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## USEFUL RECEIPTS.

### Plaster Casts of Leaves and Flowers.

The leaf, as early as convenient after being gathered, is to be laid on fine-grained moist sand, in a perfectly natural position, with that surface uppermost which is to form the cast, and to be banked up by sand, in order that it may be perfectly supported. It is then, by means of a broad camel-hair brush, to be covered over with a thin coating of wax and Burgundy pitch, rendered fluid by heat. The leaf is now to be removed from the sand, and dipped in cold water, the wax becomes hard, and sufficiently tough to allow the leaf to be ripped off, without altering its form. This being done, the wax mould is placed in moist sand, and banked up as the leaf itself was previously; it is then covered with plaster of Paris, made thin, due care being taken that the plaster be nicely pressed into all the interstices of the mould, by means of a camel-hair brush. As soon as the plaster has set, the warmth thus produced softens the wax, which in consequence of the moisture of the plaster, is prevented from adhering to it, and with a little dexterity it may be rolled up, parting completely from the cast, without injuring it in the least.

Casts obtained in the manner thus described are very perfect, possessing a high relief, and form excellent models, either for the draughtsman or for the moulder of architectural ornaments.

### Tanned Gelatine or Artificial Horn.

A manufactory has been established in Paris for the construction of a variety of ornamental articles with this substance. The gelatine is usually obtained from bones by treating them with a weak solution of muriatic acid, and is afterwards tanned by the common process, as in making leather. Upon becoming hard and dry, it assumes the appearance of horn or tortoise-shell, and is employed for the same purposes as those natural productions. It is softened by being boiled in water with potash, when it may be formed into any shape, and the figure preserved by drying the articles between moulds. In the soft state, it may also be inlaid with gold, silver, or other metals, and it may be streaked with various colored materials, so as to resemble the finest and most beautiful woods. It is probable that this substance will soon be brought very extensively into use, on account of its elegance and cheapness.

### Prof. Wright.

Prof. Wright, of Cincinnati, who has contributed for our columns the substance of his able, useful, and instructive lectures on chemistry, is at present prevented from completing the series by severe indisposition. We regret this, and so will all our readers, for his sake and the cause of science. We hope he will soon be restored to health.

It is proposed to build a wire suspension bridge over the river St. Lawrence near Quebec, at a height of 162 feet above high water mark.

## KEELER'S PATENT SMUT MACHINE.

Figure 1.

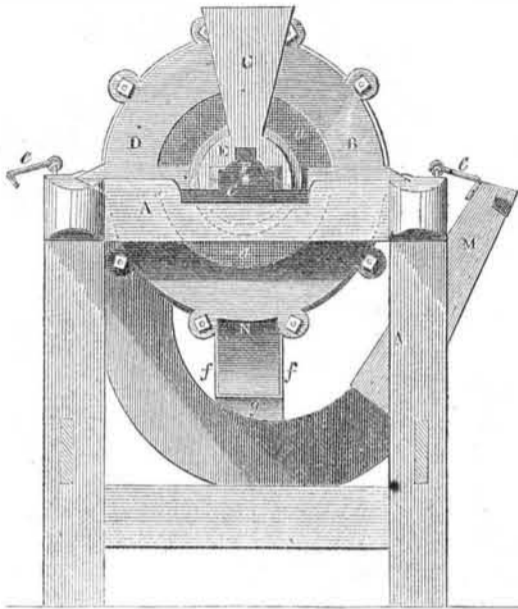
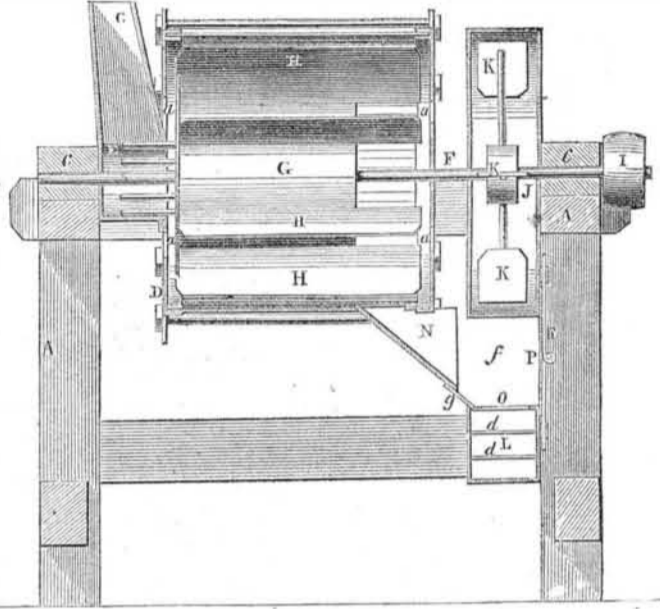


Figure 2.



The annexed engravings are views of an improvement in Smut Machines, invented by Charles and James Keeler, of Union, Broome Co., N. Y., and for which a patent was granted on the 14th of Sept., 1852.

Figure 1 is an end elevation; figure 2 is a longitudinal-vertical section of the same taken through the wind chest and passages. Similar letters refer to like parts. The nature of the invention consists in constructing the wind passages and spouts in such a manner as to allow of their being turned to either side to allow the machine to be driven in either direction.

A is the frame of the machine; B is the drum having openings, *a a*, in each end, D, covered by wire gauze or other material pervious to air; its periphery is formed in the same manner as that of other smut machine drums; C is the hopper, and E, a cylindrical box connected to the same, and surrounding the shaft. There is an opening in the end of the drum to which the box is attached, corresponding in size with the said box; F is the shaft passing through the centre of the drum and resting in bearings, *c c*; it carries the beater cylinder, G, provided with beaters, H, of well-known form, and with a pulley, I, which receives motion through the endless band; J is the wind chest which is formed in two parts: the lips, of the upper half, rest upon the top of the frame and are secured by buttons or other fastenings to hold it in its place; there are similar lips for the lower half which is secured in a similar manner, so that the entire wind chest can be released from the frame without disturbing any other part of the machine; K K are fans secured to shaft, F, and L is the wind pipe divided by partitions, *d d*, into three passages; it descends from one side of the wind chest and curving under it turns upwards; the partitions extend to the lowest part of the bend. In the bottom of the bend there are two openings.—A moveable spout, M, is fitted to the end of the wind pipe, being secured at its upper end by a hook fastening, *e*, to the frame, A; N is a spout inclining from the bottom of the drum towards the wind pipe, and O is an opening in the upper side of the wind pipe below the said spout; P is a plate having two others, *f f*, attached which are at such a distance apart as to fit close to the sides of the spout, N, and are of sufficient depth to fit between the bottom of the wind chest and the top of the wind pipe; a plate, *g*, placed across, *f f*, fits to the bottom of the spout, the plate, P, fits close up to the wind chest and wind pipe,

and with the plates attached forms a drawer which makes a movable continuation of the spout, N, to the opening, O. The drawer is secured in place by a sliding bolt, *k*. When the wind spout is turned to the opposite side of the frame, another drawer similar to this, but of a reverse form, is substituted, the one being right handed and the other left handed.

The grain is fed into the hopper, C, and passing through the box, E, into the drum, is subjected to the action of the beaters. Currents of air are caused by the partial vacuum produced by the revolution of the beaters to enter the openings, *a a*. The grain, after the separation of the smut is effected by the beaters, passes down the spout, N, and through the drawer, and enters the wind-pipe through the opening, O; in the wind-pipe it is met by the blast which carries all the smut, dust, and other extraneous matter, which did not pass through the side of the drum, up the spout, M, from which it is discharged, the grain falling out through the openings, *h h*.—This operation, except that the air is admitted at each end of the drum is substantially the same as that of other machines. In other machines, however, it is not usual to provide for driving in either direction, and no provision is made for changing the position of the wind pipe and appendages with any degree of facility, while this can be made a right-handed or left-handed machine in the following manner. The spout, M, can be lifted off by merely unfastening the hook fastener, *e*; and the drawer, P, *f f*, *g*, can be removed when the belt, *k*, is withdrawn, the buttons or fastenings which hold the lower half of the wind chest in its place to the underside of the frame may then be released, when it and the wind-pipe can be taken from the frame and turned round so as to make the pipe turn to the opposite side, and there secured by the buttons as before, the spout, M, can then be replaced and the reverse sided drawer, P, *f f*, *g*, substituted for the one before used, and being secured by the bolt, *k*, the machine is ready for operation in the contrary direction.

Many patents for grain cleaning machines have been taken out in our country, each claiming some advantage. The only way whereby our farmers can judge of their merits, or even know any thing about them, is by seeing them operate, or by engravings and descriptions of them, from which a very good idea of their nature and merits can be obtained. Those who publish illustrated descriptions of their inventions, show they are not afraid to bring

the matter before the public. More information may be obtained by letter addressed to the inventors.

### The Marston Rifle in England.

In number 17, this Vol., "Scientific American," we presented an illustrated description of the breech-loading rifle of Wm. W. Marston, of this city, and stated at the time, that it was "the most simple and best breech loading rifle yet presented." We also stated that the cartridges obviated the necessity of cleaning out the barrel, and that "it would shine bright inside after firing a thousand shots."

Since the time we made use of these quoted words, they have been confirmed in correctness by trials which have taken place at Woolwich, in England. We learn by the "London Expositor," (the Times and other leading papers confirm the accounts) that Messrs. Moulton & Eustis, from this city, (N. Y.) experimented with the Marston rifle on the 17th of January, at the Royal Arsenal, Woolwich, in the presence of Sir Henry Hardinge, Commander in Chief of the British forces, and other generals and officers of distinction. On the first trial, persons unaccustomed to the use of this rifle, fired 100 shots in 15 minutes, and after firing a thousand shots the bore was perfectly clean. The "Expositor" says, "it seems the most formidable, simply constructed, and economical rifle that has yet been produced." Full credit is given to American inventive genius for producing this formidable rifle. The principle of loading is as applicable to muskets, pistols, fowling-pieces, &c., as to rifles.

### Swiss Central Railroad.

There is a project on foot in Switzerland, Europe, to build a central railway, with several branches, which will unite Basle, Berne, Zurich, and Lucerne, and unite the Geneva line. A company has been formed and a charter granted by the cantons.

### The Ericsson Lecture in Boston.

Can any of our friends in Boston give us an abstract of Prof. Pierce's lecture before the American Academy of Sciences on the Ericsson ship, wherein he proved that it moved with half a pound pressure below 0, on the square inch.

The people in Canada complain that the mails from the United States are delayed beyond endurance. They have sent a Commissioner to Washington about it.

Australian gold is said to be worth more than £4 per ounce.