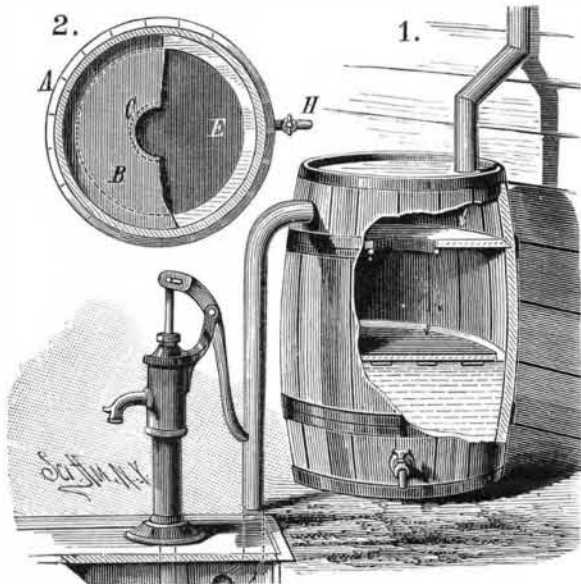


CUT-OFF FOR CISTERNS.

A tank, such as a barrel, is provided at about six inches from its top with a transverse partition, B, formed with an aperture, C. The leader from the roof is held in the top of the tank. Below the partition is the float, E, adapted to close the aperture. An overflow pipe leads from the upper part of the barrel to the cistern, and the lower part is provided with an outlet cock. The water flows into and collects in the bottom of the tank, and as the level of the water rises the float rises, and finally closes the aperture by being pressed by the water against the under side of the partition; the water then flows into the cistern. The water first



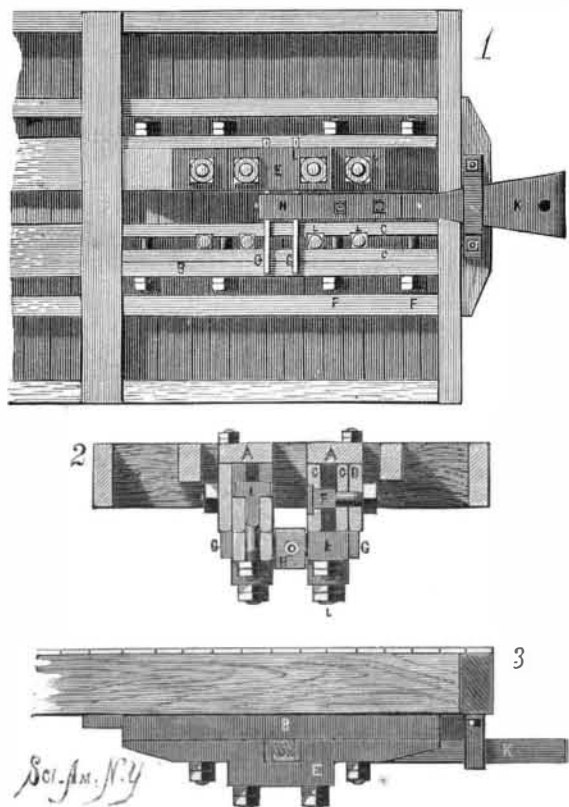
TROY'S CUT-OFF FOR CISTERNS.

collected contains all the impurities that were on the roof and only the clean and pure water passes to the cisterns. When it stops raining, the water in the tank can be drawn off through the cock. Since the quantity of water required to collect the impurities varies in different localities, by using one or more receptacles connected by a pipe to the one containing the cut-off the storage room for the impure water can be indefinitely increased, so that only pure rain water will flow to the cistern.

This invention has been patented by Mr. Daniel S. Troy, of Montgomery, Alabama.

DRAW BAR FOR FREIGHT CARS.

The engraving shows an improved draw bar for freight cars—recently patented by Mr. William A. Jones, Post Office Box 715, Delaware, Ohio—which can easily be repaired and removed or replaced without requiring the parts of the car to be taken apart. Fig. 1 is a plan view of the under side of the draw bar; Fig. 2 is a cross sectional elevation; and Fig. 3 is a longitudinal eleva-



JONES' DRAW BAR FOR FREIGHT CARS.

tion. At a short distance from each other on the under side of the car are secured two stringers, A; on the outer edge of each a downwardly projecting jaw block, B, is held by four screw bolts, L. On the inner side of each block are held two plates, C, each pair being held apart by the upper squared portions of the bolts between the plates. The middle bolts are longer than the end ones and project further down, and the lower ends of the bolts pass through plates, E, placed hori-

zontally against the bottom of plates, C, of one pair. Between the middle bolts two transverse bars, G, are placed edgewise on the plates, E, the ends of the bars being in pockets below plates, C. Between the transverse bars is arranged a spiral spring (Fig. 3) which is coiled around a spindle projecting from the rear end of the draw head, K, which is supported by a cross piece secured on the front ends of the blocks, B, and plates, C. A band, H, secured on the top and bottom surfaces of the draw head at its inner end, is passed over the two cross bars, and at its vertical cross piece is provided with an aperture through which the spindle can pass. The spring acts as a buffer both when the draw bar is pulled or pushed, and the strain is transmitted by the cross bars to plates, E, and then to plates, C, and the stringers. The plates, C, are held together by bolts, F, and the stringers are braced by cross pieces. If the draw head is to be removed, it is only necessary to remove the nuts, when the plate, E, and cross bars, G, drop; a new draw head can then be fastened, and held on the bottom of the car very easily and rigidly.

The Cholera Germ.

The cholera bacilli of the Asiatic cholera appear to be something unique, identical, and unlike any other known or described species. It is exceedingly small, and much smaller than any other form of bacilli, being more obtuse and comma shaped, with a single spore in its larger end at the time of maturity. At first, when inhabiting the mucous corpuscle (which is the home of the germ) it is more regularly oval or elliptical, existing in chains or chaplets end to end, as seen in the outer edges of the rounded and oval mucous corpuscles and broken parts of same. Inside the corpuscles they are more broken up, yet usually form short lines or chains. They multiply by transverse division (across the middle) very rapidly, and completely fill the corpuscle, bursting it at last, at which time the bacilli are set free, become motile, and take on the peculiar comma-form appearance. This is also its time of maturity, at which time the spore may be observed in the enlarged end opposite the curved and shortly pointed end.

Their size at first, in the corpuscle, is about one twenty-five-thousandth inch long by one fifty-thousandth inch broad, afterward about one twenty-thousandth by one thirty-thousandth inch, which is bordering on the size of micrococci.

They readily take the aniline staining, and to be seen well require a high-power objective with a magnification of at least fifteen hundred diameters. A slide was prepared by one of Koch's assistants, who placed the cover on the mucous lining membrane of the intestines of a cadaver in Calcutta, and was kindly sent by W. J. Simmons, of that place, to J. M. Adams, of Watertown, N. Y., who gives us the figure and substance of the above article.

Vapor of Glycerine for Coughs.

According to an account in the *Gazette Medicale de Nantes*, M. Trastour has employed with great advantage the vapor of glycerine whenever a distressing or frequent cough has had to be alleviated. The remedy is very simple in application. About fifty to sixty grammes of glycerine are heated in a porcelain capsule by means of a spirit lamp; a large volume of vapor is thereby disengaged, and should be breathed by the sufferer. Glycerine in which carbolic acid has been dissolved may also be employed. The cough of phthisis and the irritation in the throat of many complaints afford proper trials for these remedies.

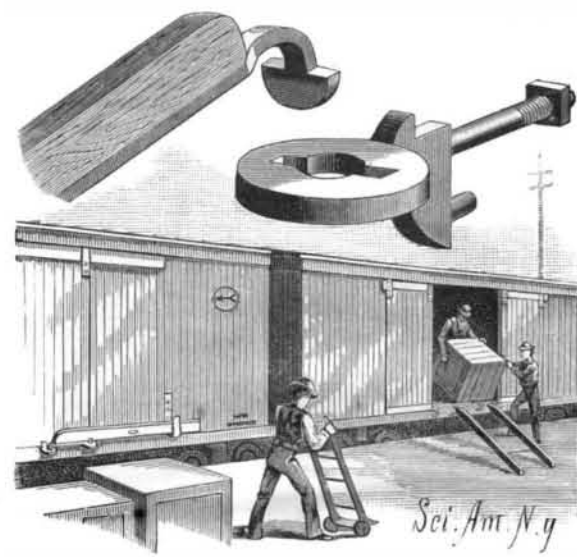
IMPROVED SAFETY VALVE.

The body of the valve, which is of cylindrical form, is made with a thread at one end for its attachment to a boiler, and the outer end is closed by a screw cap, Fig. 2, having in it a circle of holes for the escape of steam. Within the body, a short distance below the cap, is an annular flange that has its upper edge grooved and beveled to form a seat for the disk valve, which is made with a stem extending to near the lower end of the body, so as to give access to the nuts for tightening the spring; it also has a guide stem extending into a recess in the cap. Around the stem is a bridge having arms that take beneath the flange; and on the lower end of the stem, above the adjusting nuts, is a similar bridge. The bridges serve to retain the stem and valve central, and the upper one is a cap for the spiral spring which is around the stem, and rests on the lower bridge. The cap is made with a groove beneath the holes, for holding the steam or preventing it from passing to the guide recess of the stem. The valve being put together, the adjusting nuts are screwed up to give tension to the spring according to the pressure at which the valve is to open. The body is then screwed into position, when the tension of the spring cannot then be changed without unscrewing the body from its place. In operation the valve rises as soon as the pressure upon it is sufficient to overcome the spring, and the opening allows the steam to escape freely.

This invention has been patented by Messrs. Theodor Falk and Alexander Frazier, whose address is P. O. box 166, Maywood, Ill.

FREIGHT CAR SKID.

In the sill of a car a series of bolts is held below the door, on the outer end of each of which is formed a flat eye provided with a slot parallel with the sill and having an enlargement in the middle. A short distance each side of the door opening is secured a hook, on the outside of the car near the bottom, which serves to hold the outer ends of the skids. Each skid is provided at one end with a bar having its outer end bent rectangularly and having a transverse head formed with a rounded edge on the bent part, the head being at right angles to the length of the skid. When not in use the skids are held in the hooks against the sides of the car, and as the heads are at right angles to the slots, and below the



ROWE'S FREIGHT CAR SKID.

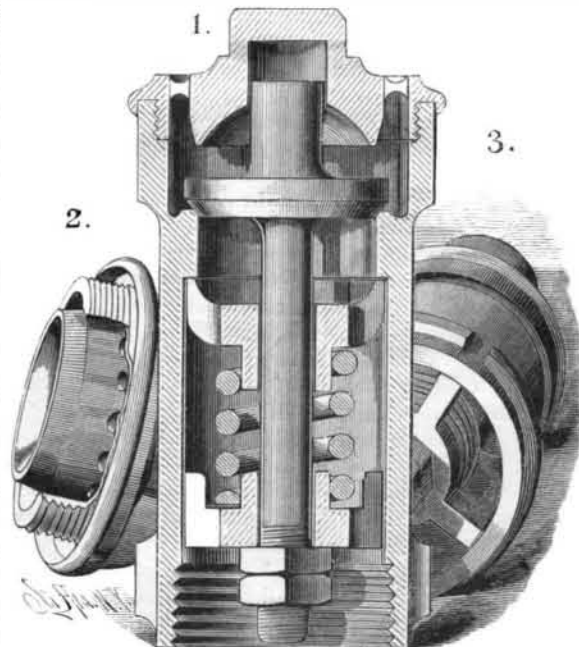
flat eyes of the bolts, they cannot be thrown out by the jolting of the cars.

When the skids are to be used, they are lifted out of the hooks and swung from the car and the free ends rested on a wagon, or on the ground, platform, etc. When in this position the hook ends of the bars can be lifted out of the eyes and placed from one eye into another. The bolt is prevented from turning by the stud on the back of the eye. The skid is automatically fastened in the hook by means of a tumbler.

This invention has been patented by Mr. Joseph L. Rowe, of Corydon, Indiana.

To Keep Cellars from Freezing.

A cheap and very effective way to raise the temperature in a cellar that is dangerously near the freezing point is to set one or more common kerosene lamps on the cellar bottom during the day time, when not wanted for lighting the rooms above. We have all noticed how much warmer a living room is in the evening, when the lamps are burning, than in the day time with the same amount of fire in the stoves or furnaces. All the heat from a burning lamp is retained in the apartment. Twenty-five cents' worth of kerosene oil will throw out a surprising amount of heat, and in many cases it would be the cheapest means for keeping a cellar from freezing during the passage of an extra cold wave. Cold waves may spoil a winter's store of vegetables, which in



FALK & FRAZIER'S IMPROVED SAFETY VALVE.

many instances might be saved by this simple expedient. Cellars that are properly protected from frost by tight underpinning, and if needed, banks of leaves or evergreen boughs, or even banking up with snow, rarely freeze during the coldest weather in winter, but sometimes an unusual cold snap, or a long continued period of cold, may endanger the potatoes and other stores even in pretty tight cellars, especially if plenty of fires are not kept burning in the rooms above.