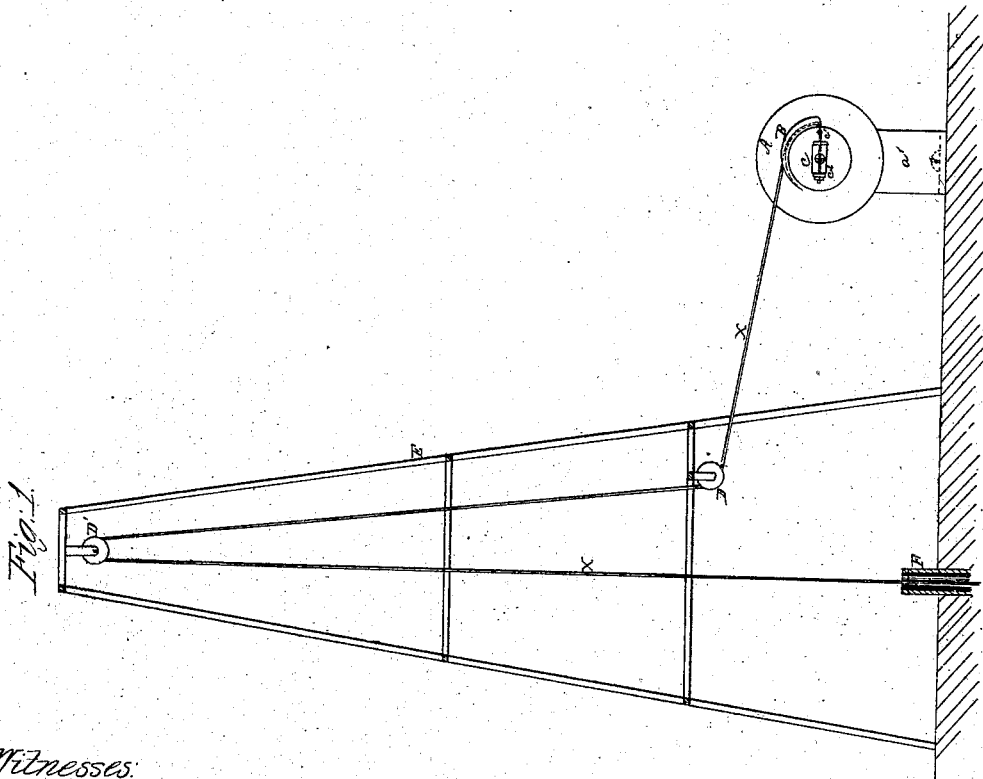
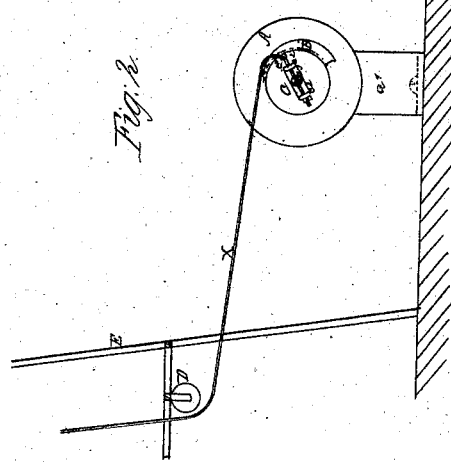
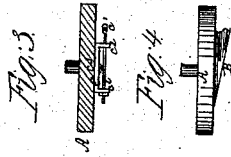


*S. J. Wadsworth,*

*Drilling Artesian Wells.*

*N<sup>o</sup> 48,605.*

*Patented July 4, 1865.*



*Witnesses:*

*S. J. Wadsworth*  
*R. A. Lytle*

*Inventor*  
*S. J. Wadsworth*



# UNITED STATES PATENT OFFICE.

SALMON J. WADSWORTH, OF BUFFALO, NEW YORK.

## IMPROVEMENT IN DRILLING ARTESIAN WELLS.

Specification forming part of Letters Patent No. 48,605, dated July 4, 1865.

*To all whom it may concern:*

Beitknown that I, SALMON J. WADSWORTH, of the city of Buffalo, county of Erie, and State of New York, have invented a new and Improved Device for Drilling Artesian or Oil Wells; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I is an elevation of my improved device, shown in connection with a derrick of common construction. Fig. II is an elevation of the operating-wheel, the drill-rope being released from the lifting-cam. Fig. III is a cross-section of the operating-wheel, showing the center swivel thereon; and Fig. IV is a top view of the same and the lifting-cam connected therewith.

The nature of this invention consists, first, in the construction and operation of a wheel revolving upon the free end of a shaft and carrying a semicircular (or nearly so) cam on the face thereof, by means of which the up and down, as well as the necessary intermittent rotary or twist, motion may be given to a drill-rope for drilling Artesian or oil wells; second, in the construction and use of a swivel attached to and revolving upon the face of the operating-wheel, to which the drill-rope is connected.

Letters of like name and kind refer to like parts in each of the figures.

A represents a wheel revolving upon the free end of a shaft supported in journal-bearings *a'*.

B is a semicircular cam secured to the face thereof, which forms a groove at one end and is made sloping down to the level of the face of wheel A upon the other end, all which is represented at Fig. IV. This cam may be made of larger or smaller diameter, but always within the diameter of wheel A, and may be varied in length as occasion requires.

C represents a swivel composed of a flat piece of metal revolving upon its center *c*<sup>3</sup>, with ears or projections at each end *c*<sup>2</sup>, through which a rod, *c'*, passes, said rod being held by a nut on one side and forming a ring upon the other, to which the drill-rope X is attached.

D D' are pulleys placed within a derrick, E, of common construction. The drill-rope X

passes over these pulleys in a common manner. F is the drill-tube, in which the rope and drill move up and down, and which guides said movement.

The operation may be described simply as follows: Power is applied to the wheel A and the same revolved in the direction of the arrows in the drawings. When the cam, with its wide and grooved end, touches the rope it will wind it up in the groove, as shown in Fig. I, at the same time twisting the rope, while the swivel C and the rod *c'* will remain stationary until the rope is released from the cam, at which time the rope X being loosened allows the swivel C and the rod *c'* to turn, thus releasing a part of the twist given to the rope by the revolution of the wheel A and cam B, leaving only a portion to be communicated to the rope before reaching the pulley D, and so on through the different sections of the rope to the drill, thus giving it a slow and automatical rotary motion. At the place where the thickness of the cam B diminishes or slopes down to the level of the face of wheel A the rope will slide off the cam, and, being thus released, will drop the drill within the well as fast as the weight of the tool will permit. This is shown at Fig. II. The twist given to the rope will communicate to the whole length thereof in sections—i. e., the twist given the rope by the wheel A and cam B will only reach to pulley D, and be communicated to the balance of the rope at the time the rope is released by cam B and loose upon the pulleys, ready to descend.

This is the cheapest, simplest, and most perfect mode of giving to the drill-rope of an apparatus for drilling Artesian or oil wells the requisite motion and twist.

By increasing the diameter of the wheel or varying the position of the swivel or cam the length of stroke of the drill and rope, as well as the rapidity of striking the rock, may be changed to suit occasion.

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

The swivel C, with its rod *c'*, in combination with the wheel A, cam B, and rope X, in the manner and for the purpose described.

S. J. WADSWORTH.

Witnesses:

S. A. GOODWIN,  
R. A. LYTLE.