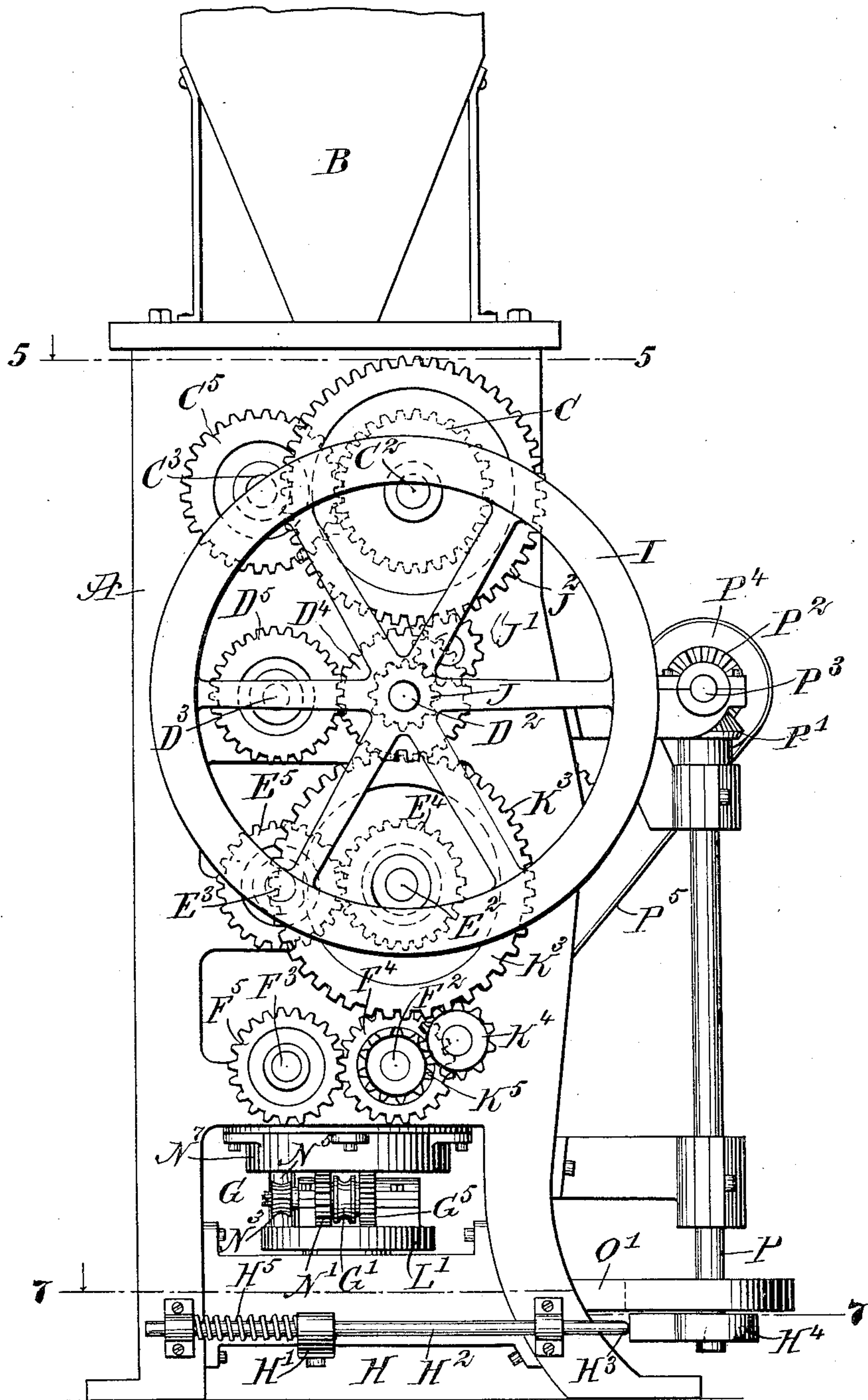


J. A. HOLLOWELL.  
CANDY FORMING MACHINE.  
APPLICATION FILED APR. 8, 1905.

4 SHEETS—SHEET 1.

*Fig. 1.*



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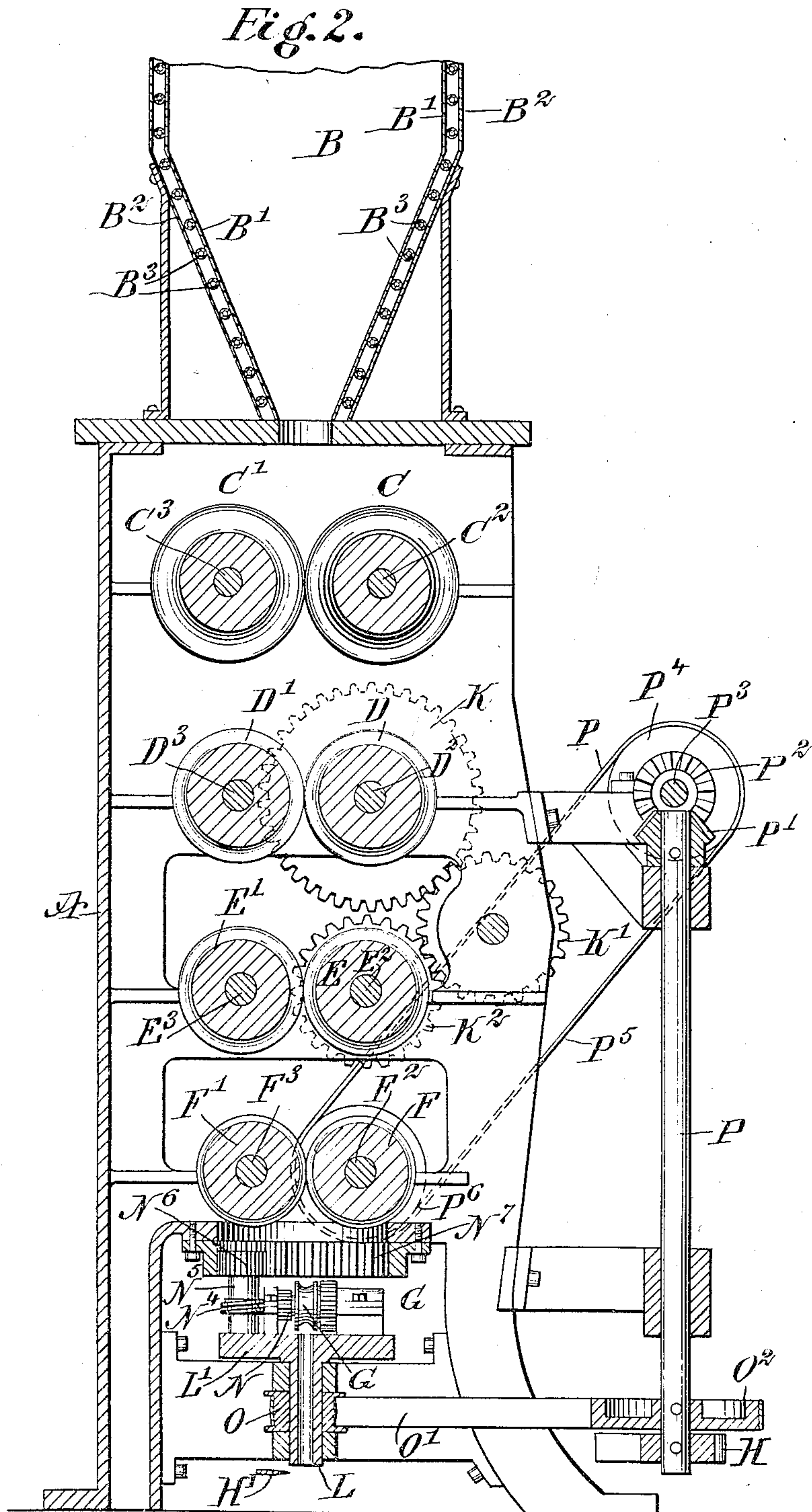
No. 817,563.

PATENTED APR. 10, 1906.

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4 SHEETS- SHEET 2.



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4 SHEETS—SHEET 3.

Fig. 3. N<sup>6</sup>

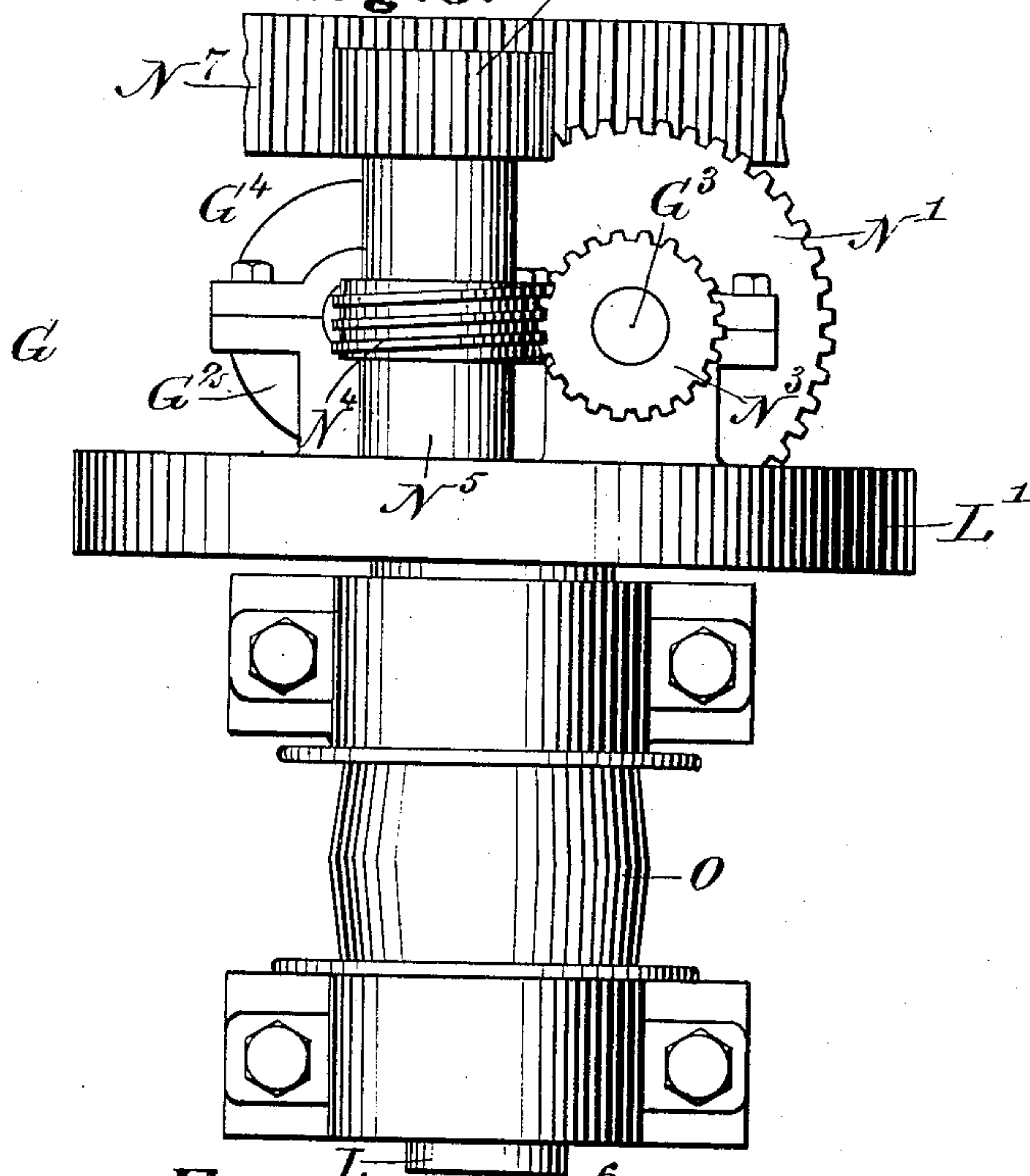
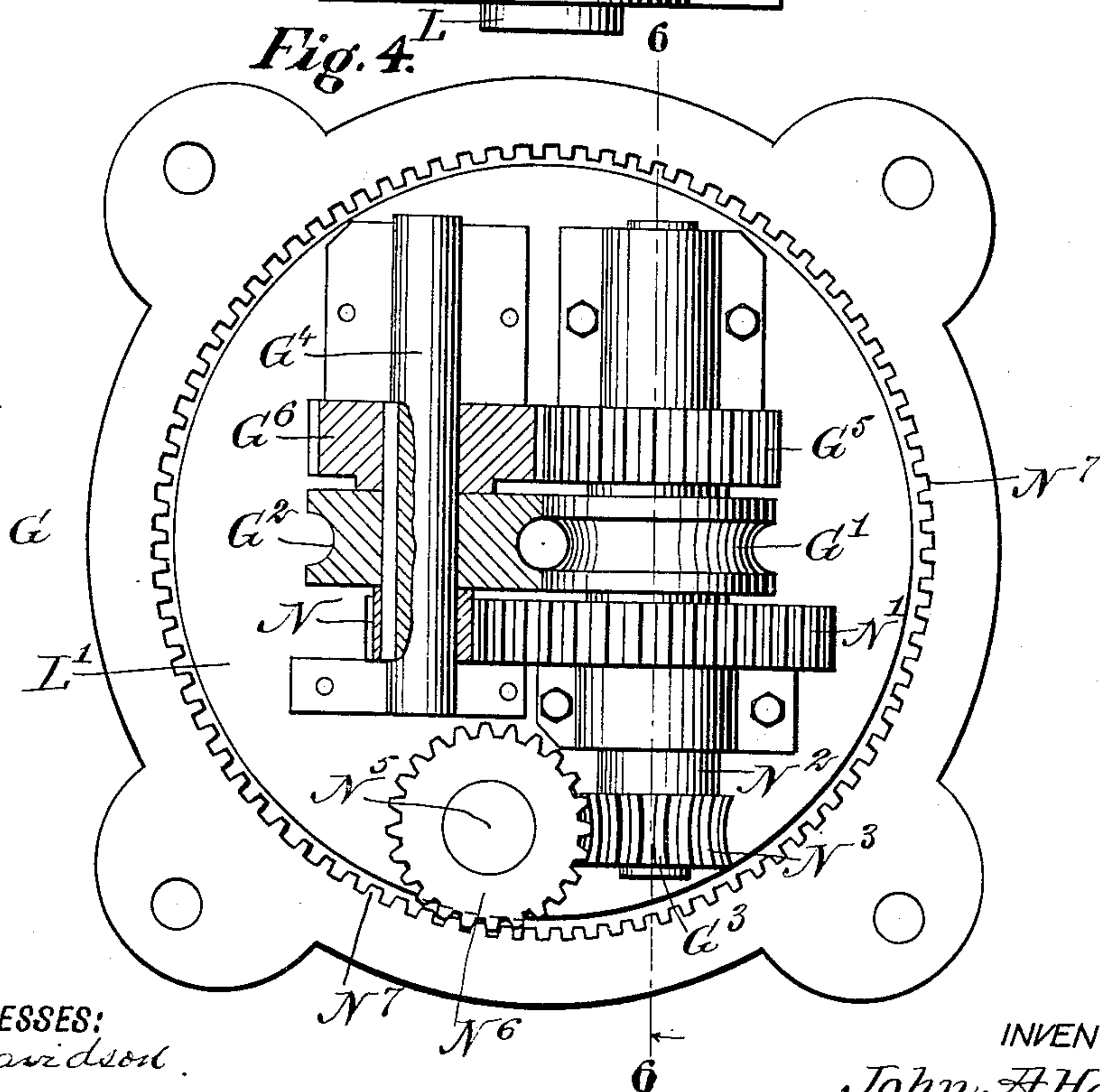


Fig. 4. L



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4 SHEETS—SHEET 4.

Fig. 5.

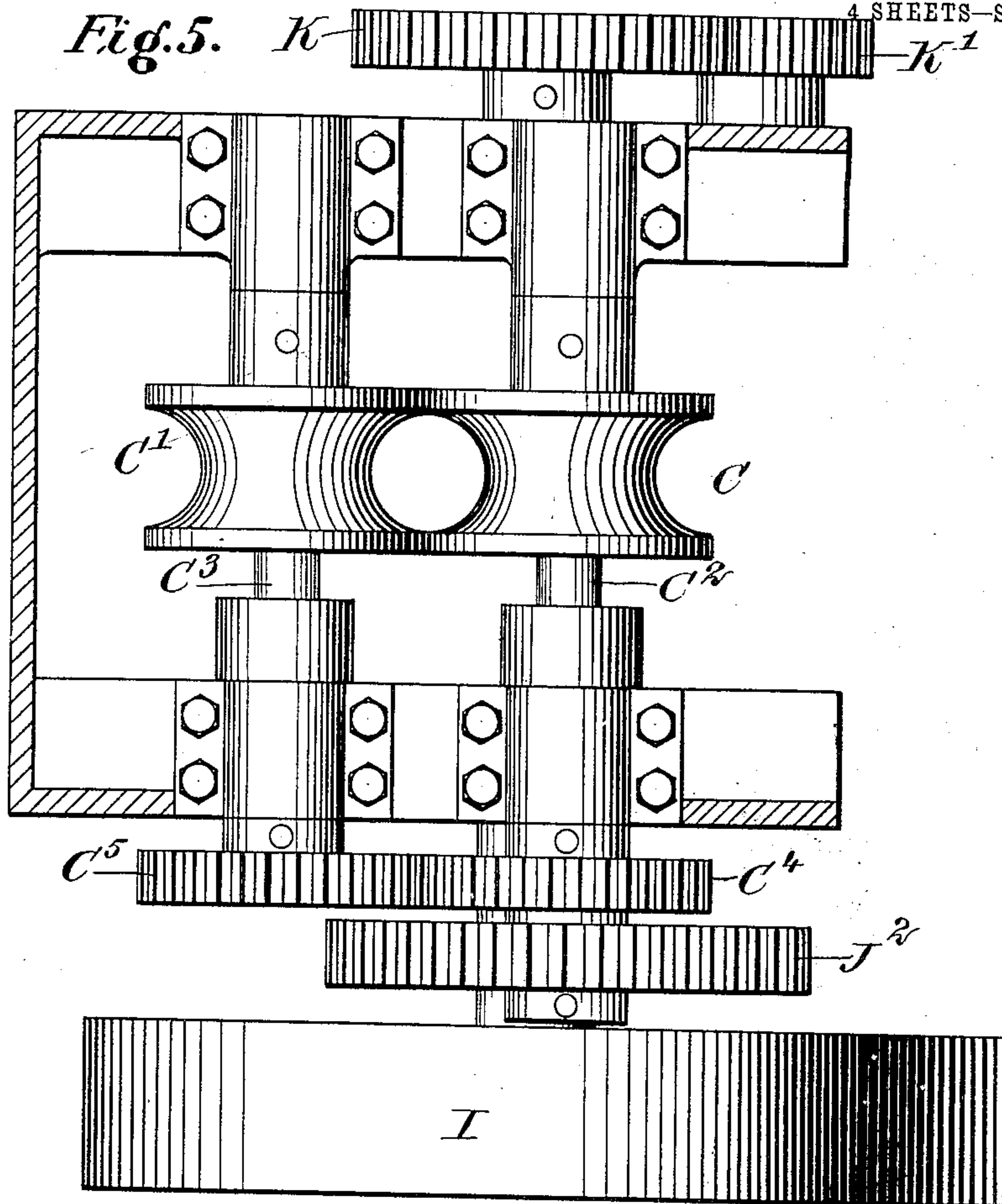


Fig. 6.

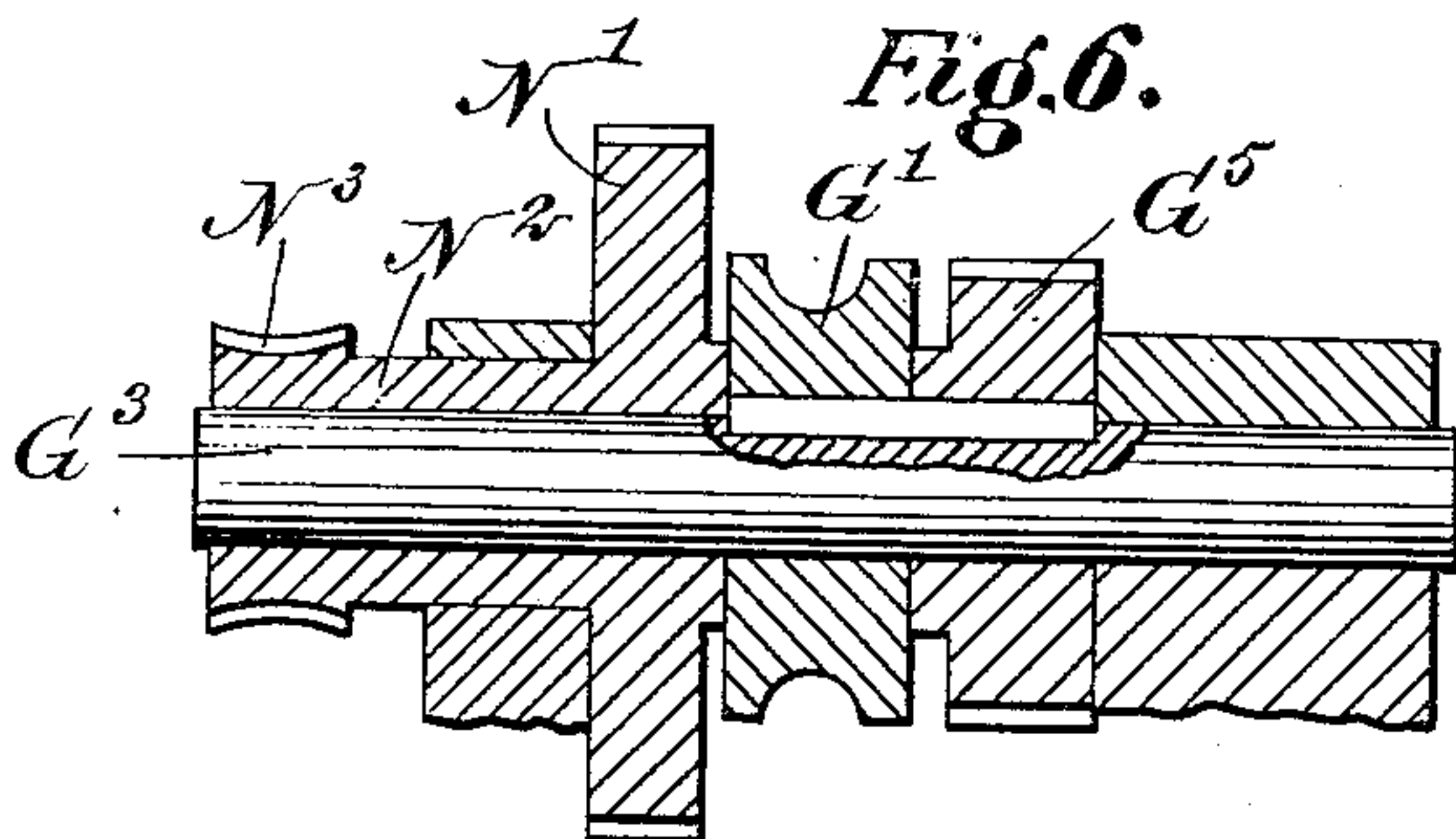
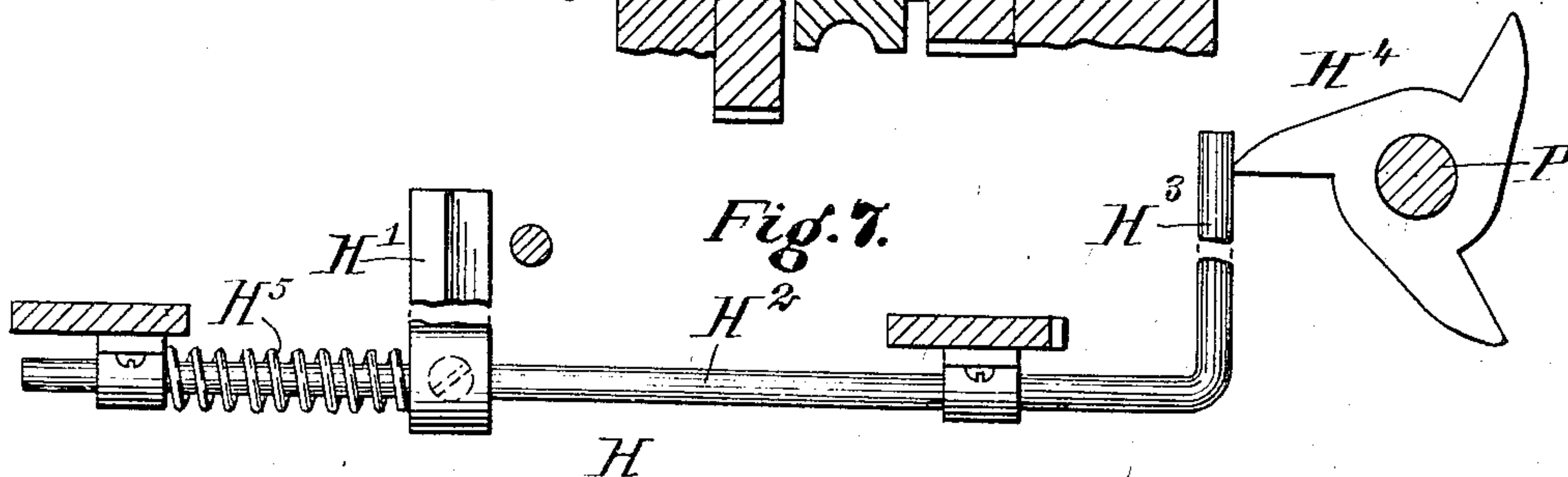


Fig. 7.



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# UNITED STATES PATENT OFFICE.

JOHN AMBROSE HOLLOWELL, OF MEMPHIS, TENNESSEE.

## CANDY-FORMING MACHINE.

No. 817,563.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed April 8, 1905. Serial No. 254,466.

*To all whom it may concern:*

Be it known that I, JOHN AMBROSE HOLLOWELL, a citizen of the United States, and a resident of Memphis, in the county of Shelby and State of Tennessee, have invented a new and Improved Candy-Forming 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 more especially designed for forming the plastic candy material into sticks of any desired shape and size and cutting the stick transversely into pieces of the desired length.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement. Fig. 2 is a sectional side elevation of the same. Fig. 3 is an enlarged side elevation of the twisting device. Fig. 4 is a plan view of the same, parts being in section. Fig. 5 is an enlarged sectional plan view of the improvement on the line 5 5 of Fig. 1. Fig. 6 is a cross-section of one of the twisting-rollers and the driving parts connected therewith; and Fig. 7 is an enlarged sectional plan view of the cutting mechanism, the section being on the line 7 7 of Fig. 1.

On a suitably constructed frame A is mounted a hopper B for containing the plastic candy material and discharging the same downward between a pair of initial drawing-rollers C C', which form the material into stick form and feed it downwardly to another pair of drawing-rollers D D', which reduce the cross-sectional area of the stick and feed the latter downward to another pair of drawing-rollers E E', employed for producing another reduction in the size of the stick and for feeding the reduced stock downward to the final pair of drawing-rollers F F', which reduce the stick to the desired cross-sectional area and deliver the stick to a twisting device G, in which the stick is twisted, the twisted stick on being discharged from the twisting device being cut into the desired lengths by a cutting mechanism H.

The pairs of rollers C C', D D', E E', and

F F' are graduated—that is, decrease in size, but are rotated with an increase in speed in proportion to the decrease in size. The rollers in each pair are in rolling contact with each other and are formed with concaved peripheral portions to provide drawing-openings for the passage of the material, the said openings decreasing gradually in size at the successive pairs of rollers to gradually reduce the stick in cross-sectional area, as will be readily understood by reference to Fig. 2. The pairs of rollers C C', D D', E E', and F F' are driven in unison and at the increased rate of speed mentioned from a pulley I, connected by belt with other machinery, and this pulley I is preferably secured to the shaft D<sup>2</sup> of the roller D, and a suitable gearing is provided for rotating the different sets of rollers from the shaft D<sup>2</sup>, carrying the pulley I. This gearing is arranged as follows:

On the shaft D<sup>2</sup> (see Fig. 1) is secured a pinion J, in mesh with an idler J', journaled on the main frame A and in mesh with a gear-wheel J<sup>2</sup>, secured on a shaft C<sup>2</sup> for the drawing-roller C, so that when the shaft D<sup>2</sup> is rotated the pinion J rotates the idler J', which in turn rotates the gear-wheel J<sup>2</sup> and the shaft C<sup>2</sup> to rotate the roller C, and with it the roller C', as the shaft C<sup>3</sup> of the latter is connected with the shaft C<sup>2</sup> by gear-wheels C<sup>4</sup> and C<sup>5</sup>, as indicated in Figs. 1 and 5. Thus the rollers C and C' are rotated at a lower rate of speed than the rollers D and D', which rotate in unison by having their shafts D<sup>2</sup> and D<sup>3</sup> connected with each other by gear-wheels D<sup>4</sup> and D<sup>5</sup>.

On the shaft D<sup>2</sup> is secured a large gear-wheel K, (see Figs. 2 and 5.) in mesh with a somewhat smaller idler gear-wheel K', meshing with a gear-wheel K<sup>2</sup>, secured on the shaft E<sup>2</sup> of the drawing-roller E, so that when the shaft D<sup>2</sup> is rotated a rotary motion is transmitted, at a higher rate of speed, however, to the shaft E<sup>2</sup> by the gear-wheels K, K', and K<sup>2</sup>. Thus the roller E is rotated at a higher rate of speed than the roller D, and as the rollers E and E' are rotated in unison by having their shafts E<sup>2</sup> and E<sup>3</sup> provided with meshing gear-wheels E<sup>4</sup> and E<sup>5</sup> it is evident that the said rollers E and E' rotate at a higher rate of speed than the rollers D and D'. On the shaft E<sup>2</sup> is also secured a large gear-wheel K<sup>3</sup>, (see Fig. 1.) in mesh with an idler K<sup>4</sup>, journaled on the main frame A and in mesh with a pinion K<sup>5</sup>, secured on the shaft



$F^2$  of the final drawing-roller  $F$ , rotating in unison with the drawing-roller  $F'$  by having their shafts  $F^2$  and  $F^3$  connected with each other by gear-wheels  $F^4$  and  $F^5$ . When the machine is in operation and the shaft  $E^2$  is rotated, as above described, then the gear-wheel  $K^3$  by the idler  $K^4$  and pinion  $K^5$  rotates the shaft  $F^2$  and the drawing-rollers  $F$  and  $F'$  at a higher rate of speed than the preceding drawing-rollers  $E$  and  $E'$ .

By the arrangement described the material is formed into stick form and is gradually reduced in cross-sectional area without danger of retarding the material in its passage through the several pairs of rollers, and hence a large amount of material can be handled in a comparatively short time.

The last pair of drawing-rollers  $F$  and  $F'$  discharges the reduced stick between a pair of twisting-rollers  $G'$  and  $G^2$ , mounted to rotate in unison and to revolve bodily around, so as to twist the stick while feeding the stick downward. For the purpose mentioned the following arrangement is made: The twisting-rollers  $G'$  and  $G^2$  are keyed or otherwise fastened on shafts  $G^3$  and  $G^4$ , (see Figs. 4 and 6,) journaled in suitable bearings carried on the upper face of a disk or flange  $L'$ , held on the upper end of a delivery-tube  $L$ , the aperture of which registers with the opening formed between the contacting twisting-rollers  $G'$  and  $G^2$ . The shafts  $G^3$  and  $G^4$  rotate in unison with each other, and for this purpose the said shafts are connected with each other by meshing gear-wheels  $G^5$  and  $G^6$ . On the shaft  $G^4$  (see Fig. 4) is keyed a pinion  $N$  in mesh with a gear-wheel  $N'$ , having its hub  $N^2$  mounted to rotate loosely on the shaft  $G^3$ , (see Fig. 6,) and on this hub  $N^2$  is secured or formed a worm-wheel  $N^3$ , in mesh with a worm  $N^4$ , having its shaft  $N^5$  disposed vertically and journaled in suitable bearings on the disk or flange  $L'$ . (See Fig. 2.) On the upper end of the shaft  $N^5$  is secured a pinion  $N^6$ , in mesh with an internal annular rack  $N^7$ , fixed on the main frame  $A$ , so that when the delivery-tube  $L$  and its disk  $L'$  are rotated then the pinion  $N^6$  rolls off on the fixed rack  $N^7$ , and thus turns the worm-shaft  $N^5$  and the worm  $N^4$ , which latter by being in mesh with the worm-wheel  $N^3$  rotates the hub  $N^2$  and the gear-wheel  $N'$ , so that the pinion  $N$  is driven, and with it the shaft  $G^4$ , and consequently the twisting-rollers  $G^2$  and  $G'$ , as the shaft  $G^4$  is connected by the gear-wheels  $G^5$  and  $G^6$  with the shaft  $G^3$ , carrying the roller  $G'$ .

In order to rotate the delivery-tube  $L$  and its disk  $L'$ , as above mentioned, and in unison with the last pair of drawing-rollers  $F$  and  $F'$ , the following device is provided: The delivery-tube  $L$  is journaled in suitable bearings on the main frame  $A$  and is provided with a pulley  $O$ , over which passes a belt  $O'$ , also passing over a pulley  $O^2$ , secured on a vertically-disposed shaft  $P$ , journaled in suitable bear-

ings on the main frame  $A$ . On the upper end of the shaft  $P$  is secured a bevel gear-wheel  $P'$ , in mesh with a bevel gear-wheel  $P^2$ , secured on a transverse shaft  $P^3$ , journaled in bearings carried by the main frame  $A$ . On the shaft  $P^3$  is secured a pulley  $P^4$ , connected by a belt  $P^5$  with a pulley  $P^6$ , attached to the shaft  $F^2$  of the drawing-roller  $F$ , so that when the latter is rotated, as previously mentioned, then a rotary motion is transmitted by the pulley  $P^6$ , belt  $P^5$ , and pulley  $P^4$  to the shaft  $P$ , which by the bevel gear-wheels  $P^2$  and  $P'$  rotates the shaft  $P$ , and the latter by the pulleys  $O^2$ ,  $O$ , and belt  $O'$  rotates the delivery-tube  $L$ , and with it the disk or flange  $L'$ .

From the foregoing it will be seen that when the machine is in operation the twisting-rollers  $G'$  and  $G^2$  of the twisting device  $G$  are rotated in unison around their axes and are carried bodily around an axis coinciding with that of the delivery-tube  $L$  and extending centrally through the opening between the twisting-rollers  $G'$  and  $G^2$  and the openings between the other pairs of rollers  $F$  and  $F'$ ,  $E$  and  $E'$ ,  $D$  and  $D'$ , and  $C$  and  $C'$ .

The cutting device  $H$  is provided with a knife  $H'$ , extending horizontally and adapted to be moved past the lower end of the delivery-tube  $L$ , so as to periodically cut the stick of candy as the latter passes through the lower end of the said delivery-tube. The knife  $H'$  is secured on a bar  $H^2$ , (see Figs. 1 and 7,) mounted to slide lengthwise in suitable bearings on the main frame  $A$ , and on one end of the bar  $H^2$  is formed an angular arm  $H^3$ , adapted to be periodically engaged by the arms of a wiper  $H^4$ , secured on the shaft  $P$ . The bar  $H^2$  is pressed on by a spring  $H^5$  to hold the arm  $H^3$  in peripheral contact with the wiper  $H^4$ , and when the arms of the said wiper impart a sliding motion from the right to the left to the bar  $H^2$  then the knife  $H'$  is moved in a like direction to the left of the lower end of the delivery-tube  $L$ , and at the same time the spring  $H^5$  is pressed, and when the end of an arm passes the end of the angular arm  $H^3$  then the compressed spring  $H^5$  causes a quick sliding movement of the bar  $H^2$  and the knife  $H'$  from the left to the right, so that the knife  $H'$  cuts the stick of candy.

In order to keep the candy material placed in batches in the hopper  $B$  from becoming hard, it is necessary to heat the hopper and the material contained therein, and for this purpose the hopper  $B$  is preferably formed of an inner wall  $B'$  and an outer wall  $B^2$ , (see Fig. 2,) the walls being spaced apart, and between the spaced walls is placed a heating-coil  $B^3$ , connected with a boiler or other suitable source of heating medium, so that the latter on flowing through the coil  $B^3$  heats the latter and the hopper  $B$  and the material contained therein to keep the latter in the proper plastic state for the material to flow through



the hopper to the pair of initial drawing-rollers C C'.

When the machine is in operation, the pair of initial drawing-rollers C C' presses the material into stick form and delivers the same in a downward direction to the next pair of drawing-rollers D D', which reduce the stick in diameter; but as the drawing-rollers D and D' rotate at a higher rate of speed than the rollers C and C' it is evident that a proper passage of the candy takes place between the rollers C C' and D D'. The latter pair of rollers D D' feeds the stick of candy to the next pair of drawing-rollers E E', in which the stick is again reduced and fed forward at a higher rate of speed to be finally reduced by the rollers F F', which in turn deliver the reduced stick of candy to the rollers G' G<sup>2</sup>, rotating in unison and turning bodily around, so as to twist the stick of candy. The twisted stick of candy is fed by the rollers G' G<sup>2</sup> into the delivery-tube L, and the twisted stick of candy is cut at the lower end of the said delivery-tube L by the knife H' to form pieces of candy of the desired length.

The machine described is very simple in construction and permits of forming a large quantity of candy material into twisted pieces of the desired length in a comparatively short time.

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

1. A candy-machine comprising a plurality of graduated pairs of drawing-rollers arranged in vertical alinement with each other, and each pair forming a feed for the following pair, means for rotating the rollers at a speed increasing in proportion to the reduction in size of the pairs, a pair of twisting-rollers arranged below the last pair of drawing-rollers, a delivery-tube adjacent to the twisting-rollers and a cutter below the delivery-tube, comprising a wiper, a slidable bar having an angular arm for engagement by the wiper, a spring connected to the slidable bar, and a knife-blade secured to the bar.

2. A candy-machine comprising a plurality of graduated pairs of drawing-rollers arranged in vertical alinement with each other, and each pair forming a feed for the following pair, means for rotating the rollers at a speed increasing in proportion to the reduction of the size of the pairs, a pair of twisting-rollers arranged below the last pair of drawing-rollers, means for rotating the twisting-rollers, means for revolving the rollers on a vertical axis, a delivery-tube, a cutter below the tube, a spring for moving the cutter in one direction, and means for positively moving the cutter in the opposite direction.

3. A candy-machine comprising a plurality of graduated pairs of drawing-rollers arranged in vertical alinement with each other, and each pair forming a feed for the following

pair, means for rotating the rollers at a speed increasing in proportion to the reduction of the size of the pairs, a pair of twisting-rollers arranged below the last pair of drawing-rollers, a cutter below the twisting-rollers, elastic means for moving the cutter in one direction, and positive means for moving the cutter in the opposite direction.

4. A candy-forming machine comprising a plurality of drawing-rollers arranged in vertical alinement with each other and each pair forming a feed for the following pair, means for rotating the rollers at a speed increasing in proportion to the reduction in size of the pairs, a twisting device arranged below the last pair of drawing-rollers, and comprising a revoluble delivery-tube provided with a disk, a pair of twisting-rollers geared together, a pinion secured on the shaft of one of the rollers, a gear-wheel in mesh with the said pinion and loose on the shaft of the other roller, a worm-wheel on the said gear-wheel, a worm in mesh with the said worm-wheel, means for revolving the delivery-tube, and means whereby the revolution of the tube may rotate the worm.

5. A candy-forming machine comprising a plurality of drawing-rollers arranged in vertical alinement with each other, and a twisting device comprising a revoluble delivery-tube provided with a disk, a pair of twisting-rollers geared together, a pinion secured on the shaft of one of the rollers, a gear-wheel in mesh with the said pinion and loose on the shaft of the other roller, a worm-wheel on the said gear-wheel, a worm in mesh with the said worm-wheel, means for revolving the delivery-tube, and means whereby the revolution of the said tube may rotate the worm.

6. In a candy-forming machine, a cutter comprising an endwise-slidable bar having an angular arm, a wiper for engaging the angular arm to move the bar in one direction, a spring for moving the bar in the opposite direction, and a knife-blade secured to the bar.

7. A candy-forming machine provided with a pair of final drawing-rollers, a twisting device provided with a pair of twisting-rollers receiving the stick of candy from the said pair of final drawing-rollers, means for rotating the said twisting-rollers and for imparting a bodily-turning motion to the same, and a delivery-tube rotating with the pair of twisting-rollers and receiving the twisted stick of candy from the same.

8. A candy-forming machine provided with a pair of final drawing-rollers, a twisting device provided with a pair of twisting-rollers receiving the stick of candy from the said pair of final drawing-rollers, means for rotating the said twisting-rollers and for imparting a bodily-turning motion to the same, a delivery-tube rotating with the pair of twisting-rollers and receiving the twisted stick of candy from the same, and a cutting device operating



in conjunction with the delivery end of the said tube, to cut the twisted stick of candy into desired lengths.

9. A candy - forming machine provided with a twisting device comprising a revoluble delivery-tube provided with a disk, a pair of twisting-rollers geared together, and a gearing, controlled by the rotation of the said disk, for rotating one of the said twisting-  
10 rollers.

10. A candy - forming machine provided with a twisting device comprising a revoluble delivery-tube provided with a disk, a pair of twisting-rollers geared together, a pinion se-

cured on the shaft of one of the rollers, a gear- 15  
wheel in mesh with the said pinion and loose on the shaft of the other roller, a worm-wheel on the said gear-wheel, a worm in mesh with the said worm - wheel, a fixed annular rack, and a pinion in mesh with the rack and se- 20  
cured on the shaft of the said worm.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

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