

No. 685,394.

Patented Oct. 29, 1901.

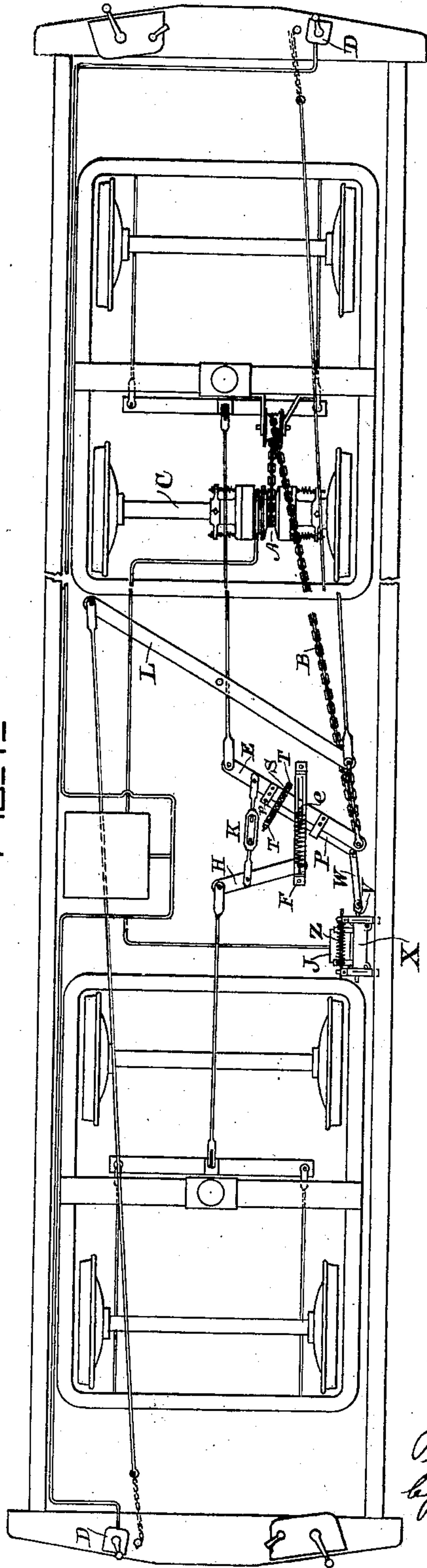
P. P. CRAFTS.
ELECTRIC BRAKE.

(Application filed Nov. 30, 1900.)

(No Model.)

4 Sheets—Sheet 1.

FIG. 1—



WITNESSES

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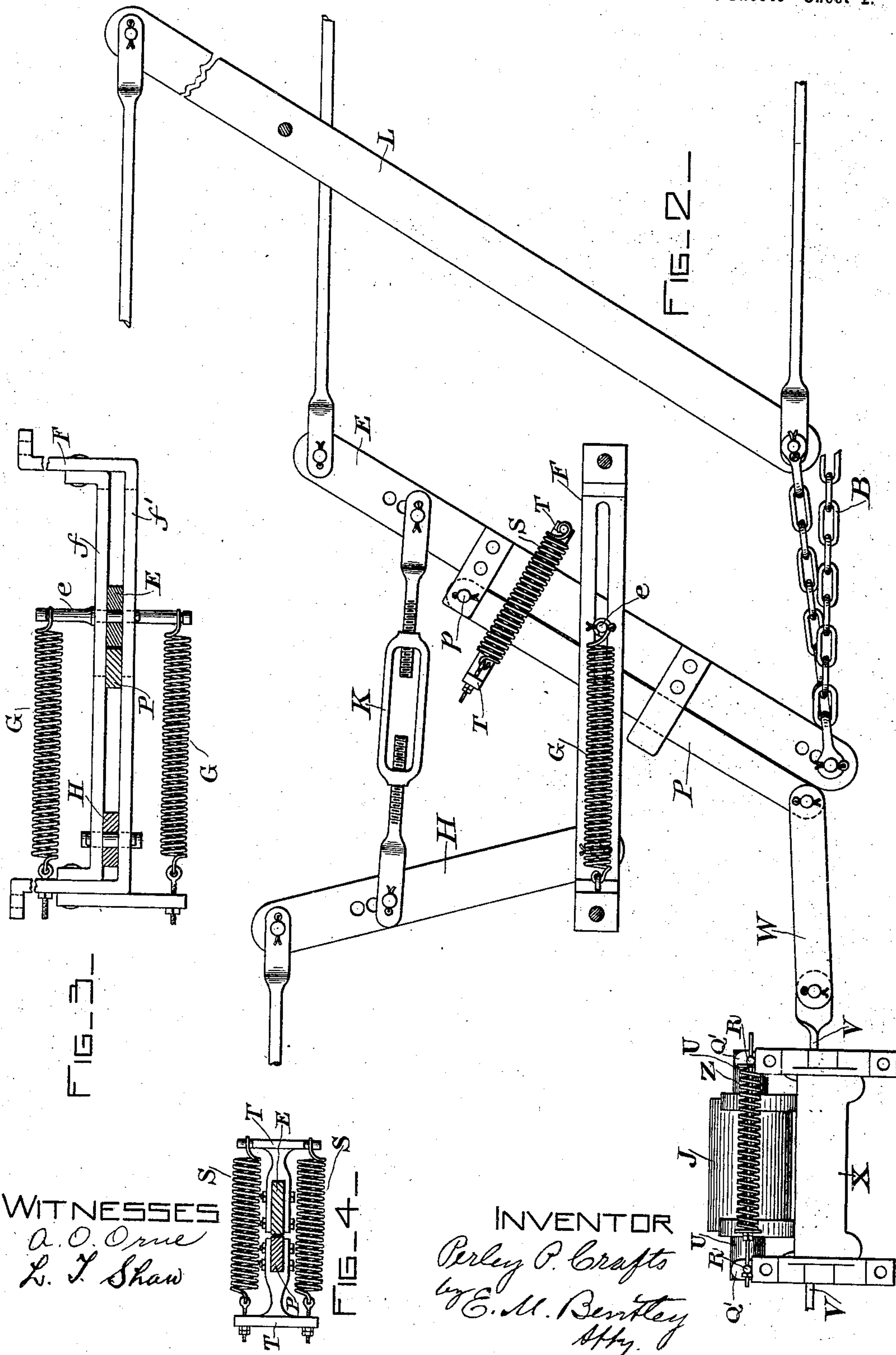
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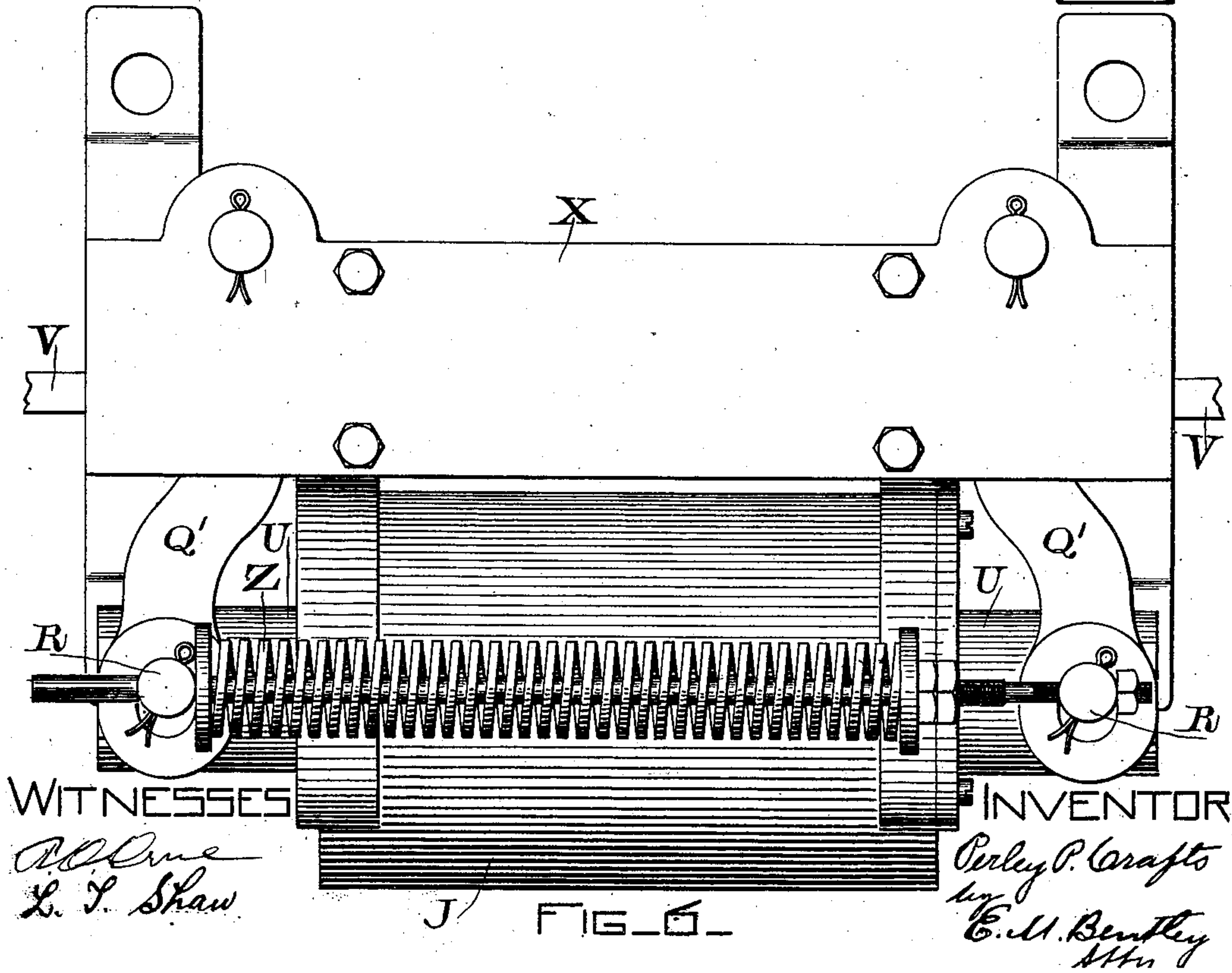
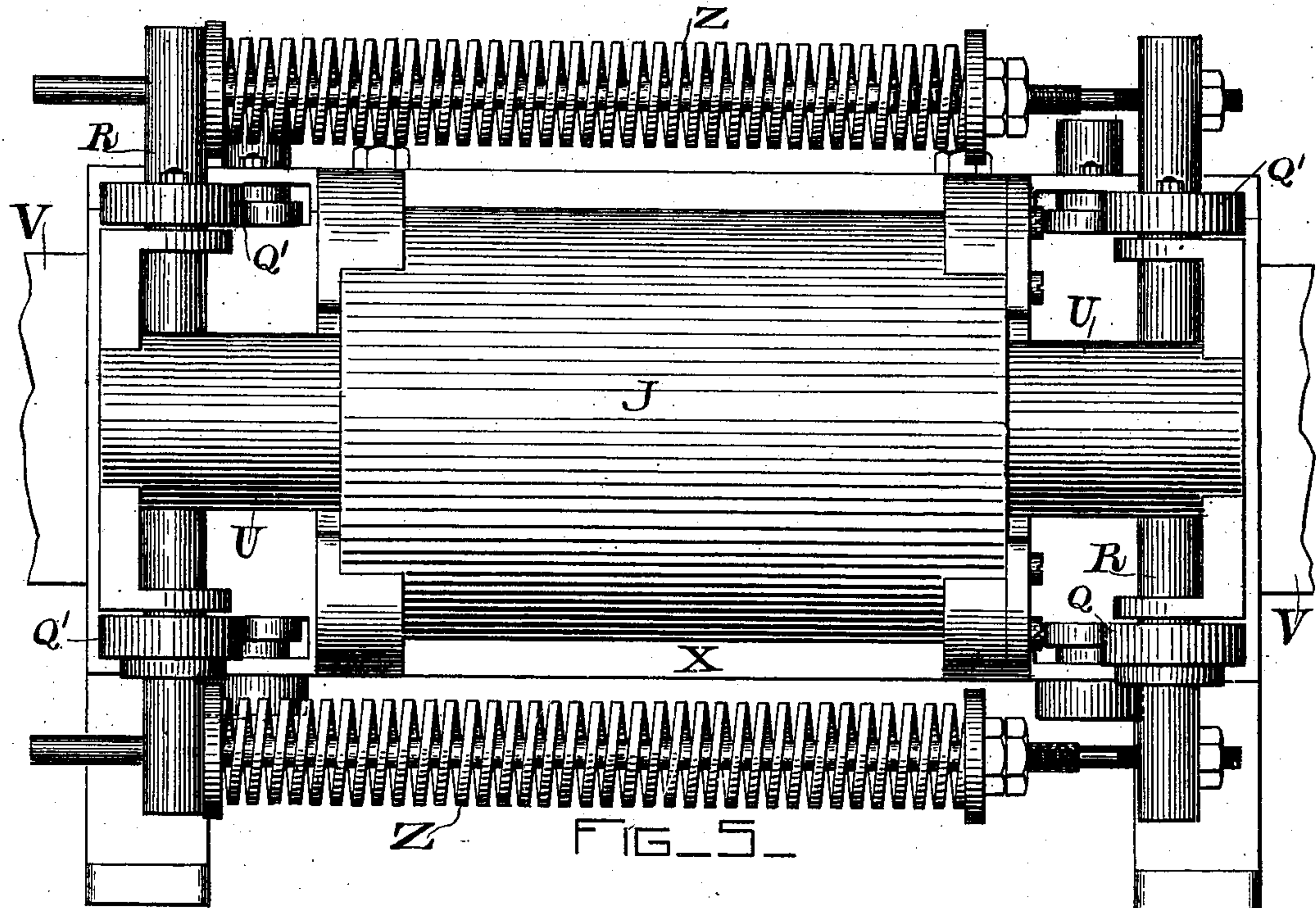
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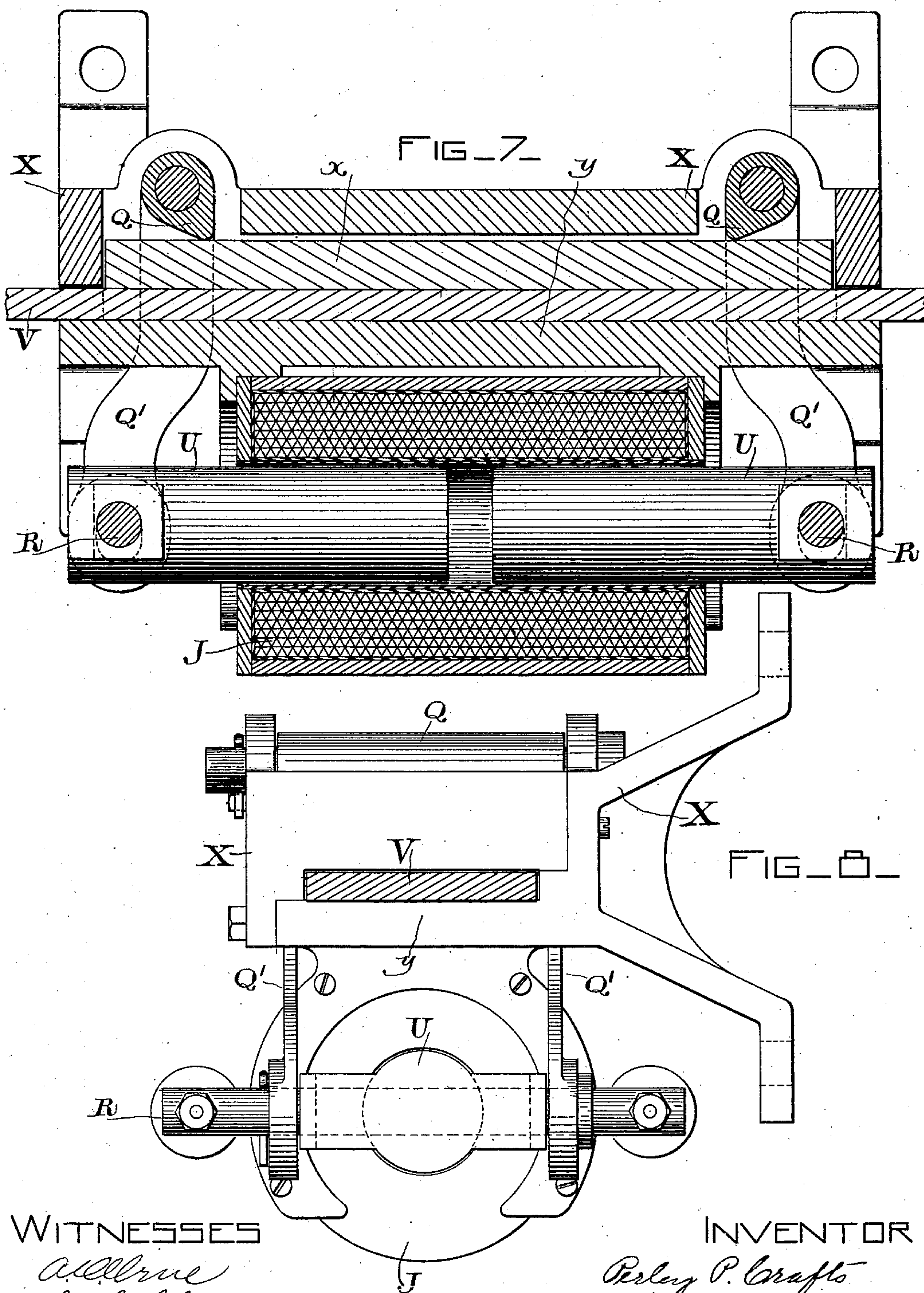
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4 Sheets—Sheet 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

PERLEY P. CRAFTS, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE ALGONQUIN ELECTRIC BRAKE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

ELECTRIC BRAKE.

SPECIFICATION forming part of Letters Patent No. 685,394, dated October 29, 1901.

Application filed November 30, 1900. Serial No. 38,137. (No model.)

To all whom it may concern:

Be it known that I, PERLEY P. CRAFTS, a citizen of the United States, residing at Boston, county of Suffolk, and State of Massachusetts, have invented certain new and useful Improvements in Electric Brakes, of which the following is a specification, reference being made to the accompanying drawings, wherein—

10 Figure 1 is a general plan of a car provided with my improved brake. Fig. 2 is a detailed plan of the locking mechanism and brake-levers. Fig. 3 is a detail of the brake-levers and supporting-hanger therefor. Fig. 4 shows
15 in detail the spring connection between the main and the locking levers. Figs. 5, 6, 7, and 8 are respectively a plan, side elevation, longitudinal section, and transverse section of the locking mechanism.

20 My invention relates to certain improvements in electric brakes of the type wherein the line-current is used to energize a magnetic clutch, which serves to put the winding-drum for the ordinary brake-chain in frictional engagement with a car-axle, while a
25 lock operated by a spring holds the brakes in their set position and is released by a magnet acting in opposition to the spring.

My improvements relate to the feature of
30 the lock and provides for applying it by a yielding connection not to the rotating winding-drum, as heretofore, but to a reciprocating part of the system, (shown herein as the main lever,) to which it is applied through a
35 special lever jointed to the main lever, with a spring intervening between it and the main lever, so that the latter can be drawn forward and the brakes applied more firmly, even when the lock is set for a minor degree of
40 brake-pressure, and the application of the brake thus made independent to a degree of the lock.

Referring to Fig. 1 of the accompanying drawings, A represents a winding-drum for
45 the brake-chain B, adapted to be put in magnetic engagement with a disk fixed to the axle C by means of a magnetic clutch under the control of a regulator D. The details of the clutch and the regulator are not given,
50 since they form no part of the present appli-

cation, it being simply understood that regulator D serves to control the aforesaid clutch and also, by means of a separate switch, to release the lock aforesaid at the will of the motorman.

The brake-chain B is connected to one end
55 of the brake-lever E, which, as more clearly appears in Figs. 2 and 3, is provided with a spindle *e*, which works in a slot in the bracket or hanger F. As seen in Fig. 3, the lever E
60 is confined between the upper and lower plates *f* and *f'* of the hanger F, while springs G G, intervening between the two ends of the spindle *e* and the bracket F, serve to draw the lever E bodily to the left, the spindle sliding in
65 the slots in the hanger. The lever E is joined to lever H by an adjustable link K, the lever H being also pivoted at a fixed point in the hanger F. The outer ends of the levers E and H are jointed to the ordinary brake-rods,
70 as more clearly appears in Fig. 1.

The system of levers which I have just described is one already familiar to the art as a means of operating car-brakes, and they are also designed to be operated manually by rods
75 and chains connected to the lever L in the ordinary manner, which lever is in turn connected to the lever E by a chain acting like the chain B aforesaid.

Taking up the locking mechanism, there is
80 jointed to the lever E at the point *p* a supplementary locking-lever P, which is normally held alongside of the lever E, as shown in Figs. 1 and 2, by springs S, arranged as shown in detail in Fig. 4. Thus T-shaped
85 brackets T T are connected, respectively, to the levers E and P, the two upper ends of the upright parts forming the heads of the T being connected by an extension-spring S and the two lower ends being likewise con-
90 nected by a second extension-spring S. The outer end of lever P is jointed by link W to the grip-bar V of the lock. This bar V is adapted to be held between clamping-jaws normally applied thereto by a spring and is
95 only released when the unlocking-magnet is energized to oppose the spring. Assuming the bar V to be locked, it is evident that the brakes may still be applied either by hand or
100 by the magnetic axle-clutch, since as the chain

B draws on lever E the latter is free to respond by the yielding of springs S S, which connect it with lever P, which is held by the lock. Ordinarily the lock will be released
 5 prior to the application of the brakes; but my arrangement avoids any failure in the application of the brakes by a neglect on the part of the operator to first release the lock. The brakes being applied and the lock being re-
 10 leased, the springs S S will draw the lever P up against the lever E and through the link W will draw the grip-bar V forward. The lock being then reapplied, the brakes will be held in their applied position. If then a fur-
 15 ther brake-pressure is desired, it can be secured by a draft on the lever E without the necessity of first unlocking the system. By this means the brakes may be used either with or without the lock and are to a certain
 20 extent independent of the lock, although the latter may be used in the ordinary manner, as desired.

Taking up the details of the lock shown in Figs. 5 to 8, the grip-bar V, as appears most
 25 clearly in Fig. 7, enters into the framework X of the lock, where it is held between two flat jaws y x , the former being simply a fixed plate rigid with the framework X and the latter a loose plate lying against the grip-bar,
 30 but pressed into contact therewith by the cams Q. The cams Q are operated by lever-arms Q', of which there are four, two for each cam. Through the lower ends of each pair of levers Q' is passed a rod R, and the two rods
 35 R are pressed apart by compression-springs Z. Thus the normal tension of the springs Z serves to apply the lock by causing the cams Q to force the plate x against the grip-bar V, and thus clamp the bar between it and
 40 the opposite plate y . To each of the rods R, respectively, there is connected one end of a core U of the solenoid J. These two cores U U enter the solenoid from opposite ends, and when it is energized are drawn therein,
 45 so as to approach each other, and thus act in opposition to the springs Z. By this means the lock may be released at any time at the will of the operator by closing the circuit of the solenoid J, whereby he is enabled at any
 50 time to not only operate the brakes, but to lock them in their applied position under any desired degree of tension, while the application of the brake is, as I have already described, independent to a certain extent of
 55 the lock.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination with the brakes of a vehicle, of a rotary winding-drum, a reciprocating lever connected to the brakes, a chain attached to the said lever and adapted to be wound on the drum, an electromagnetic clutch for engaging the said drum with a driving-shaft, an automatic lock applied to
 60 the said reciprocating lever, and an electromagnet for releasing the said lock.

2. The combination with the brakes of a ve-

hicle, of mechanical operating devices therefor and a locking device comprising a part adapted to be clamped in position and a spring
 70 normally holding the said part in engagement with the brake-levers, allowing the said levers to be operated independently of the locking device.

3. The combination with the brakes of a vehicle, of a brake-lever, a mechanical operating device therefor, a supplementary lever jointed to the brake-lever and held against the same by a spring and a locking device applied to the said supplementary lever.
 80

4. The combination with the brakes of a vehicle, of a brake-lever, mechanical operating devices therefor, a supplementary lever spring-jointed to the brake-lever, a reciprocating part connected to the said supplementary lever and a locking device provided with a clamp engaging with the said reciprocating part.
 85

5. A locking device for railway-brakes, comprising a reciprocating grip-bar, a brake-shoe
 90 bearing thereon, two cams at separated points along the shoe, a spring for operating the cams in one direction and a solenoid-magnet having two cores for operating the said cams respectively in opposition to the spring.
 95

6. A locking device for the brakes of a vehicle, comprising a reciprocating grip-bar, a clamping-shoe thereon, cams for holding the said shoe in clamping engagement with the bar, a spring for operating the said cams in
 100 one direction and a magnet for operating them in the other direction.

7. A locking device for railway-brakes, comprising a framework through which passes a grip-bar, a clamping-shoe contained in the
 105 framework and bearing upon the said bar, cams pivoted in the framework, a spring for operating the cams to clamp the shoe against the grip-bar and a magnet for operating the cams to release the said grip-bar.
 110

8. A locking device for railway-brakes, comprising a reciprocating grip-bar jointed to the brake-levers, a framework supported on the vehicles and having an opening in which the said bar reciprocates, a detachable brake-shoe
 115 bearing upon the said bar, cams acting upon the said shoe, a spring for clamping the said shoe against the said grip-bar and a magnet for releasing the bar by acting in opposition to the said springs.
 120

9. A locking device for the brakes of a vehicle, comprising reciprocating bars, a clamping-shoe and cams applied at separated points along the shoe, a spring for operating the
 125 cams in one direction and a magnet for operating them in the other direction.

In witness whereof I have hereunto set my hand, before two subscribing witnesses, this 22d day of November, 1900.

PERLEY P. CRAFTS.

Witnesses:

F. C. MILDAM,
 F. X. FITZPATRICK.