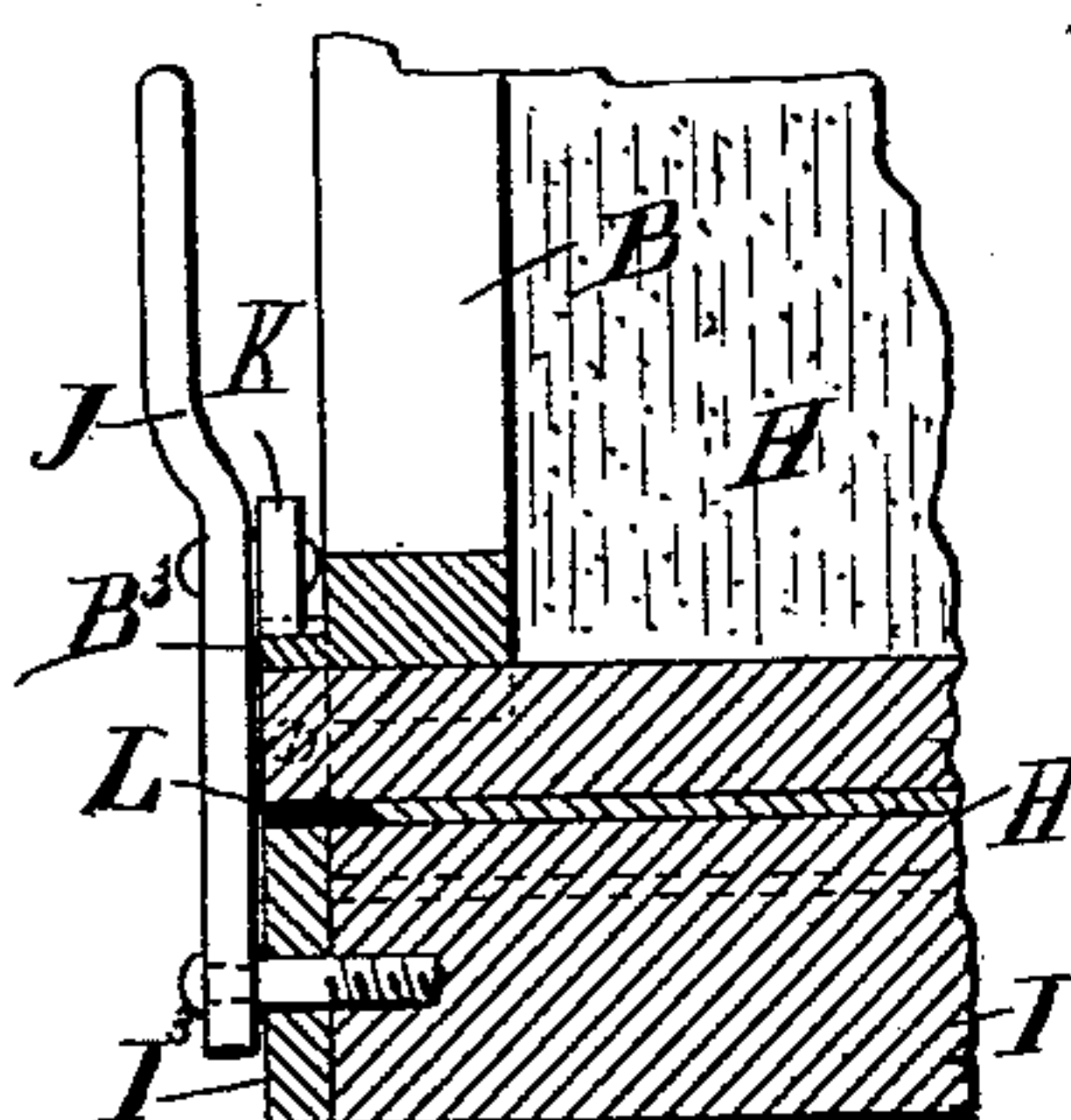
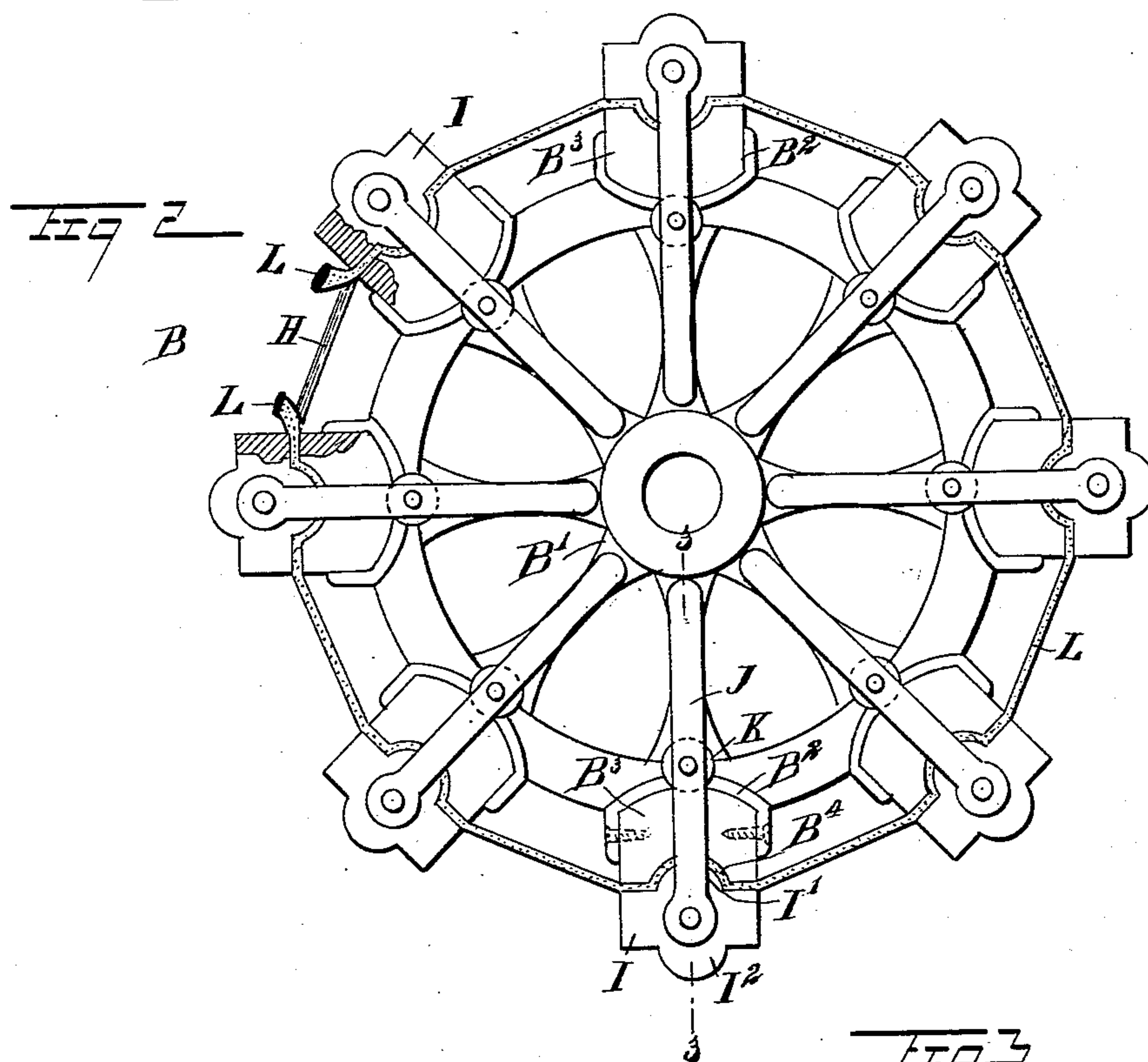
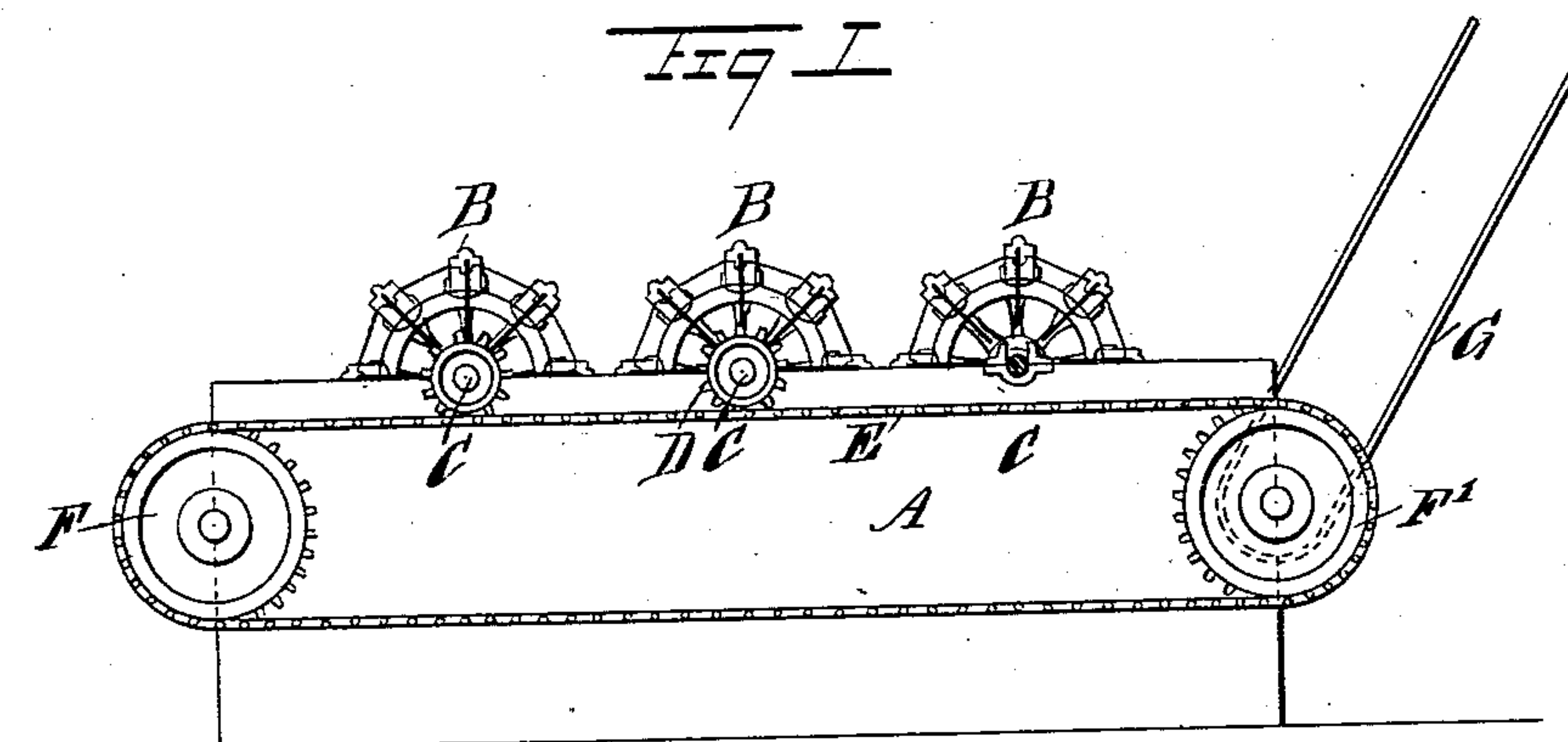


(No Model.)

J. W. GRANT.  
YARN DYEING MACHINE.

No. 563,165.

Patented June 30, 1896.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JONATHAN WILLIAM GRANT, OF FALL RIVER, MASSACHUSETTS.

## YARN-DYEING MACHINE.

SPECIFICATION forming part of Letters Patent No. 563,165, dated June 30, 1896.

Application filed March 28, 1896. Serial No. 585,229. (No model.)

*To all whom it may concern:*

Be it known that I, JONATHAN WILLIAM GRANT, of Fall River, in the county of Bristol and State of Massachusetts, have invented  
5 a new and Improved Yarn-Dyeing Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved machine for dyeing ran-  
10 dom or variegated cotton or other yarn in a very simple and economical manner.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then point-  
15 ed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indi-  
20 cate corresponding parts in all the figures.

Figure 1 is a side elevation of the improve-  
ment. Fig. 2 is an enlarged side elevation of one of the drums with the yarn in place, and Fig. 3 is a transverse section of the same on the line 3 3 of Fig. 2.

25 The improved yarn-dyeing machine is provided with a vat A, adapted to contain the dye, and on the sides of the said vat are journaled a series of drums B, the lower portions of which extend into the dye contained in  
30 the vat, so that the exposed portions of the yarn supported on the said drums are subjected to the dye. The shaft C of each drum B carries at one outer end a gear-wheel D in mesh at its under side with the upper run of  
35 an endless chain E, passing over sprocket-wheels F and F', journaled on the ends of the vat A.

The shaft of the sprocket-wheel F' carries a pulley connected by a belt G with other  
40 machinery, so as to impart a rotary motion to the said pulley F to cause a traveling of the chain E and a revolving of the several drums B. Each of the latter is provided with a number of spiders B', secured on the shaft  
45 C, the spiders being formed at their peripheral surface with bearings B<sup>2</sup>, each adapted to receive a longitudinal bar B<sup>3</sup>, formed at or near its middle with a longitudinal groove  
B<sup>4</sup>, as is plainly shown in Fig. 2.

50 The bars B<sup>3</sup> are adapted to receive and support hanks of yarn H to be dyed, and that portion of the yarn extending over the corre-

sponding bar B<sup>3</sup> is covered up and clamped in place by a clamping-bar I, formed at its inner and outer faces with longitudinally-ex-  
55 tending ribs or projections I' and I<sup>2</sup>, one of which serves to press the yarn into the recess B<sup>4</sup>. Now, in order to move the clamping-bars I firmly in contact with that portion of the yarn passing over the bar B<sup>3</sup>, I provide  
60 each end of the bar with a lever J, carrying a friction-roller K, adapted to be moved over the curved cam-surfaces B<sup>4</sup>, formed on the corresponding bearing B<sup>2</sup>. Thus, when the  
65 yarn H is in place on the several bars B<sup>3</sup>, the clamping-bars I can be moved upon the yarn to clamp the same in place and to cover up a portion of the yarn on each bar B<sup>3</sup>. When  
70 the several bars I are thus put in position, the drum B is placed in position on the vat A, and when the machine is then set in motion and the drum B is revolved then that  
portion of the yarn H extending between ad-  
jacent bars B<sup>3</sup> I comes in contact with the dye in the vat and is thus dyed.  
75

In order to prevent the dye from passing upon the hanks at the ends of the bars B<sup>3</sup> I, I clamp a rubber or other ring L between the bars at the ends of the hanks, so that the dye cannot pass into the space between the two  
80 bars at the ends of the hanks.

It is further understood that the hanks are placed close to one another throughout the length of the bars to prevent any dyestuff from passing to that portion of the yarn clamped  
85 between the two bars.

It will be seen that by the arrangement described the drums B can be readily removed from the vat by lifting the drums upward, as the gear-wheels D then readily disconnect or  
90 move out of engagement with the upper run of the chain E and without disturbing the position of the latter.

It is also understood that the drums, when removed from the vat, are filled with yarn in  
95 the manner above described, and then the filled drums are placed back in position in the vat, and are then revolved for dyeing the yarn, as previously explained.

Having thus fully described my invention,  
I claim as new and desire to secure by Letters  
Patent—  
100

1. A dyeing-machine provided with a revoluble drum comprising a series of longi-



nal bars which support the yarn in hanks, bearings for the said bars provided with a cam-surface, a clamping-bar for each longitudinal bar and a lever connected with each clamping-bar and adapted to engage the cam-surface of the bearing for the corresponding longitudinal bar, substantially as shown and described.

2. A dyeing-machine provided with a revoluble drum comprising a series of longitudinal bars formed with longitudinal grooves, a clamping-bar for each longitudinal bar and formed with a longitudinal rib adapted to engage the corresponding groove, and means for clamping the said clamping-bars in position on the longitudinal bars, substantially as shown and described.

3. A dyeing-machine provided with a drum, comprising a series of longitudinal bars formed with longitudinal grooves, a clamping-bar for each longitudinal bar and formed with a longitudinal rib adapted to engage the cor-

responding groove, and a lever fulcrumed on each clamping-bar and adapted to engage a cam-surface on the bearing, for the longitudinal bar, substantially as shown and described.

4. A dyeing-machine comprising a vat, a series of revoluble drums removably journaled on the top of the said vat and extending into the same, a gear-wheel carried on the shaft of each drum on the outside of the vat, sprocket-wheels journaled on the said vat, and an endless traveling chain passing over the said sprocket-wheels, the upper run of the said chain being in mesh with the under side of the said gear-wheels whereby the said drums can be removed from the vat without disturbing the position of the endless chain, substantially as shown and described.

JONATHAN WILLIAM GRANT.

Witnesses:

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JOHN R. PEE.