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A NEW SOURCE OF POWER.—ABSORBENT STRATA.

M. G. Hanrian, of Meaux, France, has discovered a source of power in wells and absorbent rock strata, which is certainly both curious and original, and possibly capable of a wide utilization. He proposes to drive machinery or raise water through the absorption of water by the lower strata of the soil, the avidity with which the absorbent rock absorbs the water creating, in the descent of the latter, the power, which is transmitted by mechanism to the surface. This will be better understood by reference to Fig. 1 of the annexed engravings, which we select from the *Bulletin du Société d'Encouragement pour L'Industrie Nationale.* A well, D, is first dug until the water bearing stratum is pierced. This well is suitably curbed, and then another and smaller excavation, E, is carried downward in the impermeable rock, B, until the absorbent stratum, C, is nearly reached. The bottom of this bore is covered with concrete, F; and a small tube, surmounted by a hood to prevent its being choked by impurities, is continued still further down and into the absorbent rock, C. Inside E is a sheet iron tube, H, entering a wide receptacle at its upper end (at the bottom of which sediment is deposited) and extending down into the water in the lower well. I is a valve governed by the hand wheel from above, which serves to admit water from the main well, D, into the tube, H. Said tube has within it one part of an endless bucket chain, J, which passes over and acts as a bolt on the pulley, N. Another tube, K, is placed in the well, D, and this also contains a bucket chain, M, which passes over the pulley, O. The valve, I, being opened, the water in D, of which there is a continual supply from the springs in the aquiferous stratum, descends the tube, H, and enters the well, E; thence it escapes by the tube, S, through which it is forcibly drawn by the absorbent action of the rock at C. In its descent through I, the water, acting on the buckets of the chain, J, thus rotates the pulley, N. This pulley being on the same shaft as pulley, D, the latter also is rotated, and the bucket chain in pipe, K, therefore lifts the water from D, into the receptacle, M, whence it is led away for distribution by the conduit, P. The absorption which takes place through the layer, C, is said to be so complete that, when the valve, I, is closed, the bottom of the well, E (pipe, S, having perforated sides), becomes perfectly dry.

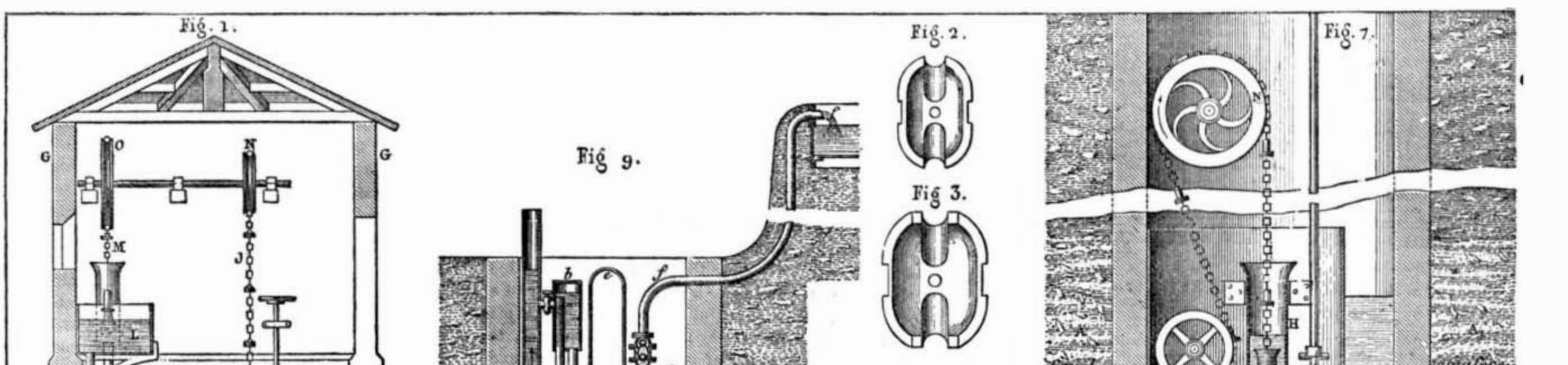
In Figs. 2, 3, 4, 5, and 6 are shown various forms of chain buckets. Fig. 5 is best adapted for thick liquids, Fig. 6 for tubes of large diameter, where the weight to be lifted is heavy. Fig. 7 represents a different arrangement of mechanism designed for the application of the power to machinery. A is the water-bearing stratum, B the impermeable strata beneath, and C the absorbent rock. The well, D, is dug as before, and inside is placed a kind of coffer dam, in the center of the area enclosed by which is sunk a small well, E. The valve, I, admits water from D, into the pipe, H, and the water as before carries down the bucket chain; the ascending part of the chain is guided through another tube, passing over the tightener, O; and finally the power is transmitted to the pulley, N, to the shaft of which the driving pulley of the machine is attached. Fig. 8 is a section of the well, E.

In Fig. 9 an entirely different arrangement of machinery is shown, the device known as Hero's fountain being utilized instead of the bucket chains. This is perhaps best applicable when the absorbent rock lies above the water-bearing stratum, as in the case of an artesian well. From the latter rises the tube, *a*, the water rising in which has access to the reservoir, *b*. A portion of the water descends into the lower receptacle, *c*, by the tube shown, compresses the air in said receptacle, and thus through the small pipe, *e*, causes a similar compression in the reservoir, *c*. But into the latter a portion of the water in *b* has likewise entered, through the conduits, *g* and *d*, and ball valves prevent its return. Consequently the water, in *c*, is compelled to ascend the tube, *f*, and thus is raised the required hight, to a receiving reservoir above. As soon as the water which enters *c* is no longer equilibriated by the weight, *h*, on the lever, *g*, which holds shut the movable bottom, said bottom falls open, and the weight, *h*, rolls to the left along the lever, holding the bottom in this position until all the water has escaped. Then the weight counterbalances, the bottom closes, and the operation above described is repeated. The water is at once absorbed by the surrounding rock; and this water, sinking in said rock, tends to displace the water in the layers beneath, and thus forces the same up the tube, *a*, keeping that conduit constantly filled.

It is stated that at Bailly-Romainvilliers, near Couilly, in France, the arrangement first described, and shown in Fig. 1, is in operation, and lifts from 600 to 1,000 quarts of water per hour a distance of 22·4 feet, absorbing for this work from 2,500 to 4,000 quarts at a depth of 185·6 feet. The apparatus shown in Fig. 1 has raised 1,000 quarts per hour 12.8 feet, the sounding tube passing to a depth of 238 feet. These were little more than experimental trials, and therefore can hardly be taken as estimating the possible capabilities of the plan.

The advantage of course lies in a constant power, available wherever a water stratum and an absorbent stratum can be found. The principal obstacle lies in the choking of the pores of the absorbent rock by impurities, but this the inventor proposes to check by filtering the water, and by occasionally administering doses of hydrochloric or sulphuric acid, which will destroy organisms, etc., and expose a clear rock surface.

THE following shows the degree of heat at which gold of varying degrees of fineness melts: 23 carat gold, 2,012° Fah.: 22 carat, 2,009°: 20 carat, 2,002°: 18 carat, 1,995°: 15 carat, 1,992°: 13 carat, 1,990°: 12 carat, 1,987°: 10 carat, 1,982°: 9 carat, 1,979°: 8 carat, 1,973°: 7 carat, 1,960°: composition, 1,587°



HANRIAN'S METHOD OF RAISING WATER