

IMPROVED PORTABLE ENGINES.

In these engines the cylinder and steam chest are cast together, the cross head guide is separate, which enables the manufacturers to do away with the heavy and unnecessary cast iron bed plate; the bearings are large and wide, reducing the friction; the cylinder is jacketed and covered with Russia iron. The crank shaft is double and extends beyond the bearings far enough to receive a pulley on either side; it is made of the best American forged iron. The guides are of an improved kind, and have very large bearing surface. The pump is driven by an eccentric from the shaft, and is bolted to the side of the boiler and is accessible at all times. The heater is large and well constructed. The governor is of an improved kind, and is so arranged that the speed of the engine can be altered while running. The boiler is made of the best American boiler plate; every sheet is tested to a tensile strain of 50,000, and the boilers are all tested to 200 pounds, and are fired and the engine run before leaving the shop.

A large wrought iron dome is placed on every boiler; this is greatly superior to those made of cast iron, as experience shows that cast iron is liable to give way at any time under pressure. The stack of this engine is made of heavy iron, and is very durable and has a very efficient spark arrester.

The engine and boiler is mounted on a strong truck or wagon; the wheels have cast iron hubs; the axles are made of the best refined wrought iron, and extend under the boiler without the objectionable bends sometimes used.

The engine is also mounted on skids when it is unimportant to have it perfectly portable.

For further particulars in regard to this engine, address the manufacturers, Phoenix Foundry and Machine Company, Syracuse, New York.

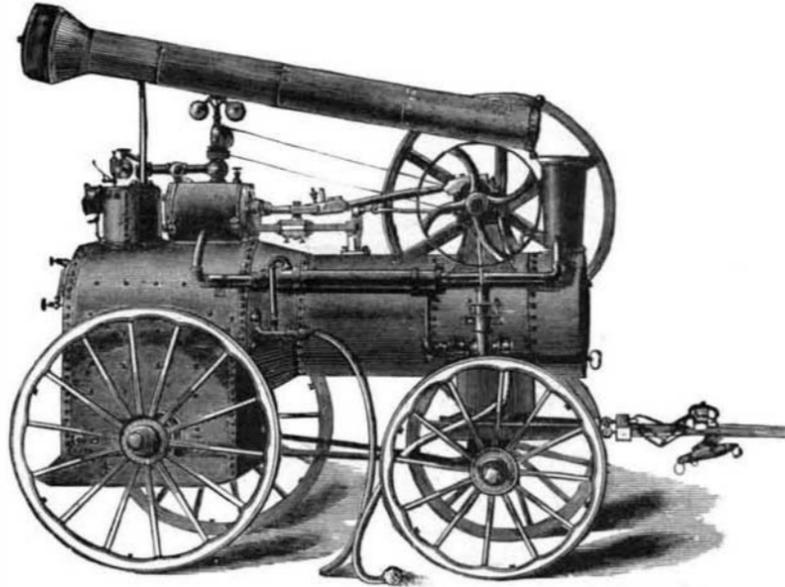
Manufactures in Kansas.

When Kansas was admitted to the Union of States, twenty-one years ago, no manufacturing was done within its borders. The quarterly report of the State Board of Agriculture just received gives an abstract from the Assessors' returns of March 1, 1881, showing that there were in the State 298 flouring mills, with a capital of \$2,953,067; 90 saw mills, capital \$152,600; 9 establishments for the manufacture of agricultural implements, capital \$71,200; 27 cheese factories, capital \$60,800; 40 wagon and carriage manufactories, capital \$150,900; 5 woolen mills, capital \$68,000; and 2 paper mills, capital \$45,000. In addition to these, a large rolling mill is in operation at Rosedale, Wyandotte county, as are also extensive shops for railroad work. At Topeka, the Atchison, Topeka and Santa Fe Railroad Company have over \$500,000 invested in repair shops, car building, and a complete establishment for railroad work in general. The large machine and repair shops of the Union Pacific Railway, Kansas Division, are located at Armstrong, Wyandotte county. In this county also are several large packing houses in full operation. The eastern portion of the State is underlaid with coal, and in many localities it is being mined in large quantities. In Cherokee county, in the southeast corner of the State, lead and zinc mines and manufactories are adding largely to the wealth of the State. Flouring mills, saw mills, foundries, woolen mills, and paper mills are numerous and in successful operation. The manufacture of sirup and sugar from the cane is developing into a large business.

The interest of sheep husbandry in Kansas has in the last two years increased rapidly. The ranges of pasture lands in the west are receiving recognition, and sheep are being brought in in large numbers. The increase since March, 1880, has been rapid. In that year the assessors' returns gave as the total number of sheep in the State, 426,492; in 1881, 806,323; while the estimates of reliable sheep men place the number, March 1, 1882, at 1,500,000. Woolen manufactures should follow.

The Fire on the Rio Grande.

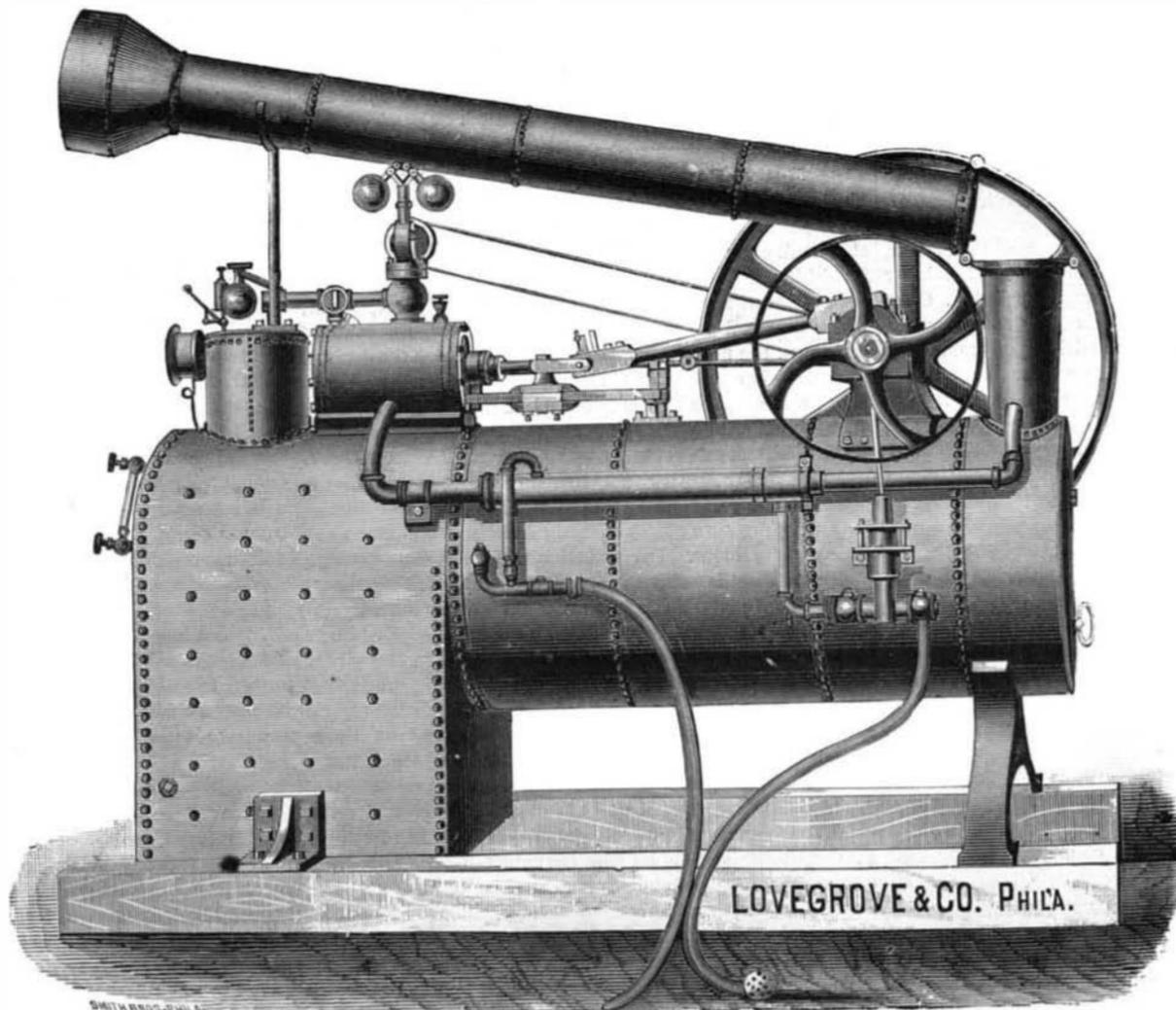
The steamer Rio Grande, of the Mallory Line, from Galveston, Texas, to this port, was found to be on fire on the evening of May 16, when the vessel was about ninety miles from the Delaware Breakwater. The cargo consisted largely of cotton, in which the fire appeared to be. Captain Burrows soon had four large streams playing into the hold, but the fire was beyond control. At sunset the Rio Grande overhauled the Italian bark Beppino A., and though the weather was thick the passengers were safely transferred to the bark. The Rio Grande was then headed for the Breakwater, which was reached in the morning. Finding

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it impossible to extinguish the fire with the pumps, Captain Burrows scuttled the ship and sank her in water about twenty feet deep, the insurance steamer North America helping to fill the forward part of the vessel. This was twenty-seven hours after the fire was discovered. In the afternoon the ship was pumped out, floated, and dried. In the evening the Beppino A. arrived at the Breakwater; whereupon the passengers of the Rio Grande were retransferred and brought safely to this port. The management of Captain Burrows under the trying circumstances was much commended by those who owed their comfort and safety to his skill and courage.

A Large Boring and Turning Machine.

What is described as the largest boring and turning machine in the United States has just been set up in the establishment of McIntosh, Hemphill & Co., of Pittsburg, Pa. It weighs 235,000 pounds, or 110 tons, is 25 feet high, and occupies a space 30 feet square. It will turn, bore, and cut a key way in wheels of any size up to 16 feet in diameter by 11 feet wide on the face.

**PHOENIX FOUNDRY AND MACHINE CO.'S PORTABLE ENGINE.****Civil Engineers.**

The annual convention of the American Society of Civil Engineers took place in Washington, May 16. Gen. Wright, Chief Engineer, U. S. A., was elected permanent chairman; but being detained at home by sickness, his place was filled by Col. Casey. In his address of welcome Col. Casey referred to the works of interest to engineers about Washington, among them the great stone arch of the aqueduct, the largest span existing, the foundation of the Washington Monument, and the harbor improvements. The first paper was read by Capt. O. E. Michaelis, on "An Instance of Zymotic Disease in Metal." At the afternoon session, Mr. Chanute, Chief Engineer of the Erie Railway, read a paper on "The Preservation of Timber." Papers on the same subject were also read by J. P. Putnam, of New Orleans, and E. R. Andrews, of New York. At the evening session addresses were delivered by the Hon. Ashbell Welch, President of the American Society of Civil Engineers, and Col. Casey.

Winter in the Sahara.

A young French traveler, M. Gorloff, lately gave to the Royal Geographical Society an account of a six months' trip in North Africa, accompanied only by two Arabs.

During the whole of his journey they had frost every night. To the south of Ghardai was Metlili, the chamber city. The sitting room of its djemaa (the town council) was a subterranean gallery, ornamented with pillars, running round a deep well. By that contrivance the council was kept cool even in hot days. The men of the Touareg tribe are not allowed to have more than one wife, and she possessed the greatest influence, not only in domestic but in political affairs. The Touareg women are far more highly educated than

the men. They could read and write well, they possessed some musical talent, and their poems were celebrated in the desert. It appeared that in the Middle Ages some persons of high birth emigrated to Africa among the Touaregs, and some of them boasted of Montmorency descent. At one time M. Gorloff and his guides were overtaken by a severe snow storm. The guides lost their way, and they were in much danger of being frozen to death. There were many in France, said M. Gorloff, who proclaimed the Sahara a rich country, where fortune was to be made. He would like those persons to travel in it. He thought they would then change their opinion.

Geology of Madeira.

As described by Mr. J. S. Gardner, a fellow of the English Geographical Society, Madeira consists almost wholly of sheets of basalt lava of variable thickness, interstratified with tufa, scoria and red bole, cut by innumerable dikes. In the central part of the island is a horseshoe-shaped valley, more than four miles in diameter, its bed 2,500 feet above the sea, its precipitous walls full 3,000 feet high, rising here and there to yet greater elevations, and forming a central point in the mountain system of the island. This Mr. Gardner regards as the basal wreck of a volcanic mountain, blown into the air by an explosion of exceptional violence. Fragments of the slopes of scoria, which once composed the inner shell, remain on the peaks surrounding this amphitheater. The dikes here are trachyte. Mr. Gardner describes a limestone exposed in one place beneath the basalts, and referred to the Upper Miocene, and a plant-bearing bed associated with them, containing fossils of species still living in the islands, some of which have been wrongly referred to extinct forms.

The steamer City of Baton Rouge lately made what is said to be the quickest trip on record between New Orleans and St. Louis, only excepting the famous run of the R. E. Lee, when, stripped for fast time, she raced with the Natchez. Fourteen stops were made; she had a load of passengers and freight; her time from port to port was 4 days 14 hours 25 minutes.