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### Home Made Guano.

The following is from a communication to the N. E. "Farmer;" it will be useful to many of our agricultural readers:—

"Some years ago I thought I would try my luck in keeping a few hens. The house I keep them in is a rough concern. I put some crotches into the ground, boarded up outside and inside, then filled in by sawdust to make it warm. It is well lighted with glass windows, and well ventilated, and a small stream of water runs through it. The roosts will accommodate about a hundred hens, that being the number I usually keep. Under the roost I throw three or four ox-cart loads of dry muck, chip dirt, &c., which I haul over two or three times a week with my manure hook. I bury their grain in it, and make them work for a living, which gives them exercise in cold weather. In the spring, I have a fine heap of home made guano. If there is anything imported that is better to make our crops grow, I am mistaken."

### French Beet Root Sugar Factories.

According to the official returns of the beet root sugar manufactories up to the end of last March, the number of establishments at work at that period was 303, or 85 less than in the same month of last year. The quantity of sugar manufactured was 73,987,419 kilogrammes being an increase of 2,530,318 kilogrammes over the quantity manufactured during the corresponding month of last year.

### Improved Hose Protector.

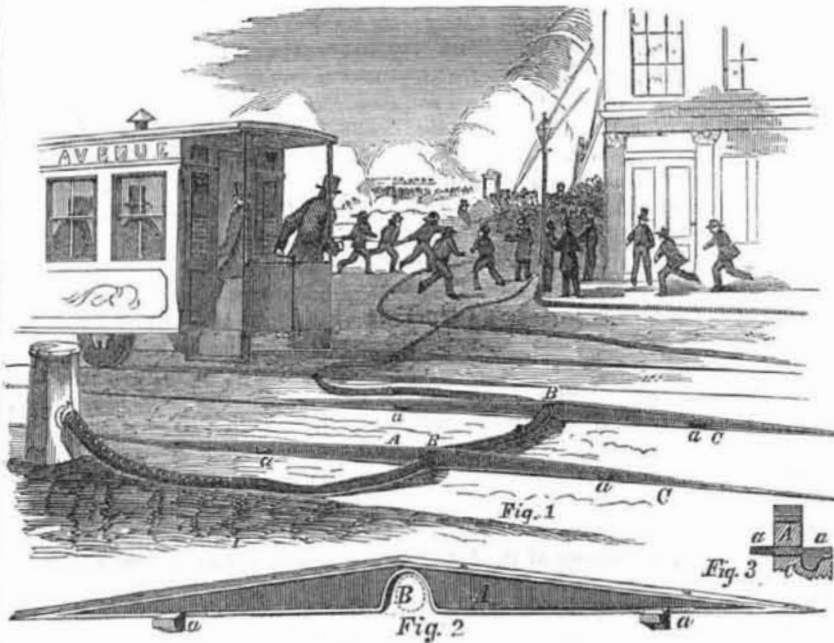
The annexed engravings represent a method of protecting the hose of fire engines crossing city railroads, so as to allow the cars to pass freely over the hose without touching or injuring them. A patent was granted for the improvement to David Demarest, of this city, on the 1st of last November. The nature of the invention consists in the employment of a portable inclined section of a railroad track, to be placed on the fixed track, which section has an opening for the hose to pass through, by which the hose can be laid over the fixed railroad, and then the portable track, inclosing the hose, laid down, to allow the cars to run over on the portable section.

Fig. 1 is a perspective view; fig. 2 is a side view of a protector for one rail, and figure 3 is a small section. The same letters refer to like parts.

The hose, B, is represented as being laid from a hydrant to a fire across a city railroad track. Over this hose is laid the Protector, A, which has its greatest depth at the center, in which is the free opening that encircles and protects the hose. It (the Protector) is inclined towards the extremities, and has a rail on its surface or top; and it lies solid on the stationary rail, it being straight on its under side, C. It is also clamped firmly to the rail by the clamps, a a. All this is so plainly represented in the figures, that the nature, application, and construction of the apparatus will be understood at once.

A car is represented as having passed over the portable track,—one section being used for each rail. All that has to be done in protect-

### DEMAREST'S HOSE PROTECTOR.

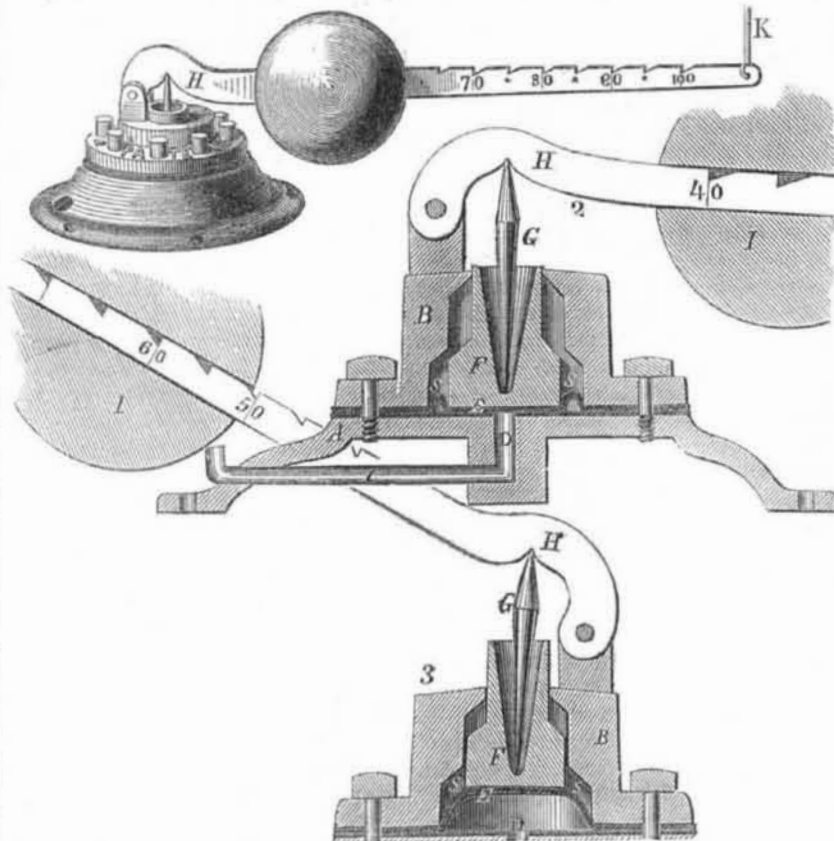


ing fire hose, by using this improvement, is simply to lay down the Protector, as shown, and when a car comes along it merely passes up a slight incline and over the hose, without touching it. This protector is also applicable to the protection of hose from all kinds of carriages, over the whole width of a street, by making it broad on the surface for the vehicles to run upon. The improvement is a very good one, and is now used by either one or two of our city railroads. It protects the hose from injuries of

a very serious character, to which they had been heretofore subjected, and it keeps them in working order—no small consideration—during the whole period in which they are required for use. These protectors ought to be carried to fires either by the engines, or a company specially appointed for that purpose.

The patentee is in the employ of the Sixth Avenue R. R. Co., and for more information respecting it, letters may be addressed to him at the office of said Company.

### REGULATOR FOR STEAM BOILER FIRES.—Fig. 1.



The annexed engravings are views of an improvement in Regulating the Dampers of Steam Boilers by the pressure of the steam, for which a patent was granted to Patrick Clark, of Rahway, N. J., on the 3rd of last January.

Figure 1 is a perspective view of the regulator; figures 2 and 3 are vertical sections through the center, in which figure 2 shows the lever down, and figure 3 the lever up. The same letters refer to like parts on all the figures.

The nature of this invention consists in causing the damper in the chimney (or if a blower is used, the damper for shutting off the blast,) to be acted on by the pressure of the steam, so that when the head of steam in the boiler has attained the pressure required, the damper will be closed, but when the pressure is less than that, say by one pound per square inch, the damper will be opened.

A is a base or platform of cast-iron, on which is fastened by means of screw bolts, the cylinder,

B, which is also of cast-iron. C is the pipe leading from the boiler, and connecting with this cylinder at D, by being screwed into the platform, A, to which the cylinder, B, is bolted. The pipe, C, is bent like a syphon, to prevent the steam from coming in contact with the diaphragm, E. This diaphragm may be made of vulcanized india rubber, or any flexible substance, having considerable strength and being impervious to water. It is shown in figures 2 and 3, intervening between the piston, F, and water, D. It is made cylindrical in form, of a length sufficient to allow of the piston moving through any distance required; about one inch is sufficient, but it may be one or ten feet, should the nature of the case require it. One end (the upper end) is closed. The lower end is open and is surrounded by a flanch about one inch wide, which answers the double purpose of holding it to its place, and making a tight joint between the flanch of the cylinder, and the top of the platform upon which the cylinder rests.

A flat disk of vulcanized rubber will answer in place of this diaphragm, where the distance moved through by the piston is not greater than one inch. The bore of the cylinder must be as much greater than the piston as will allow the diaphragm assuming the position shown at S and S. F is a cylindrical piece fitting the upper part of the cylinder loosely, and having a hole bored nearly through its axis from the top to receive the bar, G. The bar is smaller than the hole in which it stands, to allow of its accommodating itself to the varying position of the lever, H, which rests on its top; I is a ball or weight made to slide back and forward on the lever. It is used to counterbalance the static pressure on the bottom of the piston; K is a rod connecting the lever, H, with the crank of a damper. The machine as described in the foregoing being put in connection with the boiler and damper, the piston will be acted upon by the pressure of the steam, and when the weight of the ball on the lever, H, is little more than counterbalanced, the lever will be lifted, thereby closing the damper; of course, if the pressure now diminishes a little, the weight and lever will descend and open the damper, to be closed again if the pressure of the steam should rise above the given point.

After Watt had made his first and great improvement on the steam engine, and had so far perfected it as to cause it to go into general use, he turned his attention to the minor details, such as producing rotary from the reciprocating motion. The construction and application of the governor, the cut-off, &c. Among these details was his contrivance for regulating the draft of the boiler fire, which was introduced at an early period of his career. His genius did not fail to see the advantages that must result from its use, both in the economy of fuel and the saving of time, as well as a preventive of accidents resulting from too high a head of steam to the person attending the engine, who might be employed more usefully than in watching his fire. He therefore invented a regulator for boiler fires, which went rapidly into use, and is still used on all the engines now in operation in the mines in England, and in many of the manufactories where low pressure steam is used. In his day it was thought that steam, having a pressure of five pounds above the atmosphere, was as high as was compatible with safety, and the construction of his fire regulator was suited to the circumstances.

As time passed on, however, and improvements were made in the construction of boilers and boiler plate, and also in the construction of pistons, which could be kept tight against higher pressures, high pressure boilers were introduced, and the principle of the fire regulator which he invented not being capable of