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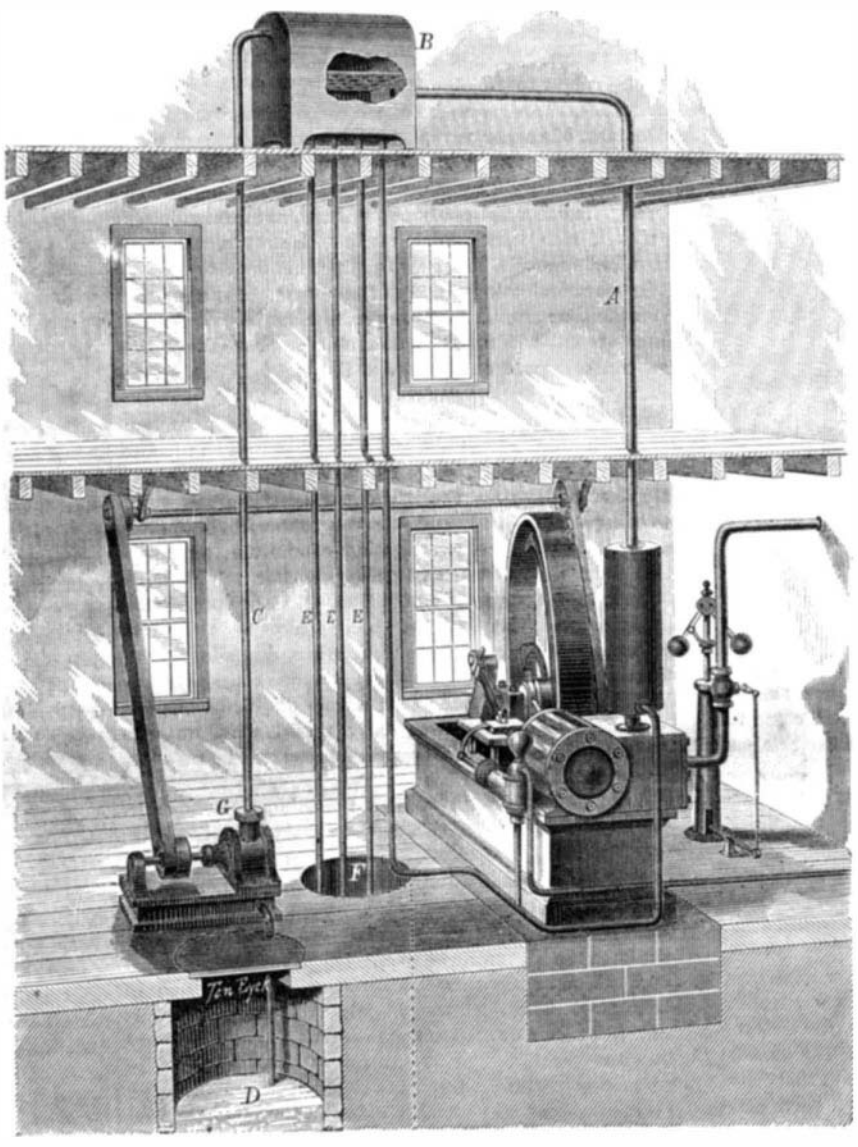
The Ransom Siphon Condenser.

The accompanying engraving represents Ransom's siphon condenser, as it has been in use in the Buffalo City Flouring Mills, the past year, in connection with an engine, cylinder 18 inches diameter, 36 inches stroke, making 100 revolutions per minute, with 50 pounds steam boiler pressure. It is the invention of Franklin Ransom ,who has been several years engaged in perfecting it. It is intended to perform the service and duty of the air pump in perfecting and maintaining a vacuum which it is claimed it does in a cheaper, easier, and simpler manner, and at a much reduced cost of construction and expenditure of power, besides which, it can be operated by any one who can run a high pressure engine.

In the accompanying engraving A represents the steam exhaust pipe from the engine carrying the steam to the condenser, B, which is placed at the hight of 32 feet above the water in the overflow. C is the water injection pipe, connected with a pump, G, of ordinary construction, which is fed from a well, D, or, in case of a natural head of water, the pump can be dispensed with. The condenser, B, is provided with a perforated plate upon which the injection water is thrown, and under which the steam is admitted. To the bottom of the condenser are attached the outlet pipes, E, through which the water, injected by the pipe, C, and resulting from the condensation of the steam, flows out and is discharged from the reservoir and overflow, F. It will be observed that advantage is taken of siphonic action set in motion by the water pump, G, and afterwards maintained by it and the action of the vacuum.

When the engine is started, the exhaust steam passes into the condenser under the perforated plate, and at the same time the pump throws water upon it. the steam the ing condensed, a partial vacuum is formed, and after a few strokes it becomes more and more perfect, thelabor of the pump decreasing in proportion as the vacuum increases until it reaches the minimum. The water injected and from the condensed steam, falls through the condenser, enters the outlet pipes, and as it passes out carries the air and any incondensable gas with it ; thus by the action of the siphon keeping up the circulation and maintaining the vacuum. It has also been found that where an independent pump is used, as is preferred on large engines, the vacuum will be perfected and maintained by the siphonic action alone without the steam.



THE RANSOM SIPHON CONDENSER.

With a vacuum of 13 pounds per square inch and the condenser at the hight of 32 feet, the water will stand in both legs of the siphon 29 feet, and it will then require the labor of the pump to lift the water 3 feet, for at that point it will be taken by the vacuum and passed into the condenser, and out of it by the long leg of the siphon. In actual practice on an engine where the water has been lifted 12 feet at a cost of one third of 1-horse power, the vacuum has been equal to 24-horse power. Thus only about one third of one per cent of the power gained is used in lifting the water.

It will be seen that this condenser costs much less than the usual air pump and condenser, and that it weighs much less, a fact of great value on marine engines ; also, that it is less liable to derangement, and that it will admit muddy water, which allows its use on our western rivers, where the mud and sand soon destroy the usual vacuum apparatus. It is also applicable to all engines now in use requiring no change in them, or in feed water heaters, or in cut-offs ; and first-class, high-pressure engines with this condenser will show a better result than any engine using the air pump.

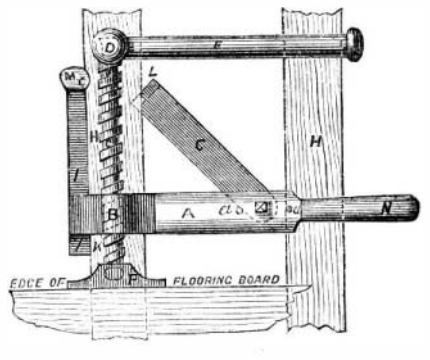
For vacuum sugar pans, surface condensers, and oil still condensers, it is equally applicable, as the water now used in condensing will also maintain the vacuum and condense the vapor. In oil stills the vapor can be admitted directly into the condenser, the oil separating easily by gravity from the water. Certificates have been shown us from several well known firms in Buffalo showing the gain to have been from 25 to 42 per cent of the fuel formerly used.

The invention is secured by letters patent, which have been assigned to the Ransom Siphon Condenser Co.—J. L. Alberger, Treasurer—at Buffalo, N. Y., to whom application for licenses or further information can be made.

6,900 workmen at the iron and steel works of Krupp, in Germany, produced 125,000,000 lbs. of steel last year.

FLOORING CLAMP.

A very handy flooring clamp, an English device—applicable moreover to other purposes—is here illustrated. It is composed of a metal plate, A, having a boss, B, pierced with a slightly inclined screw-tapped hole, through which passes a screw C, the head of which is perforated at D to receive the end of a lever, E, and the opposite end socketed in a foot plate, F. The metal plate traversed by the screw also carries a gripping lever, G, bolted loosely on its under side, the plate being pierced with several holes, *a a*, so that the pivoting of the gripper may be shifted at pleasure. The action is as follows: The plate is laid flat on the joists H H, so that the gripper, G, lies between the joists, the end coming against the joist, and the foot-plate, F, against the edge of the outer flooring board. The clamp being in this position the screw, C, is turned by the lever, E, so that the foot plate begins to press against the edge of the flooring board, and the main plate, A, to recede from it ; this backward motion of the plate,



A, along the screw, C, causes the end of the gripper, G, to nip against the side of the joist, H, forming a bearing which becomes firmer the more the screw, C, is turned in the same direction and the greater the pressure brought on the flooring. By turning the screw in the opposite direction the plate, A, advances along the screw, the pressure is taken off the edge of the flooring board, and the clamp may be immediately removed by unscrewing about two inches and striking a blow with the hammer, at M. It may also be used as a lifting jack and as a carpenter's bench clamp.

Stump Drawing by Steam.

In the neighborhood of Tattershall, in Lincolnshire, are some hundreds of acres of waste land, of a light, sandy, and gravelly nature, incumbered by the stumps of Scotch fir trees cut down some years ago, and only growing wild grass and ling. It has been proved, however, by experiments made in a small way, that this land, if properly cleared, drained, and clayed, is capable of bearing good root crops; but, until lately, the great expenditure of labor incidental to extracting the stumps and roots of the fir trees has prevented the work of reclamation from being carried out to any great extent. A short time ago, however, Mr. John Robert Bankes, the agent and steward to Lord Fortescue, to whom the land belongs, determined to attempt drawing the stumps by means of steam plowing engines, and, eventually, after a consultation on the subject with Mr. Toepffer, of the North Lincolnshire Steam Cultivating Co., a contract was entered into by this company to perform the work.

The stumps are from 12 in. to 20 in. in diameter at the base and stand from about 8 ft. to 10 ft. apart, and the operation of drawing them, which has now been going on successfully for some weeks past, is performed as follows : Two of Messrs. John Fowler & Co.'s 20-horse steam plowing engines are placed about 200 yards apart, with a row of the tree stumps between them, and, in commencing, the wire rope from the drum of one engine is led across to the second engine, passed round a snatch block there, and led back and attached to the engine,from the drum of whichit was uncoiled. The snatch block just mentioned is connected by a strong chain to a two-fluked and chor of a form suitable for taking hold of the stumps, and to a chain at the back of the anchor is attached the rope of the second engine. Things being thus arranged, the anchor which is, as it were, suspended between the engines, is raised by four men and placed about 2 ft. in the rear of the first stump to be extracted. The engine connected with the snatch block is then made to haul upon its rope when the anchor is drawn into the ground, takes hold of the stump, and extracts it with the utmost ease. As soon as the root is clearly pulled up, the second engine hauls back the anchor to clear it, and all is then ready for acting on another stump. When fairly at work, the drawing of the stumps is performed at the rate of one per minute.

The pull which each engine is capable of exerting on the rope is about 8 tuns,so that by the aid of a single snatch block a pull of 16 tuns can be exerted, or by means of a double snatch block,a pull of over 30 tuns. The double snatch block, however, is only required for the largest stumps. Besides the two 20-horse engines, two others, of less power, are engaged in drawing the extracted stumps into heaps, and thus clearing the land for plowing. The whole operation has, as we have said, been thoroughly successful, and all parties concerned are to be congratulated on opening up a new and useful field for the employment of steam plowing engines.—*Engineering.*

NEW APPLICATIONS OF BARYTA.—The sulphate of baryta is said to possess many advantages over lime as a material for whitewashing walls—4 ozs. of glue is soaked for twelve hours in tepid water, and then placed until it boils, in a tin vessel, with a quart of water—the vessel being placed in water, as in the usual process of melting glue ; the whole is then stirred until dissolved. Six or eight pounds of sulphate of baryta, reduced to an impalpable powder, is put into another vessel ; hot water is added, and the whole stirred until it has the appearance of milk of lime. The sizing is then added, and the whole stirred well together, and applied in the ordinary way while still warm.

VERY valuable mines of silver, lead, antimony, zinc-blende, copper, and gold, have lately been discovered in the Himalayas. One mine at Shigri, on the old boundary of Northern India, is described as an enormous lode, in which the ore is several feet thick and solid. The others are principally in the Vazeeri Rupi (the silver country of the Vazeers)—a name it was long known by, being so described in the maps as part of Kirloo.