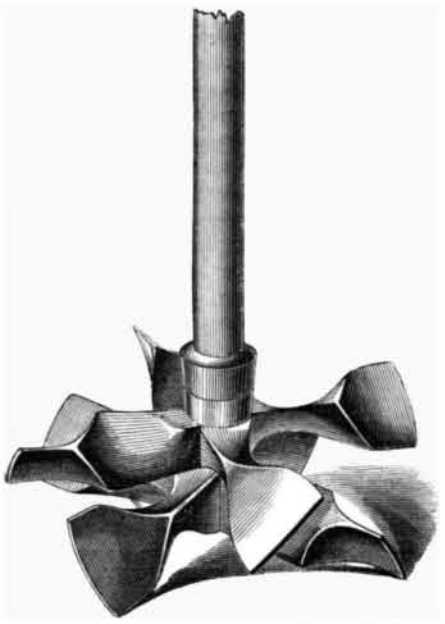
CHURN DASHER.

Our engraving shows an improved churn dasher, for which it is claimed that it so thoroughly agitates the cream or milk that not only is the butter separated therefrom with greater ease and rapidity, but that a larger quantity is obtained.

The form of the dasher is well shown in the engraving; it will be seen that, instead of the usual flat and sometimes perforated blades, it is provided with blades of double, but oppositely inclined, planes, so placed that the current made



by the action of one inclined surface is met and broken, by the action of another surface inclined in another direction.

The result is that when the dasher is moved up and down with the proper force, a violent agitation of the cream or milk is produced, the air being carried under the surface and thoroughly aerating the fluid.

This modification of the old churn dasher, which has yet held its own against powerful competition, will doubtless strengthen the hold it has retained upon the favorable opinion of dairymen. The inventor claims that the same principle of construction is equally adapted to revolving or other kinds of churns.

Patented, through the Scientific American Patent Agency, Sept. 7, 1869, by Miles Fisk, whom address at Adrian, Mich.

Moritz's Jacks for Replacing Cars.

Mr. David Moritz, of Black Rock (Buffalo), N. Y., has invented a traversing jack for replacing cars, which is to be applied to railroad cars, for the purpose of replacing them upon the rails when they are run off the track. To a portion of the car body is attached a bed plate, on which a cross head or bar shaped frame, attached to the jack, traverses. The cross head is provided with double flanges which embrace parallel rails or sides of the bed plate, and is provided with friction rollers to facilitate its movement. Both the bed plate and cross head are suspended from the car by the jack. The screw of the jack works in a nut affixed to the car body. The nut is swiveled in a shell affixed to the car, and is, by toothed wheels, connected with an upright shaft, which carries a hand wheel. By turning this wheel, the nut will be revolved to work the screw up or down, and thereby raise or lower the jack. A ball-joint forms the connection of the nut with the cross head, permitting the jack to rest in an inclined position on uneven ground. From the car is also suspended, by a ball joint, a vertical shaft which passes through a pinion, hung between ears formed on the cross head. The pinion meshes into teeth formed on the inner side of the bed plate. The vertical shaft can slide up and down in the pinion, and is connected by feather and groove to the pinion. This connection enables the car to be elevated without throwing the pinion out of gear.

The operation is as follows: When a car, having one of these jacks near each end, runs off the track, the bed plate at the off end is lowered by means of the screw, and, after it has reached the ground, the nut is still turned to raise the wheels of the car from the ground. The end of the car is then entirely supported by the jack. By next turning the vertical shaft, by means of a handle fitted to its upper end, the pinion will roll along the rack and carry the cross head and end of the car horizontally until the wheels of the latter are again above the rails. The car is then again lowered upon the track, and the bed plate raised off the ground. The nut can be locked, to hold the bed plate elevated, by means of a pawl, catching into a ratchet wheel, on the shaft.

Milroy's Method of Constructing Foundations.

Mr. John Milroy, whose name is so well known in connection with the excavator he has brought into extensive use, has invented a method of constructing piers or foundations of concrete or brickwork. The arrangement embraces two special features, one referring to the construction of the piers either in complete circular or segmental sections, and the other to the use of a curb or shoe to be used with them. Each section is founded on a platform, and within a frame, which may be constructed of wood and built up in segments. The ring is shown as formed with a mortice at one side, a tenon being placed at the other, for connecting or locking together a series of columns or cylindrical piers when constructing foundations for a continuous pier or quay.

A holder is employed in lifting the rings, and it consists of a three armed frame having levers jointed to the outer ends of the arms, and connected by chains to a central ring; those connecting chains are of such length that, when lifting force is applied to them the strain tends to draw in the upper ends of the levers, and force out their lower ends, which are shaped to catch in cavities formed for the purpose in the bottom edge of the ring; and when the latter is being lifted, the strain acting as described, prevents the levers from being loosened or displaced. When the ring has been lowered into its place, the upper chains are slackened and the lower ends of the levers are drawn inwards clear of the ring by means of three chains connected to their lower ends.

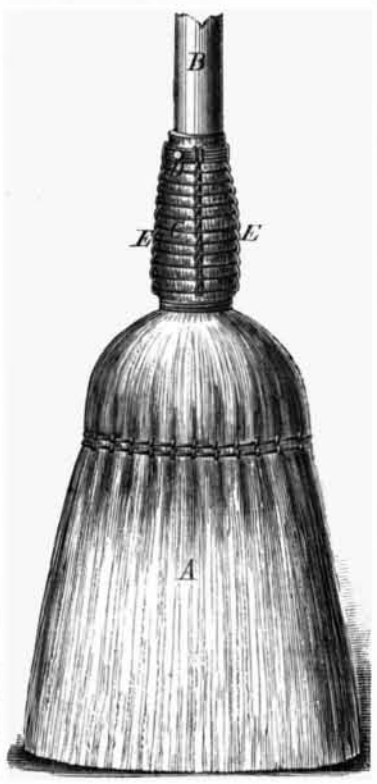
The rings are joined together with Portland cement, either by laying a bed of cement in the usual way, or, after a ring has been lowered into its place, the joint between it and the one next below it is pointed with cement round the inside and outside, and cement is then run into vertical holes made in the rings for the purpose, and rammed well in so as to spread throughout and fill up a small space left for the purpose between the two rings. Bricks may finally be inserted in the holes, to act as dowels between the rings, and thus prevent any movement of them upon each other.

The curb or shoe consists of a thin cylindrical shell easily sunk, and presenting a sharp and elongated entering part, while, from the space within elevation is accomplished without difficulty. The cylindrical shell is surmounted by a flat annular plate, the outer edge of which corresponds with and joins the top of the shell, and it is, in addition, supported by radial brackets or feather plates fixed or formed in the angle inside the shell. The bottom course of the pier rests upon the annular plate, and is fixed to it by bolts.

COPSON'S IMPROVED CORN BROOM.

The object in making this invention has been to improve the manner of attaching corn brush to the handles of brooms, so that if, by any means, the circumference wire should be broken, or the tack which holds it should work out, the wire will still be held securely, confining the brush as before.

To effect this desirable result, use is made of extra braided wires combined with the outer surface wire, as we proceed to describe, referring to the accompanying engraving.



A is the brush of the broom, arranged and applied to the handle, B, in the usual manner. C is the outer wire wound around the butts of the brushes. The end of this wire is secured by the tack, D, in the common way.

Extra braided wires, E, are bent and looped around one of the lower coils of the outer wire, the extra wires being passed alternately over and under the successive coils, and crossing each other between the coils, as shown.

The ends of the braided wires are bent back around the upper coils of the outer wire, and driven into the handle.

The braided wires thus hold and bind the coils, so that should the tack, D, work out, or any part of the outer wires be broken, the brush is firmly held. Four, more or less, of the braided wires may be used as deemed convenient and tasteful.

A patent has been ordered to issue, through the Scientific American Patent Agency, to R. E. Copson, whom address, for further information, Hamburg, Iowa.

How to Photograph a Tracing without a Camera.

I laid out several thicknesses of cloth, on a smooth drawing board, on top of which I placed a sheet of sensitized paper, superimposed the same with the drawing, right side up, and pressed the whole down perfectly smooth with a piece of glass which was kept in place by clothes pins and weights, and exposed it under the skylight until the edges of the paper showed a sufficiently dark impression, when it was removed, toned, and fixed. In this manner an exact copy of a drawing can be made, the only difference, as a matter of course, will be, the lines will be white and the body of the paper dark, which is of no disadvantage whatever.—*Anthonys Photographic Bulletin.*

Davis' Spirit Level, Plumb, and Inclinometer.

The manufacture of this well known and valued instrument was commenced in a small workshop, and has increased in importance till it now occupies a factory costing $70,000. All these instruments are made and adjusted by machinery, so that uniform accuracy may be relied upon. The maker not only furnishes the best article in this line we have seen, but, by improved machinery, is able to supply the trade at as low prices as other manufacturers who sell an inferior article. To all dealers in or users of such instruments, we recommend that they send for a pamphlet, giving prices and testimonials from a large number of practical men who have them in use. See advertisement on another page.

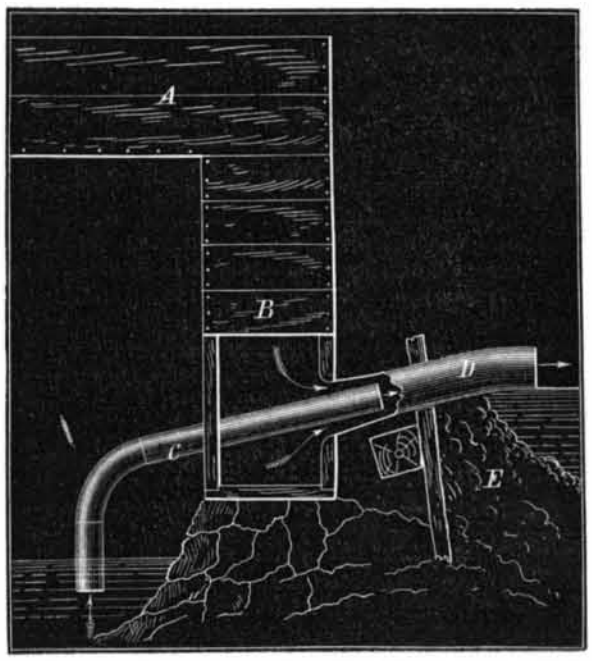
Correspondence.

The Editors are not responsible for the opinions expressed by their Correspondents.

Device for Raising Water.

To the Editor of the Scientific American:

Having learned by experience the value of the device, for raising water, of which I send a sketch, I wish to offer it



through your columns for the benefit of "our" mechanical family. Millwrights often work at a great disadvantage from the difficulty and expense of removing the water from the foundations of their mills during construction; this device will in many cases remove that difficulty at a very small cost. The whole thing can be made by any good carpenter with a few planks and pieces of stove pipe.

In the sketch, the side of the penstock is removed to show the arrangement of the suction and the discharge pipes.

A is the flume, B, the penstock, C the suction pipe, D, the discharge pipe, and E the coffer dam.

The suction pipe, C, extends a few inches into the discharge pipe, D, which, taking water from the penstock, B, surrounds the end of the suction pipe with an annular jet of water which draws with it the water in the suction pipe. In practice, I find that, with a head of 8 feet, a 10 inch discharge pipe draws the water through a six inch suction with such force as to carry cobble stones with it, while lifting the water three feet, developing also a powerful appetite for mud, gravel, etc. Will some scientific man tell us how far water can be drawn by this device with a given head?

G. W. PEARSONS.

Potsdam, N. Y.

[This device is described in Ewbank's "Hydraulics and Mechanics," and is used in Australia for mining purposes. A description of this application of it will be found in another column. Various other uses for so cheap and simple an arrangement will suggest themselves to our readers.—EDS.

Treatment of Colorado Ores.

To the Editor of the Scientific American:

I notice, in your paper of September 16, a letter from Mr. Thomas J. Lee, asking some information in relation to the treatment of Colorado ores. This is an old subject with me, as I visited the Territory in 1865, and formed the opinion which is expressed below. At that time, no proof could be brought forward, for there were too few assays of ore in quantity to form any basis for proof. But I think the publication of the United States Report on the Geological Exploration of the 40th Parallel by Clarence King, (vol. 3, by Mr. Hague, his assistant), offers pretty conclusive proof that the Colorado ores are not, in general, milling ores. There is proof of this in the experience of mill men there, and reason for it in the theory of amalgamation. The future of Colorado is a future of smelting, and all operations in any other direction seem to me to be wanton waste, so far as the ores found near Central City and Georgetown are concerned. Mr. Lee is therefore right in looking to concentration for success, and there is nothing to prevent very successful and thorough concentration.

It was long ago pointed out that mercury has but little affinity for gold, and that the so called "amalgamation" method of extracting that metal from its ores is really a mechanical and not a chemical process. The principles on which the separation is accomplished are easily explained. If we have a substance composed of two elements, one having a specific gravity of 5 and the other of 10, it is easy to see that if we can provide a liquid with a density of, say 7, the latter element will sink in it and the former cannot. To accomplish the separation of the two, we have only to crush the substance to a certain fineness and place it on a bath of the liquid. As soon as each particle of gravity 10 comes in contact with the liquid, it will sink in it, and we have only to agitate the sand until every particle is brought to the surface of the bath. We shall then have the two elements separated, one on the top and the other at the bottom of the liquid.

This is precisely what takes place in the so called amalgamation of gold ores. Gold has a specific gravity of 19·33, and mercury a density of 13·6. The iron pyrites in which the gold of Colorado is found, have a gravity of about 5, and the quartz, which is another constituent of these ores, a gravity of 2·5. It would appear, then, that in a mixture composed fo