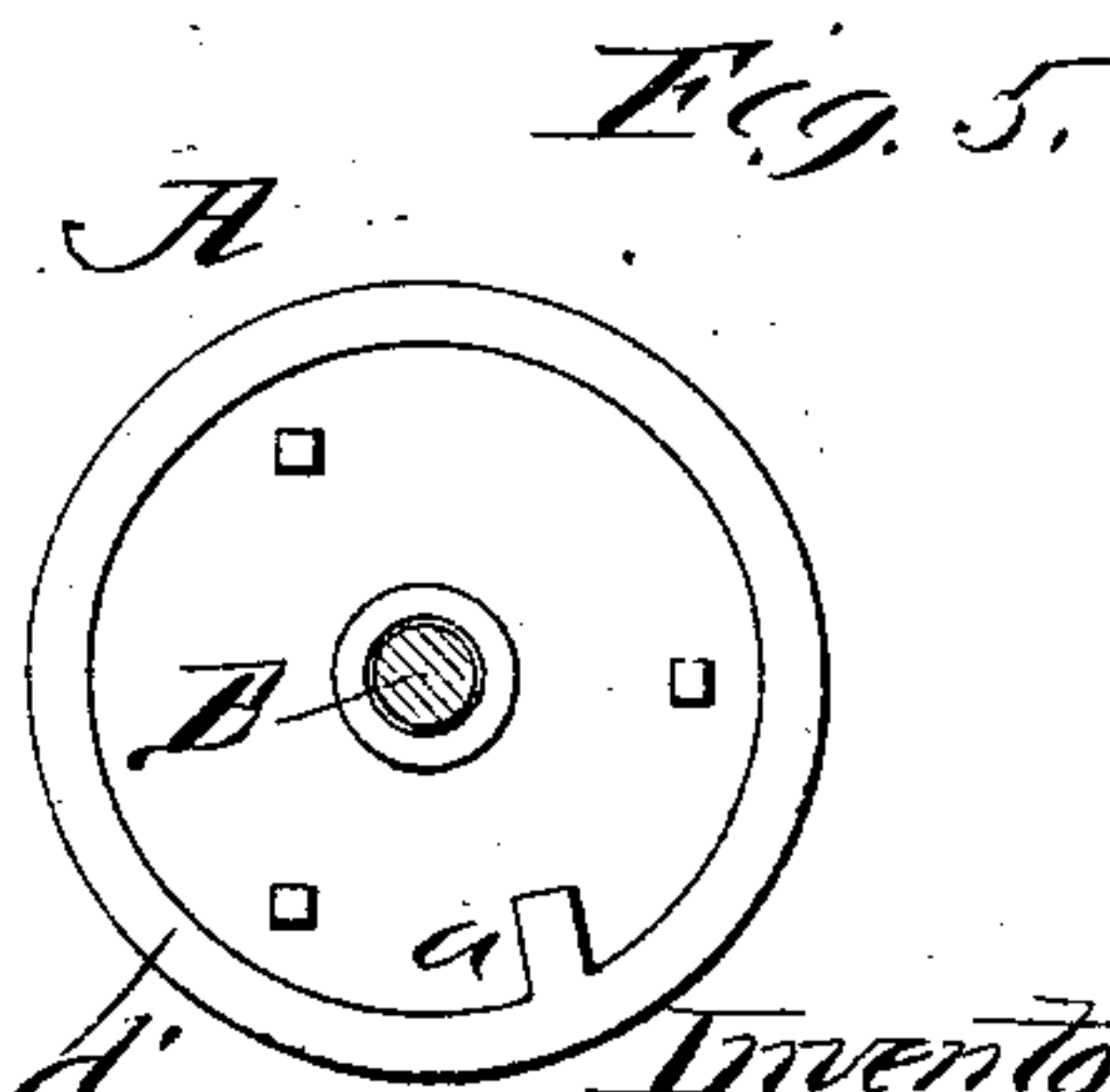
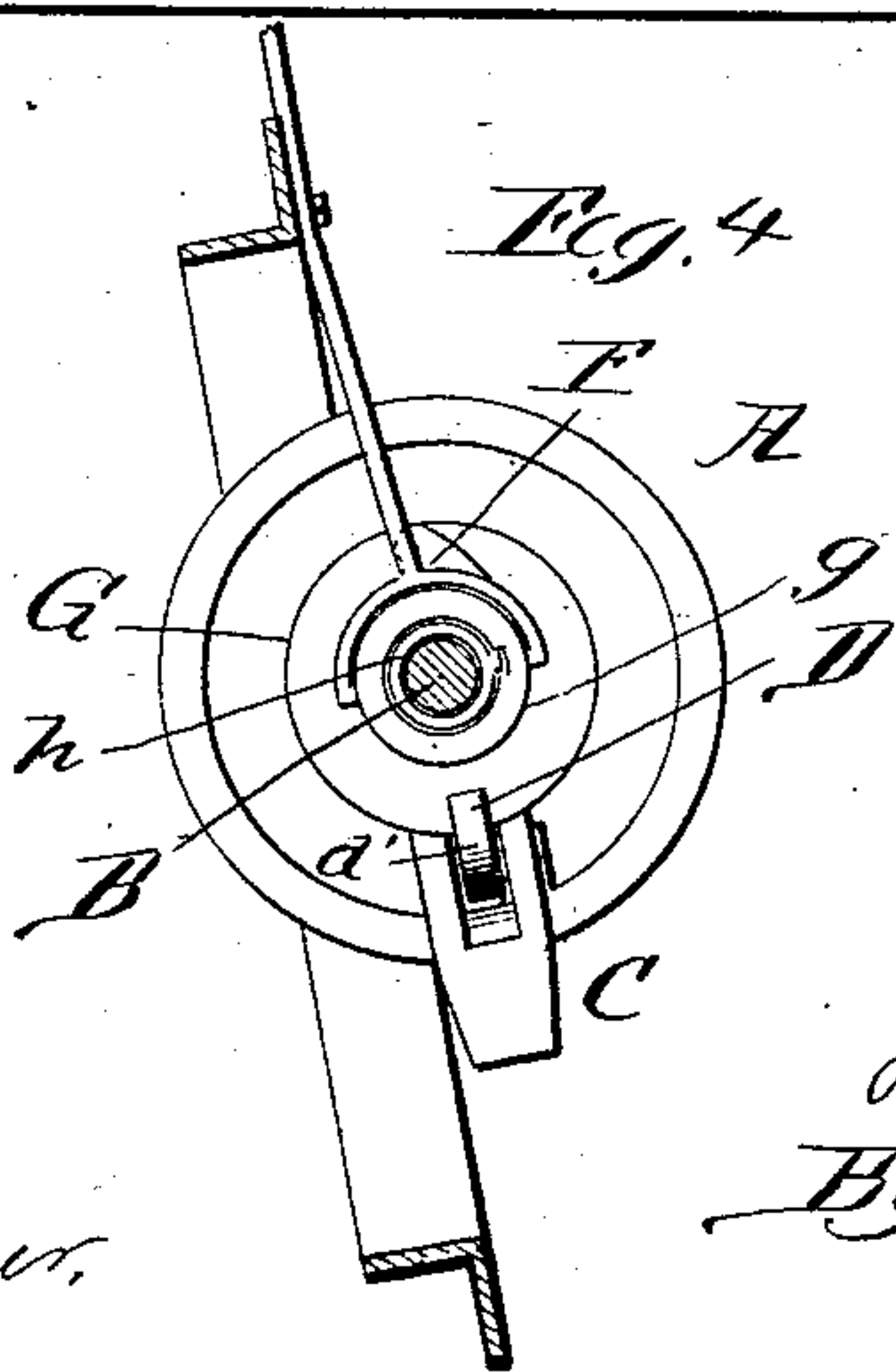
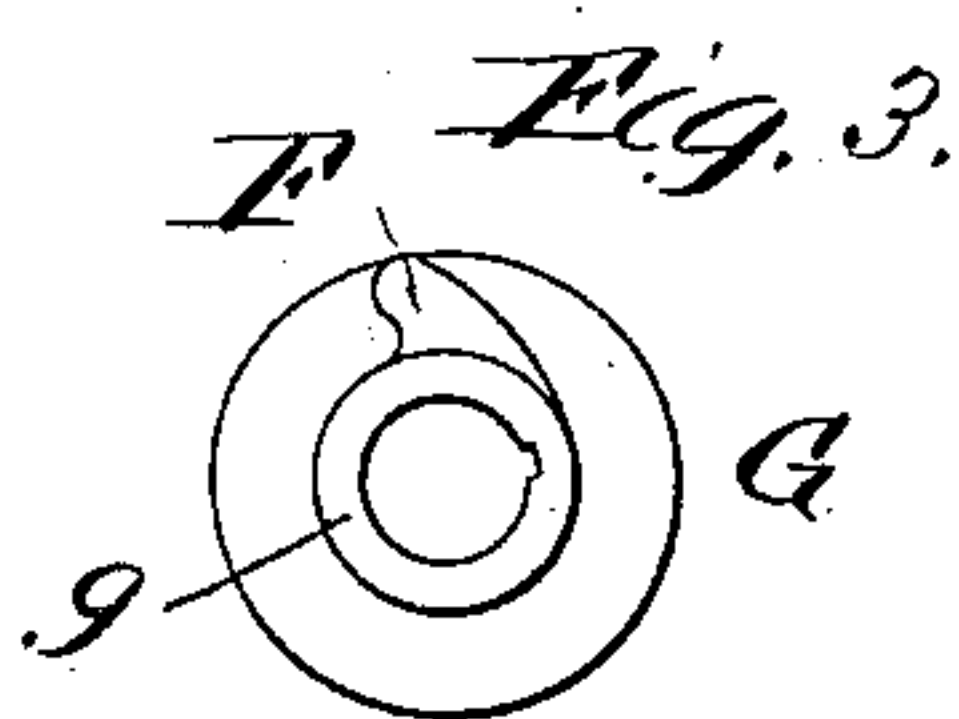
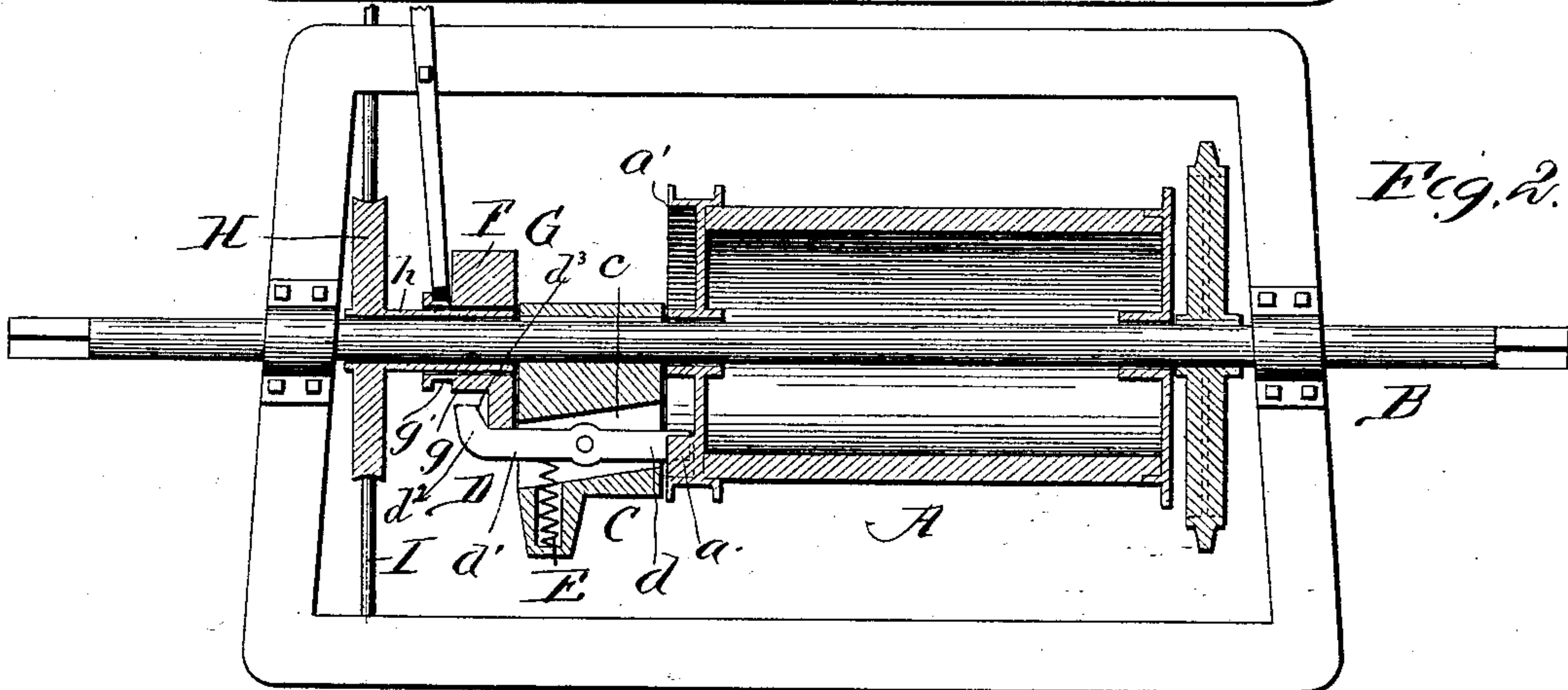
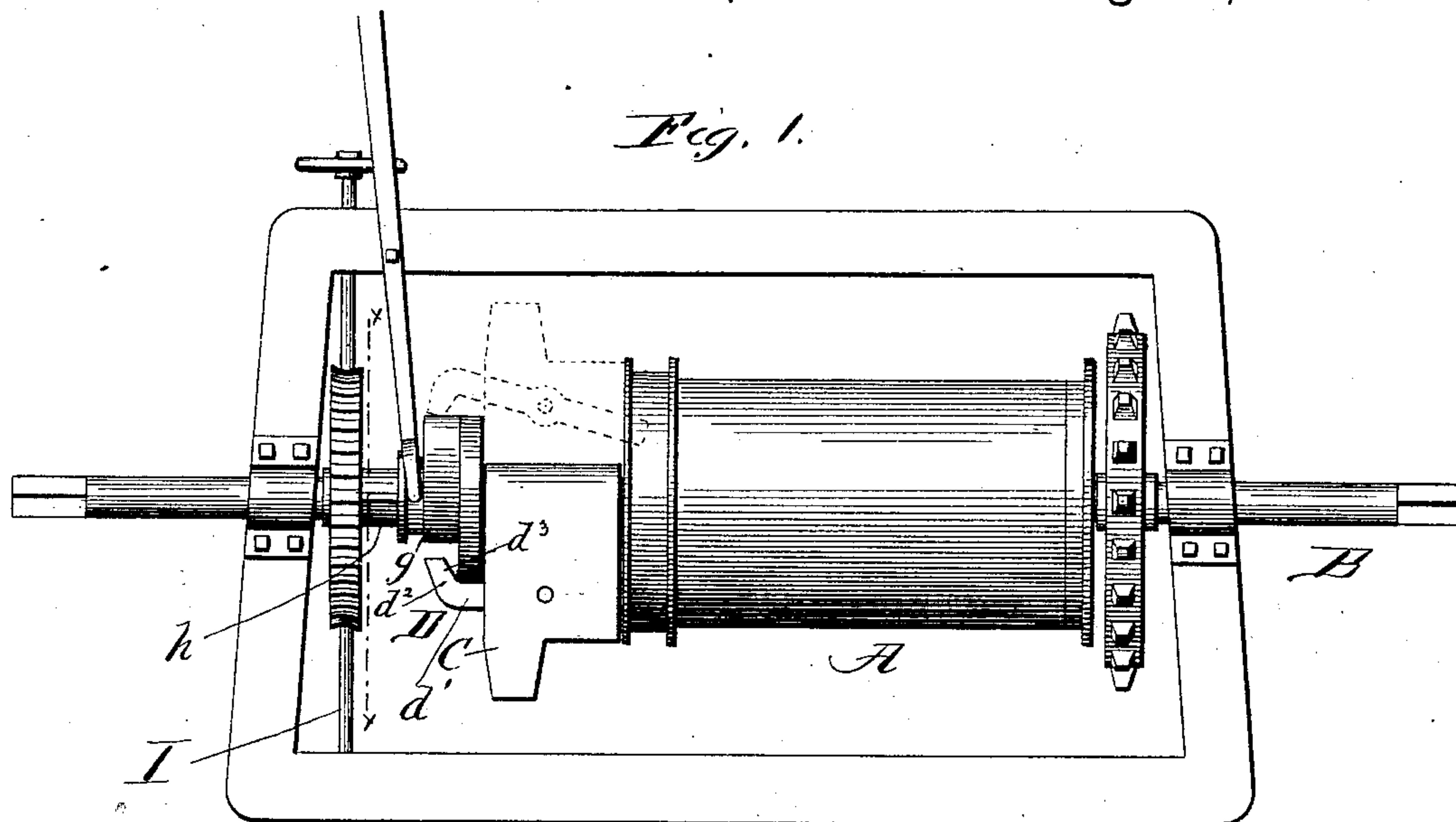


(No Model.)

J. GARDNER.  
WELL DRILLING MACHINE.

No. 480,906.

Patented Aug. 16, 1892.



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# UNITED STATES PATENT OFFICE.

JOHN GARDNER, OF BLOOMINGDALE, ASSIGNOR TO FREDERICK C. AUSTIN,  
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## WELL-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 480,906, dated August 16, 1892.

Application filed July 17, 1891. Serial No. 399,881. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN GARDNER, a citizen of the United States, residing at Bloom-  
ingdale, in the county of Du Page and State  
5 of Illinois, have invented a certain new and  
useful Improvement in Well-Drilling Ma-  
chines, of which the following is a specifica-  
tion.

My invention relates to well-drilling ma-  
10 chines of that class in which the chain or  
cable for suspending and alternately raising  
and permitting the drop of a well-tube or drill-  
rod is governed by a reversibly-rotating wind-  
ing-drum, which is arranged loose upon a  
15 revolving shaft and alternately locked upon  
and unlocked from the same, so that during  
the brief periods in which the drum is locked  
upon the shaft it will be revolved in a direc-  
tion to wind up the chain or cable, while, on  
20 the other hand, during the periods of the re-  
leasement of the drum from the shaft it will  
be permitted to turn in an opposite direction,  
so as to allow the chain or cable to unwind.

In a machine characterized by my inven-  
25 tion the winding-drum is arranged loose upon  
the rotary driving-shaft and provided at one  
end with a stop or abutment. Adjacent to  
said end of the winding-drum is a spring-  
latch, which revolves with the shaft and which  
30 is normally in position to engage the stop on  
the drum, the latch being at a point in its  
revolution released from the drum by reason  
of its engagement with a stationary cam. As  
a means for placing and locking the latch  
35 out of position for engaging the drum and cam  
I provide an adjustable dog arranged to en-  
gage the latch, as hereinafter more fully set  
forth.

In the accompanying drawings, Figure 1 rep-  
40 resents in elevation a portion of a well-drill-  
ing machine embodying my invention. Fig.  
2 is a vertical longitudinal section of the same,  
the frame being, however, in elevation. Fig.  
3 is an end view of the cam and adjustable  
45 dog. Fig. 4 is a section on line  $x x$  in Fig. 1.  
Fig. 5 is an end view of the winding-drum  
with the rotary shaft in cross-section.

A indicates the winding-drum, and B de-  
notes the rotary driving-shaft upon which the  
50 winding-drum is loosely arranged. The bear-

ing C, for the latch D, is keyed or otherwise  
secured upon the driving-shaft, and is pro-  
vided with a recess  $c$ , adapted to afford suit-  
able working space for the latch. The latch  
is pivoted between its ends and is confined 55  
between the two side walls of recess  $c$ , which  
said sides form abutments arranged to oppose  
lateral shocks to which the latch may be sub-  
ject. The latch is arranged as a lever, and  
may be said to have its front arm  $d$  adapted 60  
to extend forwardly from the bearing so as to  
normally lie in the path described by a stop  
 $a$ , arranged at one end of the winding-drum.  
A spring E, for causing the forward end of the  
latch to normally lie in the path of the stop 65  
 $a$  on the winding-drum, is confined within  
the bearing C and applied to the rear arm  $d'$   
of the latch. The cam F for operating the  
latch is stationary with regard to the rotation  
of the shaft, although it can be adjusted, as 70  
hereinafter set forth. The rear arm of the  
latch is arranged so that while the latch is  
being carried round with the revolving driv-  
ing-shaft its said arm will engage the cam,  
which will serve to swing the latch about its 75  
pivot in a way to cause its forward end to  
clear the stop on the drum and thus tempor-  
arily unlock the latter from the driving-shaft.

As a means for locking the latch in condi-  
tion to allow it to be revolved by the driving- 80  
shaft without engaging the winding-drum, I  
provide an annular non-rotating stop or dog  
G, which is arranged for adjustment toward  
and away from the winding-drum, and I so  
relatively form and position the said stop or 85  
dog and the rear arm of the latch that by  
properly adjusting the annular stop or dog  
it can be caused to engage and force the rear  
end of the latch-arm in a direction to cause  
the forward end of said latch to clear the stop 90  
 $a$  on the drum, and hence permit the latch to  
revolve with the shaft without operating the  
drum and without engaging the cam.

While the dog or stop G is non-rotative—  
that is to say, it does not rotate with the 95  
driving-shaft—I prefer as a simple and com-  
pact arrangement to provide a hub or sleeve  
 $g$ , both with said stop or dog and with the  
cam F, and arrange said sleeve or hub to slide  
along a sleeve or hollow bearing  $h$ , which is 100



rigid with a worm-wheel H, by which arrangement the sleeve *g*, cam F, and dog G can, if preferred, be all of one piece. The hub or sleeve *g* can be feathered on the sleeve or hollow journal *h* of the worm-wheel, which latter can be turned by a worm arranged on a shaft I, but not shown. The driving-shaft extends through the worm-wheel and its hollow journal, but does not affect the same.

10 The rotary adjustable worm-wheel can be turned by turning the shaft I, and by thus adjusting the worm-wheel the sleeve *g*, which carries the cam, can be turned, and hence a rotary adjustment given to said cam for the purpose of timing the operations of the drum.

15 The stop or dog G and cam can be adjusted independently of the worm-wheel by means of a lever K, having at one end a fork arranged to straddle the sleeve *g* and engage in an annular groove *g'* in the same.

20 As a desirable way of arranging the stop *a*, one of the ends of the drum is provided with an annular flange *a'*, which is in turn provided with said stop.

25 The rear arm *d'* of the latch has its end *d<sup>2</sup>* bent inwardly or toward the driving-shaft, the general arrangement being such that when the latch is in working condition the dog G will be forward of the inclined shoulder *d<sup>3</sup>*, formed by bending the end of the latch-arm,

30

as aforesaid. When, however, the dog is adjusted in a direction away from the drum it will engage said incline or inclined shoulder *d<sup>3</sup>* on the latch, and hence force the latter out of position for engaging the drum.

35

What I claim as my invention is—

1. The combination, with the drum and pivoted latch for engaging and releasing the same and cam for operating the latch, of the adjustable dog, adapted and arranged for engaging and holding the pivoted latch out of position for engaging the cam and the drum, substantially as described.

40

2. The combination, with the drum, of the pivoted latch provided with an incline, and the adjustable annular dog G for engaging said incline on the latch, for the purpose set forth.

45

3. The combination, with the drum and latch for engaging and releasing the same, of the cam F and dog G, for the purpose set forth, arranged upon a hub or sleeve which is applied to slide along a bearing formed by the hollow journal *h* of a worm-gear, substantially as described.

50

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Witnesses:

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