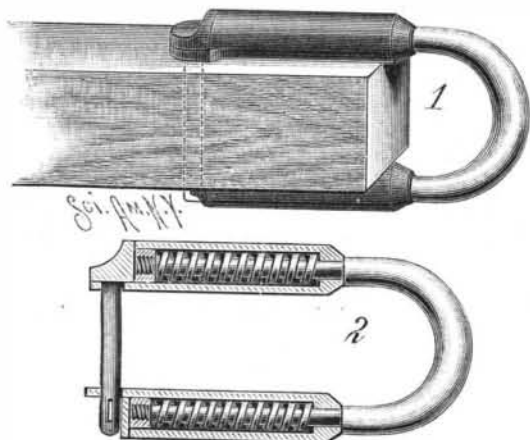


A CLEVIS TO RELIEVE HORSES FROM STRAIN.

The invention herewith illustrated provides a style of clevis designed to relieve horses and harness from strain or injury in starting, being adapted for attachment to plow beams, single trees, etc. It has been patented by Mr. Edward I. Morey, of Whitewater, Wis., and consists in forming the inner ends of a U-shaped



MOREY'S CLEVIS.

rod of diminished size to insert in spring barrels, its extremities being provided with nuts to press the inner ends of the springs and bring the shoulders of the rod against the ends of the barrels, the sides of the barrels being prolonged and having apertures for receiving a bolt. One end of this bolt has a semicircular face adapted to close the end of one of the barrels, and in the opposite end is a transverse hole for a key with head shaped to close the end of the other barrel. A flat section of the rear end of the barrels may also be further prolonged, and fitted with two holes for the clevis pin, to give one horse an advantage over the other when two of these devices are used with a team.

AN IMPROVED COTTON PICKER.

The cotton crop of the United States, for the last three years, has been between six and a half and seven million bales, of 450 pounds each, per year. Enormous as such crops are, there is no room for doubt that, with the introduction of a practical and economical cotton picker, the crops would be greatly increased, and the most severe labor that is now performed in the Southern States, and which is always more or less slighted on account of scarcity of hands, would be greatly ameliorated. These considerations give exceptional interest to any invention intended to facilitate cotton picking, a machine for which is shown in the accompanying illustration, being the subject of a patent recently issued to Mr. William H. Rohling, of Lula Station, Miss. The body of the machine travels on three small wheels, the front one being centrally arranged. It has a horizontal base, inclosed sides, and the top inclines at a decided angle from the rear downwardly to the front, the top surface being formed of a series of longitudinal slots, giving it a grate-like appearance. Within this body is journaled a main axle, upon which are ordinary sized vehicle wheels outside the body, that carry the driver's seat, to the standards of which the draught pole is attached. The large wheels, one of which is hidden by the body of the machine, are intended to travel one upon each side of a line of plants from which the cotton has been previously



ROHLING'S COTTON PICKER.

stripped, while the body is drawn between the stripped row and the line of plants from which the cotton is to be gathered. Motion is conveyed to the strippers by grooved pulleys attached to the main axle, through the transverse shaft and bevel gears shown near the top of the machine, the strippers revolving toward each other as the machine advances, and delivering the cotton bolls on the downwardly inclined slotted

top surface of the body. The main axle also operates, through geared wheels, inside the body of the machine, an endless belt, which travels in a line parallel with the forwardly inclined slotted top of the body, and attached to this belt are rows of vertical teeth, which protrude through the slots, the teeth having sharp, angular, hook-like points, inclined to the rear of the machine, which carry the cotton bolls delivered by the strippers to a chute or spout, partially shown in broken lines at the rear. This chute has one open side and a contracted open bottom, and with rear brackets is made to form a chamber behind the rear curved portion of the top part of the body of the machine, the picker teeth on the endless belt that has carried the cotton thus far operating to here separate the cotton fiber from the bolls. A brush is fitted upon a shaft in the lower portion of this rear chamber, in position to engage the picking teeth, removing the cotton therefrom, a chute or flue opposite the brush affording an exit for the chaff gathered with the cotton, which falls into the larger compartment below, where it is removed as desired. The strippers upon one side, as the machine is drawn forward, engage the plants as yet untouched, while the strippers upon the other side gather any bolls remaining upon the previously stripped row.

AN IMPROVED SAW FILING MACHINE.

The illustration herewith shows a novel machine for sharpening straight edged saws, recently patented by Mr. John Sattes, of Butte City, Montana. Upon the base plate is a double-armed standard, apertured to receive two mandrels, which carry bevel gears that give motion as the crank arm is turned by the operator. Upon the mandrels are mounted cylinders having screw threads, the central portion of the threads formed with file teeth, while the ends of the threads are uncut. The thread of the cylinder on one of the mandrels is a right hand thread, while on the other it is a left hand thread, and the pitch in both cases is double that of the teeth of the saw. At the side of the base plate are pivotally connected arms, which, in connection with the central post or standard, extending on either side over the cylinders, form movable jaws, normally held together by a spiral spring near the base plate, these jaws having a yielding hold upon the saw while it is being ground. The rollers upon which the ends of the saw rest may be either wood or rubber, or other suitable material not calculated to injure the teeth of the saw, while acting as supports therefor. In sharpening a saw it is placed between one pair of jaws, with its weight resting upon these rollers, which are readily adjustable to the desired height; then, by turning the crank, the file teeth enter every second recess between the saw teeth, the saw advancing with the revolution of the cylinder carrying the thread, the portion of the thread that is not cut as a file operating as a gauge to limit the depth of cut made by the file section of the thread. After the saw has been thus passed through the jaws on one side, it is placed in a similar way between the other pair of jaws, and in a second operation the other set of recesses between the saw teeth is entered by the threads upon the cylinders and the second set of teeth sharpened. It is of course obvious that special saws will require special file cylinders, but the arrangement is such that the cylinders may be quickly and easily put on the mandrels, and it is calculated that a single cylinder will last as long as a saw of the same relative pitch.

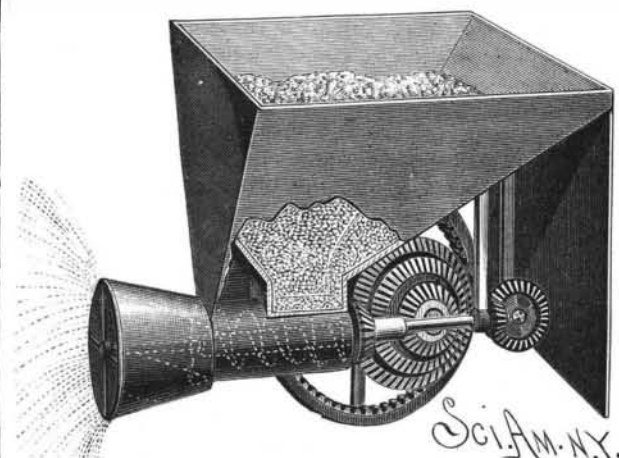
Salicylic Acid in Beer.

The author puts 100 or 50 c. c. in a roomy separating funnel after acidifying with 5 c. c. dilute sulphuric acid, and adds an equal volume of a mixture of equal parts of ether and petroleum ether. He then shakes up the mixture well and distills the filtered ethereal layer into a flask to within a few centimeters. Into the flask, while still hot, there are put 3 to 4 c. c. of water. It is agitated, a few drops of a dilute solution of ferric chloride are added, shaking gently, and the liquid is then

filtered through a moist paper. If salicylic acid is absent, the filtrate is clear as water, with a faint yellowish color; if present, the filtrate has the well-known violet color.—Rose.

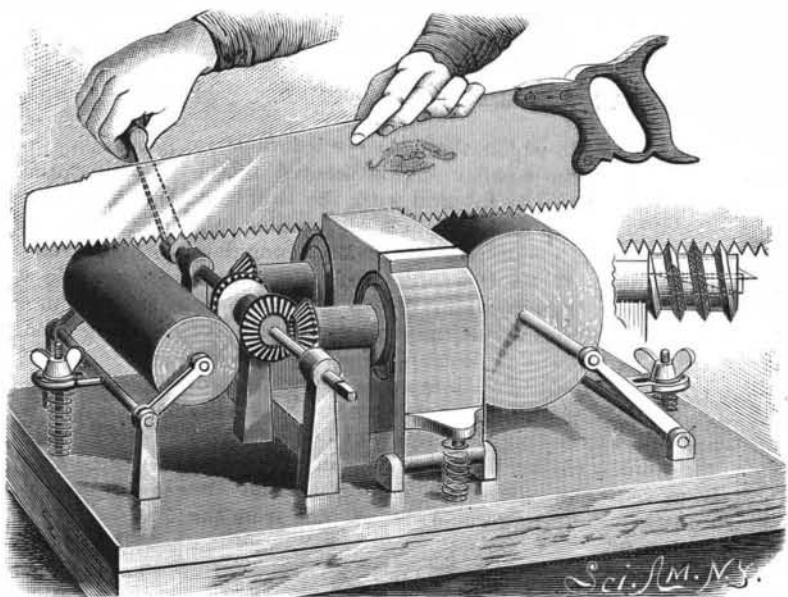
A SEED SOWING DEVICE.

The device herewith illustrated, which has recently



LOVE'S HAND SEED SOWER.

been patented by Mr. William E. Love, of Madison, Tenn., furnishes a positive feed seed sower, in which the supply of seed will not be cut off by sticks or straws choking the feed, and with simple means of adjustment for regulating the quantity of seed to be sown. The hopper, which is designed to be suspended in front of the operator, has a reduced outlet, in registry with an aperture in a tubular casing below, in which is a hollow



SATTES' SAW FILING MACHINE.

shaft carrying a spiral feed screw, this feed screw being operated by a cone gear upon the same shaft as the hand crank, and its motion made faster or slower according to the portion of the cone with which it is adjusted to intermesh. Inside the hollow shaft carrying the feed screw is journaled a shaft, upon the outer end of which is an annular distributor, its inner surface having spirally arranged blades to facilitate scattering the seed, while motion is communicated to the rear end of the shaft, through bevel gears and a transverse shaft, from the inner periphery of a hand wheel to which the hand crank is attached. A machine constructed upon this principle may also be carried upon a wagon or other vehicle, power being supplied from one of the axles, and the machine may be used for sowing fertilizers as well as seed.

Crystals in Basic Converter Slag.

At a recent meeting of the London Chemical Society, Messrs. J. E. Stead and C. H. Ridsdale described a series of crystals found by them in the center of large blocks of basic converter slag which had been allowed to gradually cool. The chemical composition of these crystals was examined by the authors, and their crystalline forms determined by Mr. Meiers. The largest crystals were of a faint yellow color, and were flat and square in form; in composition they agreed with the formula $4\text{CaO} \cdot \text{P}_2\text{O}_5$, and were identified as similar to those which had been previously described by Hilgenstock. Blue crystals were also noticed, and were found to contain, in addition to phosphoric acid, a quantity of silica and a small percentage of vanadium oxide. The formula given by the authors was $\text{CaO} \cdot \text{P}_2\text{O}_5 \cdot \text{CaO} \cdot \text{SiO}_2$. In addition to the above, crystals of a feather-like form, containing a large percentage of bases, such as magnesia, lime, and the oxides of iron, were described; also others in smaller quantity—hexagonal and lemon colored—consisting for the most part of basic phosphate of lime; and lastly, two varieties of flat black needles, containing no acid oxides, but consisting of compounds of lime, alumina, and oxides of iron.