

C. S. SIMMONS, O. D. SIMMONS & H. H. SIMMONS.

Improvement in Devices for Operating Rock-Drills for Wells, &c.

No. 129,605.

Patented July 16, 1872.

Figure 1

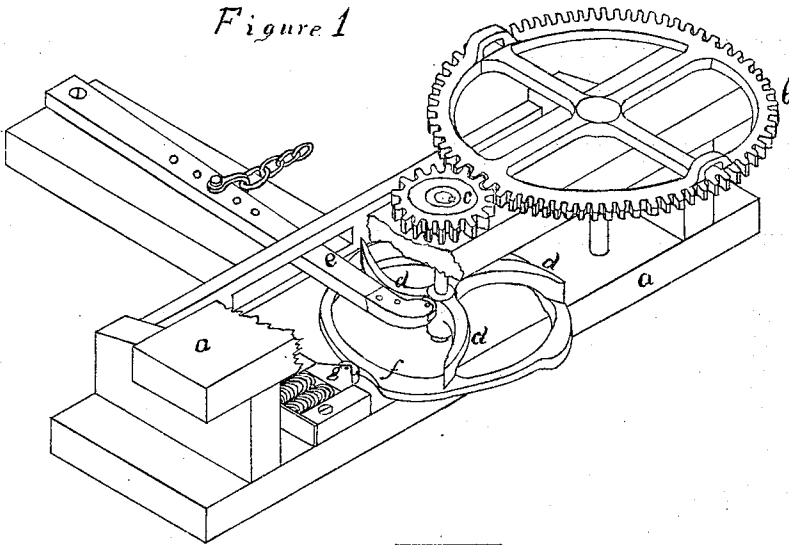


Figure 2

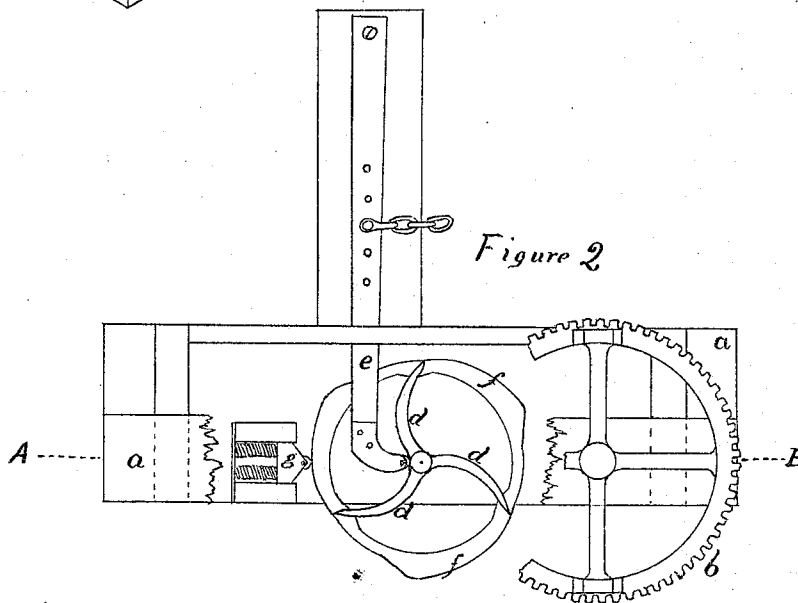
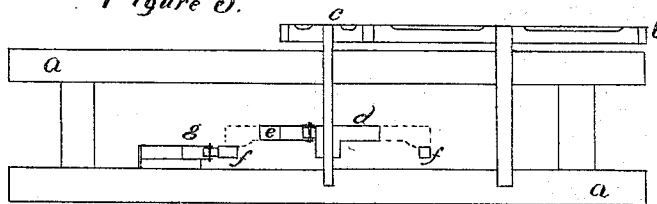


Figure 3.



Witnesses

Joseph Bass
Amasa Bass

Inventors

C. S. Simmons
O. D. Simmons
H. H. Simmons

UNITED STATES PATENT OFFICE.

CHARLES S. SIMMONS, ORLO D. SIMMONS, AND HENRY H. SIMMONS, OF
WATERTOWN, NEW YORK.

IMPROVEMENT IN DEVICES FOR OPERATING ROCK-DRILLS FOR WELLS, &c.

Specification forming part of Letters Patent No. 129,605, dated July 16, 1872.

Specification describing certain Improvements in Power Drilling-Machines, invented by CHARLES S. SIMMONS, ORLO D. SIMMONS, and HENRY H. SIMMONS, of Watertown, county of Jefferson, State of New York.

Our invention consists in combining, with the cam-wheel and lifting-lever of a drill, a second cam-wheel and a friction-roller, or its equivalent, bearing with a yielding pressure upon said second cam-wheel, the said parts being so arranged with relation to the lifting-lever and its cam-wheel that when the lever drops from the cams of the first wheel the cam or cams of the second wheel will bear against the friction device or brake so as to hold the wheels in check and preserve the uniformity of motion of the machine while the drill is dropping.

Figure 1 is a perspective view of a machine embodying our invention. Fig. 2 is a plan view of the same. Fig. 3 is a vertical sectional view on the dotted line A B, Fig. 2.

a is the frame of the machine, consisting of a broad bed-piece furnished with two short uprights at the ends, which support a top piece. *b* is the bull-wheel placed on the top of the frame, which turns with an upright shaft furnished with suitable bearings in the frame, and having two clips arranged at opposite sides on the top, through which a sweep-lever may be passed for the attachment of a horse. *c* is the pinion-wheel, also fitted to a vertical shaft, and receiving motion from the bull-wheel. *d* is a cam or eccentric wheel on the pinion-shaft, fitted with a number of cams. *e* is the lifting-lever, made fast at one end to a projecting part of the frame and working at the other end, by means of a small roller, against the cams *d*. *f* is a second cam-wheel on the same shaft with the first, and working against the friction-roller *g*. The lifting-lever *e* is furnished with a number of holes at different distances from the fulcrum, into either of which a clevis may be fastened, attaching a chain. This chain passes to a leaning mast or derrick, or other contrivance, and, passing under one pulley at the bottom, follows to the top and passes over another, and thence down perpendicularly to the drill. The cam-wheel *d* is made with such curves that with a uniform motion of the wheel a uniform lift is con-

veyed to the lever, and, by means of the chain, to the drill. As the wheel revolves, the end of the cam passes from under the lever, when the drill, being unsupported, falls by its own weight, striking a blow on the rock, and the lifting-lever is brought into a position ready to start on another lift with the next succeeding cam. The wheels are prevented from leaping forward in intermittent jerks at every dropping of the drill by the second cam-wheel *f*, which is set upon the shaft with such a relation to the first that while the cams *d* are raising the lifting-lever the friction-roller presents no resistance; but at the moment the lever drops the friction-roller presents itself to the cams *f*, which, before it can pass, must move back the roller against its springs or weight, and thereby holds the motion in check or keeps it at a uniform velocity, allowing the drill to drop and make a full blow without being caught up by the next succeeding cam before it can strike. The extent of the lift may be diminished by moving the clevis nearer to the fulcrum in the series of holes in the lifting-lever for that purpose, and increased by moving it further from it; the advantage of this over other machines used for the same purpose being that the usual jerking motion, caused by the power being unrestrained when the drill falls, is entirely obviated by the cam-wheel *f* and friction-roller *g*; and also the form of the lifting-cam *d* is such as to insure uniformity of motion during the lift.

We make no claim as to the general use of an eccentric with a lifting-lever for drilling purposes, for we are aware that this is not new; but

We claim as our invention—

The combination, with the lifting-lever and its operating cam-wheel, of a second cam-wheel and a friction device or brake, bearing with a yielding pressure against the cams of said wheel, said parts being arranged with relation to the lifting-lever cam-wheel and operating substantially as herein described.

C. S. SIMMONS,
ORLO D. SIMMONS.
HENRY H. SIMMONS.

Witnesses:

JOSEPH BASS,
AMAZA BASS.