

J. A. KENNEDY-McGREGOR.
ELECTRIC CIRCUIT CLOSER.
APPLICATION FILED APR. 2, 1910.

991,853.

Patented May 9, 1911.
2 SHEETS-SHEET 1.

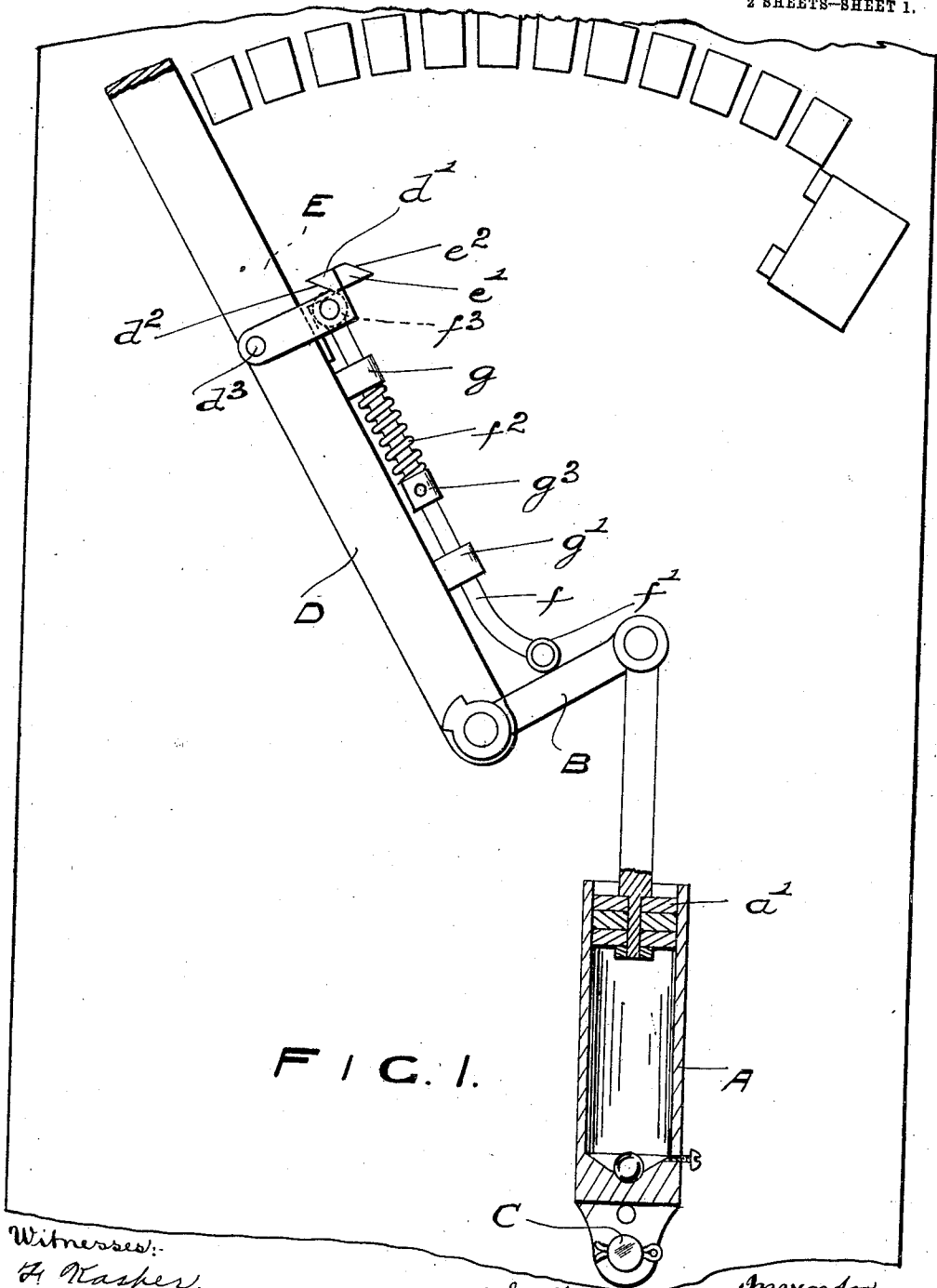


FIG. 1.

Witnesses:-
H. Kasper.
J. E. Hehlelin.

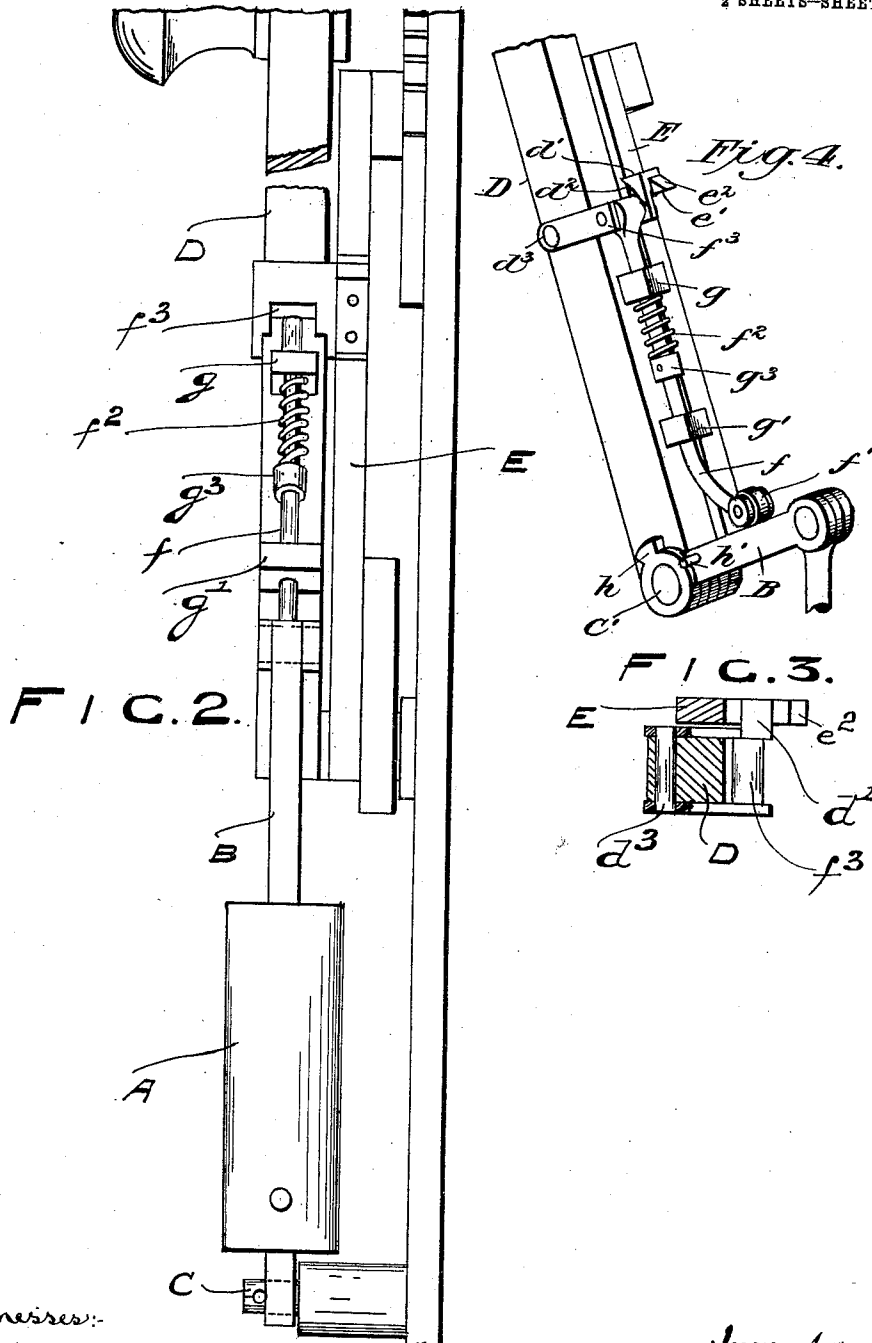
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by B. Singer.
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UNITED STATES PATENT OFFICE.

JOHN ALEXANDER KENNEDY-McGREGOR, OF BIRMINGHAM, ENGLAND, ASSIGNOR OF
ONE-HALF TO EDWARD WILLIAM BONSON, OF KNOWLE, ENGLAND.

ELECTRIC-CIRCUIT CLOSER.

991,853.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed April 2, 1910. Serial No. 553,090.

To all whom it may concern:

Be it known that I, JOHN ALEXANDER KENNEDY-McGREGOR, a subject of the Kingdom of Great Britain, residing at 275 Slade road, Gravelly Hill, Birmingham, in the county of Warwick, England, engineer, have invented certain new and useful Improvements in or Relating to Electric-Circuit Closers, of which the following is a specification.

This invention comprises an improved electric circuit closer or starter for use in connection with motors and for other purposes and it relates to the class wherein the contact bar successively engages with a series of contact studs in the process of switching the resistances out of circuit with the motor armature. If the resistances are cut out too rapidly the armature is liable to be damaged and various devices have been suggested for limiting the speed at which the attendant is able to operate the contact arm.

According to the present invention the contact arm is coupled to a main or operating arm in such a manner that excessive pressure applied to the latter by the operator in the process of operating the starter effects the disconnection of the contact arm and frees it from the control of the main arm. Upon a gradual movement of the main arm however the operating device is enabled to maintain its engagement with the contact arm until the whole of the resistances are cut out. It will be understood that the operator is not only constrained to cut out the resistance gradually but cannot damage the apparatus in an attempt to accelerate the movement of the starter by undue force.

Referring to the drawings—Figure 1 is a front elevation of a circuit closer or starter constructed in accordance with the present improvements showing the apparatus in the “open” position. Fig. 2 is a side view of the device shown in Fig. 1. Fig. 3 is a fragmentary plan showing the operative connection between the main and contact arms. Fig. 4 shows in perspective view the operative connection between the main and the contact arms.

In a convenient embodiment of this invention such as illustrated by the drawings the piston a' of the dash pot A is coupled to an arm B which is pivotally connected

as at C' to the main and contact arms D, E, the said arm B being normally inclined at approximately 90° to the main and contact arms when the starter is in the “open” position shown in Fig. 1. The operating device upon the main arm D is pivoted and coupled with a spring plunger f which carries a roller f' , such roller f' being retained in contact with the arm B to which the dash pot A is coupled, the arrangement being such that upon a gradual movement being imparted to the main arm D the dash pot is “closed” by the spring plunger the latter remaining stationary in relation to the main arm. Should however the main arm be operated too rapidly the spring f^2 of the plunger is contracted by the dashpot, and the operating device d' thereby moved from engagement with the detent e' upon the contact arm E, such operating device d' being in the shape of a bridle and pivotally attached at d^3 to the main arm D. The plunger f is extended and enlarged to form a transverse eye f^3 for articulation to the operating device. g g' are guides for the said plunger, the upper one g constituting an abutment for the spring while g^3 is a collar on the plunger f . Upon contraction of such spring in the manner aforesaid the plunger moves in relation to the main arm D and thereby through the eye f^3 and its pivot swivels, the part d' and lifts the transversely extending portion which engages the detent e' out of engagement therewith. Both the operating device d' and the detent e' are provided with inclined faces d^2 , e^2 so that upon disengagement the main arm D may again be readily engaged with the contact arm E and stops h h' are provided at the pivot of arm D and upon arm B so arranged that the dash pot is “opened” and the contact arm returned upon the main arm being replaced to the “open” position.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A circuit closer of the character described, comprising in combination with the operating lever of a controller, a contact arm normally coupled to said lever, an arm having one of its ends pivotally connected to the lower end of said contact arm, a dash pot having its piston coupled to the other end of said arm, and means to disengage said contact arm from the operating lever

for the purpose of preventing an abrupt movement of the contact arm from its open to the closed position, substantially as described.

- 5 2. A circuit closer of the character described, comprising in combination with the operating lever of a controller, a contact arm normally coupled to said lever, an arm
10 having one of its ends pivotally connected to the lower end of said contact arm, a dash pot having its piston coupled to the other end of said arm, and a spring controlled plunger guided upon the operated lever, a
15 roller upon the lower end of said plunger, kept in contact with the upper face of said arm, a detent upon the contact arm, and an operating device pivotally secured to the operating lever, normally engaging with its
20 inclined face the inclined face of said detent, and adapted to be disengaged therefrom by the contraction of the spring controlling the movement of said plunger, substantially as
described and for the purpose set forth.

- 25 3. A circuit closer of the character described, comprising in combination with the operating lever of a controller, a contact arm normally coupled to said lever, an arm hav-

ing one of its ends pivotally connected to the lower end of said contact arm, a dash 30 pot having its piston coupled to the other end of said arm, and a spring controlled plunger, guides for the same upon the operated lever, the upper guide forming an abutment for one end of the spring encircling 35 said plunger, and controlling its movement, a collar upon said plunger forming an abutment for the lower end of said spring, a detent upon the contact arm, an operating device pivotally secured to the operating lever, 40 normally engaging with its inclined face the inclined face of said detent, an eye upon the upper end of said plunger, adapted to disengage and readily engage said detent and 45 operating device, stops upon the pivot of the arms, and upon arm (B) to regulate the relative movements of said arms, and means to operate said plunger, substantially as described and for the purpose set forth.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JOHN ALEXANDER KENNEDY-MCGREGOR.

Witnesses:

ROWLAND L. GOOLD,
WILLIAM A. DAVIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
