Jerome & Cole,

Lock-Valve for Canal Gate,

No. 47,643. Patented May 9. 1865.

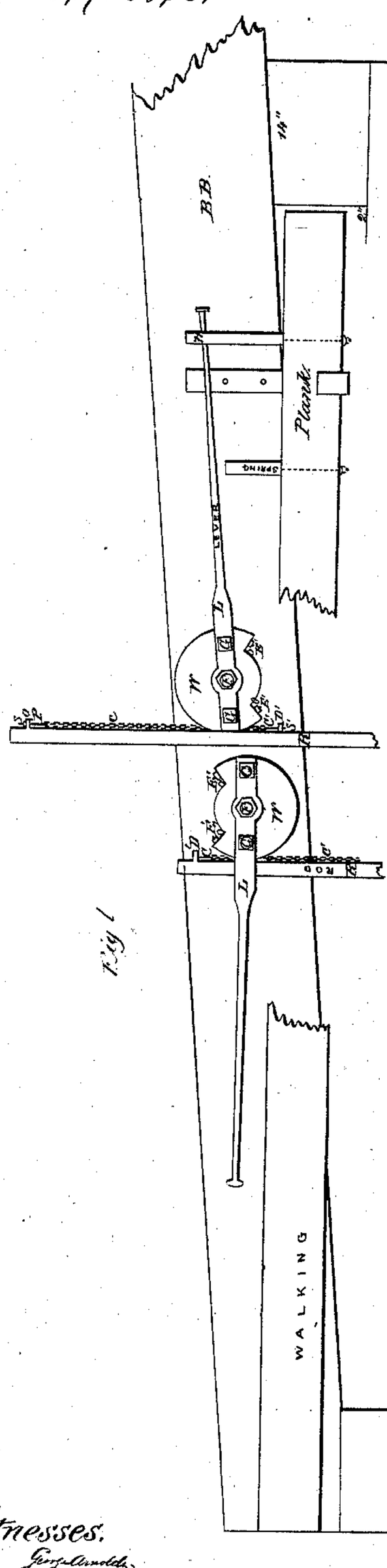
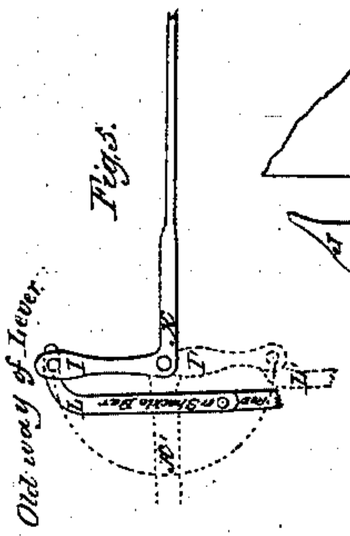


Fig. 1



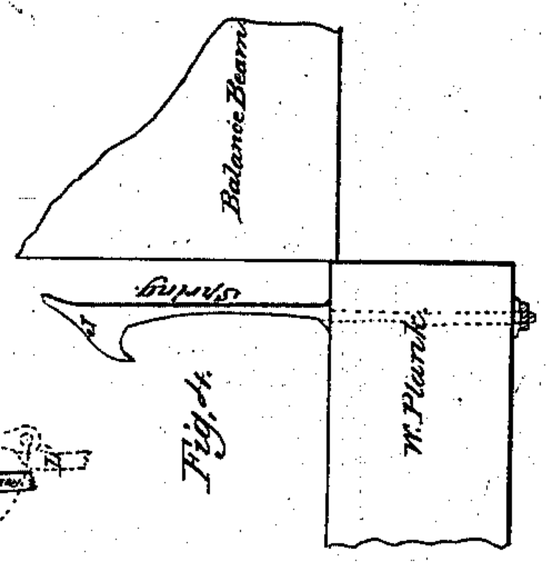


Fig. 4.

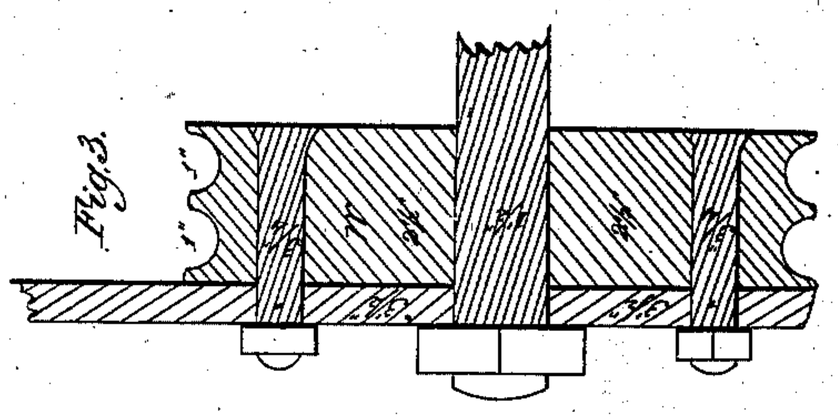


Fig. 3.

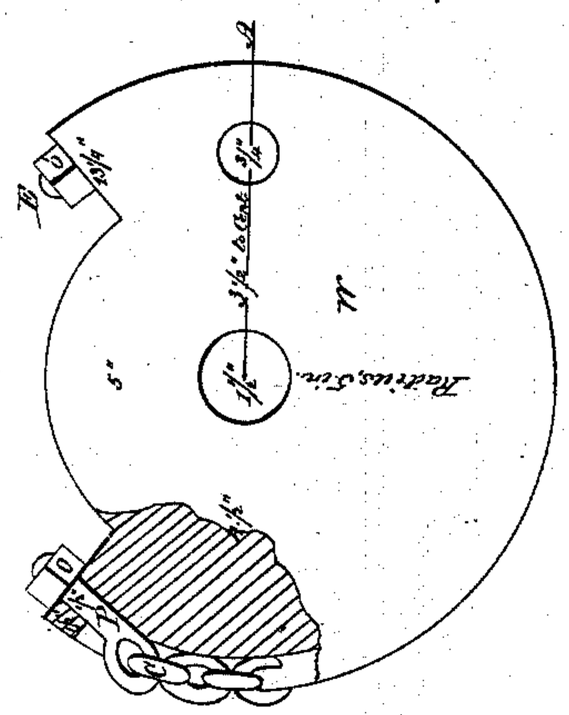


Fig. 2.

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UNITED STATES PATENT OFFICE.

LEWIS K. COLE, OF SYRACUSE, AND WALTER W. JEROME, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN LOCK-VALVES FOR CANAL-GATES.

Specification forming part of Letters Patent No. **47,643**, dated May 9, 1865.

To all whom it may concern:

Be it known that we, LEWIS K. COLE, of the city of Syracuse, in the county of Onondaga and State of New York, and WALTER W. JEROME, of the city of Rochester, in the county of Monroe and State aforesaid, have invented a new and useful Improvement in Machinery for Opening and Closing the Valves of Lock-Gates; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of our invention consists in moving the rods which open and close the valves of lock-gates by means of levers, to each of which is firmly fastened a wheel, so that the bolt which forms the fulcrum of said lever shall pass through a hole in the center of the wheel, with two grooves in its edge, each groove to contain a chain, one end of which is attached to the wheel and the other end to a projection on the rod in such a manner as that when the lever is turned the rod shall be moved so as to open and close the valves.

To enable others skilled in the art to make and use our invention, we proceed to describe its construction and operation.

We construct our lock-gates in any of the known forms with valves opening and closing by means of rods or "shackle bars," as they are sometimes called. The ordinary method of moving this rod or shackle-bar is set forth with sufficient clearness in Figure 5, in which K shows the position of the long arm of the bent lever, and L that of the rod when the valve is closed, and K′ and L′ of the same parts when the valve is open. The objections in the practical working of this lever sought to be obviated by our invention are, first, the side motion of the rod L, Fig. 5, in opening and closing the valve; second, the failure to close perfectly the valve, especially when the connection between the lever and rod becomes a little worn, thereby causing a considerable waste of water and a continual current through the lock, so as greatly to obstruct the entrance of boats into the lock against this current; and, thirdly, the greatly-increased labor of opening and closing the valves under a high head of water especially, in consequence partly of the length of the short arm of the lever K, Fig. 5, necessarily required to give sufficient motion to the rod L to open and close the valve.

Now, in order to obviate these objections, we fasten to the balance-beam B B of the lock-gate, Fig. 1, the lever L (or the two levers L L, if we use two valves) by the bolt F, which forms the fulcrum on which the lever turns. To each lever, and upon the side nearest the balance-bar B B we firmly bolt the wheel W by the bolts G G, so that the hole in its center shall receive the fulcrum-bolt F. In the edge of this wheel W, which may be of any suitable size and thickness, (the one represented in the drawings, Figs. 2 and 3, being ten inches in diameter and two and one-half inches thick,) we cut two grooves of a sufficient size and depth to contain the chains C and C′, of strength sufficient to move the rod R. From each wheel we remove a portion, as represented in Fig. 1, between E and E′, for the greater convenience in fastening the chains to the wheel. To each wheel we attach two chains, C and C′, Fig. 1, by an eye at the end of each chain, having a long shank, which passes through a portion of the wheel and is fastened by a nut (represented by O and O′) at the points E and E′. This method of fastening the chain to the wheel is more clearly shown in Fig. 2, where the chain C is fastened by the shank of the eye P passing through a portion of the wheel and secured by the nut O at E, the other chain fastened in a like manner to the wheel at E′ by the nut O′. The other end of each of these chains is fastened to the rod R, Fig. 1, by the shank of a similar eye passing through the projections D and D′ and secured by the nuts S and S′. These chains are so arranged that the chain C, Fig. 1, is fastened by one of its ends to the wheel W at E and by its other end to the projection D at the upper end of the rod R, and the chain C′ is fastened by one end to the same wheel at E′ and by the other end to the projection D′ on the rod R, each of the chains occupying exclusively one of the grooves in the edge of the wheel W.

In order that each chain may work freely in its own groove, we bend the upper ends of the rods R and R, Fig. 1, slightly away from the balance-beam B B, so that the chain C, which is attached by one end to the projection

D on the rod R, may run easily and freely in the groove in the wheel W farthest from the balance-beam B B, and have no inclination to run into the other groove. We make the shank of the eye at each end of the chain several inches in length, with a thread cut upon its whole length, so that by simply turning up the nuts which secure the chain to the wheel W and the rod R, Fig. 1, we can at all times take up the lost motion caused by the wearing of the parts, and consequently at all times be able to perfectly close the valve, which cannot be done by any mechanism now in use for that purpose. It will also be readily seen that the rods R and R, Fig. 1, have no side motion, but only a motion in the direction of their length, and that the lever L at all times acts with equal efficiency upon the rod R, because at all times the power exerted by it upon the rod tends to produce a motion in the rod in the direction of its length only, and not to produce a side motion.

H H, Fig. 1, represent two spring-hooks, which we attach to the balance-beam B B, one of which is more fully set forth in Fig. 4, (marked J,) for the purpose of holding in place the long arm of the lever L, Fig. 1, when the valve is closed.

What we claim as new, and desire to secure by Letters Patent, is—

The combination and arrangement of the wheel W, the two chains C C′, provided with screw shanks and nuts, the rod R, and the lever L, constructed and operating in the manner and for the purpose described.

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