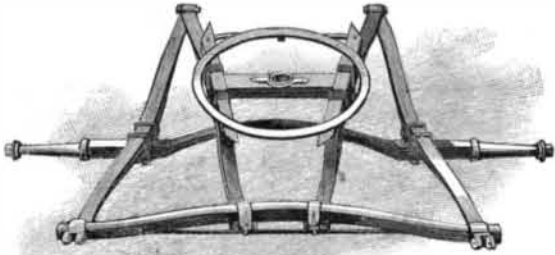


VEHICLE PLATFORM GEAR.

The side springs are secured to the axle in the ordinary manner by clips, and the ends of their main leaves are formed with eyes which rest within longitudinally slotted tubes. The central springs are also formed with eyes, which fit snugly within the forward tube, the ends of the spring being placed toward the center of the bar. The rear eyes are large enough to be slipped over the rear eyes of the side springs, the tube in this case being slipped over the eyes of both sets of springs. Rods passed through the tubes and eyes afford an additional support for the springs, and serve to strengthen the tubes which constitute the front and rear bars of the platform. The shaft clips are secured directly to the forward bar. The ends of the springs are clamped in place by clips. The frame constituting the bed of the fifth wheel is held to the two center springs. The rear tube may be entirely dispensed with, the overlapping ends of the springs being united by bolts, as shown in the cut,



HOLMAN'S VEHICLE-PLATFORM GEAR.

and for the forward tube may be substituted a wooden bar strengthened by an iron rod. This construction is particularly well adapted for all except very heavy wagons. This peculiar W formation of the platform prevents it from getting out of square, as each spring serves as a brace for the others.

This invention has been patented by Mr. Thomas H. Holman, of Newark, Ohio.

VERTICAL CHUCKING MACHINE.

The machine shown in the accompanying engraving was designed by the manufacturers, the Brown & Sharpe Manufacturing Company, of Providence, R. I., to meet a want long felt in their own works—a ready and convenient method of chucking counter-shaft pulleys and other work of similar character. The revolving table is driven by a five-step cone for a 3 inch belt, and is geared six to one, which gives it great power. The steps of the cone are so graded as to make the cutting speed uniform for five different diameters of holes. The turret head has four holes, 1 3/4 in. in diameter, and is securely clamped in position. An adjustable dog allows the locking pin to be withdrawn at any part of its upward motion. The turret slide has a movement of 21 inches, and is provided with an automatic feed, which can be easily and quickly changed from the finest ever needed to the coarsest required. It has a quick return by hand, and is counterbalanced by a weight inside of the column.

The machine will take a pulley 36 inches in diameter, 18 inches face, and hub 12 inches in length; and to bore a 4 inch hole in same, making two or three cuts, and finish by reaming, can be done without removing either the tools or work.

It is evident that with this machine much more work, and of a superior character, can be accomplished in a given time than can be done upon an engine lathe. The work can be more easily trued and secured in place than upon any machine having a horizontal spindle, and the different tools in the turret head can be readily brought into operation in succession. The chips fall through the center of the spindle of the revolving table to the floor, causing no trouble by clogging of reamers, etc.

Protection against Yellow Fever.

In a letter dated May 26, 1886, addressed by Dr. Domingos Freire, of Rio de Janeiro, to Dr. Joseph Holt, President of the Louisiana State Board of Health, the following interesting statement is made:

I have performed over 7,000 inoculations with full success; the immunity was almost absolute, notwithstanding the intensity of the epidemic this year. More than 3,000 persons who were not inoculated died of yellow fever; while among the 7,000 inoculated, inhabiting the same infected localities, subjected to the same morbid condition, but seven or eight individuals, whose disease was diagnosed as yellow fever, died. It is hardly necessary to say that I have taken notes of but one of these cases. My confreres here have the abominable

habit of not giving notice of the fact until after the interment of the individuals, and consequently accuse me of being unsuccessful. You therefore see that, in spite of all this bad will, my doctrine comes out victorious once more by the test of this year, when the epidemic characterized itself by energetic intensity of infection and contagion.

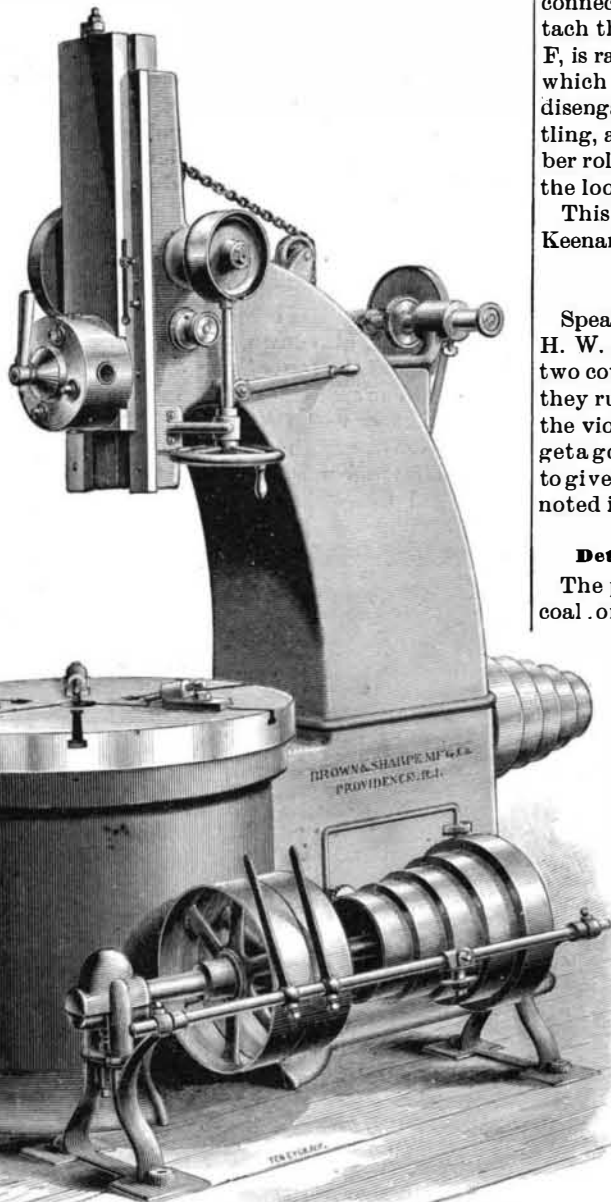
Oil, Albuminoid Matter, and Starch from Corn.

In the manufacture of starch, corn is steeped in water, and kept at a temperature favorable to promote fermentation and putrefaction, for the purpose of loosening the cellular tissue, and to liberate the starch granules as well as possible. In order to accelerate this process, an addition of a small quantity of alkali, preferably caustic soda, is generally made, while other manufacturers, for the dissolution of the inter-cellular matter, prefer the use of dilute acids, especially sulphurous acid.

After 24 to 40 hours' standing, the steeped corn is reduced to a pulp by grinding, from which the starch is then obtained by brushing through sieves and an elaborate process of floating and settling. In the spent liquors remain dissolved the soluble parts of corn, such as gum, sugar, albuminoid substances, gluten, salts, etc., which hold in emulsion fatty and resinous matter, and also suspended cellular and other insoluble matter.

It is this milky liquid to which the inventor, Dr. F. V. Greene, of Philadelphia, applies his process. The liquors are mixed with a small quantity of a solution of sulphate of alumina, which renders insoluble the albuminous substances (for the larger part). These in coagulating envelop and precipitate the fatty matter, as well as the coarser particles, so that the liquor, after settling, is left almost clear. The precipitate is separated by subsidence or filtration, and pressing, and after proper drying forms a grayish coarse powder, the by-product of starch factories, as intended by the inventor. The same treatment is also proposed for the residues of distilleries and vinegar factories.

From the dry product, the oil may be obtained by pressure, or by extraction with benzene or bisulphide of carbon, and the exhausted residue is proposed as a fertilizer for the sake of its nitrogenous matter. Mr. Trimble found 4.26 per cent nitrogen in a sample; while Mr. Haines found 4.75 per cent in another sam-



VERTICAL CHUCKING MACHINE.

ple of this exhausted residue, which amount the inventor expects to increase to 8 per cent by improved operations. The quantity of oil obtained is reported by the inventor as being about one-tenth of the dry precipitate.

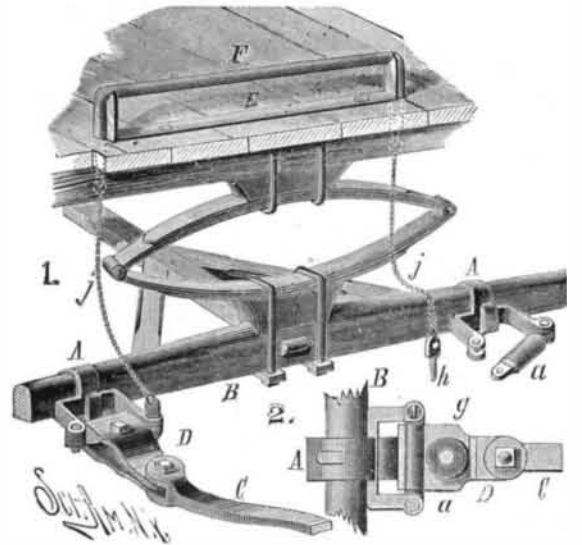
The oil, which in its crude state is dark colored, has a good body, and is capable of bleaching. After all

odor of the remaining extracting medium (hydrocarbons or bisulphide of carbon) is dissipated, the oil has a very agreeable flavor of its own. Undoubtedly, it would make a very satisfactory soap stock.

The drying of the precipitate, which, in its nature, must be very bulky and pasty, will undoubtedly be somewhat difficult and expensive; considering, however, that the waste waters will by this treatment at the same time be disinfected, the process would be a great boon to the whole community in removing a public nuisance—putrefying waste waters of starch factories. —Franklin Journal.

HORSE DETACHER.

Each of the clips, A, secured to the axle, is provided with a swinging bolt, a, whose free end is held by a



KEENAN & GARDNER'S HORSE DETACHER.

pin, h, between eyes formed on the ends of the other arm of the clip. The thill iron, C, is made with a forked eye to receive a loop, D, through which passes the swinging bolt, a. Between the sides of the loop and in front of the bolt is journaled a rubber roller, g, which holds the loop into close engagement with the bolt. To the floor of the wagon is secured a rest, E, for the rod, F, to the bent ends of which are secured chains connected with the pins, h. When it is desired to detach the horse—as in the case of a runaway—the rod, F, is raised, thereby drawing the pins, h, from the bolts, which turn on their pivots and release the loops, thus disengaging the thills. The rubber roller prevents rattling, and when the swinging bolt is released the rubber rolls along the bolt and facilitates the release of the loop.

This invention has been patented by Messrs. C. H. Keenan and J. P. Gardner, of Fort Halleck, Nevada.

Musical Fishes.

Speaking of the musical perch of the Ohio River, W. H. W. says: "The humming or singing is produced by two corrugated bones in the mouth or throat, which they rub together, and the sound is on the principle of the violin or musical glasses. I intend as soon as I can get a good specimen to dissect, or have it done, and hope to give you an item, as I do not think it has ever been noted in any work or paper."

Determination of the Caloric Power of Fuel.

The process consists in burning one gramme of the coal or fuel in a small platinum crucible, supported on the bowl of a tobacco pipe and covered by an inverted glass test tube, through which is passed a stream of oxygen while the whole is placed under water in a glass vessel. The oxygen is fed into the test tube by a movable copper tube, which may be pushed into the test tube so as to come immediately over the crucible. The coal burns away in a few minutes with very intense heat, and the hot gases escape through the water—the bubbles being broken up by passing through sheets of wire gauze, which stretch between the test tube and the walls of the vessel containing the water in which it is placed. The temperature of the water is taken before and after the experiment, and from the figures thus obtained the heating power of the coal is calculated.

THE Agricultural Department at Washington has just sent out large quantities of the eggs of the silk worm by mail to all parts of the country. It has now been satisfactorily demonstrated that the leaf of the Osage orange makes as good silk as that of the mulberry, and that the worms will feed upon it and thrive. The Department is in receipt of letters from girls in various parts of the country, saying that they have made from \$20 to \$100 by raising silk in this way.