

IMPROVED CAR COUPLING.

The annexed engraving shows a very simple and effective car coupling, which is capable of being readily adapted to cars now in use, and may be used in connection with other forms of coupling. It is, in fact, an improvement upon the old-fashioned link and pin coupling, which thus far has taken the preference over couplings of more recent design. The improvement illustrated is applied to the ordinary drawheads, and is perfectly automatic in its action. It is needless to refer to the advantages of an automatic coupler; the weekly record of the crippling and maiming of trainmen being a sufficient argument in favor of improvements in this direction. The coupling shown in the engraving consists of a link jointed to a link-pin, the latter being inserted in holes made in the drawhead back of the usual holes for the link pin.

Holding pins with enlarged and strengthened heads are inserted in place of the usual link pin. These pins are provided with latches in their heads, which engage the links when the latter drop down into engagement with the pins.

At the end of each car a block attached to the sill is notched to receive the link when not in use, and the link is retained in the notch by a latch. When the cars are to be coupled the latch retaining one of the links is disengaged, and when the drawheads come together the link is tilted by the spring of the drawhead and falls down over the upper end of the pins of the adjacent couplings as shown in the engraving. The link is disengaged by hand, the latch in the top of the pin being first turned. Both links may be used simultaneously if desired.

It will be seen that this coupling is as simple as the ordinary link coupling, while it is automatic in its operation and reliable.

It is the invention of Mr. Geo. W. Vunk, of Brockport, N. Y. All communications in regard to it should be addressed to Mr. B. E. Huntley, of the same place.

IMPROVED FILTER.

We give an engraving of a new filter made by the Newark Filtering Company, of 177 Commerce street, Newark, N. J. In this filter the greatest possible filtering surface is provided, and it is capable of filtering the water supply of the largest cities, and is adapted to the use of paper mills, dye works, laundries, steam boilers, etc.

One of the novel features of this filter is the device by means of which the filter beds may be quickly and perfectly cleansed. This device consists of traveling jets of water which may be directed upon every portion of each filter bed.

This filter is constructed mainly of cast iron, and consists of a number of cylindrical compartments varying in depth from twelve to twenty-four inches, according to the quality of the water to be filtered and the degree of filtration required. The several compartments are fastened together by bolts, *f*, forming one apparatus. This affords a very large filtering area in a comparatively small space. The bottom of each compartment is provided with raised studs, upon which finely perforated sheet brass is placed which supports the filtering material.

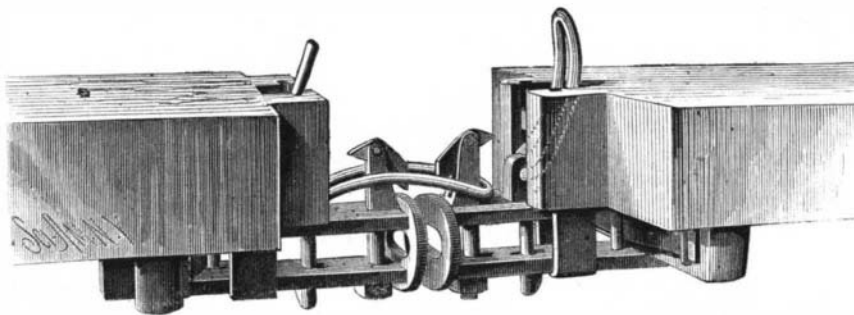
Water is supplied through the valve, *A*, to the main vertical inlet port, *C*, connected with which are the inlet ports, *d*, supplying the water to be filtered to the upper surfaces of the beds of sand or other filtering material. The hand-hole plates, *h*, afford access to all parts. Leading from the space between the perforated brass and the studded bottoms are outlet ports, *g*, which connect with the main vertical outlet port, *D*, delivering the filtered water through the valve, *G*.

In the center of the filter is the pipe, *J*, which is supplied with water from a pump or other source at a pressure of at least twenty pounds per square inch, in order to afford a sufficient force to the jets. This pipe passes through each compartment, terminating in a socket in the lower compartment. To this pipe, which serves as a shaft, are attached smaller radial pipes, *b*, perforated on their under sides at short intervals, one of the smaller pipes being provided for each bed. The inlet valve, *A*, and outlet valve, *G*, are closed, the waste valve, *B*, and washer valve, *J'*, are opened, and by slowly turning the central pipe shaft, *J*, by means of the ratchet, *L*, the smaller pipes, *b*, are revolved, and cause the jets of water to disturb the entire depth of all the filter beds. The effect of this is to detach all the impurities, which being of inferior specific gravity, rise and are carried out of the filter through the ports, *d*, and waste outlet, *E*. Above the radial pipes, *b*, are semicircular ribbed plates, *i*, which prevent the sand from escaping with the waste water.

While the washing is taking place the process of filtering is not interrupted for a moment, except where a single filter

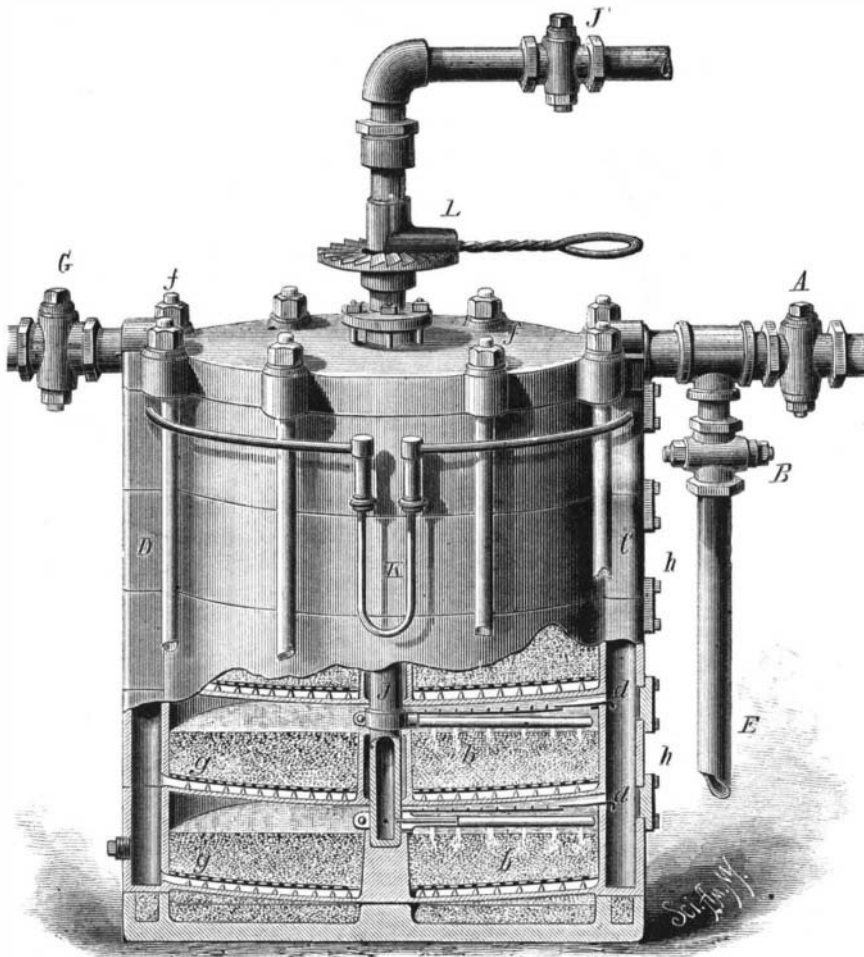
is used, in which case the interruption lasts from three to four minutes. The consumption of water for this purpose need not exceed one per cent of the amount filtered.

All other filters are cleansed either by reversing the current of water or by removing the filtering material. The first-mentioned process only partially accomplishes the object, and the other involves so great an amount of labor and expense (besides its impracticability) as to preclude its general adoption. The facility with which this filter can be cleansed insures a perfect filtration, and prevents any pollution of the filter bed by the presence of decayed animal and vegetable matter.

**VUNK'S CAR COUPLING.**

The mercury gauge, *K*, connected with the inlet and outlet, indicates exactly the amount of resistance per square inch offered to the passage of the water through the filter beds, which resistance increases in proportion to the accumulation of silt and to the volume of water passed through. When the beds are clean they will offer a resistance of about one pound per square inch, and when the gauge indicates about four pounds the filter beds should be washed.

In this filter the sand is kept clean and always in a condition for effective work, and the large area required by the old method of filtration through beds of sand is reduced to a minimum, and the area is further diminished by placing the beds one above the other, from three to ten sections high. This enables the manufacturer to place the filter in a

**THE MULTIFOLD FILTER.**

mill or building where it will not take up a floor space of more than one three-hundredths part of the area required by the old style of sand bed.

The interior pipes are of brass, and the iron parts are protected against corrosion. It will withstand a high pressure, so that water may be forced through it for reservoirs, boilers, etc., or it may be used under a low head. For high pressures the case is made of wrought iron.

The filter in its original form was the invention of Mr. P. Clark, of Rahway, N. J. It has been brought to its present state of perfection by Mr. John W. Hyatt, a prominent inventor of Newark, N. J.

RECENT INVENTIONS.

An improvement in washing machines has been patented by Mr. Flavius L. Wickham, of Racine, Wis. This invention relates to washing machines using corrugated rollers, which are moved back and forth over the clothes, and the improvement consists principally in constructing said roller with long and short ribs, whereby, when the roller is moved back and forth, it will pound the clothes, and at the same time exert a rubbing action upon them between the several corrugations of the roller and of the tub in which the roller works. Said roller is journaled in side bars which are in pivoted connection with crosspieces that carry the main

handle, and which side bars are united at their top by a hinged handle to facilitate the taking of the roller out of the frame when required. The cover of the tub is sufficiently narrow to pass between the side bars of the roller frame, which consequently is guided by the cover in a straight line when reciprocated, and the roller is free to adjust itself to the unevenness of the clothes in the tub.

An improved air-cooling apparatus, which has been patented by Mr. Alfred C. Garratt, of Boston, Mass., provides in a very simple manner either for directly cooling the person or for cooling apartments. It consists of a vessel filled with one or more ice-holding racks, and having an opening in its top for the admission of air, and a series of discharge apertures below the ice having collars secured in them, over which caps may be placed or pipes for distributing the cooled air be fitted.

A fan blower is or may be arranged on the vessel for producing a forced current of air through it, which blower may be operated by hand and the whole device be made portable.

A very convenient and useful wagon stake has been patented by Mr. Eugene F. Chapman, of Scribner, Neb. In this improvement the stake proper is formed with a shoe at its bottom for fitting it upon the end of the bolster to which it may be bolted under the wagon box. The upright portion of said stake is chambered out to receive within it a vertically sliding extension, which has a hook on its upper end that fits over the edge of the box when the extension is wholly inclosed in the stake. The back of this extension is formed with a series of holes, as is also the back of the stake, for supporting the extension, by a rod or brace and pins fitting said holes, in various positions, as, for instance, in a position for supporting a hay or straw rack, or in a position for holding sideboards upon the box, or again in a still different position for supporting a temporary cover over the box or wagon, the bolsters of which are fitted with similar stakes on opposite sides of the wagon.

Mr. James England, of New York city, has patented an ingenious improvement in crozing tools for cutting grooves in the ends of the staves of a barrel to receive the ends of a barrel head. In this improved croze a hollow elliptical tool holder is used. This holder is formed with open ends and with a series of outer longitudinal guide ribs, each of which has a different radius to adjust the holder to the inner surfaces of staves of barrels of different diameters. It also has an inner annular rib near one end of it. The continuity of the outer ribs is interrupted by a like number of longitudinal apertures in the center of the holder. An opposite pair of these longitudinal apertures serve to receive through them a crooked handle rod to which may be secured, by wedges, either a saw or a series of lances, routers, or cutters, for cutting the groove in the barrel at the desired distance from its edge, and subsequently, in place of these cutters, a gouge for beveling the edges of the groove. These cutting devices project through one of the longitudinal apertures in the holder, at the rib having the same curvature as the barrel. The handle rod has a stud above its crook and a longitudinal flanged plate below, and fitting said rod and its plate, so as to be adjustable up or down thereon, is a handle plate having a hook for holding it in proper position on the rod plate. This handle plate being adjusted to rest on the end edge of the barrel, the croze is passed several times around the barrel to cut the groove, and afterwards similarly operated to bevel its edges.

Mr. Abiathar Blanchard, of South Norwalk, Conn., administrator of Dexter Dennis, deceased, has patented an improvement in hats. The object of this invention is to increase the strength and durability of hats made of chip and other materials. The sweat-band and brim lining of the hat are made in one piece, which may be of waterproof paper, and the same be glued or otherwise cemented to the brim and body of the hat, also be further secured, if desired, by the stitching that fastens the band to the hat-body. Said piece or lining may be first formed of annular shape, and its inner part, which is afterward bent upward, be scalloped or notched. Such combined lining and sweat band is free from