot air and the cloth being constantly fed into the chamber at one end of the track formed by said rails and removed from said chamber at the other end of said track. In such apparatus the rods are commonly carried one at a time from one end of the track by a pair of endless chains provided with hooks, the chains traveling constantly above and outside of the track, down one end of the chamber, under the cloth, and up at the other end of said chamber to the other end of said track. The rods in such apparatus are pushed forward, one at a time, intermittently, at one end of the track, causing all the rods to advance and causing the rod at the other end of the series to fall into a position to be caught by the hooks of the chains.

The principal objects of this invention are, first, to dispense with the chains by arranging the rods in two oppositely-traveling series on parallel tracks and transferring the empty rods from the end of one track to the beginning or starting-point of the other track; second, to prevent the oil on the ways and on the collars of the rods from getting on the bodies of the rods and greasing the cloth by the construction and arrangement of said ways; third, to prevent the rods when pushed forward by the cams from moving backward by the use of spring-latches, and, fourth, to prevent the weight of a fold of cloth from drawing the cloth from a rod on which a subsequent fold is being made by a suitable clamp.

Said invention consists in the devices and the combinations hereinafter described and claimed.

In the accompanying drawings, (five sheets,) Figure 1 is a side elevation of the apparatus; Fig. 2, a plan of the same; Fig. 3, a vertical transverse section of the same on the line 3 3 in Fig. 1; Fig. 3<sup>a</sup>, a vertical section on the line 3<sup>a</sup> 3<sup>a</sup> in Fig. 2 of the journal-box of the ends of two adjacent rolls, one being a feed-roll and the other a delivery-roll; Fig. 3<sup>b</sup>, a horizontal central section on the line 3<sup>b</sup> 3<sup>b</sup> in Fig. 3<sup>a</sup>; Fig. 4, a vertical longitudinal section on the line 4 4 in Fig. 2; Fig. 4<sup>a</sup>, an enlarged vertical section of a way in the same plane as that of Fig. 4, showing a rod in end elevation; Fig. 5, a horizontal section on the line 5 5 in Fig. 4; Fig. 5<sup>a</sup>, a vertical cross-section on the line 5<sup>a</sup> 5<sup>a</sup> in Fig. 4 of the track and springs, showing in elevation a rod with cloth hung thereon.

The steam-chamber A is of usual construction and is supplied in the usual manner with hot-air or steam by pipes. (Not shown.) Cloth is taken into the chamber A by feed-rolls B B and withdrawn from the chamber by delivery-rolls B' B', two pairs of each kind of rolls being represented, each feed-roll being in line with a delivery-roll and the adjacent ends of said rolls being supported in a journal-box B<sup>2</sup> B<sup>2</sup>, common to both of said rolls, Figs. 3, 3<sup>a</sup>, and 3<sup>b</sup>, and each journal-box stand is double, so that each of said journal boxes or stands B<sup>2</sup> B<sup>2</sup> supports the inner ends of four rolls. The outer journals of the rolls are supported in pairs in double journal boxes or stands B<sup>3</sup> B<sup>3</sup> B<sup>3</sup> B<sup>3</sup>, Fig. 2, in an obvious manner.

All the rolls B B' are alike and are hollow to enable them to be heated by steam in the usual manner, and their journals are reduced to form shoulders b to prevent any endwise movement of said rolls. The outer end of each roll is provided with a gear b', which engages a similar gear on the other roll of the same pair to cause said rolls to turn in opposite directions, and one roll of each pair of feed-rolls is provided at the end with a sprocket-wheel b<sup>2</sup>, connected by a sprocket-chain b<sup>3</sup> to another sprocket-wheel b<sup>4</sup>, fast on the end of that delivery-roll at the same side of the chamber which turns in the same direction as said feed-roll, Figs. 1, 2, 3, and 4, and said feed-roll is also provided with an-



other sprocket-wheel  $b^5$ , connected by a sprocket-chain  $c$  to a sprocket-wheel  $c'$ , fast on the driving-shaft  $c^2$  or shaft of the driving-pulley C, said shaft  $c^2$  passing through the chamber A and being supported in journal-box stands  $c^3 c^4$ , secured to said chamber.

No special stress is intended to be laid upon the use of sprocket wheels and chains, because any connecting mechanism which will cause all the rolls B B' to turn in the proper directions (indicated by arrows) and at equal surface speeds may be used.

There are two parallel tracks, Figs. 3, 4, and 5, each consisting of two parallel rails D D', supported within the chamber A in any usual manner, as by sleeve-brackets  $d$ , cast or otherwise secured on the rails and surrounding girders  $d'$ , the ends of which are secured in the side walls of said chamber. Each rail is provided with a guard  $d^2$ , which is arranged immediately over and parallel with the tread  $d^3$  of said rail and is connected to said tread by a web  $d^4$ . The two adjacent rails D' D' are preferably made in one piece and supported by sleeve-brackets  $d$ , common to both of them. The space between the end of each rail and the corresponding end of its guard is preferably closed at  $d^5$ , as shown in Figs. 4 and 5, and all the rails at each end of the track are connected by a way  $d^6 d^6$  or trough, Fig. 4<sup>a</sup>, of a suitable size and shape to allow the rods E to be pushed from one track over onto the other track, and each way  $d^6$  is provided with cross-rails  $d^7 d^8$  to support the heads  $e$  of a rod which is being transferred from one track to the other and to furnish a suitable surface on which said heads may slide and also to prevent said heads from carrying with them the oil or grease with which the way  $d^6$  is lubricated.

The "rods" E are of the usual construction, being preferably metallic tubes provided with circular heads or collars  $e$ , which run or slide on the tracks D D' between the treads  $d^3$  and guards  $d^2$  as the rods at opposite end of the two series are pushed forward by the four cams F, of usual construction, a pair of such cams being fast on each driving-shaft  $c^2$ .

The ways  $d^6$  and the rails D D' are provided with slots  $d^9$ , which permit the cams F to pass through said rails, in the usual manner, to push a rod along on a track at each revolution of a pair of cams, the cams striking against the heads of a rod and pushing said rod and all the rods of the same series forward, the guard preventing the rods from rising on the track and causing the rod at the other end of the same series to roll down the inclined part  $d^{10}$  of the rails or track into the way  $d^6$ .

When a rod in my apparatus is pushed forward by the cams, said rod is pushed against the cloth, which then falls in a new fold over the rod, and said rod is prevented from moving backward toward said cams by spring-latches G, which yield under the weight of said rod and rise behind said rod when the

latter passes over the ends of said latches, Figs. 3, 4, 5, and 5<sup>a</sup>.

To prevent the weight of the last-formed fold of cloth K from preventing the formation of a new fold by causing the cloth to slip down over the rod which is being pushed forward, the clamp H, Figs. 4 and 5<sup>a</sup>, is used, the same consisting of a trough-shaped bar, preferably of wood, and pressed downward by a series of springs  $h^2$ , represented as leaf-springs, the free ends of which enter the trough  $h$  of said bar and prevent the bar from being carried along by a rod being forced under the same, said bar being so arranged parallel with the rods that as each rod is pushed forward by the cams against the cloth said cloth is clamped between said bar and said rod and the incoming cloth falls between said rod and the adjacent shaft  $c^2$  to make a new fold. The bar H is provided with slits  $h'$ , extending from the top nearly to the bottom of the same to allow the bar to bend into conformity with any longitudinal curvature there may be in the rod beneath.

The rod in the way  $d^6$  is transferred from the end of one track to the beginning of the other track by means of a push-rod I, which passes through a wall of the chamber into said way, said push-rod being given a reciprocating motion by a cam-lever J, pivoted on a stand  $j$  and having an upper arm  $j'$ , provided with a fork  $j^2$ , which engages a laterally-projecting stud  $i$  on said rod I, the other arm  $j^3$  of said lever J having a stud  $j^4$ , which may have an antifriction-roll  $j^5$  and which enters the cam-groove  $l$  of a cam L, fast on a vertical shaft  $l'$ , which is supported in the stand  $j$  and in a journal-box stand on the side of the chamber A. The cam-shaft  $l'$  is rotated at the same speed with the driving-shaft  $c^2$ , as by means of miter-gears  $l^2 c^5$ , fast on said cam-shaft and driving-shaft, respectively, to reciprocate the push-rod once at every revolution of the cams at the same end of the machine and to transfer the empty rod when said cams are out of their operative position. An antifriction-roll  $i'$  turns on the stud  $i$  of the push-rod (the upper end of which is forked or provided with a yoke  $i^2$  to receive said roll  $i'$ ) and is guided between horizontal rails  $i^3 i^4$ , which project from the sides of the chamber A. It will of course be understood that the rod-transferring devices are alike at each end of the machine.

Any obvious means may be used to connect the two driving-shafts  $c^2$  and to drive them at the same rate of speed, and thereby to dispense with one of the driving-pulleys C.

I claim as my invention—

1. The combination of two equal series of fabric-supporting rods, two tracks, parallel throughout their length, means of causing each series of rods to travel on one of said tracks at right angles to said tracks and at all times parallel with each other, in the opposite direction from that taken by the other of said series, means for moving the rods in



the direction of their length at the end of each series one at a time from one track to the other, means of feeding a fabric to the rods at one end of each series and means of removing said fabric from said rods at the opposite end of the same series.

2. The combination of two tracks, two equal series of fabric-supporting rods, cams, to move each series of rods intermittently in the opposite direction from that taken by the other series, ways, connecting said tracks, push-rods, and means to reciprocate said push-rods longitudinally in said ways.

3. The combination of two tracks, two equal series of fabric-supporting rods, provided with heads or collars, cams, to move each series of rods intermittently in the opposite direction from that taken by the other series, ways, connecting said tracks, and having rails to support said heads, push-rods, and means to reciprocate said push-rods longitudinally in said ways.

4. The combination of two tracks, two series of fabric-supporting rods, two driving-shafts, cams, turning with each of said shafts, to move each series of rods intermittently in the opposite direction from that taken by the other of said series, ways, connecting the ends of said tracks, cam-shafts, driven from said driving-shaft, other cams, fast on said cam-shafts, levers, actuated by said last-named cams, and push-rods, reciprocated by said levers in said ways, to transfer fabric-supporting rods from one to the other of said tracks.

5. The combination with a suitable track, of fabric-supporting rods, adapted to travel

on said track and latches, arranged to prevent the return movement of said rods.

6. The combination with a suitable track and fabric-supporting rods, adapted to travel on said track, of a flexible clamp-bar, springs, supporting said bar and pressing said bar downward, said bar being adapted to yield upward and to press upon a fabric resting upon a rod as said rod travels under said bar.

7. The combination with a suitable track and fabric-supporting rods, adapted to travel on said track, of a flexible clamp-bar and springs, supporting said bar and pressing said bar downward, said bar being trough-shaped to receive the ends of said springs, to prevent said bar from being carried along by a rod forced under said bar but allowing said bar to yield upward and to press upon the fabric resting upon said rod.

8. The combination with a suitable track and fabric-supporting rods, adapted to travel on said track, of a trough-shaped clamp-bar and springs, the ends of which enter the trough of said bar, to prevent said bar from moving with a rod forced under said bar, said bar having slits extending from the top nearly to the bottom of said bar to allow said bar to bend to fit the longitudinal curvature of said rod.

In witness whereof I have signed this specification, in the presence of two attesting witnesses, this 16th day of September, A. D. 1897.

THOMAS WALSH.

Witnesses:

ALBERT M. MOORE,  
KIRKLEY HYDE.