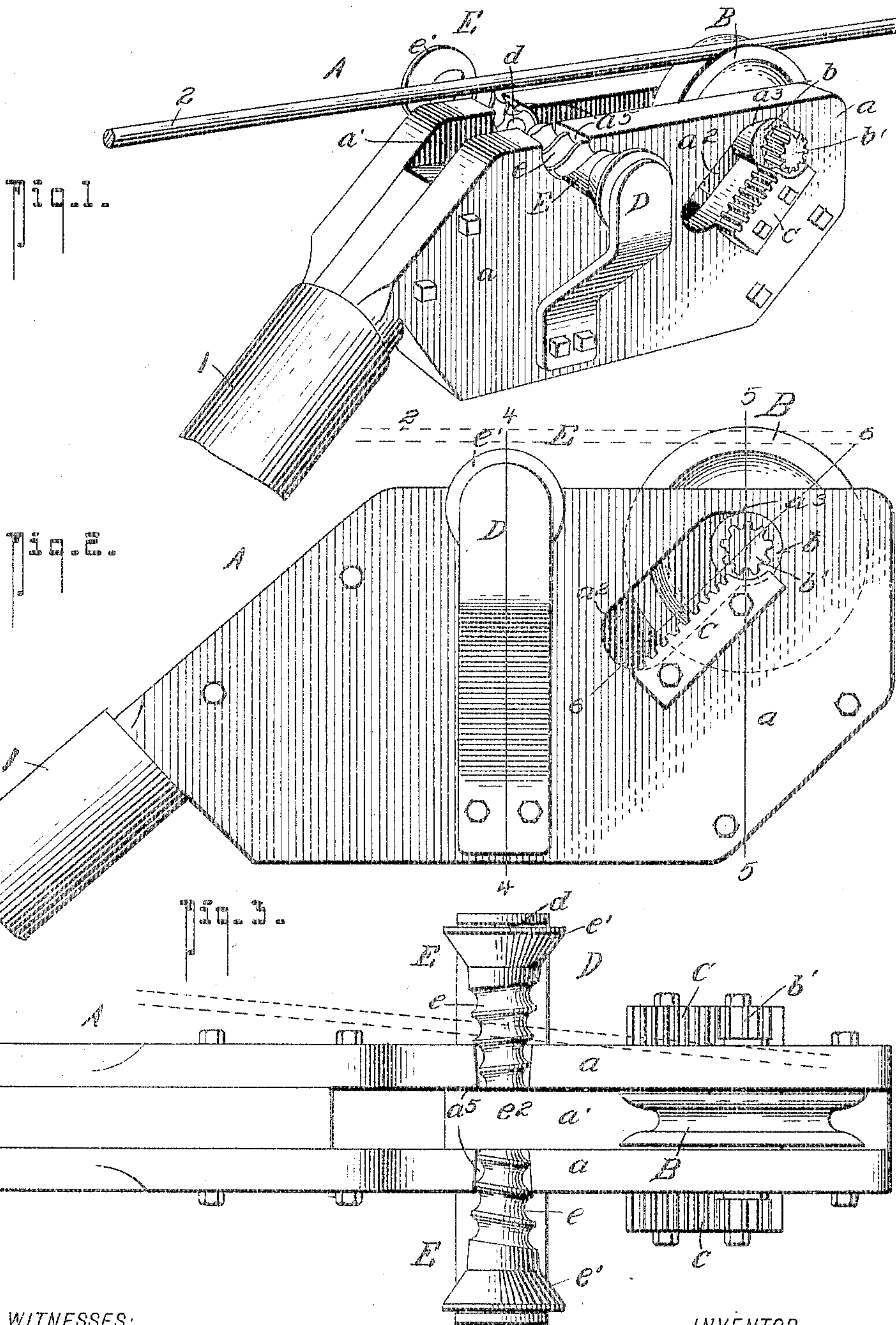


No. 794,020.

PATENTED JULY 4, 1905.

H. I. JEFFERS.
TROLLEY HEAD.
APPLICATION FILED AUG. 20, 1903.

2 SHEETS—SHEET 1.



WITNESSES:

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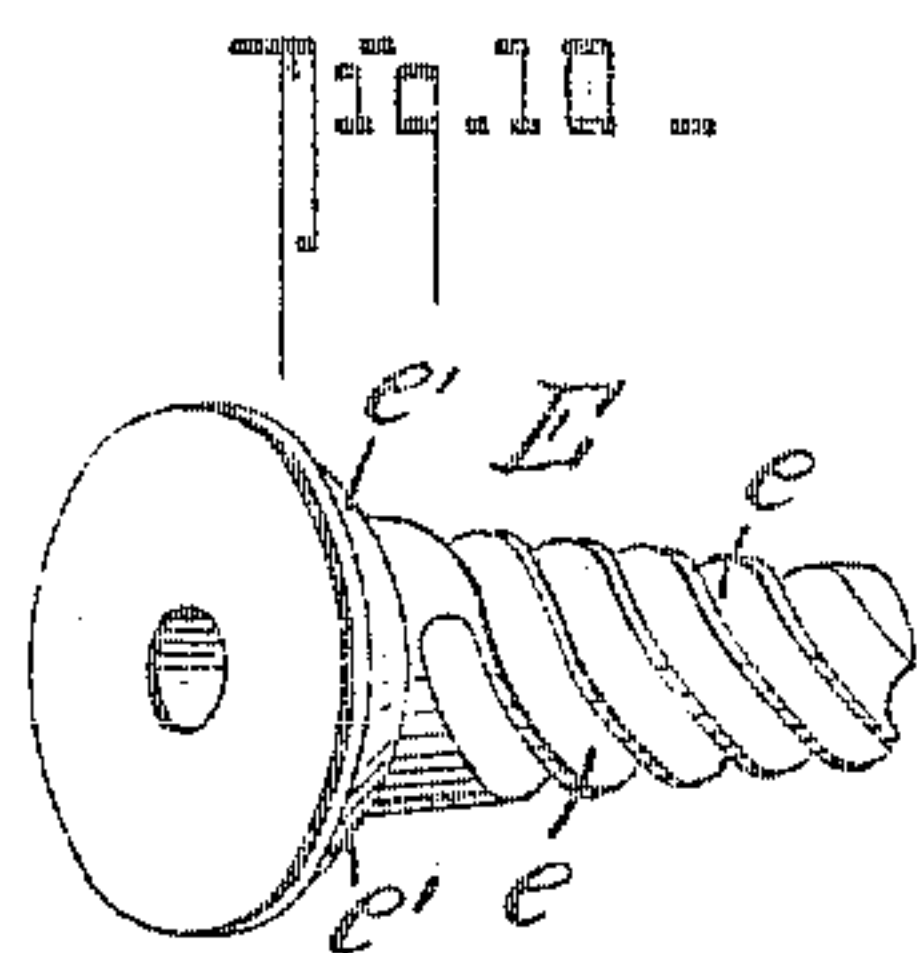
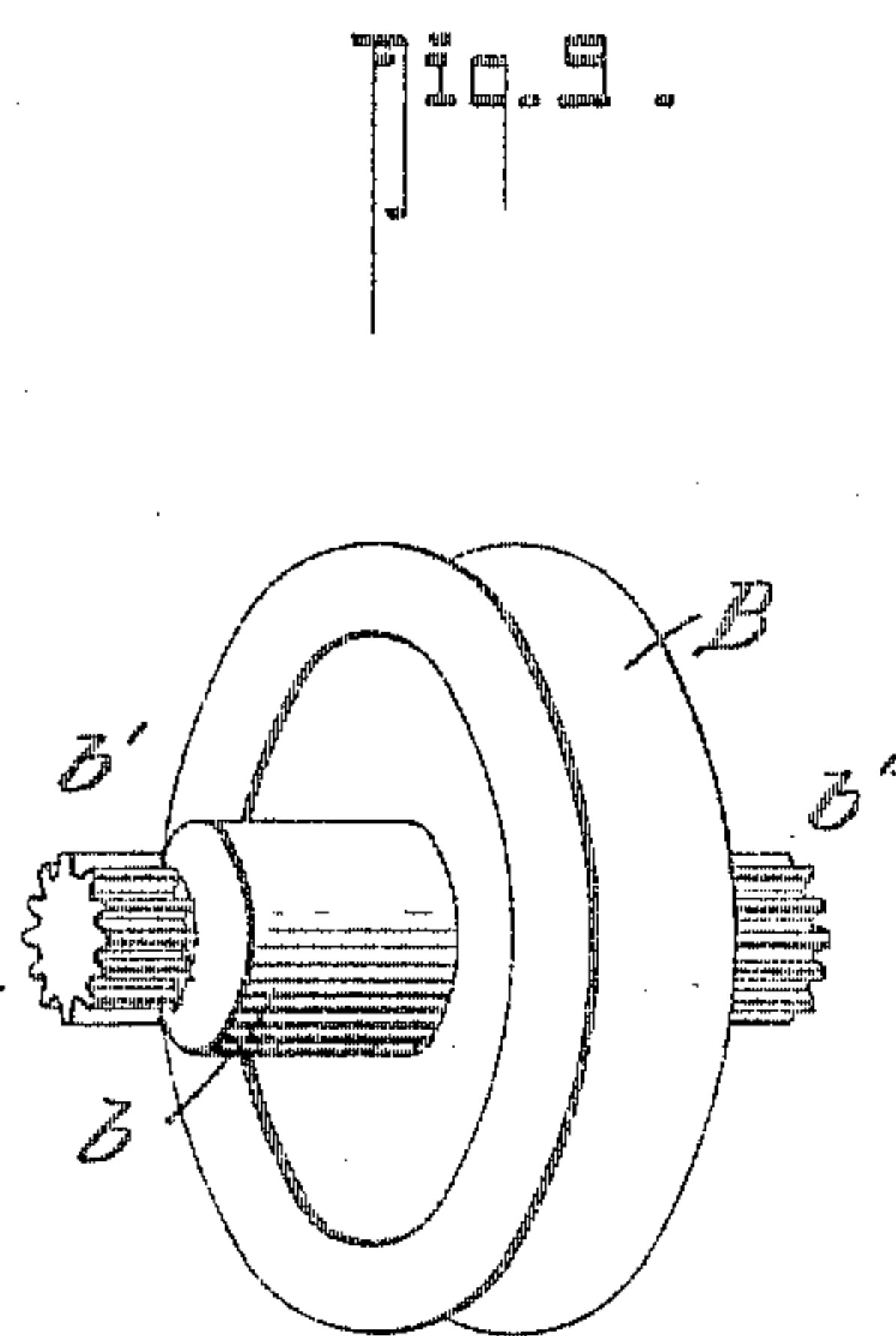
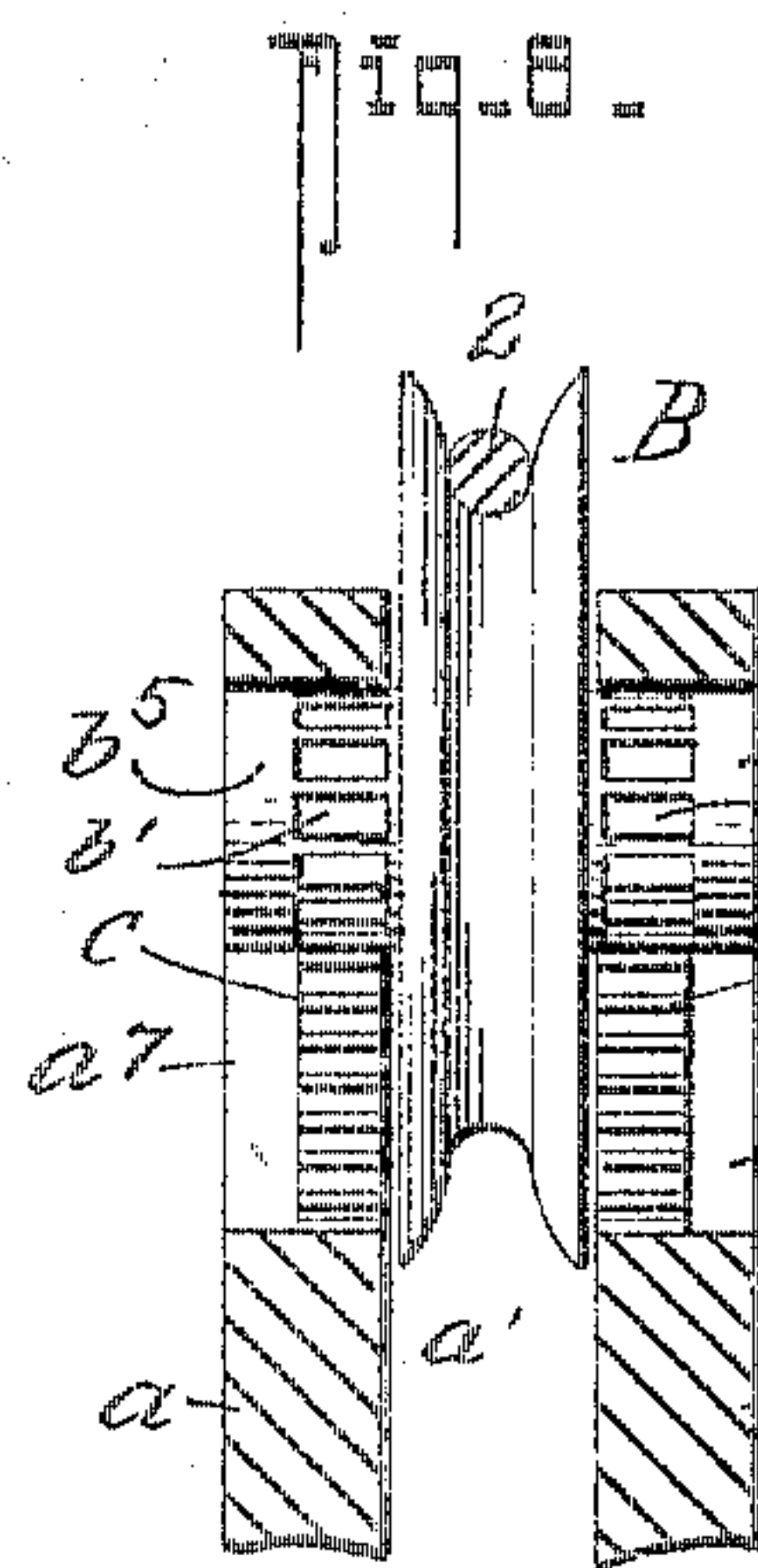
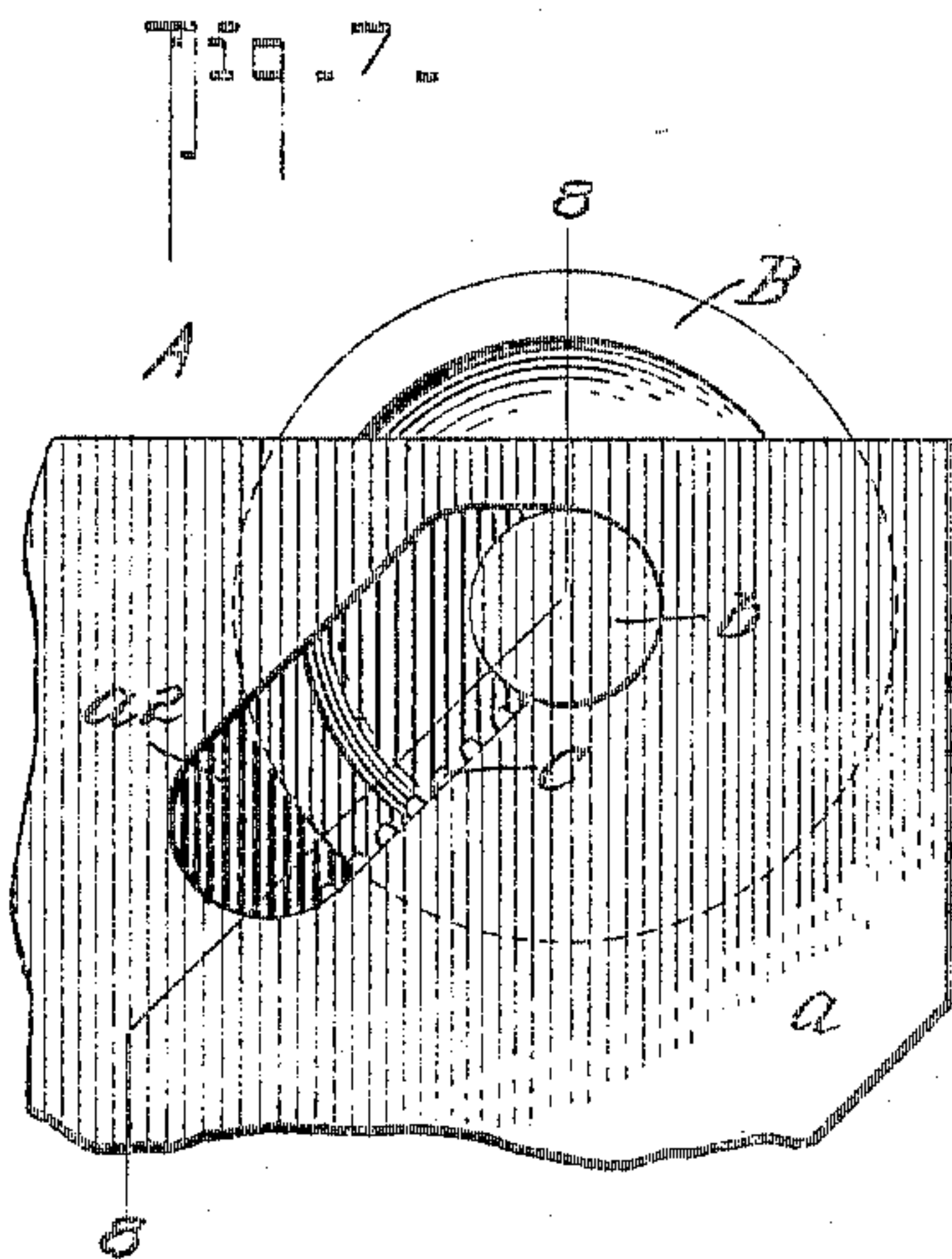
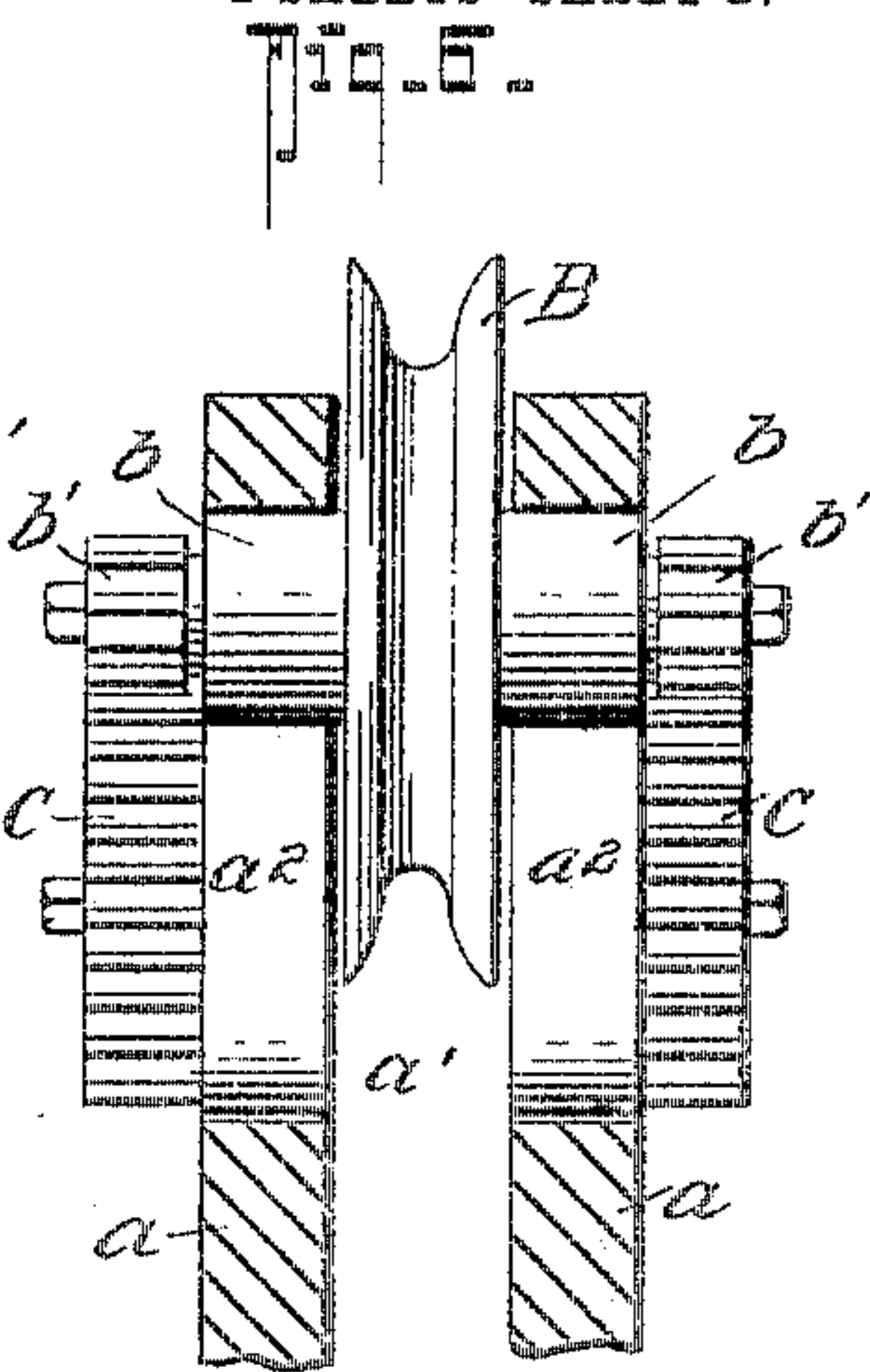
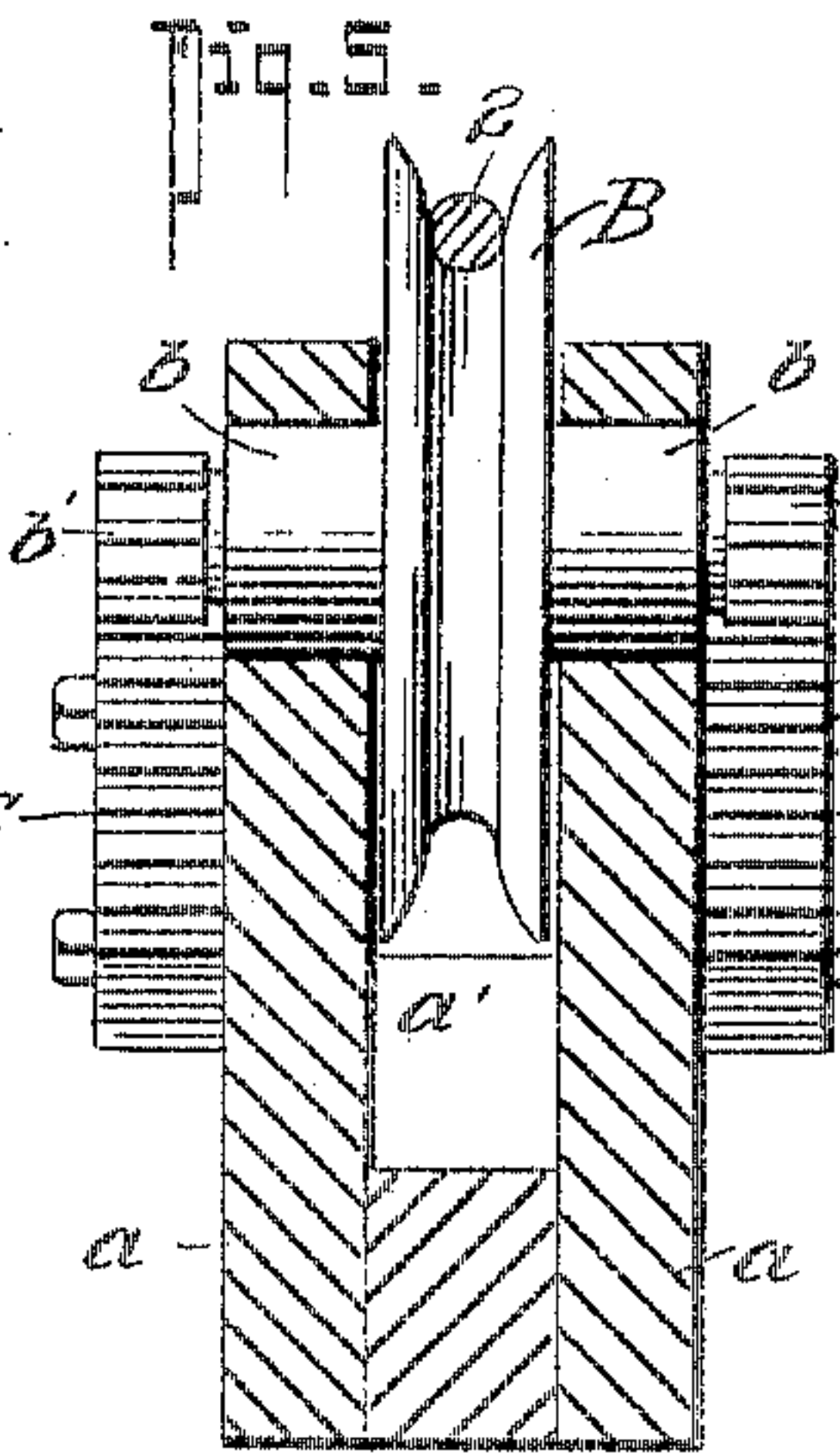
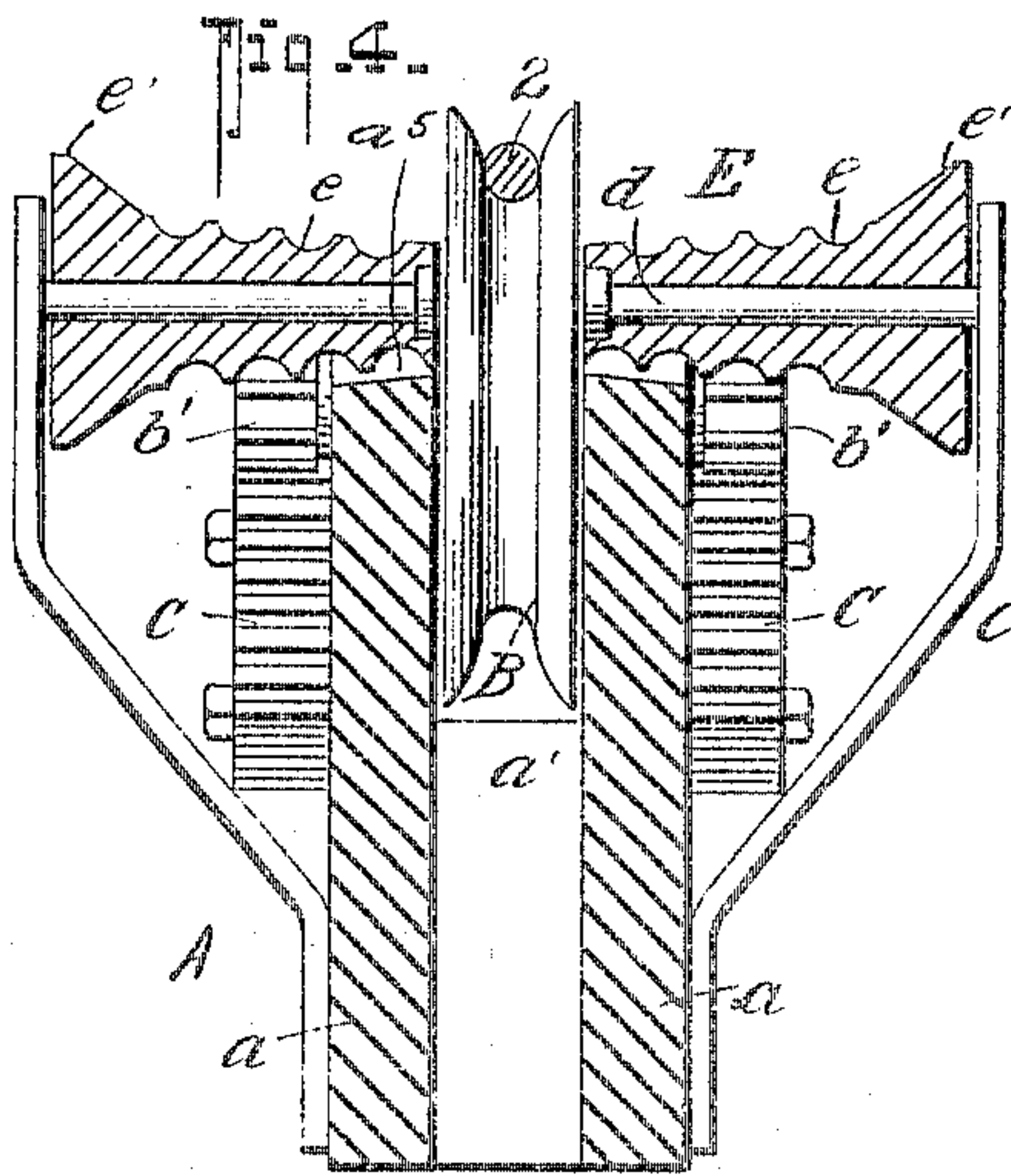
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2 SHEETS—SHEET 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HARRY IRWIN JEFFERS, OF TUSCALOOSA, ALABAMA.

TROLLEY-HEAD.

SPECIFICATION forming part of Letters Patent No. 794,020, dated July 4, 1905.

Application filed August 20, 1903. Serial No. 170,166.

To all whom it may concern:

Be it known that I, HARRY IRWIN JEFFERS, residing at Tuscaloosa, in the county of Tuscaloosa and State of Alabama, have invented a new and Improved Trolley-Head, of which the following is a specification.

My invention relates to the class of trolley-heads in which means are provided for preventing the trolley-wire leaving the trolley; and the invention primarily seeks to provide a device of this character of a very simple and efficient nature which will readily and effectively serve its intended purposes.

Primarily the invention consists in a main trolley-wheel adapted for free movement in the supporting-frame and supplemental auxiliary wheels or finder for bringing the trolley-wire into proper alinement with the main or trolley wheel, the said trolley-wheel being so arranged as to lift the wire out of engagement with the finders when the said wire is in engagement with the trolley-wheel.

With other objects in view, which will hereinafter be apparent, the invention consists in the novel construction and combination of parts, all of which will be first described in detail and then specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my invention as applied for use. Fig. 2 is a side elevation thereof. Fig. 3 is a top plan view thereof. Fig. 4 is a cross-section on the line 4 4 of Fig. 2. Fig. 5 is a cross-section on the line 5 5 of Fig. 2. Fig. 6 is a similar view on the line 6 6 of Fig. 2. Fig. 7 is a detail side elevation of a slightly-modified form of my invention. Fig. 8 is a cross-section on the line 8 8 of Fig. 7. Fig. 9 is a detail view of one of the trolley-wheels detached. Fig. 10 is a similar view of one of the finder-wheels detached.

Referring now to the accompanying drawings, in which like numerals and letters of reference indicate like parts in all the figures, 1 designates a trolley-pole, to the upper end of which my invention is applied, and 2 designates the trolley-wire, the pole and wire being of any approved construction, since they *per se* form no part of my invention.

The trolley-head (designated generally by

A) consists of a casing having side walls a and a central space a' of sufficient width to permit the free rotation of the trolley-wheel B, which in my invention is capable of a slight up-and-down movement in a vertical plane for a purpose presently to appear. The side walls a of the casing have slots a^2 disposed at an angle to the vertical, and the said slots a^2 terminate at their upper ends in enlarged circular portions a^3 , as clearly shown in Fig. 2.

The trolley-wheel B has a shaft b of a diameter to loosely fit the slotways a^2 , and the said shaft b has cogs b' at each end which mesh with the rack members C of the casing-walls a and which rack members C are arranged parallel with the slotways a^2 and run from the lower end to the enlarged circular portion a^3 at the upper end of the slotways a^2 .

D designates bracket members secured to the side walls of the casing, and the said bracket members have right-angled bearing-spindles d to receive the finder-wheels E, which consist of conically-shaped members having spiral grooves e in their periphery, which have a flange e' at the base of the cone, while the small end e^2 of the finder-wheels E play in cut-away portions a^5 in the said walls a and have their inner ends flushed with the inner surface of the side walls a^3 , as shown in Fig. 3.

The trolley-head A may be attached in any approved manner to the trolley-pole 1; but I preferably form the said head with an integral rod portion adapted to slip into the hollow end of the tubular trolley-pole 1, and while I prefer to form the head A of separate parts molded together, yet, if found desirable, I may form the frame with a single casting. Again, I may dispense with the rack members C, fastened to the casing-wall, and form the said rack as an integral part of the slotways a^2 , as shown in Figs. 7 and 8, by reference to which it will be seen that the slotways a^2 are formed with smooth portions a^7 and rack portions C, and when this form of my invention is used the trolley-wheel shaft b is formed with a smooth portion b^5 and a pinion portion b' between said smooth portion b^5 and the trolley-wheel B, so as to coöperate with the said smooth and rack portion of the slotways a^2 .

So far as described the manner in which my

invention operates will be best explained as follows: Assuming the parts to be in the position shown in Fig. 1, if the trolley-wire should leave the trolley-wheel the said trolley-wheel will drop down into the casing with its shaft at the lowermost end of the slotways α^2 , and the trolley-wire will come into engagement with the finder-wheels, which by reason of their shape and by reason of their spirally-arranged grooves will carry the wire toward the casing and drop it into the open portion α' at the top, when the wire will again engage the trolley-wheel, causing it to rotate, and as the pinions on the trolley-wheel shaft are in engagement with the racks on the casing the said trolley-wheel will rise until its shaft engages the enlarged portion of the slotway at the upper end thereof, when the pinions will have left the racks, and the wheel may then turn freely. In rising the trolley-wheel leaves the trolley-wire above the finder-wheels, so they will not interfere with the said wire when the parts are in their normal operative position, as shown in Fig. 1. It should be understood that as the trolley-wheel and the trolley-wire become disengaged from each other the slightest jar of the trolley-head will be sufficient to move the wheel B into engagement with the rack-teeth C.

From the foregoing description it will be seen that I have provided a simple and easily-operated trolley-head which will effectively maintain the trolley-wheel on the wire at all times, and by constructing the finder-wheels as shown and described and by beveling the front edge α^{10} of the casing-head, as shown in Figs. 1 and 2, should the trolley-head become entirely disengaged from the trolley-wire any cross-wires or hangers with which the head might come in contact will not be injured in any way, as the head will readily pass under the said cross-wires or hangers.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the advantages and complete operation of my invention will be readily understood by those skilled in the art to which it appertains.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a trolley-head, comprising in combination with a trolley-wheel, of supplemental and finder wheels arranged in advance of the trolley-wheel and adapted to be engaged by the trolley-wire at predetermined times, said trolley-wheel being arranged for up-and-down movement in a vertical plane at predetermined times.

2. A trolley-head, comprising a main frame having slotways, a trolley-head mounted on said frame with its shaft in said slotways, said trolley-wheel including pinions, rack members mounted on said main frame for co-

operating with said trolley-wheel pinions, for the purposes specified.

3. In a trolley-head, a main supporting frame or casing having slotways, rack-teeth secured to said casing and running parallel to said slotways, and a trolley-wheel having a shaft mounted within said casing with its shaft in said slotway, for the purposes specified.

4. In a trolley-head, a main supporting frame or casing having slotways, rack-teeth secured to said casing and running parallel to said slotways, said slotways being of greater length than said rack-teeth, and a trolley-wheel having a shaft mounted within said casing with its shaft in said slotways, said shaft including pinions for meshing with the rack-teeth, as specified.

5. In a trolley-head, a main supporting frame or casing having slotways, rack-teeth secured to said casing and running parallel to said slotways, said slotways being of greater length than the rack-teeth, and a trolley-wheel having a shaft mounted within said casing with its shaft in said slotways, said shaft including pinions for meshing with the rack-teeth, and said trolley-wheel being so arranged as to move within said slotway from one end to the other.

6. In a trolley-head, a main supporting frame or casing having slotways, rack-teeth secured to said casing and running parallel to said slotways, said slotways being of greater length than said rack-teeth, and a trolley-wheel having a shaft mounted within said casing with its shaft in said slotways, said shaft including pinions for meshing with the rack-teeth, said pinions engaging said rack during a portion of said movement.

7. In a trolley-head, a main supporting frame or casing having slotways, rack-teeth secured to said casing and running parallel to said slotways, said slotways being of greater length than said rack-teeth, and a trolley-wheel having a shaft mounted within said casing with its shaft in said slotways, said shaft including pinions for meshing with the rack-teeth, and said trolley-wheel being so arranged as to move within said slotway from one end to the other, an auxiliary wheel mounted on said main frame for bringing the trolley-wheel into alinement with the said trolley-wheel at predetermined times.

8. In a trolley-head, a main supporting frame or casing having slotways, rack-teeth secured to said casing and running parallel to said slotways, said slotways being of greater length than the rack-teeth, and a trolley-wheel having a shaft mounted within said casing with its shaft in said slotways, said shaft including pinions for meshing with the rack-teeth, said trolley-wheel being so arranged as to move within said slotway from one end to the other, and auxiliary conical wheels hav-

ing spiral grooves mounted on the main frame and adapted to bring the trolley-wire into engagement with the trolley-wheel, for the purposes specified.

5 9. In a trolley-head, a main supporting frame or casing having diagonally-disposed slotways, rack-teeth running parallel thereto throughout nearly its entire length, and said slotway including an enlarged portion at its
10 upper end, a trolley-wheel having a shaft mounted with its shaft in said slotway, said shaft including pinions for engaging said rack-teeth, said trolley-wheel normally resting with
15 its shaft in the lower end of said slotways, and adapted to be moved with its shaft into the said enlarged portion of the slotway when in contact with the trolley-wire.

10. In a trolley-head, a main supporting frame or casing having diagonally-disposed
20 slotways, rack-teeth running parallel thereto throughout nearly its entire length, and said slotway including an enlarged portion at its upper end, a trolley-wheel having a shaft mounted with its shaft in said slotway, said
25 shaft including pinions for engaging said rack-teeth, said trolley-wheel normally resting with its shaft in the lower end of said slotways, and adapted to be moved with its shaft into
30 the enlarged portion of the slotway when in contact with the trolley-wire, means for bringing said trolley-wire into engagement with said wheel, as specified.

11. In a trolley-head, a main supporting frame or casing having diagonally-disposed
35 slotways, rack-teeth running parallel thereto throughout nearly its entire length, and said slotway including an enlarged portion at its upper end, a trolley-wheel having a shaft mounted with its shaft in said slotway, said
40 shaft including pinions for engaging said rack-teeth, said trolley-wheel normally resting with its shaft in the lower end of said slotway, and adapted to be moved with its shaft into
45 the enlarged portion of the slotway when in contact with the trolley-wire, means for bringing said trolley-wire into engagement with said wheel, said means including auxiliary members having spiral grooves and mounted
50 for rotation on said casing.

12. A trolley-harp having a wire-contacting element mounted to drop downwardly when contact with the wire is broken; and means for feeding the wire into engagement with the contacting element, said element climbing up-
55 wardly to its normal position on the reestablishment of the contact.

13. A trolley-harp, having a climbing wire-contacting wheel longitudinally movable in the harp toward and away from the line-wire.

14. A trolley-harp, having a longitudinal 60 guide and a climbing wheel movable in the guide toward and away from the line-wire.

15. A trolley-harp, having parallel arms with coinciding inclined slots and a climbing current-collector movable in the slots toward 65 and away from the line-wire.

16. A trolley-harp, having parallel arms, with elongated journal-bearings in the arms and a current-collector having journals movable longitudinally in the bearings. 70

17. A trolley-harp having oppositely-disposed catchers, a current-collector carried by the harp and projecting above the catchers, and means for permitting the collector to drop below the catchers when not in contact with 75 the trolley-wire.

18. A trolley-harp, having oppositely-disposed spiral catchers, an intermediate current-collector longitudinally movable in the harp.

19. A trolley-harp, having oppositely-dis- 80 posed finders, a longitudinally-movable current-collector carried by the harp and normally below the finders when out of contact with the conductor-wire, said collector being movable to a position above the finders when 85 in contact with the conductor-wire.

20. A trolley-harp, having parallel arms, provided with inclined slots, a trolley-wheel loosely working in the slots, and having unobstructed movement and rotatable finders 90 carried by the harp.

21. A trolley-harp, having parallel slotted arms, a wheel in the slotted arms and having unobstructed movement, a yoke at one end of the harp and having arms parallel with arms 95 of the harp and rotating finders interposed between the yoke-arms and the arms of the harp.

22. The combination with a trolley-wire, of a harp having inclined slots, a trolley-wheel in 100 the slots and maintained at one end thereof by frictional contact with the wire, but movable to the other end of the slots when out of contact with the wire, and oppositely-disposed finders carried by the harp. 105

23. A harp, having oppositely-disposed finders, and a wire-contacting element movable above and below the planes of the finders.

24. A harp having two oppositely-disposed spiral finders, and an interposed wheel carried 110 by the harp and longitudinally movable in the harp to points above and below the planes of the finders.

HARRY IRWIN JEFFERS.

Witnesses:

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S. C. WEATHERFORD.