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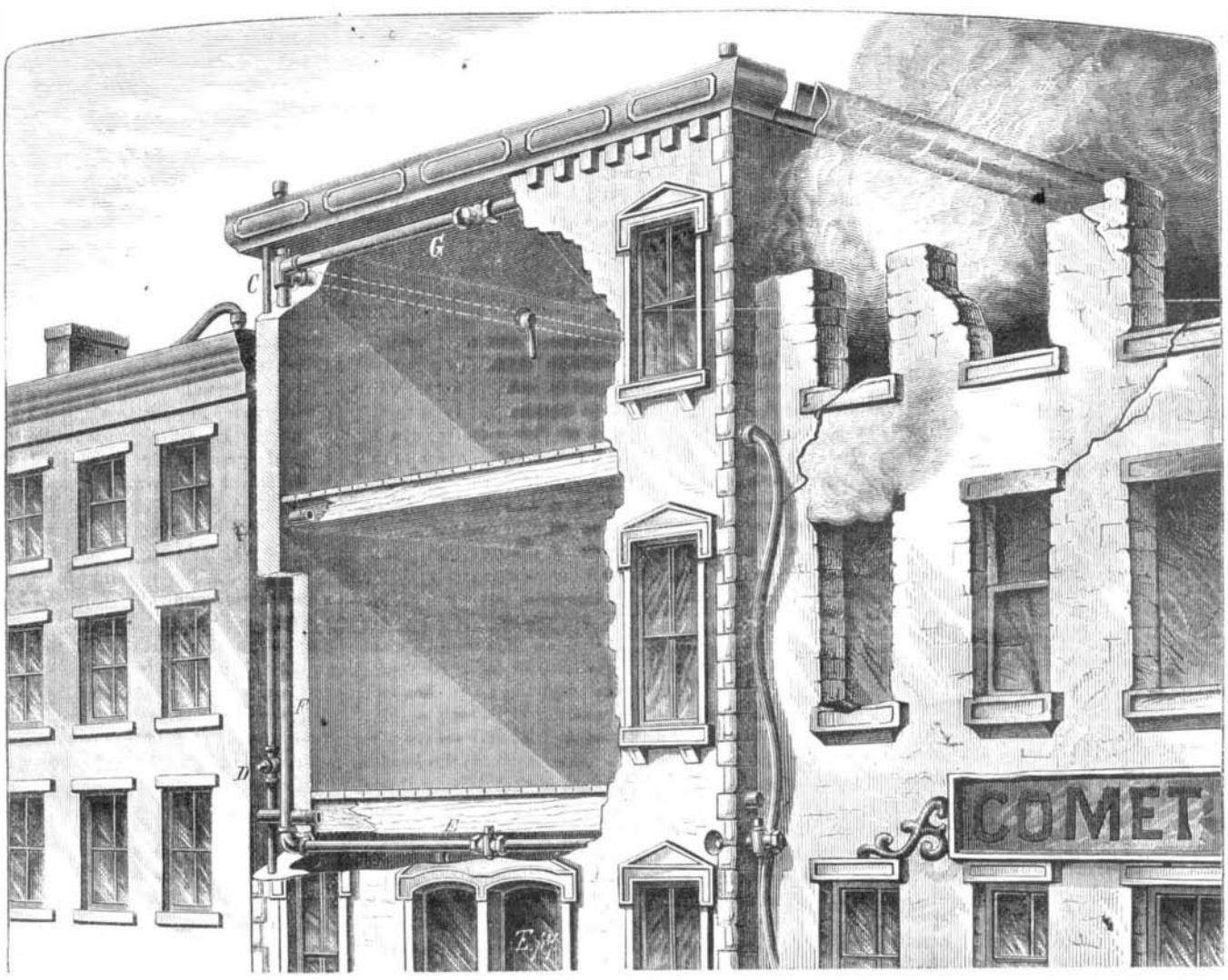
FIRE EXTINGUISHING APPARATUS FOR BUILDINGS.

Illustrated in the annexed engravings will be found a novel and, it is believed to be, a most efficient device for protecting buildings of every description from fire. The invention consists essentially in a peculiar form of tank roof, which may be entirely submerged through its connection with a system of water pipes running through the edifice, as illustrated in our engraving. By means also below described, the outer walls may be kept constantly wet by a thin stream of water pouring down their faces. Perforated pipes are laid through the building, in order to afford a supply of water to the different stories; and finally, by suitable hose connections on the roof, streams of water may be thrown upon adjoining structures.

The roof arrangement is shown in Fig. 2, and consists of a flat sheet metal watertight covering, having around it a flange, A, within which is a partition, B, the two portions forming the eaves. The flange, A, supports a cornice, the lower edge of which stands out from the wall for a distance of about an eighth of an inch. Perforations are made in the outer flange, so that, whenever the water in the gutter rises above the orifices, it will escape and flow down the walls.

A suitable waste pipe, C, Fig. 1, connects with the gutter, and ordinarily carries off the water to the sewer; but when it is desired to cause an overflow through the perforations, as above noted, the shutting off of a cock, at D, accomplishes the object.



FIRE EXTINGUISHING APPARATUS FOR BUILDINGS.

Under the lower floor, and inside the walls of the building, it is designed to place four distributing mains, one of which is shown at E, Fig. 1. From each corner, formed by their junction, rises a stand pipe, F, to and through the roof, terminating in a hose coupling, Fig. 2. Under the roof horizontal pipes, G, connect the stand pipes together, and these, as are also the mains, E, are provided with suitable stopcocks, by means of which water may be delivered at any one or more of the stand pipes upon the roofs, or without pressure through all the pipes. One stand pipe terminates at the plane of the roof, and serves to conduct water therefrom except when flooding is desired, when a stopcock at the lower part of the tube is closed. At the planes of the joists of the several floors, the stand pipes are tapped with couplings with which to connect perforated pipes extending across the building, for the purpose of throwing spray between the floors and ceilings to extinguish fires occurring therein. These spray tubes are provided with stop valves at each end, so that no water need be used unless required.

In the center of the roof is a pipe, H, extending through the same and having hose couplings at both ends. The upper extremity may be connected by a hose with one of the stand pipes; and, by hose attached to its lower portion, water may be delivered at any point within the upper story. The stand pipes are provided with external couplings at the several floors, which project through the outer walls to receive lines of hose from fire engines, as shown in Fig. 1.

The inventor suggests that the device will prove a valuable safeguard in theaters and other buildings liable to sudden conflagration. He proposes to make the sides of proscenium boxes, and also the railing of each balcony, of galvanized metal with perforated surfaces, so that a flow of water may be instantly secured, which will flood the auditorium.

Patented January 20, 1874. For further particulars regarding sale of rights address the inventor, Mr. John C. Schweizer, with Kramer Brothers, 264 and 266 Madison street, Chicago, Ill., or Francis Probst, 51 Liberty street, New York city.

Carnivorous Plants.

In a recent number of the *American Naturalist*, Mrs. Mary Treat gives an interesting account of her observations of the habits of the plant known as sundew (*drosera filiformis*), which she found in July last, in Atlantic county, N. J. These plants appear to be most remarkably endowed. To all the usual functions of plants, certain animal instincts and propensities are added, such as the power to seize, kill, and suck the blood of insects, and to grasp and eat raw meat, etc.

Our author says of the plant: It was in full bloom and growing as thick as it could well stand, on either side of an extensive cranberry plantation. This charming plant, with its pretty pink blossoms, together with the dew-like substance exuding from the glands (the glands surmount the bristles or hairs which cover the long thread-like leaves), was one of the most beautiful sights I ever beheld. From

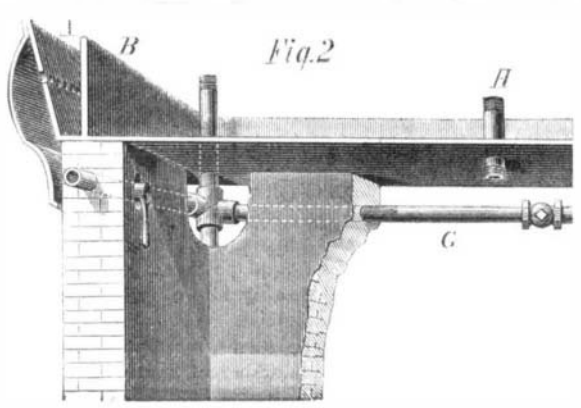


Fig. 2

former observations I had supposed this plant caught only small insects, but now found I was mistaken; great asilus flies were held firm prisoners, innumerable moths and butterflies, many of them two inches across, were alike held captive till they died—the bright flowers and brilliant, glistening dew luring them on to sure death. But what is the use of this wholesale destruction of insect life? Can the plants use them? Upon examination I find that, after the death of the larger insects, they fall around the roots of the plants as if to fertilize them, but the smaller flies remain sticking to the leaves.

Careful and repeated experiments during several days revealed the fact that on some days the plants work much better than on others. Whether it was the electrical condition or amount of moisture in the atmosphere is yet to be ascertained.

I experimented with three species of these plants—*d. filiformis*, *d. longifolia*, and *d. rotundifolia*.

July 11, 10 o'clock, A. M., I pinned some living flies half an inch from the leaves, near the apex, of *d. filiformis*. In forty minutes the leaves had bent perceptibly toward the flies. At twelve o'clock the leaves had reached the flies, and their legs were entangled among the bristles and held fast. I then removed the flies three quarters of an inch further from the leaves. The leaves still remained bent away from the direction of the light toward the flies, but did not reach them at this distance. Whether the action of the flies' wings may have created sufficient force to bring the leaves near enough to entangle the flies, is a question I have not yet satisfactorily settled in my own mind, for dead flies did not seem to have the same power as living ones.

Fifteen minutes past ten of the same day, I placed bits of raw beef on some of the most vigorous leaves of *d. longifolia*. Ten minutes past twelve, two of the leaves had folded around the beef, hiding it from sight. Half past eleven of the same day I placed living flies on the leaves of *d. longifolia*. At twelve o'clock and forty-eight minutes, one of the leaves had folded entirely around its victim, and the other leaves had partially folded and the flies had ceased to struggle. By half past two, four leaves had each folded around a fly. The leaf folds from the apex to the petiole, after the manner of its venation. I tried mineral substances, bits of dry chalk, magnesia, and pebbles. In twenty-four hours neither the leaves nor the bristles had made any move like clasping these articles. I wet a piece of chalk in water, and in less than an hour the bristles were curving about it, but soon unfolded again, leaving the chalk free on the blade of the leaf.

The bristles around the edge of the leaf of *d. rotundifolia* are longer than on those of *d. longifolia*, but the leaf of the former does not fold around a fly as it does in the latter—simply the bristles curve around the object, the glands on the ends of the bristles touching the substance, like so many mouths receiving nourishment.

Half past 10, A. M., I placed raw beef on some leaves of *d. rotundifolia*; by 1 o'clock the inner bristles were curving about it, and the longer bristles, on the outer edge of the leaf, were slowly curving upward. By 9 o'clock, in the evening, all the bristles of three of the most vigorous leaves were clasping the beef, almost hiding it from sight, while an equally vigorous leaf made no move like clasping a bit of dry chalk. At 10 o'clock in the morning I placed bits of raw apple on some of the leaves of the last named species; by 9 o'clock in the evening part of the bristles were clasping it, but not so closely as the beef. By 10 o'clock next day, twenty-four hours, nearly all the bristles were curved toward it, but not many of the glands were touching it. So it would seem that these plants are really carnivorous, that they prefer and absorb animal substances through their leaves. And Mr. Darwin says that by pricking a point in the leaf of *drosera*, he can paralyze half of it, and this indicates nerves!