

N° 19,805



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COMPLETE SPECIFICATION.

"Improved Device for Transferring Drawings, Manuscripts and the like to a Distance by Electricity."

I, KARL WACKERMANN, Cashier of 45 Blottnitzstrasse, Beuthen O/S, Germany, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

- 5 The object of the present invention is a device by means of which drawings, manuscripts and the like are transferred any distance by electricity, the copy being exactly the same as the original.

- At the transferring station, the original to be transferred is pressed out or cut in non conducting material and this material must be in sheet form and
10 easily flexible so that the original, after the lines have been pressed out or cut therein, can be fixed to a metal sleeve, around a roller. Said sleeve is a good electrical conductor, and is connected by a device to one of the conducting wires. The roller around which the original is fixed is set by a suitable device in a regular rotation, and over the revolving original slides a sharp pointed needle
15 which is guided in such a manner along the longitudinal axis of the roller that it describes a screw path of a very small pitch on the original.

- When the needle comes in contact with the metal sleeve through one of the cuts in the original, the electrical circuit is closed as the needle is connected to the other pole of the electrical source. As soon as the needle is at the end
20 of the cut, it slides over the non-conducting original thus breaking the circuit. The original must therefore be very thin.

- This closing and breaking of the circuit is, by means of conducting wires, transmitted to a receiving station, where the copy is produced. This is effected in the following manner, that on a roller, similar in size to the roller at the
25 transferring station, around which the original is fixed, is fixed a sheet of paper or similar material. The roller is set rotating at the same speed as the roller at the transferring station by a suitable device, and an electro-magnet is provided whose armature, which is in the form of a double armed lever, is provided with a pencil or the like. The electro-magnet must be moved in the
30 direction of the longitudinal axis of the roller at the same speed as the needle at the transferring station and the pencil therefore also describes a screw path of a small pitch on the copying roller.

- As soon as the needle moves over the original and the circuit is broken, the pencil at the receiving station is not in contact with the sheet for taking the
35 copy. But as soon as the needle comes in contact with the metal sleeve through one of the cuttings, the circuit is closed and the armature is attracted by the magnet thus pressing the pencil on the sheet around the receiving roller and by means of this producing at the receiving station a copy which accurately corresponds to the original.

- 40 Instead of moving the needle and the electro-magnet in the direction of the longitudinal axis of the rollers these latter could be moved along their longitudinal axes as already known.

- The present invention differs from a previous invention, in that the needle which is fixed to one arm of a double armed lever, is kept in contact with the
45 original by a balance weight which is mounted on the other end of the double

[Price 8d.]



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armed lever. The pencil at the receiving station is fixed to the armature of a magnet as already known, and when the circuit is closed at the transmitting station the armature, which is in the form of a double armed lever has one end attracted by the magnet, thus bringing the pencil in contact with the paper or the like on which the copy is to be produced. When the circuit is broken 5 at the transmitting station, the armature not being attracted by the magnet at the receiving station, the pencil is removed from the copy roller by a balance weight which is fixed on the same arm of the armature as the pencil. In the present invention the electrical circuit contains the needle at the transmitting station, the magnet at the receiving station and the metal sleeve around the 10 roller at the transmitting station, the current being produced from one source. The circuit is closed when the needle projects through an opening in the original and comes in contact with the metal sleeve around which the original is wound.

In the present invention the needle is moved in the direction of the longitudinal axis of the roller at the transmitting station by the motor, which 15 revolves the roller, and wheel gearing; whereas in a previous invention, this is affected by the motor through leading screws and wheel gearing. The same means are used for moving the pencil at the receiving station in the direction of the longitudinal axis of the receiving roller.

The rollers at the receiving and transmitting station are the same size. 20

In the accompanying drawings is shown a constructional form of the present invention.

Fig. 1 to 3. being the arrangement at the transferring station, and

Fig. 4 and 6. the arrangement at the receiving station.

Fig. 1 shows a longitudinal section of the transferring roller. 25

Fig. 2 shows a plan thereof, and

Fig. 3 shows a section thereof.

Fig. 4 shows a longitudinal section of the receiving roller.

Fig. 5 shows a plan thereof, and

Fig. 6 shows a section thereof. 30

The transferring roller *a* is constructed of a bad electrical conductor and is surrounded by a metal sleeve *b*. Around this metal sleeve *b* is placed the original *c*, which is made of as thin a sheet as possible of a bad electrical conductor, in which are pressed out or cut, the lines of the drawing or manuscript which is to be transferred. The metal sleeve *b* is connected by means of a 35 wire *d*, to a collector disc *e* with which a brush *f* is in contact, said brush being connected to the connecting wire *g*, connected to one pole of the electric source. The roller *a* is mounted in suitable bearings, and to its shaft is keyed a rope pulley *h* connected by a rope to the motor *i*. Over the original *c* slides the needle *k* mounted on the 40 arm *l*, which latter is provided with a balance weight *n*, and mounted on the shaft *m*, the balance weight being adapted to continually keep the needle *k* in close contact with the original *c*. The shaft *m* is non-conducting and the arm *l* is therefore connected by means of the wire *o* to a terminal which latter is connected to the other pole of the electrical source by the wire *p*. In order to 45 slowly move the needle *k* in the direction of the longitudinal axis of the roller *a*, the shaft *m*, which is guided, is connected by a silk thread *q* to a sheave *r* which latter is set in motion by the motor *i* through the medium of wheel gearing as slowly as possible, so that the needle *k* describes on the original *c* a screw path of as small a pitch as possible. 50

In the circuit of the wire *p* and *g* is the electro-magnet *s* at the receiving station whose armature *t* is in the form of a double armed lever which at one end is provided with a pencil *u*. This produces, when the circuit is closed, the lines on the sheet of paper *v* or the like.

The sheet *v* is fixed around a roller *w* which rotates at the same speed as the 55 roller *a* being also driven by a motor *i*. In order that the electro-magnet *s* may move at the same speed in the direction of the longitudinal axis of the

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roller *w*, as the needle *k*, it is connected by a silk thread to a sheave which latter is connected by a similar wheel gearing as the sheave *r* at the transferring station, to the motor *i*, the base plate of the magnet being guided in a fork *x*.

- 5 Instead of the wheel gearing for moving the various parts, this could be replaced by a rack and toothed wheel or other gear and the rollers could be revolved by other suitable means instead of a motor.

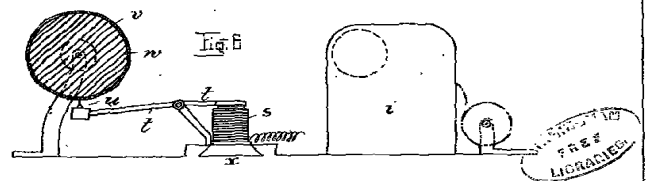
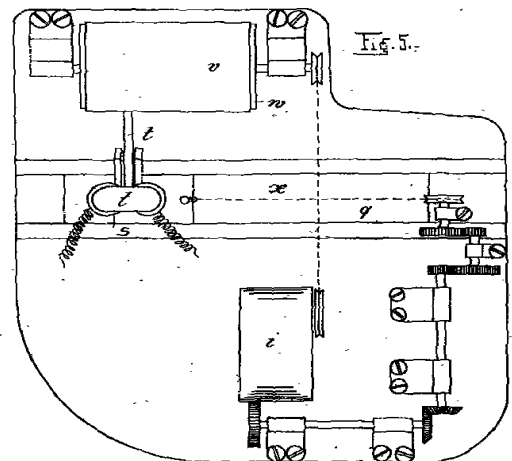
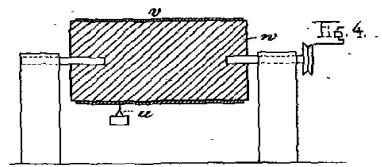
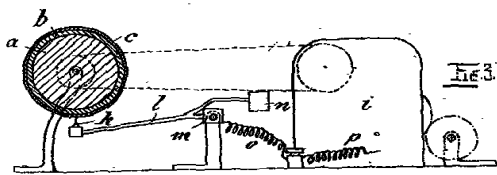
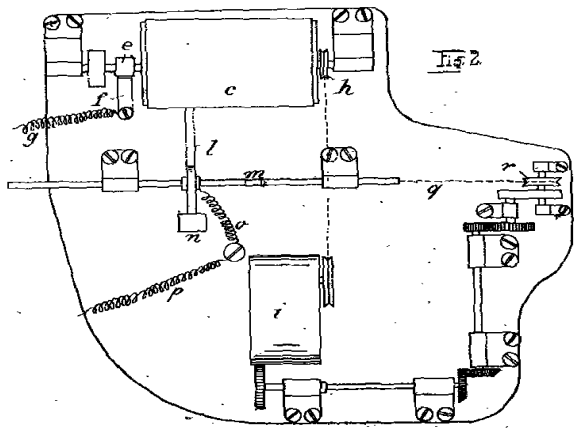
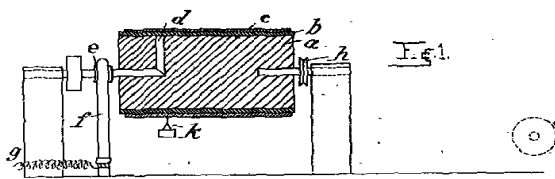
10 Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

- 1.) A device for transferring drawings, manuscripts and the like to a distance by electricity, in which the original to be transferred is pressed out or cut in a thin sheet of non-conducting material and fixed around a metal sleeve, characterised thereby that the needle which is slowly moved in the direction of the longitudinal axis of the roller and slides over the original, is kept in contact by a balance weight on the opposite arm of a double armed lever to that on which the needle is mounted so that the circuit passing through the transmitting and receiving stations is closed and thus influences a magnet at the receiving station whose armature is in the form of a double armed lever, of which one arm is provided with a balance weight and a pencil which latter is moved at the same speed, in the direction of the longitudinal axis of the roller around which a sheet of paper is fixed, as the needle, the said pencil producing the copy on the paper, said copy accurately corresponding to the original, the balance weight being adapted to remove the pencil from the paper when the circuit is broken at the transmitting station, substantially as described and shown and for the purpose set forth.

- 2.) A device according to Claim 1, characterised thereby that the original *c* is attached to a metal sleeve *b* around a roller *a*, the current being conducted to the sleeve *a* by a wire *d* and a brush *f* and further characterised by the needle *k*, which is continually pressed against the original by a balance weight on the opposite arm of a lever to that on which the needle is mounted, said lever being fixed to a guided shaft, which is moved in the direction of the longitudinal axis of the roller by a motor and wheel gearing, a similar arrangement being adapted to move the electro magnet at the receiving station, substantially as described and shown and for the purpose set forth.

Dated this 4th. day of September. 1907.

HENRY O. KLAUSER,
Civil Engineer,
Agent for Applicant.



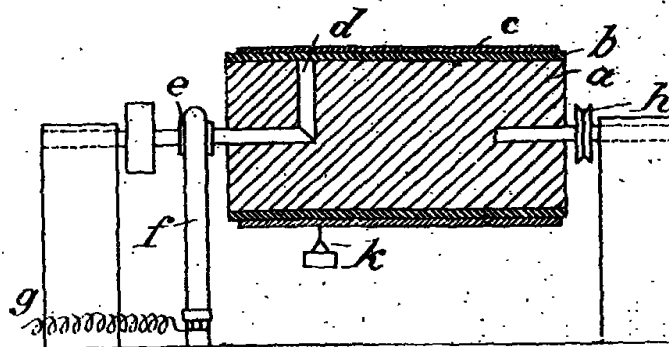


Fig. 1.

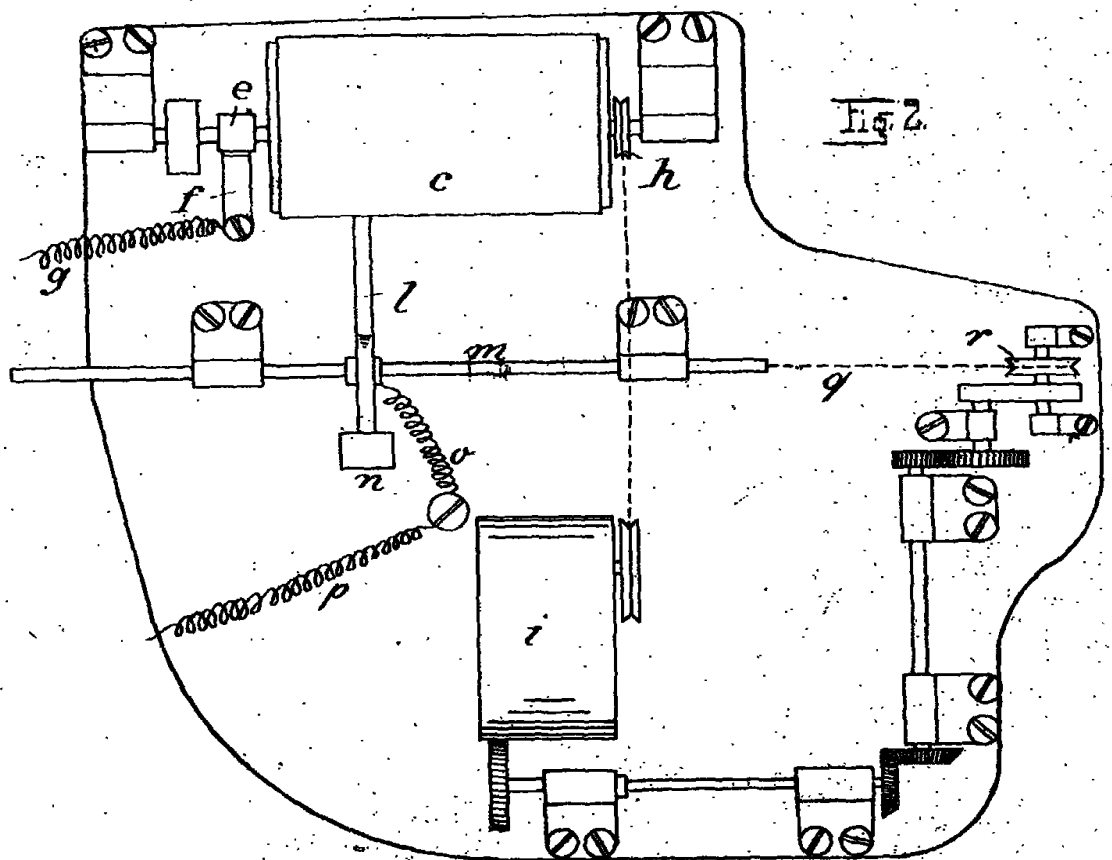


Fig. 2.

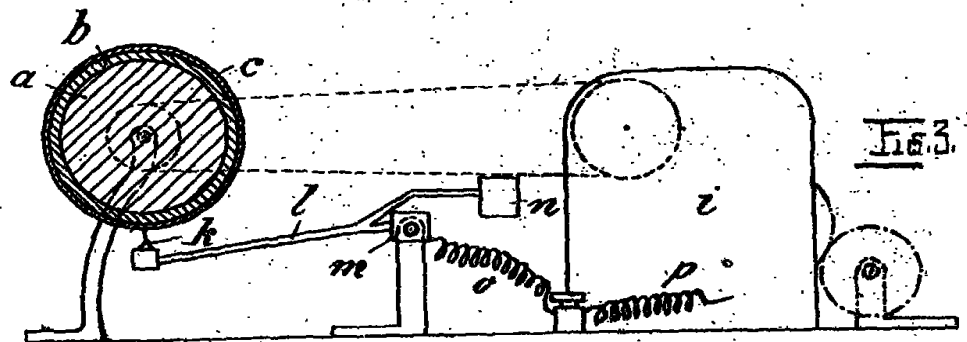
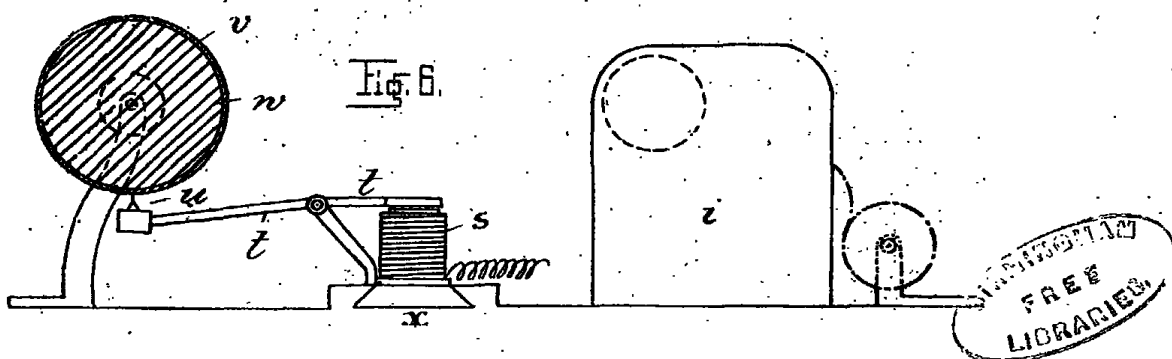
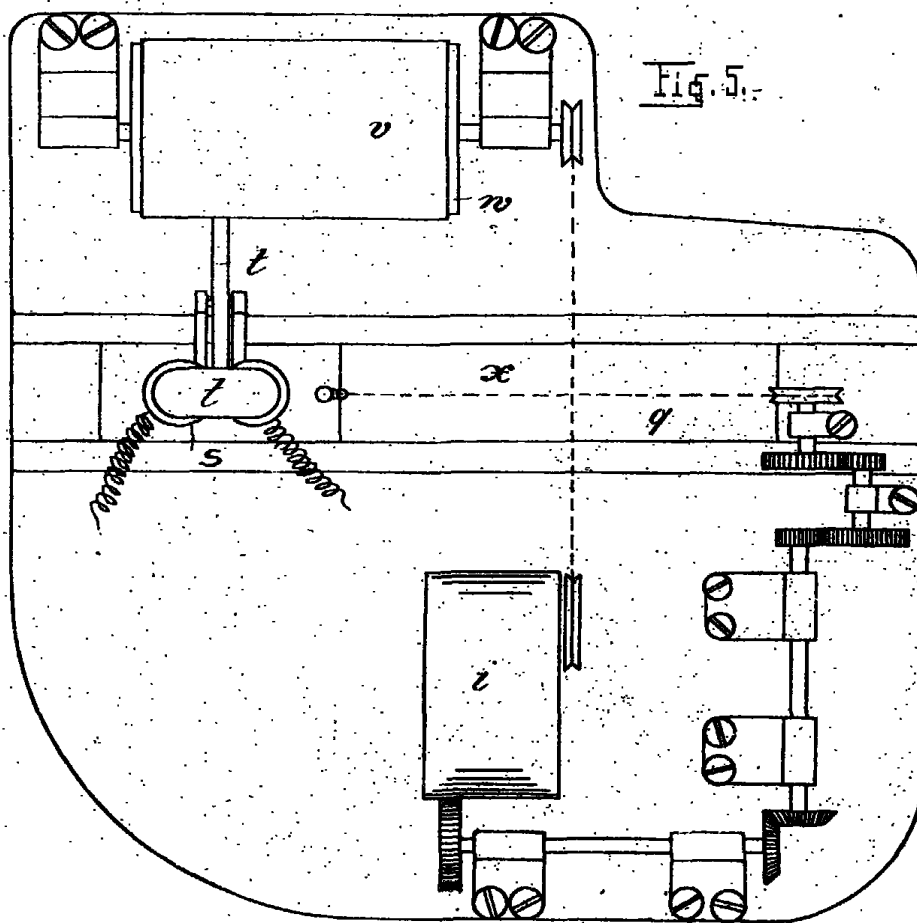
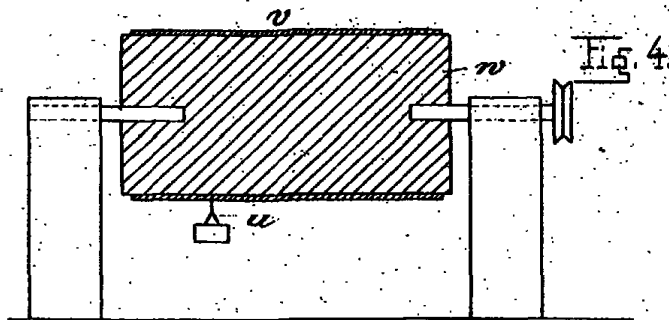


Fig. 3.

[This Drawing is a reproduction of the Original on a reduced scale.]



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