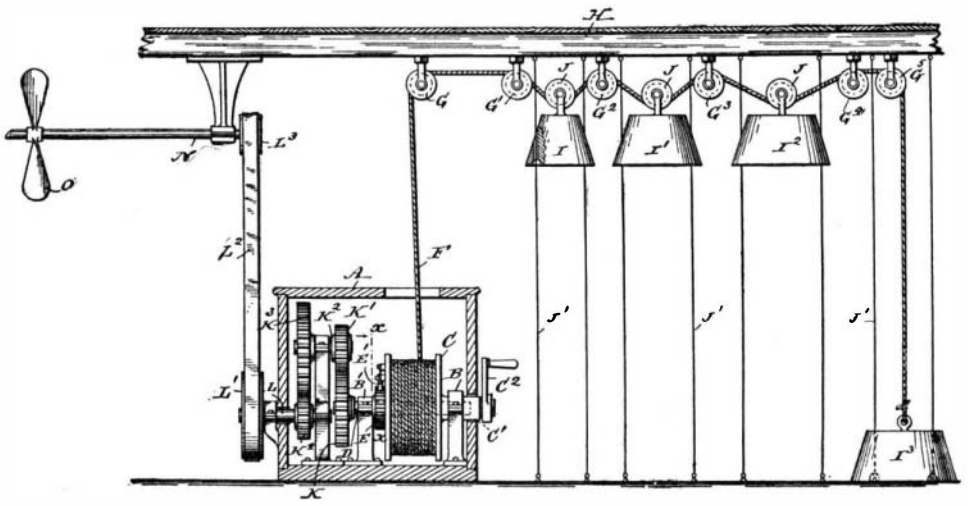
A WEIGHT POWER TO DRIVE FANS, ETC.

The illustration represents a device of simple construction designed to be utilized in driving fans, sewing machines, small pumps, and other light machinery. It has been patented by Mr. Louis Dedel, of No. 245 Josephine Street, New Orleans, La. In the casing, A, is supported a drum, C, on a shaft, D, the shaft being connected with the drum by a ratchet mechanism, the ratchet wheel being engaged by a spring-pressed pawl when the drum turns in one direction, while the pawl passes over the teeth of the ratchet when the drum turns in the opposite direction. On the drum is wound a rope, F, extending up over a series of pulleys, G, on the ceiling, H, there being hung on the rope between adjacent pulleys a series of weights, I, the last of which, I^3, is attached to the free end of the rope. The weights slide along suitable guideways, J^1, extending from the ceiling to the floor, and increase in size and weight in such manner that the last weight is sufficiently heavy to hold the other three weights in an uppermost position, the third weight in like manner holding up the other two, and the second weight holding up the first, each, however, developing surplus power to actuate the drum. A series of gear wheels, K, connected with the drum shaft, actuate shaft, L, extending to the outside of the casing, this shaft carrying a pulley connected by a belt with the mechanism to be driven, in the illustration represented by a fan. On the outer end of the hub of the drum is a crank arm, C^2, to wind up the rope of the drum, by which all the weights are raised to an uppermost position, the drum shaft then remaining motionless as the pawl glides backward over the ratchet teeth. By using an additional set of weights, with proper connections, this power may be made to operate without interruption, one set of weights being wound up as the other runs down.



DEDEL'S WEIGHT POWER.

Detection of Paraffin in Beeswax.

A few grammes of the substance in fine air-dried shavings are gradually heated in a small porcelain capsule until fumes begin to rise. A half-liter wide-mouthed bottle is then inverted upon the capsule, and when filled with white vapors is closed and set aside until the fumes have condensed upon its walls. The sublimate is then dissolved in 3 c. c. of chloroform, the chloroform evaporated in a test tube, and the residue boiled with 4 c. c. of soda solution. If paraffin was present, it will, after cooling, be found floating on the clear solution. A drop of the chloroform solution may also be evaporated on a slip of glass and examined microscopically.

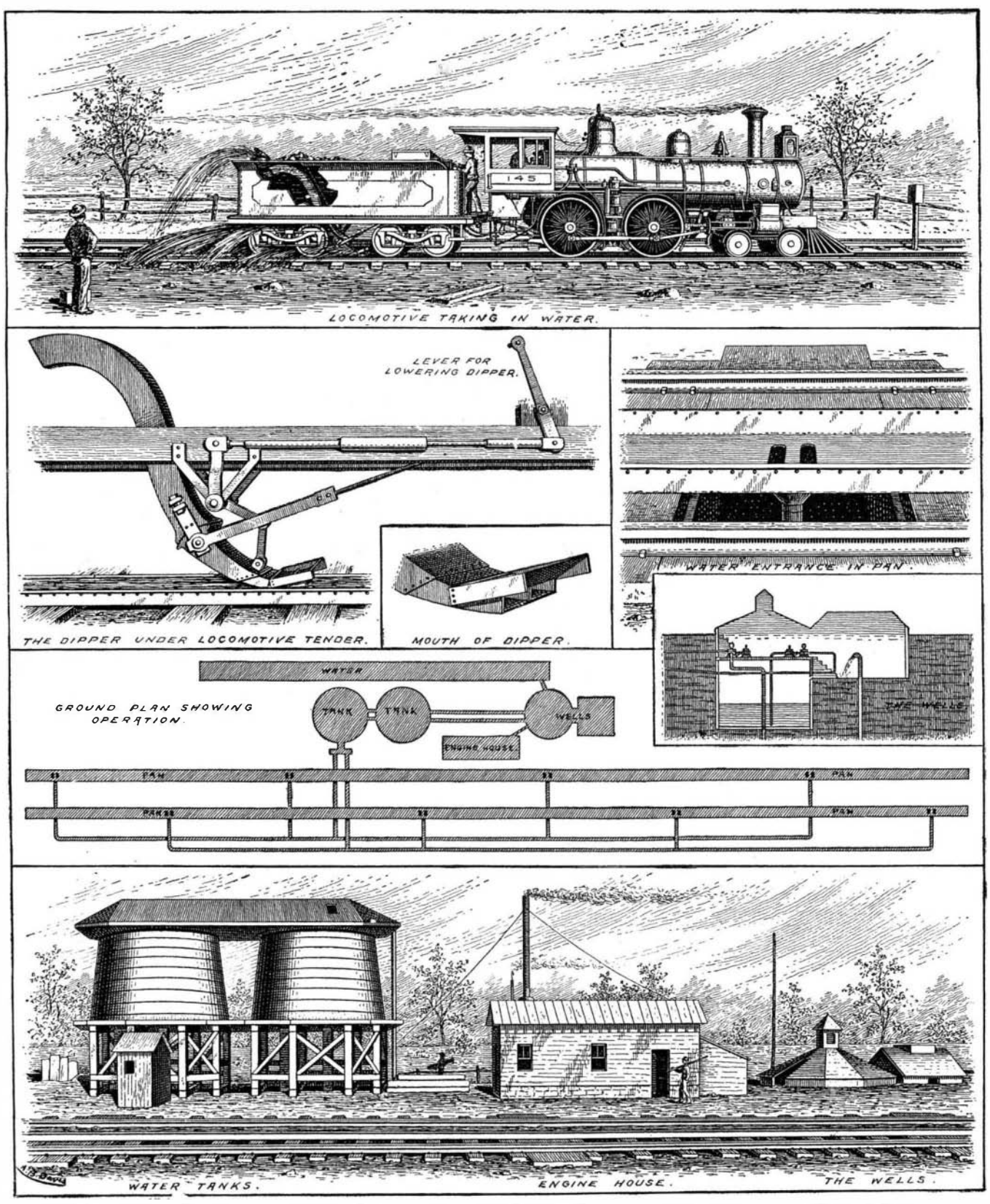
The fumes from pure beeswax are not so white as from paraffin, and are only obtained at a higher temperature (300°—320°). The sublimate gives a colored solution with chloroform and a colored and turbid solution with soda. The residue from the chloroform solution is a dull film; paraffin, on the contrary, gives separate grains in a clear field.

SUPPLYING MOVING TRAINS WITH WATER.

The system of taking water into locomotive tender water tanks without stopping the train has been quite extensively introduced upon some of the leading railroads of this country. A good example is now in operation upon the Pennsylvania Railroad about one mile east of Rahway, N. J. An iron trough is laid upon the sleepers. It is 6 inches deep, 18 inches wide, and about 1,200 feet long. It is made in sections 30 feet long, or just the length of a rail. Two drilled wells supply the water, which is pumped from water vaults or cisterns over the wells into elevated tanks by the side of the track. The tanks, of 35,000 gallons capacity each, are fed by two Blake pumps. From the tanks pipes are carried down to the ground and underground to the track trough, entering it as shown in one of the cuts. There are four feeds for each trough. Part of the connections are of leather, to prevent breakage by jarring. Each opening in the bottom of the trough is 3 by 8 inches. The first pipe from the tanks is 12 inches in diameter. To this two 8 inch pipes are connected, which run both ways for several hundred feet, eventually reducing to 4 inches in diameter. When fully charged, 5 inches depth of water are run into the troughs.

A dipper or movable chute is carried by the locomotive tender. It is arranged so as to be raised or lowered at will by a lever. The general construction is shown in the cut. When lowered, it descends to within about one inch of the bottom of the water trough. From the mouth of the dipper a rectangular pipe rises into the water tank of the tender. At its upper end this pipe is one foot square. The range of vertical movement of the dipper is about eight inches. Its mouth is three and one-half inches high, and corresponds closely in width with the interior of the trough. It is made of copper, so that if it strikes anything it will bend and not break, and can be easily straightened out again. A wing or blade extends over the top of the mouth, to prevent water being thrown over and out of it.

To take in water the fireman lowers the dipper. As it meets the water in the tank, the latter is forced up in great volumes into the tender tank. From one trough two thousand two hundred gallons can be taken in on passing. A watering station is installed about every forty miles. Thus an engine can run continuously as far as the coal can carry it on a road supplied with these appliances.



TAKING IN WATER AT FULL SPEED ON PENNSYLVANIA RAILROAD, AT RAHWAY, N. J.

Survey of the Pacific Coast.

After nineteen years the United States steamer Hassler has completed the survey of the California and Oregon coasts. The Hassler was built specially for this work in 1871, and on her maiden trip around Cape Horn, Professor Agassiz made a series of deep-sea dredgings along the coast of North and South America, with valuable results to science. The most interesting fact developed in the recent surveys is that the coast line of Southern California is more abrupt than that of any part of the Atlantic or other portion of the Pacific.