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The Burdick Bolt Heading Machine.

Our engraving represents a view of the Burdick bolt forging or heading machine, of which Messrs. Plumb & Burdick, of Buffalo, N. Y., are proprietors. Thirty of these machines have been put in operation during the past fifteen months, and used by bolt makers, car and locomotive builders, railroad companies, etc. They are particularly adapted to the manufacture of square heads, but capable of making any desired style of head. One has lately been put up with twenty-four and one with thirty-six changes of dies. It is claimed by the manufacturers of these machines that they will do more and better work than any other.

We shall not enter into a description of its details of construction, as this would entail the use of auxiliary engravings, and require far too much space. We will content ourselves with a brief summary of the well demonstrated capabilities of the machine, which is put up in the best manner, and requires but little power. It is quickly adjusted from one size or length of iron to another, and can head bolts of any length. Unlike others, where the blanks are held horizontal, the blank in this machine remains stationary until the head is completed.

Other machines clamp the blanks tightly with the holding dies, and at the same time turn one quarter or one half around, thereby reducing the size of the rod directly under the head where the dies strike it. In this machine the end of the blank rests against a stop, and the holding dies simply close on the iron, and remain so until the head is completed. The stock for the head is upset by a plunger, which recedes, and the forging dies acting simultaneously on the four sides form the head to the required size and shape, thus producing heads uniform in size and retaining the full strength of the rod. It is so arranged that it makes four, six, or eight revolutions—each head receiving twenty, thirty, or forty blows, according to the finish desired—and stops to discharge the bolt and receive another blank. The working parts of the machine are in operation only while the bolt is being headed, thus reducing the wear in proportion to the work done.

The capacity of this machine is such, that in a contract with Messrs. James Wood & Co., Pittsburgh, it was required that 4,000 one half inch bolts should be headed in ten hours, and 3,500 five eighths inch bolts in the same time. The first number was finished in eight hours, and the second in less than nine hours. In their own works, the manufacturers state, that 4,500 three fourths inch T-headed bolts have been made in ten hours.

The dies can be reversed, which greatly prolongs their usefulness, and when worn are readily sharpened by grinding. Four sizes of the machine are furnished, adapted to head from one fourth inch to two and one half inch iron.

The machine is covered by two patents, dated respectively Sept. 3, 1867, and Nov. 30, 1869. For further information address Plumb & Burdick, corner Clinton and Adams streets, Buffalo, N. Y.

THE DANGERS OF SEWAGE IRRIGATION.

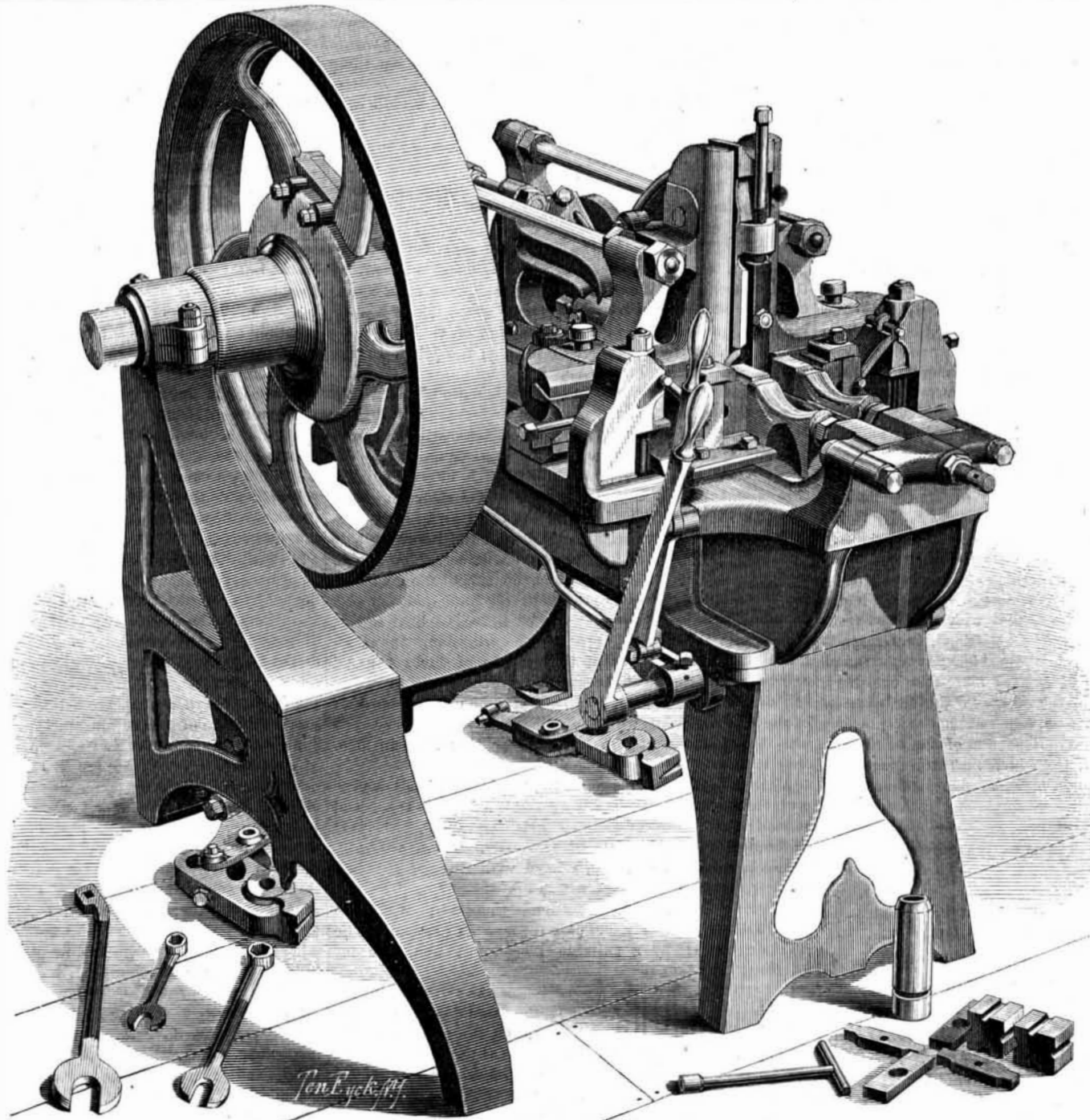
From a pamphlet by James Alexander Manning, referred to in a recent editorial on the "Sewage Question," we extract further particulars, showing the dangers arising from sewage irrigation. He says:

"The late Marquis of Salisbury, only three or four years ago, joined his neighbors, near Tottenham, in a petition to the Privy Council, against the practice of sewage irrigation,

to keep them in good order. Ask the medical faculty the cause of the disease, squalid misery, and deaths of thousands of the poorer, and hundreds of the wealthier classes of London in every year. They must reply that the contamination of the air in the confined spaces they occupy, and the mephitic emanations from the sewers and water closets, the pipes of which, owing to an imperfect system of regulation, are ever charged to the utmost with the foulest gases, which rush into the closet the moment the

plug is raised, and continue filling the chamber with poison until the valve is again closed and jointed, as it is called, with water, as well as from the kitchen or scullery sinks, where, in ten cases out of twenty, in the dwellings of the poorer classes, the traps are either defective or deficient. Many folio volumes might be written on this subject in proof of all I have advanced without once repeating either my argument or the few facts I have adduced, but I cannot close this part of my subject without referring to the dreadful mortality in Brussels during the cholera outbreak of 1866, which, it is now universally admitted, was, if not positively produced, greatly aggravated by the contamination of the atmosphere, both externally and internally, by reason of sewage miasmas, caused by the condition of the river Senne, which intersects the town, a considerable portion of which was open, having been used as a common sewer to receive all the house, hold drainage of every description.

Statistics speak for themselves; thus, by the report of the



THE BURDICK BOLT HEADING OR FORGING MACHINE.

which had proved not only fatal to many, but universally disgusting to all the inhabitants of the vicinity, and must ever be so on stiff clay land, where, as soon as the surface is covered, the sewage must run off into the ditches, and, while creating the most offensive odors, rendering life insupportable, must contaminate the land springs, and render the water totally unfit for culinary or ordinary domestic purposes. The whole system of sewerage is vicious, as proved by the high death rate in all our large manufacturing towns, and the frightfully increased poor rates; and it is now admitted by the scientific world that upwards of 100,000 lives are annually lost in this country, which might be saved by attention to sanitary requirements. As far as the sewers of towns are concerned, I am satisfied that the purposes to which they are now devoted will ere long undergo a very important modification, and as science advances it will be found indispensable to the health of the inhabitants that they shall be maintained only for surface drainage—that is, rainfalls and household slops, leaving the solid and fluid human excreta to pass into proper receptacles, where, by chemical treatment, they will be rendered innocuous to man and invaluable to agriculture. At the present moment, all I can suggest as a substantial benefit to the inhabitants of this great metropolis, though I am fully aware that it will meet with powerful opposition, is the effectual trapping of the gully holes and the street gratings, as well as the water closets and sinks in every house, and their being liable to periodical police supervision

Registrar-General, it appears that the deaths from cholera in Great Britain and Ireland in that year, out of a population of twenty-eight millions, amounted only to little over 6,000, while upwards of 6,300 were carried off by that frightful scourge in the small city of Brussels alone, containing at that period a population only of 250,000; and that out of a population of between four and five millions, of which the whole kingdom of Belgium is composed, upwards of 30,000 victims succumbed to the malady in that year. I have frequently discussed the subject with eminent Belgian physicians, and not one has ever disputed the theory I laid down, as to the cause of such frightful ravages. I have also called their attention specially to the great annual mortality prevailing in almost all the agricultural districts of that kingdom, arising from the use of liquid sewage supplied to their fields by means of the barrel cart and scoop.

"During the manuring season of each year, as soon as this practice commences, the rural population, and particularly children, are afflicted with swollen glands, and a fever called by the faculty 'la fièvre milliare,' which soon places a whole village in mourning, and no stronger proof as to the cause can possibly be adduced than is to be gathered from the fact that in the Walloon districts of Belgium, Mons, Charleroi, Jemappes, Ath, etc., etc., where no such practice prevails, the inhabitants are entirely free from these fatal attacks. I recommended to the Burgomaster of Brussels the trapping of all the gully holes of that city, as well as the passing of a