IMPROVED CHURNING APPARATUS.

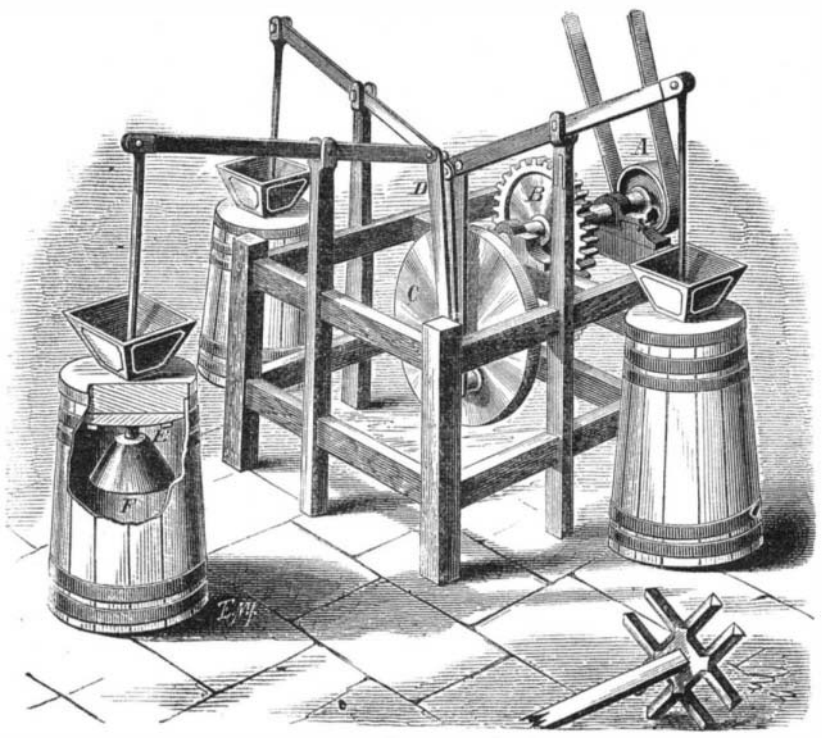
The object of the device represented in the annexed engraving is to furnish a convenient means of operating a single churn or any desired number of churns at once, in accordance with the amount of milk used and power to be applied.

To the end of the driving shaft is attached a hand crank or a pulley, A, which is connected by a belt to a suitable motor. The shaft rotates in bearings in the framework of the machine, and carries a large gear wheel, B, which, through a smaller wheel below, actuates a balance disk, C. To a crank pin on the latter are connected the rods, D, which, through the horizontal levers pivoted to supports on the frame, communicate motion to the churn dasher shafts.

The frame of the apparatus may, if desired, rest upon a platform, in which recesses may be made for the reception of the lower portions of the churns. The peculiar form of dasher represented in the foreground of the engraving is made by halving two bars to each other and attaching them at their centers to the extremity of the dasher handle. The middle portions of the ends of the bars are cut away, and the arms thus formed are made V shaped upon the upper side, while they have grooves of similar contour on their lower faces. The under side of the middle portion of the dasher is concaved, in order, it is stated, to gain a better hold upon the milk and to prevent spattering.

In the cover is formed a chamber, of which the funnel shown forms an upward continuation. The object of the chamber is to receive the milk and fine butter which may be carried up by the dasher shaft. Its bottom is formed by attaching to the cover a plate, E, the under side of which is made convex, so as to scatter the milk that may be projected against it by the dasher. This plate is secured by screws and may be readily removed for cleaning, etc.

Instead of the form already described, the dasher may be made of the shape shown at F, its upper side being conical, and its base slightly concave. The invention is of simple construction, and, according to the inventor, of very efficient operation. He informs us that a child, by its aid, using a simple churn, can easily produce butter from four gallons of cream in ten minutes, and that with three churns, actuated by one horse power, thirty gallons can be similarly treated in fifteen minutes. Patented through the Scientific American Patent Agency, November 4, 1873. For further information address the inventor, Mr. George Ridler, Rickardsville, Dubuque county, Iowa.



RIDLER'S IMPROVED CHURNING APPARATUS.

A New Torpedo Boat.

A new torpedo boat was lately launched with success at the Navy Yard, Brooklyn, N. Y. It is a double hull vessel, being built with two vertical sections and five watertight bulkheads, and will be furnished with a vertical wheel of peculiar construction, by means of which she will be guided as well as propelled. She is constructed wholly of iron, is 175 feet long, 28 feet wide, and 14 feet deep. On the bow she will carry a gun of 11 inch caliber, and on either side and on the bow two torpedo booms will project. The torpedo has been building for two years, and she will not be finished until next year.

What Made the Chimney Fall?

At the cement works of Gostling & Co., Northfleet, Eng., the upper part of an immense chimney, 220 feet high, composed of the best bricks and mortar, grouted with Portland cement, recently fell, just as the last brick for its completion was being laid. Seven lives were lost. The remainder of the chimney was subsequently torn down. An official enquiry as to the cause of the disaster was held. The jury were unable to decide what made the chimney fall, and brought in a verdict, in respect to the killing, of accidental death, with an expression of sympathy for the owners of the chimney, whose loss was quite heavy.

It is possible that some of our readers may be able to point out the cause of the disaster, and we will therefore give some of the particulars, as deduced from the evidence of scientific experts, workmen, the architect, the builder, and the proprietors.

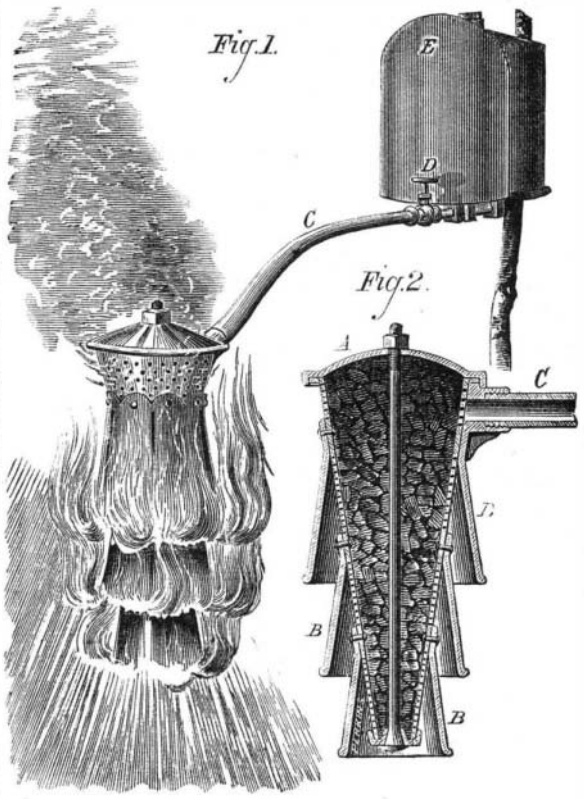
1. The materials were perfect, the workmanship the very best, the method of building excellent; the work was not hurried, more than sufficient time being allowed, namely sixteen weeks, the rate of progress being 14 feet per week.

2. The work was most carefully watched at all times during its progress, and always found plumb; had been plumbed a few minutes previous to the fall, and then stood exactly correct.

3. The walls of the chimney were thicker and stronger than chimneys of equal hight were ordinarily made. The base on which the chimney rested was 30 feet square, base of chimney 22 feet diameter top of chimney 11 feet diameter outside. Thickness of wall at base, 3 feet 9 inches. The first set-off, at 26 feet 3 inches, was 3 feet 4½ inches, at 52 feet 6 inches it was reduced to 3 feet, at 78 feet 9 inches it was reduced to 2 feet 7½ inches, at 105 feet it was reduced to 2 feet 3 inches, at 131 feet 3 inches it was reduced to 1 foot 10½ inches, at 157 feet 6 inches it was reduced to 1 foot 6 inches, at 183 feet 9 inches it was reduced to 14 inches, and it was carried out at 14 inches. A large chimney in West Cumberland, belonging to the West Cumberland Iron and Steel Company, was 250 feet high · diameter of the shaft as it comes out of the ground, 22 feet; thickness about 2½ bricks, which would be about 1 foot 11 inches, so that they were pretty nearly a third thicker at the base; at 160 feet this shaft breaks off to 1½ bricks, that is 14 inches, while at 157 feet theirs was 18 inches. The chimney at Workington was 200 feet; diameter at base 23 feet; thickness of work at bottom, 2½ bricks, that is, 1 foot 11 inches, while they had a thickness of 3 feet 9 inches; at 100 feet, this was 18 inches while theirs was 2 feet 3 inches. The shaft at St. Rollox Chemical Works, Glasgow, was 422 feet from the surface, the thickness at the bottom was 3½ bricks or about 2 feet 8 inches, while this chimney was 3 feet 9 inches, or proportionately nearly double the thickness. The cap was begun about a week before the accident, the greatest projection of the body of the cap was 18½, and it took 10 feet to get out each brick, overlapping barely ½ inch; there were eight projecting ribs in it which projected 4½ beyond, so that it came out a 2 foot projection. They were well supported and not a source of weakness. The weight of the shaft was 1,674 tuns, the weight of the cap being 19 tuns 3 cwt.

BARTHOLOMEW'S IMPROVED TORCH.

Mr. Seth Bartholomew, of Sturgis, Mich., is the inventor of the ingenious form of torch represented in the accompanying engravings. The device may be used for fishing purposes by night, or as a means of illumination during political or other public demonstrations, instead of the ordinary stationary gasoline flambeau generally employed.



It consists of a cast or wrought iron cresset, A, shown in section in Fig. 2, perforated and made in the shape of an inverted cone. This is traversed axially by a rod, the lower end of which forms the bottom of the receptacle, and the upper extremity is screw-threaded in order to hold the nut which secures the cover. Attached and surrounding the cresset is a series of inverted funnels, B. The apparatus is applied and, at the same time, supplied with gasoline or other combustible liquid by a pipe, C, which connects with a suitable can or reservoir. The latter is secured to a post or tree by sockets, and is provided with a screen, E, to protects its contents from the heat of the flame.

The cresset being filled with fragments of brick or other porous material, and the reservoir charged with liquid, the valve, D, is opened. On a match being applied, the finely separated fluid within the cresset takes fire and burns as represented in Fig. 1. Should it be desired to lower or extinguish the light, the operator is enabled to do so by manipulating the cock, D. The brick filling, being wholly noncombustible, will not smolder as a wick would, but will retain its full efficiency for instant service. The funnels may be greater or less in number than represented, and the cresset, if desired, may be otherwise supported and connected with the reservoir by a flexible tube.

Dr. Crace Calvert.

Dr. Crace Calvert died recently at Manchester, England. As an analytical chemist, Dr. Calvert's renown was European. He left England as a youth to pursue his education in France, and in the schools of that country secured many honors—defraying the cost of his education by the awards which he obtained. He subsequently pursued the study of chemistry, and was appointed assistant chemist at the Gobelin Works, under his learned master, Chevreuil. Soon after his return to England, he commenced reading a series of papers before the Society of Arts, on chemistry applied to industry; and on February 12, 1851, brought forward the discoveries of Mons. Chevreuil in relation to the laws of color, his object being to explain upon what basis those laws are fixed, and to point out their application in the effective arrangement of colored fabrics in the Great Exhibition of 1851. In 1846 he settled in Manchester, and was soon after appointed Professor of Chemistry at the Royal Institution there. He was also, for some time, a lecturer at the Manchester School of Medicine. His connection with the Manchester Sanitary Association led him to hygienic investigations—one of the principal results of which was a patent for the application and preparation of carbolic acid. In this he followed up the discoveries of the Prussian, Runge.

Another of his patents was for desulphurizing coke, by means of chloride of sodium, and this has led to an extensive business. In some other directions Dr. Calvert's persistent experiments were doomed to become commercially valueless just at the moment when they had attained to success in the laboratory. This was the case with a patent for sizing cloth, and with another for the production of aniline colors. Dr. Calvert's process for obtaining the aniline from coal tar was soon superseded by its more profitable preparation from benzine. Dr. Calvert made a series of elaborate experiments with picric acid, for dyeing purposes, and also with tannic acid for tanning leather. In scientific circles great interest attached to Dr. Calvert's protoplasmic investigations.—*Journal of the Society of Arts.*

The Hartford Steam Boiler Inspection and Insurance Company.

The Hartford Steam Boiler Inspection and Insurance Company makes the following report of its inspections in the month of September, 1873:

The number of visits made during the month were 1,465; boilers examined, 2,858; internal examination, 792; external, 2,738. The hydraulic pressure was applied in 236 cases. Total number of defects discovered was 1,199, of which 287 were regarded as dangerous. The defects were as follows:

Furnaces out of shape, 46—11 dangerous; fractures, 110—43 dangerous; burned plates, 67—25 dangerous. Several of these cases resulted from the neglect of the fireman to try the gage cocks before starting fire in the morning. The boilers were blown down Saturday night, and then refilled; but the blow-off cock did not close tight, or a defect in the check valve in the feed water pipe allowed the water to run out of the boiler before Monday morning. The red hot, warped and twisted plates soon gave notice of the situation. Blistered plates, 202—28 dangerous; deposit of sediment, 223—27 dangerous; incrustation and scale, 210—24 dangerous; external corrosion, 70—14 dangerous; internal corrosion, 34—14 dangerous; internal grooving, 12—6 dangerous, water gages defective, 79—14 dangerous; blow-out defective, 26—11 dangerous; safety valve overloaded, 43—15 dangerous; pressure gages defective, 189—24 dangerous; errors ranging from —44 to +7 pounds. Boilers without gages, 61—8 dangerous; deficiency of water, 5—3 dangerous; braces and stays broken, 54—19 dangerous; boilers condemned as unsafe to use, 8.

WE are under obligations to correspondents who, from time to time, furnish letters for publication in our columns upon a great variety of practical topics. We highly value these contributions, and hope that our mechanics and others will oftener take the pen and contribute from their valuable store of practical information. During the coming months we hope to enrich our columns with a greater variety of practical subjects, and shall look for an increased number of useful contributions from our readers.

VARIEGATED COTTON THREAD.—Cotton thread may be dyed in two or three colors by covering some parts with parchment paper, tightly wound, and thin tin or lead foil, holding the latter in place by binding threads. If tied sufficiently tight when the skeins are introduced into the dye bath, the protected parts remain white; and by protecting the dyed portion, and unwrapping the white portion, another color may be applied.