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### Mechanical Hand Rake.

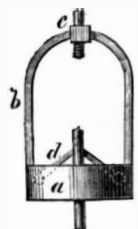
The uses and importance of the horse hay-rake are so well known that we need not comment upon them. It would be difficult to find another tool which is so important or pays for itself so quickly. The rake here illustrated is similar in its construction to the horse rake, but is much lighter and narrower, being adapted to the strength of an ordinary man. It is intended to be used where horses cannot be, as on lawns, or when the team is required on other work.

The principal novelty is in the mechanism for holding the rake in position and for detaching it when the load is to be thrown off. The details consist in a lever, A, joined to the frame, B, of the rake. The end of the lever is provided with a metallic guard which butts against a projection, C, screwed to the rake head. This device retains the rake in its position while in operation; a simple depression of the lever, A, being all that is needed to throw it out of contact with the rake head and allow the same to revolve. There are also springs, D, on the inner side of the frame which keep the rake teeth in contact with the ground.

This is a very useful and convenient utensil; for raking lawns, grounds or other places where it is undesirable to bring a horse, it will be found eligible.

It was patented through the Scientific American Patent Agency on the 24th of Oct., 1864, by S. C. Rundlett, of Portland, Me. For further information address Rundlett & Johnson, proprietors, Portland, Me. E. Chapman, Jr., 229 Congress street, Portland, Me., is the agent for the same.

### TOOL FOR DRAWING BROKEN PUMP RODS.



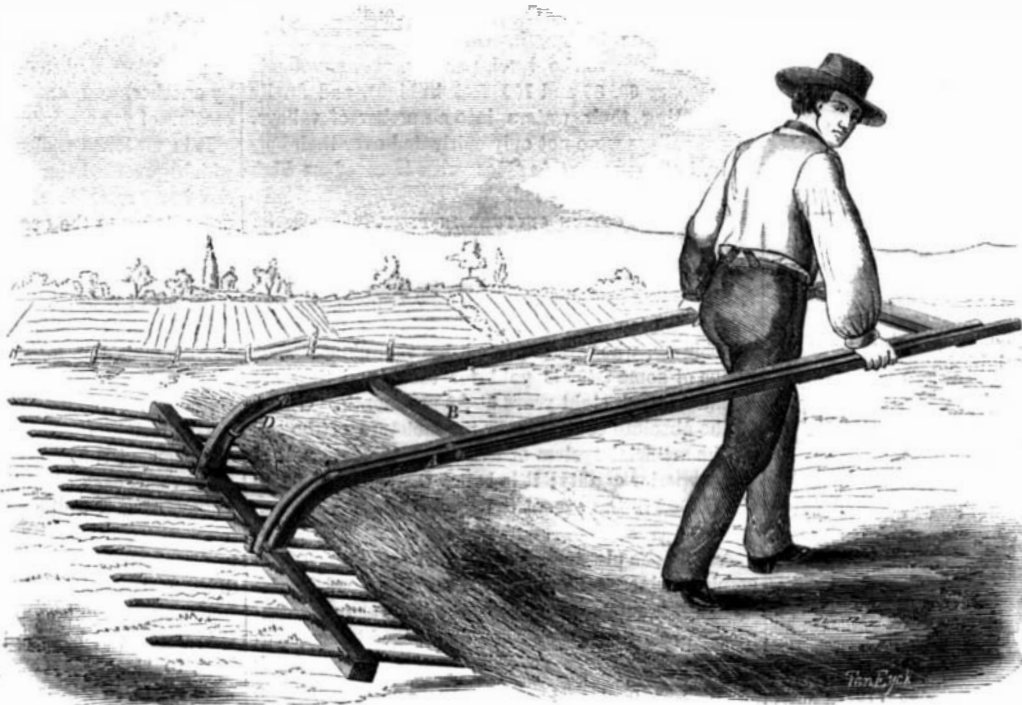
We publish herewith an illustration of a very convenient little tool for drawing broken pump rods or drills for oil wells, which have slipped down out of reach. It is simply an iron ring, a, with a bail, b, on it, having a thread tapped in the square top, c. There are two pawls, d, in the ring, jointed so that they move easily, and of such length that they will be about one-fourth of an inch less in diameter than the size of the broken rod. When this apparatus is let down the pawls slip over the rod, and when the whole apparatus is lifted by a rope or wire, the pawls bite on the broken drill or other object, and hold it firmly so that there is no escape. This tool is cheaply made and will be found serviceable.

### Intensity of Action of Different Parts of the Solar Disk.

With regard to the late researches by Secchi—according to which the calorific radiation of the center of

the solar disk is greater than that of the borders, nearly in the ratio of 2 : 1, Mr. Volpicelli writes that the fact was very exactly observed in 1614 by Luc Valerio, a mathematician of Naples, author of a work, *De centro gravitatis solidorum*, and of another *De quadratura parabole per simplex falsum*. He was a professor in the Roman University, and has been called the Archimedes of his age.

In one of his letters to Galileo, Luc Valerio considers the rays proceeding from the central part of the solar disk as the more active.

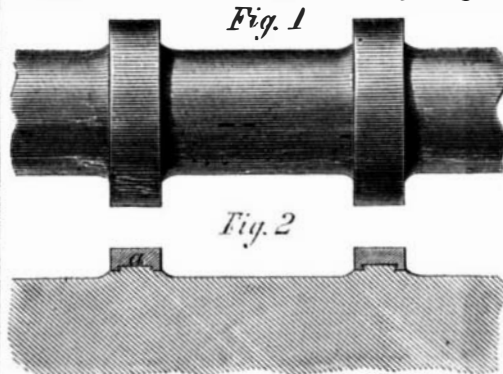


### RUNDLETT'S MECHANICAL HAND RAKE.

Analogous facts have been observed by Mr. Roscoe, according to whom the center of the disk exerts a more intense chemical action than the borders. He has also observed that the south polar zone is more active than the north.—*Silliman's Journal*.

### HOW TO SHRINK COLLARS ON A SHAFT.

In forging heavy shafts for marine engines or other work, the collars, where journals come, give a great



deal of trouble. A very neat way of putting them on by shrinking is shown in the accompanying engravings, in which Fig. 1 is a front elevation, and Fig. 2 a profile in section. The shaft is left slightly large where the journals occur, and bosses turned for the collars to set on. On these the seats for the collars

are turned. The collars are welded up separately, and bored and turned complete in the lathe, a recess being left for the rib on the shaft. This rib need not be more than three-sixteenths of an inch high in shafts twenty inches in diameter, being limited in size by the amount the collar will expand when heated. The lateral shrinkage left on the collar should not be more than the one-hundredth of an inch; a snug fit will answer, since the collar never can shift, even if it becomes loose.

After the several parts of the shaft are finished the collars are heated and shipped over the end of it, but care must be taken to ascertain first, whether the collar has been expanded sufficiently, otherwise it will stick when half on. It must not be heated so hot as to raise scale, for that would destroy the fit of the several parts. For heavy shafts this will be found an expeditious method.

### Defaced Treasury Notes.

The *United States Mail*, the official paper of the Post Office Department, says:—"Postmasters are obliged to receive all Treasury notes, for stamps and postages, if clearly genuine, no matter how torn or defaced they may be, provided one-twentieth part thereof be not missing. Such notes and currency received as are unfit for re-issue should

be kept separate and distinct, and returned as occasion requires to the Treasurer of the United States, Washington, in sums of not less than three dollars, to be exchanged for new."

### Cement for Rooms.

An invention by M. Sorel, of Paris, is stated to be superior to plaster of Paris for coating the walls of rooms. It is used in the following manner:—A coat of oxide of zinc mixed with size made up like a wash, is first laid on the wall, ceiling, or wainscot, and over that a coat of chloride of zinc applied, being prepared in the same way as the first wash. The oxide and chloride effect an immediate combination, and form a kind of cement, smooth and polished as glass, and possessing the advantages of oil paint, without its disadvantages of smell.—*Dublin Med. Press*, Aug. 31, 1864.

### How to Make Green Confectionery.

The *Druggists' Circular* informs a correspondent that a harmless green color for dyeing confectionery can be made by digesting five grains of genuine saffron in two drachms of distilled water for twenty-four hours; meanwhile, dissolve four grains of sulphate of indigo in half an ounce of distilled water, and mix the two solutions; the liquid will assume a beautiful green color. Three drachms of this are sufficient for dyeing intensely two pounds and a half of sugar. The green liquid, boiled with sugar and concentrated to the consistency of sirup, may be preserved for a long time.