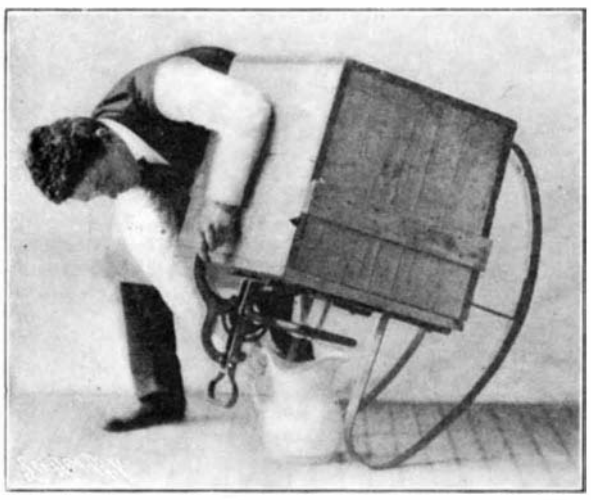
A CARBOY INCLINATOR.

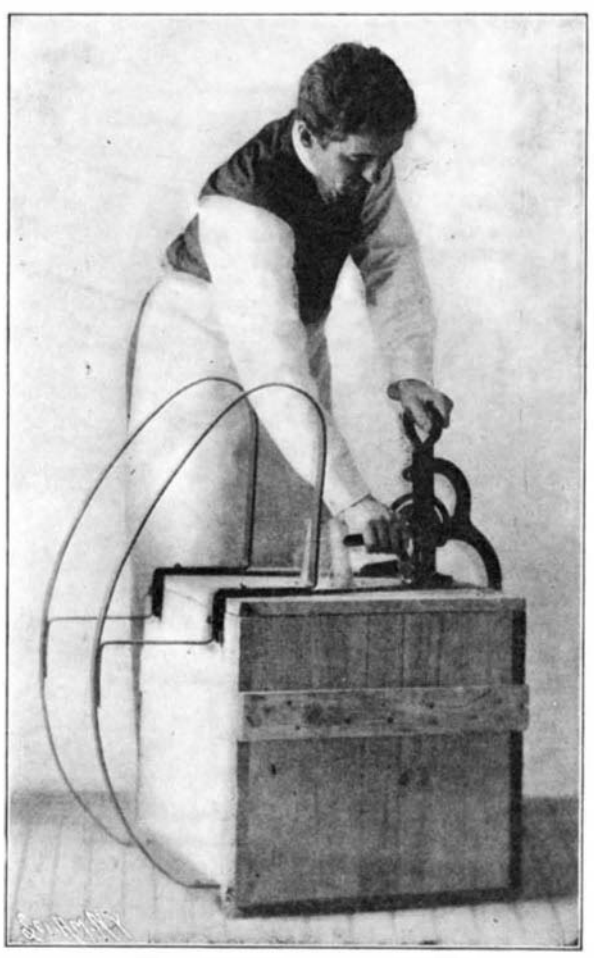
BY A. FREDERICK COLLINS.

For the protection of those who have to handle carboys of volatile fluids, such as nitric, sulphuric, muriatic, and other acids, the device here illustrated has proven an invaluable aid. It is known as the Flaherty carboy inclinator, and by its means a carboy may be tilted and its contents poured out at will, with the least amount of exertion and with absolute safety from spilling or splashing. A single movement only is required to lock the lever of the inclinator to the carboy; a pull on the handle then tilts the carboy and allows its contents to be poured out, when the carboy, by an ingenious curvature of the rockers, resumes its upright position.

Owing to the facility with which the inclinator may be clamped on or taken off, only one is required on a floor, which suffices for any number of carboys. The device works with a cam action, and clamps like a skate, it clutches the carboy firmly, and permits of



TILTING A CARBOY EQUIPPED WITH AN INCLINATOR.



APPLYING THE CARBOY INCLINATOR.

easy and safe handling, whether the carboy be full or contain but a gill.

The inclinator is strongly built, being made of iron throughout, and as all the cast parts are malleable, there is nothing to break or get out of order, and it should last a lifetime.

The North-Eastern Railway of Great Britain has considerably accelerated the express trains running over its system, in connection with the East Coast route between London and Edinburgh. The train which formerly left Leeds at 8:50 A. M. and occupied 4 hours 40 minutes to cover the 230 miles thence to Edinburgh, exclusive of stops, is accelerated by six minutes between York and Newcastle. This is a distance of 80 miles 48 chains, and it is now covered in 82 minutes exactly, an average of 58.97 miles per hour. This is a meritorious performance, since there are several severe gradients to be negotiated, while in running over the Durham viaduct and the high-level bridge at Newcastle-on-Tyne, speed in each instance has to be reduced to 15 miles per hour. In order to maintain the high average speed, the first 44¼ miles from York to Darlington is covered in 43 minutes, a speed of 61.7 miles per hour. In connection with the express leaving London at 5:30 P. M. for Newcastle, the distance between York and Darlington is covered in 44 minutes, a start-to-stop average speed of 60.34 miles per hour.

A Photographic Mailing Card.

Illustrated mailing cards are so much the vogue that collections of them are almost as common as stamp and autograph collections. A mailing card on which the amateur photographer may print his own pictures has been popular in Europe for some time, and is of considerable interest both for the photographer and his distant friends. It is quite easy to prepare. A common one-cent United States postal card may be sensitized in the following way:

Dissolve 5 grains of gelatine in 5 ounces of hot water and then add 50 grains of salammoniac. This solution must be filtered through a chemical filter paper or clean white blotting paper. It must then be put in a flat dish and the postal card floated in it, with the blank side down, for three or four minutes. The amount of solution specified will suffice for thus "salting" fifteen or more postal cards. Thus prepared, they will last indefinitely, but as soon as they are dry, they may be sensitized in the following bath:

Silver nitrate	50 grains
Distilled water	1 ounce

Float each card on this, with the blank or salted side down, for about three minutes, taking care that no fluid gets on the address side, and dry in the dark. Care must be taken to avoid air-bubbles. These sensitized cards will only remain good for a few days, so that it is not advisable to sensitize more than is required for immediate use. Print in the usual way in a printing frame, then wash and tone as directed below, then fix with a sodium hyposulphite solution, one part of the salt to eight parts of water.

For printing, an ordinary 3¼ x 4¼ frame will do if two adjacent corner pieces are knocked out so as to allow the card, which is 5½ x 3¼, to project without bending. The projecting end must be covered with a light-proof paper bag. In order to secure neatness it is often necessary to vignette the negative with a piece of opaque paper cut to the required shape. By this means it is possible to leave as much writing space as desired.

The following solution is used. The print is toned rather beyond the required color:

Sodium acetate	100 grains
Gold chloride	2 grains
Water	3 ounces

After toning the print is washed in water and fixed in the fixing solution given above. The card is finally washed in running water for about twenty minutes and dried.

Blue prints may be made on postal cards as follows:

Make the following solutions:

1	Ammonio-citrate of iron	1 ounce
	Water	4 ounces
2	Potassium ferricyanide	1 ounce
	Water	4 ounces

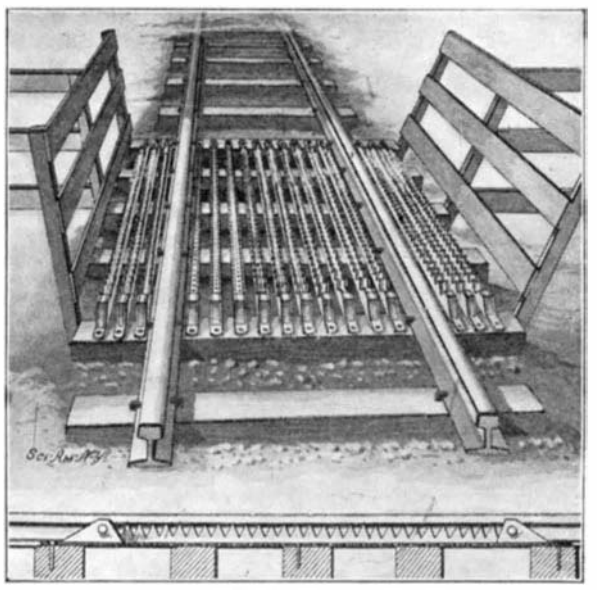
When ready for use, mix the required amount in equal proportions and apply to the surface of the paper with a sponge.

Print darker than the required print is to be and fix by washing in water until the high lights contain no trace of yellow. Although this is easier than the silver process it does not give such fine results. Whichever process is used, a negative with strong contrasts gives the best results.

AN IMPROVED CATTLE GUARD.

One of the principal objections to the cattle guards in general use, is that they are apt to present some obstruction to the passage of a chain or other member which may be hanging beneath a railway car, and when such a pendant member catches upon a portion of the cattle guard, the latter is almost certain to be greatly damaged thereby. Furthermore, in cattle guards as commonly constructed the parts are so connected that if any extensive damage is done, which would impair the apparatus to any considerable extent, it is necessary to remove practically the entire guard structure to repair it. We illustrate herewith a new form of cattle guard, in which the defects above noted are overcome. It is made up of a number of channel bars, which are independently secured to the ties with spikes. Each of the channel bars is beveled at the ends, and between the beveled portions the flanges are formed with teeth, as shown. The flanges are braced at the ends by blocks inserted between them. This makes it impossible for an animal to press a flange over to either side and render the teeth ineffective, as sometimes happens with guards constructed of the serrated plates commonly employed. Openings are formed in the bottom of each channel bar to provide drainage, and also to permit introducing the securing spikes.

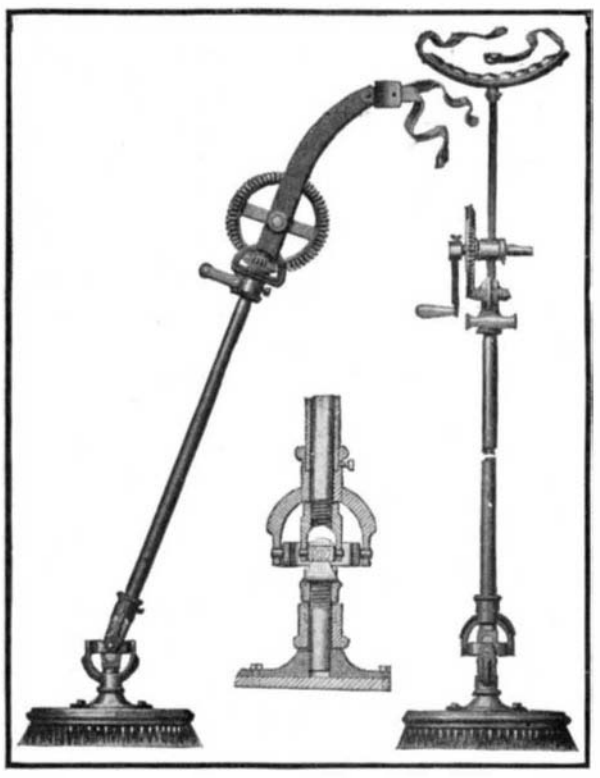
The proper drainage of the channel bars is important, as otherwise water would accumulate in them, filling them with ice in cold weather, and thus rendering the guards ineffective. Due to the beveled ends, the likelihood of the guards being torn up by a chain or the like depending from a car is very remote. In case, however, a guard is injured, it may be taken up without disturbing any of the others, and be straightened out or replaced with a new one. Mr. William Dobler, of Sumner, Wash., has just secured a patent on this invention.



IMPROVED CATTLE GUARD.

REVOLVING SCRUBBING MACHINE.

The ordinary method of scrubbing floors, that of getting down on one's knees and performing the work with a hand scrubbing brush, is very fatiguing. The use of a long-handle scrubbing brush, while less fatiguing, does not permit of as thorough work, owing to the fact that the necessary pressure cannot be well applied. A new method, however, has been supplied by the recent invention of Mr. William J. Tangerman, of Hammond, Ind. This invention consists of a revolving scrubbing brush, so arranged that the operator may exert any desired pressure to insure a thorough scrubbing of the surface under treatment. As shown in the accompanying illustration, the machine is provided at the upper end with a padded breastplate, which may be strapped to the body of the operator. The scrubbing brush is connected by a universal joint with a driving shaft, which passes up through a tubular member of the main frame. The tubular member is also connected by a universal joint with a sleeve on the spindle of the scrubbing brush. A bevel pinion at the upper end of the driving shaft meshes with the driving gear, which is mounted on the main frame, and rotated manually by means of a crank. A handle is formed on the tubular member of the frame, by which the scrubbing brush may be conveniently directed while in operation, the requisite pressure being at the same time applied by the body bearing against the breastplate. Owing to the universal joint connection between the frame and the bearing sleeve of the scrubbing brush, the brush is held at all times level and in proper contact with the floor.



SIMPLE MACHINE FOR SCRUBBING FLOORS.