

No. 671,924.

E. D. ROCKWELL.  
BELL.

Patented Apr. 9, 1901.

(No Model.)

(Application filed Aug. 27, 1900.)

2 Sheets—Sheet 1.

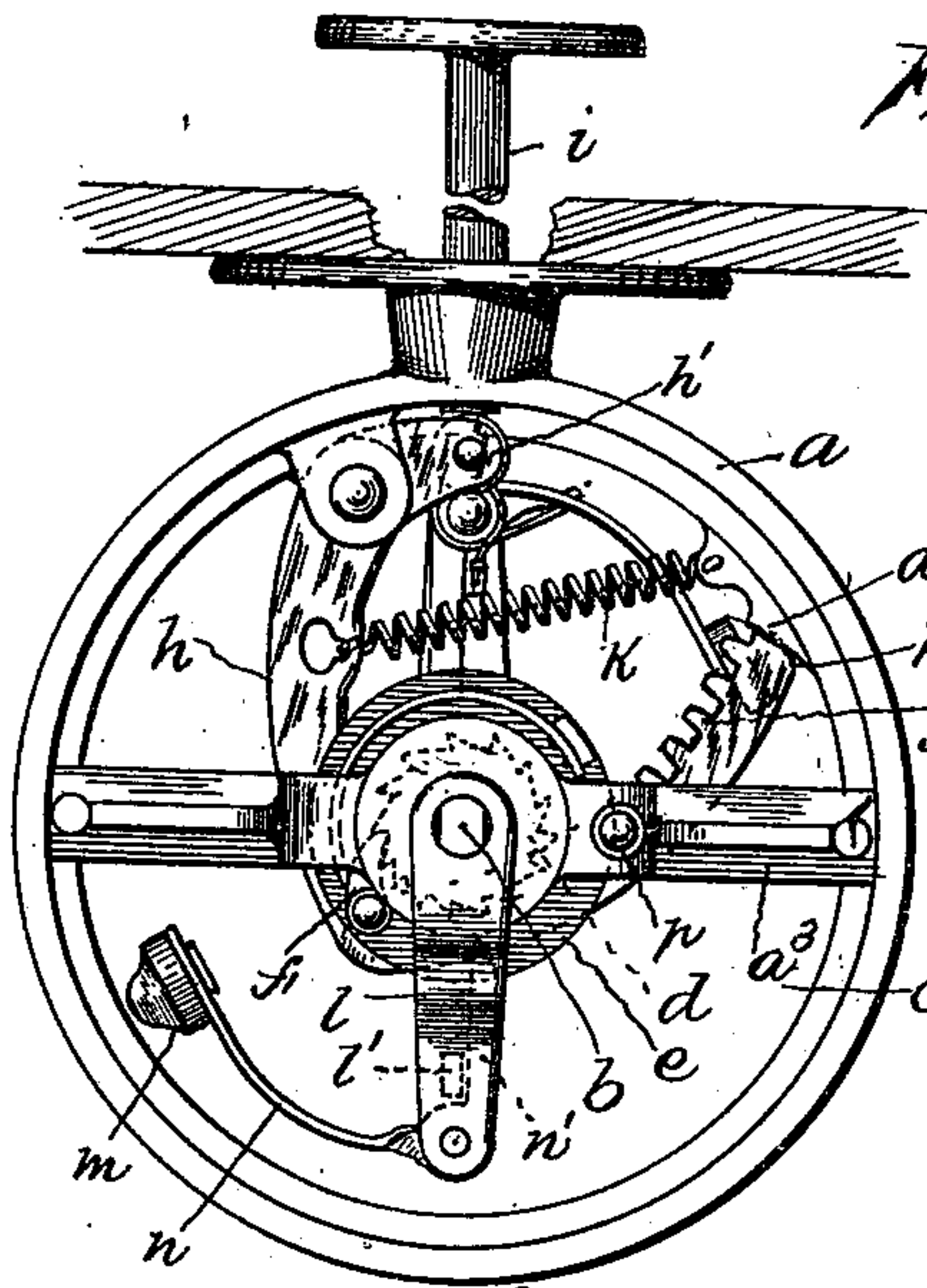


Fig. 1

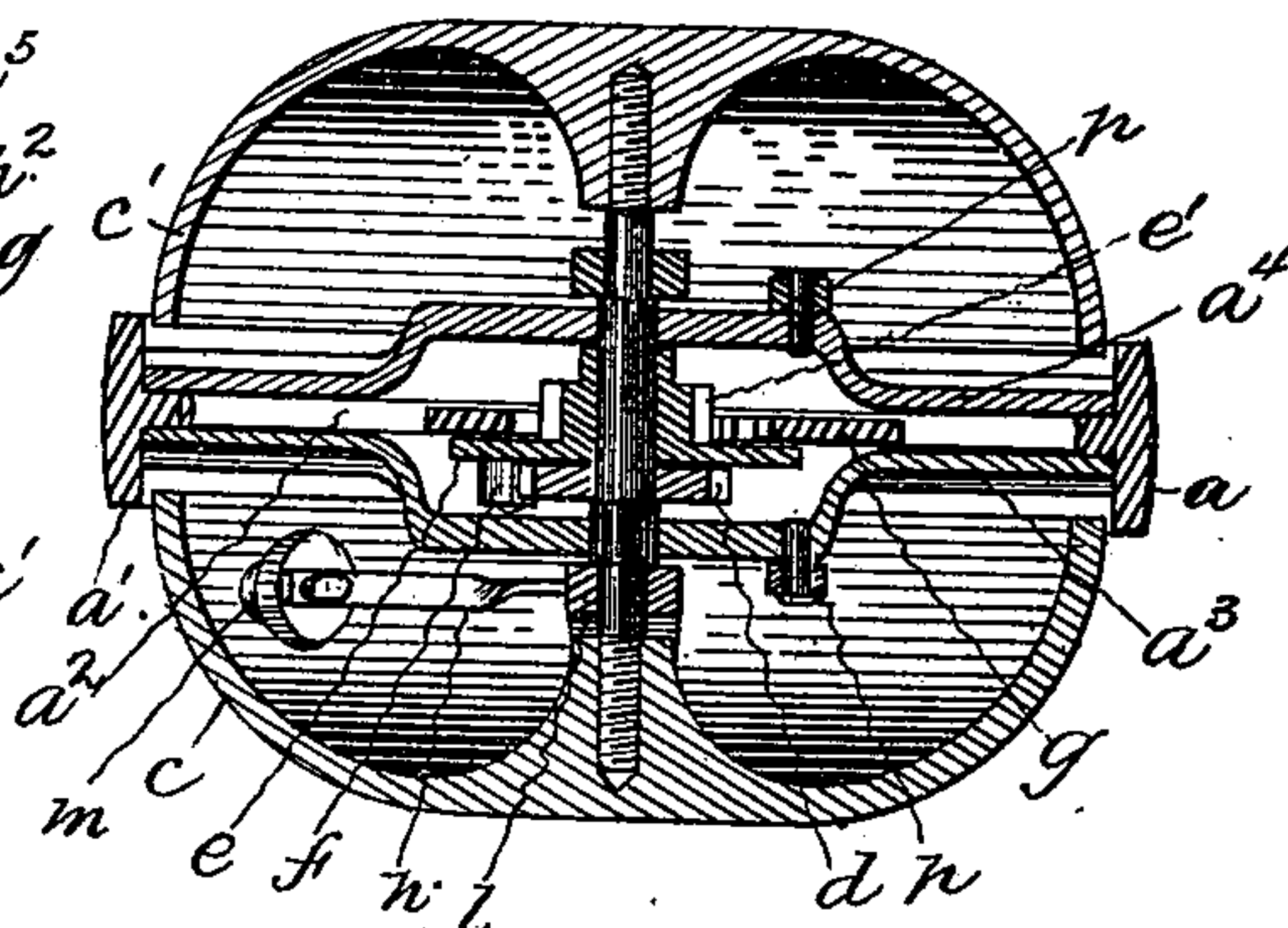


Fig. 2

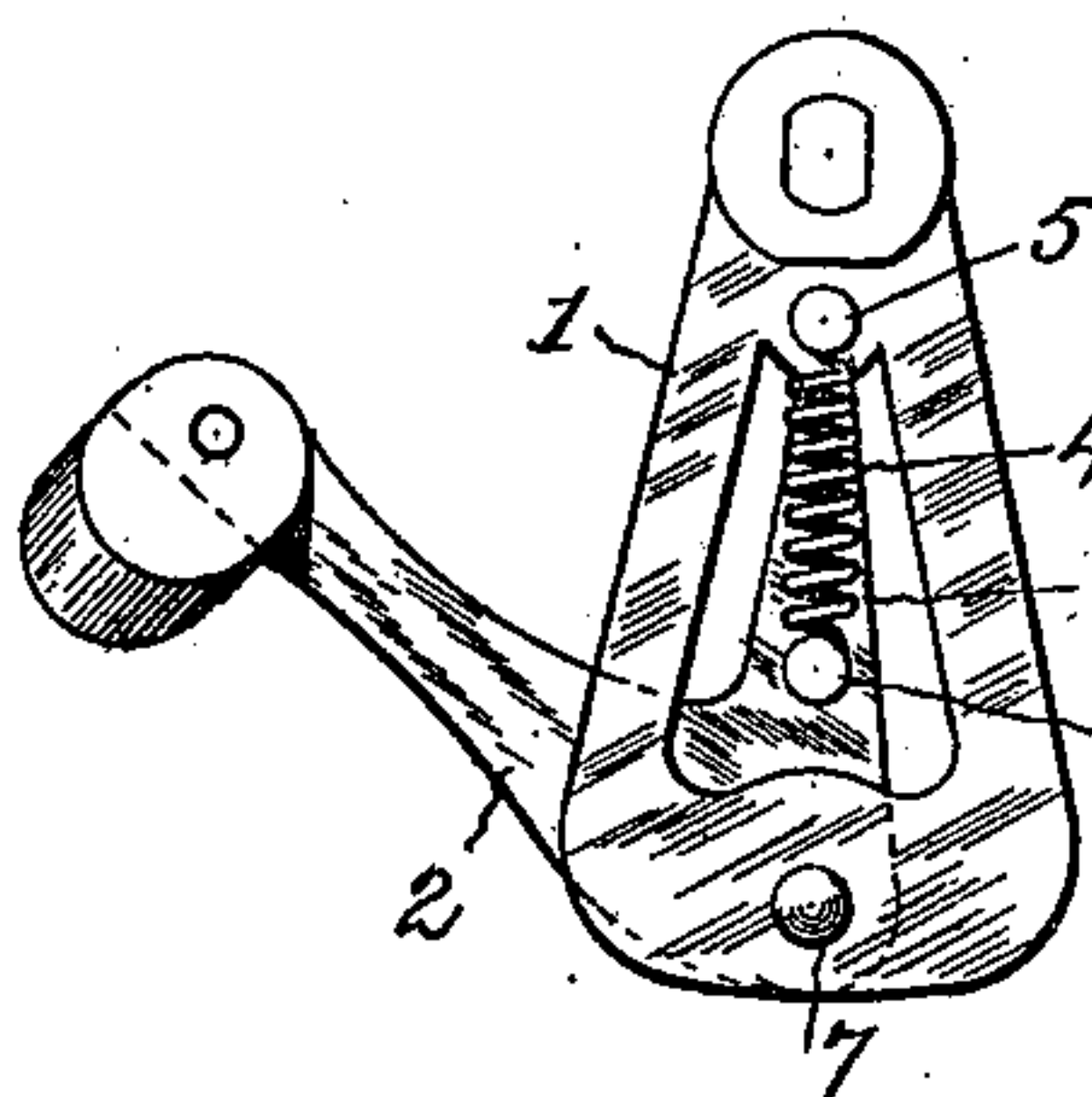


Fig. 3

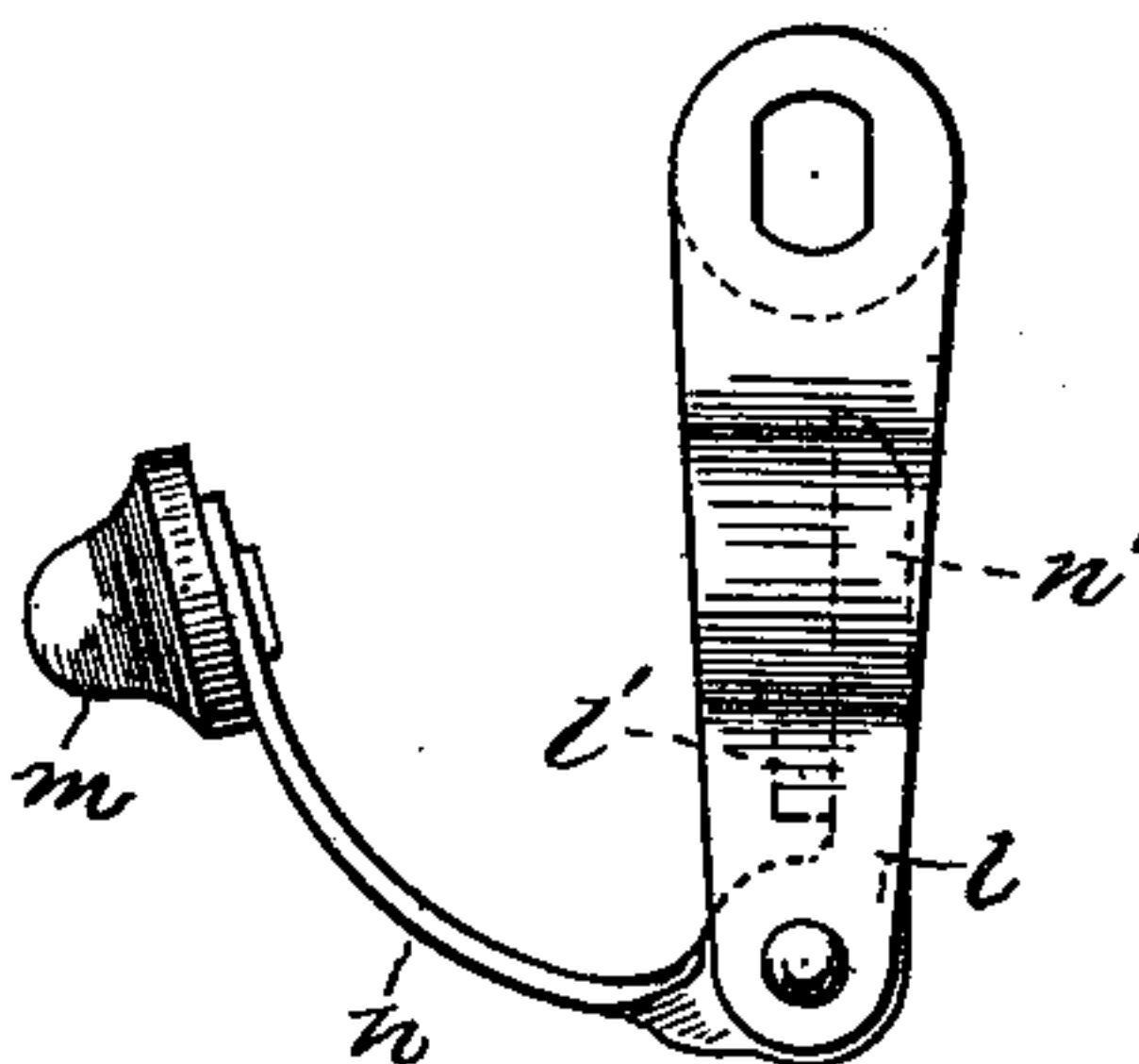


Fig. 5

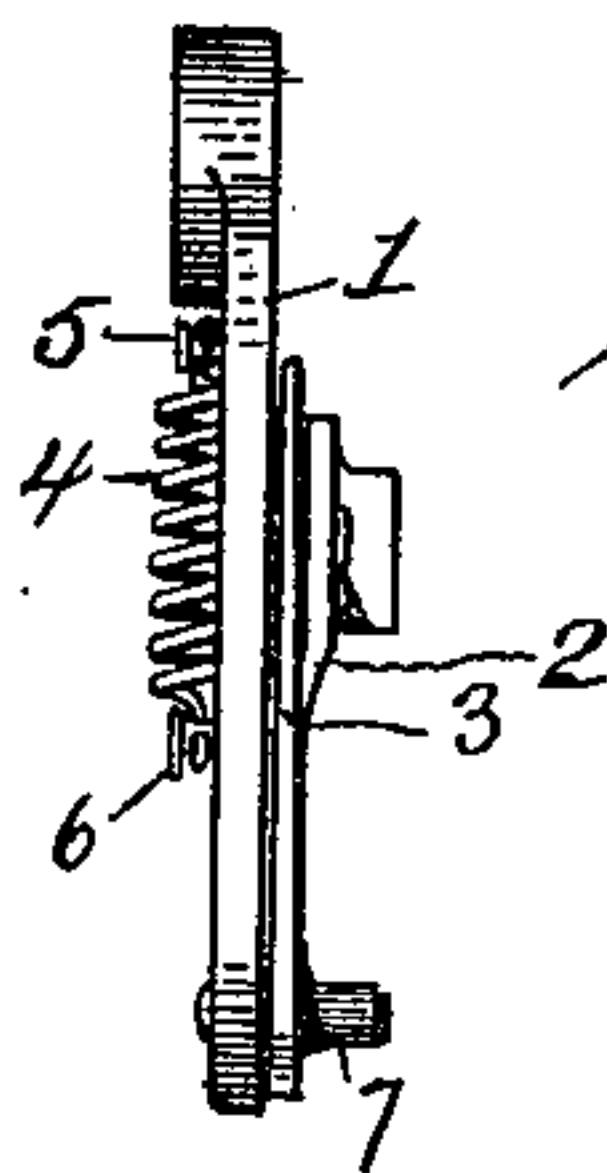


Fig. 4

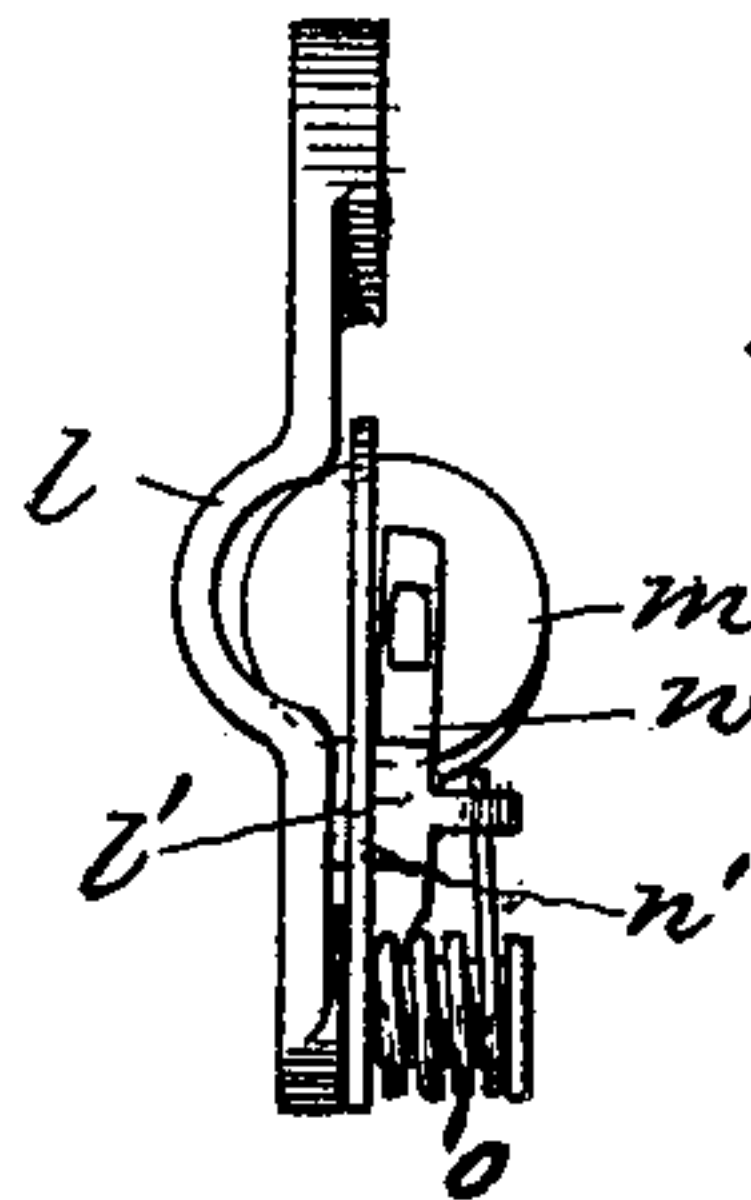


Fig. 6

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2 Sheets—Sheet 2.

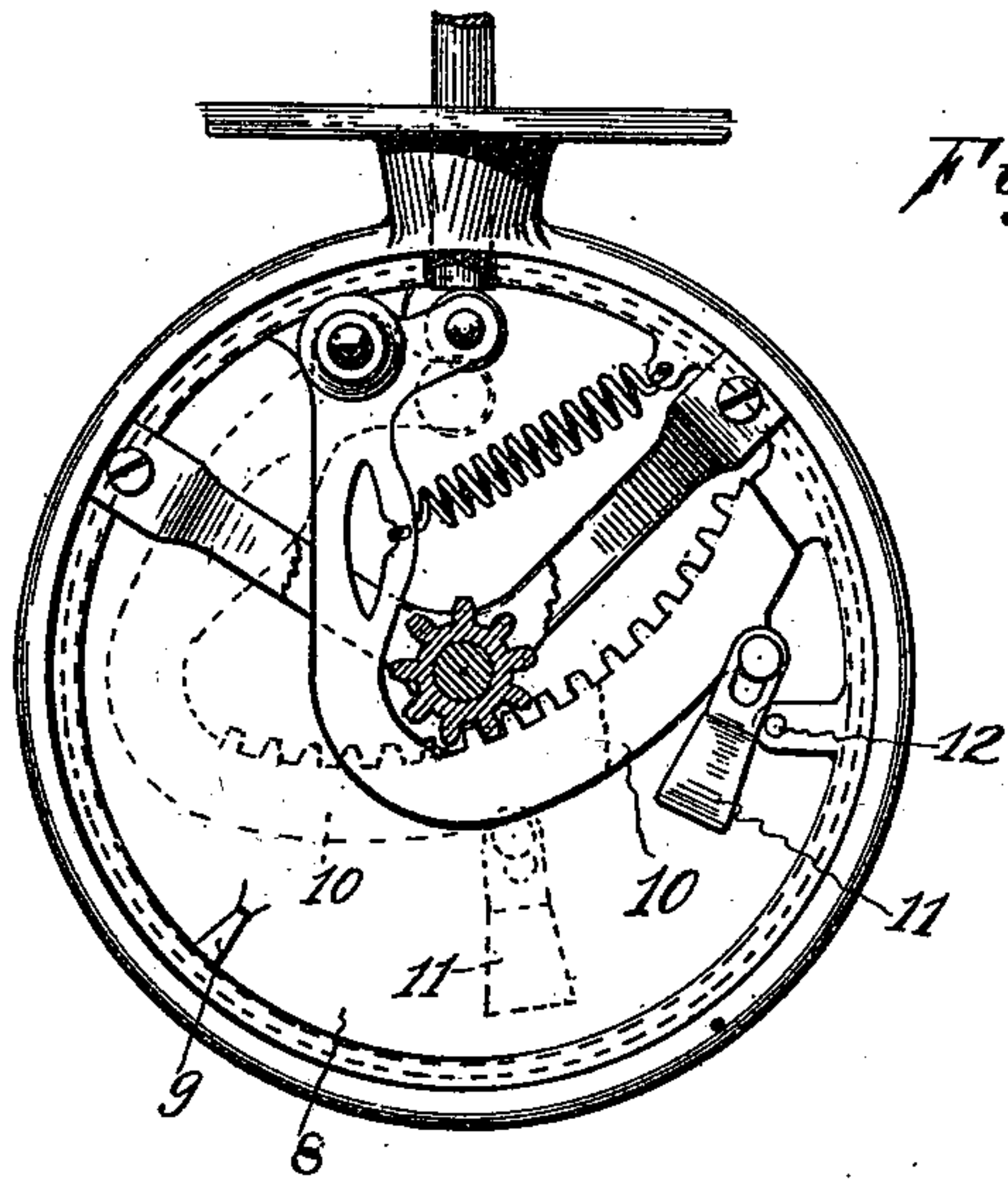


Fig. 7

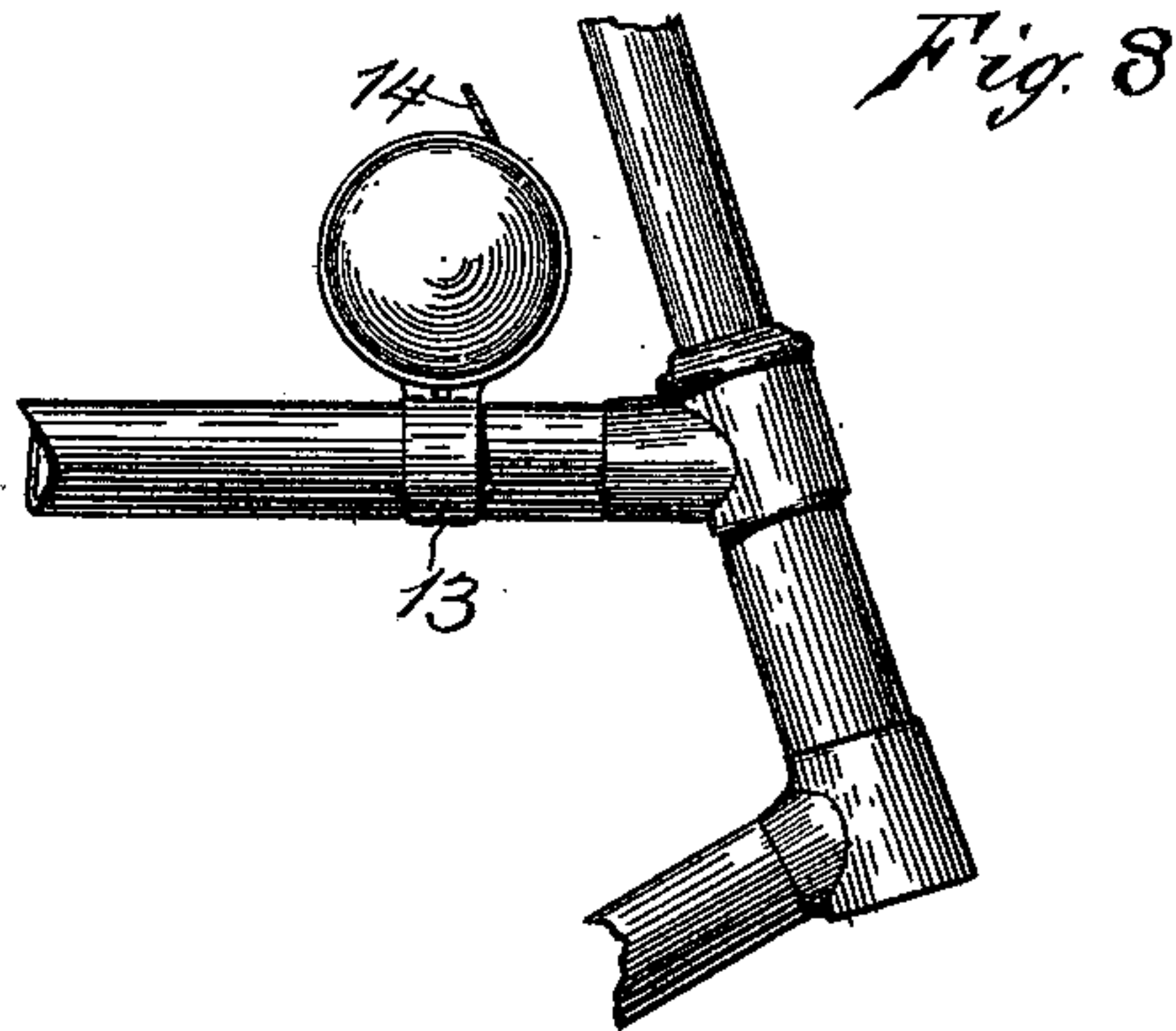


Fig. 8

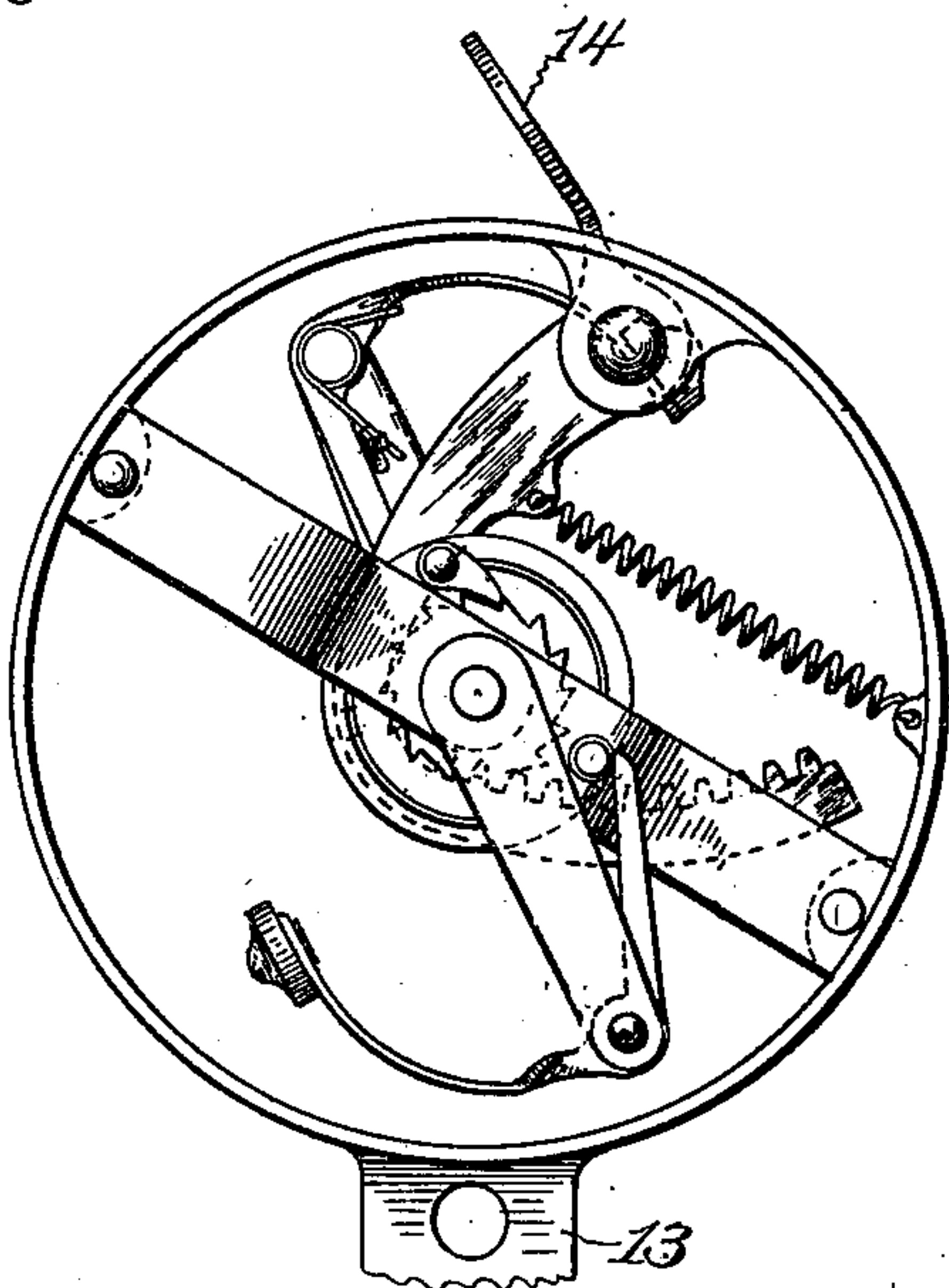


Fig. 9

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# UNITED STATES PATENT OFFICE.

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## BELL.

SPECIFICATION forming part of Letters Patent No. 671,924, dated April 9, 1901.

Application filed August 27, 1900. Serial No. 28,097. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD D. ROCKWELL, a citizen of the United States, and a resident of Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Bells, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

My invention relates to the general class of alarm-bells as used on vehicles; and its object is more particularly to provide for automobiles and like vehicles a bell which shall be capable of giving a loud, clear, and penetrating sound.

Referring to the drawings, Figure 1 is a view of one form of embodiment of my invention, showing the bell-frame in side elevation with one of the gongs removed and the bell attached to the floor of a vehicle. Fig. 2 is a view in horizontal section through the bell. Fig. 3 is a detail view of a modified form of striker-arm. Fig. 4 is an edge view of the same. Fig. 5 is a detail view, in side elevation, of the striker-arm shown in Fig. 1. Fig. 6 is a detail edge view of the same. Fig. 7 is a detail view, in side elevation, of the bell with one gong removed and showing a modified form of striking means. Fig. 8 is a view showing one form of the bell as applied to a bicycle. Fig. 9 is a detail view, on enlarged scale, showing the bicycle-bell in side elevation with one gong removed.

In the accompanying drawings the letter  $a$  denotes a frame or support, which is provided with means for attaching the bell to the vehicle on which it is to be used, and this frame supports the gongs and operative parts of the bell.

Where two gongs are employed, they are screwed onto the opposite ends of the shaft  $b$ , which is mounted in the center and transversely of the frame  $a$  in bearings in which it turns freely. The gongs  $c$   $c'$  face each other and their edges preferably underlie the rim  $a'$  of the frame  $a$ , so as to enable the rim to exclude to a certain degree dust and dirt.

One of the main features of my improvement resides in providing a comparatively loose support for the gongs, which are rotary with respect to the supporting-frame and are

combined with striking mechanism which is actuated by the rotation of the gongs.

The gong-shaft  $b$  has a ratchet-wheel  $d$  (see Figs. 1 and 2) fast on and turning with it, a loose drive-wheel  $e$  being mounted on the same shaft next to the ratchet-wheel and in position for the spring-pawl  $f$ , borne by the drive-wheel, to engage the ratchet-teeth. The drive-wheel has a pinion  $e'$  on its hub or fast to it, and the teeth of this pinion are in engagement with the teeth on the rack  $g$ . This rack  $g$  is preferably formed on the inner edge of the bent arm of a lever  $h$ , which is pivoted to the frame and swings in a central plane midway between the two gongs and in a space  $a^2$ , provided between the cross-bars  $a^3$   $a^4$  of the frame  $a$ , in which the bearings for the gong-shaft are provided. The short arm  $h'$  of this lever  $h$  underlies the tappet or plunger  $i$ , which is located in a socket or opening radially through the frame, this plunger serving as a means for swinging the lever  $h$  in one direction, the return movement being effected by the spring  $k$ , fast at one end to the frame  $a$  and at the other to the lever  $h$ . By this means a rotary movement may be imparted to the shaft  $b$  and the gong or gongs fast to it by a reciprocating movement of the rack. It is what may be called the "primary" means for sounding the gong. The loose connection between the shaft and its operating means above described allows the shaft to rotate independent of the primary operating means, and the gong or gongs secured to the shaft act as a fly wheel or wheels to continue this rotation of the shaft after the primary means for driving it have ceased to operate in this respect. This means for continuing the rotation of the shaft is what may be called the "secondary" means for sounding the gong.

The gongs are sounded by striking mechanism, which includes hammers borne on the gong-shaft in all except the modified form shown in Fig. 7. A carrier-arm  $l$  is mounted on the shaft  $b$  in a radial position and turns with it, carrying on its outer end a striker or hammer  $m$  on the end of a bent striker-arm  $n$ , which is pivoted to the arm  $l$ . The striker-arm  $n$  has one part,  $n'$ , which lies along the carrier, where it is held by a spring  $o$  and in



position to encounter a pin *p* on the cross-bar of the frame *a*. This arm *n'* forms a trip which when it encounters the pin *p* tilts the striker-arm *n* and winds up or puts a tension 5 on the spring *o*, so that when the end of the trip slips off from the pin, as it does in the continued rotation of the shaft, the hammer is thrown against the gong and sounds it with a force depending in part on the strength of 10 the spring. Where the two gongs are embodied, as shown in Fig. 2, there are two hammers, with their operating mechanism counterparts of each other (one hammer having been omitted from this view) and so located 15 as to sound the gongs alternately. A stop *l'* in the return-path of movement of the trip *n'* under the pressure of the spring holds the trip in proper position to again encounter the pin *p* as the shaft continues to revolve, 20 and thus repeats the blow of the hammer. A continued rotary movement may be imparted to the gong-shaft and the gongs by repeating the swinging movement of the lever *h*, as by the operation of the plunger or other 25 convenient means the spring returning the rack to its original position, with its end *h*<sup>2</sup> resting against the stop *a*<sup>5</sup> on the frame, so as to hold the lever out of such contact with the gear as would put a brake upon the drive-wheel. The drive-wheel being loose upon 30 the gong-shaft and connected with the latter by means of a ratchet and pawl, as described, the manner in which this successive driving movement is imparted to the gong-shaft will be readily understood. Owing to the fact 35 that the gongs are not rigidly attached to a base, frame, or other support, the vibration under the blow of the hammer is clear, loud, and enduring, so that much better results may be attained from a given size and weight of 40 bell than in structures where the gong is fast.

In Figs. 3 and 4 a modified form of striking mechanism is shown, the carrier 1 having pivoted to its outer end a striker-lever 2, 45 which has two arms located at an angle to each other, the arm 3 extending along the striker and forming a trip device, while the outer end of the lever carries the hammer. A spring 4 is secured at one end to a pin 5 on the carrier and at the other end to a pin 6 on 50 the striker-lever, this spring being under tension, so as to hold these two points of attachment in line with the pivot 7, by which the striker-lever is connected to the carrier. The 55 function of this spring is to hold the striker-lever normally in the position shown in Fig. 3 and to return the lever to the same position after the striker has been tripped, as by contact with the pin on the frame in the manner 60 already described. The recoil of this spring also serves to sound the gong.

In Fig. 7 a form of striking mechanism is shown in which the gong 8 is provided with a lug 9 and the swinging lever 10 has supported from it loosely-mounted strikers 11. 65 When the striking mechanism is operated so

as to rotate the gongs, these strikers 11 are carried down in position so that they will lie in the path of movement of the lug on the gong and cause the latter to sound. When 70 the pressure on the rack or driving lever is removed, it is returned by the spring to the position shown in Fig. 7, and the strikers 11, resting against stops 12 on the frame, are held out of the path of movement of the lug and 75 the sounding of the bell is stopped.

My improvement is adapted for use either on bells for automobiles and like vehicles, as illustrated in Figs. 1 to 7, or it may be embodied in a bicycle-bell, as illustrated in Figs. 80 8 and 9. The only difference in the bicycle-bell over the form already described is that the clamp 13 differs from the form of attachment required in the automobile-bell, and in the place of a tappet the end of the rack-lever 85 extends beyond the edge of the bell and is made in form of a thumb-piece 14. The bell is clamped in convenient position on the frame of the bicycle to be within reach of the rider, as illustrated in Fig. 8. 90

While I have shown and described herein one form of device in which my invention may be embodied, it is obvious that this construction may be departed from to a considerable extent and yet come within the 95 scope of the invention, which includes a hammer supported by a carrier and a trip adapted to cause the hammer to be swung against the gong to sound it.

What I claim as my invention, and desire 100 to secure by Letters Patent, is—

1. In combination in a bell, a supporting-frame, a gong mounted to rotate freely on the frame, a pivoted hammer supported by the frame, means including the rotary gong for 105 operating the hammer, and means for rotating the gong.

2. In combination in a bell, a supporting-frame, a gong rotarily mounted on the frame, a hammer revolubly supported by the frame, 110 means including the rotary gong for revolving the hammer at the same rate of speed as the rate of rotation of the gong, and means for operating the gong.

3. In combination in a bell, a gong, a supporting-frame, a rotary shaft mounted in the frame, shaft-driving mechanism, a clutch interposed between the shaft and the driving mechanism, a carrier mounted on the shaft, a striking-lever carrying a hammer and pivoted to the carrier, a trip device on the striker-lever, a fixed stop fast to the frame and in the path of movement of the trip device, and means for resetting the trip. 120

4. In combination in a bell, a supporting-frame, a rotary shaft mounted in the frame, gongs secured to the opposite ends of the shaft and with their adjacent edges underlying the rim of the frame, shaft-driving means, a clutch device with a part secured to the 130 shaft and a cooperating part connected to the driving mechanism, a striker-lever bearing a



hammer and pivotally supported by the shaft, a trip device on the striker-lever and a fixed stop in the path of movement of the trip.

5 In combination in a bell, a supporting-  
frame of annular form, cross-bars at the cen-  
ter of the frame, a shaft mounted in the cross-  
bars, a pair of gongs secured to opposite ends  
of the shaft, a clutch part fast to the shaft,  
a complementary clutch part loose on the  
10 shaft, a gear-wheel fast to the clutch member  
loose on the shaft, a swinging lever bearing  
a rack in mesh with the gear-wheel on the  
clutch part, a spring connecting the said  
swinging lever and the frame and holding  
15 the lever at one end of its path of swinging  
movement, means for swinging the lever, and  
bell-striking mechanism operated by the ro-  
tary movement of the shaft and the gongs.

6. In combination in a bell, a supporting-  
20 frame, a shaft mounted in the frame, a gong  
secured to the shaft, a pivoted hammer sup-  
ported by the shaft and arranged to sound  
the gong in its rotation, means for rotating  
the shaft, and a loose connection between the  
25 operating means and the shaft whereby the  
latter runs free in the sounding operation.

7. In combination in a bell, a supporting-  
frame, a rotary shaft mounted in the frame, a  
gong secured to said shaft, a carrier secured  
30 to the shaft, a swinging hammer mounted on  
the carrier, means for swinging the hammer

to sound the gong, means for rotating the  
shaft and including a loose connection be-  
tween the shaft and driving means whereby  
the former runs free in the operation of sound- 35  
ing the gong.

8. In combination in a bell, a supporting-  
frame, a rotary shaft mounted in the frame,  
a gong secured to the shaft, shaft-driving  
mechanism, a carrier supported by the frame, 40  
a hammer pivoted on the carrier, and means  
including the rotary gong for operating the  
hammer.

9. In combination in a bell, a supporting-  
frame, a gong mounted on the frame to rotate 45  
independently of its operating mechanism, a  
pivoted hammer supported by the frame, pri-  
mary means for operating the mechanism to  
sound the bell, and secondary means for con-  
tinuing its operation. 50

10. In combination in a bell, a supporting-  
frame, a shaft mounted on the frame to rotate  
independently of its operating mechanism, a  
gong secured to the shaft, shaft-driving mech-  
anism, a carrier supported by the frame, a 55  
hammer pivoted on the carrier, primary  
means for operating the hammer, and second-  
ary means for continuing its operation.

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Witnesses:

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