

**IMPROVED DREDGING MACHINERY.**

The apparatus shown in our engraving is designed for cutting canals, deepening lakes, etc., and can be largely used in the work of reclaiming land. The barge, which carries the machinery, and the frame for carrying the mast or jib, are made of wood. A boiler, on deck or below, supplies steam to a small pair of engines on deck, which work two drums, two chains being necessary, which run over a double block or pulley, A. One chain, P, which may be a lighter one than the other, acts on the frame of the bucket, B B, and lowers it open. As soon as it is required to drag, the second or heavy chain, R, acts on the frames and side chains at D D, and causes the shaft, E, to unwind, which causes the bucket to close, as at C, and the sharp edges enter the ground. Though the edges jam, the chain goes on all the time, and the action becomes one of lifting, and the charge of earth or mud, often weighing two tons, or measuring one cubic yard, is lifted through the water; and the man at the winch or engine, knowing where he is going to dump it, puts in motion the wheels, H, acting on the chains, G, which guide the head of the crane, F, over the spot. As soon as the loaded bucket is over the barge, or the land where the charge is to be dropped, the man holds on to the first chain and lets the second chain slack, and the bucket opens, and so rapid is the motion that a single engine driver can excavate and dump four tons per minute.

The barge is very often moored, says the *Engineer*, from which journal we select the engraving, by two poles or stilts at the sides, which are raised by a winch. This saves the time of pulling up an anchor, and keeps the barge steadier, and the advantage is that a mark can be tied on the chain; and whenever this comes to the same spot, the engine driver knows he is deep enough, and a level can be secured under water. When it is necessary to lift rock and stones, then the bucket is unhooked at O, and a pair of claws hooked on to the two chains, which claws act in a similar manner to the bucket. The tool is used for wrecking, and will work to the greatest nicety in a depth of water far below that at which any diver could descend. It has also the advantage that two men can work it with ease.

**The Philadelphia Exhibition.**

As time progresses, the Centennial Exhibition at Philadelphia arrives at a condition of more perfect completeness,

and with the bright summer weather the surrounding grounds attain even more beauty than they possessed upon the opening day. The crowds, which are almost lost within the great enclosure, save at the special points of popular attraction, increase in number every week; and though probably some slight falling off in the attendance is to be expected in the burning months of July and August, there is little reason to doubt that this decrease will be far more than made up by the mass of visitors during September and October, always the two most crowded months at any exhibition.

The Exhibition is but, as it were, a handbook only to the great industrial developments of the United States, developments which to be believed must be seen, and which, when seen, fill one with astonishment that so much could have been effected in so short a time. The admirable address of the Hon. Abram S. Hewitt, President of the Institute of Mining Engineers, gives the reader some idea of the magnitude of two of the most important branches of industry in the United States—its mining and metallurgy—from the time when, in 1622, one hundred and fifty workmen were sent to the American colonies to erect ironworks, until today, when 2,108,000 tons of iron represent the production of last year. Of every different mineral, indeed, except tin, the United States possesses, practically, unbounded resources; of coal the quantity is equally unlimited; of petroleum she alone possesses, as far as is now known, those strange and extended subterranean stores, the discovery of which created, not many years ago, so wild an excitement, and by which the whole world is supplied from some 3,600 wells in the State of Pennsylvania, and which furnish an average of about 24,000 barrels of oil daily. The Centennial Exhibition contains specimens of nearly all these sources of national wealth; and though they do not of themselves afford much information to the visitor, all information respecting them may be obtained, and the centers of the various industries visited; for though distances are great, the facilities for overcoming them are great also, and the inconveniences of travel in the United States are reduced to a minimum.

But manufactures of all kinds may be studied fully within the limits of the Exhibition itself, and the position attained by the United States to-day, in the production of woolen, cotton, and silk goods, would astonish many European manufacturers who look to a freedom from transatlantic monopoly

for all time, notwithstanding that to-day the export of cotton goods from New York to Liverpool is considerable, if not at present very lucrative.

We have already referred to the admirable arrangements made for the benefit of visitors who wish to go to different parts of the country and study different industries. There never was an exhibition held at which so many facilities were offered in every direction, so many kindnesses shown, so much trouble taken, and, let us add, so much that would be worth seeing and studying, if the distances were not so magnificent. But so many thousand miles have to be traversed, and time for most visitors in Philadelphia is limited, while their duties unfortunately are not, that only a very small proportion of what should be seen can be visited, despite the opportunities afforded, and the universal anxiety to aid the stranger in every possible way.—*Engineering*.

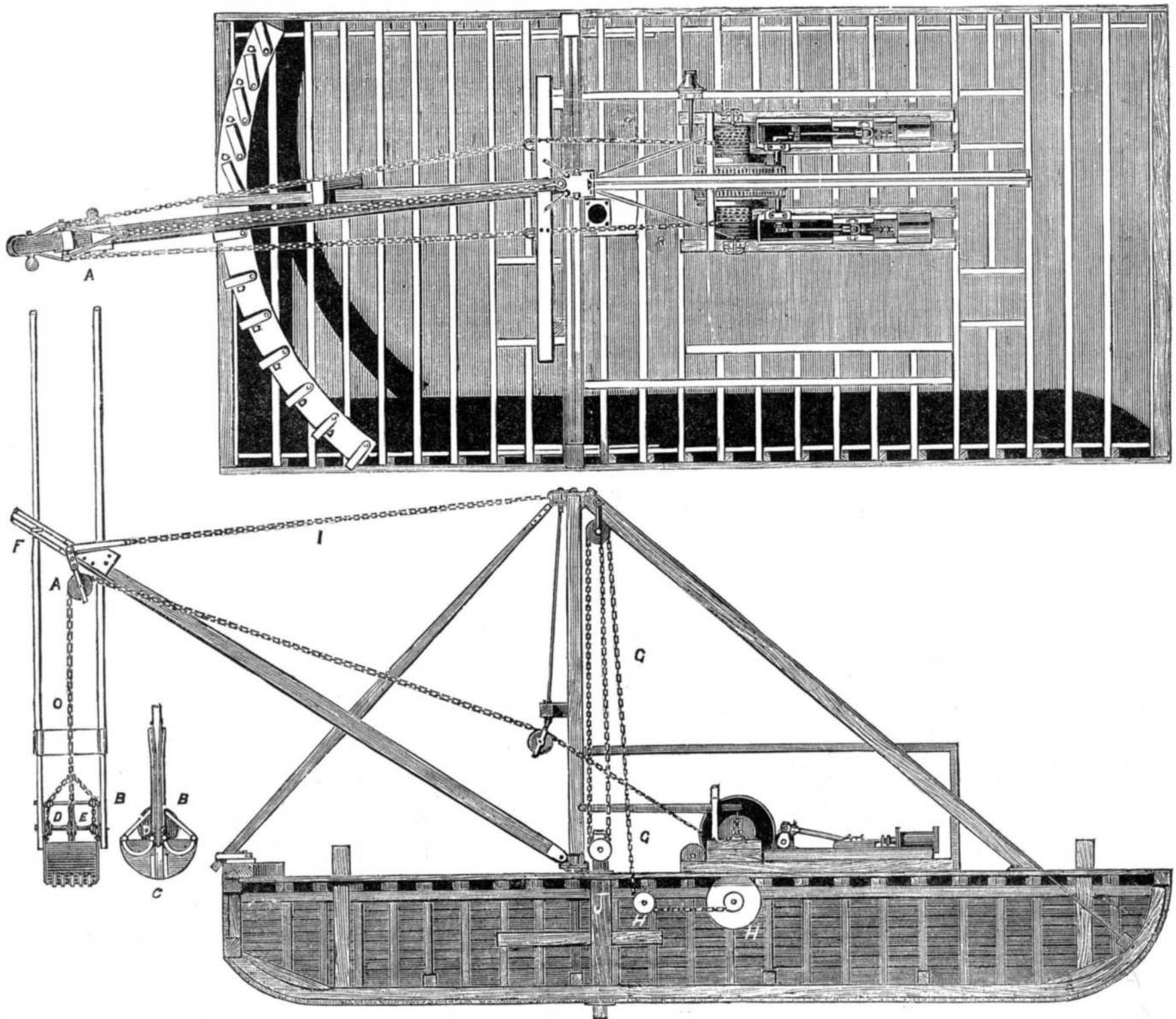
**Wool Greasing.**

A Mr. Lebrun mentions, in a German paper, that a considerable quantity of oil may be saved by the following process of oiling wool, besides insuring a more uniform and regular web, on account of the woolen fibers loosening and separating themselves more easily from each other. Moreover, this plan, it is said, is not open to the objectionable features of some processes, which sometimes cause the total disappearance of fine color dyes; and the cards wear longer and better, besides allowing the wool to be more easily and economically cleaned.

To obtain this preparative, pour into a wooden trough 20 parts oil, with 10 parts of liquid ammonia, adding 5 parts of water. Stir up this liquor with a wooden spoon, and, by inserting a steam pipe, allow the same to boil until the strong smell of ammonia has evaporated, after which the oiling or greasing may be proceeded with in the usual manner.

**New Size for Cottons.**

Haitra is procured from China and Japan, and may be used for thickening colors and sizing all tissues. For use it is washed in water and is then boiled with sixty times its weight of water, in a closed vessel, at 65° Fah. The paste thus obtained will keep, and adheres to the fiber so tenaciously that when once dry it cannot be removed with cold water.

**NEW STEAM DREDGING MACHINE.**