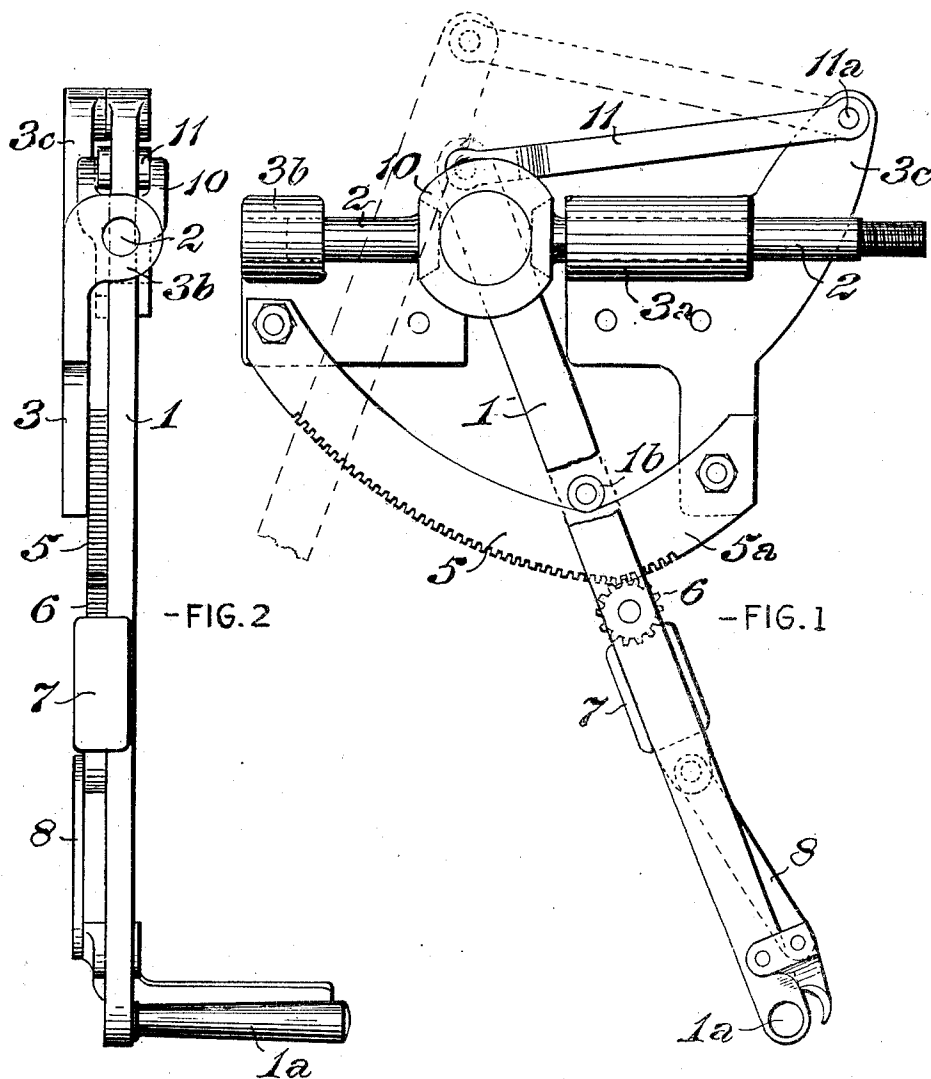


F. F. SCOVILLE.
VALVE OPERATING LEVER.
APPLICATION FILED SEPT. 25, 1920.

1,382,020.

Patented June 21, 1921.

2 SHEETS—SHEET 1.



WITNESSES:

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S. R. Bell.

INVENTOR

Frank F. Scoville,
by J. Mendenhall,
ATTORNEY

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FIG. 4.

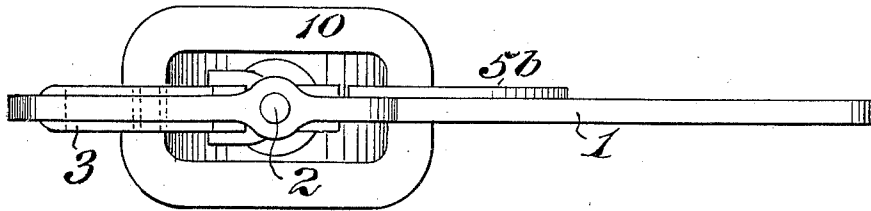
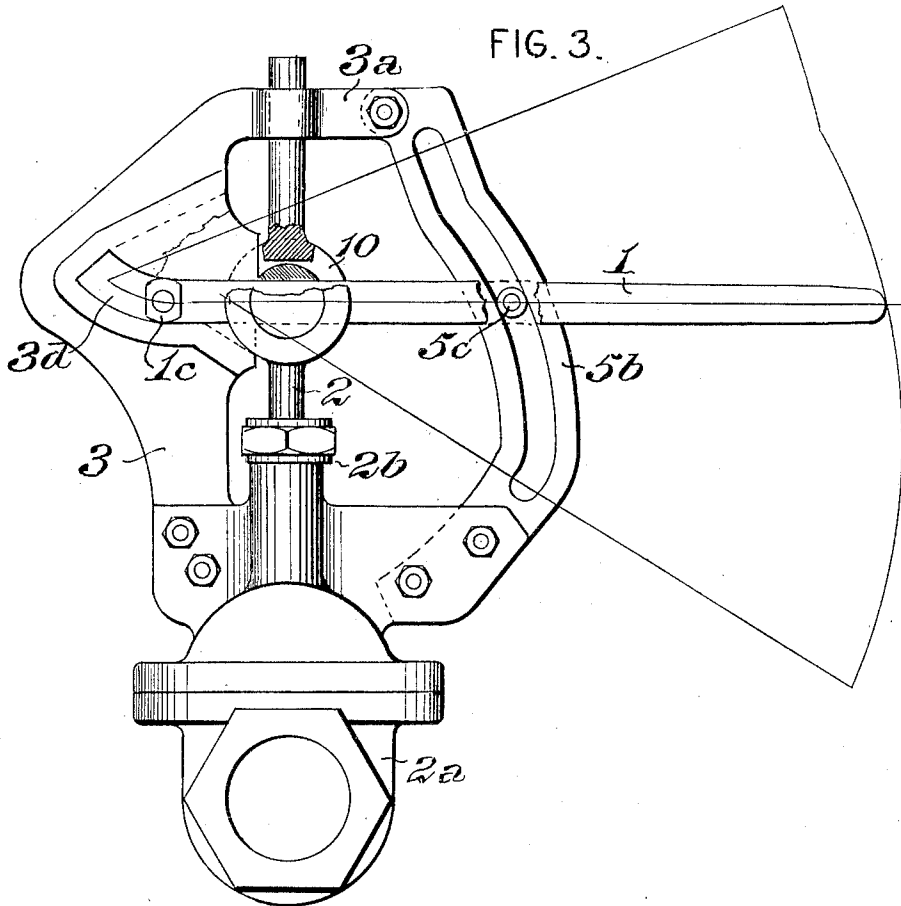


FIG. 3.



WITNESSES:

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Frank F. Scoville INVENTOR
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UNITED STATES PATENT OFFICE.

FRANK F. SCOVILLE, OF SCHENECTADY, NEW YORK.

VALVE-OPERATING LEVER.

1,382,020.

Specification of Letters Patent. Patented June 21, 1921.

Original application filed November 1, 1919, Serial No. 335,132. Divided and this application filed September 25, 1920. Serial No. 412,887.

To all whom it may concern:

Be it known that I, FRANK F. SCOVILLE, of Schenectady, in the county of Schenectady and State of New York, have invented a certain new and useful Improvement in Valve-Operating Levers, of which improvement the following is a specification.

My invention relates to levers for manually operating throttle or other valves controlling the flow of fluid, and its object is to provide a lever of such character, in the operation of which maximum leverage may be afforded at the commencement of the traverse of the lever, and be progressively decreased toward the end thereof, or vice versa, this result being attained without the use of the toggle connections heretofore employed for the purpose, in which slackness of the joints is substantially objectionable. The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a side view, in elevation, of a valve operating lever, illustrating an embodiment of my invention; Fig. 2, a view taken at right angles thereto; Fig. 3, a side view, showing a structural modification; and, Fig. 4, a plan view of the same.

In the practice of my invention, referring descriptively to the specific embodiment thereof which is herein exemplified, and first to the form shown in Figs. 1 and 2, I provide a valve operating lever, 1, having a handle, 1^a, at one end, which may either stand at an angle to the body of the lever, as shown, or be in line therewith, as preferred. A longitudinally movable valve stem, 2, which is actuated by the operating lever, 1, is fitted to slide in guides, 3^a, 3^b, on fixed supports, 3, between which guides there is formed on, or fixed to it, a block, 10, through slots in which, the operating lever passes, and imparts longitudinal movement to the valve stem, in either direction, by its bearing on the block. The operating lever is coupled, by a link, 11, to a fulcrum, 11^a, fitted in an upwardly projecting lug, 3^c, on one of the fixed supports, 3, and swings over a toothed segment, 5, in proper relation to which it is maintained by a pinion, 6, journaled in the lever, and by a roller, 1^b, also journaled on the lever and bearing on the inner face of the segment. A block, 7, fixed to the lever, on the outer side of the segment, carries a latch which is movable toward and from teeth on

the pinion, by a latch lever, 8. A supplemental section, 5^a, which is upwardly curved in reverse direction to the remainder of the segment, 5, is formed thereon, at its end corresponding with the normally closed position of the valve, in order to provide a fixed proportion of leverage for any further closing movement that might become necessary by reason of wear or slackness.

In operation, movement of the operating lever, 1, to the left, moves said lever upwardly, relatively to the valve stem, 2, and thereby progressively increases the length of the resistance arm of the lever, correspondingly reducing the leverage thereof in its traverse, which reaches its minimum at the left hand extremity of the traverse of the lever.

As shown in Figs. 3 and 4, my invention is applied for actuating the stem, 2, of an ordinary gate valve, which is inclosed in a casing, 2^a. The valve stem is guided in a stuffing box, 2^b, on the valve casing, and a guide, 3^a, on a fixed support, 3, secured to the valve casing, and the operating lever, 1, passes through a block, 10 on the valve stem, and works over a slotted segment, 5^b, to which it may be fixed, as desired, by a clamping screw, 5^c. In lieu of being coupled to a fulcrum pin by a link, as in Figs. 1 and 2, it is fulcrumed on a block, 1^c, which is fitted to slide in a curved slot, 3^d, in the fixed support. As shown in Fig. 4, the end portions of the segment are differently curved or inclined, relatively to the operating lever, from the main portion thereof, so that the opening leverage is constant for a period, and, in the final portion of the traverse of the operating lever, it is also constant as well as more rapid. In the traverse of the lever from the position which it occupies when the valve is closed, its leverage is decreased, by the variation of distance between the points of application of the fulcrum and resistance resultant upon the movement of the fulcrum block, 1^c, away from the axis of the valve stem, 2, as the block traverses in the slot, 2^d.

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

1. The combination of a fixed support; a valve stem, fitted to slide in guides therein; a block, fitted in the valve stem, and slotted in the axial line thereof; a valve operating lever, fitting and extending through the slot

of said block, and longitudinally movable, relative to the valve stem; a segment, over which the operating lever is fitted to traverse; and means for maintaining said lever
5 in normal relation to the segment.

2. The combination of a fixed support; a valve stem, fitted to slide in guides thereon; a block, fitted in the valve stem, and slotted in the axial line thereof; a valve
10 operating lever, fitting and extending through the slot of said block; a link coupling the operating lever to the fixed support; a segment, over which the operating lever is fitted to traverse; and means for main-
15 taining said lever in normal relation to the segment.

3. The combination of a fixed support;

a valve stem, fitted to slide in guides thereon; a block, fitted in the valve stem, and slotted in the axial line thereof; a valve
20 operating lever, fitting and extending through the slot of said block, and longitudinally movable, relatively to the valve stem; a segment, over which the operating lever is fitted to traverse, and having one or
25 both of its ends curved or inclined differently in direction from its main body; and means for maintaining said lever in normal relation to the segment.

FRANK F. SCOVILLE.

Witnesses:

R. F. HALL,

E. K. PAINTER.