

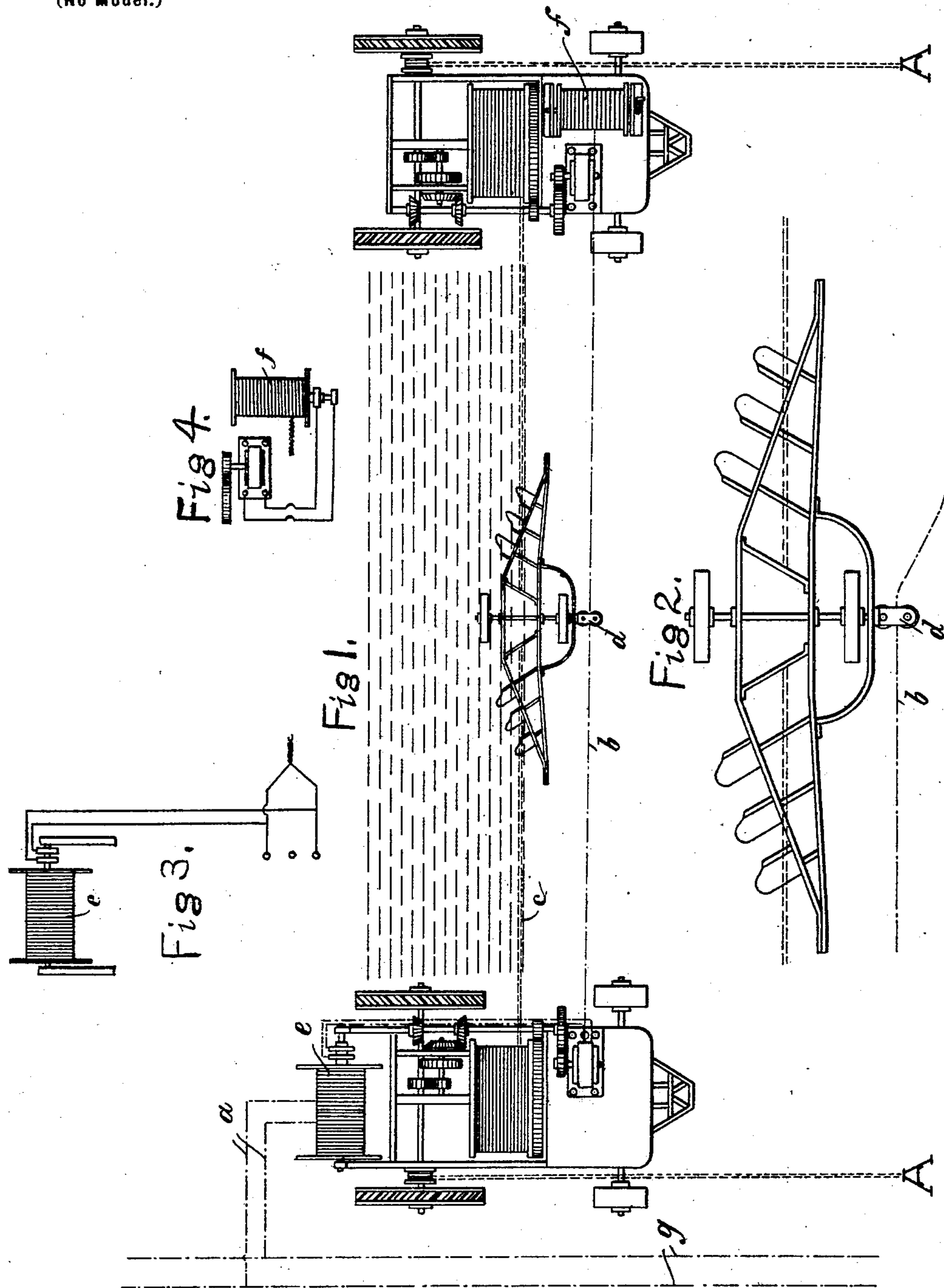
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Patented June 25, 1901.

C. MEISSNER.
ELECTRICALLY OPERATED PLOW.

(Application filed Dec. 31, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

CONRAD MEISSNER, OF FRIEDRICHSBERG, GERMANY.

ELECTRICALLY-OPERATED PLOW.

SPECIFICATION forming part of Letters Patent No. 677,247, dated June 25, 1901.

Application filed December 31, 1900. Serial No. 41,675. (No model.)

To all whom it may concern:

Be it known that I, CONRAD MEISSNER, a subject of the King of Prussia, Emperor of Germany, residing at Friedrichsberg, near Berlin, in the Kingdom of Prussia and Empire of Germany, have invented certain new and useful Improvements in Electrically-Operated Plows, of which the following is a full, clear, and exact description.

10 The system of driving plows with two engines presents great advantages over all other plow-traction systems as well if the plows are electrically operated as if the same are actuated by steam-power. These advantages of
15 the system with two engines over the single-engine system are, first, that the weight of machinery is reduced; on the second hand, that power is saved; third, that the apparatus can be moved more easily as well during its
20 setting up as while the same is working. The weight is very much lowered, owing to the fact that said weight is distributed over two motor-cars. In the single-engine system the motor-car is much heavier than the machine
25 used in the system with two engines, because two cable-drums and a triple cable are used. On the other hand, the car is much more strongly built in the single-engine system, because the same has to support the additional
30 tension of the inactive cable and to stand the motion of the anchoring-carriage. Now the saving of power of the system with two engines with regard to the single-engine system is according to practical tests of at
35 least thirty per cent. This saving of power is due to the fact that in the single-engine system about five hundred meters more of cable are used; further, that friction is produced in the cable-drum of the anchoring-
40 carriage and by the motion of said anchoring-carriage effected by said cable-drum. During the setting up of the apparatus the greater freedom of motion of electrically-driven plows is especially proved by the fact
45 that the second engine without direct power being used and without any auxiliary current-line—this is owing to the wire connection between the power-station and the field—can be transported to its actual station of
50 working.

During the working the object of the present invention shows also the advantage that

the two motor-cars can be moved independently from one another, because each one is provided with a separate current-supply. 55
The pulling of a plow-cable having a length of one thousand meters by horses is not necessary at all, according to the present invention's object.

Until now the system with two engines possessed the disadvantage that each motor-car cannot be moved independently from the other only with the help of the wire connection between the power-station in relation with the field—that is, without auxiliary 65
power or auxiliary current-line.

According to the present invention in order to avoid the disadvantages which have been connected until now with the system using two electrically-operated engines two 70
motor-cars are used, the one of which during the plowing-work proper is directly connected to the main of the power-station, the other motor-car, on the contrary, being connected by means of a cable or current line disposed 75
on the field between the two motor-cars in a parallel direction to the furrow of the plow with the contact device of the first motor-car. While being transported to the field which is to be plowed each motor-car inde- 80
pendently from the other can, however, be brought into connection with the fixed main or line. It is not absolutely necessary to conduct the motor-cars directly below the fixed
85 current-line, as said motor-cars can also be moved at a pretty great distance from same—that is, up to five hundred meters. In this manner it is possible in the plowing operation to save a rather great quantity of fixed current-
90 line wire, because for a rather large district only one fixed current-line is necessary, the single wires being set apart at a distance of about two kilometers. This great saving or economizing of expensive wire is one of the
95 principal advantages of the new system of transmitting the current to the motor-cars. Further, while transporting the motor-cars one can pass at a rather great distance from the fixed main current-line good roads or ways
100 which may eventually be found, these roads or ways being used for bringing said motor-cars to the working station.

In the accompanying drawings, forming a part of this specification, Figure 1 is a top

plan view of the machine in operation. Fig. 2 is a top plan view of the plow. Figs. 3 and 4 are diagrammatic views of the circuits.

The two motor-cars during the working stand at both sides of the field to be plowed. The motor-car situated in proximity of the main current-line *g* is provided with the conductor-drum *e*, the shaft or axis of which is parallel to the furrow traced by the plow, while the second motor-car, situated on the opposite side of the field, is provided with the conductor-drum *f*, the shaft or axle of which is vertical relatively to the furrow traced by the plow. From the main current-line *g* the diphas or triphas conductor *a* leads to the drum *e*. To the contact device of the latter the ends of the conductor leading to the second motor-car are connected in a suitable manner so that the current is not interrupted when the drum *e* is rotated. The conductor *b* is led between the rollers or pulleys of a pivoted arm *d*, disposed on the side of the tilting plow. The arm *d* is connected to the reciprocating plow in such a manner that the conductor *b* lies always slack on the field. Owing to this disposition, the plow, which is pulled back and forth across the field by its tension-cable *c*, displaces the conductor *b*, situated near the tension-cable, always of a distance corresponding to the working breadth of the plow.

The setting in place of the above-described plant for driving plows with two engines is effected in the following manner: The ends of the conductors on each of the two motor-cars are suitably connected with the wires *g*. Now the two motor-cars move along the current-line on the field to be plowed independently from each other, the plow itself being connected with one of said motor-cars. On the field one brings the first of the two motor-cars into its proper position or station. The conductor of the second motor-car is then disconnected from the main current-line and connected to the current-supply contrivance or trolley of the first motor-car. The second motor-car when no current-line leads to its station can also be brought into this station independently from the other, this being possible after the conductor of the second motor has been connected with the current-supply contrivance or trolley of the first motor-car. Now the second motor-car can reach its station by using its own power independently from the main current-line to a distance of about five hundred meters from the first carriage and one thousand meters from the main current-line. This, as will be readily understood, is a great advantage, because the known plowing apparatus driven by two engines only provide for bringing the second apparatus to its proper station by means of animal power or with the help of additional current-lines. Further, during the traveling of the second apparatus to its proper position in the field the tension-cable *c* is automatically wound off from the first car, so that even for

this purpose no additional power is required. After the second car has attained its proper station independently from the first one the loose or slack conductor *b*, lying in a parallel direction to the furrow traced by the plow, which conductor is well insulated and properly strengthened, is brought between the rollers of the pivoted arm *d*. Now, the plow being connected to the tension-cable, the work can begin.

As according to the present invention not only the motor-car connected to the fixed current-line *g*, leading to the power-station, but also the second motor-car, standing on the opposite side of the field, receives its motive power from the same fixed current-line *g*. An auxiliary current-line for the second motor-car is no way necessary. Further, the second motor-car remains always independent from the first one during the whole plowing work. The displacement of the conductor *b* of a distance corresponding to the working breadth of the plow is operated in a simple and safe manner by the arm of the reciprocating plow that is moving backward and forward.

The utilization of power which is at hand—for example, of steam-generating plants of distilleries, starch-factories, brick-kilns, &c., and before all hydraulic motors—can be effected without difficulty for the plowing-work.

With the present invention is connected the advantage of a small weight of machinery, and the costs of the electrical apparatus are small in comparison with the costs of a steam-plow locomotive. While the weight of a steam-plow is of about four hundred and twenty hundredweight, a machine of an electrically-operated plow only weighs about one hundred and twenty-three hundredweight. The costs of a steam-plow are of about seventeen thousand dollars, while the costs of the second-named apparatus is only of about five thousand six hundred dollars. Further, with the new disposition it is not necessary to provide the working station with water and fuel, and a very skilled engine-driver is not required, because for controlling motor-cars it is only necessary to turn by hand a crank-lever. Even if power is at hand for effecting the plowing-work, the present invention allows a better utilization of the fuel, because rather great stationary steam-engines can be used in the present case.

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

In a system of electric supply for electro-motors of agricultural machines, the combination with a plow and its draft-rope, the arm *d* connected to the plow, of a motor-car, a reel mounted on a transverse of the car, contact devices for said reel, conductors wound on the reel and connected with said contact devices, and a main supply-conductor, a winding-motor on said car to which one end of the draft-rope is secured, connections leading

from the said contact devices to said motor; a second motor-car, a conductor-drum secured thereon with its axis at right angles to the length of the car, a conductor wound thereon and connected with the contacts of the first-named car, a reel on which the draft-rope is wound and a motor connected with said reel and conductor, whereby each motor-car is independently operated during the plowing

although both receive their current from the same fixed main conductor.

In witness whereof I subscribe my signature in presence of two witnesses.

CONRAD MEISSNER.

Witnesses:

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