E. SCHNEIDER.

TELEMOTOR.

APPLICATION FILED JULY 21, 1920.

1,393,837.

Patented Oct. 18, 1921.

4 SHEETS—SHEET 1.

Fig. 1.

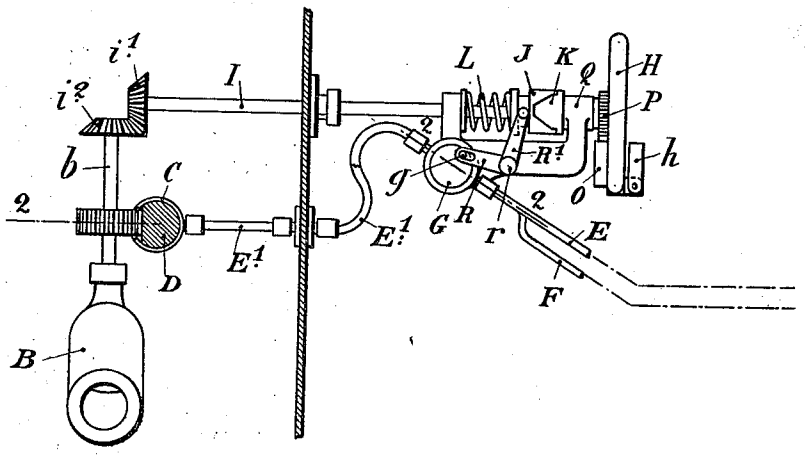
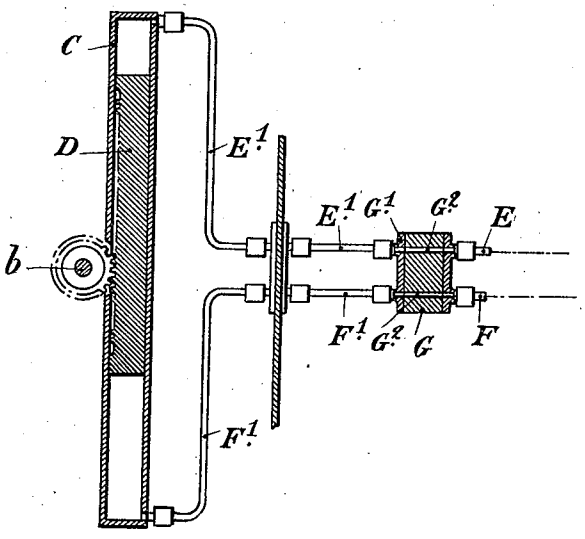


Fig. 2.



Inventor,
Eugene Schneider
By Marks, Cameron, Lewis & Kirkam
Attorneys

E. SCHNEIDER.

TELEMOTOR.

APPLICATION FILED JULY 21, 1920.

1,393,837.

Patented Oct. 18, 1921.

4 SHEETS—SHEET 2.

Fig. 1a

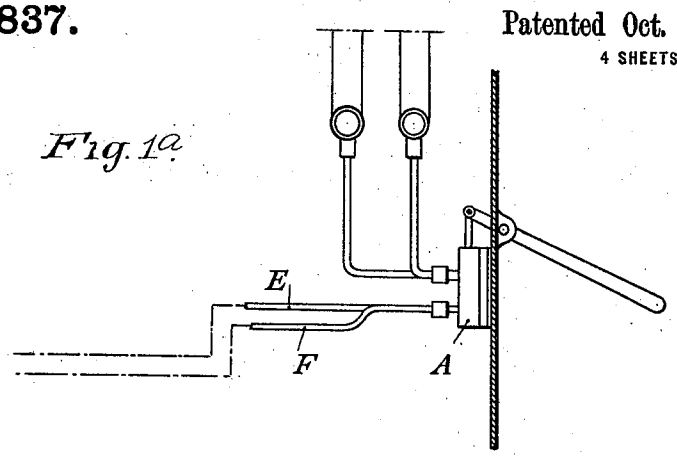
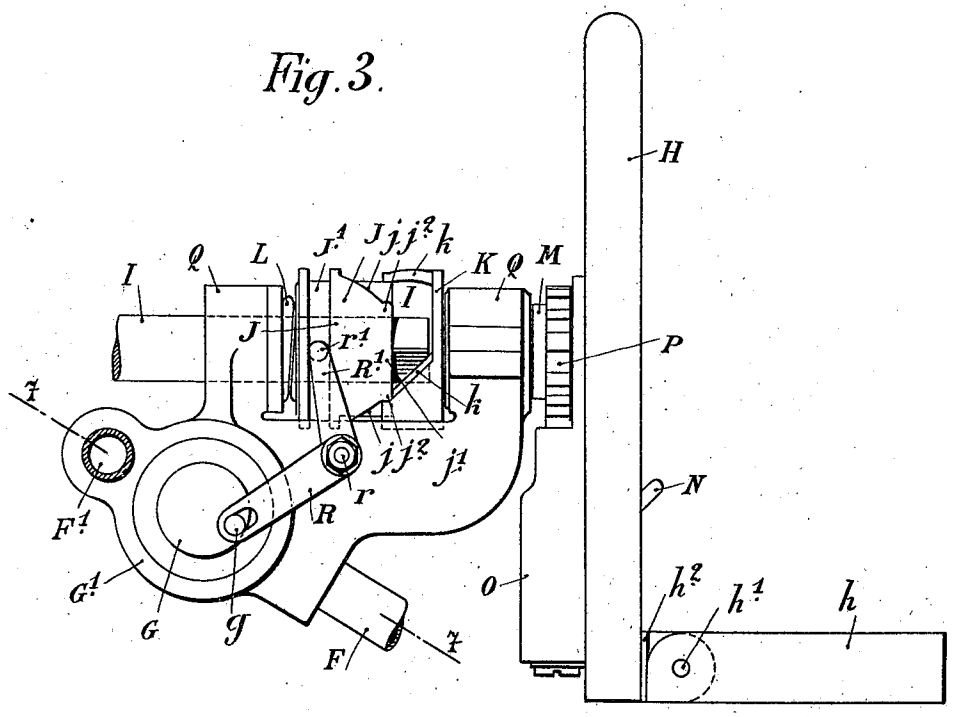


Fig. 3.



Inventor,
Eugene Schneider
By Munn, Cameron, Lewis & Keelan
Attorneys

E. SCHNEIDER.

TELEMOTOR.

APPLICATION FILED JULY 21, 1920.

1,393,837. Patented Oct. 18, 1921.

4 SHEETS—SHEET 3.

Fig. 4.

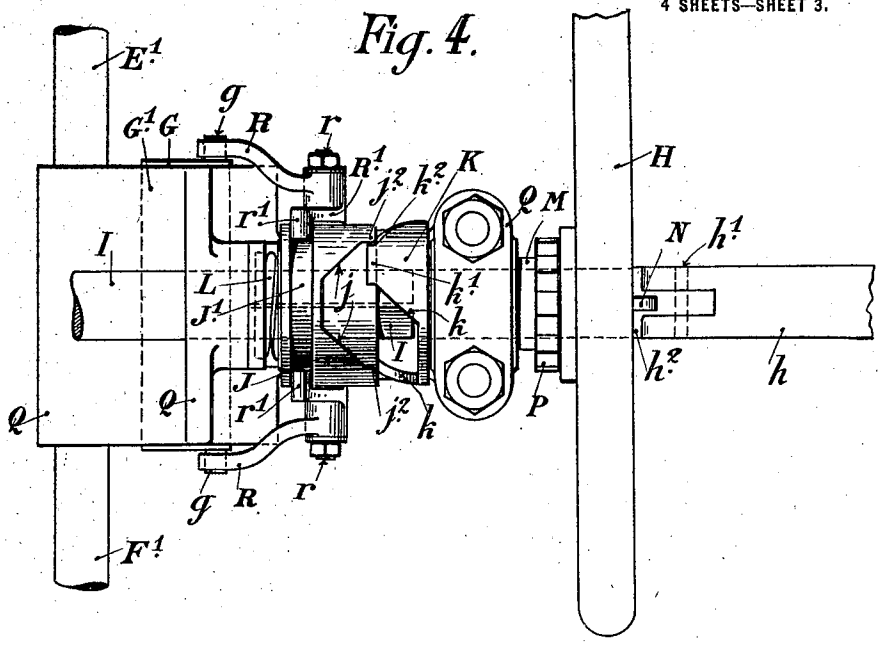
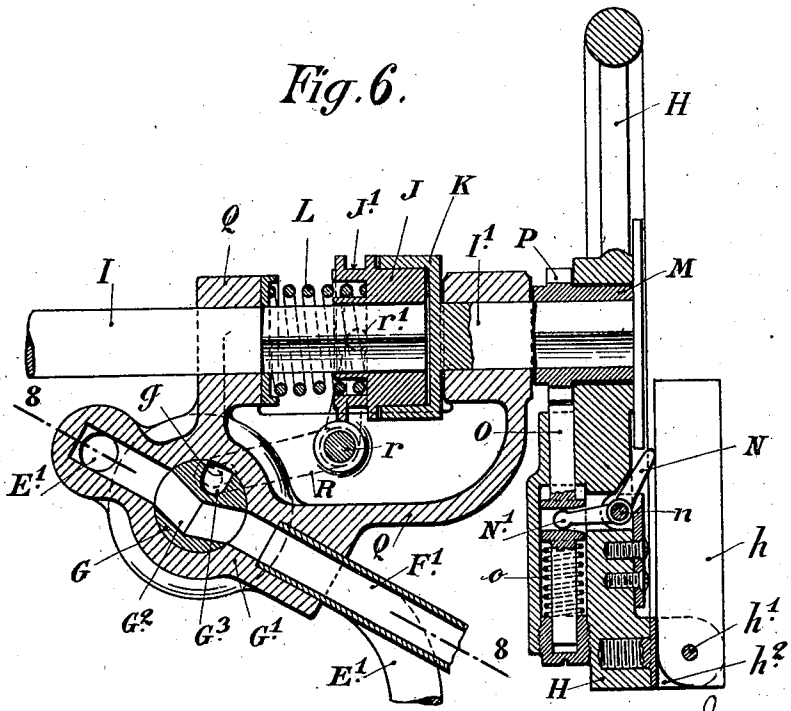


Fig. 6.



Inventor,
Eugene Schneider
By Mann, Cameron, Lewis & Kirkham
Attorneys

E. SCHNEIDER.

TELEMOTOR.

APPLICATION FILED JULY 21, 1920.

1,393,837. **Patented Oct. 18, 1921.**

4 SHEETS—SHEET 4.

Fig. 5.

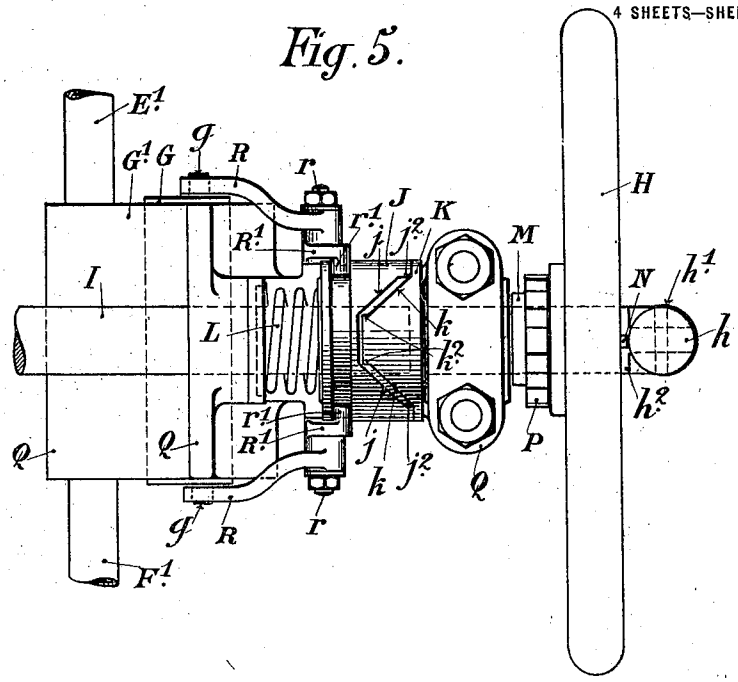


Fig. 7.

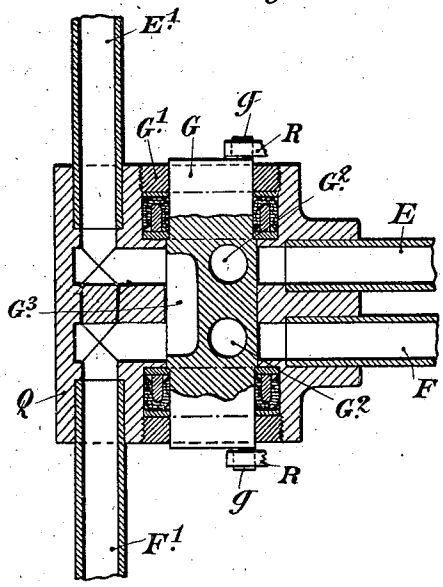
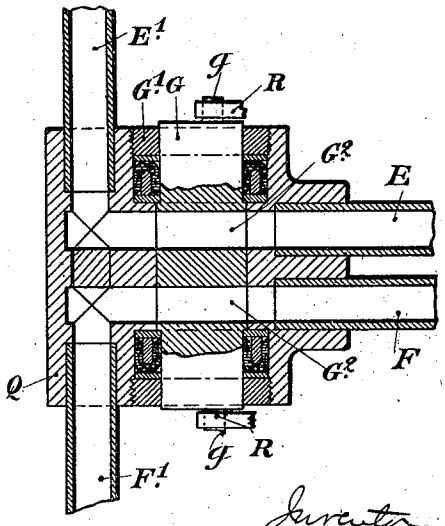


Fig. 8.



Inventor
Eugene Schneider
By Munro, Cameron, Lewis & Kirkham
attorneys

UNITED STATES PATENT OFFICE.

EUGENE SCHNEIDER, OF PARIS, FRANCE, ASSIGNOR TO SCHNEIDER & CIE., OF PARIS, FRANCE, A LIMITED JOINT-STOCK COMPANY OF FRANCE.

TELEMOTOR.

1,393,837. Specification of Letters Patent. Patented Oct. 18, 1921.

Application filed July 21, 1920. Serial No. 397,947.

To all whom it may concern:

Be it known that I, EUGENE SCHNEIDER, a citizen of the Republic of France, resident of Paris, France, have invented new and useful Improvements in Telemotors, which invention is fully set forth in the following specification.

In installations of apparatuses comprising a plurality of mechanisms actuated by fluid pressure, it is advisable to group the actuating mechanisms of the apparatuses as a whole in a common control station so that a single operator is enabled to control their working.

It may however be necessary in case the source of energy should become unavailable, to provide for each apparatus, conjointly with the distant fluid controlling mechanism, an emergency hand-control mechanism located near the said apparatus. In such a case, when the control mechanism is brought into operation, it is necessary that the fluid contained in the operating motor shall be able to pass from one side of the piston to the other by flowing in pipes connecting the motor to the distributer.

In order to diminish the distance the fluid must traverse in the case of hand control, it has already been proposed to provide near the motor and in the circuit of the latter, a branch which terminates at the two ends of the motor cylinder and which is normally closed by a cock that is opened when it is desired to employ hand control.

The present invention consists in an improvement on that known mechanism. It consists essentially in a linking arrangement between the hand-wheel or other member of the hand control mechanism, and the short-circuiting cock, that is to say, the cock on the branch that connects together the ends of the motor cylinder. This linking arrangement is such that when the operator operates the hand control wheel, he opens automatically the said short-circuiting cock of the motor irrespectively of the direction of the operation, and the release of the said hand-wheel causes automatically the cock to return into its closed position. This interlinking of the hand control device and the short-circuiting cock dispenses with one operation and besides obviates thereby any wrong maneuver.

Complementary Figs. 1 and 1^a of the accompanying drawings is a diagrammatic elevation of the general arrangement of hydraulic mechanism and hand control mechanism for actuating a mechanism or device such as a sluice valve, and comprising the improved apparatus of the present invention; the parts are shown in the positions they occupy for hydraulic operation.

Fig. 2 is a partial horizontal section on the line 2—2 of Fig. 1.

Fig. 3 is a detail elevation on a larger scale showing the hand control wheel and the short-circuiting cock linked together in the positions they assume automatically as soon as the said wheel is operated.

Fig. 4 is a corresponding plan.

Fig. 5 is a similar plan showing the parts in the rest position, that is to say, when the cock is closed.

Fig. 6 is a detail vertical section of the apparatus comprising the hand control wheel and short-circuiting cock interlinked.

Fig. 7 is a horizontal section on the line 7—7 of Fig. 3.

Fig. 8 is a section on the line 8—8 of Fig. 6.

Referring to Fig. 1, A is the distributer for operating hydraulically from a distance a device such as a sluice valve B. In Figs. 1 and 2, C indicates a motor whose piston D receives alternately on its faces through the ducts E, E^1 and F, F^1, pressure fluid from a suitable supply controlled by the distributer or valve mechanism A in the system.

The hand control mechanism is located as near as possible to the device B to be actuated in order to avoid great lengths of mechanical gearing.

According to the present invention, the installation comprises a mechanical linking arrangement between the hand control device such as the hand-wheel H, and a cock G for circuiting the ends E^1, F^1 of the ducts E. F.

In the example shown, this interlinking is effected as follows:—

The shaft I by which the hand control motion is transmitted by means of the gearing i^1, i^2 to the shaft b carrying the device B to be actuated, is divided into two sections I and I^1 between which a clutch J—K is arranged subjected to the action of a counter-spring L. One of the elements J of this clutch is connected to the short-circuiting cock G. The other element K is connected to the hand control wheel H. The

arrangement is such that the counter-spring L which has a constant tendency to keep the sleeve J engaged with the sleeve K, has also a tendency to close the short-circuiting cock G. Inversely, if the operator by operating the hand-wheel H, acts upon the clutch in such a manner as to move the clutch elements and compress the counter-spring L, thereby coupling together the two sections I^1 and I of the hand control shaft, he will automatically open the cock G.

In practice, the hand wheel H is loose on a sleeve M engaged on a square part of the shaft I^1, so that the hand-wheel is not uselessly moved when the hand control is not being used. The hand-wheel can be coupled to the sleeve M immediately it is desired to move it in one direction or the other. For this purpose it comprises a folding handle h pivoted on a pin h^1 carried by a block h^2 fixed to the said hand-wheel. This handle when at rest is folded back into the position shown in Fig. 6. In this position it pushes back a bell crank lever N, N^1 pivoted at n to the hand-wheel, and it thereby by means of the arm N^1, moves away from the axle of the hand-wheel, a spring bolt O that is normally engaged between the teeth of a ratchet wheel P fixed to the sleeve M.

It will be readily perceived that the turning of the handle outward into the position shown in Fig. 3, for the purpose of operating the hand-wheel, will cause the bolt O to engage between the teeth of the ratchet wheel P and thus couple the hand-wheel to the shaft section I^1.

The clutch J—K comprises an element K fixed to the shaft section I^1. This element consists of a sleeve cut so as to form two claws k^1 having extensions in the form of diverging inclines k. When at rest, the whole k—k^1 of these claws and inclines is engaged between the complementary claws and inclines of the sleeve J constituting the other element of the clutch. The inclines k are situated opposite the corresponding inclines j.

The interpenetration of the two elements J and K is such that during rest, a claw k^1 is engaged between two inclines j, while a claw j^1 is engaged between two inclines k. The sleeve J slides along a square part of the shaft I.

The counter-spring L bears at one end upon the sleeve J and at its other end upon a fixed point that may be situated on the common frame Q carrying the shafts I, I^1 and the cock G.

For the purpose of coupling the clutch element J to the cock G, the sleeve J is formed with a groove J^1 in which engage studs r^1 of branches R^1 of two bell crank levers R—R^1 fulcrumed on a pin r carried by the frame Q. The arms R of these levers are pivoted at their free ends to studs g eccentrically carried by the plug G of the short-circuiting cock. The casing G^1 of this cock can be formed in the frame Q.

As shown in detail in Figs. 6, 7 and 8, the two pipe sections E^1, F^1 which are to be short-circuited during hand control, open at one of their ends in the cock casing G^1 into which there also open the pipes E, F leading to the distributer A. The cock plug G is pierced with two transverse ducts G^2 and a longitudinal duct G^3.

The improved apparatus operates as follows:—

For controlling at a distance by means of fluid pressure, the parts are brought into the position shown in Figs. 1, 2, 6 and 8. The handle h is raised; the bolt O is moved out of the way; the hand-wheel H is loose on the sleeve M; the clutch elements J and K are engaged with each other; and the expanded spring L keeps the cock in the position shown in Figs. 6 and 8 in which it allows the fluid to flow from one side of the piston to the other throughout the extent of the pipes E, E^1, F, F^1 through the medium of the distributer A.

When it is desired to employ hand control, the handle h is depressed by moving it into the position shown in Figs. 3 and 4, thus causing by the expansion of the spring o, the bolt O to engage between the teeth of the ratchet wheel P and thus lock the hand-wheel H on the shaft section I^1. Immediately the hand-wheel H is moved in one or the other direction, the inclines k of the clutch elements K exert a pressure upon the claws j^1 of the element J. The latter is thereby forced toward the left compressing the spring L, and by means of the groove J^1 moving the bell crank levers R^1, R so as to cause a rotation of the cock plug G as soon as the hand-wheel has been rotated through a quarter of a revolution. By this means the claws k^1 after sliding over the inclines j, are moved into contact with the claws j^1, and the shoulders k^2 bear against the shoulders j^2 (Figs. 3 and 4).

By continuing the rotation, the clutch element J is carried around by the element K; the groove J^1 turning on the studs r^1 of the lever arms R^1. The parts then occupy the positions shown in Figs. 3, 4 and 7, where the cock plug G short-circuits by means of the duct G^3, the pipe sections E^1 and F^1.

As soon as the operator releases the hand-wheel H, the spring L expands, and the parts resume automatically the positions they occupy as shown in Figs. 5, 6 and 8, that is to say, the requisite position for the fluid-pressure control from a distance.

It will be seen that the improved apparatus allows at any moment of producing a short-circuit of the said ends of the pipes E^1, F^1 terminating at the motor, by the mere actuation of the hand control device

H, and that inversely the mere action of releasing the said hand control device reëstablishes automatically connection between the motor and the distant control distributer A.

As a matter of fact for changing from hand control over to fluid-pressure distant control and vice versa, the operator need not operate any cock, so that this invention not only does away with one operation in each case but also obviates any wrong move in all cases.

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. In a telemotor, the combination with a device to be actuated, of manually operated means for actuating said device, a motor operatively included in a fluid-pressure system controlled at a distance for actuating said device independently of the manually operated means, and a valve interposed in the system to be actuated by the manually operated means to short-circuit the motor while the device is actuated by said manually operated means.

2. In a telemotor, the combination with a device to be actuated, of a motor operatively included in a fluid-pressure system controlled at a distance for actuating said device, manually operated means for actuating said device independently of the motor, and a valve interposed in the system to be actuated by the manually operated means to short-circuit the motor, thereby permitting free flow of the liquid from one side of the movable element of the motor to the other side thereof as said element is incidentally moved through its connection with the device actuated by the manually operated means.

3. In a telemotor, the combination with a device to be actuated, of a motor operatively included in a fluid-pressure system controlled at a distance for actuating said device, manually operated means for actuating said device independently of the motor, a valve interposed in the system to be actuated by the manually operated means to short-circuit the motor, thereby permitting free flow of the liquid from one side of the movable element of the motor to the other side thereof as said element is incidentally moved through its connection with the device actuated by the manually operated means, and spring-pressed means operating to return the valve to its original position on release of the manually operated means to reëstablish the communication between the motor and the fluid-pressure system.

4. In a telemotor, the combination with a device to be actuated, of manually operated means for actuating said device, a fluid-pressure motor for actuating said device independently of the manually operated means, fluid-pressure supply pipes controlled at a distance and communicating with the opposite sides of the motor, and a valve controlling the passages through the supply pipes actuated by the operation of the manually operated means to short-circuit the motor, thereby establishing a direct communication between opposite sides of the motor for the flow of fluid from one side of the movable element of the motor to the other side thereof while said element is incidentally moved through its connection with the device actuated by the manually operated means.

5. In a telemotor, the combination with a device to be actuated, of a motor operatively included in a fluid-pressure system controlled at a distance for actuating said device, a valve interposed in the system to be operated to short-circuit the motor, manually operated means for actuating said device independently of the motor, said means comprising shafting having a driving connection with said device and including engaging clutch members with one of said members movable relatively to the other member by the rotation of said shafting, and mechanism for transmitting motion from the relatively movable clutch member to the valve to actuate the latter to short-circuit the motor during the rotation of said shafting.

6. In a telemotor, the combination with a device to be actuated, of a motor operatively included in a fluid-pressure system controlled at a distance for actuating said device, a valve interposed in the system to be operated to short-circuit the motor, manually operated means for actuating said device independently of the motor, said means comprising shafting having a driving connection with said device and including engaging clutch members with one of said members movable relatively to the other member by the rotation of said shafting, mechanism for transmitting motion from the relatively movable clutch member to the valve to actuate the latter to short-circuit the motor during the rotation of said shafting, and a spring normally pressing the movable clutch member to return the same to its initial position when the manually operated means is released, the return of the movable clutch member to its initial position operating through the transmitting mechanism to return the valve to its original position to reëstablish the communication between the motor and the system.

7. In a telemotor, the combination with a device to be actuated, of a motor operatively included in a fluid-pressure system controlled at a distance for actuating said device, a valve interposed in the system to short-circuit the motor, manually operated

means for actuating said device independently of the motor, said means comprising shafting having a driving connection with said device and including clutch members having mutual engaging faces to reciprocate one of said clutch members when the shafting is rotated, and mechanism for transmitting the motion of the reciprocated clutch member to the valve to actuate the latter to short-circuit the motor during the rotation of said shafting.

8. In a telemotor, the combination with a device to be actuated, of a motor operatively included in a fluid-pressure system controlled at a distance for actuating said device, a valve interposed in the system to short-circuit the motor, manually operated means for actuating said device independently of the motor, said means comprising shafting having a driving connection with said device and including clutch members having mutual engaging faces to reciprocate one of said clutch members when the shafting is rotated, mechanism for transmitting the motion of the reciprocated clutch member to the valve to actuate the latter to short-circuit the motor during the rotation of said shafting, and a spring normally pressing the reciprocative clutch member to return the same to its initial position when the manually operated means is released, the return of the movable clutch member to its initial position operating through the transmitting mechanism to reëstablish the communication between the motor and the system.

9. In a telemotor, the combination with a device to be actuated, of a motor operatively included in a fluid-pressure system controlled at a distance for actuating said device, a rotatable valve interposed in the system to short-circuit the motor, manually operated means for actuating said device independently of the motor, said means comprising shafting having a driving connection with said device and including clutch members having mutual engaging faces to reciprocate one of said clutch members when the shafting is rotated, a bell-crank pivoted to a fixed part having one arm eccentrically connected with an end of the rotatable valve and having the other arm provided with a sliding engagement with the reciprocative clutch member so that the angular displacement of the bell-crank by the movement of the reciprocative clutch member will rotate the valve to short-circuit the motor during the rotation of the shafting, and a spring normally pressing the reciprocative clutch member to return the same to its original position when the manually operated means is released, the return of the reciprocative clutch member to its original position operating through the bell-crank connection to turn the valve to reëstablish the communication between the motor and the system.

Dated this 23rd day of January, 1920.

In testimony whereof I have signed this specification.

EUGENE SCHNEIDER.

Witnesses:

ANDRÉ MOSTICKER,

CLEMENT S. EDWARDS.