

This apparatus in the Bank of England, independently of heating and ventilating several large apartments, is put to the severest test namely, that of evaporating the moisture from a series of 400 large mill-boards, with a surface of 1600 feet, and which moisture they have absorbed from the fresh-printed bank notes which are daily dried by this process.

With respect to the quantity of heat which this small apparatus is capable of imparting to the air, this is accurately tested by the quantity of water which is condensed, and which amounts hourly to twelve gallons. Now, as Professor Brande observed, when we consider what an enormous body of heat is contained in the steam generated from twelve gallons of water, we are enabled to appreciate the hourly effective heating powers of this apparatus.

As to the volumes of warm air that may be required, that will of course depend on the cubical contents of the buildings to be heated. This, however, may be stated, that there is scarcely any limit, either to the quantity of heat which may be thus given out, or the quantity of fresh air, so heated, that may be propelled by such a system. Of the mechanical means by which this artificial current of air is created, little need be said, these are within the reach of all.

Of the efficacy of an artificial current produced by means of a fan or cylinder, Dr. Ure observes, that "it has been ascertained that a power equivalent to one horse, in a steam engine, will drive at the rate of 80 feet per second a fan, the effective surfaces of whose vanes, and whose inhaling conduits have each an area of 18 inches square, equal to that of a large steam boiler chimney. The velocity of air in the chimney, produced by a consumption of fuel equivalent to the power of twenty horses, was no more than 35 feet per second; while that of the fan, as impelled by the power of one horse, was 66 feet per second. Hence it appears, that the economy of ventilation by the fan, is to that by the chimney draught, as 66 is to $\frac{35}{66}$ or, 38 to 1. It is obvious, therefore, that with one bushel of coals consumed in working a steam-impelled excentric fan, we can obtain as great a degree of ventilation, or we can displace as great a volume of air, as we could with 38 bushels of coals consumed in creating a chimney draft. Economy, cleanliness, and compactness of construction, are not, however, the sole advantages which the mechanical system of ventilation possesses over the physical. It is infallible, even under such vicissitudes of wind and weather, as would essentially obstruct any chimney draught ventilation; because it discharges the air with a momentum quite eddy proof; and it may be increased, diminished or stopped altogether, in the twinkling of an eye, by the mere shifting of a band from one pulley to another. No state of atmosphere without, no humidity of air within, can resist its power. It will impel the air of a crowded room, loaded with the vesicular vapours of perspiration, with equal certainty as the driest and most expansive."

After so clear and practical an exposition of the advantages of a current, mechanically created, nothing further need be said of natural currents arising from mere increase of temperature, excepting that by the adoption of the pump instead of the fan, a very considerable power is saved, and the operation performed much more effectively.

Another peculiarity of Mr. Oldham's apparatus here merits attention. The large volume of air heated and passed off to the required apartments is, previously to its being received into the heating chest, filtered and purified, by being deprived of all that noxious floating matter with which the atmosphere, particularly that of London, is at all times charged, and which, if heated and sent into the apartments with the air, would but increase that noxious character and render it still more injurious to the respiration of human beings. Not only indeed are these offensive impurities which are floating in the atmosphere effectually separated, but a power is given of charging it with aromatic or antiseptic matter, thus rendering it not only the medium of warmth and ventilation, but of purifying and healthful influences.

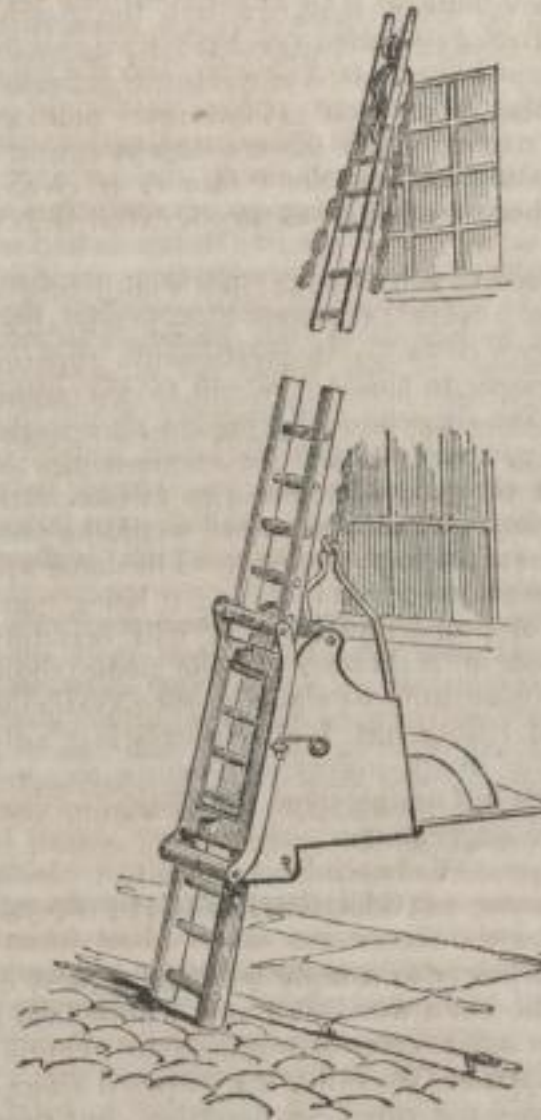
The peculiarities of Mr. Oldham's arrangements then, are, first, the adoption of mechanical means for the creation of a current of hot or cold air, and which may be augmented to any required extent or volume, instead of that comparatively feeble current which results from the difference of temperature alone; secondly, the causing this artificial current of air to be heated by a peculiar arrangement which separates its volume spontaneously into their horizontal films, thus making them pass in contact with a corresponding number of surfaces heated by steam, imparting a large volume of heat to a large volume of air in a small space and with great rapidity—and when so heated, of again uniting these films—to be passed up in a body in whatever direction or to whatever distance may be required; thirdly, the filtering the air before it is received into the heating apparatus, thus effectually excluding that offensive dust and black matter with which the atmosphere is charged.

I am, Sir, &c. C. W. WILLIAMS.

[We will, in our next Journal, if possible, give the drawings of Mr. Oldham's apparatus.—EDITOR.]

MACHINE FOR CLEANING AND REPAIRING FRONTS OF HOUSES, &c., OR A FIRE ESCAPE.

Sir,—As the many melancholy instances of loss of life by fire have occasioned a very general interest in the invention of Fire Escapes, I beg the favour of your notice of one which I think has all the desiderata mentioned by Captain Manby, in his address to the Society for the Protection of Life from Fire, namely, simplicity, portability, and efficiency. I may add to these, economy in construction as being not a whit less important, seeing that the cheaper such machines can be made the greater will be the chance of their being kept in every part of the metropolis; the expense of mine will not exceed seven pounds; and in quantities, I have no doubt they may be made for a third less.



As I do not pretend to be more than an amateur in mechanics, I fear I shall very ill explain myself. By reference to the annexed sketch it will be seen that my invention consists of a car traversing up and down the inner or under side of a ladder, which it uses as a sort of inclined railway, and is suspended to the top round of the ladder by means of a chain passing over a pulley of a snatch block. The car may be adjusted to any sized ladder, which is admitted within the double framework of the machine between four rollers (two at the top and two at the bottom), each of which have occasionally a bearing on the ladder, but generally only the lowest inside and the upper outside rollers. The car weighs, including a single fall rope and block, about 90 lbs, and I propose that every fire engine should carry one, which may be attached very ornamentally at the opposite end to the driving box.

By means of this car a fireman could be raised to the upper windows of a house without difficulty by three persons, and thus

afford personal help to those in danger, who, nine times in ten, have not presence of mind to avail themselves of the aid thrown up from below.

As the car descends with the inclination of the ladder, it of course recedes from the front of the house; it is, however, enabled to put forth in case of need an additional projection or stage of four feet, as shown in the sketch, which I believe would be the utmost required. Such a machine will also be found very useful for builders, plasterers, painters, and others, for the purpose of repairing, cleaning, colouring, or painting fronts of buildings. If generally adopted for such purposes, hardly a street would be without one, which would form an additional certainty of the fire-escape being ready in case of need.

I need not be reminded that my invention is nothing without a ladder; but as fires very rarely happen without their being speedily procured in the neighbourhood, there cannot be any difficulty on that point.

Hoping to obtain, through your widely circulated publication, some practical opinion of the machine, I intrude this communication.

And remain, Sir, yours, &c.

Nine Elms, December 31, 1838.

A. F.

THE NATIONAL GALLERY.

Sir,—I had been for some time coveting a little leisure to submit a few opinions to you on this ill-fated building, when the "Supplement to the Public Buildings of London," by Mr. Leeds, informed me that my intentions were anticipated by one much more competent to speak upon the subject. The points to which I more immediately intended to advert, were for the most part those on which Mr. Leeds has so forcibly commented, viz., the absurdity of accusing the architect of having diminished the capacity of the building by the very measures which, on the contrary, increased it (see pages 62, 63); the inconsiderate outcry concerning its being "too low" see pages 67, 68); and the injustice of "censuring in the lump, without caring to hint at particular beauties in what upon the whole may be defective."

It is not for me to presume that anything emanating from so hum-