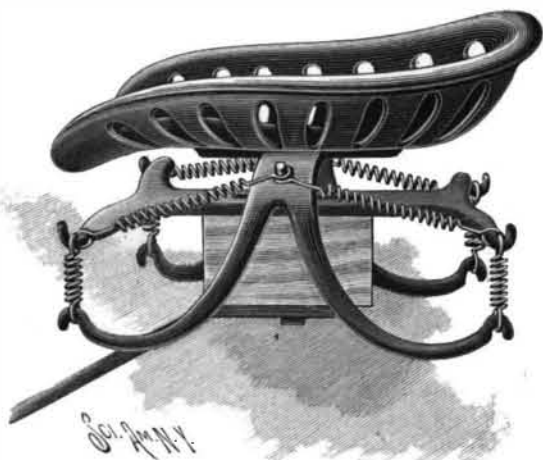


AN IMPROVED SPRING SEAT.

The illustration represents a seat of novel and inexpensive construction adapted for use on agricultural machines, locomotives, etc. It has been patented by Charles F. Davy, of Starkville, N. Y. The improved seat is attached to a seat standard by a bolt, and consists practically of two sections, a lower frame section having oppositely diverging arms at opposite ends and an upper frame section also having oppositely diverging arms at opposite ends. The arms of the upper section depend below the arms of the lower section, springs uniting the arms of the respective sections, while side springs connected at one end near the center of one section connect diagonally with their opposite ends with arms of the other section, to prevent undue



DAVY'S SPRING SEAT.

rocking movement of the seat and hold it moderately steady. The seat, while capable of moving in all directions, is held in position by the springs, and made comfortable at all times.

Photographic Prints on Plain Paper.

BY THOMAS HARP.

I find that Rives No. 24 plain paper is all that can be desired for moderate sized prints. Whatman's rough drawing and Michallet's crayon paper are excellent for large work, the latter giving very fine prints of a red color without any toning.

It is necessary to point out that few English papers are of any use, and that attempts to employ them will lead to disappointment. Care must further be taken to sensitize the right side of the paper; an inspection of the water mark will suffice to show this, in the case of Rives paper, and in the rough papers the difference of surface will be a sufficient guide. It is best to mark in pencil the wrong side before preparation.

When salting the paper, the sheets should be immersed one at a time to the number of six, each sheet being turned, and the surfaces freed from air bubbles before another sheet is placed in the bath, then they should be turned over in a body and removed singly, being drawn between the edge of the dish and a glass rod resting against it in order to remove superfluous solution from both surfaces. The sheets when thoroughly dry should be kept flat in a portfolio, so as to avoid difficulty in floating on the sensitizing bath.

Thick, rough papers require longer immersion, etc., in all stages. Sensitizing should be performed as short a time as is possible before the paper is required for use; the dish used only for this purpose having at least a quarter or three-eighths of an inch depth of solution, so as to minimize the risk of air bubbles.

In preparing to float the paper on the sensitizing bath, the sheet should be held by opposite ends or corners, with the wrong side uppermost, and bent so as to cause the lower side to curve with its center downward. The center of this curve should be brought gently into contact with the solution in the dish, and the ends gradually lowered until the sheet lies flat on the bath, any air bubbles which may be observed on raising the paper for inspection being removed with the edge of a small piece of blotting paper.

When the paper is very dry it will be found to curl up on being floated on the solution, and it is well to have two pieces of lath, a little less in length than the paper is wide, and to lay these gently on the back of the floating paper to keep it flat. A pair of ebonite tweezers are useful for lifting the sensitized paper, from which any surplus solution may be removed by drawing it over the edge of the sensitizing dish, and the use of them will obviate finger staining with the silver solution, and marks on the paper from being touched by the fingers. Float for two minutes.

The paper should be dried quickly, and if not used within a few hours, should be stored in a chloride of calcium tube, which may be efficiently improvised with one of the self-closing tins now commonly in use, a small earthen jar containing the calcium chloride being placed within it.

When printing in damp weather a dampproof pad is desirable; no doubt a celluloid film which I have seen recommended would be very efficient; the rubber

pads sometimes used will not answer, as they stain the paper badly.

In finishing the prints, we obtain, by direct immersion in the fixing bath and subsequent washing, pleasing brown tints on Rives paper. These tints can be modified, after rinsing slightly from hypo, by immersion in a weak solution of a bichromate.

By the usual process of washing and toning in a weak acetate of soda and gold bath, we get perfect engraving black tints in the fixed and finished prints.

Michallet's crayon paper (cream tint) gives fine reds by merely fixing without washing. Whatman's drawing paper will yield similar red tints if treated with bichromate, as recommended above, after fixing. Of rough papers, I should give the preference to Michallet's for large work.

Having, I think, dealt quite fully with every point connected with the preparation of the sensitized paper, it may be convenient to append the formulæ for preparing the sensitized paper:

1.—SALTING SOLUTION.

Chloride of sodium (fine table salt).....100 grains (say ¼ ounce).
Bromide of potassium..... 10 grains.
Water..... 20 ounces (one pint).

Solution of a bichromate to be added, a drop or two at a time, till a clear lemon color is obtained. N. B.—Avoid excess of bichromate.

2.—SENSITIZING SOLUTION.

Nitrate of silver..... 1 ounce.
Distilled (or rain) water.....10 "

Liq. ammonia to be added to the solution till the precipitate at first formed is just redissolved. N. B.—Avoid excess of ammonia.

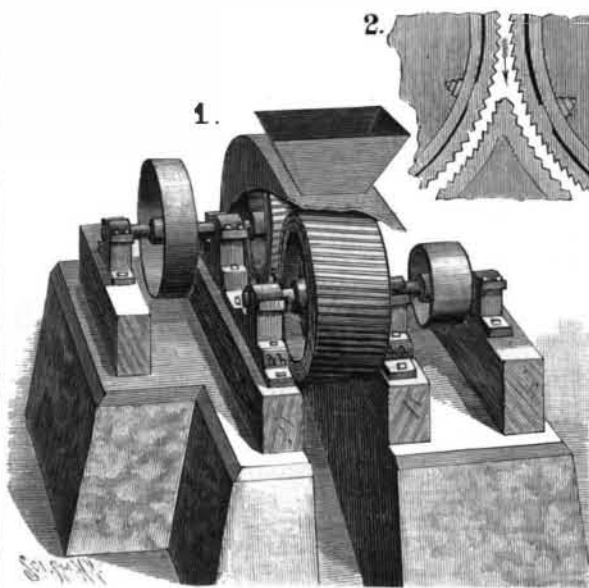
An acid sensitizing solution may be employed, adding one drop per ounce of nitric acid instead of the ammonia, or a proportion of citric acid if desired. The latter addition greatly modifies the color of finished prints; the former has not such effect.

In either case the prints require to be treated with an alkaline solution, say of washing soda, before toning.—Photography.

AN IMPROVED COAL CRUSHER.

A crusher more especially designed for disintegrating bituminous coal, to improve the quality of the coke made therefrom, is shown in the accompanying illustration, and has been patented by Samuel Evans, of Elkhorn, West Virginia, and Francis J. Morgan, of No. 1023 South Jefferson Street, Roanoke, Va. The machine has a feeding and crushing roll and a cutting roll, adapted to rotate toward each other at different rates of speed, the foundations of the roller shafts being placed a suitable distance apart to form a delivery space and chute for carrying off the crushed material. On the periphery of the feeding and crushing roll are bolted segmental sections with diamond shaped ribs extending transversely at a slight inclination to the axis of the roll, the other roll having similar attached sections whose ribs are ratchet shape, with the cutting edges in the direction of the travel of the roll, and standing at an angle to the axis of the roll in an opposite direction to the ribs of the first roll.

Between the two rolls, as shown in the small view, is



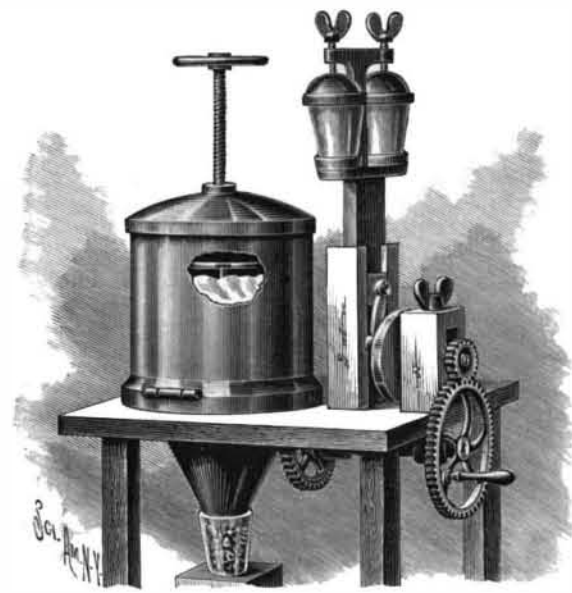
EVANS AND MORGAN'S COAL CRUSHER.

arranged a table with segmental sides and ratchet and diamond-shaped ribs, the table being vertically adjustable, so that its sides may be moved nearer to or farther from the peripheral surfaces of the rolls, as the material is to be reduced to a finer or coarser state. In order to prevent the breaking of the ribs by iron or other hard substances passed between the rolls, the inner roll bearings are set on rollers held on plates, permitting the bearings to slide and move the rolls apart, the shafts at their other ends being journaled in outer bearings by ball and socket joints.

THE sum of \$2,500 has been granted to the St. Petersburg Medical Academy for carrying out X ray experiments.

A COMBINATION ICE SHAVER AND MILK SHAKER.

To facilitate making a "milk shake" or other summer drink, the combination device shown in the illustration is adapted, while shaking the milk, to simultaneously cut or shave ice from a block for use in preparing the next drink. For this improvement a patent has been allowed to Max Raubold, of No. 758 East Market Street, Louisville, Ky. On turning the handle a gear and pinion actuate a crank disk and pitman to reciprocate a crosshead moving in vertical guideways,



RAUBOLD'S ICE SHAVER AND MILK SHAKER.

the crosshead carrying saucers to receive the glasses, the tops of which are engaged by covers held in place by set screws in a bracket extending upward from the crosshead. On the inner end of the operating shaft is a gear wheel in mesh with a gear near the outer periphery of a wheel across whose diameter extends a knife adapted to engage with its cutting edge the under side of a block of ice in an adjoining receptacle, the shaved ice passing through the open wheel into a hopper by which it is directed into the mixing receptacle. To prevent the turning of the ice as the revolving knife cuts away its under side, the top of the block is engaged by points on the under side of a disk held on a screw rod extending up through the cover of the receptacle, the turning of a handle on the upper end of the screw rod bringing the points into firm engagement with the ice. The ice receptacle is hinged to its base, permitting the ice to be readily taken out and stored in the ice box or placed in position for shaving, and the milk shaker may be conveniently disconnected from the ice shaver, allowing the latter, if desired, to be used as a single device.

Cycling Notes.

The novelist Rudyard Kipling, who for a long time has been an anti-cyclist, has recently learned to ride the wheel.

The Michaux Club of New York has introduced a variation of the Virginia Reel, called the "Wheel Reel." The riding is done very rapidly, the music playing at a lively rate.

Biltmore, the new estate of Mr. George Vanderbilt, is a wheelman's paradise. There are 95,000 acres in the estate and the system of roadways is so perfect that Mr. Vanderbilt, who is a wheelman, can go a hundred miles over a macadamized road without going off his estate.

The sprockets on wheels of this year's pattern are larger than heretofore. Large sprockets mean less friction, diminished tension on chain and consequently less pressure on the rear wheel and crank shaft bearings. They also tend to prevent the bending of the rear forks.

The physicians of Chicago enjoy peculiar privileges as regards transportation. For fifty cents he can procure of the city clerk a badge with a red cross which gives him the right of way. The physician can then pin on the badge and mount his wheel or carriage and all vehicles are obliged to yield him precedence.

A decree has just been rendered by the Minister of France which defines the status of cyclists in that country; the decree, while it compels the cyclist to carry a lamp, a bell and a name plate, recognizes their full right to the road. Cyclists are also permitted to use the foot paths outside of towns when the road is stone paved or undergoing repairs.

Sometimes the wick in a lamp will obstinately refuse to turn up in the ordinary manner, says the Wheel. It will seem firmly wedged at one side, while the other runs up in a point, causing the impatient owner weariness and vexation of spirit. To overcome this particular brand of lamp depravity, get a new wick, draw out a thread near the selvedge, and the wick will be found to be quite tractable when introduced into the burner, the cogs rapidly taking it up, and it will give an even flame when lighted.