

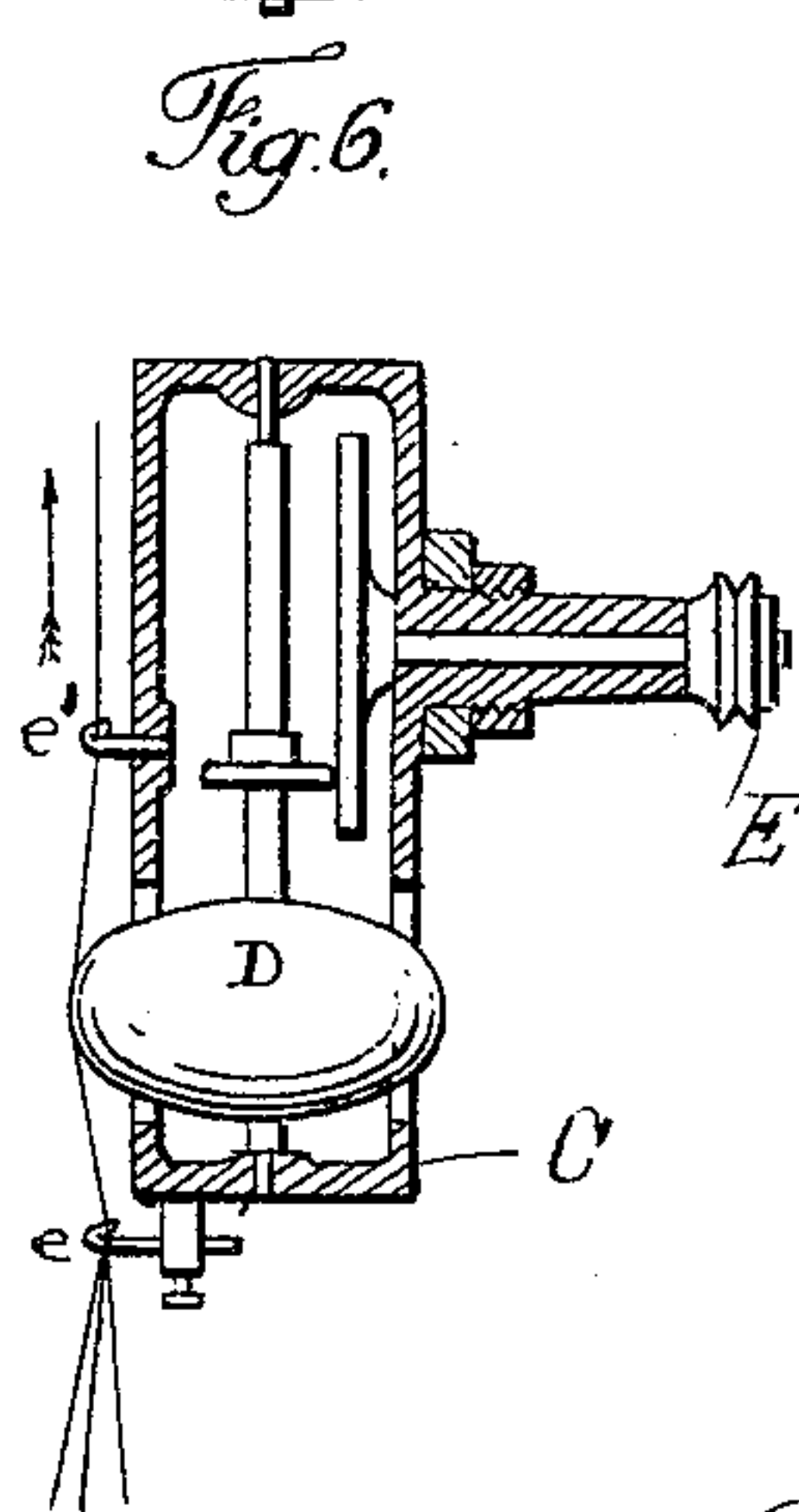
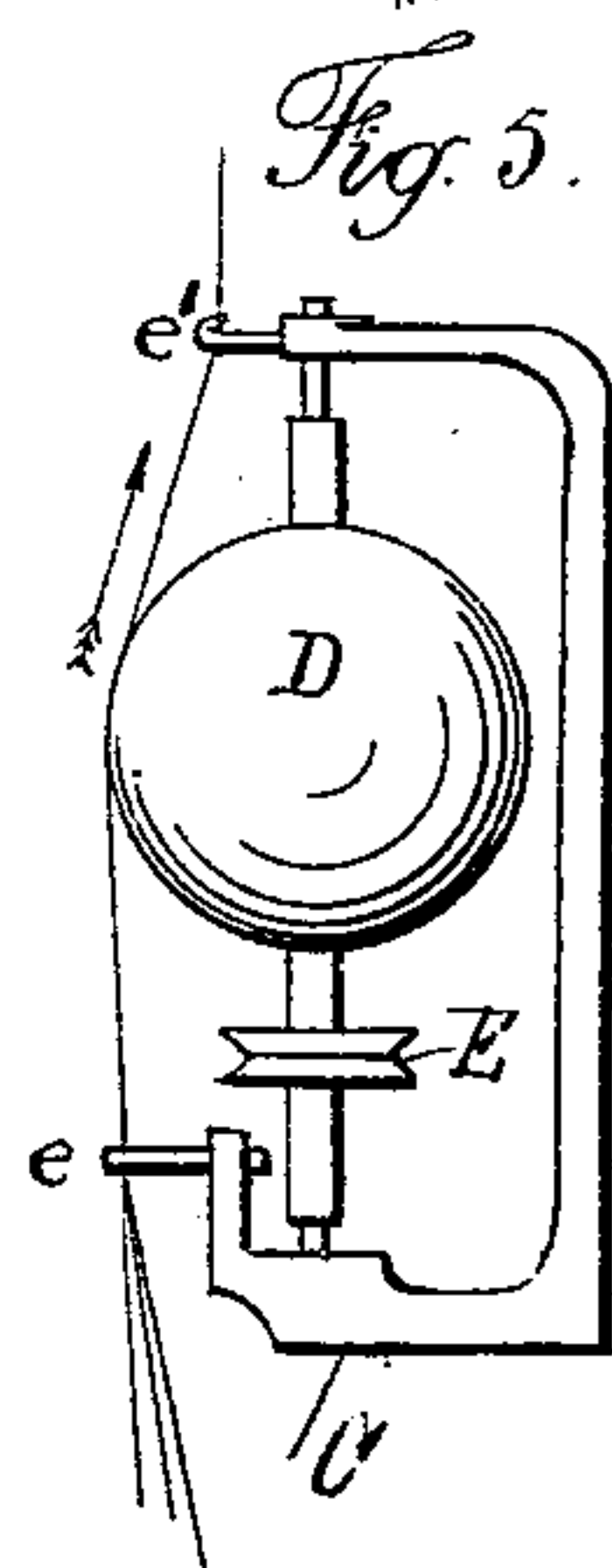
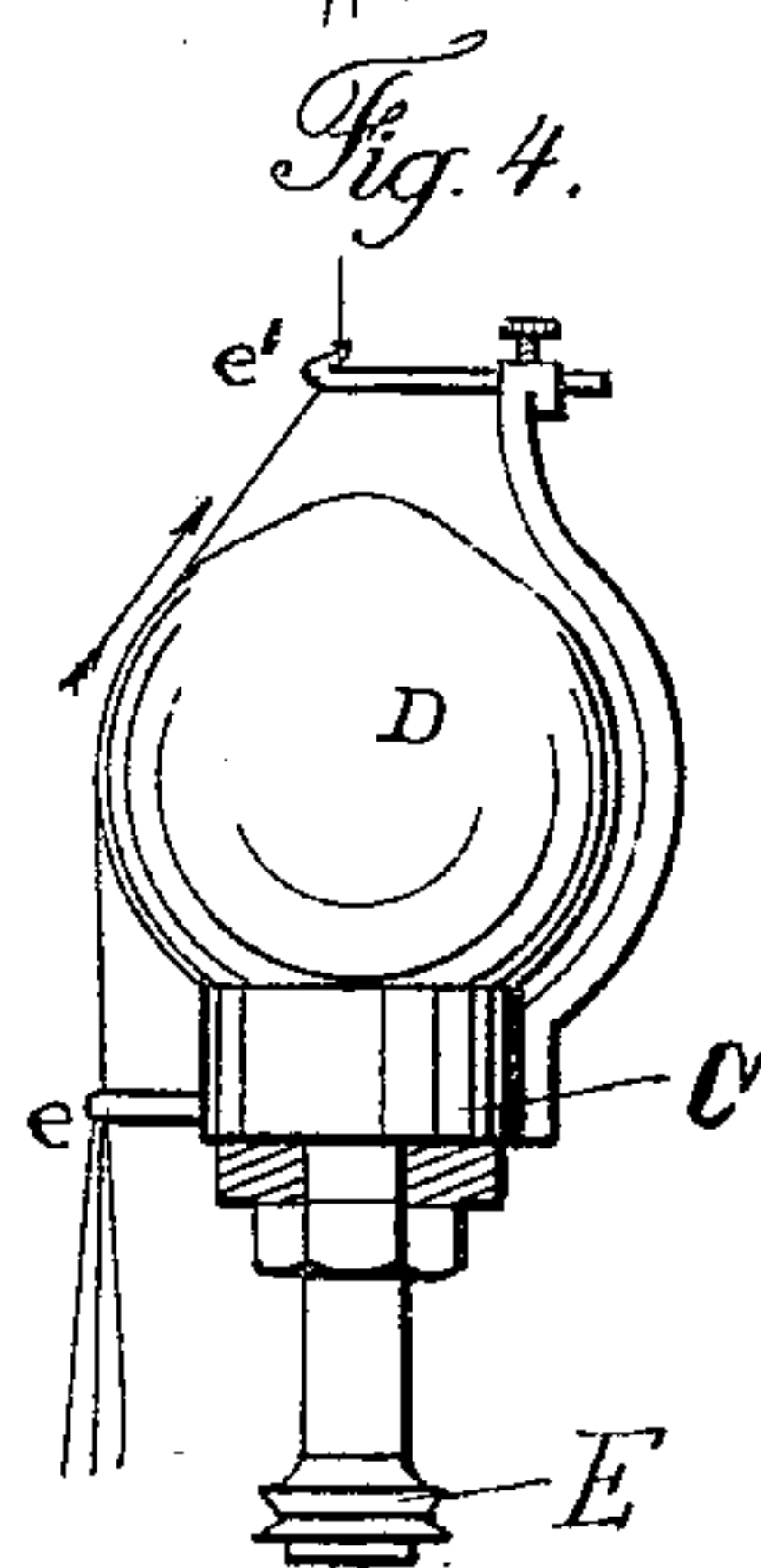
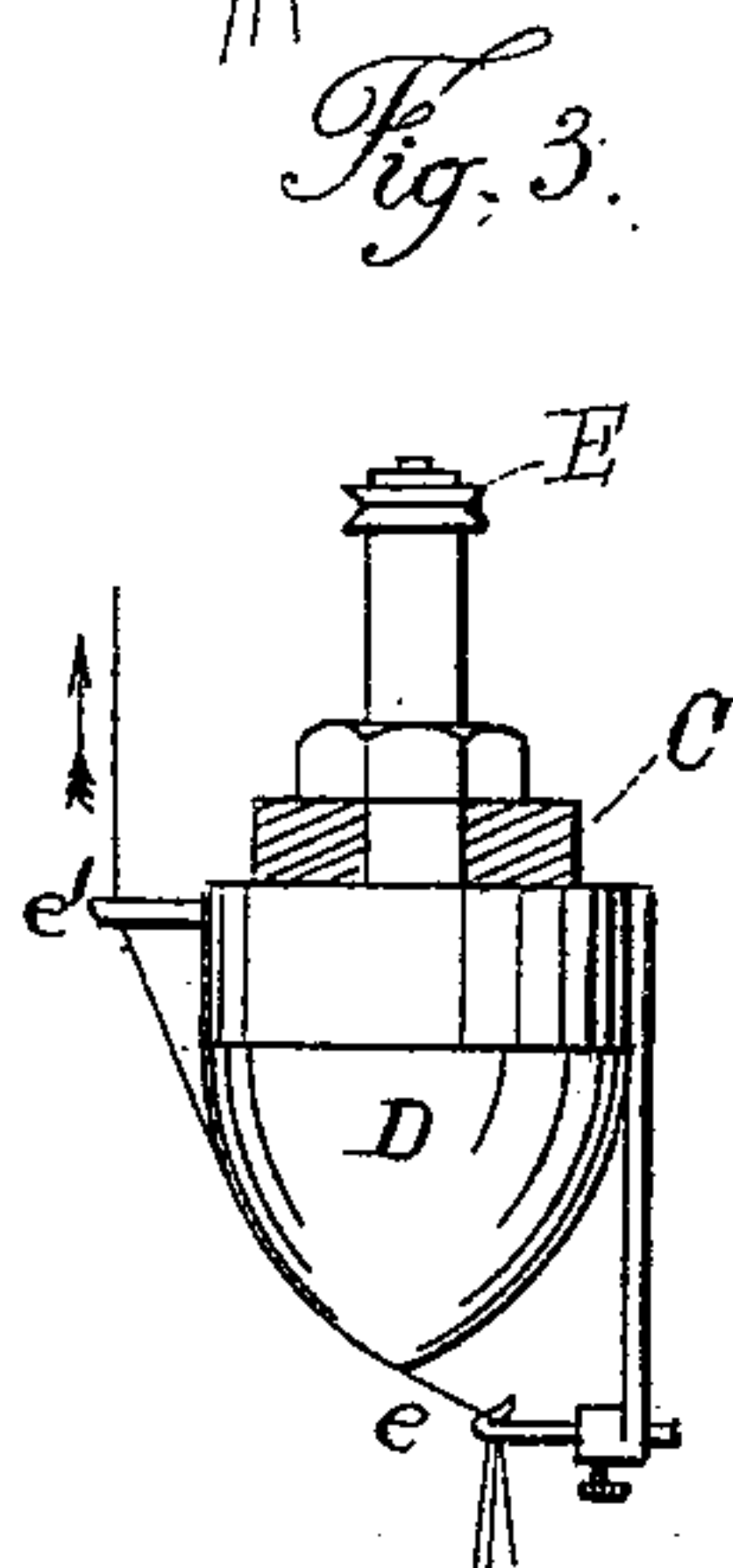
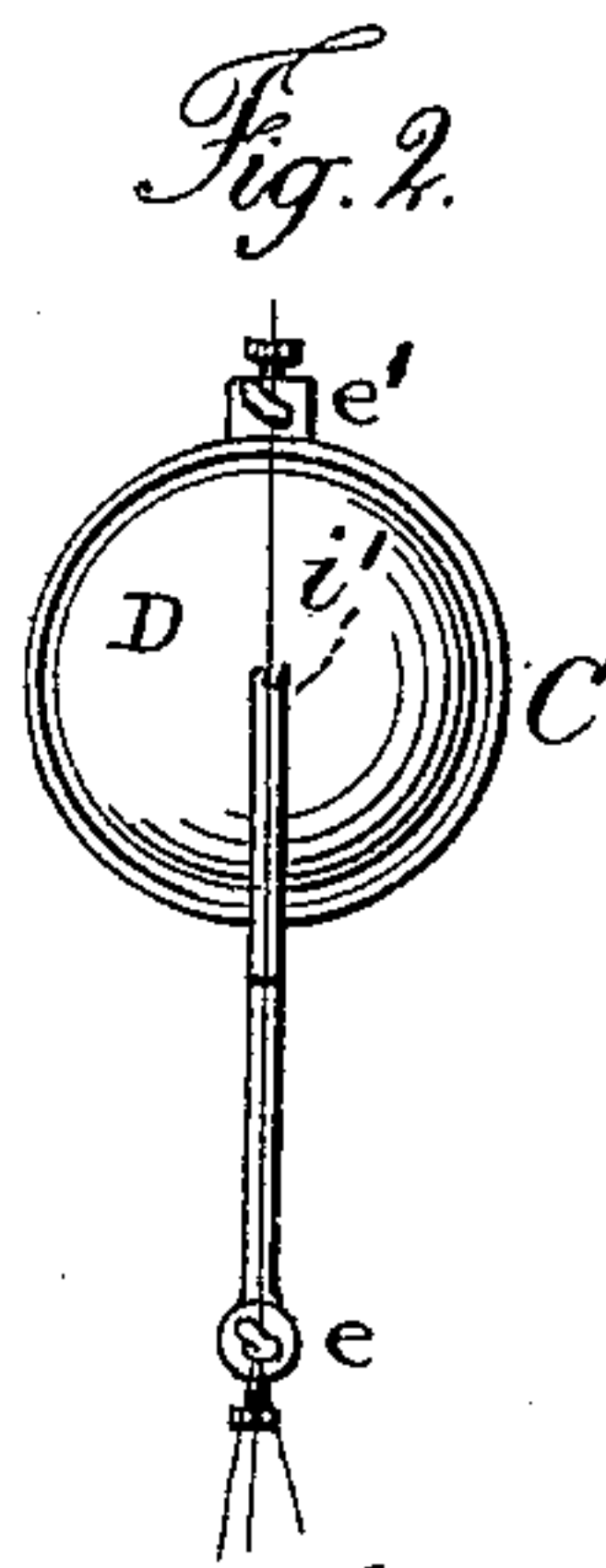
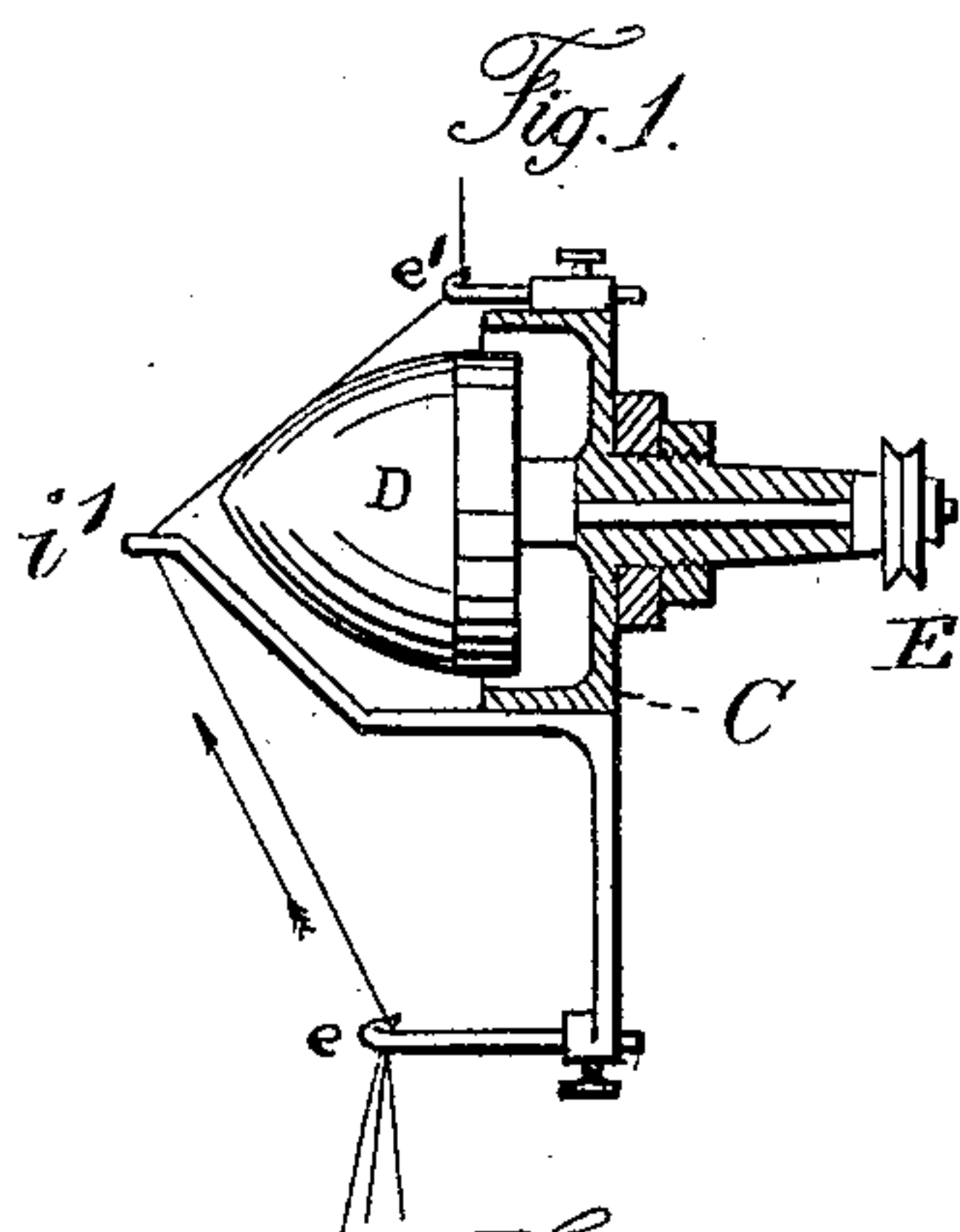
(No Model.)

2 Sheets—Sheet 1.

G. BERGIER.
REELING SILK.

No. 496,108.

Patented Apr. 25, 1893.



Witnesses

Chas H. Smith
J. Staib

Inventor

Gabriel Bergier
per Lemuel W. Serrell
Att

(No Model.)

2 Sheets—Sheet 2.

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Fig. 7.

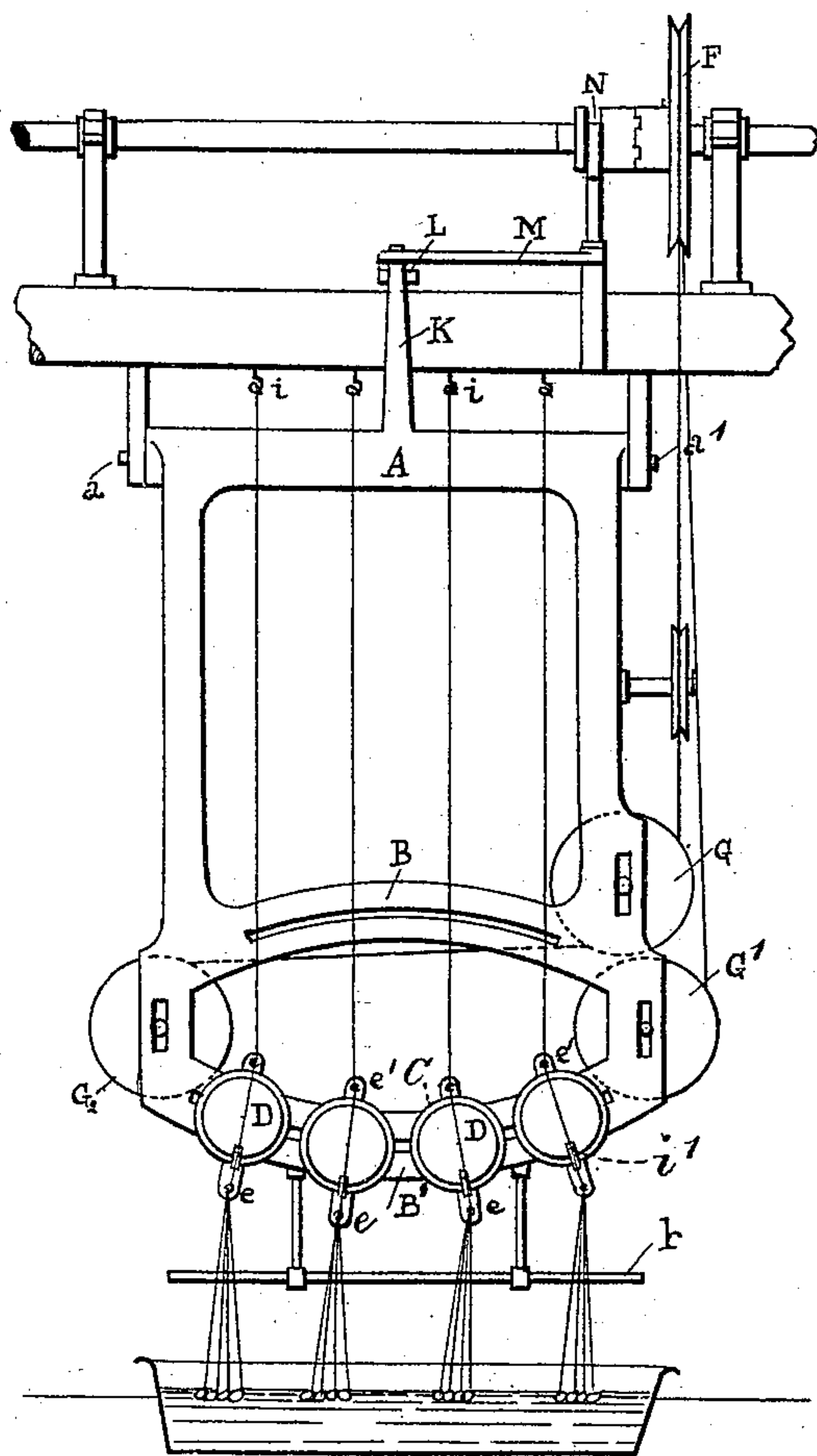


Fig. 8.

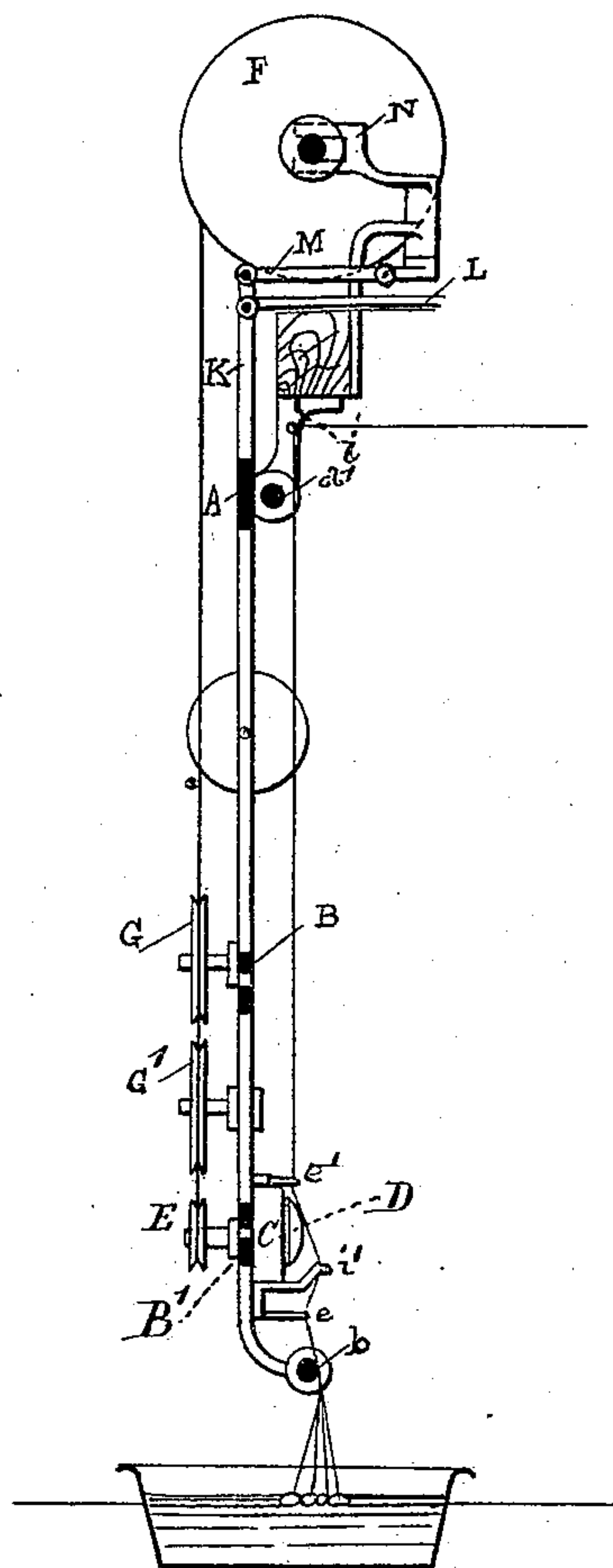
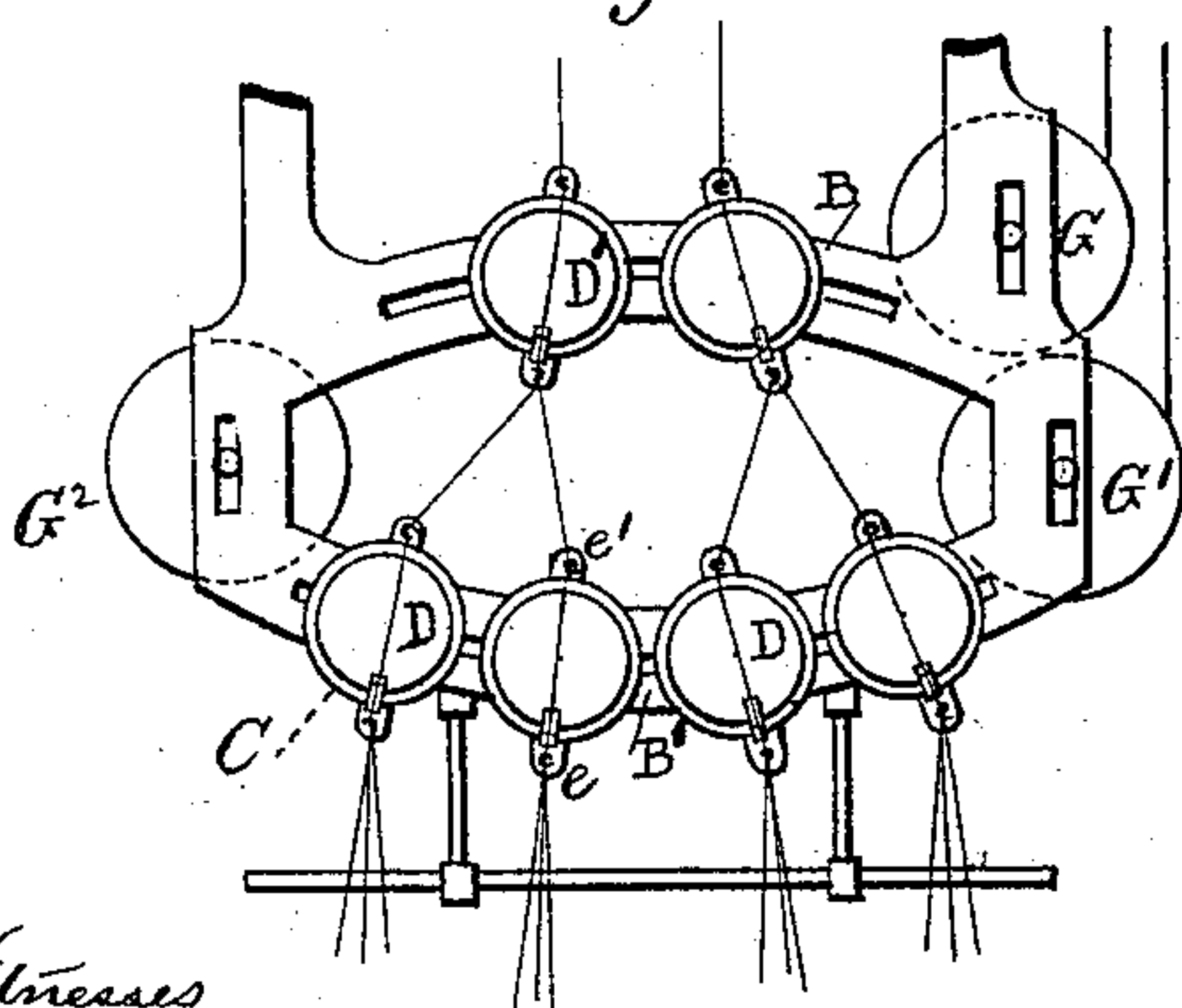


Fig. 9.

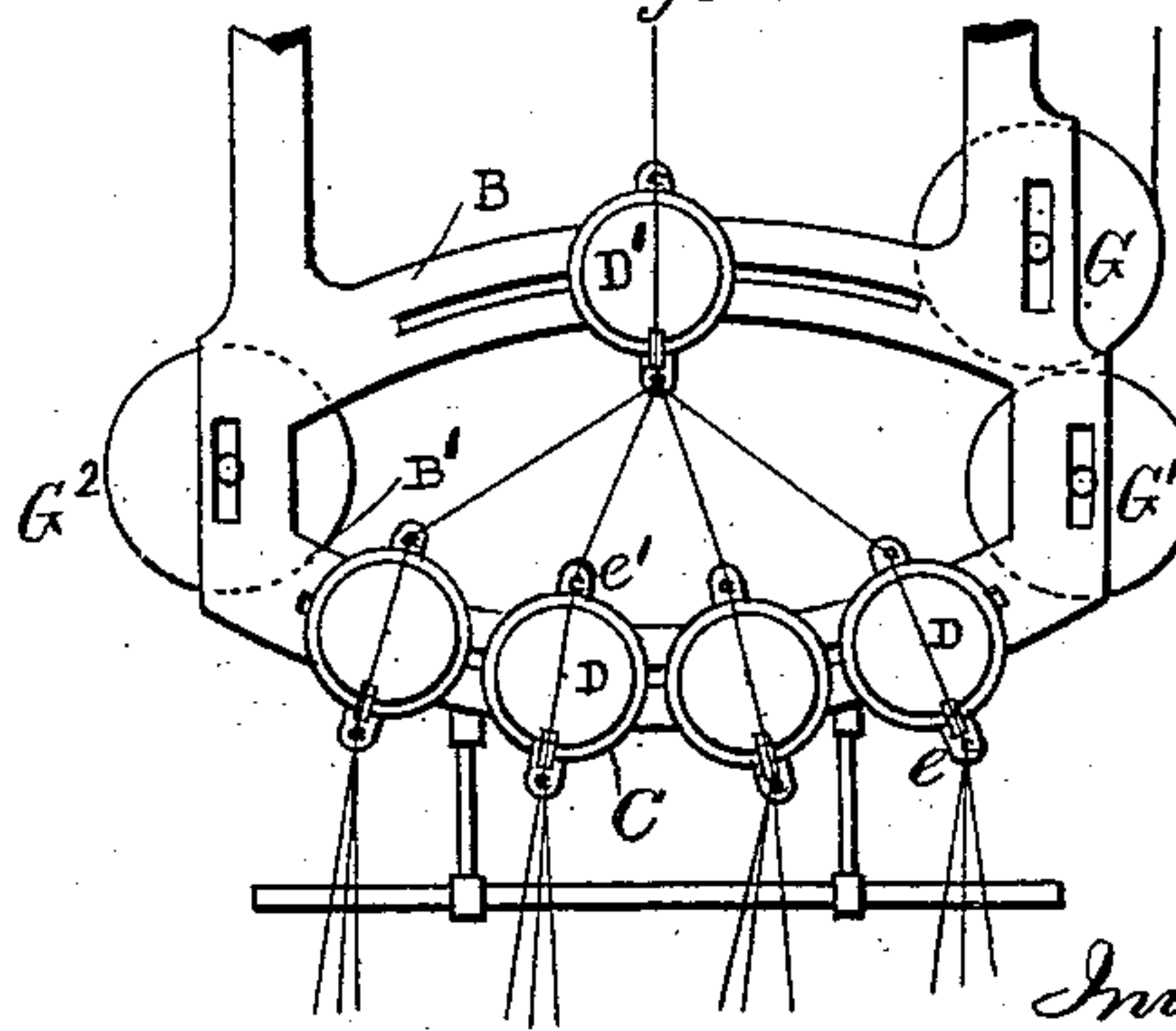


Witnesses

Chas H. Smith

J. Staib.

Fig. 10.



Inventor

Gabriel Bergier

per Lemuel W. Ferrell

UNITED STATES PATENT OFFICE.

GABRIEL BERGIER, OF LYONS, FRANCE.

REELING SILK.

SPECIFICATION forming part of Letters Patent No. 496,108, dated April 25, 1893.

Application filed March 31, 1892. Serial No. 427,173. (No model.) Patented in France February 4, 1891, No. 208,985; in Italy March 17, 1891, LVII, 183; in Spain April 28, 1891, No. 11,815; in Switzerland August 31, 1891, No. 3,270, and in Germany November 26, 1891, No. 59,925.

To all whom it may concern:

Be it known that I, GABRIEL BERGIER, a citizen of the Republic of France, residing at Lyons, France, have invented an Improvement in Reeling Silk, of which the following is a specification.

This invention was patented to me as follows: in France, deposited October 23, 1890, granted February 4, 1891, No. 208,985; in Germany, deposited March 19, 1891, granted November 26, 1891, No. 59,925; in Switzerland, deposited March 13, 1891, granted August 31, 1891, No. 3,270; in Italy, deposited February 28, 1891, granted March 17, 1891, No. 183, Vol. 57, and in Spain, deposited February 26, 1891, granted April 28, 1891, No. 11,815.

My invention relates to the reeling of silk filaments from cocoons, and to devices for uniting a number of filaments together to form a thread, which devices shall not twist the filaments but unite them by a rubbing action.

Heretofore filaments have been united by a rubbing action caused by the rapid rotation around the moving filaments of a sleeve through which they passed. With these devices difficulty was experienced in threading the filaments through the sleeve when broken.

In carrying out my invention I employ a rapidly revolving curved form of wood or suitable material, and the fibers or filaments to be united are drawn across this curved and rapidly revolving surface and are united by a rubbing or rolling action which unites the mass of glutinous threads into a perfectly agglomerated single and rounded thread without torsion. A number of filaments are thus connected to form a fine thread, and any number of fine threads may be made in a single apparatus, or two or more threads may be united to form a thread of greater size and strength.

In the drawings, Figure 1 is a side view partially in section, and Fig. 2 is an end view of the rubbing device on a horizontal axis. Figs. 3 and 4 are views of the rubber with the axis vertical. Fig. 5 is an elevation with the axis of the rubber vertical and supported at both ends. Fig. 6 is an elevation with the vertical axis of the rubber driven frictionally.

Fig. 7 is a side elevation, and Fig. 8 is an end elevation of the devices applied above the basin for the cocoons, and Figs. 9 and 10 represent the arrangements of rubbers that may be used with the threads led across them.

The rubbing device is represented at D and the same may be made of wood or other similar or suitable material and this rubbing device is provided with a curved or convex surface, and an axis or shaft in a suitable bearing, and a pulley E for rotating the same rapidly. I provide guides *e e'* connected adjustably to the bearing or support of the rotary rubbing device and a stationary guide *i'* may also be employed.

The object of the rotary rubbing device is to roll (not twist) the bundle or mass of fibers or filaments in contact with its surface and to form of them a single perfectly united and rounded thread without torsion.

The length of contact and the pressure of the threads on the rubbing device can be varied by adjusting the guides *e e'* which for this purpose are adjustable in slide ways. It is understood that the rubbing devices may receive an indefinite variety of forms and may turn on vertical, horizontal or inclined axes, provided the guides are accordingly arranged. Figs. 3, 4, 5 and 6 show a few examples, additional to Figs. 1 and 2. Figs. 7 to 10 show the application of these rubbers to a reeling basin with the practical arrangements which guarantee the good working of them.

The rubbing devices D are fastened on the ends of horizontal axes revolving in sockets as in Figs. 1 and 2, the front parts of which sockets or cylindrical casings C protect the rubbing devices and the working parts of the rubbers alone are visible. A pulley E fastened to the end of each axis opposite to the rubbing device serves to give it a rotary movement; the guides *e e'* and *i'* may be mounted on the cylindrical casing or sockets C, as shown in Figs. 1 and 3. The rubbing devices made in this way and their bearings C in one or two rows are supported upon curved grooved bars B B' of a frame A suspended above the basin by the two pivots *o o'*. The rubbing devices are driven by

endless cord or band coming from the pulley F and passing over the guide pulleys G G' G² which are adjustable vertically.

For acting upon the raw silk threads Figs. 7 and 8, there is only one row of rubbing devices uniting the fibers or filaments of the cocoons coming from the basin in similar or variable numbers according to the desired size of the thread. The indispensable crossing in the ordinary reeling is here advantageously replaced by the action of the rubbing device and the raw silk threads coming from the upper guides *e'* go up directly to the guides *i i* from whence they are directed toward the vertical winding reel placed as usual behind the basin.

For obtaining raw silk threads of increased size and strength, I place in the upper groove B of the frame one or more similar rubbing devices D', Figs. 9 and 10, the object of which is to unite the raw silk threads furnished by the lower row of devices D. The oscillating frame A provides for the instantaneous and simultaneous stoppage of the rubbing devices and of the winding reel; for this purpose said frame carries at its upper part an arm K connected by the rod L to the uncoupling device of the winding reel which is of ordinary character. The same arm K acts also on a lever M operating the uncoupling device N applied to the pulley F. It is therefore only necessary to push back the frame A to simultaneously stop the drawing of the thread and its friction and uncover at the same time the basin. This gives to the reeling girl great facility in her work. By bringing the frame forward the whole is again put in motion.

It is understood that if rubbing devices hav-

ing vertical or inclined axes are used it will only be necessary to modify the form of the oscillating frame so as to receive these rubbing devices on one or two horizontal rows.

I claim as my invention—

1. The combination in a silk reeling apparatus, of a rubbing device, consisting of a convex form over a portion of whose surface the silk filaments are drawn, and mechanism for rotating such rubbing device and guides for directing the filament across such rubbing device, substantially as and for the purposes set forth.

2. The combination in a silk reeling apparatus, of a rubbing device, consisting of a convex form of wood or other suitable material, means for rotating the same, adjustable guides through which the silk filaments pass and by which they are retained in position on the rubbing device substantially as and for the purposes set forth.

3. The combination in a silk reeling apparatus with adjustable filament guides, of a rubbing device consisting of a convex form of wood or other suitable material, over a portion of whose surface the silk filaments pass as they are drawn through the adjustable guides, a swinging frame in which said rubbing devices are mounted, and means for rotating and stopping the same at will, substantially as and for the purposes set forth.

The foregoing specification of my improvement in reeling of silk signed by me this 13th day of February, 1892.

GABRIEL BERGIER.

Witnesses:

Y. RABELLUND,
G. LEPINETTE.