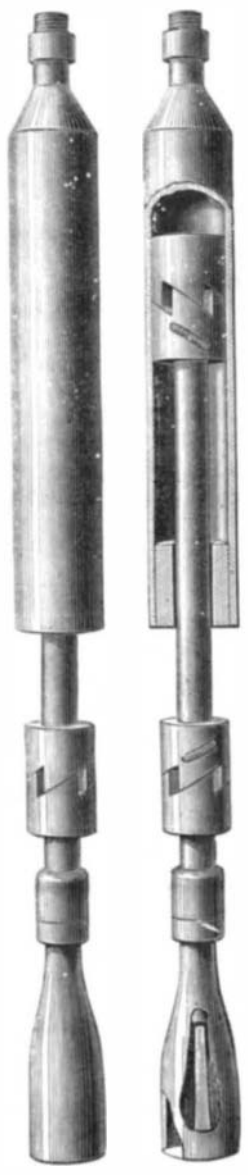
NEW GRAPPLING TOOL FOR OIL WELLS.

A simple and effective tool for recovering drilling tools from oil and other drilled wells, is represented in the annexed engraving. The tool consists of two solid ratchets rigidly secured, at some distance apart, with their teeth toward each other, on the long shank of the grappling tool, and of two corresponding movable ratchets encircling the tool shank and held by springs with their teeth nearly in contact with those of the fixed ratchets. A cylindrical hammer encircles the top of the tool shank and the upper ratchets, by means of which the loose ratchets are alternately driven against the fixed ratchets to make the grappling tool rotate downward in one direction.

Fig. 1 shows the exterior of the tool, and Fig. 2 is a sectional view showing internal parts.

In operating this device, it is lowered into the well until the lower end of the tool is engaged upon the drilling tool that is to be recovered. The hammer is then drawn quickly up, so that the upper surface of its block is brought in contact with the loose ratchet, forcing it against the fixed ratchet, and making its teeth slide on the corresponding diagonal surfaces of the teeth of the loose ratchet, so that by friction and impact the ratchet is made to rotate and impart its motion through the shank to the tool. Then the hammer is permitted to fall upon the lower ratchet, rotating the ratchet, and consequently the tool, in the same direction, and the hammer is thus operated until it has produced the desired effect by driving down and rotating the tool, causing it to securely grapple with and unscrew the drilling tool that is to be removed from the well; and when the drilling tool is thus grappled and unscrewed by the application of repeated torsional blows of the hammer it is raised, together with the drilling tool, by means of an ordinary drilling stem or cable attached to the hammer, and by the engagement of the block against the lower face of the upper ratchet.



Fairchild's Grappling Tool for Oil Wells.

To those familiar with the difficulty of removing tools from drilled wells the advantages of this simple tool will be at once apparent.

This device was recently patented by Mr. O. J. Fairchild, of Buttsville, Pa.

The Largest Farm.

The wheat ranch of Dr. H. J. Glenn, about twenty miles above the town of Colusa, Colusa county, California, is perhaps the largest and best known in the State. The Chicago *Tribune* says that on being asked recently why he raised nothing but wheat, Dr. Glenn replied: "It is the only crop that will bear transportation; it is the only crop not perishable. I must not raise on my land what ruins me, but what is profitable." Dr. Glenn's ranch comprises about 60,000 acres of land, and the number of acres in wheat each year ranges between 40,000 and 50,000 Reckoning an average of from 20 to 25 bushels to the acre. the aggregate crop each year amounts to something more than 1,000,000 bushels. This enormous amount of grain requires vast appliances for planting and bringing it to market; and the capital invested in machinery alone sums up a considerable fortune.

During the harvest time there are employed on the entire ranch some 500 men. Dr. Glenn is general-in-chief of his force, and the ranch is divided, for convenience of operations, into nine smaller ranches—each with dwelling house, barns, blacksmith shop, and other necessary buildings. In charge of these are seven foremen, under whom are sixteen blacksmiths, fourteen carpenters, six engineers, six machinists, five commissaries, and numerous cooks and servants. The common workmen are divided into gangs, and detailed where they are needed. There are 130 gang plows; 60 harrows, 18 seeders, 6 thrashers, 6 engines. Besides, there are many smaller instruments and vehicles, which cannot be classified. Co-operating with their human brethren in the great labor are 1,000 work horses and mules, with a kinship of 1,000 brood mares and younger stock which has not yet achieved the dignity of labor. There are 32 dwelling houses, 27 barns, 14 blacksmith shops, and other structures sufficient to swell the aggregate to 100. The machinery could not be replaced for $125,000; the work horses and mules are worth $110,000; the brood mares and young stock $75,000, and the buildings on the place $100,000.

Treatment of Pain by Mechanical Vibrations.

For some years past Dr. Mortimer Granville has been occupied with important researches upon the possibility of combating neuralgia by mechanical means. Proceeding largely upon theoretical considerations, he came to the conclusion that a series of interrupted mechanical shocks to a nerve would diminish its sensibility, and for that purpose invented a small instrument whereby a succession of rapid blows could be kept up upon the skin. Many physicians in London and Paris have seen and employed the apparatus, and spoken of it with approval; but Dr. Granville forbore to bring it under general notice until it had been thoroughly tested. He has paid the penalty of his patience, and the old story is repeated of the publication of an idea by another person by whom it was conceived long after the one who first thought of it, but who did not proclaim it to the world. In justice to himself Dr. Granville should forthwith point out how he arrived at the idea, and state his experience of its practical enforcement. Meanwhile it may be interesting to summarize the statements of M. Boudet de Paris, who writes on the subject in the current number of *Le Progrès Médical.*

After alluding to Dr. Brown-Sequard's observation that chloroform applied over the skin of an animal produces general anæsthesia by its irritant action on the peripheral nerves, he points out that all irritants or revulsives may be placed in one category—such as actual cautery, hypodermic injections of water, application of metals, magnets, tuning-forks, electricity, vesicatories, sinapisms, compresses steeped in ether or chloroform, a motley group, but each intended for the same end—the relief of pain; they all operate by irritating the terminal twigs of sensory nerves. Vulpian long ago showed the good effect of the local application of chloroform; and Landouzy has recently pointed out the remarkable influence in controlling the cough of phthisis of hypodermic injections of water; while the cautery, acupuncture, and each of the forms of electricity are commonly applied to relieve pain. The action of metallic applications—metallotherapy—of which we have heard so much in the last few years, was best explained on the theory of vibrations by Vigouroux, who proceeded to experiment upon the effect of sonorous vibrations, which he thought might have a direct mechanical effect upon the sensory nerves. By the aid of a large tuning-fork and sounding board he caused hemianæsthesia to disappear, and provoked contractions in hysterical subjects at La Salpétrière, as rapidly as with the magnet or electricity. The pains of an ataxic were subdued when his legs were brought under the influence of these sound waves.

M. Boudet de Paris then thought this might be applied locally over a nerve—the sonorous being changed to mechanical vibrations by means of a small button attached to the resonator, and applied over the nerve. He therefore contrived a small apparatus consisting of an electrically mounted tuning-fork, the vibrations of which were transmitted to a rod which could be easily applied over a nerve. In a healthy man this mechanical excitation produced rapid local analgesia, often anæsthesia, the maximum effect being by application over a nerve which could be compressed on a bony surface. When placed against its skull its walls vibrate in harmony with the tuning-fork, and a sensation of approaching vertigo, frequently followed by a desire for sleep, is produced. An attack of migraine can be cut short by the application. Neuralgia—especially of the fifth, where the nerves issue from bony canals—disappears after a few minutes' application of the instrument to the nerve at such points, but in the case of deeper-seated nerves, much protected by soft parts, it is more difficult to get good results. The writer suggests this treatment for the pains of ataxics and syphilitics; he thinks there is no limit to its applications, and suggests that perhaps cranial vibrations may induce cerebral and thus general anæsthesia. Its mechanical action is comprehensible, when we see how simple friction of the skin may soothe very acute pain. He does not regard the number of vibrations as important. This, however, is, we believe, a point on which Dr. Mortimer Granville lays the greatest stress.—*Lancet.*

A Magnetic Thermometer.

It is well known that the "permanent" magnetism of steel magnets is not constant, but changes slightly with changes of temperature, the magnet becoming weaker when warmed, and recovering its strength as it is cooled. The magnetic thermoscope described by Sir W. Thomson ("Proceedings Royal Society") is intended to indicate differences of temperature by showing differences between the magnetic moments of steel magnets. Two thin wires of hard steel, each one centimeter long, are arranged so as to form a *nearly* astatic couple, being magnetized to equal strength and set in opposite directions, but not quite parallel, so that they set at right angles to the magnetic meridian. Two other magnets, about twice the size of the former pair, are placed one on each side of this astatic couple as "deflectors," being laid in one line nearly along the magnetic meridian, with their similar poles facing one another at about two centimeters apart. When properly adjusted the little astatic pair suspended between them will be found to be excessively sensitive to the least change in the strength of either of the deflectors, and if they are at different temperatures will turn through an angle which, if small, may be regarded as a measure of the temperature difference. A small mirror suspended from the lower needle of the pair serves to reflect a spot of light on to a scale in the usual way.

IMPROVED ASH SIFTER.

The sifter shown in Fig. 1 in perspective, with a portion broken away, and in Fig. 2 in vertical section, is believed to be superior to other devices for the same purpose, as very little effort is required to operate it, and the motion being rotary, the whole body of ashes is simply turned over, and not moved by main force, as in sliding sifters. It is free from dust, and delivers the ashes to the barrel, while the cinders pass out of the spout and drop into a hod or other receptacle.

The sieve consists of a cylinder having wooden ends and

Fig. 1.

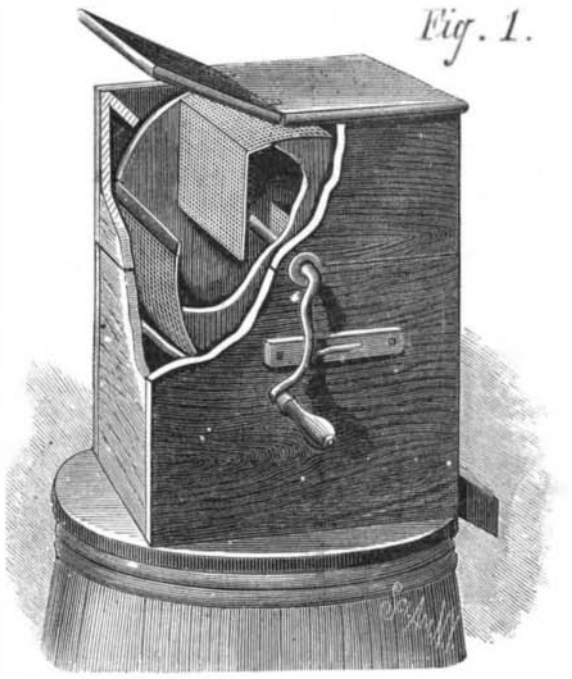
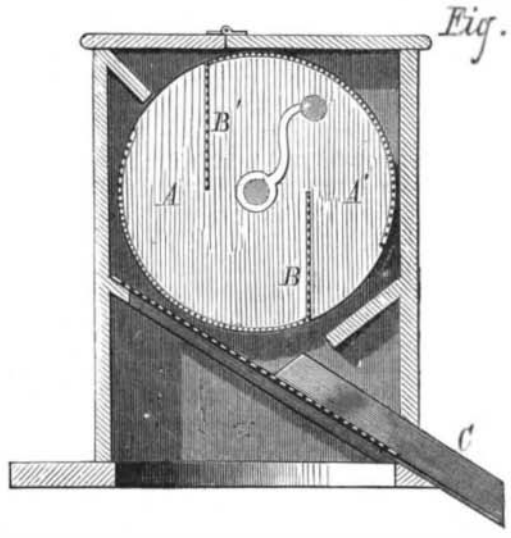


Fig. 2.



KELLY'S ASH SIFTER.

wire cloth sides, B B', which are opened on diametrically opposite sides and extended inward. The ashes are poured into cylinder through one of the openings, A A', the inclosing box is shut, and the cylinder is turned, so that the cinders are delivered from one of the curved sieves to the other, while the ashes drop through the inclined sieve into the barrel. When the ashes have been all removed from the cinders the cylinder is turned in the reverse direction, when the cinders pass out through the openings, A A', and are delivered to the hod or other receptacle through the spout, C. It will be seen that this sifting apparatus is entirely inclosed, and that in consequence no dust is allowed to escape. The sifter is simple, compact, and inexpensive.

For further information in regard to this useful invention, address Mr. Geo. B. Kelly, 162 Broadway, Cambridgeport, Mass. We call attention to an advertisement in the Business and Personal column relating to this invention.

A Buried City in Algiers.

French newspapers report the discovery in Algiers, by the archæologist M. Tarry, of a city which had been entombed in the sand. M. Tarry's attention had been awakened by the mound like appearance of the sandy soil, and some digging brought to light the minarets and upper portion of a mosque. Further excavations laid bare a terrace, a tower, and about a dozen houses, all in excellent preservation. He reported his discovery to the Government of Algiers, which has undertaken to have the site thoroughly explored. The place is in the southern part of the province, not far from the town of Ouargla, and exposed to the full blast of the sandy winds from the desert. Probably a succession of siroccos bearing clouds of sand completely filled up the streets and houses, making the town uninhabitable, and so drove out the population. At present there is no ground for conjecture as to the date of the occurrence.