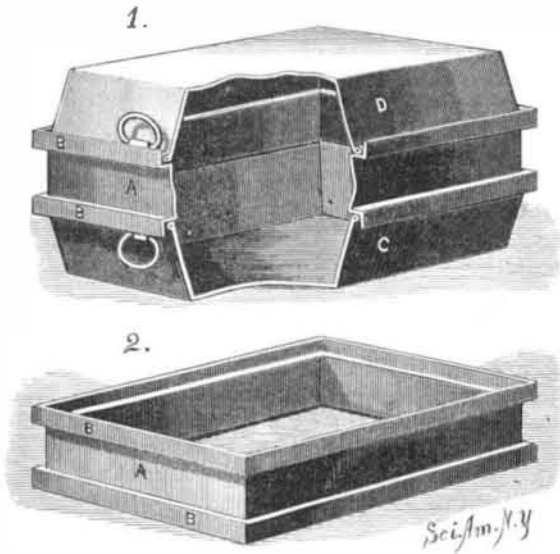


A DOUBLE BAKING PAN.

Mrs. Annie T. Laube, of Huron, Dakota Territory, has obtained a patent for an improved double baking pan, an illustration of which is herewith given. The invention contemplates the use of two ordinary pans, united by a rim or frame placed between them, the rim having angular flanges on the top and bottom edges, to receive the edges of the pans, the bottom pan standing right side up and the upper pan being inverted. Fig. 1 shows the double pan arranged, with a part broken out to show the interior, C, the bottom, and D, the top pan, being united by the rim or frame, A, and held securely by the flanges, B, the rim with its flanges being also separately shown in Fig. 2. This simple arrangement provides a ready means for making an oven within an oven, as



LAUBE'S DOUBLE BAKING PAN.

it were, so that anything being baked can be completely enclosed, or the top protected from too great heat.

CURRENT WHEEL.

A vertical shaft journaled in the supporting frame carries a wheel, the hub of which has radial slots, in which are pivoted the arms carrying the buckets. The outer ends of the arms are inclined downward, and are supported, by means of rollers, on a circular track having that portion which is next to the current of water set lower than the remaining portion. To the vertical shaft are pivoted at different elevations a series of levers, each of which has its ends connected to two oppositely arranged arms. The ends of the levers are joined to the bucket arms by rods; these connections are so constructed that certain ends of the levers may be raised for elevating the arms to which they are joined to a position in which the buckets will be out of the water when it is desired to stop the machine. For elevating the ends of the levers a disk is loosely mounted on the upper end of the shaft, and is provided with pendent hooks of lengths corresponding to the elevations of the ends of the levers with which they engage to support the arms over the water. The arms are raised by the elevated portion of the track, so that if the disk is moved by hand until the hooks are over that portion, and is then held by the brake, the movement of the wheel will carry the arms into engage-



COFFMAN'S CURRENT WHEEL.

ment with the hooks. The hooks will thus support the arms above the depressed portion of the track with the buckets out of water. When it is desired to start the wheel again, the disk is turned backward sufficiently to allow the arms to drop off the hooks into the water. The brake consists of two curved levers pivoted to the frame in such a manner that they partly embrace the periphery of the disk. The two levers are connected by a toggle lever, to the centerjoint of which is still another lever that is fulcrumed on the frame. To the toggle lever is pivoted a pawl which operates the disk, that is formed with ratchet teeth. When

the lever is moved toward the disk, the brakes are moved out of contact with the disk, which is made to revolve backward by the pawl engaging against one of the teeth. The disk is connected with the shaft by a spring catch, and is thereby adapted to revolve with the wheel.

This invention has been patented by Mr. W. M. Coffman, of Roanoke, Va.

New Process of Reproducing Maps and Plans.

At a meeting of the Societe d'Encouragement held last month, Mr. Davanne gave a description of a new process called *Photo-calk*, which is employed at the department of public works for reproducing such parts of a map or plan as may be needed for the study of some new project.

Such reproductions have hitherto usually been made by tracings taken from the original. The new process consists in taking a photograph of the original, and then destroying such details as are not wanted.

After a negative has been taken, a positive print is made upon salted, non-albumenized paper. This print is not toned in the gold bath, but, after a simple fixing by hyposulphite, is dried. It is upon this exact reproduction of the original that the draughtsman makes the modifications that are required of him, and retraces all the details that are necessary for an understanding of the new project.

1. *When but a single copy is required.*—The draughtsman employs India ink for tracing upon the photograph all the details that are requisite. But the photograph, whether it be enlarged or reduced, gives a host of other details that are often useless, and this is especially the case with maps. So it is necessary to cause them to disappear. To effect this it is only necessary to immerse the sheet in a bath that will destroy the photograph. Various chloridizing solutions will do this; for example:

Bichloride of copper.....15 grammes.
Water.....100 "

This will cause the photographic images to disappear very quickly. After this, the sheet is washed and treated with hyposulphite of soda in order to dissolve the chloride of silver formed (without which the image would reappear when exposed to the light). After this the sheet is again washed. The result of this operation is that there is nothing left upon the paper but the lines that have been drawn by hand.

A solution of cyanide of potassium, in the proportion of 3 parts to 100 of water, will bleach the photograph very quickly, and the effect is almost instantaneous, if there be used a five per cent solution of this salt slightly colored with iodine. As the excess of cyanide dissolves the salts of silver formed, it is not necessary to do any fixing, but only to wash the sheet. This solution, when diluted with its own volume of water, still gives good results.

2. *When a number of copies are to be made.*—In this case the draughtsman's work must be transferred to stone or zinc. In order to make this transfer, the paper must contain a special sizing which photographic paper does not possess. The sheet is therefore prepared as follows: It is in the first place given a coat composed of starch or arrowroot, to which is added $\frac{1}{4}$ of mucilage of gum arabic and $\frac{1}{8}$ of sugar. After drying it, a hot 10 per cent solution of gelatine is spread over the prepared side. After this has dried, the paper is calendered.

If the subject requires an impression in several colors, a single photographic positive will suffice. After this has served to transfer the first color, it remains intact with the exception of the sizing, which must again be applied. Then a drawing is made and the part necessary for the second color is transferred, and so on to the end of the series. It will be seen that there is thus obtained an exact register, the same sheet and the same image serving to make each of the plates in colors.—*Revue Industrielle.*

TRACE HOLDER AND DETACHER.

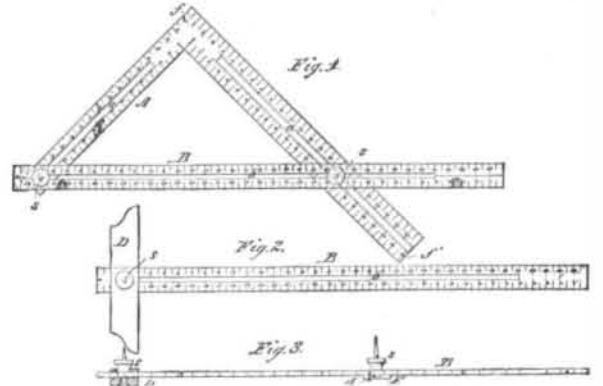
The two shanks, A, are fastened to and project beyond each end of the singletree. A clamp plate, formed with slotted ears and recessed slightly at the middle, swings on a cross pin passed through the ends of the shanks. A segmentally curved plate, K, the curved surface of which faces the clamp plate, is provided with two arms in which the squared head of a screw is loosely held—the head being adapted to swing on a pin, J, passed through the two shanks. The screw passes through a hole in the end of the fork, and enters a smooth socket on the inner end of the plate, K. Between the socket and the cross piece of the fork is screwed the ribbed nut, L. To one of the arms of the plate is fastened a cord that passes around each side of the dashboard from each end of the single tree. A cam lever, N, is pivoted on the pin, D, between the slotted ears of the clamp plate.

By turning the nut, L, the plate, K, can be adjusted a greater or less distance from the clamp plate, according to the thickness of the trace. When the cam lever, N, is turned down, it forces the clamp plate more firmly against plate, K. By swinging the plate, K, back the trace, O, can be placed between the clamp plate and plate, K, when the latter is swung in the inverse direction, thereby clamping the trace firmly between the plates. As the strain on the trace increases, the pressure with which it is clamped also increases. If the horses are to be detached while the vehicle is in motion—for instance, in case they run away—the plates, K, are swung back by pulling on the cord.

Further particulars regarding this invention may be obtained from the patentees, Messrs. Standing & Swaine, corner Natural Bridge Road and Grand Avenue, St. Louis, Mo.

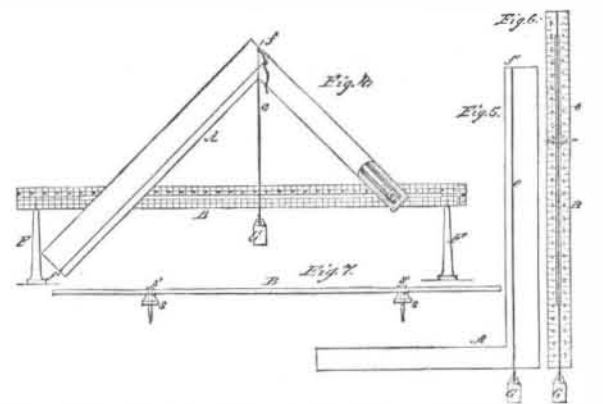
COMBINATION TOOL FOR CARPENTERS.

Combinations of the adjustable and interchangeable parts of this tool will produce a combined square and bevel, and, among other uses, will give the angles and lengths of all kinds of braces, may be used as a rule, and may be rapidly and easily adjusted from one tool to another. The steel square, A, is formed with longitudinal dovetail grooves in the faces of its arms to receive sliding screws. The thirty-



KING'S COMBINATION TOOL FOR CARPENTERS.

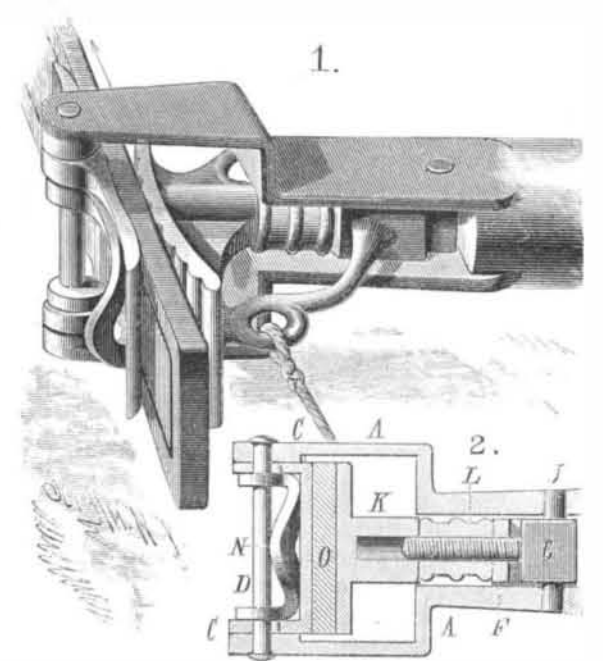
six inch rule, B, has a longitudinal slot through its face for the sliding screws to work in; this slot extends to within two inches of one end and within five inches of the other end. One side of the rule is divided into inches and twelfths, and the other side has lumber measurements indicating twelve, fourteen, sixteen, and eighteen feet, or other lengths.



KING'S COMBINATION TOOL FOR CARPENTERS.

The sliding screws are so constructed as to form scribes. A T square may be formed by sliding the head piece, D, on one end of the rule; the square may also be used as a gauge by fitting the rule with the grooved sliding metal block, E. When the square and rule are combined, as shown in Fig. 1, the tool may be used for giving the angle and length of different kinds of rafters and braces. The rule can be readily taken off and put on, and when once set will be held firmly by the set screws. When the tool is to be used for leveling, as in Fig. 4, the supports, F, which screw into the rule or pass around it, may or may not be used. The method of using the tool as a level is clearly shown in the drawing; when used as a plumb the string is placed in the slit, f, as in Fig. 5. The yard rule may also be used as a plumb by attaching the string as shown in Fig. 6. Fig. 7 shows the tool arranged to be used as a beam compass.

This useful device has been patented by Mr. P. O. King, of Valley City, Dakota.



STANDING & SWAINE'S TRACE HOLDER AND DETACHER.

Production of Coal for 1883.

	Tons.
Great Britain.....	151,184,000
United States.....	76,184,000
Germany.....	46,698,000
France.....	19,909,000
Belgium.....	16,906,000
Austro-Hungary.....	14,936,000
Russia.....	3,000,000
India and Japan.....	2,600,000
Australia.....	2,170,000
Canada.....	1,416,000