

tion to one in rock, as may be seen by comparing Figs. 4 and 5. It has a clear height of 13'53 feet and an extreme width of 13'6 feet. The arch is 12 inches thick at the crown, 16 inches thick at the center of the sides, and 20 inches thick at the spring lines. The concave sides are 8 inches thick and are secured by walls, as

A NEW LINK MOVEMENT FOR REVERSIBLE ENGINES.

In the reversible engine shown in our engraving, the cylinder is of the usual slide valve order, and operates the valves by its oscillation on the supporting trunnions. The inner trunnions form the inlet pipes, and the outer the exhausts. The slide valve rod is flexibly

for hoisting, propeller, or traction work; and besides the great advantage of the simplicity of its parts, makes less noise, even when much worn, than the ordinary link movement when new. The motion of the valve being derived from the sliding of the sleeve up and down on the inclined rod of the link, there is no

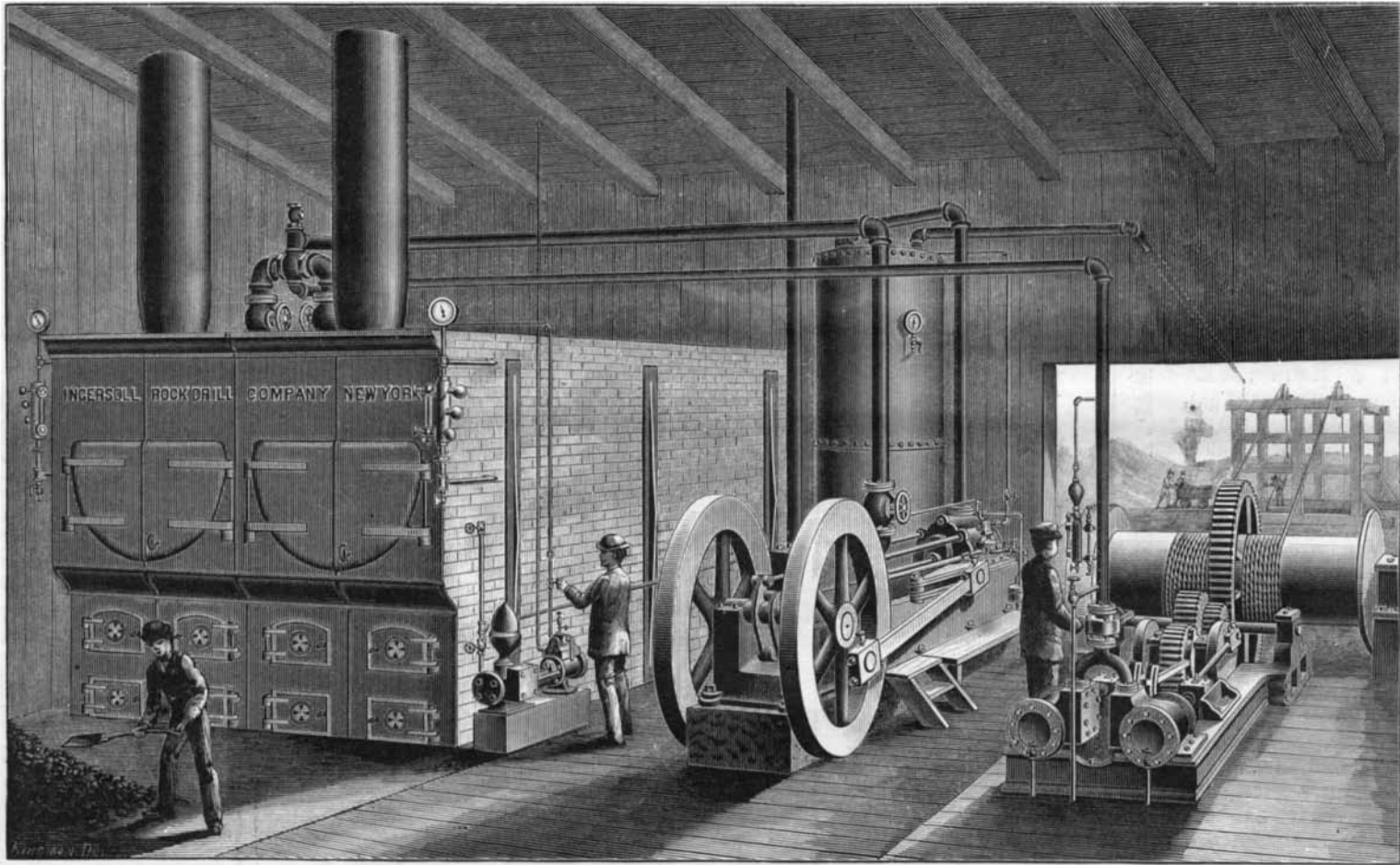


Fig. 8.—THE INGERSOLL PLANT AT SHAFT No. 10, ON THE LINE OF THE NEW AQUEDUCT.

shown in the cut. The invert is 12 inches thick, and rests upon a concrete foundation.

At 135th Street a gate house will be located. Contracts have been let for all the work, with the exception of this gate house and the inverted siphon under the Harlem. The Quaker Bridge project has not yet been definitely settled upon. The contracts have been awarded as follows: Sections A and B to Mr. Heman Clark for \$2,147,740; sections 9, 8, 7, and 6 to Messrs. O'Brien & Clark for \$4,445,447; sections 5, 4, 3, and 2 to Messrs. Brown, Howard & Co. for \$5,297,155; and the gate house at Croton Dam to Messrs. Smith & Brown for \$442,000. On the 24th of October the total length of tunnel completed was 22,342 feet, and at the present time the excavation is growing at the rate of one mile per month.

The engineer corps is composed of the following named gentlemen: Mr. Benj. S. Church, chief engineer; Mr. A. Fteley, deputy chief engineer; Mr. H. S. Craven, constructing engineer; Messrs. Chas. S. Gowen, J. B. McIntyre, J. W. Wolbrecht, Alfred Craven, E. S. Gould, F. W. Watkins, and E. Wegmann, Jr., division engineers; Mr. F. S. Cook is in charge of the draughting bureau.

Improved Tent.

New felt tents were recently introduced in the Danish army. They are composed of rectangular wooden frames, on which felt is tightly stretched. Being of rectangular form with vertical sides, these tents occupy comparatively small space; they are very stable, need not be fastened with ropes to the stakes as is the case with canvas tents, and their erection requires but a few minutes. Felt being a bad conductor, these tents afford a good shelter from cold and heat, and withstand action of moisture better than canvas tents.

TITIAN R. PEALE, of Philadelphia, died on the 13th of March, 1885, in his 86th year. Mr. Peale was one of the naturalists of the Wilkes Exploring Expedition. He was for twenty-four years connected with the Patent Office at Washington.

connected with the sleeve, B, which slides up and down on the rod of the link, A. This flexible connection permits the sleeve to adjust itself to any inclination of the link.

To the ends of a transverse axle supported in the standards, D, the links are rigidly attached, and are thus capable of a backward or forward motion, their position being determined by that of the reversing lever, C, also rigidly attached to the transverse axle. A direct or reverse motion is given to the piston by altering the inclination of the links, and consequently, through the sleeves, of the slide valve rods. Like all other reversing engines, there is a dead center, so that the steam can be cut off by the reversing lever. The

sudden stop, and consequently no hammering. We have shown the movement applied to a double cylinder hoisting engine, but it will also operate with a single cylinder for stationary work.

Any further information concerning this invention may be obtained from Mr. T. J. Baum, 79-81 Race St., Cincinnati, Ohio.

General George B. McClellan.

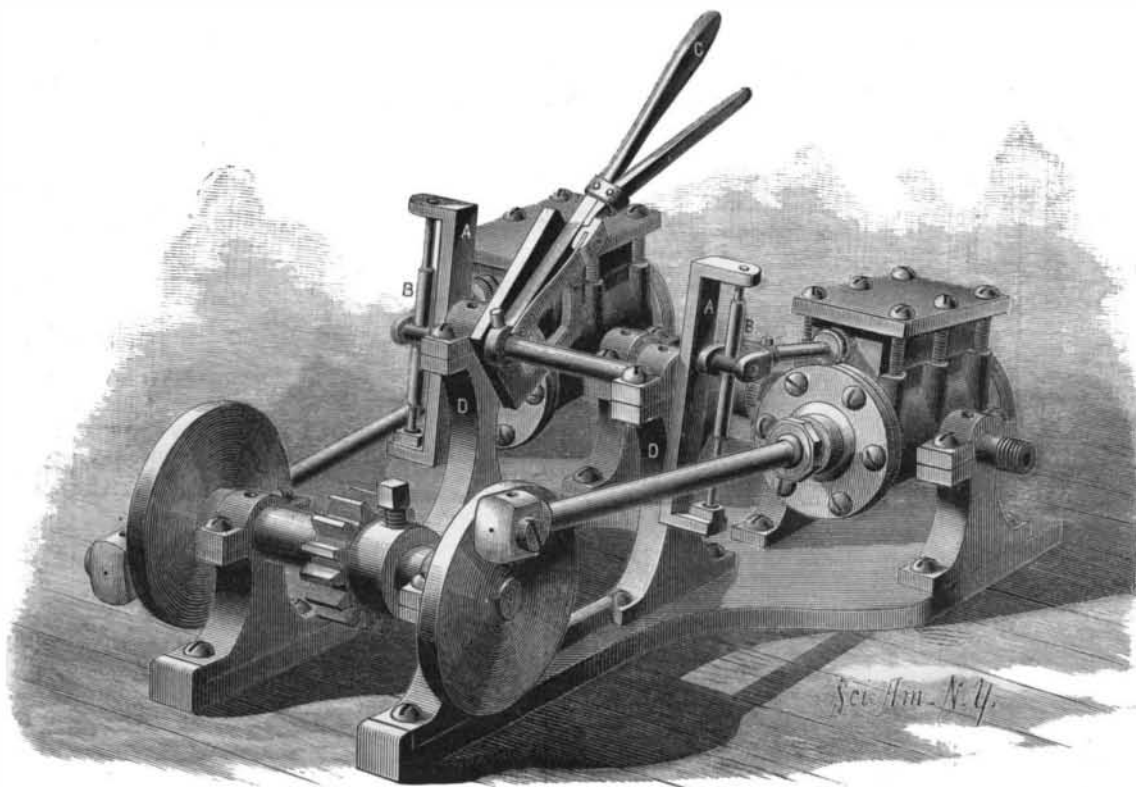
Speedily following the death of Gen. Grant has come that of another of the great generals of the Union Army during the late war, Gen. George B. McClellan, who died very suddenly, from neuralgia of the heart, on the morning of October 29, at his home on Orange Mountain, N. J. He was not quite 59 years of age, and his condition was apparently so robust that all who knew him thought there were yet many years of an honored and useful life before him; but his death occurred in about three hours from the fatal attack, after a day of but ordinary business activity. Since the war, besides having served a term as Governor of the State of New Jersey, Gen. McClellan has filled various important positions, in which his abilities as an engineer and a man of broad executive capacity have been conspicuous. Personally, he was loved and honored by all who knew him.

Agee's Improved Corn Planter.

In the SCIENTIFIC AMERICAN of October 24, 1885, we described and illustrated an improved corn planter possessing many excellent features. It is simple in construction and

reliable in operation. The present address of the inventor, Mr. George S. Agee, is West Plains, Howell County, Mo.

FRENCH paper makers are highly elated at the Government's resolve to abolish the tax on papers, which has been in force since September, 1871. Though not coming into operation until December 1, 1886, they are still satisfied, as the battle they have been fighting has been a terribly uphill one.



BAUM'S NEW LINK MOVEMENT FOR REVERSIBLE ENGINES.

action of the links hastens the opening and closing of the ports, and the steam therefore works more expansively than when the ports are operated by an eccentric. This link movement effects a great saving of friction by dispensing with all eccentrics, crossheads, crosshead slides, eccentric yokes, rods, etc., while the first cost of the engine is fully one-third less than that of the ordinary type. The absence of these parts makes the engine compact, and reduces the necessary weight of the bed plate. It is an engine particularly adapted