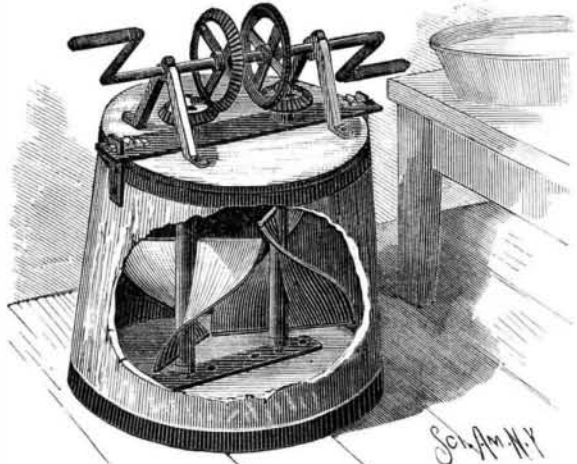


AN IMPROVED CHURN.

The illustration herewith at once brings before the mind a clear idea of the mode of operation and the principles involved in the construction of an improved churn, recently patented by Mr. Henry J. Wagner, of Dayton, Cass County, Mo. In the churn cover are standards, in bearings of which is mounted a driving shaft, operated by the opposite crank handles, bevel



WAGNER'S CHURN.

wheels on the driving shaft meshing into wheels on the upper ends of two vertical shafts, and thus rotating the dasher blades. These dasher blades are secured spirally to the vertical shafts, each blade making a partial turn around its shaft, and are arranged at right angles to each other, so as not to interfere with each other on being rotated in opposite directions. By this construction, as the right hand shaft revolves, the cream passes up the spiral face and outward from the dasher blade, to be received by the spiral face of the dasher blade of the left hand shaft, revolving in an opposite direction, the air following the lower edge of the dashers, and the cream being thoroughly agitated by constant motion forth and back between the dashers. Such a churn is not expensive to make, and the operating parts are all easily removed.

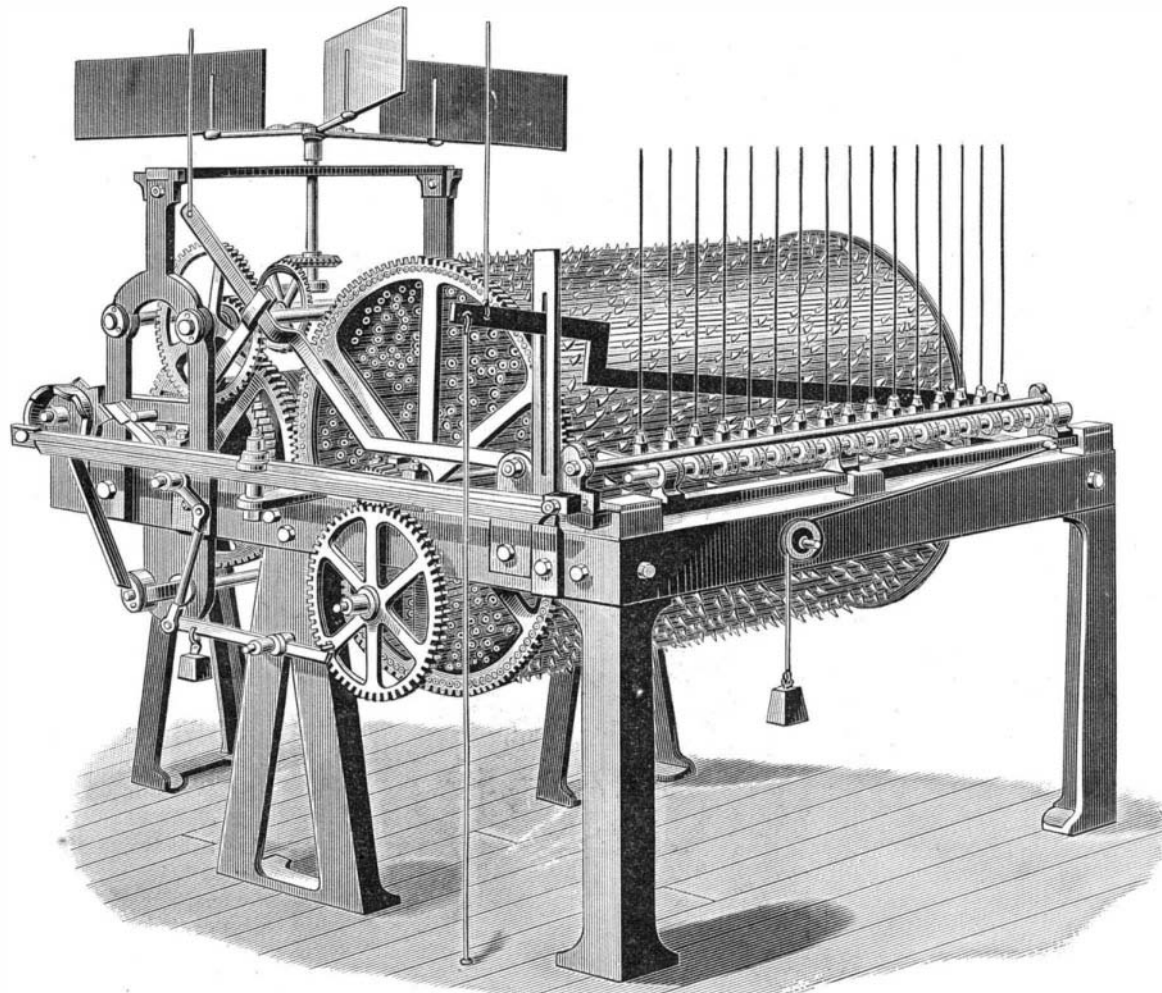
IMPROVED CARILLON.

Of late years, says *Engineering*, there has been a revival of the ancient custom of using the church bells for musical airs. Not only are the beautiful chimes known as the Cambridge quarters substituted for the monotonous "ting-tang" on two bells, but when the clock has chimed the quarters and struck the hour, it discharges by means of a lever.

In the carillon here shown, by the revolution of the barrel—the motive power being a weight of 8 cwt. on a smaller barrel which gears directly into the great one—the hammers are raised and strike the bells in due order, according to the arrangement of the pins. The hammers are of a massive character, and the blows are delivered with sufficient force to bring out the full tones of the bells.

The machine has been constructed on the old form, but with modern improvements, and is comparatively simple in design, very solid in material, calculated to do its work without failure, and to last at least a century—advantages that do not belong to the more modern form, which is easily deranged, and as a matter of fact often fails.

The barrel is of gun metal, 3 feet in diameter, machine cut, the bars of steel nutted at each end and sufficiently open to allow the fixture of the steel pins, 800 in number, which are secured by a screw nut inside the barrel, so that they can be easily removed when required and adjusted for other tunes. There are two



IMPROVED CARILLON.

hammers for each of the eight bells, to provide for the immediate repetition of a note for which a single hammer would be inadequate.

The machine, which plays at intervals of three hours, is entirely automatic. On being discharged by the clock, the barrel makes one revolution, the time being regulated by three fans, as shown, plays the air

through, and in some cases repeats it. The wheel is then locked and the performance ceases.

At the end of the day the hammers are moved for the next air. The object of making the change every day of the week, instead of after every tune, is to provide a special piece for each day, so that a sacred subject will always be played on Sunday. The tunes are as follows: Sunday, Ps. Quam dilecta; from Hymn A. and M., 242; Monday, Auld Lang Syne; Tuesday, Hanover; Wednesday, Home, Sweet Home; Thursday, Spanish Chant; Friday, Mozart's 12th Mass, Air from Last Movement; Saturday, Evening Hymn, Abide with Me.

As a fine specimen of work, the carillon, which, with the exception of the cast iron frame, is entirely constructed of steel and gun metal, is worth inspection. It has been constructed by Mr. Benson, of Ludgate Hill, London.

Life Failures.

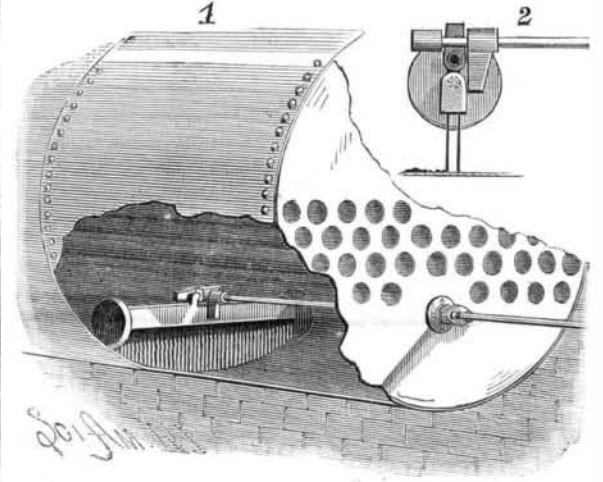
An expert compiler of statistics in England has received a commission from a literary client to collect information regarding causes of individual failures in life. The compiler, accordingly, has issued a circular which he has mailed "to all curates of more than forty and journalists over thirty-five years of age; to all unknown barristers, and to certain members of Parliament, and public men." It is a cruel document, as its mere receipt shows that the person to whom it is addressed is regarded as a patent failure. The form of inquiry reads as follows:

"To what causes do you attribute your failure in life? I, _____, of _____, profession _____, attribute my failure in life to the following causes: 1. Drink (say what drink). 2. Gambling (turf, cards, or what). 3. Dishonesty. 4. Unfortunate acquaintances. 5. Marriage. 6. Single life. 7. Disinclination to work. 8. Lending or borrowing (say which). 9. Unpopular views (political); unpopular views (religious). 10. Tobacco (in what form). 11. General incapacity. 12. Other causes. General remarks."

It is not easy to conjecture what would be the mental sensations of a recipient of the above, after he had once recovered from the primary embarrassment of discovering that the shot was aimed at himself; nor is it in all respects easily answered. For a broken-down toper to determine what particular drink had been his rock ahead in life would perhaps be a difficult task. In fact, in the circumstantiality of the suggested answers lies the ingenious barb of the document. Still, while a man might naturally be diffident about proclaiming his own relationship to any of the above enumerated causes of his life failure—if, indeed, he could be brought to concede the latter to be a fact—there is little doubt that he could find a fitness in the formula for many of

BOILER CLEANER.

Placed near the lower side of either the front or rear of the boiler is a packing box, through which passes a long iron or steel rod, on whose inner end is loosely mounted a block, hinged to which is a brush head provided with wire splints. Upon each end of the brush head is a small wheel; these wheels run upon the bottom of the boiler, and support the head



MILLAR'S BOILER CLEANER.

in a horizontal position. Rigidly secured to the rod, upon either side of the block, are lugs placed at right angles to each other, so that when one lug is turned to a vertical position, the other will be horizontal. One lug is for the purpose of driving the brush along the bottom of the boiler toward the blow-off, while the other is for pulling the brush toward the front of the boiler. The small sectional view clearly shows the arrangement of these lugs. If the brush is to be pulled forward without carrying the mud with it, the rear lug is turned up, when the brush will swing backward and be dragged along the bottom of the boiler. By properly turning the rod and its lugs, the brush may be made to move to the accumulated dirt or mud toward the blow-off, which may be placed at any desired point in the bottom. By means of this device the boiler may be kept thoroughly clean, even when it contains its usual supply of water, or is under steam pressure, or empty.

Further particulars regarding this invention may be had from Mr. John Millar, Box 75, Allenford, Ontario, Canada.

Analysis of Color.

M. Camille Koechlin finds that the solar spectrum yields only two simple colors, blue and yellow. The third is blended with yellow and blue to constitute

the reds on the one hand, the violet on the other, purple being red deprived of yellow, or violet deprived of blue, or simply the spectrum without yellow or blue. If on the red of one be projected the blue of another spectrum or on the violet of the first the yellow of the second, the result is purple. The red or the violet may again be restored by applying to the purple the yellow or blue of a third spectrum. And if these applications be made with reversed prisms, so that the complementary colors reciprocally cover each other, the spectrum will present at both extremities a purple region with yellowish white interval. Purple, being a simple color, will thus never be obtained by mixture, but only by extracting the yellow from a red or the blue from a violet. The solar spectrum contains the elements of all shades, either by mixtures or by dilution with white or extinction with black. In the latter case the colors containing blue preserve their tint, while those on the opposite side of the yellow become changed in char-

acter. Thus green, blue, and violet yield the so-called deep greens, blues, and violets, while the yellow, orange, red, and purple cannot be intensified, but pass over to olive, brown, garnet, or amaranth.

THE Midland Railway of England is making experiments with steel sleepers.