

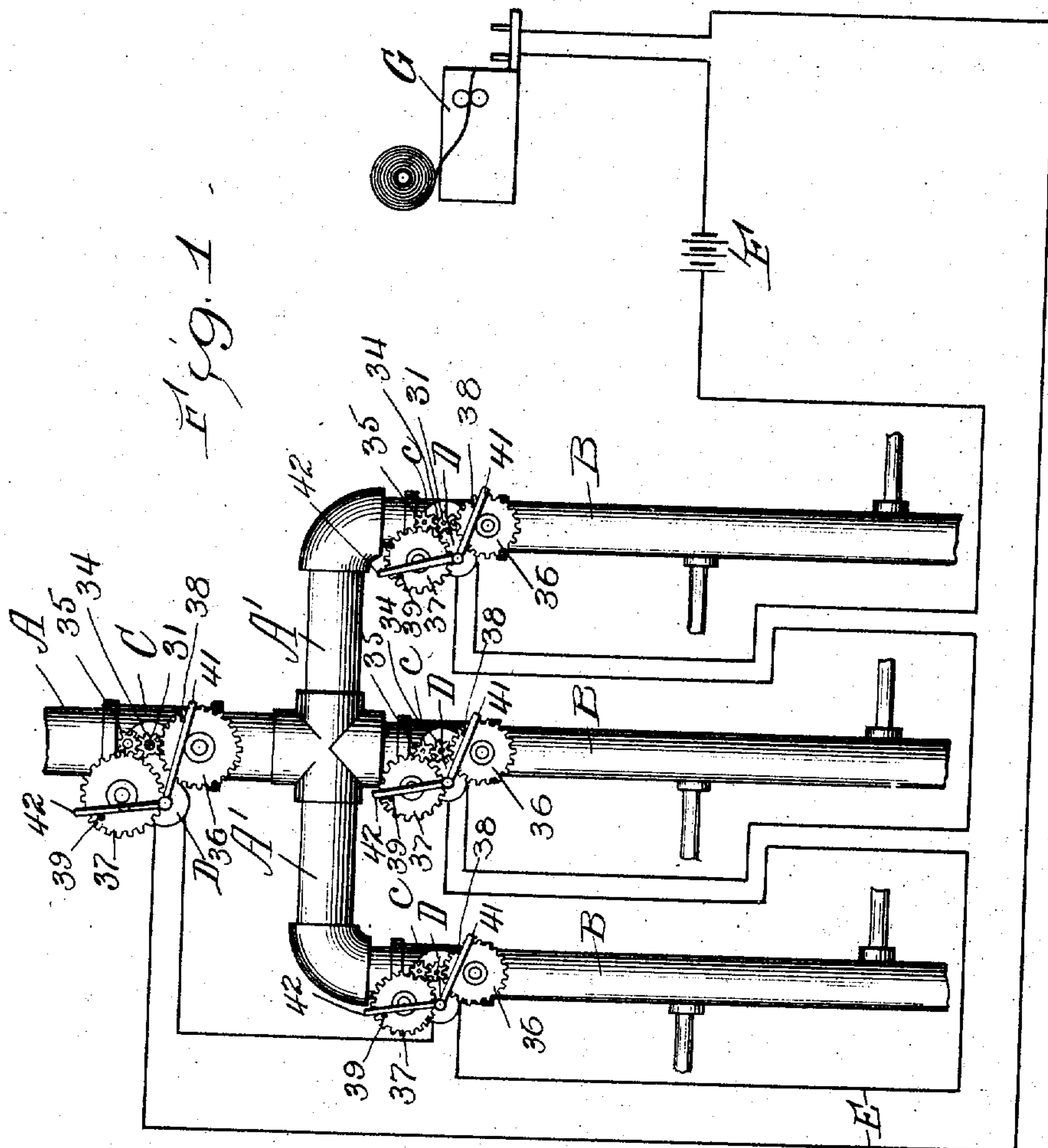
No. 860,560.

PATENTED JULY 16, 1907.

J. G. & J. D. NOLEN.
AUTOMATIC FIRE EXTINGUISHER SUPERVISORY SYSTEM.

APPLICATION FILED OCT. 28, 1904.

3 SHEETS—SHEET 1.



Witnesses:

Ray White

Harry C. Lewhite

Inventors

John D. Nolen

James G. Nolen

By Josée Gair Atty

No. 860,560.

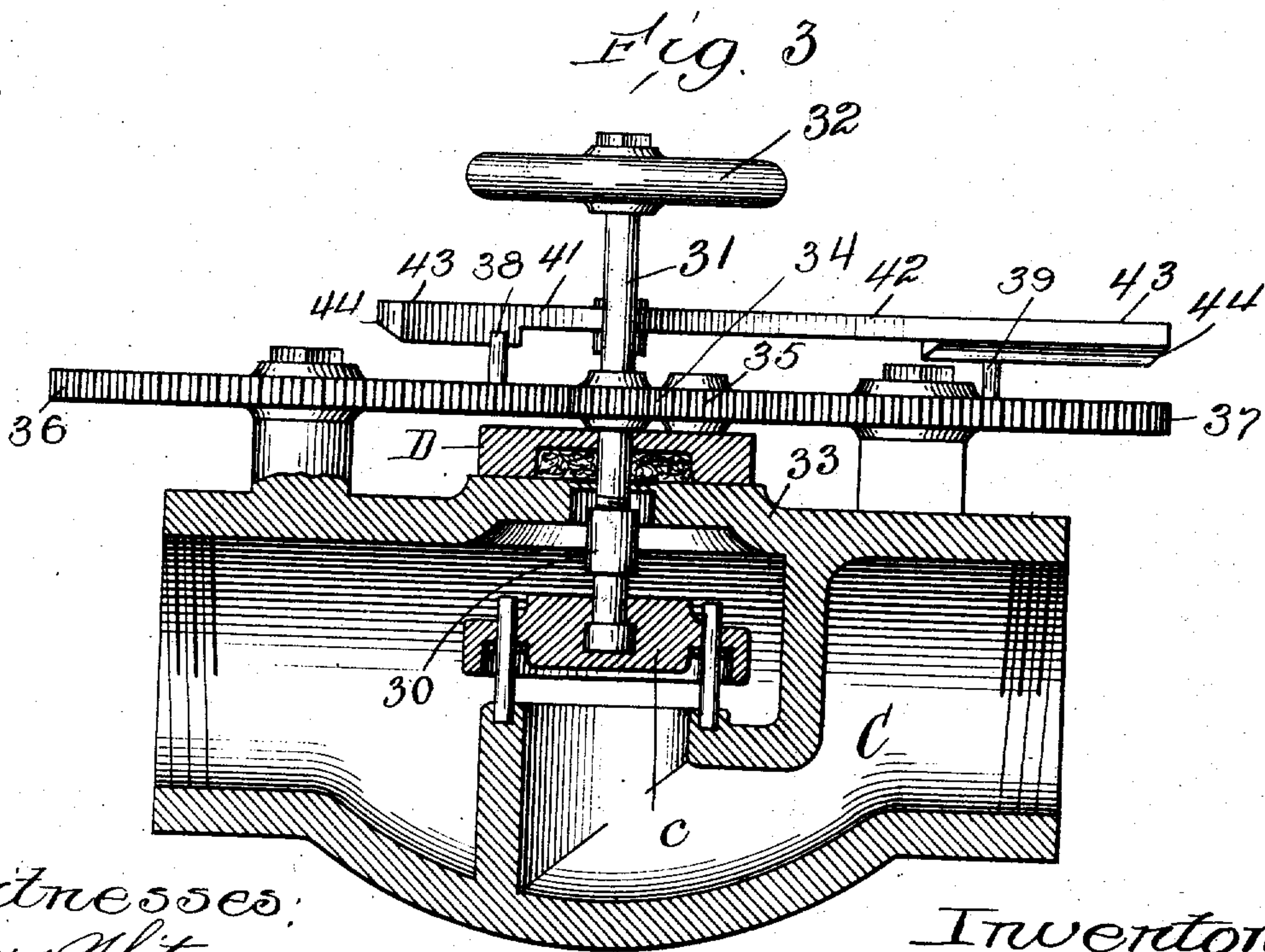
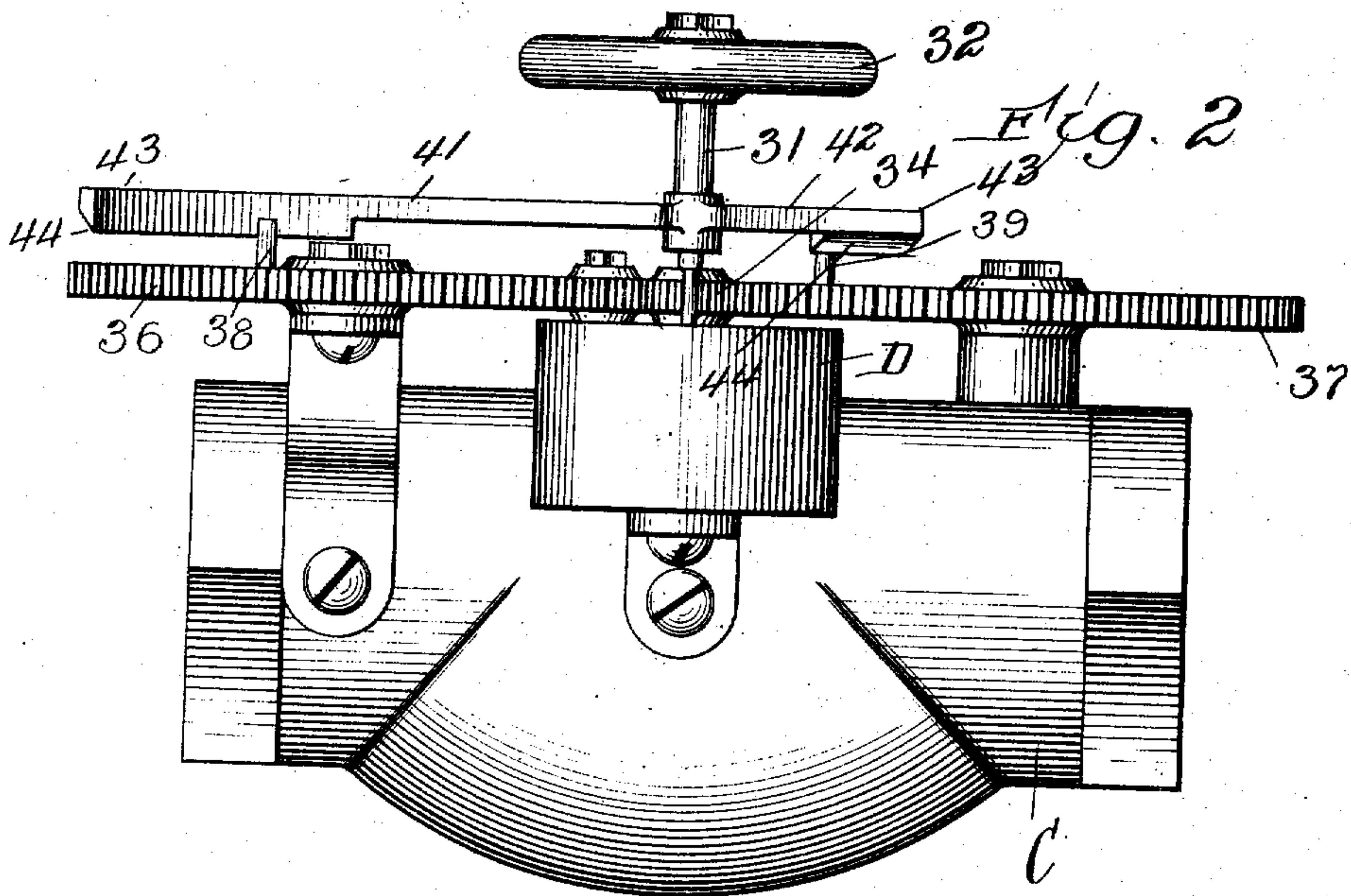
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3 SHEETS—SHEET 2.



Witnesses:
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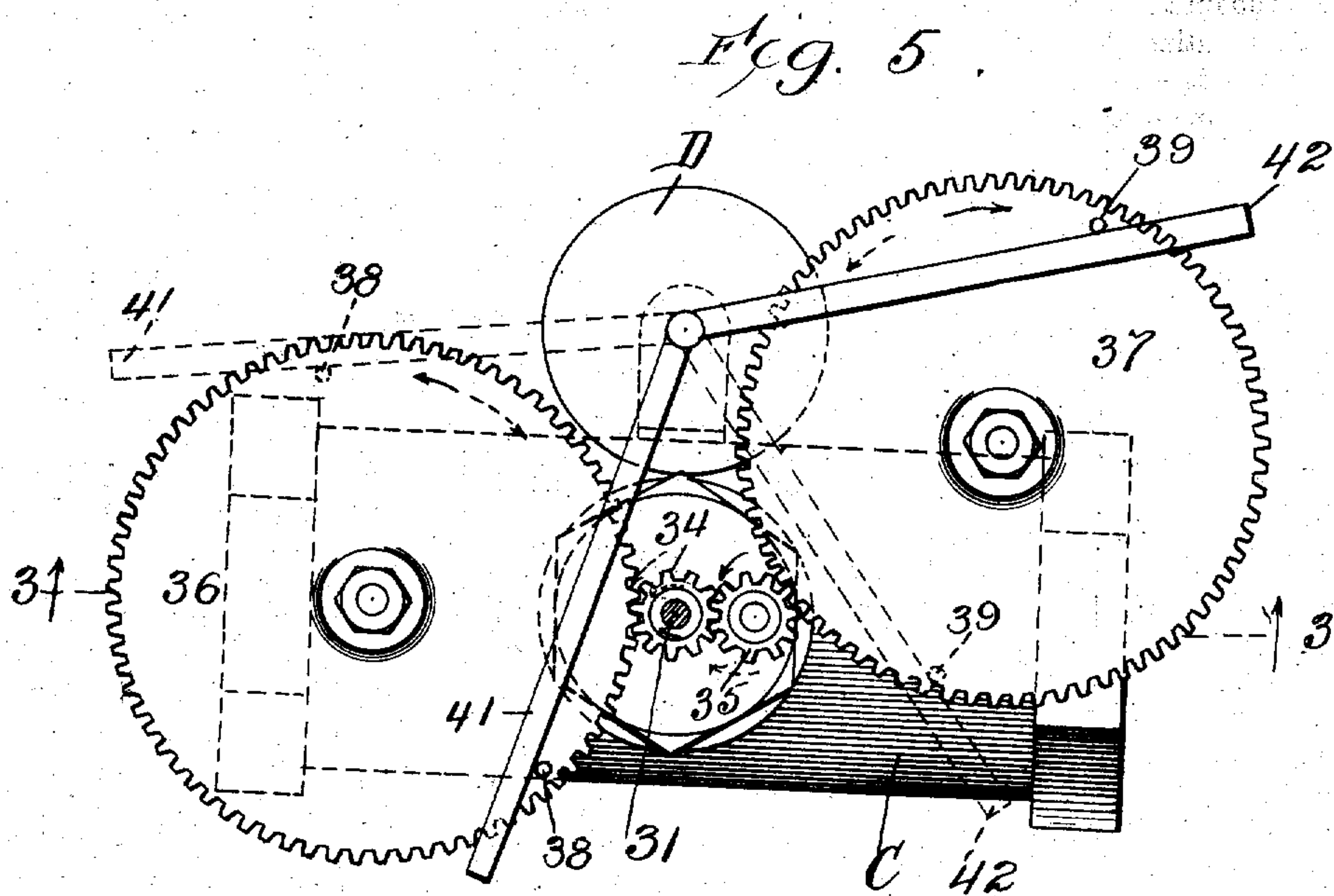
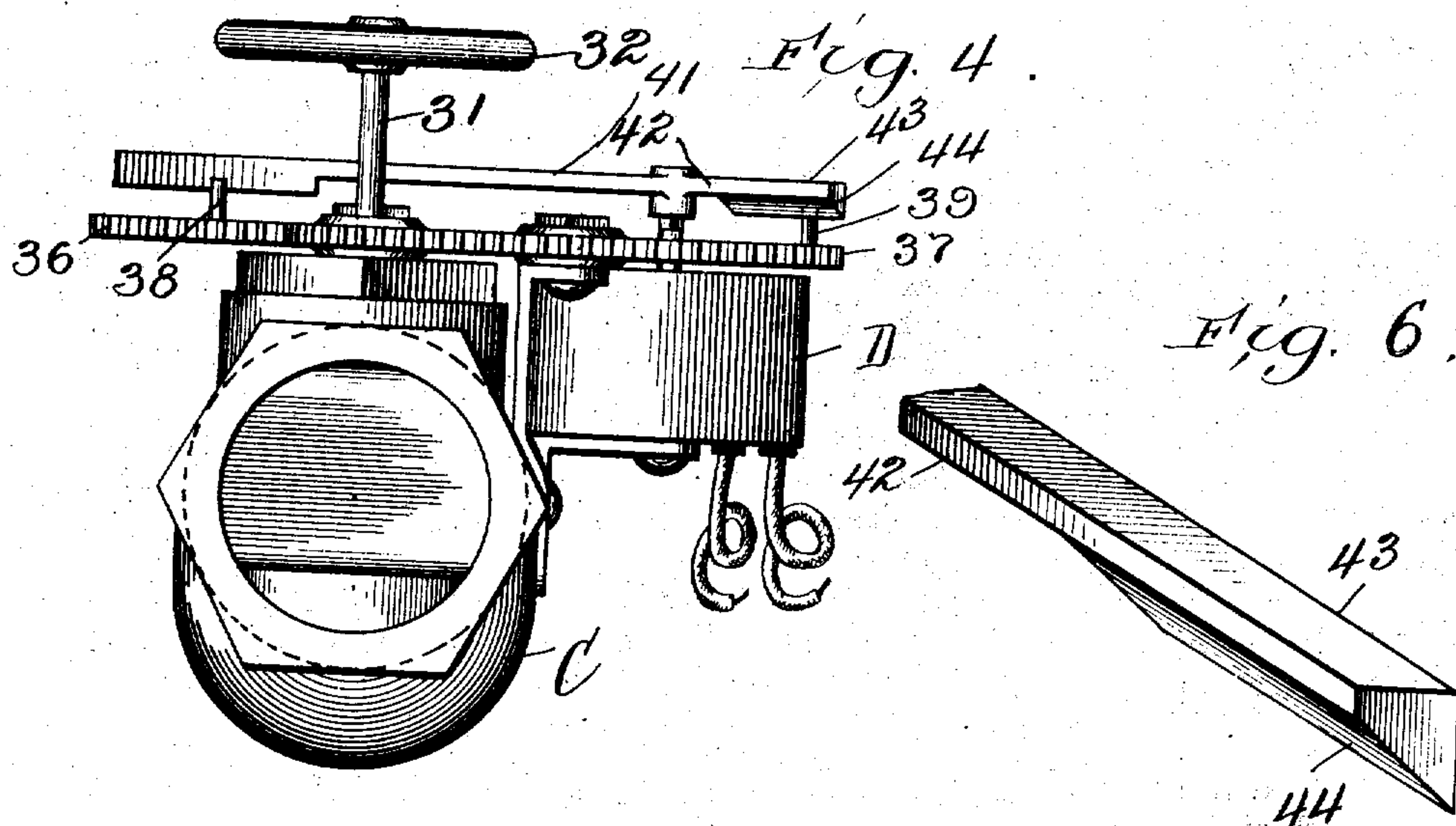
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3 SHEETS—SHEET 3.



Witnesses:
Ray White.
Harry Colver

Inventors
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James G. Nolen,
By *Joseph D. Nolen*

UNITED STATES PATENT OFFICE.

JAMES G. NOLEN, OF CHICAGO, ILLINOIS, AND JOHN D. NOLEN, OF TOLEDO, OHIO; SAID JAMES G. NOLEN ASSIGNOR, BY MESNE ASSIGNMENTS, OF HIS RIGHT TO AUTOMATIC FIRE PROTECTION COMPANY, A CORPORATION OF MAINE.

AUTOMATIC FIRE-EXTINGUISHER SUPERVISORY SYSTEM.

No. 860,560.

Specification of Letters Patent.

Patented July 16, 1907.

Original application filed September 11, 1902, Serial No. 122,925. Divided and this application filed October 28, 1904.
Serial No. 230,303.

To all whom it may concern:

Be it known that we, JAMES G. NOLEN and JOHN D. NOLEN, of Chicago, in the county of Cook and State of Illinois, and of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Automatic Fire-Extinguisher Supervisory Systems; and we hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to automatic fire extinguisher supervisory systems and has for its object to provide means whereby supervision may be maintained over a plurality of such systems by a central station, in order that they may be maintained constantly in operative condition.

In automatic fire extinguisher systems it is common to provide in the area to be protected a system of branch distributing pipes emanating from a main or header directly connected with the source of water supply, and to provide each of the branch pipes and the header with a valve adapted to remain normally open, in order that the distributing pipes may be constantly filled with water. It is some times necessary, however, to close the valves in order that repairs in the system may be effected, or for other purposes, and in the event that said valves are not reopened the system, or some portion thereof, is totally disabled by the cutting off of the water supply therefrom.

It is with a view to enabling those interested in the safety of buildings equipped with such systems, as for example their owners or the fire underwriters, to maintain a supervision over the condition of the cut-off valves that our invention is designed, and to this end it consists in providing in conjunction with each cut-off valve of the extinguishing system an automatic signal transmitting box arranged in electrical circuit with suitable indicating devices at a central station whereby upon manipulation of the valve in either direction a signal will be sent to the central office by which the supervising operator is notified of the closing or opening of the valve.

Our invention further consists in certain features and details of construction and arrangement of devices employed, which will be hereafter more fully described and pointed out in the claims.

In the drawings; Figure 1 represents diagrammatically an automatic fire extinguishing system equipped with our invention. Fig. 2 is a side elevation of a valve provided with a signal box and operating means. Fig. 3 is a central vertical section through the same taken on line 3—3 of Fig. 5. Fig. 4 is an end elevation of

the valve and signaling mechanism. Fig. 5 is a top plan view of the same; and, Fig. 6 is a detail perspective view of one of the signal box operating levers.

Throughout the drawings like numerals of reference refer always to like parts.

In Fig. 1, A represents a source of water supply communicating with a header or distributing pipe A' from which emanate a series of risers or branch pipes B—B arranged to supply water to suitable subsidiary devices of a fire extinguisher system, as well known to those skilled in the art. The inlet from the main A to the header A' and the connection between said header and the distributing pipes B—B are provided with suitable cut-off valves C, adapted to remain normally open to permit said pipes to be filled with water from the source of supply. D—D represents a series of signal boxes, of any suitable type, such for instance as those used in messenger call service to send readable plural impulse signals to indicate station numbers by breaking an electric circuit a plurality of times, one being arranged adjacent to each valve and connected thereto by means to be hereafter described, so the said signal box will be caused to operate whenever the valve is sufficiently moved from open position toward closed position, or vice versa. Said signal boxes D are arranged in series in an electric circuit E communicating with a suitable central station, and there provided with a battery F, or other suitable source of electric supply, and an indicating recording device, such as the ordinary tape recorder used in messenger call systems and conventionally indicated at G.

Referring now to Figs. 2 to 6, wherein is illustrated an operative means for connecting the alarm box D and the valve so that the alarm box is actuated whenever the valve is sufficiently moved from open toward closed position or from closed toward open position; the valve C is shown as of a reciprocating type, having a movable member c provided with a screw threaded socket 30 adapted to receive the screw threaded end of a revoluble axially stationary stem 31. Said stem is provided with a handle 32 and has secured thereto in proximity to the valve casing 33 a driving pinion 34. 35 is a pinion of equal size with the pinion 34 and meshing with the latter. 36 and 37 are two large gears of equal size meshing respectively with the gear 34 and the pinion 35. The pinion 35 and gears 36 and 37 are mounted upon suitable studs projecting from the valve casing 33, or other suitable supports associated with said valve casing. 38 is a stud or pin projecting from the face of gear 36, and 39 is a similar pin projecting from the gear 37. The signal box D is secured to the valve casing by suitable brackets and

is provided with two operating levers 41 and 42 arranged in angular relation to each other, so that one normally overlies the face of gear 36 while the other is similarly related to the gear 37. The lever arms 41 and 42 should be formed of spring metal, preferably relatively thin, and laterally extended, so they may readily spring away from the gears, and preferably inflexible in a direction of rotation. Each of said arms is provided at its extremity with a head 43 having a beveled rear face 44, as best shown in Fig. 6.

When the parts are in position shown in Fig. 5, so that the valve is open and the signal box set in operative condition, the pin 39 on the gear 37 will be in contact with the straight front face of the head 43 of arm 42, and the pin 38 upon the gear 36 will be in contact with the front face of arm 41. If now the valve handle 32 be rotated to the right, the pinion 34 and the train associated therewith, will be turned in the direction indicated by the solid arrow in Fig. 5, and the movement of the gear 37, communicating with the lever 43 through the pin 39, will move the cam lever arm 42 to the position shown in dotted lines in Fig. 5, when the pin 39 will pass beyond the inward extremity of the head 43 of said arm, releasing the latter and allowing it to return to its initial position under the influence of the spring forming part of the signal box mechanism. Upon the other side of the valve the gear 36 rotates in a direction opposite to that of the gear 37 the pin 38 thereon will meet the beveled rear face of said head 43 of lever 41 and pass thereunder, the arm 41 yielding to permit the pin to escape. The parts are so arranged that a complete revolution of each of the large gears is effected when the valve is moved from open to closed position. Thus it will appear upon the valve being closed the parts will again occupy the initial position as shown in full lines in Fig. 5, but upon moving the valve handle to open the valve again the handle must be turned to the left and the gearing revolved in the direction indicated by the dotted arrows. Now the pin 38 upon the gear 36 presses against the head 43 of arm 41 and moves the same to the dotted line position, the pin 39 upon the gear 37 during its movement passing beneath the arm 42 in the manner before described. It will be seen that the movement of the valve in either direction causes the signal box to be operated and the signal to be transmitted to the circuit E, which is received and recorded upon the recorder G.

It will be apparent that while we have described in detail certain operative devices which may be employed in the practice of our invention numerous changes in the construction may be readily made therein without departing from the spirit and scope of

our invention, and we do not, therefore, desire to be limited to the details of construction herein set forth for the purpose of affording a full disclosure of said invention, further than as specified in the claims.

We do not, however, claim herein the broad idea of the association with a valve of an automatic signal transmitter in proper circuit relation with a suitable signal receiving instrument, the transmitter being arranged for control by the valve and adapted on a certain movement of the valve to transmit a signal and condition itself for another signaling operation, as such matter is covered by our application Serial No. 122,925, filed Sept. 11th., 1902, whereof this case is a division, but we limit this case to such an arrangement that movement of the valve in either direction occasions the actuation of the transmitter.

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

1. The combination with a valve of a fire extinguishing system, movable in two directions, of means for indicating movement of the valve in either direction, said means comprising an electric signal transmitter, adapted to transmit plural impulse signals, a signal responsive device, suitable circuit connections between said transmitter and signal responsive device, and operative connections between the transmitter and valve, whereby the valve initiates the operation of the transmitter when moved from open position toward closed position, and again when moved in the reverse direction.
2. The combination with a valve of a fire extinguishing system movable in two directions, of means for indicating movement of the valve in either direction, said means comprising an electric signal transmitter adapted to transmit plural impulse signals, a signal responsive device, suitable circuit connections between said devices and operative connections between the transmitter and valve whereby the valve controls the operation of the transmitter.
3. The combination with a valve of a fire extinguishing system, movable in two directions, of means for indicating movement of the valve in either direction, said means comprising an electric signal transmitter adapted to transmit plural impulse signals, a signal responsive device, suitable circuit connections between said devices, and operative mechanical connections between the transmitter and the valve, whereby the valve controls the operation of the transmitter and initiates the operation of said transmitter upon movement of the valve in either direction.

In testimony that we claim the foregoing as our own, we affix our signatures in presence of two witnesses.

JAMES G. NOLEN.
JNO. D. NOLEN.

In presence of—

As to James G. Nolen:

GEO. T. MAY, JR.,

MARY F. ALLEN.

As to John D. Nolen:

J. W. CABLE,

F. G. CRANE.