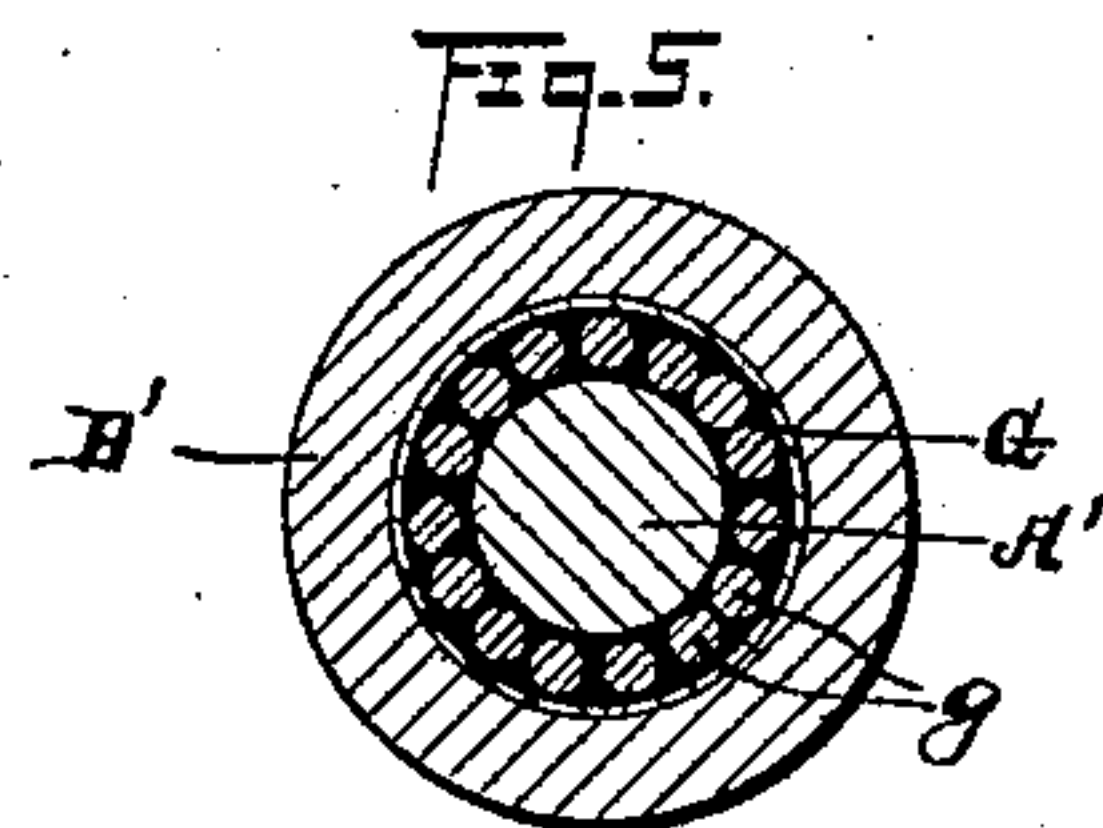
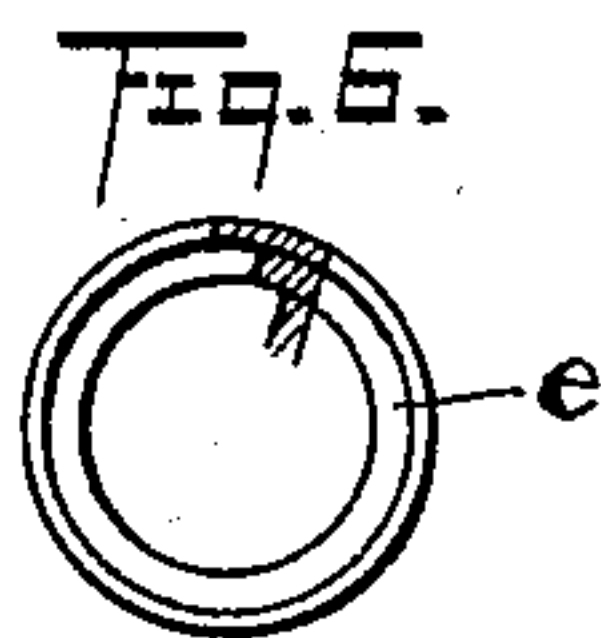
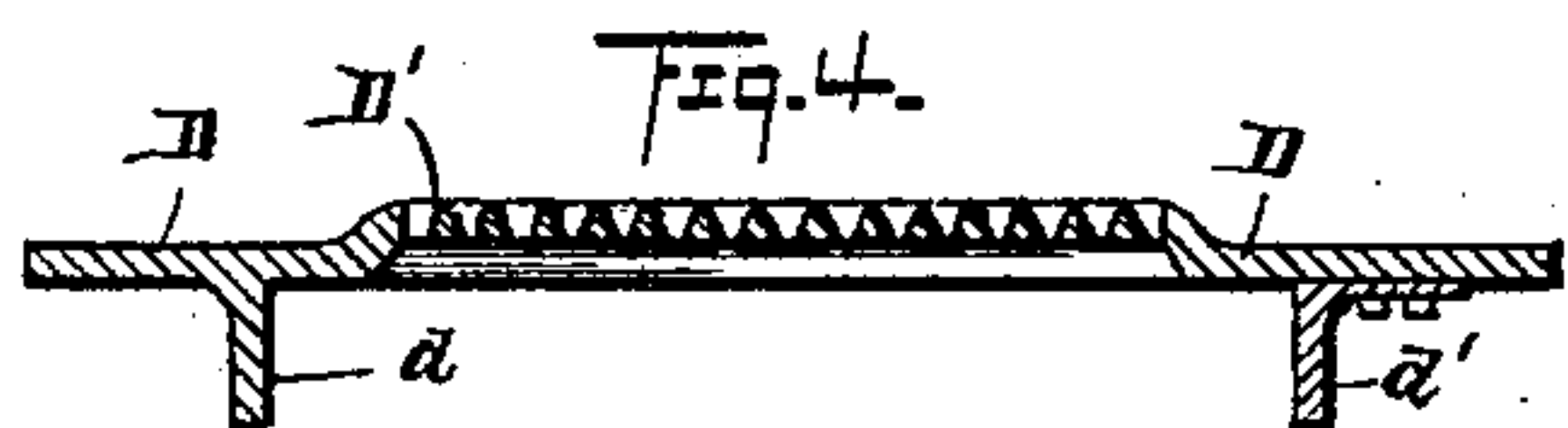
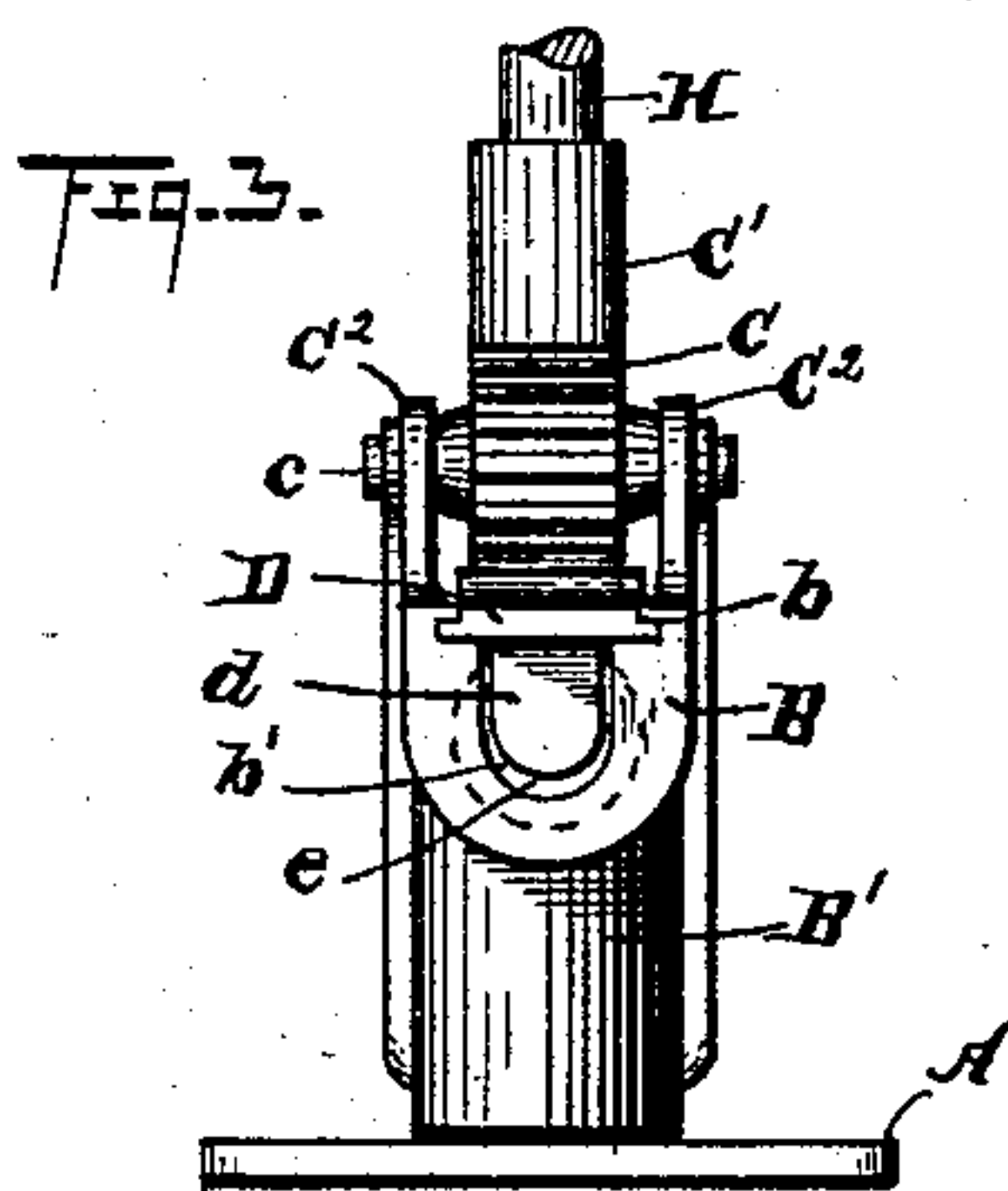
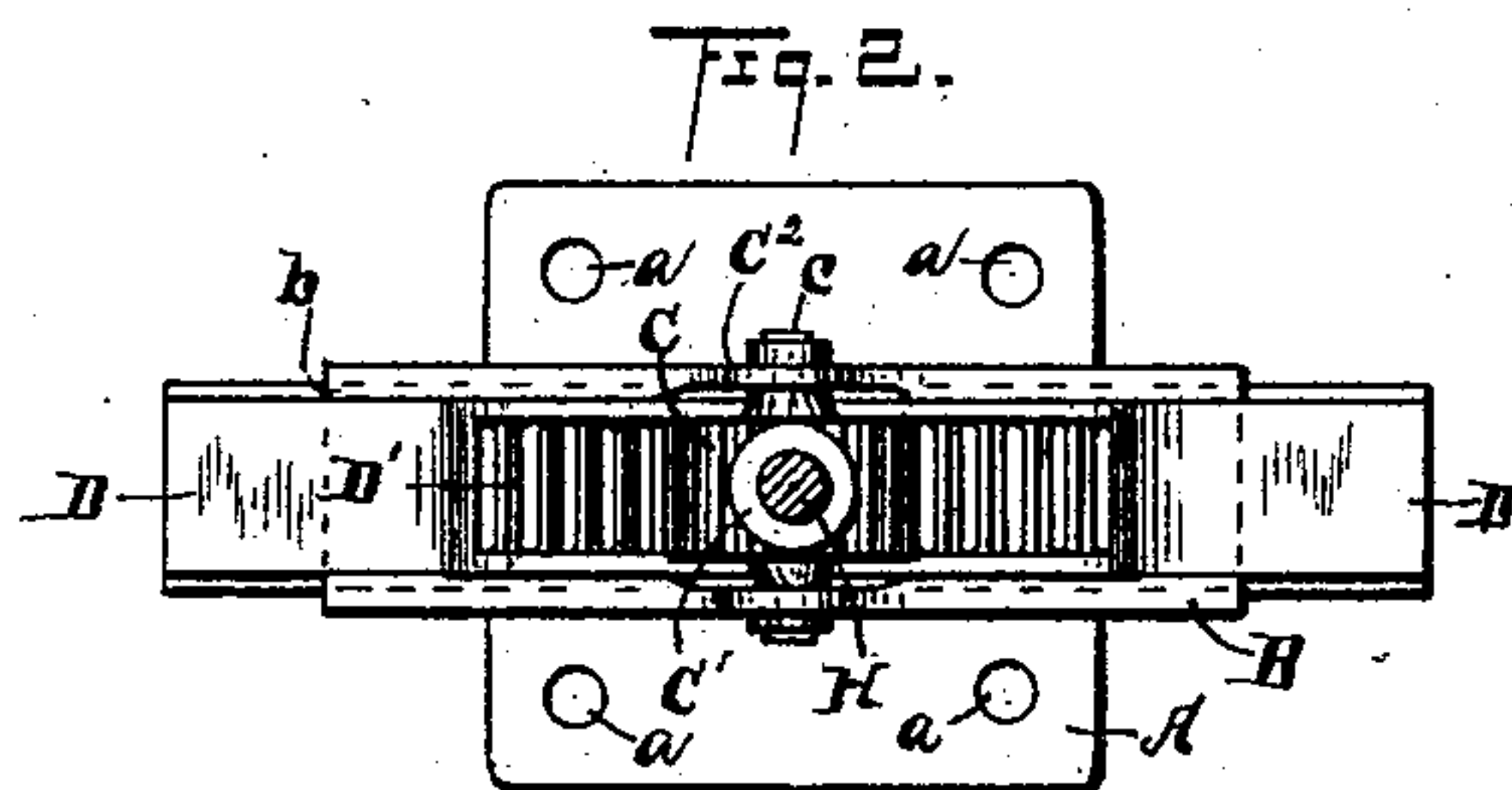
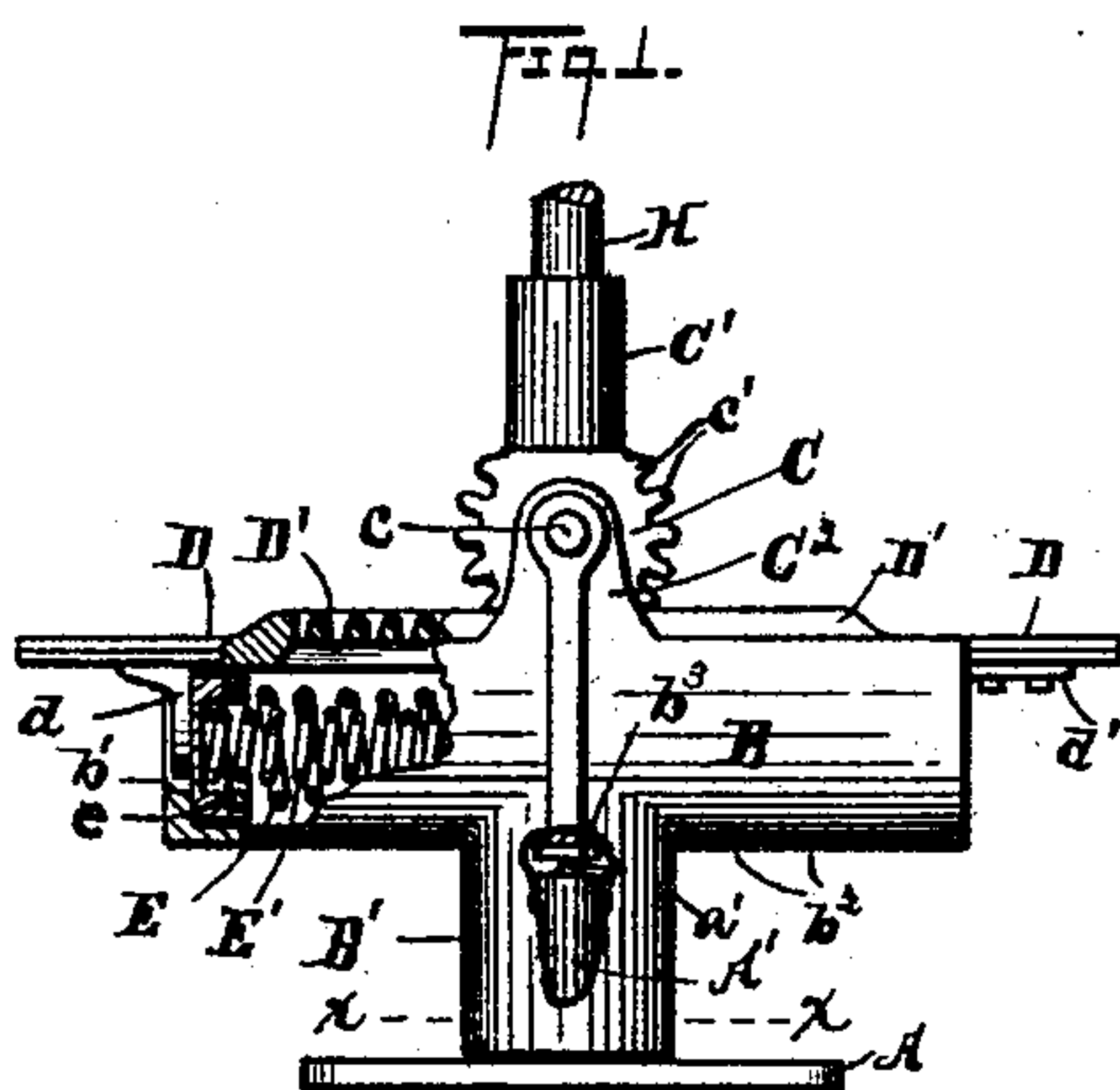


(No Model.)

S. HARRIS.  
TROLLEY STAND.

No. 491,210.

Patented Feb. 7, 1893.



WITNESSES.

Belle S. Lowrie,  
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INVENTOR.

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ATTORNEY.

# UNITED STATES PATENT OFFICE.

SAMUEL HARRIS, OF CLEVELAND, OHIO, ASSIGNOR TO THE STEEL MOTOR COMPANY, OF SAME PLACE.

## TROLLEY-STAND.

SPECIFICATION forming part of Letters Patent No. 491,210, dated February 7, 1893.

Application filed November 14, 1892. Serial No. 451,893. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL HARRIS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and  
5 useful Improvements in Trolley-Pole Stands; 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 pertains to make and use the  
10 same.

My invention relates to improvements in trolley-pole stands and it consists in certain features of construction and in combinations of parts hereinafter described and pointed out  
15 in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a trolley-pole stand embodying my invention, a portion thereof being broken away to show the internal construction. Fig. 2 is a plan with the pole in section. Fig. 3 is an end elevation. Fig. 4  
20 is a vertical longitudinal section of the rock bar. Fig. 5 is a horizontal section taken on line  $x x$  Fig. 1. Fig. 6 is a face view of a washer  $e$ .  
25

A represents the base plates, B the housing and C the head. Plate A is provided with an upwardly projecting cylindrical hub A' of considerable length, and this plate is also provided with holes as at  $a$  for the passage of the bolts that are supposed to secure plate A to the top of the car.  
30

G is a sleeve concentric with, but somewhat larger in diameter than hub A'. This sleeve  
35 is constructed preferably of a piece of brass tube of the same length as hub A'. In the annular chamber between the hub and sleeve, is located a series of anti-friction rollers  $g$  and these rollers should fit snugly between the hub and sleeve, radially, and should so  
40 fill the chamber circumferentially, that the rollers can not assume inclined positions such as would cause the rollers to wedge and become fixed in the chamber.

The housing B has a depending leg or sleeve B' and the latter is bored to fit easily outside of sleeve G aforesaid. I will here remark that there is a heavy lateral strain between the housing and the hub A' owing to the length  
45 of the trolley-pole and pressure of the trolley on the wire, and it is important that, under  
50

such strain, the housing should revolve freely, otherwise the trolley would be likely to jump the wire, at the bends of the wire. Ordinarily, sleeve G revolves with the housing, but in  
55 case anything should occur to "stick" the rollers, the housing, in such case, can revolve on the inner sleeve. Sleeve G performs another important function in the facility it affords for assembling the parts. With the inner  
60 sleeve in position, it is an easy matter to place the rollers, and then to place the housing over this sleeve, and in removing the housing, as is sometimes required, this sleeve and the rollers remain intact. The horizontal portion of the housing is substantially a U shaped  
65 trough, the open side thereof being at the top. The edges of the housing are grooved internally as at  $b$ , such grooves forming ways that receive the reduced edges of the rack-bar D. The teeth  
70 D' of this rack-bar are of the mortise variety, that is, the spaces between the teeth extend vertically through the bar, so that snow, ice or dirt can not accumulate between the teeth. Member D has depending lugs or ears  $d d'$  for  
75 purposes hereinafter mentioned. One of these ears may be integral with the bar, but the other must be detachable, and hence, ear  $d'$  is shown bolted to the bar. The end walls of the housing have openings as at  $b'$ , large  
80 enough to admit the passage of lugs  $d d'$ . The housing has upwardly projecting ears C' and these ears are pierced to receive the axial pin  $c$  on which head C is journaled. Head C has teeth  $c'$  in the form of a sector, these  
85 teeth being adapted to engage the teeth of the rack-bar, whereby the latter is reciprocated by oscillating head C. Head C terminates above, in a socket C' in which socket the butt end of the trolley-pole H is secured.  
90 Inside the housing, is located a stiff coiled spring E, this spring being constructed of large sized wire, say half inch in diameter, more or less, and by reason of the wire being of large size the convolutions of the spring  
95 are necessarily of large diameter, in fact about as large as the cavity of the housing will accommodate. Inside spring E is located a second coiled spring E', the two springs co-operating. These springs, at the ends thereof, abut washers as at  $e$ , these washers being  
100 located next inside the end walls of the hous-



ing, these washers being of such large size that they will not pass through the opening  $b'$  aforesaid. The faces of washers  $e$  have ledges to form seats for the springs, see Fig. 6.

5 In assembling the parts the springs and washers are first placed in position in the housing, after which the rack-bar with member  $d'$  removed is slid endwise into position, after which member  $d'$  is attached to the rack-  
10 bar, the arrangement being such that lugs  $d$   $d'$  are next outside the washers  $e$ . It follows then that by moving the rack-bar in either direction from its normal, that is to say, its central position in the housing, one  
15 or the other of the lugs  $d$   $d'$  will engage, and carry with it, the opposing washer  $e$  whereby the springs are compressed by such movement. When the parts are left free, the recoil of the springs returns the rack-bar to its  
20 normal position wherewith the trolley pole is supposed to stand approximately vertical. When the larger spring is new, if its tension is found sufficient for the work, it would, in such case, be good practice to omit the inner  
25 springs until such time, when, from the relaxation of the larger spring, it became necessary to add the smaller spring.

From the foregoing it will be readily understood that when the movement of the car is  
30 to be reversed, the trolley-pole may be reversed by swinging it around on the axis of the housing. But in many cases this is not practicable for want of room, and when for any reason if preferred, the trolley-pole can be reversed on its own axis, that is to say, having  
35 disengaged the trolley from the wire, the trolley pole may be swung over in nearly a vertical plane in reversing the same, and without reversing the housing, the one method or the  
40 other being used, as, from circumstances may be most convenient. I may add, that, for obvious reasons, the housing has openings along the bottom thereof as at  $b^2$ , and that hub  $A'$  is usually provided with a hardened steel plug  
45 as at  $a'$  that engages a plate  $b^3$  for sustaining the weight of the housing and attachments,

thereby reducing the friction of these parts to a minimum.

What I claim is:

1. In combination, a trolley-pole stand hav- 50  
ing a stationary base provided with an upright hub, a housing having a sleeve concentric with the hub, an inner loose sleeve with a series of anti-friction rollers located in the  
annular chamber between the inner sleeve 55  
and hub, substantially as and for the purpose set forth.

2. In combination, a stationary base and hub, a housing swiveled upon such hub, a horizontal rack-bar operating in ways of the hous- 60  
ing, a coiled spring located inside the housing, washers abutting the spring inside of and engaging the end walls of the housing, the rack-bar having lugs engaging the outer faces  
of the washers, the end walls of the housing 65  
having openings for the passage of such lugs, substantially as and for the purpose set forth.

3. In trolley-pole stand, in combination, a stationary base having an upright hub, a housing swiveled thereon, a rack-bar of the mor- 70  
tise variety operative in ways of the housing, cylindrical coiled springs, the one spring operating within the coils of the other spring, such springs being located in the chamber of  
the housing, washers interposed between the 75  
ends of the springs and the end walls of the housing, lugs of the rack-bar located outside of and opposing the washers, openings in the end walls of the housing for the passage of  
these lugs, an oscillating head having teeth 80  
engaging the teeth of the rack-bar, such head having attachments, for engaging the trolley-pole, substantially as and for the purpose set forth.

In testimony whereof I sign this specifica- 85  
tion, in the presence of two witnesses, this 31st day of October, 1892.

SAMUEL HARRIS.

Witnesses:

G. P. NASH,  
W. H. DURKEE.