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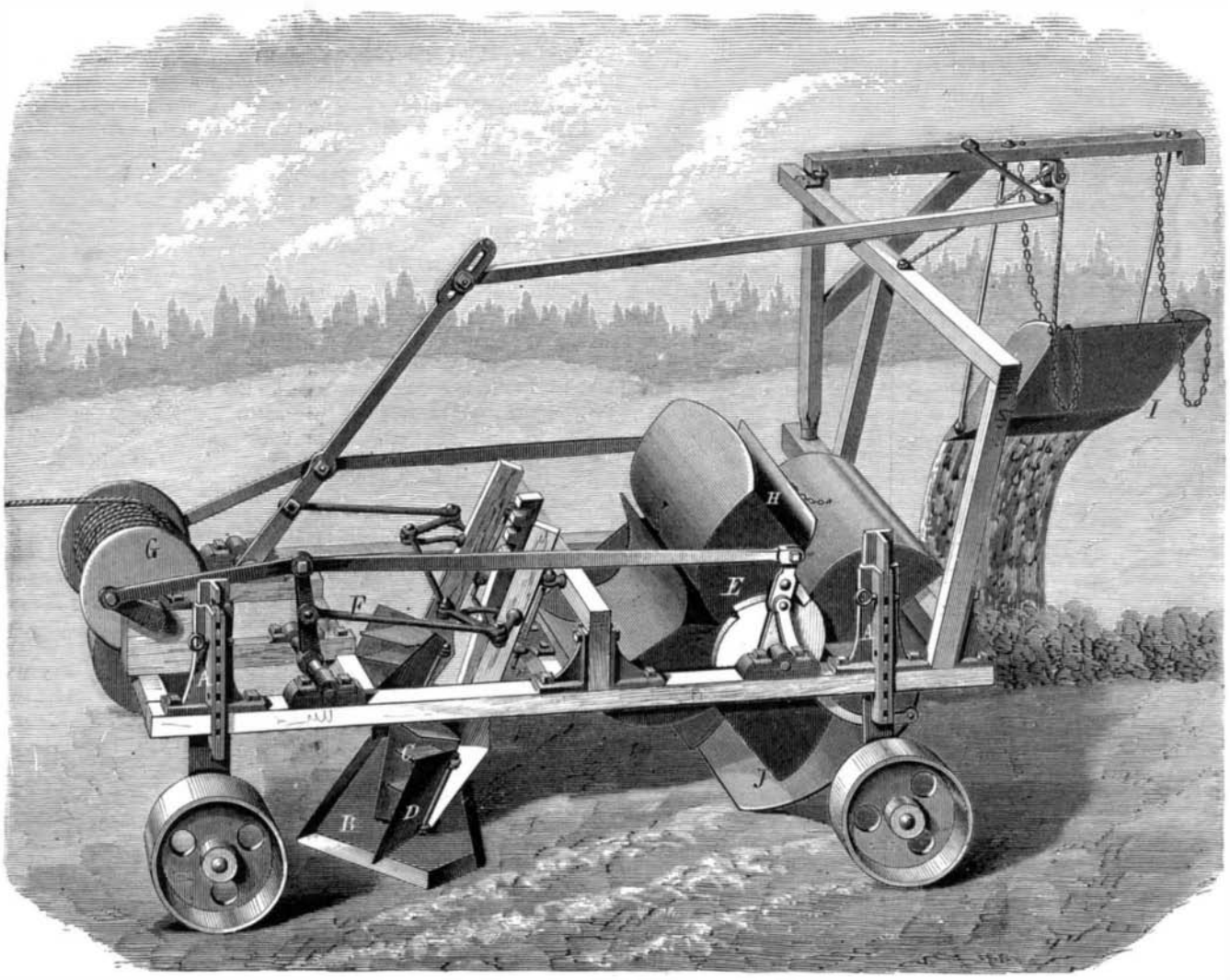
IMPROVED DITCHING MACHINE.

The improved apparatus illustrated in the annexed engraving can be constructed of any size, and hence may be used for ditching, dredging, or for railroad embankment making and leveling. It can be operated either by animal or by steam power, and is so designed as to perform the triple motion of a ditching hand. The earth is cut down and loosened by the cutters and scrapers, then taken up by the buckets, and is received therefrom by the vibrating pan.

The frame of the machine is supported on wheels, which are pivoted to lower ends of rack bars, A, which slide in guides and are secured by pins passing through their notches, so that the apparatus can be readily lowered as the depth of the ditch increases. The slice of soil to be raised is separated by the plow, B, the standard of which is notched or perforated, and works in guides, so that it may be secured to adjust the plow to work deeper or shallower in the ground. In order to loosen the soil above the plow, colters, C, are provided, attached to an oscillating block, the latter also having hinged to it scrapers, D, which are curved forward and backward, so as to scrape off the soil from the forward end and sides of the ditch and throw it back so that it will be taken up by the buckets of the ditching wheel, E. The scrapers are supported to their work by a spring attached to the oscillating block. Said block is moved by the joint levers, F, which by suitable cranks communicate with the drum, G, which is turned by a rope unwound from it by the team pulley in the direction in which the machine moves. It will also be observed that, by a simple assemblage of jointed levers and pawls, the bucket wheel, E, is rotated so as to scoop up the earth and (by the tilting spoon, H, which is in each bucket) to deliver it to the pan, I. Said pan causes the spoons to be thrown out by being swung in so as to arrest the edge of each successive spoon in passing. The spoon in turn throws its load into the pan, which, by a series of levers, also connecting with the drum, moves out and back during two movements of the bucket wheel, so that a bucket is presented to the pan each time it moves back.



GONELLAZ'S DITCHING MACHINE

At J is a shovel, which is so arranged as to be drawn forward at each movement of the ditching wheel to scrape up any soil that may be dropped or missed by the buckets. As the earth accumulates on the shovel, the bucket wheel, in its revolution, scrapes it off. The machine is ingeniously constructed, and embodies many useful devices. It was patented through the Scientific American Patent Agency, April 4, 1876. For further information, address the inventor, Mr. Hyacinth Gonellaz, Vermilionville, Lafayette Parish, La.

Zinc as an Anti-Incrustant.

We have already noted numerous reported cases wherein pieces of zinc, inserted in steam boilers, seem to have prevented incrustation or scale. Some further and more extended investigations into the subject have recently been carried on by Messrs. Bruckmann & Son, manufacturers at Heilbronn, Germany, and the results given point strongly to the efficacy of the metal introduced.

In the first experiment, 66 lbs. of zinc, in the shape of shavings and small fragments, were inserted in a boiler of 307 square feet of heating surface, having, besides, two new superheaters. At the end of six weeks there was formed in the boiler a muddy, white-gray mass, easily withdrawn by a sheet iron shovel; and water forced in by a hand pump sufficed to render the interior of boiler and heaters completely clean. The iron of the latter retained its black color, and in the boiler not a trace of former incrustations was visible. The zinc had entirely disappeared, with the exception of a little *débris* in a state of disaggregation, and this remained in the locality where the mass had previously been deposited.

A second experiment was then made on a larger boiler, with but 37 lbs. of zinc, and at the end of four weeks the deposit was easily washed out. The third experiment was made on the boiler first mentioned, using well water, which was very hard and rich in calcareous matter; 57 lbs. of zinc were used. Formerly this water produced the hardest kind of scale, which almost defied hammer and chisel. After four weeks' running the boiler was opened and merely a few easily detachable bits of lime were found. A part of the zinc was still in its normal state, and seemed fully capable of protecting the boiler for from two to four weeks longer. An average of several experiments shows that about 2·2 lbs. of zinc scrap per month and per horse power is the proper proportion. This, however, must be increased or diminished with reference to the known composition of the feed water.

Wages in England.

Complaints regarding the inflated state of wages in England are becoming both bitter and frequent. At a recent meeting of the Manchester, Sheffield, and Lincolnshire Railway Company, the chairman said that at the present day the cost of mining coal in Great Britain is 15 per cent higher, as a matter of wages, than it was eight or nine years ago. He pointed out that the English iron trade is seriously affected, and that it is now impossible for it to compete in American or other markets of the world. He further stated, however, that the diminution of wages paid in England was already nearly $10,000,000 weekly, and expressed the hope that, after another year of such discipline in the way of financial stress, England, by reducing the inflation of wages and doing more work, would outbid all other producers in the world in the cheapness of her products.

Novel Folding Scissors.

Many travelers who return from abroad bring home to their friends, as a novelty, a pair of folding scissors. But travelers can no longer astonish their friends with this novelty, for Marx Brothers, of 430 Broadway, New York city, are manufacturing, under patent issued May 28, 1872, a superior quality of folding scissors, which are five inches long when in use, but fold into a length of two and a half inches for the pocket, highly finished and neatly put up in leather cases, which they offer in competition with the imported articles

Walking in the Fiery Furnace.

In London, on August 8 last, experiments were made in the grounds of the Alexandra Palace with an extraordinary invention, by which results somewhat analagous to those recorded as miraculous in Jewish history were achieved. Mr. Oersberg, a Swedish mechanician, claims to have invented, and Captain Ahlstrom, a compatriot, to have matured and fitted for practical use, a dress which will enable the wearer to dash with impunity into the fiercest fire for the purpose of saving life and property. At the east end of the Palace, between the circus and the banqueting hall, huge piles of old dried wood were heaped up, intersected by narrow avenues, and the wood was drenched with petroleum. The consequence was that, the moment a light was applied to the pyre, the whole blazed up with a flame so fierce, and sending forth a heat so intense, that the thousands who had gathered around to witness the scene were forced to retire to a more respectful distance. The sun's rays, which had hitherto been inconveniently felt from above, were quite forgotten in the glow which now flamed up from below, and it really seemed as if there was malice in the tongues of fire that spat out on every current of passing air. Standing 40 yards to the windward of this fierce fire, the heat was all but intolerable; and even the firemen of the Palace brigade, under the command of Captain Archer, the chief officer, were fain to give a wide berth to the burning center. Then it was that Captain Ahlstrom, clad in a dress not at all unlike that worn by Captain Boyton when he paddled himself across the Straits of Dover, made his appearance on the scene. His costume consisted, so far as it was possible to ascertain, of an overcoat of fustian, covering an inner garment of wool and felt. Between the two skins, so to say, is a network of veins, through which are pumped continuous supplies of air and water, the main air tube, before it reaches the body, being enclosed in the larger water tube, and by such means kept perfectly cool. The escape for the cool air is through orifices in front of the face, and the current so made forces back the flames, and leaves perfect breathing space. Assurance was given that the clothing itself is in no way chemically prepared, and is simply protected against the action of the flames by the torrents of water that pour over the man from head to foot. With the greatest possible nonchalance Captain Ahlstrom walked into and through the fiery furnace, not only free from discomfort, but apparently with enjoyment. After spending about ten minutes in about the warmest climate it is possible to imagine, enveloped at times so as to be hidden by flames, he carried out a chair which was on fire, sat coolly down upon it, and, to the amusement and astonishment of a crowd of spectators, smoked a cigar.

New Artesian Well, Charleston, S. C.

A new artesian well is in progress and has now reached a depth of nearly three hundred feet. The drills are still digging their way through the eocene marl of the Ashley River beds, and at a depth of two hundred and sixty feet a stratum of silicious rock, about three feet in thickness, was struck and passed through without much difficulty. In this stratum are found millions of little microscopic shells, which are almost invisible to the naked eye, but upon being viewed through a magnifying glass are clearly seen as beautiful nautilus-shaped shells, perfect in formation and color. The work is creating much interest, and numbers of scientific gentlemen visit the well every day for the purpose of inspecting the fossils.