Patent Department

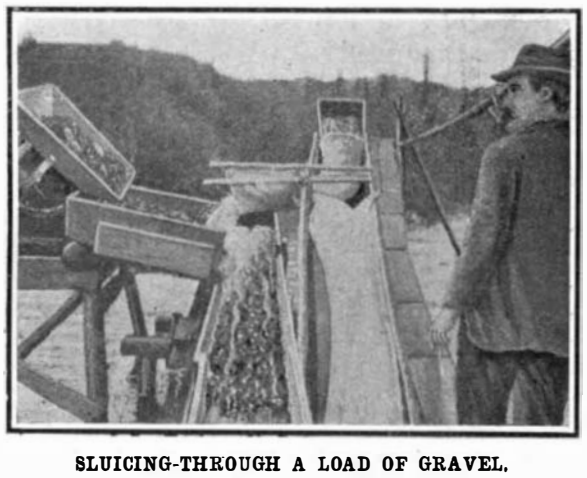
MODERN USE OF AN ANCIENT INVENTION.

People living in sparsely-settled or frontier regions, and who are denied many of the luxuries of modern civilization, would profit by studying the simple but ingenious expedients which went to make up the civilization of the ancients. One of the readers of the SCIENTIFIC AMERICAN, in the gold regions of Alaska, has thus profited by his acquaintance with ancient hydraulics. Mr. J. M. Weldon is a placer miner, and in his work requires some means of raising water for washing the gold-bearing gravel. At the Forty-Mile River, where Mr. Weldon is conducting his operations, it is entirely impractical to convey the water by ditch from some higher level, because the river bottom lands are underlaid with glacier ice. Several attempts were at first made to thus convey the water, but no sooner was the water turned into the ditch than it melted a hole in the bottom and ran out. Hole after hole was flumed across, but still the water found its way through the ice bottom. It was then that Mr. Weldon bethought himself of a primitive pump which he had seen pictured in one of his early school books. The pump consisted of a gutter or trough mounted to rock like a seesaw in a stream or other body of water, so that the ends would alternately be submerged, and on rising would deliver the water they scooped up to a trough leading from the fulcrum of the pump. This apparatus offered a promising solution of the difficulties at Forty-Mile River, for with it the necessary water for sluicing could be raised directly from the river wherever desired.

RAISING WATER WITH A SEESAW PUMP.

The pump was built on a point which jutted out into the water. As shown in the engravings, a framework is erected at the end of this point. Mounted to rock on the framework is a beam 22 feet long, provided with a large scoop at each end. The scoops consist of open boxes provided with valved bottoms, which permit them to fill as soon as they touch the water. The boxes are tilted inward, or toward the center of the beam. The inner end of each box opens into a 10-inch canvas hose, which conducts the water to the sluice box. To rock the beam the operator walks back and forth upon it, applying his weight first to one and then to the other side of the fulcrum, as shown in the illustration. To facilitate this operation the beam is floored with boards, and a hand rail is provided which is supported by a pair of tripods erected in the river. The scoops take up about 20 gallons of water at each lift, and raise it about 4½ feet higher than the head of the sluice box. A hopper is provided at the head of the sluice box, and leading to this is a gang plank for the wheelbarrows in which the gold-bearing gravel is conveyed.

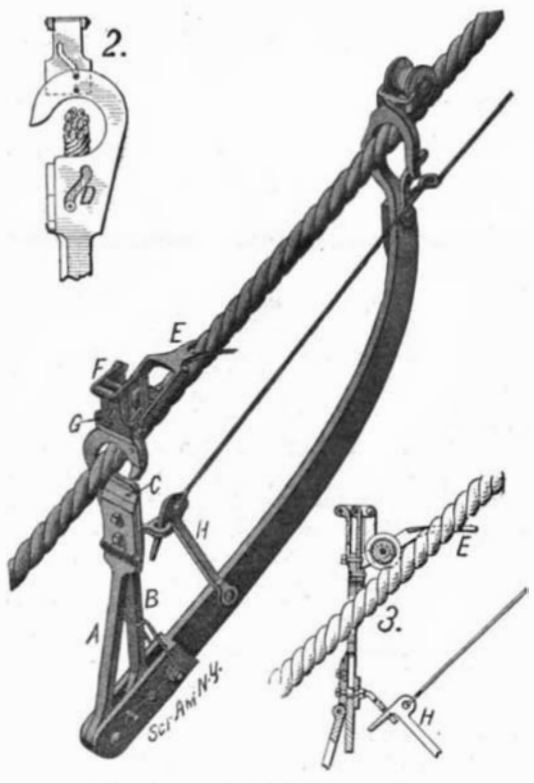
Mr. Weldon operates the apparatus alone, first loading the hopper with four wheelbarrow loads of gravel, and then rocking the beam until the entire charge is sluiced through, the tailings being washed out into the river. Several times he has had to dismantle the apparatus and draw it up on high ground, owing to high water, but the task of rebuilding it was not a very serious one. With this primitive pump, Mr. Weldon claims that one man can sluice through as much as two men can dig and shovel into the hopper.



SLUICING-THROUGH A LOAD OF GRAVEL.

IMPROVED CABLE-CUTTING DEVICE.

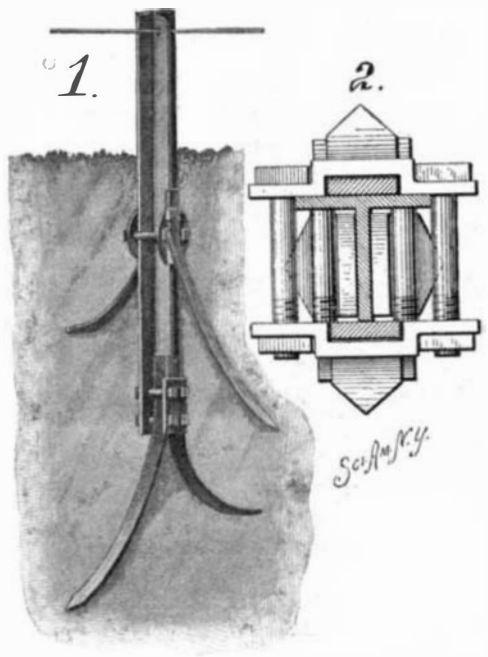
Pictured in the accompanying engraving is an improved device adapted for cutting ship's cables at any point along their length. It consists of a frame mounted on rollers, which are hooked over the cable. The frame is adapted to travel down the cable to any desired point, whereupon, by the pulling of a cord, a pair of knives are operated to sever the cable. As shown in Fig. 1, the forward end of the frame carries two levers, *A* and *B*, whose fulcrums are separated by a short space. Hinged to the upper end of lever *A* is a plate, which carries a knife blade *C*. This plate is connected to lever *B* by means of a bolt, which passes through a slot *D* therein. The upper end of lever *B* is formed with a hook, which passes over the cable. Connected with this hook is a fork or a dog *E*, which rests against the cable. Now, if the frame be drawn back up the cable by means of a cord, the dog *E* will engage the cable, arresting the upper end of lever *B*. The levers *A* and *B* will then be swung on their fulcrums, forcing the knife blade *C* to cut through the cable. To assist in this cutting action the slot *D* is curved, as shown in Fig. 2, so as to give a shearing motion to the knife blade. In addition to the blade *C* an upper blade *G* is provided, which is connected by links *F* with the dog *E*, in such manner that when the frame is drawn upward, the knife will move down to assist in severing the cable. This knife is also given a shearing motion, by means of a curved slot therein, which is engaged by a fixed bolt. To prevent the knives from operating under normal conditions, a spring bears against the lever *B*, holding it in inactive position. In addition to this a hook *H* engages an eye on this lever. The cord by which the knives are set in action is attached to this hook, so that when it is pulled taut the hook will be disengaged from the lever, permitting the parts to operate. The inventor of this device is Mr. Charles Petrie, Office of the Government Engineer, St. Johns, Newfoundland.



IMPROVED CABLE-CUTTING DEVICE.

ANCHORING DEVICE FOR POSTS.

The anchoring device which is herewith illustrated is particularly adapted for use on metal fence posts. Briefly stated, it comprises a series of prongs so mounted that when they are driven down they curve outward and are imbedded into the ground on all sides of the post, thus holding the post firmly in upright position, even when subjected to severe lateral strain. Each post is supplied with an upper and lower set of anchoring prongs, the two sets being at right angles to each other. The fence post is T-shaped in cross-section, consisting of a head with a central web or flange. A plate is secured to the lower end of the post against the outer edge of the flange by means of two upper and two lower bolts, which pass through the head of the post. Resting against opposite faces of the flange, between the head and this plate, are two anchoring prongs, which consist of narrow plates of metal pointed at the lower ends. The prongs pass under the upper bolts, but their points curve out over the lower bolts, so that when they are driven downward they will spread outward, as shown in the engraving. At a convenient point above the lower prongs a pair of straps are bolted to the post. These are bent to form sockets, in which the upper pair of prongs are seated, as best shown in the section view. The straps are framed with offsets, which cause the points of the prongs to curve outward. As stated above,



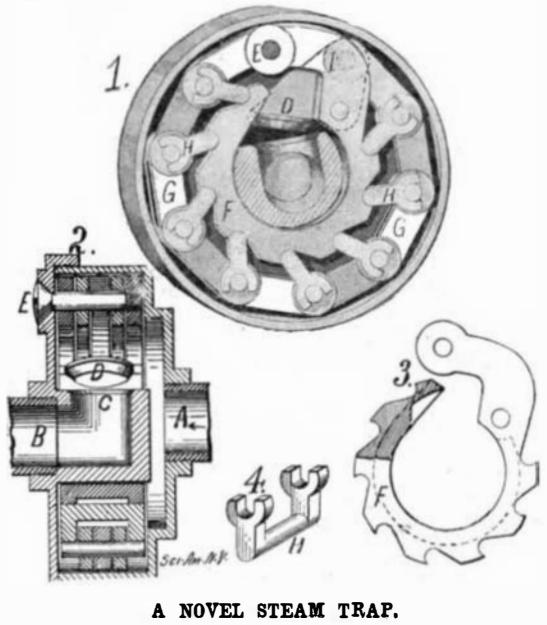
ANCHORING DEVICE FOR POSTS.

these prongs are set to spread at right angles to the lower prongs. In practice the post is driven or sunk into the ground, and then, with a suitable instrument, the prongs are driven down, when they will assume the positions shown in the engraving. The inventor of this improved anchoring device is Mr. Percy T. Bailey, Melville Station, Newport, R. I.

A NOVEL STEAM TRAP.

The purpose of a steam trap, as is well known, is to permit the flow of water while arresting the escape of steam. Usually this is accomplished automatically by means of thermostatic devices, which operate to close a valve when the temperature rises with the presence of steam in the trap. The trap which is herewith illustrated belongs to this same general class, but the method of applying the thermostatic principle is decidedly unique.

As shown in the cross section, Fig. 2, the trap is fitted with inlet and outlet pipes, *A* and *B* respectively. Communicating with the outlet *B* is a valve seat *C*, in which the valve *D* is adapted to be seated. The valve *D* is carried by a lever that is fulcrumed to an expansion collar *F*. This collar, as best shown in Fig. 3, is split and is formed at the sides with notched flanges. One end of the collar is formed with an arm, which is fastened to the casing of the trap by means of an eccentric pin *E*. This pin also serves to hold one end of an expansion chain *G*, the opposite end of which is attached at *I* to the lever that carries the valve *D*. Seated loosely in the notches of the expansion collar *F* are a series of U-shaped rockers *H* (Fig. 4) whose forked ends engage the pins that join the links of the expansion chain. Fig. 1 shows the normal position of the parts, when the water is free to flow from inlet *A* through valve seat *C* to outlet valve *B*. After the water has escaped and steam begins to flow into the trap, the collar *F* and chain *G* will expand with the increase of temperature; and as they are both secured to the casing at *E*, the expansion will take place in opposite directions. The rockers will then swing inward, or toward the expansion collar, permitting such elongation of the chain as will seat the valve *D*. The relative positions of the various parts



A NOVEL STEAM TRAP.