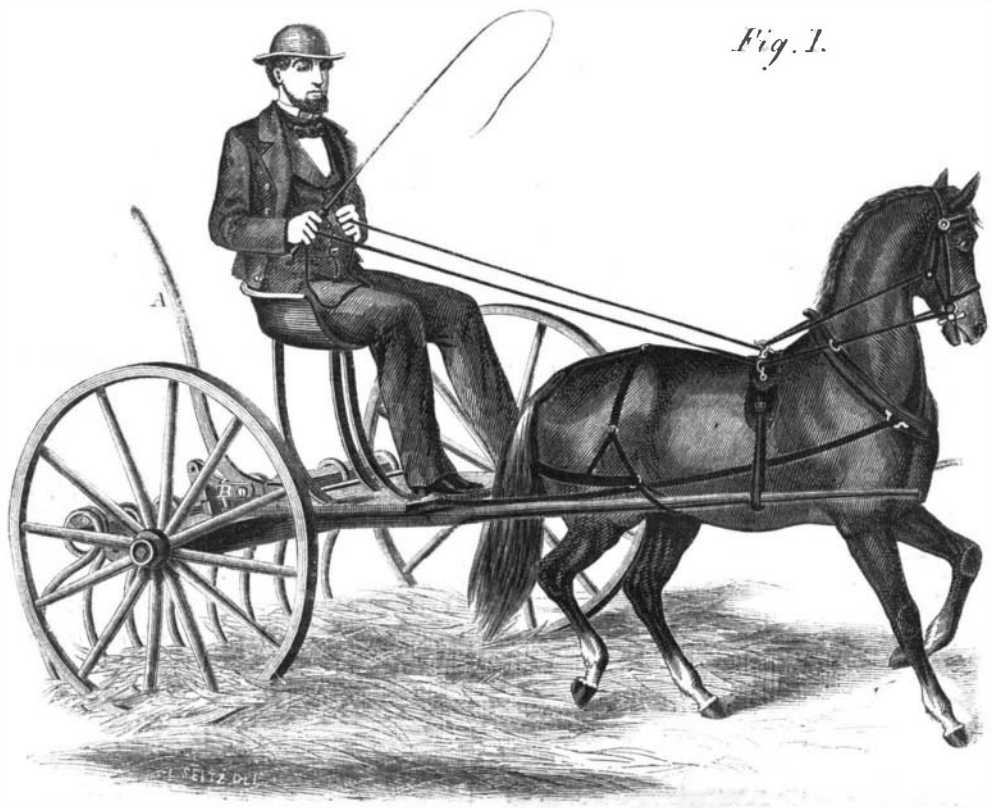
Improved Horse Rake.

This engraving represents a new improvement in horse rakes, by which it is claimed they are rendered more perfect in operation, and less liable to raise when not desired.

In order to control the action the inventor provides a lever, A, jointed to the frame at one end, and having a short arm, B, working on it. This latter connects with a vertical arm, C, on the rake shaft, as will be seen by the engraving.

It will further be observed that in the position there shown the rake teeth are held firmly to their work, preventing them from raising partially, and scattering loose uneven winrows. At the same time

Fig. 1.



HARDGROVE'S HORSE RAKE.

the teeth are free to conform to undulating ground by the springing of the teeth.

Fig. 2 shows the invention enlarged. This combination forms a toggle joint, and acts equally well to prevent the rake from falling when the lever is thrown forward so as to raise it clear of the ground, as it does when going from one field to another.

This rake is easily operated by any boy old enough to drive, and the lever can be applied to a machine of any style. It may be reversed, if desired, so as to operate from the front instead of the rear of the driver.

In unloading, the lever is brought forward to about an angle of 45° with the shafts, and no further, and can be returned to a rest or lock without letting go of the lever.

It was patented by O. J. Hardgrove, on March 22d, 1864. For further information or shop rights address O. J. Hardgrove & Co., Canton, Ohio.

Steel Curtains for Theaters.

A cotemporary says:—"The new Theater Royal, Edinburgh, Scotland, has a new fire-proof curtains of steel. The theater is divided by a wall two feet in thickness, at the line of the proscenium, which wall passes up to a hight of 8 feet, above the roof, dividing the theater into two distinct buildings. In this wall is an opening of 30 by 32 feet, which forms the proscenium; this opening is closed by patent revolving shutters (the largest in the world) in one sheet of steel, coiling above; it is raised and lowered by a hydraulic apparatus, which receives its power from a head of water supplied by a tank at the top of the building, which tank also supplies the fire-mains throughout the theater. It has long been a desideratum how to provide for the safety of the audience in the event of fire. Wide passages and good staircases, no doubt, are of great importance, but if the auditorium is cut off from that portion of the building where fire always originates, thus calming the public mind, and giving them ample time to escape, it will be more effectual than the widest passage that can be afforded in any theater. The fire-proof curtain at Edinburgh has been tested by the architect, Mr. D. MacGibbon, and has been pronounced successful, and to work in the best manner. The whole contrivance is ingenious, and worthy the attention of all managers of first-class theaters here."

The Opal Mine in California.

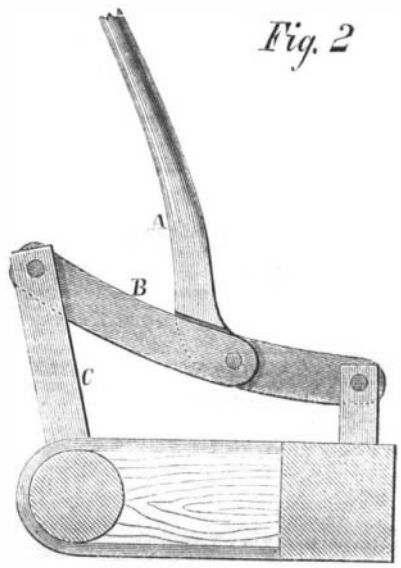
There is great excitement in California over the reported discovery of an opal mine in Calaveras county. The mine is claimed by seven different companies. A local paper describes it thus:—

"This vein, varying in thickness from four to eight inches, contains a rather large quantity of the minerals, some specimens resembling in form the branches of a tree, others that of kidneys, more or less large. In some parts of the vein the minerals are colored by a mixture of foreign matters, occurring since their first formation. In that state they are either opal jaspers or resinite jaspers. Sometimes they are soft, gelatinous or pasty, and in that state they come from a moist, gravelly trachyte. In other places they are white on the surface, and often to the center; but a dead white like the carbonate of lime. From time to time, in the healthy and compact parts of the vein, an opal has a considerable degree of purity and more or less transparency. We have taken a few specimens of the latter sort from the shaft, at the depth of about one hundred feet, and by our analysis we found it composed as follows:—Silex, 90·50; water, 9·50—100. The elements of that composition are exactly those of the true opal, and the pretty reflections similar to those of the prism, which are met with in this kind of mineral, are certainly due to the presence of a little more water than is required to produce that formula."

Water-proof Paint.

An article in the nature of paint, yet combining more of the preservative and less of the flaky nature of the common lead and oil preparation, was long a great *desideratum* among mechanics and builders in every line. Our European and coasting steamers, as well as shipping of every description, require expensive outlays at either port of entry, in repainting smoke stacks, boilers, rigging and hull. Among shipmasters and builders, tin, zinc, wood, leather and iron manufacturers, the prime object has been to secure a paint impervious to water, and durable against sea atmospheres and the wear of ordinary use and exposure. C. M. Spooner & Co., of 105 Fulton st., Boston, Mass., have lately perfected one of the best preparations for the above-named practical purposes, in the market, and its adaptability to an almost endless variety of manufactures, warrants a further mention and commendation of it to our readers. The article is known to the trade as the "elastic black varnish paint," which, unlike varnishes, contains no coal tar, and at the same time yields an even and rich luster, with a body of treble the consistency of ordinary black paint. For painting iron which is to be exposed to heat or the weather, such as boilers and chimney tops, radiators, railings and steam pipes, this black-varnish paint is peculiarly well compounded, since the warmth or atmosphere neither causes it to emit the nauseating odor of benzine, so often arising from newly heated radiators, nor scale off and corrode. It is also a baking varnish and possesses the two-fold advantage of its paint and japan nature, over common varnish. The factory of the firm is located at Edgeworth, and thence it passes into the market under brands suited to its different customers. We notice that in the report of the committee of Mechanics' Association Fair, lately held here, this paint was especially mentioned as one of the best substitutes for ordinary lead, oil, or tar applications, and in indorsement of that opinion, a medal and diploma were granted its manufacturers.—*Commercial Bulletin, Boston.*

Fig. 2



FROM THE STEAM PRESS OF JOHN A. GRAY AND GREEN.