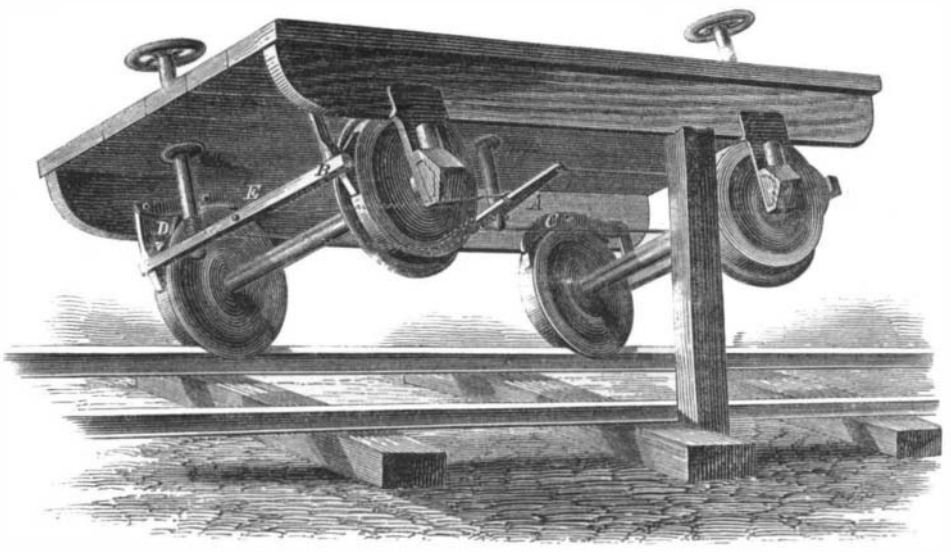
IMPROVED CAR BRAKE.

The invention herewith illustrated consists of a brake so constructed and attached to a railway car as to exert a much greater pressure upon the wheel than is ordinarily obtained. This result is claimed to be effected by a system of levers and auxiliary brakes, causing the rotary motion of the wheel itself to contribute to the pressure upon its periphery.

The shafts of the brake wheels are connected by suitable means with a pivoted lever arranged under the car at A, and the latter, in turn, communicates with the brakes, B. These are arranged on an arm which is pivoted to a horizontal lever, C, which is also pivoted at its center to the framework of the platform, and carries two brakes, D and E. If the car wheels revolve from right to left, their peripheries, acting upon brakes, B, pressed closely against them, tend to draw such brakes downward, thereby tilting the lever, C, and causing one of the pieces thereon, in this case D, to bind firmly against the wheels. If, however, the latter turn in the opposite direction, the brakes, B, are somewhat lifted, depressing the lever, C, so as to cause the piece, E, to act as an auxiliary brake. It is claimed that, by this means, the power of the brake is doubled; and in cases where steam is employed, it will give the same power with one half the strain upon the braking apparatus.

For further particulars address the inventor, Mr. George W. Crowe, 125 West 5th street, Cincinnati, Ohio.



CROWE'S IMPROVED CAR BRAKE.

IMPROVED ANIMAL TRAP.

The invention illustrated herewith is a device for catching and destroying mice, rats, squirrels, and other small animals.

The trap is actuated by clockwork, and once wound up is self-setting. When sprung, a sharp toothed bar is rapidly rotated, striking the animal, killing it, and throwing it out of the box.

The case is made with an opening of a size proportionate to the hight of the animal to be trapped. The vertical shaft, A, is connected with a coiled spring and toothed wheel, part of the latter being shown at B. When the shaft is turned by the key, it coils up the spring without revolving wheel B: but when the spring is allowed to unwind, the said wheel is rapidly rotated. This motion by the cog teeth is transmitted to a similar wheel, C, the shaft of which extends above the case and terminates in a notched disk, D. Just beneath the wheel, C, and at E, is the toothed bar for destroying the animal.

F is a horizontal shaft, having at its forward end an upwardly projecting arm, G, which is caught and held perpendicular by the spring catch, H. At the middle of the same shaft is an arm, I, which passes down through a slot in the case, in such a position that a stop on the wheel, C, may take against it, and the motion of mechanism be thus arrested. At the inner end of shaft, F, is a cam or arm, J, which is so arranged in connection with a projection, K (dotted lines), on the wheel, that said projection strikes it, thus turning the shaft, F, thereby raising the arm, G, so as to be again caught by the spring, H, and also lowering the arm, I, so that the wheel may be arrested, as already explained.

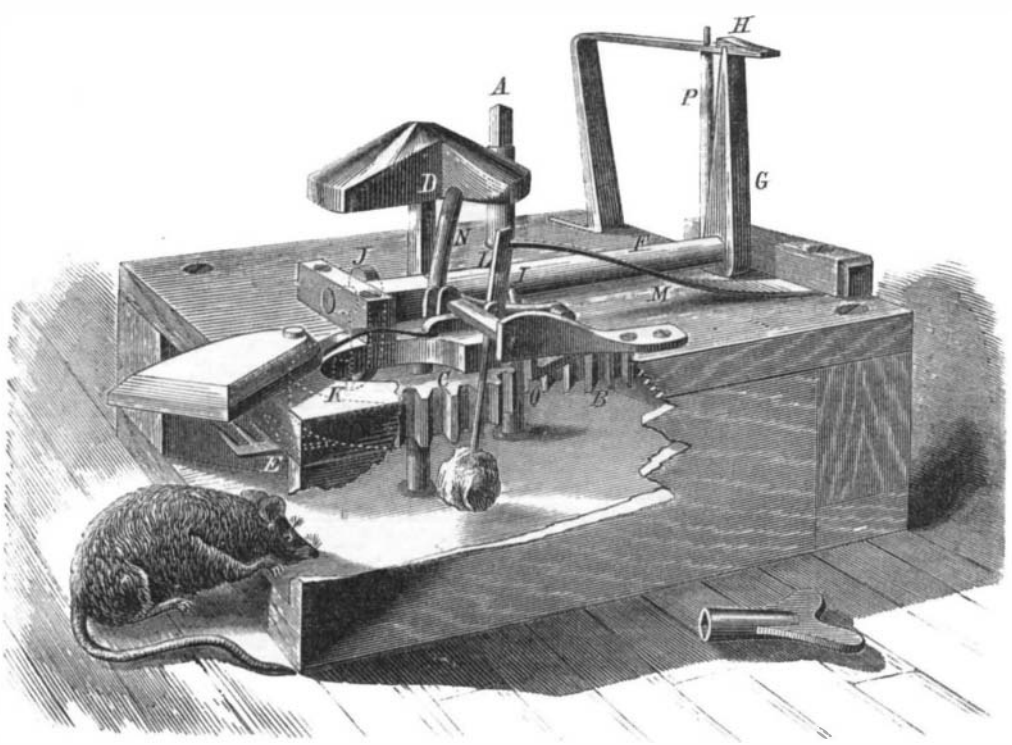
The shank of the bait hook, which is so placed that the animal cannot pass through the case without coming with in the sweep of bar, E, passes up through a slot and connects with a flattened rock shaft which rests, as shown, upon the horizontal arm of the bent lever, L, the latter being pivoted at its angle to the top of the case. The vertical arm of the lever has a notch into which is caught the extremity of a spring, M, when the trap is set. Beneath the end of this spring is a bent lever, N, also pivoted at its angle, and having a vertical arm, to accommodate which the notch is made in the disk, D. There is still another bent lever, O, only a part of which is seen, as it extends under the top of the case. This has a projection directly under the end of the spring, M, and connects with the perpendicular rod, P, so that when pushed down by the spring, M, it raises the catch, H, clear of the arm, G, and allows the shaft, K, to turn.

The illustration represents the trap as set. When the bait hook is agitated it turns the rock shaft so that the edge bears down the horizontal part of the lever, L, clearing the spring, M, from the notch. The spring, of course, comes down with some force on the projecting upper end of the lever, O, thereby, as above described, releasing the arm, G, of the shaft, F. This releases the wheel, C, allowing it to be rotated by the wheel, B, acted upon by the coiled spring. By this means the toothed bar, M, is revolved with considerable force, killing the animal and tossing it clear of the box.

The disk, D, of course revolving with the wheel, C, the side of its notch strikes against the vertical arm of the lever, N, thereby raising the other arm, now directly under the spring, M, so as to elevate the end of the latter once more into the notch on the lever, L, and, at the same time, allows the lever, O, to be withdrawn from the catch, H, by a small spring. As the wheel, C, revolves the projection, K, strikes the cam, J, which throws the arm, G, into the catch, H, and lowers the arm, I, to catch and stop the wheel. At the same time the outer end of the lever, N, rises into the notch on disk, D, and its inner end drops away from the spring, M, so that the trap is thus reset.

The device is quite ingenious and very sudden in operation. We should imagine that it would speedily clear a cellar or other infested locality of troublesome vermin.

Patented through the Scientific American Patent Agency, November 12, 1872. For further particulars regarding sale of rights, etc., address the inventor, Mr. George Barr, Clatskanie, Columbia county, Oregon.



BARR'S ANIMAL TRAP.

Action of Platinum and Palladium on the Hydrocarbons.

The recent experiments of M. Coquillon on the above subject take as a point of departure the fact that a platinum wire, rolled in spiral form and heated to redness, remains incandescent in presence of vapors of alcohol or ether, and forms different products of which the principal are aldehyde and acetic acid. All mono-atomic alcohols, as well as their ethers, act in analogous manner, and produce, in this incomplete combustion, aldehyde and the acid corresponding to the alcohol; while all the hydrocarbons, volatile oils, aniline etc, participate in this property and maintain the incandescence of the platinum spiral. The fixed oils and sulphureted essences, such as the essence of garlic or mustard, are without this effect.

Palladium has this property of remaining incandescent in hydrocarbureted vapors in even a greater degree than platinum; and with toluol, it similarly produces hydride of benzoyl. When it is plunged in an incandescent state into proto-carbureted hydrogen, it continues in the same condition without requiring to be brought to redness by the battery. With bicarbureted hydrogen, while the platinum wire gives frequent explosions, palladium causes none. It extinguishes itself when the gaseous mixture is no longer suitable. Another curious peculiarity is that its surface becomes rough and wrinkled, and the spirals break, after a few days' experimenting. The weight is also sensibly diminished.

Chloride of Iron Obtained by Dialysis.

It is now many years since the late Professor Graham discovered that when a solution contained both crystalizable and uncrystalizable, or colloid, substances, the former would pass much more rapidly through an animal membrane that the latter. For performing this experiment, a hoop of hard rubber has a piece of parchment paper stretched over it, and the apparatus, which resembles a sieve, is allowed to float upon the surface of water. The mixed solution is poured into the apparatus, and in a few days the greater part of the crystalizable body will be found in the water, while the uncrystalizable one will remain on the membrane. Professor Graham gave to this process of separation the name of "dialysis," and to the apparatus that of "dialyzer," which names have been generally adopted in all languages.

Since the discovery of dialysis, it has found many uses. It has been used with great advantage in analytical chemistry, for separating crystaloid and colloid bodies, especially organic ones. Its greatest value has been in analyzing the contents of the stomach, when it is desired to show that poison has been taken. The presence of a poison in the slimy contents of the stomach would otherwise be difficult to prove. Recently it has, also, been employed in the arts, and Dr. Reimann describes in his *Färberzeitung* its use in the dye house for preparing iron salts: From mixed solutions of salts and gum, the salts can be separated while the gum remains behind. But not only so; when a salt alone is placed in the dialyzer, the crystalizable portion of the salt, which is usually the acid, passes through the membrane first, the base remaining on the dialyzer. Now there are a series of salts which require a proportionally large quantity of acid to keep them in solution. Notable among these are the sesquioxides, especially that of iron. The very acid salt of iron is extensively employed in dyeing silk as an iron mordant for heavy black. An iron mordant which is very acid and which generally contains an excess of nitric acid, as well as some nitrous acid, acts destructively upon the fiber, so that very heavily weighted black silk loses a greater part of its strength, and sometimes can be pulled apart. To avoid this disadvantage, the iron may be used in the form of dialyzed oxide of iron. In preparing such a solution, oxide of iron dissolved in muriatic acid (perchloride of iron) is placed in a dialyzer. After some time it will be found that the acid is mostly gone off, while a solution of the oxide of iron remains in the dialyser. Such a solution gives up its oxide of iron very readily to the immersed fiber, which is thoroughly mordanted, while it cannot be attacked, since there is no acid, at least no excess of it, present. Such a solution is far more active than the ordinary iron mordant, because the iron in it has a great tendency to deposit itself upon the fiber, while that in the acid mordant, being held by the acid, shows less of this tendency. It seems, too, from what has been learned, that the mordanting of fibers in a solution of salt is really a phenomenon of dialysis. The fibers may be regarded as a conglomerate of membranes, and hence it is natural that the silk, for instance, should take out the iron from a solution of its salt, and allow the acid to disseminate itself through the bath. This tendency of the fiber to take up the iron is assisted by previous dialysis of the solution.

For technical purposes, especially for weighting silk, it is necessary to take away all the acid from the oxide solution. Here it is sufficient to obtain a solution containing but little acid and an excess of oxide of iron.

Fr. Oltmanns, an apothecary in Hanover, has for years prepared dialyzed oxide of iron for medical purposes, and recently has also made it for use in dyeing. The dialyzed oxide of iron made by him contains 6 to 7 per cent of pure sesquioxide of iron in solution; a quantity which, because of the ease with which it acts on the fiber, is more than sufficient for most purposes, For weighting silk, and for many similar purposes in the dye house, especially for all cases where it is desirable to load the fiber heavily with the oxide of iron in mordanting, without attacking it, dialysed iron is invaluable.

THE building of dikes at the mouth of the Seine has been the means of causing high water to appear at Havre 36 minutes sooner during the spring and 14 minutes during the neap tides.