

**NEW HATCHELING DEVICE.**

The engraving represents an apparatus for hatcheling or straightening and removing the gummy matter and roots from hair combings or other snarled and tangled hair.

The invention consists in a bed or table fitted with hatcheling and combing teeth arranged in a peculiar manner. These teeth are carried by blocks fitted to slide in the bed to allow change or removal of the teeth and the substitution of fine and coarse teeth one for the other, as required.

The bed, A, is screwed fast to a suitable table, and carries the hatchel, a, and combs, b, c, and d. The hatchel and comb teeth are sustained in blocks, e, fitted in dovetail grooves or mortises of the bed, A, so that they may be removed when desired.

The teeth of the hatchel, a, are arranged in four parallel rows with the required number in each row, two rows being of round teeth and two of flat teeth placed alternately. These teeth are secured in place by being driven through holes in the block, so that they may be adjusted as required.

The comb, b, is for gumming the hair, and is fitted in a diagonal position at the left of the hatchel as the operator stands.

The coarse rooting comb, c, is placed across the end of bed, A, and d is the fine rooting comb, placed at the opposite side of bed in a diagonal position. This arrangement of the combs gives the greatest facility for the successive operations, especially if more than one operator is at work with the apparatus.

The teeth of the combs, b, c, d, are needle-pointed, and are soldered at their lower ends between metal strips fitted in slots in their respective blocks, so that the teeth may be removed from the blocks for cleaning or the substitution of others.

In using the apparatus the operator stands facing the hatchel, a, and holding the hair in the right hand, draws it toward him through the teeth of the hatchel. In the same manner the hair is drawn through the gummer, b, the teeth of which remove the gummy matters and dirt.

In using the rooting comb, c, the operator stands at the end of bed, A, and taking the hair in small locks, draws it through the comb, at the same time pressing the hair toward the base of the comb with the left hand, so that the teeth will remove the roots. If the fine rooter, d, is required the operator stands at the back of the bed, or the block, h, and comb d may be put in place of comb b, and the operator stand in front of the machine.

The blocks, e, are each fitted with a ring for drawing the block out, and when two persons are working on the same machine these blocks may be drawn out partially, so as to give more room for working.

The combs are covered by metal caps, f, when not in use to keep them clean and preserve the teeth from injury. By the use of this apparatus the work of hatcheling, gumming, and rooting tangled hair can be readily and quickly done.

The hatchel teeth are arranged in four parallel rows, two of fifteen round and two of fourteen flat teeth, placed alternately in the block and secured by being driven through holes, so as to be adjustable for cleaning or putting in new teeth. The round teeth keep the hair from being cut or broken, causing it to separate as it is drawn through. The flat teeth receive the knotty and matted hair as thrown off from the rounded teeth and hold it while the good hair is drawn through, they also keep the hair down toward the base and prevent it from slipping off the hatchel.

This invention was recently patented by Mr. Aarou D. Cheney, of Three Oaks, Mich.

**IMPROVED FOG HORN.**

We give an engraving of an improved fog horn lately patented by Mr. Richard Chester, of Chicago, Ill. It is designed more particularly for sailing vessels and boats not propelled by steam. It is of the simplest character, and may be worked by one or more men.

The trumpet, A, is of the usual form, and at the larger end is provided with a conical disperser sustained in place by radial arms. The smaller end of the trumpet is inserted in the chamber, C, and provided with a reed, B.

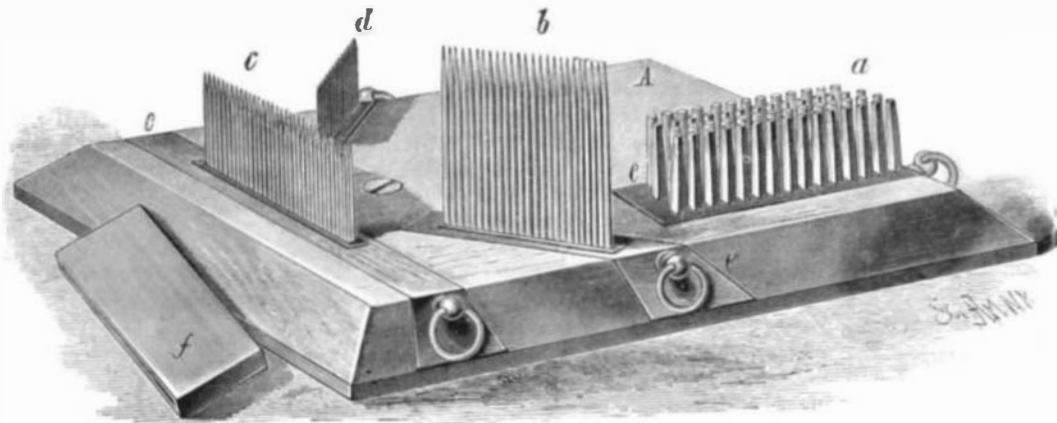
The chamber, C, communicates with the air cylinder, F, whose piston is moved by means of a handle at the end of

the piston rod projecting through a stuffing box at the end of the cylinder. Air enters at either end of the cylinder through valves; G, and is forced through a passage containing a check valve into the air chamber, C.

The details of construction may be clearly seen in Fig. 2, which is a longitudinal section of the apparatus. By a reciprocating movement of the piston the air is compressed sufficiently to give strong blasts from the horn, which may be heard long distances.

**Motive Power and Machinery of a Mill.**

A gentleman of ample experience furnishes *Leffel's Mechanical News* the following sensible hints for millers: The first requisite is good motive power, and among all hydraulic motors yet discovered none can compete with a good turbine, for the following leading reasons: The turbine is not affected by ice; it is not affected by backwater, save the loss of power

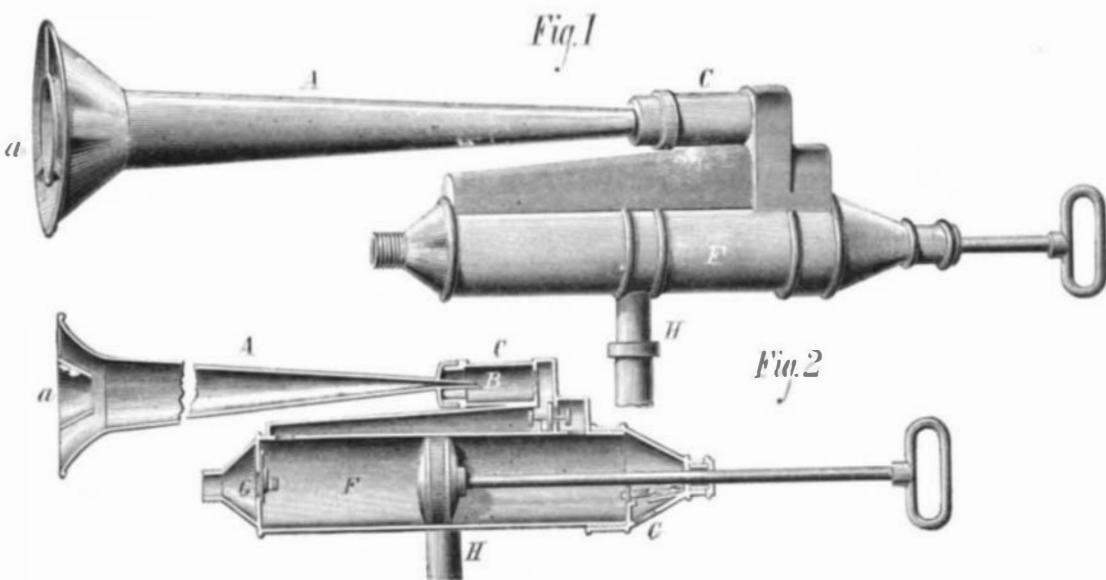


**CHENEY'S HATCHELING DEVICE.**

due to the loss of head; it is much cheaper in first cost; it is more cheaply and easily transported and erected; it is suited for all heads and all locations; and, above all, it is more economical in the use of water, for its high velocity dispenses with the cumbersome double gearing which is absolutely necessary with under or over shot wheels. Look well to your foundations, both of the building and of the penstock and flume. Never connect the husk of a mill with the frame of a building; it should be framed entirely separate, for the stones will work better and will not be thrown out of level by the settling of the building. In planning a mill, study how to render it complete with as little machinery as possible. Above all, avoid complications in machinery, which waste power and cause delays and expense for repairs.

**The Geological Survey of Pennsylvania.**

In a long account of the progress of the State geological survey of Pennsylvania, the *Press*, of Philadelphia, gives the following information of general interest: The survey has been going on six and a half years, and two and a half years more will be required to complete the work. Forty-two



**CHESTER'S FOG HORN FOR VESSELS.**

counties have been fully surveyed and eighteen partially; six counties remain untouched. The anthracite coal field was entered upon for the first time the past season in the Mahanoy and Wilkesbarre districts. The publication of the reports has nearly kept pace with the field work. Twenty-eight county reports and sixteen special reports are already in print, and thirteen of the former and three of the latter are in preparation.

One of the most valuable results of the season's work is a third report on the oil regions, with maps and illustrations, prepared by Mr. Carll, who has a high reputation as an expert. A special paper, which promises to be of great importance, has been prepared by Mr. Franklin Platt on the waste in anthracite mining. This report is now going through the press, and will be laid before the Legislature at an early

day, having been prepared in response to a call by that body for such a report. Professor Lesquereaux, who is the leading fossil botanist of the world, has prepared a volume of nearly 700 pages on the fossil plants of the State, which is said to be the most perfect work of the kind in existence, and Dr. Genth, who has been making a special chemical investigation of the slate, gneiss, and trap rocks, has made some remarkable mineralogical discoveries.

**NEW INVENTIONS.**

Mr. Rufus M. Brundige, of New York city, has patented an improved dust and wind guard for windows. A plate having eyes at its ends and bent rods for supporting the plate, whereby the plate can be adjusted at either side of the window, constitutes the invention.

Mr. James N. Lee, of Natchitoches, La., has patented an improved portable chamber for hot air, vapor, warm water, and similar baths. The invention consists of a portable bath chamber formed of a detachable, top, and of sides made with sections hinged to each other, provided with doors having glass lights, and openings for stovepipes, the whole resting on a base frame provided with a stove or furnace for heating the chamber.

Mr. Leonard Tilton, of Brooklyn, N. Y., has patented an improved canceling stamp, which can be readily manipulated to bring it into the desired position on the bed, and which gives a uniform pressure in stamping to insure plain marking.

Mr. Edward Heyde, of East Saginaw, Mich., has patented a boat rowing apparatus, the object of which is to facilitate the working of oars of boats by a better application of the power of the rower. It dispenses with ordinary rowlocks, and makes use of the weight of the rower in working the oars. The boat is provided with a rocking seat, upon which the oars are supported, their inner ends being pivoted to a central standard rising from the seat between the supports. The motion of the operator causes the seat to rise and fall, and thereby carry the blades into and out of the water.

A novel foot bath recently patented consists of an oval vessel with a half cover set at an angle to deflect the steam toward the limbs and to prevent clothing from dropping into the water, and when blankets are used, as in taking a steam bath, it forms a support for them. It is provided with a special device for adding hot water, and forms a very desirable article. Mr. R. B. Robinson, 145 Broadway, is general agent.

**Experiments in Gunpowder.**

From our English contemporaries we learn that several new descriptions of prismatic powder are being prepared at the Royal Gunpowder Factory at Waltham Abbey for the future experiments of the Committee on Heavy Guns and Explosives. The prisms will be of various forms and sizes, and some will be perforated to accelerate combustion. The researches into the properties of prismatic powder have engaged military and scientific men of various nations for many years, but it is only of late that the introduction of air spaces into the cartridges has given a direction to experiments and developed the full advantages of the system. Some powders of this description made in Russia and Germany have recently been tried, and the German prisms, which are about an inch long, have been found to be the best yet produced. The government works at Waltham Abbey have manufactured some prisms so large as to weigh 4½ oz. each "grain," but this powder has been discarded as overstepping legitimate growth, and the qualities about to be tested will probably not exceed 1½ in. in length, or rather more than 1 oz. per grain. There is now very little doubt that, in some form or other, the explosive material for employment with great guns in the future will be prismatic gunpowder.

**MATCHES.**—There are in the United States about 28 establishments, large and small, devoted to the manufacture of matches, about 4,000 persons being employed in the business. The trade, however, is monopolized by six or seven more prominent concerns, of which the Barber Match Company, of Akron, is the largest.