

been demonstrated by Dr. Hooker that the pitchers of *Nepenthes* not only allure insects by a sweet secretion at the rim and upon the lid of the cup, but also that their capture, or the presence of other partly soluble animal matter, produces an increase and an acidulation of the contained watery liquid, which thereupon becomes capable of acting like gastric juice in dissolving flesh, albumen, and the like. In other words these pitchers seem to be stomachs. Borneo is indeed a land of many wonders. Dr. Beccari has found there a curious plant (*Myrmecodia*) which never fully develops until bitten by a large red ant. They make their nest in the swollen stem, and thence rush out to repel all invaders. Dr. Beccari asserts that the presence of these ants is absolutely essential to the plant's existence, for unless the young plants are thus attacked they soon perish.

IMPROVED ELEVATOR.

The frequency of accidents to elevators has suggested a practical field for invention, to which some of our inventors have turned their attention. By some safety is sought in pawls and ratchets, in a multiplicity of ropes, and in the hoisting machinery itself; but the inventor of the device which we illustrate secures safety by automatically opening and closing the hatches as the elevator approaches and recedes from them. This plan not only secures the elevator car from dangerous falls, but it also prevents persons from falling down the hatchway, and in case of fire prevents its spread through the hatchway.

The mechanism by which this very desirable end is accomplished is both novel and ingenious. The hatchway is closed at each floor by two doors, A B, which are connected by links, *a*, with a slide, *b*, moving in guides at the side of the hatchway, so that when one door is moved in one direction the other will be correspondingly moved in the opposite direction. The doors, A B, are each provided with two segmental racks, C D, which are engaged alternately by racks on the vertical rods, E F. These rods extend from the top to the bottom of the hatchway, and are provided with as many short sections of rack as there are segmental racks attached to the doors.

On the driving shaft of the elevator there is a loose spur wheel, G, engaging a rack on the lower end of each of the rods, E F, so that when one of the rods moves upward the other moves downward. Upon the rod, F, in addition to the rack already mentioned, there is another rack which is engaged by a wheel having cogs in a segment of its periphery, H, secured to the driving shaft. The car is hoisted in the usual way, and as the driving shaft revolves an intermittent vertical movement is imparted to the rack on the lower end of the rod, F, by engagement with the mutilated wheel, H. The rod, E, by virtue of its connection with the rod, F, through the spur wheel, G, is also moved vertically, but in the opposite direction.

When the car is ascending the rod, F, with its racks, is moved downward, and its movements are timed relatively with the movement of the car, so that just before the car reaches a pair of doors the rack segment, D, on the door is engaged by one of the racks on the descending rod, F, and the doors are opened, at the same time one of the racks on the rod, E, engages one of the rack segments, C, on the door below, closing the doors immediately after the passage of the elevator through the floor to which the doors belong. When the car descends the reverse of what has just been described occurs.

This invention was recently patented by Mr. James W. Evans, care Geo. F. Betts, Equitable Building, 120 Broadway, New York city, who may be addressed for further information.

A Great Towing Feat.

One of the longest towing feats on record was lately accomplished by the salvage steamer *Recovery*, of Liverpool, in towing from St. Vincent, W. I., to Flushing, Holland, the Italian screw steamer *Centro-America*, which had broken her propeller shaft. The *Recovery* left St. Vincent, with the steamer in tow, April 1, and arrived at Santa Cruz, Teneriffe, April 11, where she was detained one day. The *Lizard Signal* station was passed April 24, the run from Teneriffe, 1,383 miles, having been made at an average of 115 miles a day. Flushing was reached on the 27th, making the whole passage of 2,578 miles in 26 days, deducting the detention at Teneriffe. Two heavy gales were encountered by the way. The best day's work was 144 miles. The *Centro-America* registered 1,384 tons.

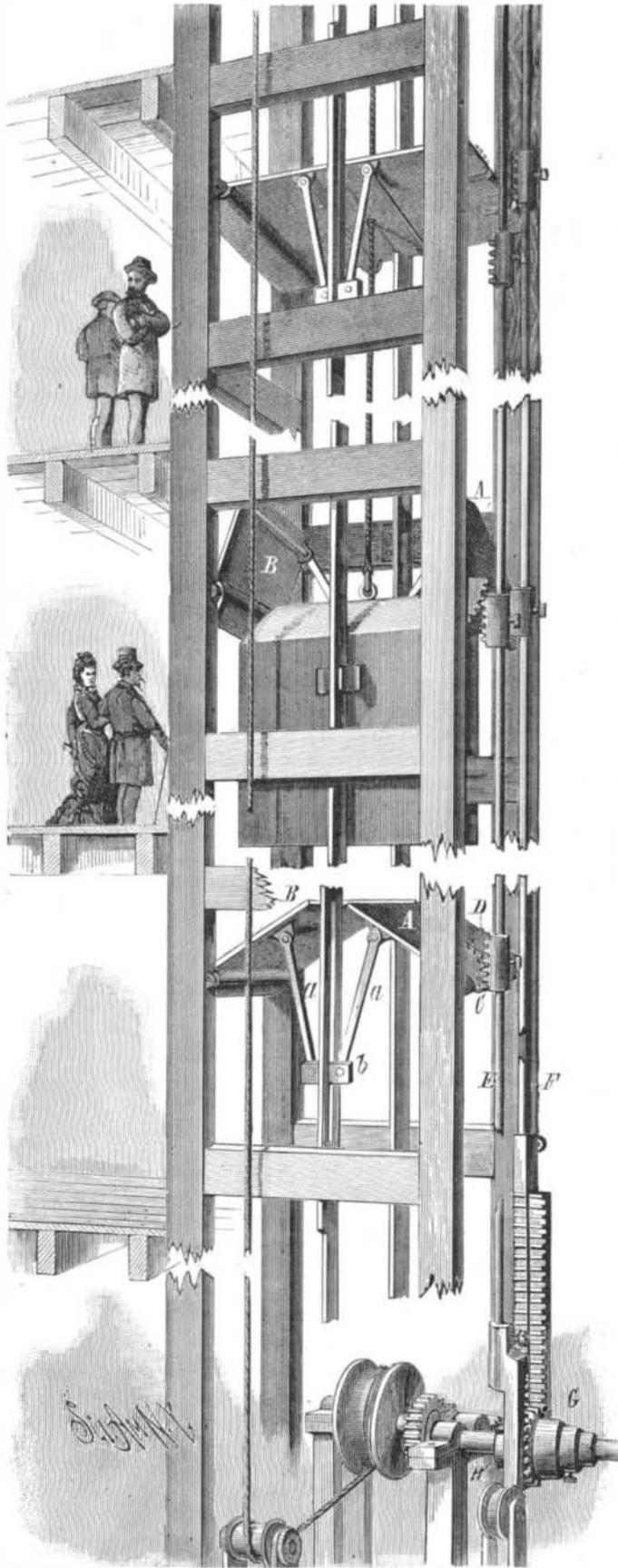
Preservation of Hops.

The principal feature in this new system consists in sprinkling the hops with alcohol prior to packing, and then pressing them tightly into air-tight vessels. In course of time the alcohol combines with some of the constituents of the hop, and certain volatile ethers are thus formed; these possess a strong and peculiar fruity smell, but being very volatile, they are all dissipated during the boiling. Dr. Lintner has experimented on these preserved hops at Weihenstephan, and speaks well of them; he says the fine color

is retained and there is a full development of aroma; the fermentation of worts made with these hops worked well, and the resulting beer possessed a fine bitter flavor. If this method of sprinkling with alcohol will stop the development of valeric acid, which takes place in hops when stored in the usual manner, it ought to come into general use.

Wind Pressure.

Does the wind, in passing through the open spaces left between the solid members of an articulated structure (such as a bridge), experience no further resistance than that offered by the net area of the solid surfaces of the members? We think it does. Air is a fluid equally with water, and it is well known that when water issues through an orifice in a flat surface, the issuing stream is very sensibly contracted to much less than the area of the orifice. This coefficient of discharge through holes in plates or flat surfaces is as low as 0.62. Or, in other words, only 62 per cent of the opening is truly effective for the passage of the liquid. Without



EVANS' IMPROVEMENT IN ELEVATORS.

doubt, these principles apply equally to all fluids, gases as well as liquids. In the case, then, of air flowing through an articulated structure, we do not think that the full area of the openings, between the solid members, should be considered as effective for the passage of the air, but only to a reduced extent of, perhaps, from 60 per cent to 70 per cent. This would have the effect of adding very largely to the gross resistance offered by any articulated structure to the wind—in fact, it would cause an addition of from 30 per cent to 40 per cent of the openings to be added to the solid members as representing the whole area offering a resistance to the passage of the wind. This additional amount of resistance may be found more than sufficient to occasion overturn, when otherwise it would be far from being anticipated by calculation.—*Iron*.

A Curious Phenomenon.

The *Plaindealer*, of East Kent, Ontario, states that a curious and inexplicable phenomenon was witnessed recently by Mr. David Muckle and Mr. W. R. McKay, two citizens of that town. The gentlemen were in a field on a farm of the former, when they heard a sudden loud report, like that of a cannon. They turned just in time to see a cloud of stones flying upward from a spot in the field. Surprised beyond measure they examined the spot, which was circular and about 16 feet across, but there was no sign of an eruption nor anything to indicate the fall of a heavy body there. The ground was simply swept clean. They are quite certain that it was not caused by a meteorite, an eruption of the earth, or a whirlwind.

The New Brooklyn Elevator.

A brick elevator, with stores, rivaling in capacity the great elevators of the Erie and the Pennsylvania Railroad Companies in Jersey City, has just been erected in Brooklyn by David Dows & Co., of this city. It is intended exclusively for handling and storing grain for the European trade.

The façade on Columbia street is 200 feet, and the sides reached to the Atlantic dock stores, of which it will form a part, are 175 feet on each side and three stories in height. The chimney is situated on Pacific street, about the middle of the building, and is 12 feet square at the base, rising to the height of 180 feet, which is also the height of the elevator. The upper part of the latter will be entirely of framework, extending the full width of the store on which it rests, and will contain five tiers of chutes leading to the wharves on either side, so as to be readily connected with the holds of vessels. A novel feature in connection with these chutes is that they form a continuous circuit with other chutes leading from the new building.

But the essential feature of the structure in which it differs from the other elevators in use is the erection of two elevators on the Columbia street side, corresponding in height and shape to the elevator proper at the wharves. These will be so connected with each other and with the main elevator, that any or all can be used simultaneously in loading from one to four vessels, or in unloading grain from canal boats or lighters at one point, and at the same time loading steamers at another. It is in the facility with which this process can be carried out that the great improvement in the elevator system consists. So great is the capacity of the stores that 20,000 tons of grain can be readily stored on any floor of either building. The machinery will be so adjusted that a double hoisting system can be employed with as little difficulty as the single hoisting system now employed on the railroad elevators. It is calculated that by this method two transatlantic steamers of the greatest capacity can be loaded with grain within eight hours by the simultaneous operation of the double hoisting apparatus.

Explosions of Malt Dust.

One of the Burton-on-Trent breweries has narrowly escaped destruction by fire. A violent explosion occurred in the malt grinding room, and as soon as the workman in charge, who had been thrown on to the ground, could recover himself, he found that the hopper above was in flames, which, fortunately, were soon suppressed. There is but little doubt that this explosion was caused by a sudden combustion of malt dust, and it is well that brewers should be warned against this danger. Finely divided combustible powders, such as flour, malt dust, coal dust, etc., will explode, and there are on record many serious conflagrations which have been traced to this cause; in America several large flour mills have been totally destroyed by fires originating in this way. Some difference of opinion exists as to the way in which these explosions are brought about; it is, however, easy to imagine that a combustible substance like malt, flour, or coal, may be reduced to such a fine state of division as almost to approach the gaseous state, and being thus intimately mixed with the oxygen of the atmosphere, we have all the materials for a sudden and explosive chemical combination. Some persons have argued that these explosions are spontaneous, but we incline to the opinion that either a flame or a spark is required to bring about the combination.

It is a common practice in some breweries to place an unprotected gas jet or lamp close to the malt mill, and in this way the inflammable dust may easily become ignited; or the same result may be produced by a small stone passing between the steel malt rolls, by which a spark is produced, and thus the dust is exploded. Precautions against these two sources of danger should be observed in every brewery.—*Brewers' Guardian*.

A BEEFSTEAK chopped up fine and baked with flour and yeast in the form of a "meat-bread" loaf is the latest dietetic sensation. It is asserted that meat thus treated entirely disappears during the process of purification, the nutritive principles becoming incorporated with the bread. M. Scheurer Kestner has just been explaining the process.