NEW INVENTIONS.

We publish descriptions of the following new inventions, obtained through Dewey & Co.'s *Mining and Scientific Press* Patent Agency, San Francisco:

DREDGING AND DITCHING MACHINE.—Daniel Bridges, Yoncolla, Douglas county, Oregon.—Dated Dec. 3d, 1878. The invention is an improved dredging and ditching machine, and the improvements consist in a novel combination of mechanism by which the inventor is enabled to cut out and lift the earth by the vertical action of the dredging bucket; and in certain details of construction, the machine can be made on a small scale to be worked by hand for ditching purposes or may be made large to be worked by steam power for reclamation purposes. It will operate in any earth stiff enough to hold together without falling between the forks of the grapple. For softer material a plate of metal is used instead of forks. The device is intended more particularly to construct ditches or dikes on marsh swamps, tule or tide lands where there is little or no fall to the ground, and where the marshy character of the soil is such as to preclude the use of horse power. The device is used to best advantage on a scow, being operated by hand or steam power. It has been practically and successfully tested in Oregon by the inventor.

PULVERIZING BARREL.—John C. Senderling, San Francisco.—Dated Dec. 3d, 1878. This invention relates to certain improvements in crushing and pulverizing barrels or that class of apparatus in which balls, rollers, shoes, hammers, etc., are employed to crush and pulverize rock within a rotating cylinder or barrel. It consists in the employment of a iron rotating, stationary or adjustable shaft, passing through hollow trunnions of the barrel, and having arms attached for the purpose of holding rollers or shoes in position. The said rollers or shoes may thus be held at a certain point, and as the ore is fed into the barrel it passes between the rollers or shoes and the inner periphery of the cylinder or barrel. The pulverized ore will escape through perforations or slots in the dies and from thence through the enclosing screens, while any particles not crushed sufficiently free will be returned to the cylinder.

LIGHT WEIGHT HORSE FORK.—Byron Jackson, Woodland, Yolo Co., Cal.—Dated, Dec. 3d, 1878. This invention relates to certain improvements in devices, known as horse forks, such as are employed to handle headed grain, and hay or straw. It consists in a novel construction of the head in two pieces, and a light frame work having as many bars as there are tines on the fork, the two outside bars being united at one end, and diverging from each other at the opposite end, to secure the outside tines. The other bars of the frame receive the inner tines at one end, and are united at the other end to the outside bars. One end of each of the bars of this frame is locked between the two head pieces, by the tines passing through them. The tines being shouldered on a light frame brace on one side, and a nut screwed down on the other. The braces are cast rolled to a bar of the frame, thus bringing the strain of each tine lengthways with each bar of the frame. There is then no twisting strain on any portion of the frame or head, as is the case in the old methods of using a single head piece and clamping the lifting arms to it by means of cast or wrought iron bands. By this construction the weight is reduced nearly one-half, while the same strength is retained.

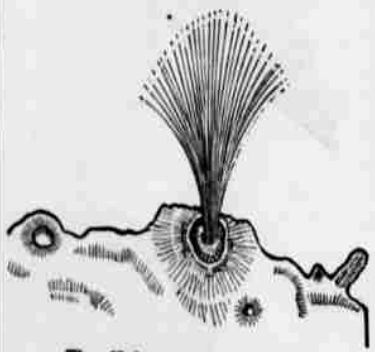
THE Japanese government have agreed to grant a loan of $1,500,000 for the purpose of working the coal fields.

[From the Mining and Scientific Press.]

IS THERE AN ACTIVE VOLCANO IN THE MOON.

For many years the opinion prevailed that the moon had long since arrived at the stage of physical quiescence; that it was, in short, a dead planet. Neison, in his admirable work on the moon, takes strong ground against this opinion; and the drift of later observation has been to indicate at least the probability of the progress of active volcanic changes during recent years. In one instance, at least, a large crater disappeared, apparently by filling from within; but hitherto no astronomer has been fortunate enough to witness anything like an eruption. Mr. J. Hammes, of Keokuk, Iowa, has now added still farther evidence of the fact that the moon is still manifesting some small degree of activity. Under date of November 20th, 1878, he addressed the following letter to Admiral Rodgers, the Superintendent of the Naval Observatory at Washington.

ADMIRAL JOHN RODGERS:—I take the liberty to offer you a sketch of an observation on the moon, taken November 12th, hour 8:30 evening, seen by me, my son, and several gents who were present, at the town of Oskaloosa, Iowa, about latitude 41° 30′—what I supposed to be an eruption of a volcano. It was only seen for one half hour through my six and a half inch telescope, as plain as any other mountain scenery in the moon is seen, and of the same color. I



The Volcano in the Moon.

would like to hear what you think of it.—JOHN HAMMES.

This letter was forwarded to the editor of the *Scientific American*, who published the same, in connection with the accompanying illustration, which we have here reproduced.

Mr. Rogers, in his note to that paper, says that Mr. Hammes writes that he travels around the country with his telescope, showing the moon and planets to colleges and schools, and that he is perfectly familiar with the appearance of the moon, and with the use of his instrument.

The crater seen by Mr. Hammes seems to be, from his drawing, in the vicinity of Baco, Barocius and Nicolai, as these names are given on Beer and Madler's map of the moon.

The Mayor of Keokuk, the Postmaster and several other prominent gentlemen fully endorse Mr. Hammes, as a man well known in that city, and one whose word can be implicitly relied upon.

In connection with the above, we append the following note from a well-known gentleman of Oakland:

EDITORS SCIENTIFIC PRESS:—In the *Scientific American* of December 21st I find a notice of a supposed volcanic eruption on the moon, seen by Mr. J. Hammes, Iowa, November 12th, 1878. I am reminded by it of an observation made many years ago—I think in 1840. About that time I was greatly interested in amateur astronomy, using a small achromatic telescope and a reflector of 6 or 7 inches diameter, and 5 feet focal length, of my own manufacture. Observing the moon one night I saw, as did others, on the dark portion, a bright, red spot, which at once suggested the thought of volcanic eruption.

In Dicks' "Celestial Scenery," it is stated that "during the annular eclipse of the sun, June 24th, 1778, Don Ulloa perceived, near the northwest limb of the moon, a bright white spot, which he imagined to be the light of the sun shining through an opening in the moon. This phenomenon continued about a minute and a quarter, and was noticed by three different observers. Beccaria observed a similar spot in 1772. M. Bode, of Berlin, Villeneuve, Nouet, Capt. Keter, and several others, at different times observed similar phenomena, some of which had the appearance of a small nebula, or a star of the 6th magnitude, upon the dark part of the lower disc."

Sir W. Herschel refers in the "Philosophical Transactions, 1787," to an eruption seen by him May 4th, 1783, and to another observation April 19th, 1787, of three volcanoes in different places of the dark part of the new moon, two of them nearly extinct, and the third showing an actual eruption of fire. Herschel's description is quite elaborate, and shows that with a ten-foot reflector the spots could be plainly distinguished from the rest of the marks on the moon.

These observations indicate that the moon is yet far from being a burned-out and inactive planet, as theorists maintain.

Oakland, Dec. 23d. J. H. WYTHE M.D.

RINSING WINE BOTTLES.—Bottles, after being some time in use, are apt to acquire a crust or coating very difficult to remove by ordinary rinsing. The *Bohmische Bierbrauer* gives the following methods for removing such impurities: 1st, soak them in permanganate of potash; 2d, rinse the bottles out with a solution of equal parts of muriatic acid and water; 3d, chloride of lime and water in the proportion of one ounce of the lime to two pints of water, and allow the bottles to lie in the solution for three or four days; 4th, strong sulphuric acid may be put into the bottles, which may then be corked and allowed to stand for a day or two. This should remove the strongest crust. Either of these four methods requires great care. The chemical should in all cases be carefully rinsed out with clean water, and it should be borne in mind that all acids are extremely injurious to clothes, etc.

CELLULOSE WASHERS.—For the purpose of packing joints which are to be hermetically sealed, as retort-connections, couplings, etc., where vulcanized rubber has usually been used, cellulose appears to be even a better material. It is very cheap, readily absorbs water at first, thereby becoming pliable, and adapts itself more accurately to the surfaces it is intended to make tight. If a joint is exposed to steam, and is to be frequently opened, the cellulose should be soaked in oil.

A MAN WHO BURST.—A German medical journal gives an account of a man who literally burst from taking four plates of potato soup, and many (how many is not stated) cups of tea and milk, followed by a large dose of bicarbonate of soda to aid digestion. His stomach swelled enormously, and tore the diaphragm, causing immediate death.

COST OF THE ELECTRIC LIGHT.—The cost of the 16,000-candle power electric light at the Palace hotel, San Francisco, has been estimated as follows: Interest on the investment, wear and tear of the machinery, etc., is estimated at 14 cents; cost of coal, 40 cents; carbon, 28 cents engineer, 10 cents; oil, etc., 3 cents; total $1.25 an hour.

A NUMBER of horse cars were lately shipped to Calais, France, to be used in running from that place to the suburb of St. Pierre, over a road constructed with English capital. Orders are expected soon from other European cities.