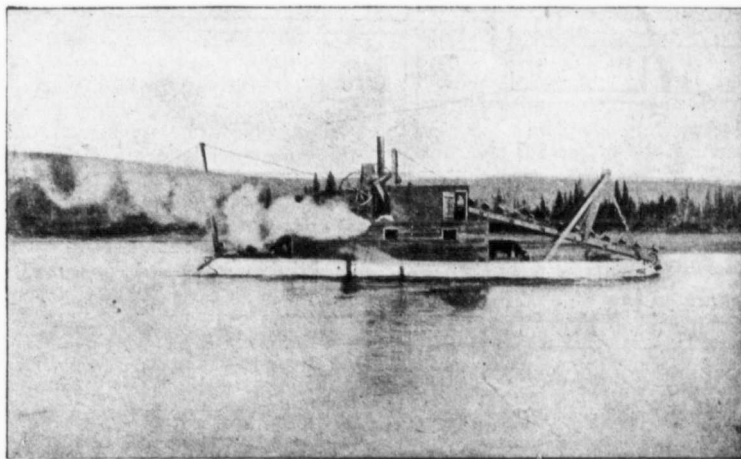


part of the dredge is therefore precisely the same as in hydraulic mining and as the tailings are discharged astern with a large quantity of water they can be so distributed as not to interfere with the work of the dredge. In special cases where the ground to be worked stands at a considerable elevation above the water it may be necessary to employ a tailings elevator but the writer has used dredges of this type which excavated their way through dry ground standing to feet to 12 feet above water and disposed of all the material without any tailings elevator. The movements of the dredge are controlled by wire ropes attached to anchorage or on shore and operated by an independent steam winch. This winch is placed on the main deck and consists of six drums driven by a pair of independent engines. In the design and construction of this winch the idea of keeping the weight down to the smallest possible amount has been fully lived up to and at the same time the strength and efficiency

or attached to the boat in any way. This in turn greatly simplifies the erection of the dredge. It is only necessary to set the winch on deck and bolt it down. When it is ready for work as soon as the steam pipes are connected.

It may be incidentally mentioned that the time occupied in the construction and erection of this dredge was very brief considering the difficulties involved, and it is because of the simplicity of the design in little features such as these that the time of erection and completion was much less than ordinarily required.

The engines for driving the winch are of the vertical torpedo boat type with a cast steel bed plate and forged and turned steel column frames. The engines are fitted with link motion and are of the highest quality of design and workmanship. They are so small and light that they can be readily picked up and carried by one or two men, and yet they are sufficiently strong that they can haul the entire dredge up a current of



General View of Dredge on Stewart River.

has not been sacrificed but rather improved. There is no cast iron in this winch except the engine cylinders. The drums are of rolled steel plate with cast steel heads. The friction housings attached to each drum are of flanged steel plate with turned flanges. All the gears are of best cast steel and even the bearings in which the shafts are carried are steel castings of special and light design lined with babbit metal. The frame of the winch consists of two bars of flat steel to which all the bearings are bolted and which thus connects them all together and preserves the alignment and position of the gears. This bar frame is adapted to be bolted down on top of timbers on the deck. Each drum is fitted with independent clutch and brake. The clutch operating levers are mounted on the winch and project up through the floor of the operating room above so that they can be directly reached and worked by the operator without any shafts, bearings, links or connections being necessary

nine or ten miles per hour and can perform all the movements of the winch with ease.

With high class machinery of this kind built entirely of steel and of light weight, not only is the cost of transportation reduced but the liability to breakage during handling and erection also. If these parts, such as the drums and flanges of the winch, had been made of cast iron as is ordinarily the case they might easily be broken through handling or falling on the ground or otherwise injured during the vicissitudes of their long journey. With these light steel parts, however, no such risk is involved and if by chance some parts should be injured or sprung out of shape through accident or a heavy blow it can be readily re-shaped and put back again.

The revolving screen is 38 inches in diameter by 14 feet long. It is driven by steel gearing over the intermediate shaft of the head frame. A special method of driving this screen is employed which in-