

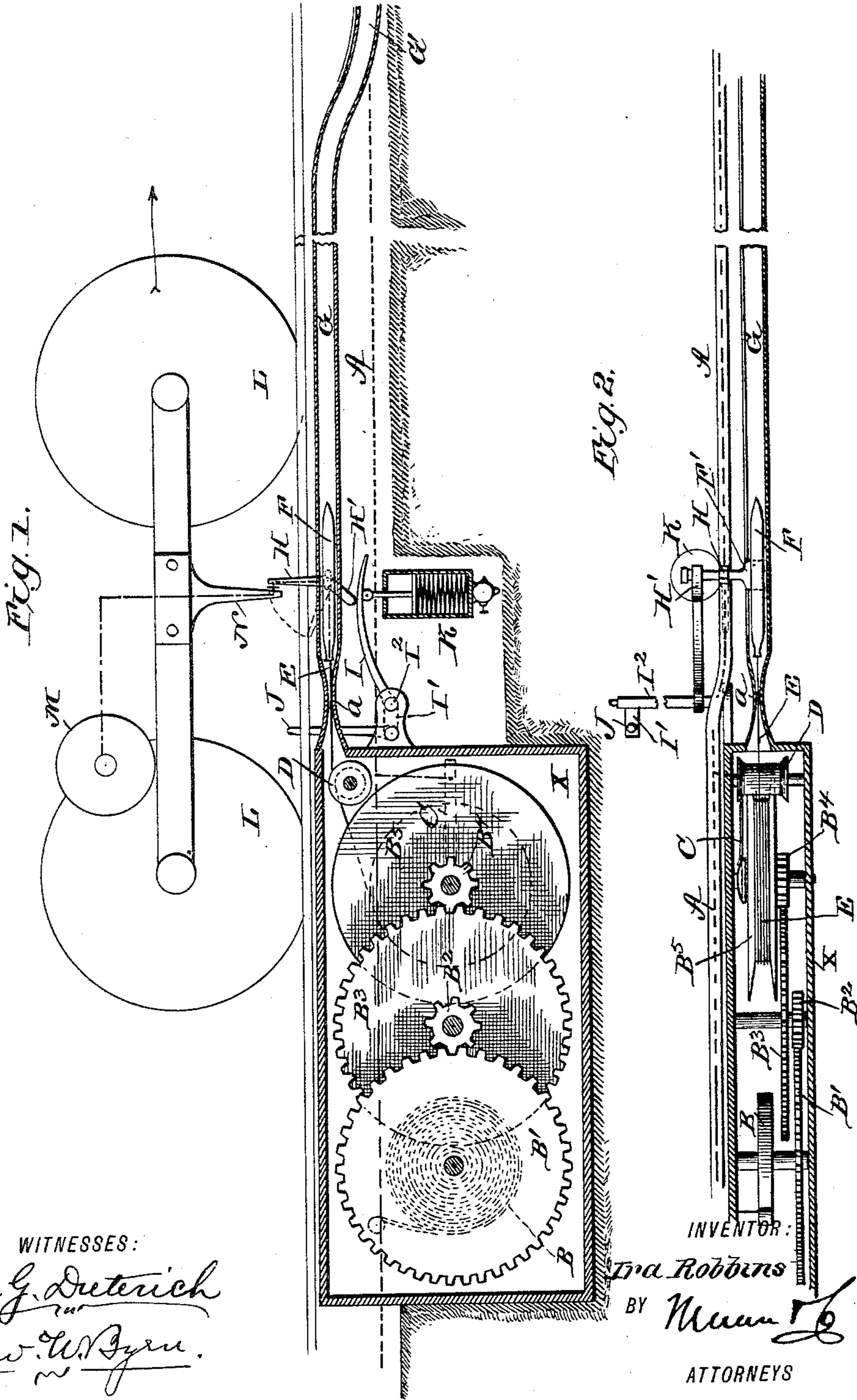
(No Model.)

2 Sheets—Sheet 1.

I. ROBBINS.
ELECTRIC RAILROAD.

No. 460,887.

Patented Oct. 6, 1891.



WITNESSES:
Fred G. Dretterich
Edw. W. Byrne.

INVENTOR:
I. Robbins
BY *Messrs. [signature]*
ATTORNEYS

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

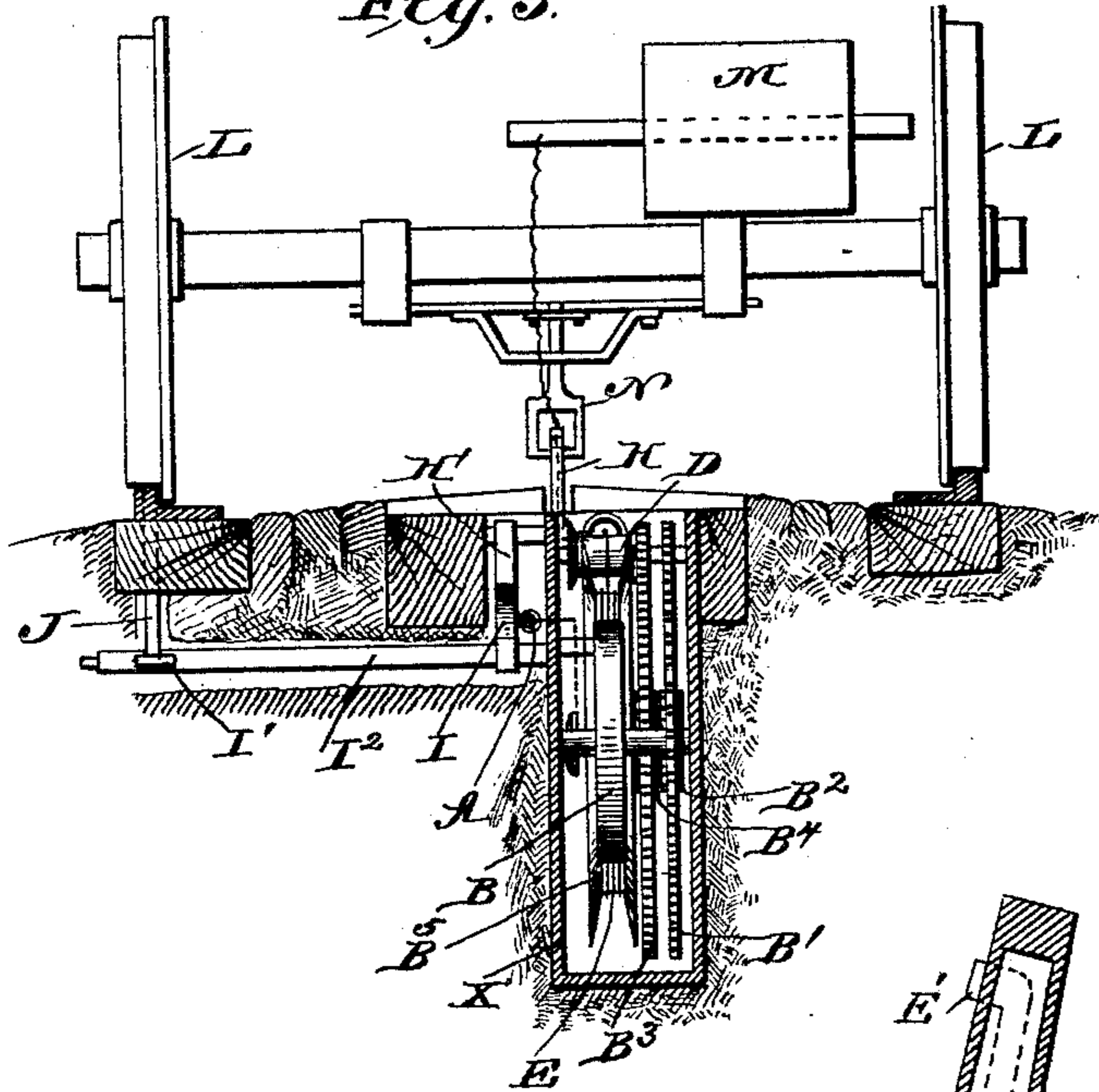


Fig. 4.

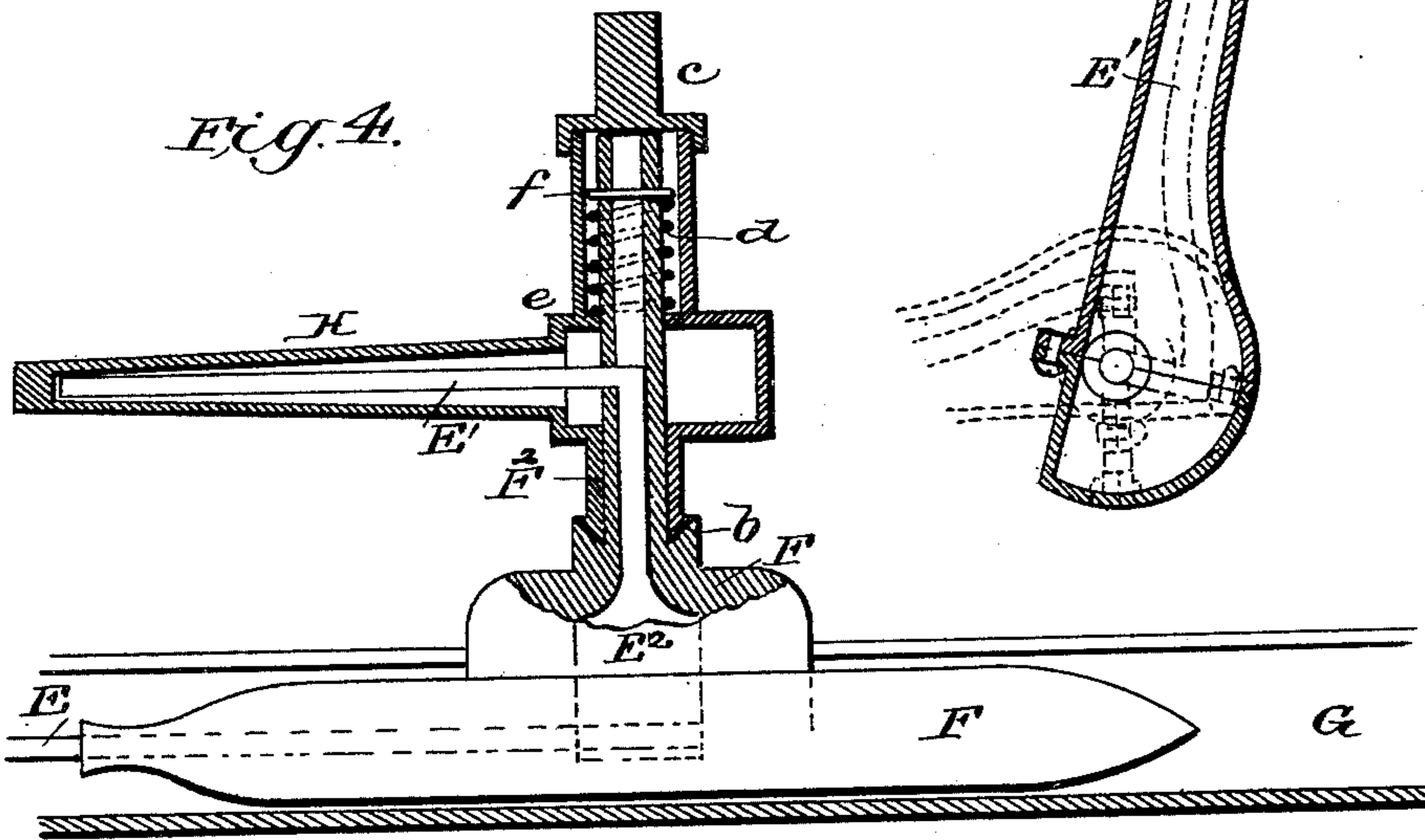
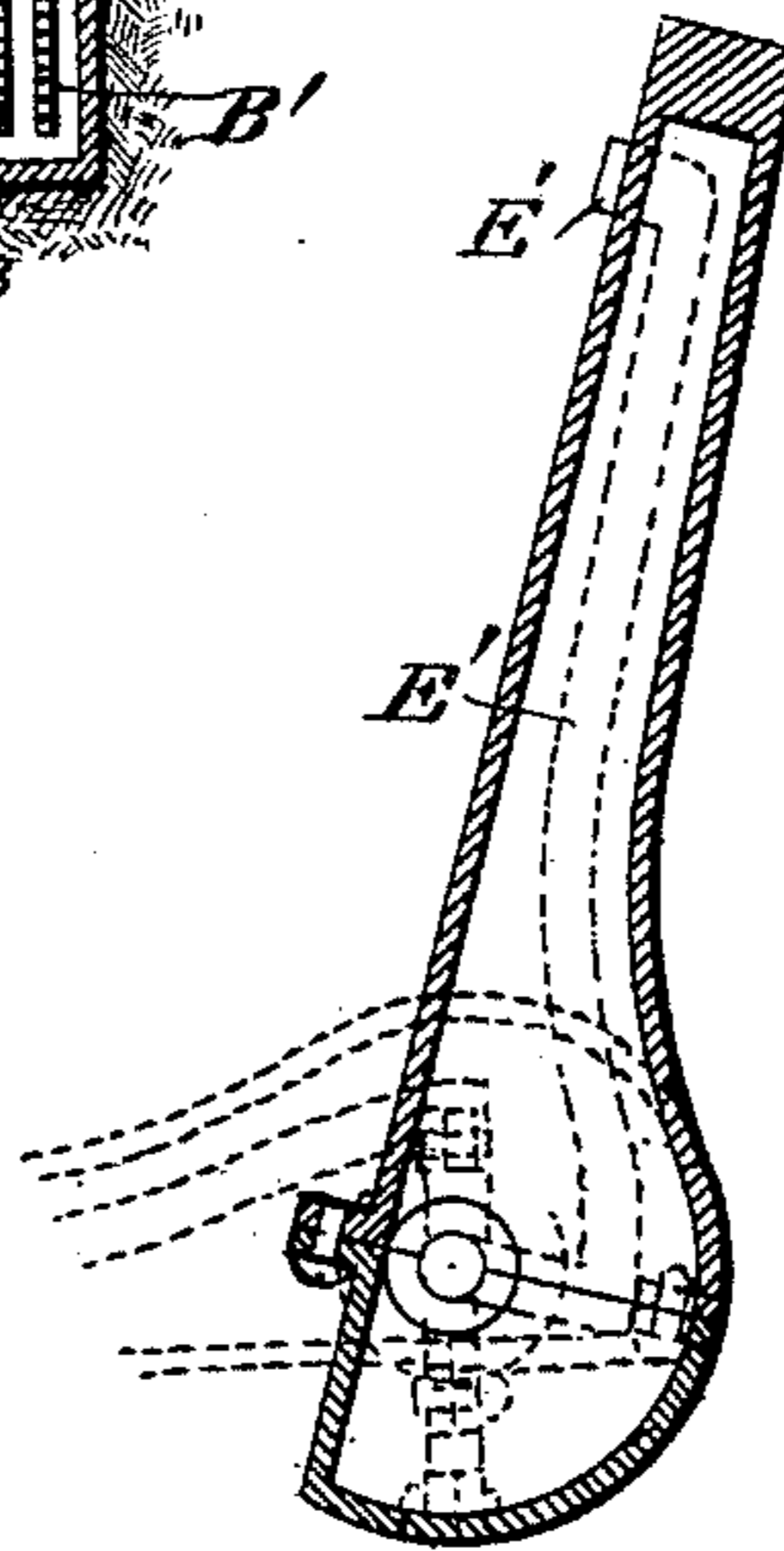


Fig. 5.



WITNESSES:
Fred G. Dieterich
Edw. W. Byrne,

INVENTOR:
Ira Robbins
BY *Manly C.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

IRA ROBBINS, OF SHEFFIELD, ALABAMA.

ELECTRIC RAILROAD.

SPECIFICATION forming part of Letters Patent No. 460,887, dated October 6, 1891.

Application filed January 19, 1891. Serial No. 378,600. (No model.)

To all whom it may concern:

Be it known that I, IRA ROBBINS, of Sheffield, in the county of Colbert and State of Alabama, have invented a new and useful
5 Improvement in Electric Railroads, of which the following is a specification.

The object of my invention is to provide an improved electric railroad of that class which employs a continuous insulated under-
10 ground conductor from which the current is taken off at intervals along the road.

It consists, chiefly, in a series of spring-actuated drums having a given length of conducting-wire wound thereon and connected
15 to a carrier which is dragged along by the car, the wire on the drum being connected to the main conductor, so as to shunt a portion of the current through the traveling wire and carrier to the car, the carrier being dis-
20 connected from the car when its section of wire is unwound, and the carrier being drawn back and the length of wire wound up on the drum again by its spring action at the same time that the car enters upon another section of
25 the track similarly equipped, as hereinafter fully described.

Figure 1 is a vertical longitudinal section through the underground conduit. Fig. 2 is a horizontal longitudinal section. Fig. 3 is
30 a vertical transverse section, and Figs. 4 and 5 are enlarged details of the shuttle and the contact-making devices.

In the drawings, A represents a continuous underground conductor. This is thoroughly
35 insulated in a lead tube and is placed in a conduit in the ground, and extends from one end of the road to the other. Along the main conductor at intervals of from fifty to one thousand feet (more or less) are boxes or
40 casings X, arranged underground and made air and water tight. In each of these boxes is arranged a spring (or weight) B, which, through a train of gear-wheels B' B² B³ B⁴, tends to wind up a drum B⁵ with a section
45 E of insulated wire thereon equal in length to the length of the sections of road. This insulated wire is connected to the axle of the drum, and the latter has a rubbing contact with a bar C, which is connected to the
50 line-wire. The free end of the traveling wire E passes first over guide-roller D and then

through a contracted neck *a*, as it issues from the box or casing, and is connected to a carrier F, constructed in the general form of a shuttle. This shuttle slides in a tube G, which ex-
55 tends along the route underground the length of one section, and said tube is slotted along its side throughout its entire length. Through this slot there extends a laterally-projecting arm F', attached to the shuttle and carrying
60 the insulated wire E. At the end of this arm there is a vertical rocking arm H, which extends up through the slot in the conduit a few inches above the level of the road-bed, so as
65 to be struck by a pendent arm N, extending downwardly from the car. The motor M on the car is electrically connected to this arm N, and its contact-face is adapted to touch a
70 metal surface on arm H, which is electrically connected to the wire E, so that whenever the arm N presses against arm H, as would
75 be the case when the car is traveling in the direction of the arrow, the current of the main line is shunted through the wire E and arms H and N to the motor, thereby supply-
80 ing the necessary power to continue the movement of the car. This contact between the arms N and H is continued throughout one section of the track of from fifty to one thousand feet, the shutter F being dragged along
85 in its tube G by the car and the wire E being reeled off the drum and paid out against the tension of the coil-spring, which latter is thus wound up. When the end of a section
90 is reached, the arm H is disconnected from arm N, and the latter is caught against a similar arm H of another section.

To effect the disconnection of the arm H from the arm N the guide-tube G of the shuttle is made to dip down at its end, as shown
95 at G', Fig. 1, and this takes the arm H below and out of contact with N and beneath the plate or covering of the conduit and the spring or weight draws the shuttle and wire back to the box again, the wire being rewound upon
100 the drum from the uncoiling of the spring and the rotation of the gears. When the shuttle passes back to the box, the arm H is thrown down into the slot of the conduit below the road-bed, and for this purpose arm H
has an elbow H', which strikes a trip-lever I.

To throw the arm H up again when another

car approaches, the trip-lever I is fixed to rack shaft I², provided with an arm I', above which rests a depressible stem J, arranged to extend vertically a short distance through and above the rail, where it will be struck by the first car-wheel. When so struck and forced down, the lever-arm T rises, and in pressing against the arm H' throws the arm H into an upright position again.

To prevent the lever I from dropping immediately after being raised, the piston of a pneumatic cylinder K is attached thereto, which, by a gradual escape of air, after the manner of a door-check, holds the arm H up until the car-arm N catches it.

In constructing and arranging the shuttle F and arm H the horizontally-projecting shuttle-arm F', Fig. 4, is reduced in size, and an oscillating sleeve F² is arranged thereon, which sleeve carries the arm H. This sleeve has a ground joint at *b* at one end and a closing screw-cap *c* at the other end, so that no water can get into the same.

A spiral spring *d* is wound upon the outer end of arm F' and bears at one end against a pin *f*, fixed in said arm, and at the other end against a chamber *e*, formed in the sleeve F², so as to hold its ground joint at *b* tightly against its bearing on the arm F'.

E' and E² is the metal conductor which passes in an insulated manner from the wire E in the shuttle centrally through the horizontal arm F' and swinging vertical arm H.

Having thus described my invention, what I claim as new is—

1. The combination, with a continuous main conductor, of a series of resilient or returning shunt-wires connected electrically to the main conductor and a drag connection for said wires arranged to be pulled along by the car and transmitting the electric current

thereto from the main conductor, substantially as shown and described.

2. The combination, with a continuous underground conductor, of a series of resilient or returning shunt-wires connected electrically to the main conductor, a continuously-slotted guide-tube, a shuttle-carrier arranged therein and connected to the section of shunt-wires, an adjustable contact-arm carried by said shuttle, and a car having a coacting contact-arm electrically connected to its motor, substantially as shown and described.

3. The combination, with the spring-drum, the returning wire E, and the traveling shuttle bearing an adjustable arm H, of tripping and lifting devices for raising and lowering the arm H above or below the road-bed, substantially as shown and described.

4. The combination, with the car having contact-arm N, of a traveling shuttle-carrier having a coacting contact-arm and a continuously-slotted tube G, having a portion G', depressed or offset from the car to withdraw the shuttle-arm from the car-arm, substantially as shown and described.

5. The combination, with the wire E, of the attached shuttle F, having horizontal arm F', oscillating sleeve F², mounted thereon and provided with arm H, and the spring *d*, bearing at one end against the arm and at the other end against the sleeve, substantially as shown and described.

6. The combination, with the shuttle F and the rocking arms H H', of the lever I I', depressing-pin J, and pneumatic cylinder K, substantially as shown and described.

IRA ROBBINS.

Witnesses:

T. L. BENHAM,
C. S. DU MONT.