NEW UMBRELLA SUPPORT.

Umbrellas as commonly made are provided with a central staff and with braces converging toward the staff, the entire arrangement preventing the head from being placed in anything like a central position under the top, and of course the umbrella does not afford the protection it should.

The engraving shows an umbrella provided with a support formed of four rods pivoted to each other at the ends, the upper ends of the upper rods being pivoted to the middle of the umbrella top frame, and the lower ends of the lower rods being pivoted to each other at the handle end of the umbrella support, these several rods being provided with braces and binding rods and locking springs.

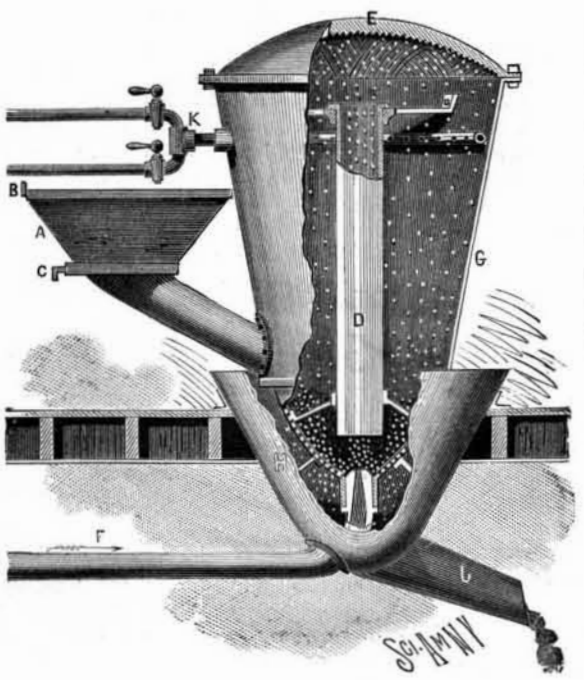
FORSTER'S UMBRELLA SUPPORT.

This arrangement of parts permits of holding the center of the umbrella top directly over the head.

This invention has been patented by Mr. Joseph Forster, of Vienna, Austro-Hungary.

APPARATUS FOR DISINTEGRATING VEGETABLE SUBSTANCES.

This invention consists in the combination, with a closed vessel or chamber having a perforated bottom or lower portion, of a pipe or trunk supported therein and open at both ends, and a nozzle through which air or steam may be injected to produce an upward current through the pipe or trunk, whereby grain or other material is caused to be repeatedly carried up through the pipe or trunk, and to strike with great force against the top or head of said vessel or chamber, and to fall to the bottom thereof outside of said pipe or trunk. The grain or other material is broken up and disintegrated by striking the top of the chamber, and



GOESSLING'S APPARATUS FOR DISINTEGRATING VEGETABLE SUBSTANCES.

when reduced to a sufficient degree of fineness, is forced by the pressure within the chamber through the perforated bottom or lower portion of said vessel or chamber. The head or a portion thereof may be made separate from the top of the vessel or chamber, and so secured that it may be adjusted nearer to or farther from the end of said pipe or trunk, or removed from the vessel or chamber. There is in the chamber a pipe through which water may be admitted to mingle with the starchy or farinaceous particles and carry the same through the perforated bottom or lower portion of the vessel or chamber.

This invention has been patented by Mr. G. O. Goessling, of Jersey City, N. J.

The Waste of Water.

The *prevention of the waste* of water already dealt out to the consumers by existing works is a more important subject for investigation than the extension of facilities for still further waste.

According to a report of the city of Milwaukee, it frequently happens that between the hours of 10 P. M. and 6 A. M., when all honest water consumers should be in bed, more water is drawn from the city mains than in any eight hours of daylight. The excess quantity is given as four millions of gallons; this, divided among a population of 115,600, is about 35 gallons per head *wasted*—an amount sufficient for the daily legitimate use of the citizens, and more than is dealt out per day in many English and Continental cities.

In the same report is a startling tabular statement of the quantity of water consumed before and after the introduction of meters. Just why a party should use 203,800 gallons per month when he did not directly pay for it, and should suddenly discover that 5,800 gallons for the same period was sufficient for his needs, as soon as the water was to be paid for *by measure*, is a knotty question to solve. In any other transaction, we should call this abuse of privilege dishonest; he is either robbing his neighbor of water or of money to pay for more water.

"But water costs nothing" is the common opinion and answer of the ignorant and wasteful consumer. It *does cost* fuel and attendance and interest on the general plant, as any one will find out who studies the annual appropriations of his city. In Milwaukee, for instance, the entire system has cost to date $2,374,274; and New York, with 90,000,000 gallons per day on hand to be divided among one and a quarter millions of people, has almost under way a scheme for a further extension of supply, to cost probably twenty millions of dollars.

How to prevent this known waste of water and of cash is a question more easily discussed than answered. The Milwaukee authorities say, force economy by measuring out the daily supply, and if a man will persist in waste, let him pay for his negligence. The present meter system seems to us certainly the best adapted to meet the difficulty in the case of mills and large factories where the greatest individual misuse of water is located. But what are we to do with our dwellings? Even though the waste may be small in each, the aggregate swells to an enormous total!

The vents for water in the distributing system of a large city are almost countless, and to protect them all against abuse is an exceedingly difficult contract. A very respectable percentage of water pumped in most cities finds its way into the ground or adjacent sewers, through leaking joints in the mains. The waterphone of recent introduction has been the means of discovering and having repaired some alarming waste from this cause; and it has also been utilized in checking abuse among consumers.

The average user of water cannot be reasoned with; he must be forced to a proper economy; and he who will suggest the best means, and the best method of putting into practice his suggestions, will be deserving of the unbounded thanks of all taxpayers, and he will put money in his purse as well.

The intermittent or tank-system of England will not answer; it has many objectionable features, and among the most serious is the fact that users will not properly clean them, and hence the tanks become breeders of disease, instead of dispensers of nature's most precious fluid.

We measure out gas in every house, and though the supply becomes more complicated in the case of water, we must ultimately resort to universal metering. With present experience, we see no other way of putting a stop to the waste of public money now going on in all our larger cities, in providing further food for waste; the evil grows in proportion to the supply.

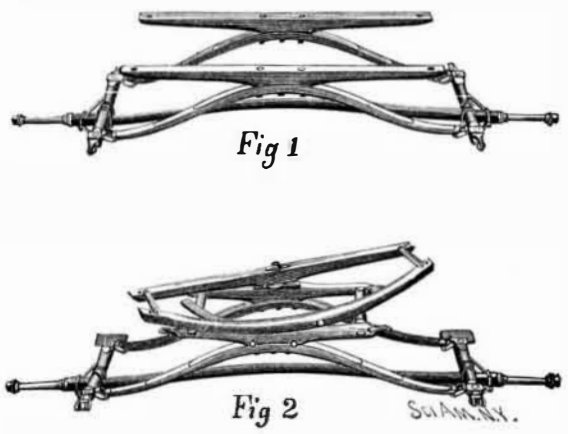
There is a certain sentimental dislike to the limitation of an individual water supply that is as groundless in fact as it is expensive in application; it must be resolutely cast aside. When sifted the problem is one in which all have a vital interest, though few seem to realize it.—*Engineering News.*

Food and Brain Work.

An organism which is doing brain work as well as muscular work requires higher and better food than an organism in which the brain is comparatively idle and only the lower centers and the muscles do much work. Undoubtedly the effect of brain work is to strengthen the brain and to render it less likely to become abnormal in its structure or disorderly in its activity than if it were idle. Such exercise as the brain receives in education, properly so-called—that is, development of the faculties—stimulates nutrition, and in so doing increases the need for food. Excessive activity with anxiety is not good at all, and ought to have no place in the educational process. Worry is fatal to good work, and to worry the growing brain of a child with work is to maim and cripple its organization, doing irreparable, because structural, mischief, the effects of which must be life-long. "Tension" in work is not a proof of strength, but of weakness. A well developed and healthy grown brain works without tension of any kind. The knit brow, straining eyes, and fixed attention of the scholar are not tokens of power, but of effort. The true athlete does not strain and pant when he puts forth his strength. The intellectual man with a strong mind does his brain work easily. Tension is friction, and the moment the toil of a *growing* brain becomes laborious it should cease. We are, unfortunately, so accustomed to see brain work done with effort that we have come to associate effort with work, and to regard "tension" as something tolerable, if not natural. As a matter of fact, no man should ever knit his brow as he thinks, or in any way evince effort as he works. The best brain work is done easily, with a calm spirit, an equable temper, and in jaunty mood. All else is the toil of a weak or ill developed brain straining to accomplish a task which is relatively too great for it.—*Lancet.*

IMPROVED PLATFORM GEAR FOR WAGONS.

We give an engraving of an improved platform gear for wagons recently patented by Mr. William S. Appleget, of Cranberry, N. J. Fig. 1 shows the rear axle with its attached springs, and Fig. 2 shows the forward axle. The bars to which the rear end of the wagon body are to be attached are secured to half-elliptic springs whose ends are



APPLEGET PLATFORM GEAR FOR WAGONS.

suspended by links from bars resting transversely on the axle. The front axle is similarly arranged, and the fifth wheel is supported on the cross-bars, the king-pin being carried by the forward bar, and the wear plates by the rear bar.

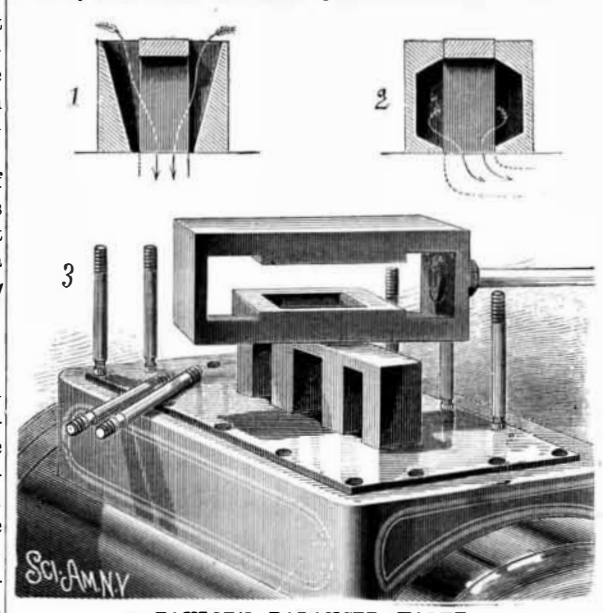
This arrangement insures great firmness and security to the gearing of platform wagons, and admits of the use of the best form of spring.

NEW BALANCED SLIDE VALVE.

The annexed engraving exhibits a new form of slide valve designed to obviate the friction caused by steam pressure on the valve. Fig. 1 is a transverse section taken through the supply portion of the valve. Fig. 2 is a transverse sectional view taken through the middle of the valve, showing the exhaust cavity, and Fig. 3 shows the valve seat and the complete valve in perspective, but separated from each other.

The face of the cylinder on which the valve slides is formed at its center with the raised portion or projection, of a length and width for covering the openings to the steam and exhaust ports, and this projection or cover is formed with transverse slots or ports which are continuations of the usual steam ports, so that they open to the steam chest at the sides of the projection.

The valve is substantially two bridge valves yoked together and fitted to the opposite sides or faces of the seat. The two sides of the double valve, are connected at their ends by cross bars. The middle portion of each side is formed



TAYLOR'S BALANCED VALVE.

with an exhaust recess, and near to their ends the sides are cut out to give space for the access of steam to the ports.

It will be seen that with this double valve fitted in the manner described on the projection of the valve seat the steam pressure is equal upon each side of the valve, and the pressure of steam is sustained by the material of the valve. There is therefore no pressure of the valves upon the side faces of the valve seat on which they work. There is another advantage in the double ports and valves, as at the first movement of the valve in opening the ports the port at each side is opened, so that double the amount of steam is admitted.

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