

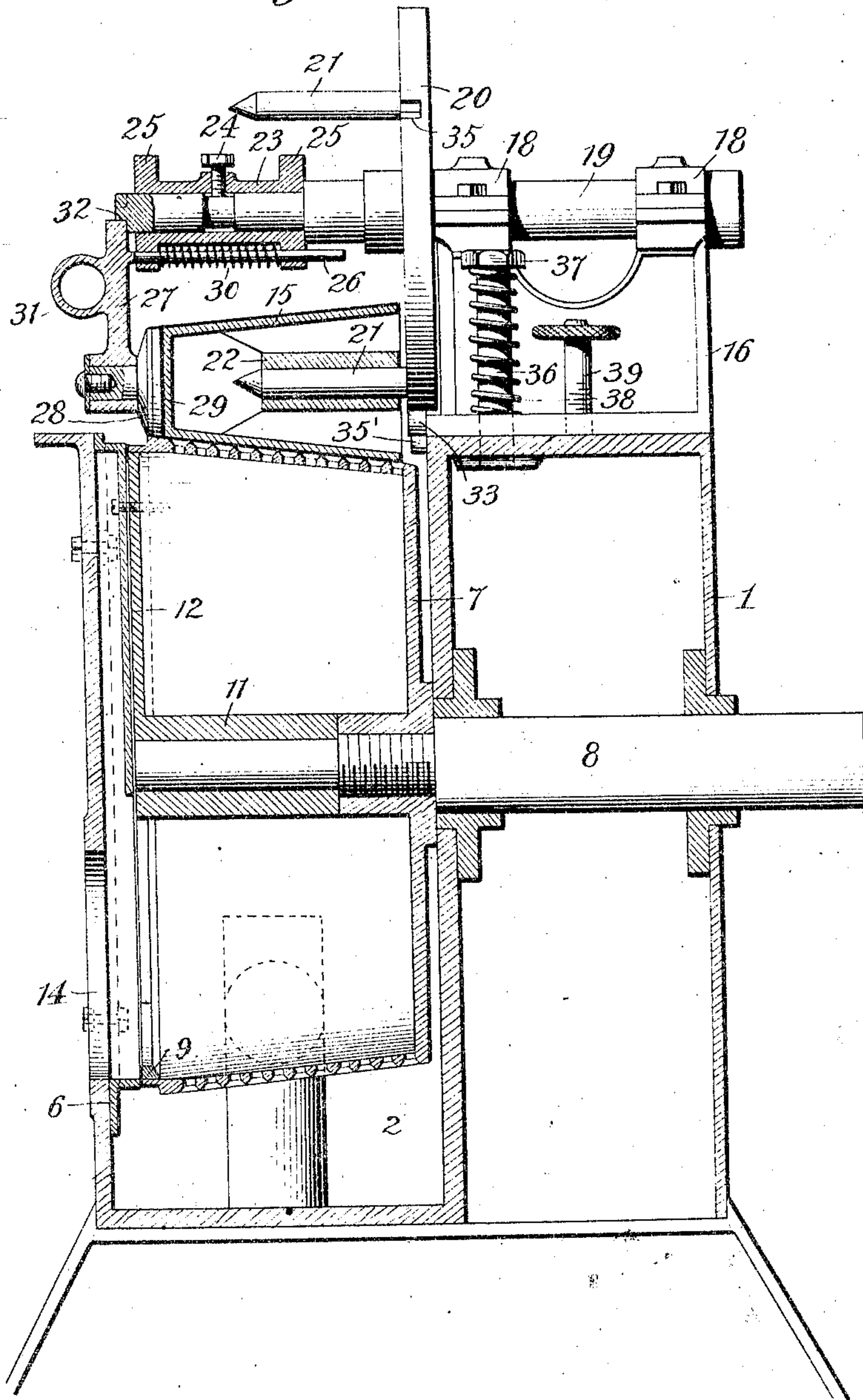
F. E. KEYES.
MACHINE FOR MAKING ARTICLES FROM PULP.
APPLICATION FILED AUG. 1, 1910.

986,996.

Patented Mar. 14, 1911

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

James Hutchinson
G. J. Downing

Inventor:

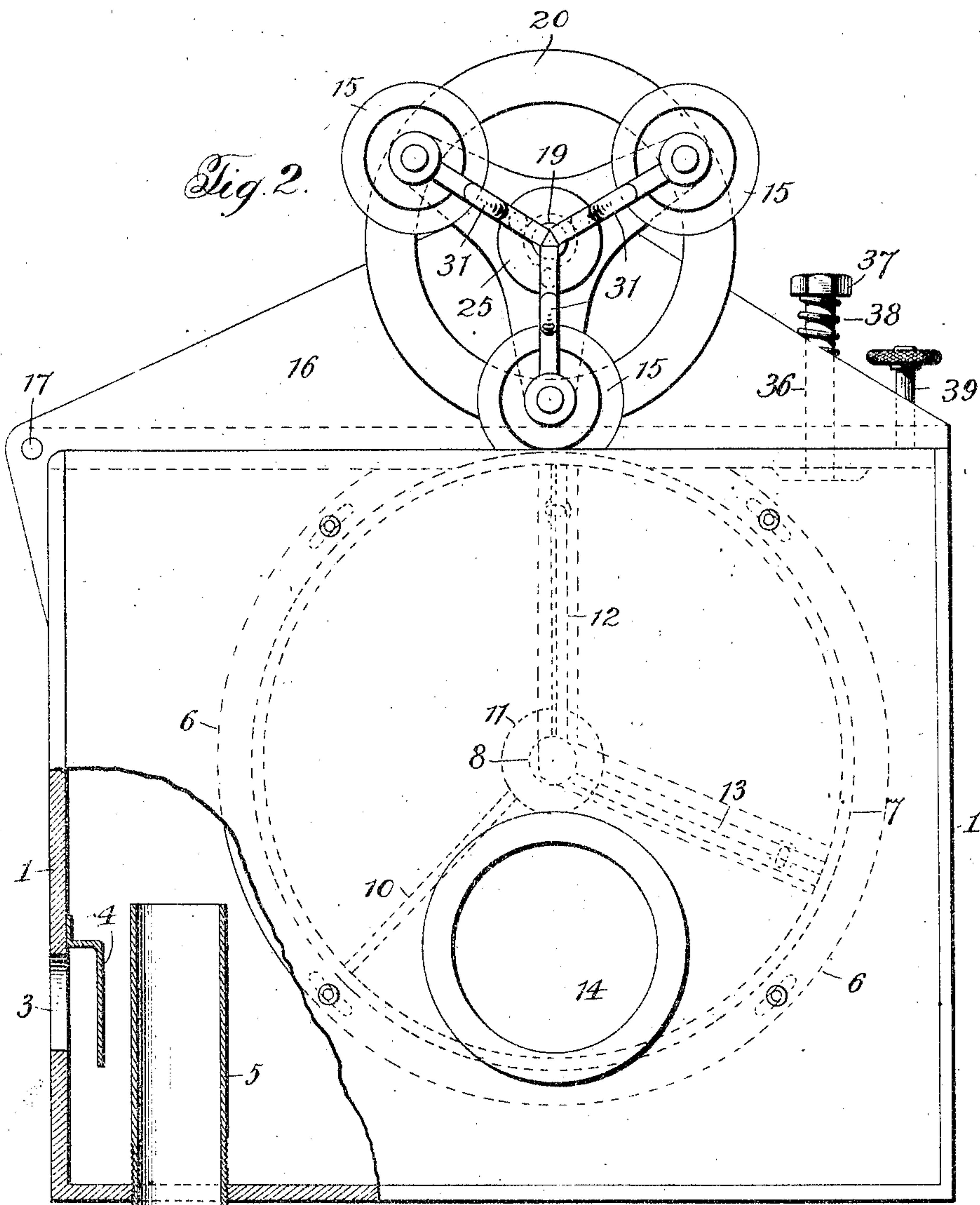
F. E. Keyes
By *L. A. Seymour* Attorney:

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Jas. E. Hutchinson:
G. J. Downing.

Inventor:

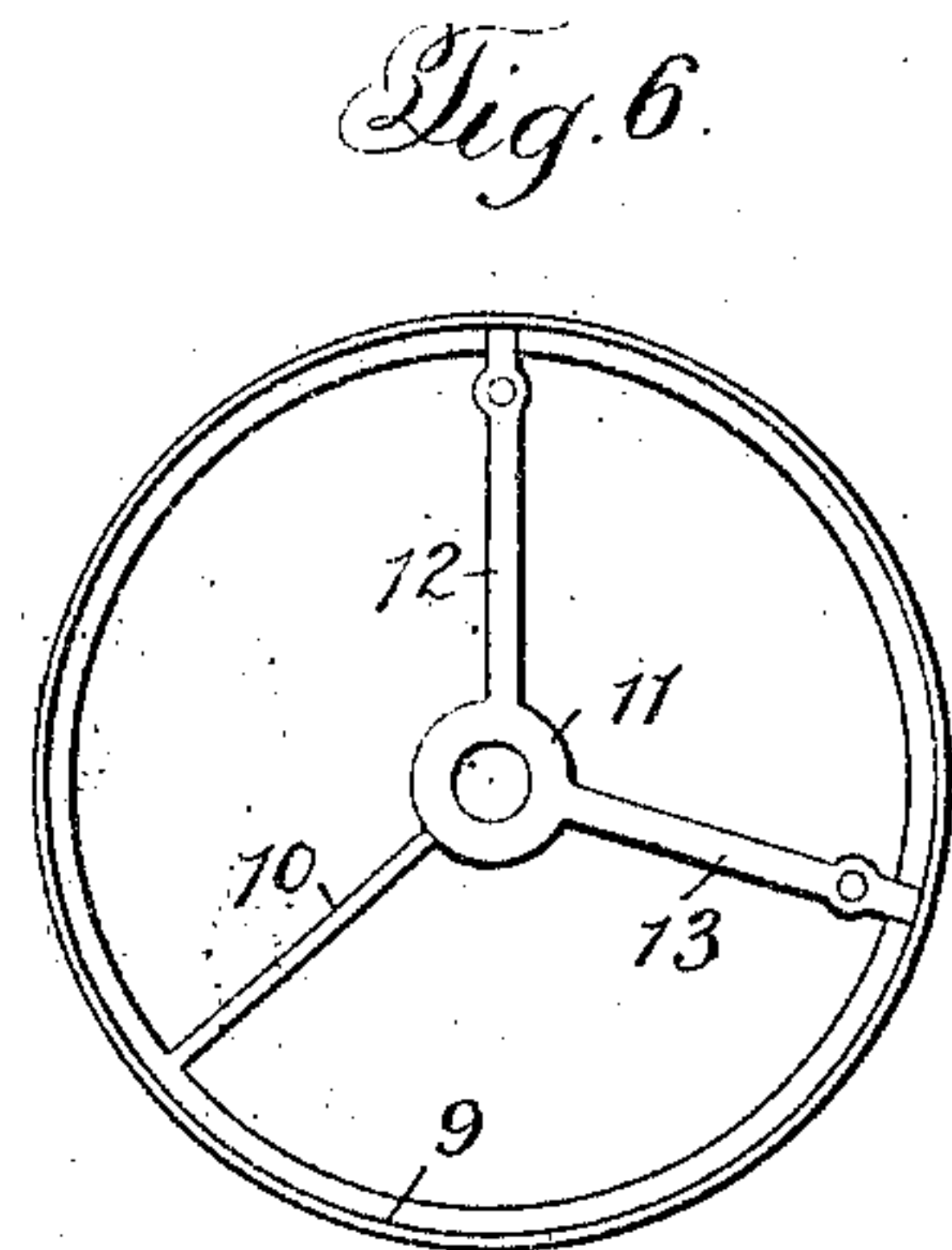
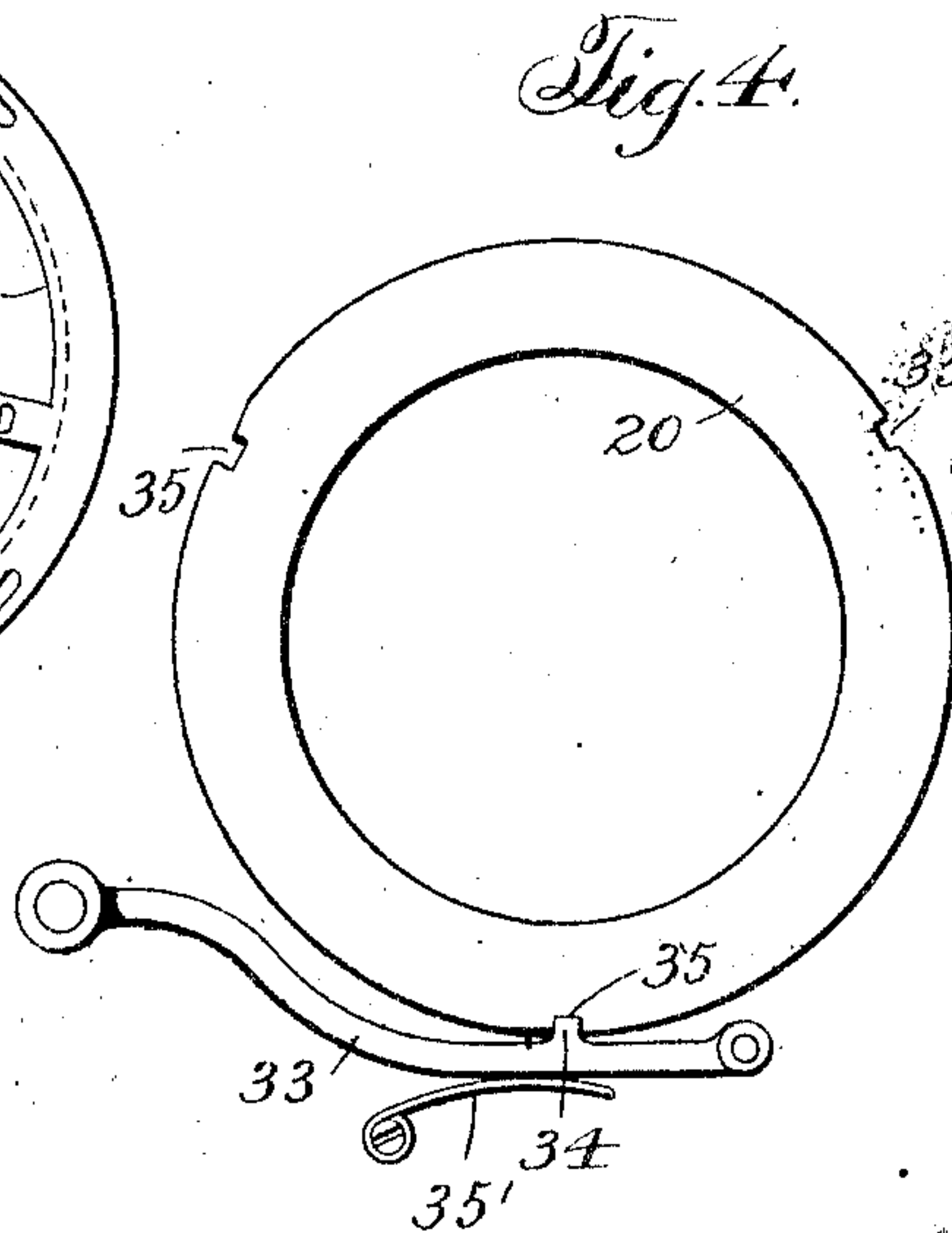
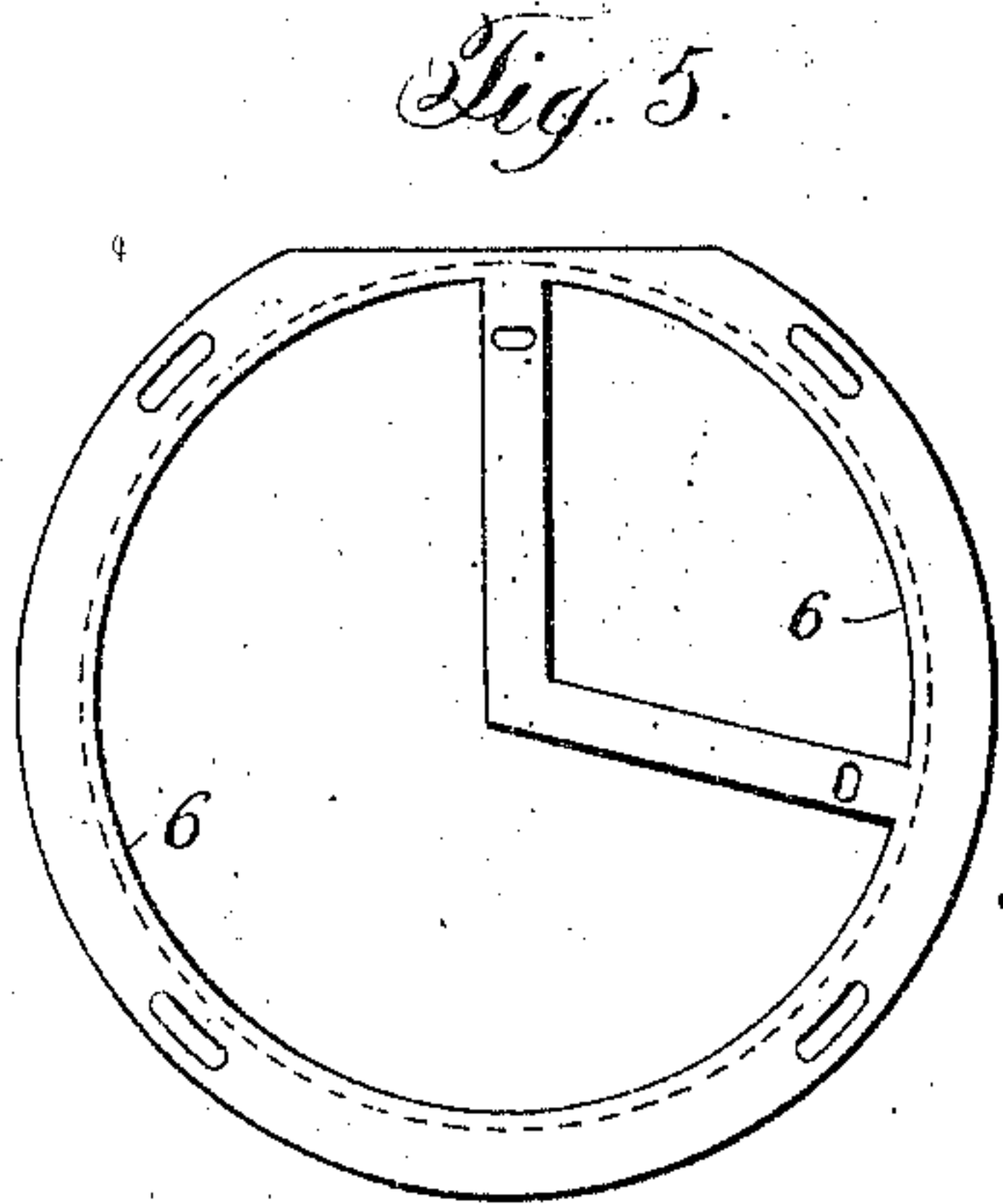
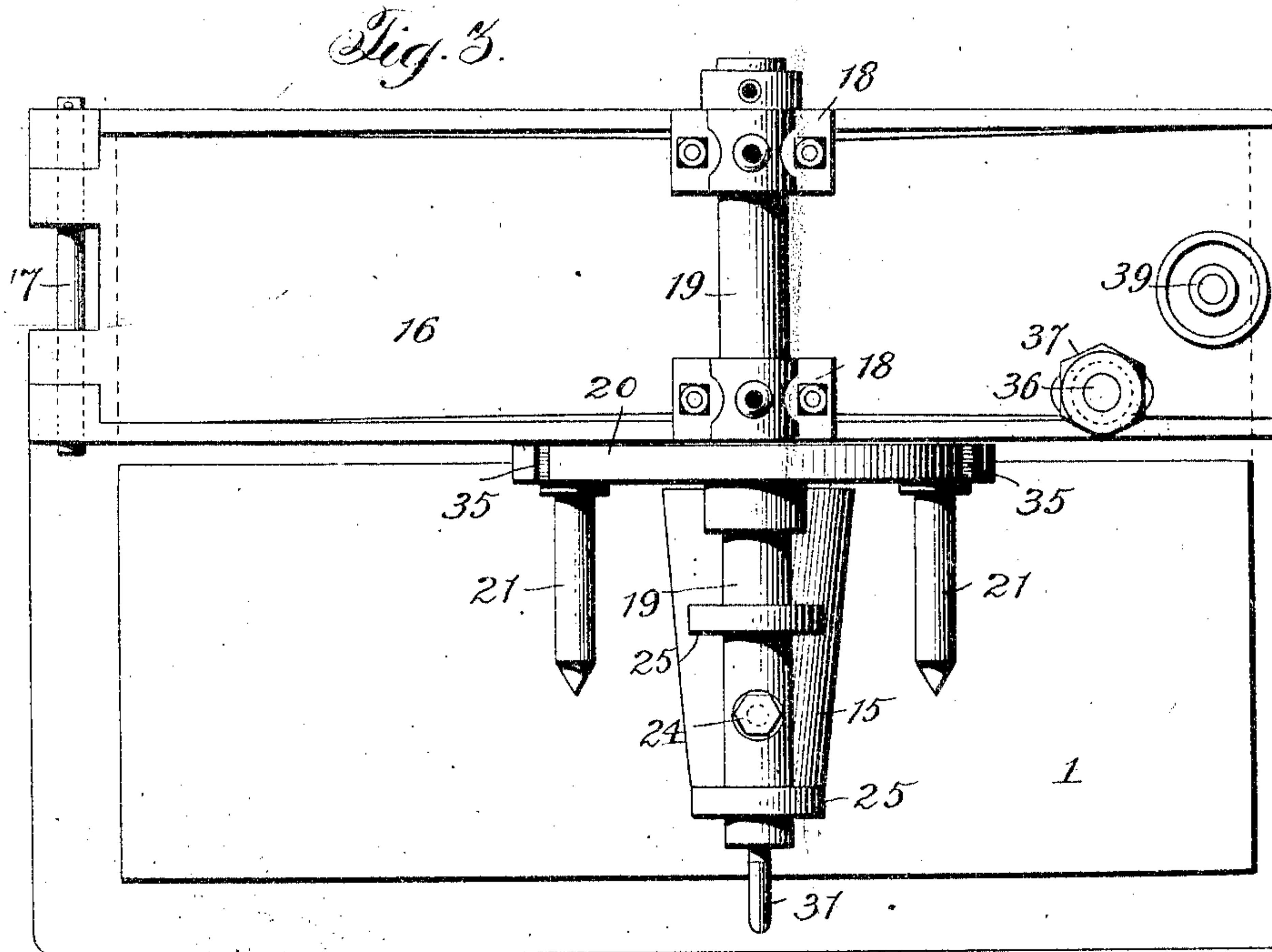
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By H. A. Seymour Attorney:

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3 SHEETS—SHEET 3.



Witnesses:

Jas. Hutchinson:
L. J. Downing.

Inventor:

F. E. Keyes
By H. A. Seymour Attorney.

UNITED STATES PATENT OFFICE.

FRANK E. KEYES, OF NEW YORK, N. Y.

MACHINE FOR MAKING ARTICLES FROM PULP.

986,996.

Specification of Letters Patent. Patented Mar. 14, 1911.

Application filed August 1, 1910. Serial No. 574,986.

To all whom it may concern:

Be it known that I, FRANK E. KEYES, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Machines for Making Articles from Pulp; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in machines for making articles, such as cups and the like, from paper pulp,—the object of the invention being to so construct the machine that the pulp will be supplied evenly to and wound upon a former in such manner that the bottom of the article can be applied during the forming of the body portion of said article, and to construct the machine in such manner as to facilitate the application of the formers and their removal with the finished article.

With this object in view the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional view, partly in elevation, of a machine embodying my improvements. Fig. 2 is a side view partly in section. Fig. 3 is a plan view, Fig. 4 is a detail view showing the wheel 20 and locking means. Fig. 5 is a view of the deckle ring 6, and Fig. 6 is a view of the fixed ring 9.

1 represents the main frame of the machine, to one side of which a pulp tank 2 is located and the latter is provided in one wall with a pulp inlet 3 guarded by a shield 4. An overflow pipe 5 projects upwardly into the pulp chamber 2 and regulates the level of the pulp in the latter.

A deckle ring 6 is located on one wall of the pulp chamber and from this deckle ring to the opposite wall of the pulp chamber, a molding cylinder or drum 7 extends,—said molding drum being mounted upon a shaft 8 having suitable bearings in the main frame 1 and this shaft may be provided with any suitable means for rotating it. The molding drum is made at one end with a closed

head and the peripheral portion of said drum is reticulated, as clearly shown in Fig. 1. The open end of the molding drum 7 is rotatable on a stationary ring 9 supported by suitable spokes 10 projecting from a hub 11. Two partitions 12 and 13 are located within the molding drum and made rigid with the fixed ring 9. The partition 12 is vertically disposed while the partition 13 is disposed in an inclined position so that its lower end will terminate near the level of the pulp in the pulp chamber 2. The outer side wall of the pulp chamber is provided near its lower end with an opening 14 with which suitable connection is made for the purpose of creating suction within the molding drum 7 and below the partition 13,—said opening 14 also serving for the passage of water. It will be observed that that portion of the space within the molding drum between the vertical partition 12 and the upper face of the diagonal partition 13 will be isolated from the action of the suction created within the remaining portion of said drum, so that as the drum rotates and passes through the pulp in the chamber 2, the pulp will be caused to adhere to the reticulated peripheral wall of the drum from the time that said wall passes the partition 13 and enters the pulp until the upper end of the partition 12 is passed. As there will be no suction in that portion of the molding drum to the right of the partition 12 in Fig. 2, the sheet of pulp will be released from said molding drum at the upper end of said partition 12 and will be transferred to a former 15 on which the body of the cup or other article is constructed.

I provide means for supporting a series of formers 15 and the construction and operation of these means will now be explained.

A triangular frame is located upon the main frame 1 and hinged at one end thereto, as shown at 17. At the apex of this triangular frame, bearings 18 are provided for the accommodation of a shaft 19 which is of sufficient length to extend over the pulp chamber and the molding drum therein. A wheel 20 is fixed to the shaft 19 and provided with a series of pins 21 to receive sleeves 22 located within and rigid with the

formers 15,—the latter being thus revolubly mounted on said pins. A sleeve 23 is located on the shaft 19, near the free end of the latter, and secured thereto by means of a set screw 24,—said sleeve being provided at each of its ends with a flange 25. The flanges 25 are perforated for the passage of rods 26 which project from arms 27. Each arm 27 has connected therewith a head or disk 28 which serves to hold in place against the end of the adjacent former 15, a disk 29 of pulp board which forms the bottom of the cup constructed on the former. The disk 29 is held in position and the former 15 is prevented from longitudinal movement on the pin 21 by means of a spring 30,—said spring being secured at one end to rod 26 and bearing at its other end against flange 25 at the outer end of sleeve 23. Each arm 27 is provided with a finger piece 31 for moving the same when a former is to be applied to or removed from the machine and each arm 27 is normally locked in position by the engagement of one end thereof with a notch 32 in the free end of the shaft 19. During the formation of a cup, the wheel 20 and the shaft 19 to which it is secured will be locked against rotary movement by means of a latch lever 33 having a tooth 34 to engage one of a series of notches 35 in the periphery of the wheel 20 and such engagement is normally maintained by means of a suitable spring 35.

A rod 36 is secured to the top of the main frame 1 and passes loosely through the hinged frame 16 near the free end of the latter. This rod projects an appreciable distance above the upper face of the hinged frame 16 and is provided at its upper end with a nut 37. Between this nut and the upper face of the hinged frame 16, a spring 38 is located for the purpose of maintaining proper yielding pressure of a former against the molding drum. The pressure of the former against the molding drum or relatively thereto, can be regulated by means of a screw 39 passing through the hinged frame 16 adjacent to the free end of the latter and engaging the top of the main frame 1, as clearly shown in Fig. 2.

From the construction and arrangement of parts above described, it will be seen that as the sheet of pulp carried up by the reticulated molding cylinder, reaches the former disposed immediately over the same and as the sheet of pulp cannot be held by suction against the drum beyond the upper end of the partition 12, said sheet of pulp will be transferred to the former and as the latter is rotated, the pulp will be wound upon it to form the body of the cup or other article to be made. As the wet pulp is thus wound

and pressed on the former it will so engage and be pressed against the periphery of the pulp disk held by the former, that a permanent joint will be made between the wet pulp and the pulp disk and thus the bottom of the article is secured in place during the formation of the body portion of the latter. When a cup or other article shall have been completed, the wheel 20 can be released and turned for moving the completed article away from the molding drum and moving another former in position over the molding drum. The completed article can then be easily removed from the machine and another former placed in position.

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is,—

1. In a machine of the character described, the combination with a pulp chamber and a reticulated drum therein, of a wheel mounted above the pulp chamber and provided with a series of pins, formers revolubly mounted upon said pins, clamping heads having plane faces to clamp fiber disks to said formers, and means for normally preventing rotation of said wheel.

2. In a machine of the character described, the combination with a main frame, a pulp chamber and a molding drum located in the latter, of a hinged frame on the main frame, a shaft mounted on said hinged frame, a wheel carried by said shaft and provided with a series of pins for the reception of formers, spring actuated means carried by the shaft for holding the formers in place, and means for adjusting the hinged frame vertically.

3. In a machine of the character described, the combination with a main frame, a pulp chamber and a molding drum in the latter, of a frame mounted on the main frame and hinged thereto at one end, a spring connection between the other end of the hinged frame and the main frame, a shaft mounted on the hinged frame, a carrier for formers secured to said shaft and adapted to support the formers one at a time over the molding drum, and means for adjusting the free end of the hinged frame to adjust the position of the former relatively to the molding drum.

4. In a machine of the character described, the combination with a main frame, a pulp chamber, and a molding drum in the latter, of a shaft mounted above the main frame and projecting over the molding drum, a wheel secured to said shaft and provided with pins for the reception of article formers, a sleeve secured to said shaft and provided with flanges, arms provided with heads to clamp fiber disks to the formers,

rods projecting from said arms and passing through the flanges of said sleeve, springs on said rods and secured at one end thereto, and a latch device to engage said wheel and
5 retain the same against movement during the formation of an article on one of said formers.

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

FRANK E. KEYES.

Witnesses:

WM. J. MAHON,
W. F. KEYES.