

holes is by the "churn" drill, by which it is practically impossible to drill a round hole. Generally a three cornered hole is made, which is very objectionable, because if the hole is perfectly round it will present a uniform surface to the pressure, retaining the blast until its force is fully developed. With a three cornered hole the pressure on the sides is concentrated at the corners, which, being required to resist more than their share of the pressure, give way, permitting the explosive gases to escape before the force is fully developed, and thus produce only a large amount of smoke.

By the introduction of hand-drilling machines a cheaper and better hole has been secured. The hole being perfectly round requires less powder, as it retains the explosive gases until their power is fully developed.

NEW MINES.

New mines have been opened and put in operation during the year, as follows: Brandenberger Bros., Belleville; Oakland Mining Co., Belleville; Daniel Marsh & Son, Belleville; Lill & Schinider, Belleville; Dickison & Jones, Belleville; Crown Coal Co. No. 1, near Belleville; Madox & Son, Belleville; Tilden Mining Co., Tilden; New Enterprise Coal Co., Marissa; Consumers Coal Co., Caseyville; New Athens Coal Co., New Athens; James Lemont, Centerville Station; Robert Brennan, Caseyville; St. Louis Ore & Steel Co. No. 5, shaft, machine mine, Murphysboro; Future Mining Co., Breese; Griffin & Nickles, Carterville; A. Burgan, Stoneford; Dean & Hopper, Percy; Big Muddy Coal & Coke Co., shaft No. 2, DeSoto; Miller, French & Ranch, Lenzburg; J. L. Weir & Son, Sparta; Roseborough & Moffat, shaft No. 2, Percy.

All the above mines, with the the exception of those of A. Burgan, Stoneford, and Roseborough & Moffat, Percy, are working a seam of coal varying from 7 to 9 feet in thickness.

The following new mines have been opened and are preparing to hoist coal: Jupiter Mining Co., DuQuoin; Superior Mining Co., DuQuoin; Henry Horn, Esq., DuQuoin; G. W. Brown, Esq., Pinckneyville.

Elkville Coal Co.'s mine, owned by Halliday Bros., and located at Elkville, Jackson county, will be operated entirely with the Legg mining machine, workmen being paid by the day.

New shafts for hoisting purposes are being sunk as follows: Joseph Taylor, Ridge Prairie; Charles Donow & Bros., O'Fallon; John Yock, Belleville; Edward Aband, Belleville; Crown Coal Co. No. 2, Belleville; Harry Taylor, Belleville; Isaac Jonston, Marissa; Thomas Davis, French Village; Fred Murphy, Belleville; Brugge-man & Hortman, Belleville; A. C. Wiley, Sparta.

The following abandoned mines have been reopened during the year: Freeburgh Coal Co.'s mine, Freeburgh; Union Mines, Caseyville; Winning & McMath, Carterville.

Two of the above companies have erected new head-frames, sunk and capement shafts, and are making other improvements in and about the mines.

Air shafts are being sunk as follows: Consumers' Coal Co., Caseyville; Brandenberger, Belleville; Dickinson & Jones, Belleville; Fred Murphy, Belleville.

From the above it will be observed that there have been 23 new shafts sunk and put in operation, and three abandoned mines reopened during the year, 19 of which are "shipping mines," and all accessible to St. Louis. There are, in addition to these, six other new mines almost ready for operation, and eleven in process of sinking, near to the same market, and destined to compete for, and to share, in some measure, the business of that market. At no previous period, probably, has the price of coal been lower, nor has there ever been greater development of close economy in the working of coal than in the year just ended.

IMPROVEMENTS.

At Shaft No. 4, of the St. Louis Ore & Steel Co., at Murphysboro, a new head-frame has been erected, two Cherry automatic dumping cages put in, and an entire new outfit of mine cars purchased, at a cost of \$5,000. Shaft No. 5, belonging to the same company, is a new machine mine, having been equipped with the latest improved machinery. There are four new cylinder boilers, 39" x 30'; double engine, 12" x 24"; one Ramsey box-car loader, and two Cherry automatic dumping cages. The method of working this mine is by the three-entry system, the splits being so arranged that as soon as the new fan is erected there will be an abundance of ventilation. At present they are ventilating by a steam jet.

Two new fans have been built by the Gartside Coal Co. at their shafts No. 1 and 4, at Murphysboro, which have greatly improved the ventilation.

The White Oak mine, operated by the Consolidated Coal Co., has been fitted with two new 34" x 30' cylinder boilers, new ropes, one Blake air-compressor, and the fan has been remodeled.

The Crystal Plate Glass Co., at Fredonia, have greatly improved the sanitary condition of their mine by sinking an air shaft and erecting a 12-foot fan over it. They have also put in two new boilers and one Ramsey box-car loader.

By adopting a better system of conducting the air to the working faces, and sinking a new air shaft, the Carterville Coal Co., of Carterville, have greatly improved their mine.

The Enterprise Coal Co. and the DuQuoin Mining Co., of DuQuoin, have erected new fans at their mines, which are giving excellent results.

The Odin Mining Co., at Odin, and the Future Mining Co., of Breese, have put up new fans at their mines.