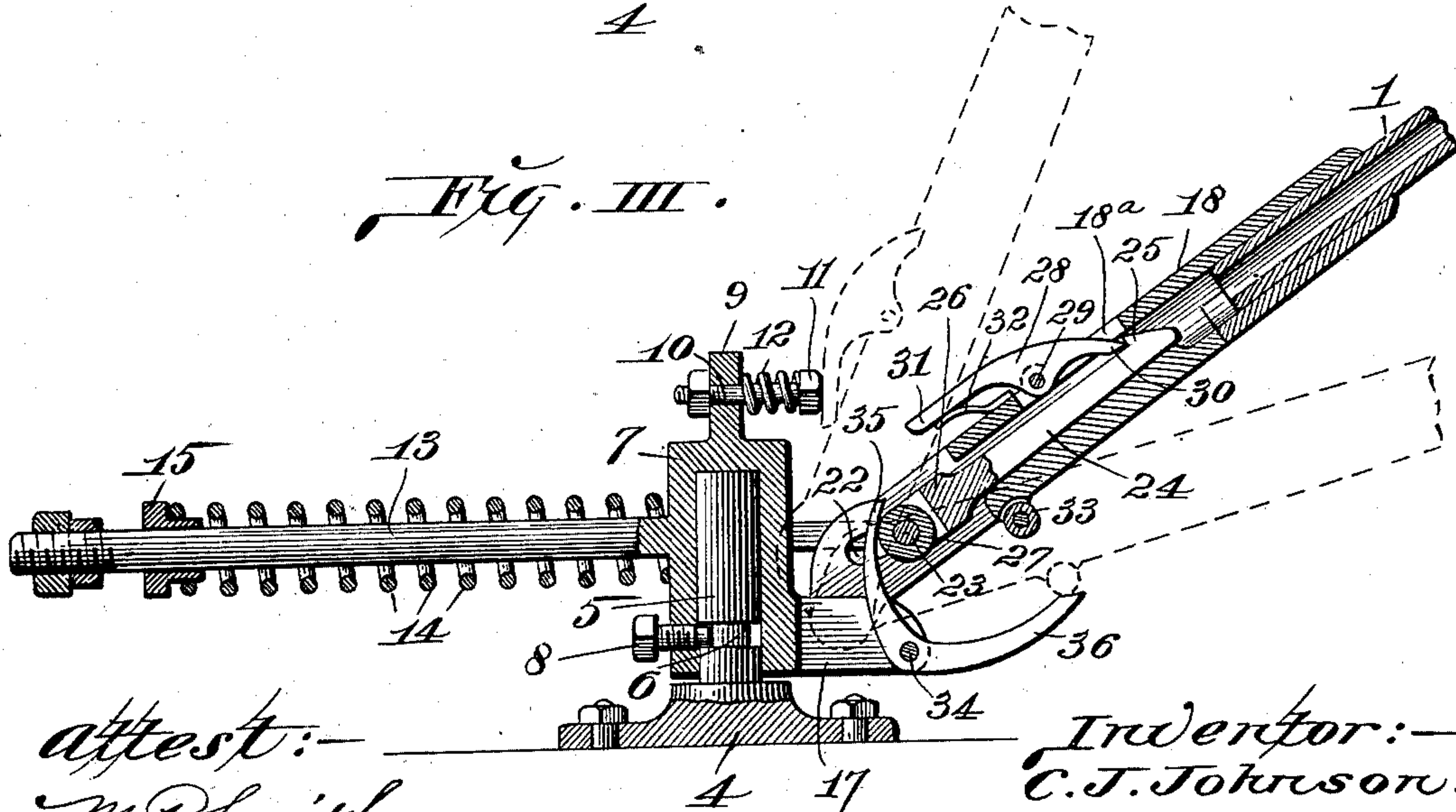
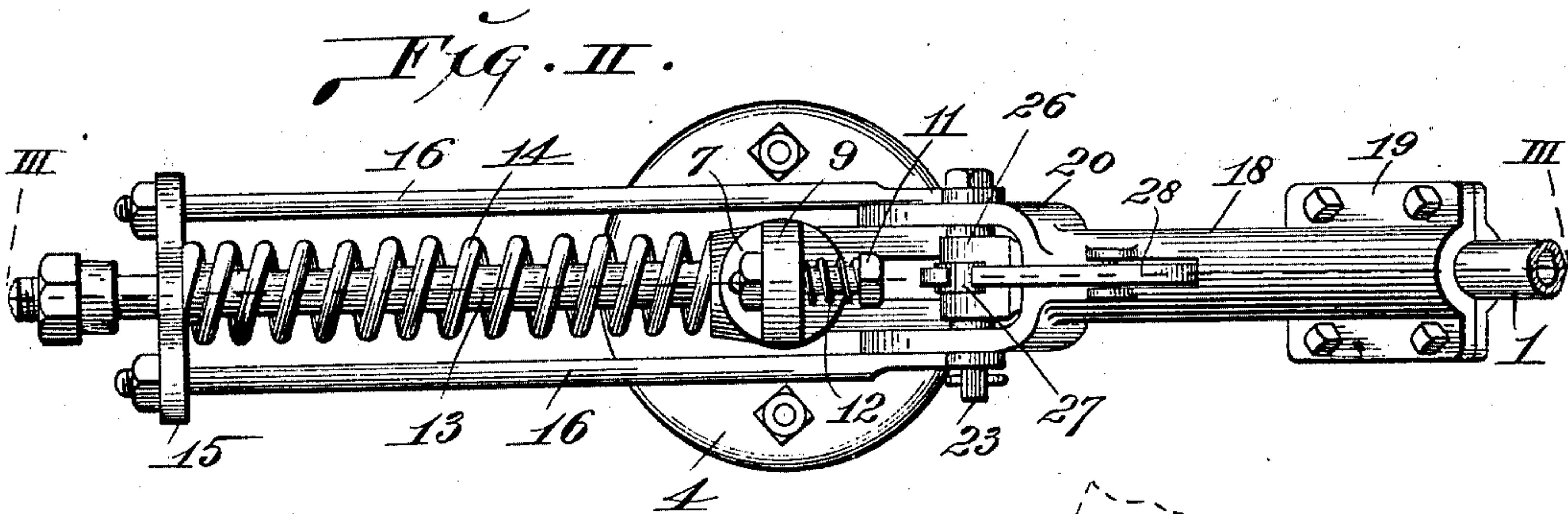
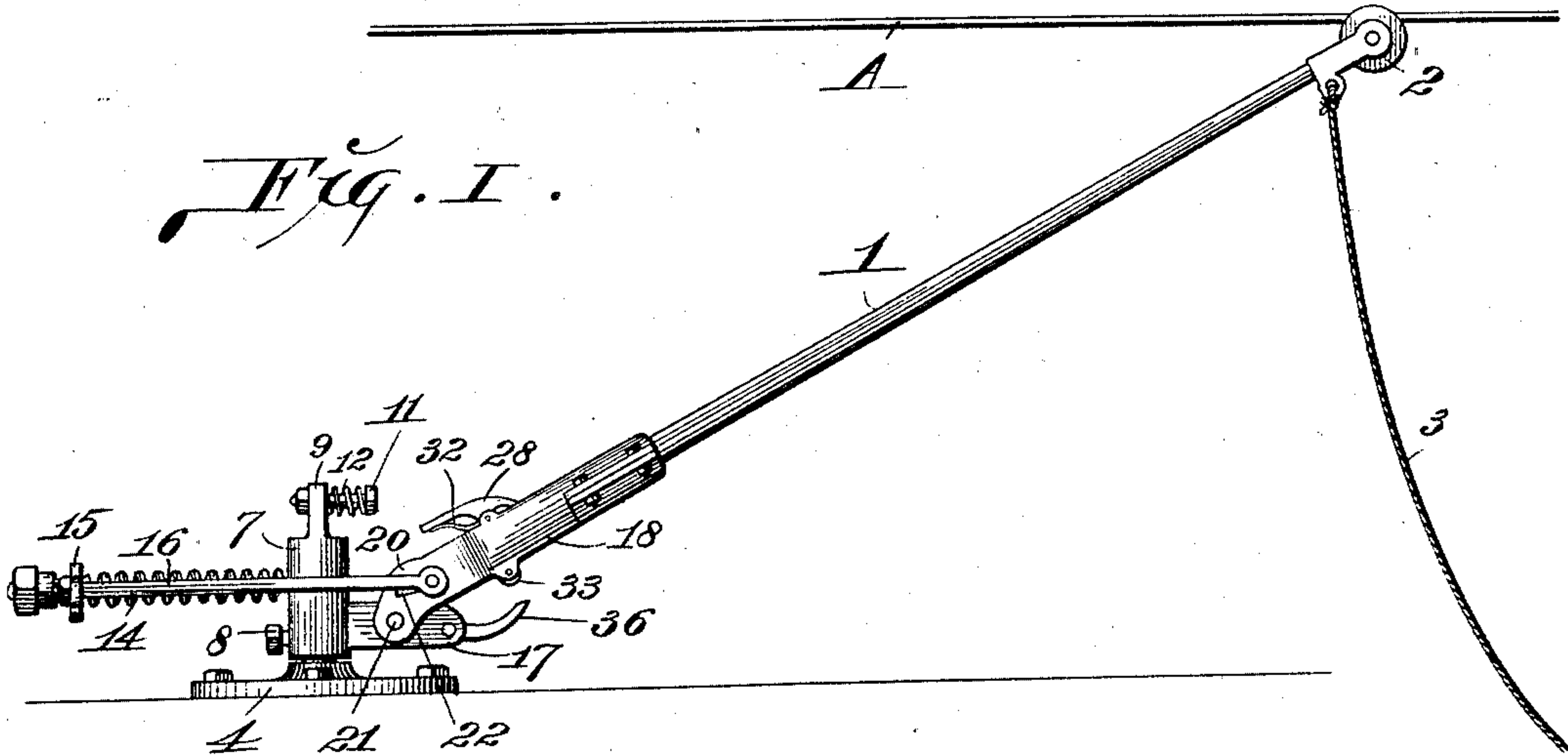


No. 750,368.

PATENTED JAN. 26, 1904.

C. J. JOHNSON.
TROLLEY FOR ELECTRIC RAILWAY CARS.
APPLICATION FILED MAY 14, 1903.

NO MODEL.



attest:-

*M. J. Smith
E. S. Knight*

Inventor:-
C. J. Johnson.

By *Wright, Bro*
attys.

UNITED STATES PATENT OFFICE.

CHARLES J. JOHNSON, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF
TO CHARLES W. BENEDICT, OF ST. LOUIS, MISSOURI.

TROLLEY FOR ELECTRIC-RAILWAY CARS.

SPECIFICATION forming part of Letters Patent No. 750,368, dated January 26, 1904.

Application filed May 14, 1903. Serial No. 157,030. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. JOHNSON, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have
5 invented certain new and useful Improvements in Trolleys for Electric-Railway Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.
10 My invention relates to that character of railway-car trolleys which are designed to automatically drop to a lowered position when the trolley-wheel becomes displaced from the overhead electrical conductor; and the inven-
15 tion consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a side elevation of my trolley. Fig. II is a top or plan view of the trolley with the pole thereof omitted. Fig. III is a
20 longitudinal section taken on line III III, Fig. II.

1 designates the pole of my trolley, which carries a wheel 2 of the usual form that travels in contact with the electrical conductor A.
25 (See Fig. I.)

3 is a pull-cord connected to the trolley-pole.

4 designates the trolley-base, having a vertical post 5, that is provided with an annular
30 groove 6 and receives the swiveling pole-carrying head 7, that is held from displacement on said post by a retaining-screw 8.

9 is an upright surmounting the head 7 and in which is loosely seated a trip-pin or bolt
35 10, having a head 11 and surrounded by a cushion-spring 12.

13 designates a spring-supporting rod carried by the head 7, and 14 is the expansion-trolley-supporting spring mounted on said
40 rod.

15 is a cross-head slidably mounted on the rod 13 at the rear end of the spring, to the arms of which the rear ends of pull-rods 16 are connected.

45 17 designates an arm projecting rearwardly from the swivel-head 7, and 18 is the base of the trolley-pole in which the pole 1 is preferably held by a clamp 19, so as to permit ready separation of the pole from said base in the

event of breakage of or injury to the pole. 50
The pole-base 18 is formed with a pair of fork-arms 20, that straddle the arm 17 and are pivotally connected thereto at 21. (See Fig. I.) In each of the fork-arms 20 is a slot
55 22, extending in corresponding directions diagonally of the arms.

23 is a cross-rod that passes through the forward ends of the pull-rods 16 and is loosely fitted in the slots 22 to work therein.

24 designates a slide-bolt reciprocally positioned in the pole-base 18 and provided at its upper end with a catch-hook 25. This slide-bolt has a bifurcated head 26 at its lower end that is fitted to the cross-rod 23, and situated
60 between the arms of said bolt-head on said cross-rod is a roller 27.

28 is a dog pivoted at 29 to the pole-base 18 and having an arm 30, that enters through a slot 18^a in said base to engage the catch-hook
65 25 of the slide-bolt 24. Extending downwardly from the pivot of the dog 28 is a trigger-arm 31, that is backed by a spring 32.

33 is an antifriction-roller carried by the pole-base 18 at its under side. (See Figs. I and III.)
75

Pivoted at 34 to the swivel-head-carried arm 17 is a cam-rocker, consisting of a forwardly-extending curved arm 35 and a rearwardly-extending curved arm 36.

Having now described the parts of my trolley mechanism, I will set forth the operation thereof in practical use, which is as follows: As shown in the drawings, the trolley-pole is maintained in elevated position, so that its wheel is in contact with the electrical conductor, being held thereto under the action of the supporting-spring 14. At this time the slide-bolt 24 is held upwardly in the pole-base 18 by the dog 28, and the cross-rod 23 is therefore maintained in a position at the rear ends
80 of the slots 22 in the pole-base, so that the pull-rods 16, that receive the pressure of the spring 14, will uphold the pole-base and the pole therewith. So long as the trolley-wheel is in engagement with the overhead conductor
85 the parts will remain in the positions stated. In the event of the trolley-wheel becoming disengaged from the conductor the supporting-
90

spring 14 acts to throw the pole and its base upwardly and forwardly, with the result that the trigger-arm 31 of the dog 28 is moved to the head of the trip-pin 10, supported above the swivel-head 7, as seen in dotted lines, Fig. III. When said trigger-arm strikes said pin, the catch-arm 30 is disengaged from the catch-hook 25 of the slide-bolt 24, thereby releasing said slide-bolt for downward movement to the extent permitted by the slots 22 in the pole-base, in which the cross-rod 23 travels. Upon the downward movement of the slide-bolt the cross-rod 23 is drawn under action of the spring 14 to the forward ends of the slots 22, thereby changing the position of fulcrumage of said cross-rod in the pole-base and permitting the base to fall and carry the pole therewith into the position seen in dotted lines, Fig. III. In the descent of the pole-base it swings upon its pivots 21, and its movement is limited to an extent corresponding to the length of the slots 22, which is sufficient to permit forward travel of the cross-head 15 to the limit of its travel and stop the expansion of the spring 14, so that the action of said spring will cease. In resetting the parts to support the trolley in contact with the overhead contact for service the pull-cord 3 is drawn downwardly, causing the antifric-tion-roller 33, carried by the pole-base, to ride in contact with the rear cam-arm 36 and swing the forward cam-arm 35 in a rearwardly direction. The forward cam-arm in its move-ment rides against the roller 27 on the cross-rod 23 and acts to push the slide-bolt 24 upwardly in the pole-base until its catch-hook 25 is engaged by the catch-arm 30 of the dog 28. When the slide-bolt has been so moved, the cross-rod 23 is positioned at the rear ends of the slots 22 in the pole-base, and the rod is fulcrumed at such point to be held thereat, while the slide-bolt is retained by the dog 28 to enable the supporting-spring 14 to uphold the trolley-pole through the medium of the connecting pull-rods 16.

A very advantageous feature of my construction lies in the fact that the trolley-pole is yieldingly caught when it falls after the trolley-wheel has escaped from its conductor. This is due to the roller 33 striking the rocker-arm 36 when the pole falls, thereby throwing the rocker-arm 35 in a direction corresponding to that in which the arm 36 moves, in which action the arm 35 by striking the roller 27 exerts a pull upon the spring 14, and the exertion of said spring in contraction and relaxation cushions the fall of the pole, as will be readily understood.

I claim as my invention—

1. In a trolley, the combination of a head, a pole-supporting spring carried by said head, a slotted pole-base pivoted to said head, and means of connection between said spring and said pole-base operating in the slot therein, substantially as set forth.

2. In a trolley, the combination of a head, a

pole-supporting spring carried thereby, a slot-
ted pole-base pivoted to said head, means of
connection between said spring and pole-base
arranged to operate in the slot in said head,
a member carried by said pole-base and hav-
ing connection to said spring-and-base-con-
necting means, and means for holding said
member to retain said connecting means in a
fixed position while the trolley has contact
with an overhead conductor, substantially as
set forth.

3. In a trolley, the combination of a head, a
pole-supporting spring carried thereby, a slot-
ted pole-base pivoted to said head, means of
connection between said spring and a pole-base
arranged to operate in the slot in said base, a
member carried by said pole-base and having
connection to said spring-and-base-connecting
means, and means for holding said member
to retain said connecting means in a fixed po-
sition while the trolley has contact with an
overhead conductor, and means whereby said
member is released when the trolley becomes
displaced from said overhead conductor, sub-
stantially as set forth.

4. In a trolley, the combination of a head, a
pole-supporting spring carried by said head, a
slotted pole-base pivoted to said head, means
connecting said spring and pole-base and op-
erating in the slot in said base, a slide-bolt car-
ried by said head connected to said spring-
and-pole-base-connecting means, and means
for holding said slide-bolt in a fixed position
while the trolley is in contact with an over-
head conductor, substantially as set forth.

5. In a trolley, the combination of a head, a
pole-supporting spring carried by said head, a
slotted pole-base pivoted to said head, means
connecting said spring and pole-base and op-
erating in the slot in said base, a slide-bolt car-
ried by said head connected to said spring-
and-pole-base connecting means, and means
for holding said slide-bolt in a fixed position
while the trolley is in contact with an over-
head conductor, and means whereby said slide-
bolt is released when the trolley is displaced
from contact with the overhead conductor,
substantially as set forth.

6. In a trolley, the combination of a head, a
pole-supporting spring carried by said head,
pull-rods having bearing against said pole-sup-
porting spring, a slotted pole-base pivoted to
said head, a cross-rod united to said pull-rods
and operating in the slot in said pole-base, a
slide-bolt connected to said cross-rod, and a
dog engaging said slide-bolt to hold said cross-
rod in a fixed position in the slot in said pole-
base, substantially as set forth.

7. In a trolley, the combination of a head, a
pole-supporting spring carried by said head,
pull-rods having bearing against said pole-sup-
porting spring, a slotted pole-base pivoted to
said head, a cross-rod united to said pull-rods
and operating in the slot in said pole-base, a
slide-bolt connected to said cross-rod, and a

dog engaging said slide-bolt to hold said cross-rod in a fixed position in the slot in said pole-base, and means for tripping said dog to free said slide-bolt, substantially as set forth.

5 8. In a trolley, the combination of a head, a pole-supporting spring carried by said head, pull-rods having bearing against said pole-supporting spring, a slotted pole-base pivoted to said head, a cross-rod united to said pull-rods and operating in the slot in said pole-base, a slide-bolt connected to said cross-rod, and a dog engaging said slide-bolt to hold said cross-rod in a fixed position in the slot in said pole-base, and a tripping-pin carried by said head to receive said dog and trip it to free said slide, substantially as set forth.

9. In a trolley, the combination of a head, a pole-supporting spring carried by said head, pull-rods having bearing against said pole-supporting spring, a slotted pole-base pivoted to said head, a cross-rod united to said pull-rods and operating in the slot in said pole-base, a slide-bolt connected to said cross-rod, a dog engaging said slide-bolt to hold said cross-rod in a fixed position in the slot in said pole-base, and a cushioned tripping-pin to receive the impact of said dog and to free said slide-bolt, substantially as set forth.

10. In a trolley, the combination of a head, a pole-supporting spring carried by said head, a slotted pole-base pivoted to said head, means connecting said spring to said pole-base and operating in the slot therein, a retaining member carried by said pole-base and united to said connecting means, means for holding said

retaining member, and means for moving said retaining member to receive its holding means and to shift the position of said spring-and-pole-base-connecting means in the slot in said pole-base, substantially as set forth.

11. In a trolley, the combination of a head, a pole-supporting spring carried by said head, a slotted pole-base pivoted to said head, means connecting said spring to said pole-base and operating in the slot therein, a retaining member carried by said pole-base and united to said connecting means, means for holding said retaining member, and a cam-rocker for moving said retaining member to receive its holding means and to shift the position of said spring-and-pole-base-connecting means in the slot in said pole-base, substantially as set forth.

12. In a trolley, the combination of a head, a pole-supporting spring carried by said head, a slotted pole-base pivoted to said head, pull-rods having engagement with said spring, a cross-rod connected to said pull-rods and operating in the slot in said pole-base, a slide-bolt connected to said cross-rod, a dog carried by said pole-base for engaging said slide-bolt, a two-armed cam-rocker having pivoted connection with said head, a roller carried by said cross-rod to engage one of said rocker-arms, and a second roller carried by said pole-base to engage the other of said rocker-arms, substantially as and for the purpose set forth.

CHAS. J. JOHNSON.

In presence of—

E. S. KNIGHT,

NELLIE V. ALEXANDER.