IMPROVED LUBRICATOR.

We illustrate in the accompanying engraving a new lubricating device, claimed to ensure a continuous and economical flow of oil or similar lubricating material into the cylinders of steam engines, and, besides, to possess many improvements and advantages in general construction.

The oil is poured into the cup, A, Fig. 1, and descends by the glass tube, B, into the circular receptacle shown. At C, the apparatus is attached to the cylinder, the steam from which, when the valve, D, is opened, passes up the tube, E. This tube is movable in the direction of its length and is held tightly in stuffing boxes, as indicated in the sectional view of its upper portion, Fig. 2. G is the condensing surface, so that the steam, emerging from the end of tube E, fills the intermediate space between said tube and the inner periphery of G with water. It is clear that, by moving tube E up or down so as to bring its upper end nearer or further from the cover of G, the condensing surface will be decreased or augmented so that less or more water will pass by pipe H, and mingle with the oil in the reservoir. The effect of this addition of water is to displace the oil, raising the latter back through glass tube B and pipe H into G, and thence down tube E into the cylinder at C. The glass tube, B, affords a convenient means for the engineer to perceive the amount of oil in the apparatus, and also to know when the water entirely displaces the lubricating material in the reservoir, a fact indicated by its appearance at the bottom of the tube. There is an opening in the lower part of the reservoir which communicates through pipe I and valve J with the bent conduit shown, thus allowing the contents to be drawn off at will. The valves at J and at A are provided with screw thread collars, which secure them in place and through which their stems freely work. This is designed to obviate the difficulty, which arises when the thread is on the valve stem, in screwing the plug down on its seat in case of any foreign material stopping the way. With the present arrangement, the collar is the securing portion, while the stem may be turned around so as to grind the valve into its seat.

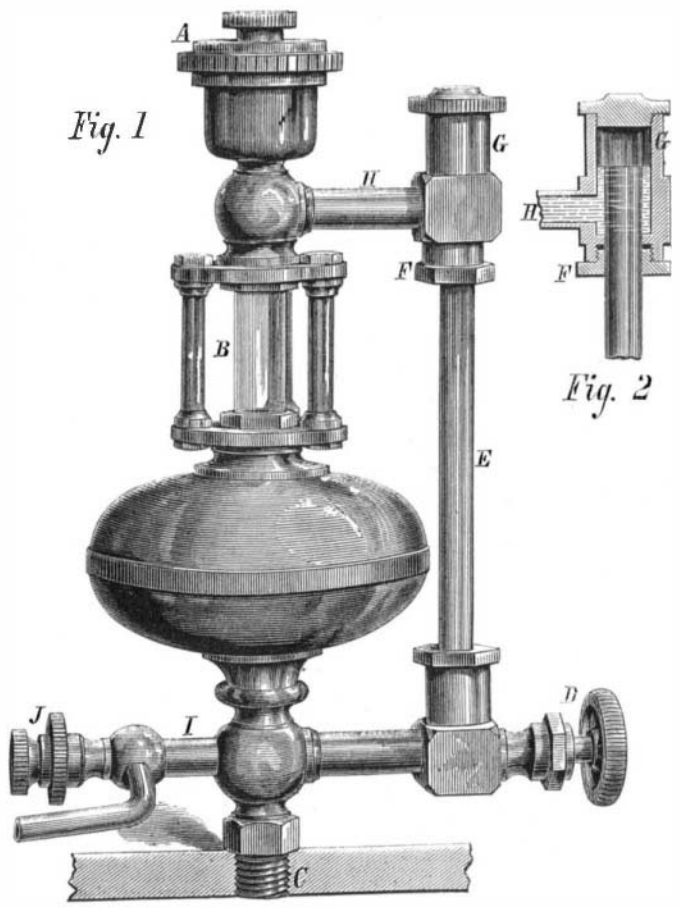


Fig. 1

Fig. 2

POWER'S IMPROVED LUBRICATOR.

The inventor informs us that he has had this device in use for some time past and has experienced uniform success. The flow is constant and unobstructed, while the expenditure of oil is reduced to a minimum. The construction is strong and durable, and the apparatus generally appears to us as showing considerable ingenuity as well as being well adapted for its purpose.

Patented through the Scientific American Patent Agency, January 7, 1873. For further particulars address the inventor, Mr. James McL. Power, Port Townsend, Washington Territory, or at Warren, Trumbull county, Ohio.

Testing Alcohol.

It is customary to obtain the percentage of absolute alcohol and water in mixtures of alcohol by taking the specific gravity with a hydrometer especially adapted to the purpose and called an alcoholometer. When a liquor contains sirups and extractive matters, the specific gravity fails to indicate the amount of alcohol present. In such cases it has been necessary to distil off the alcohol and then measure it.

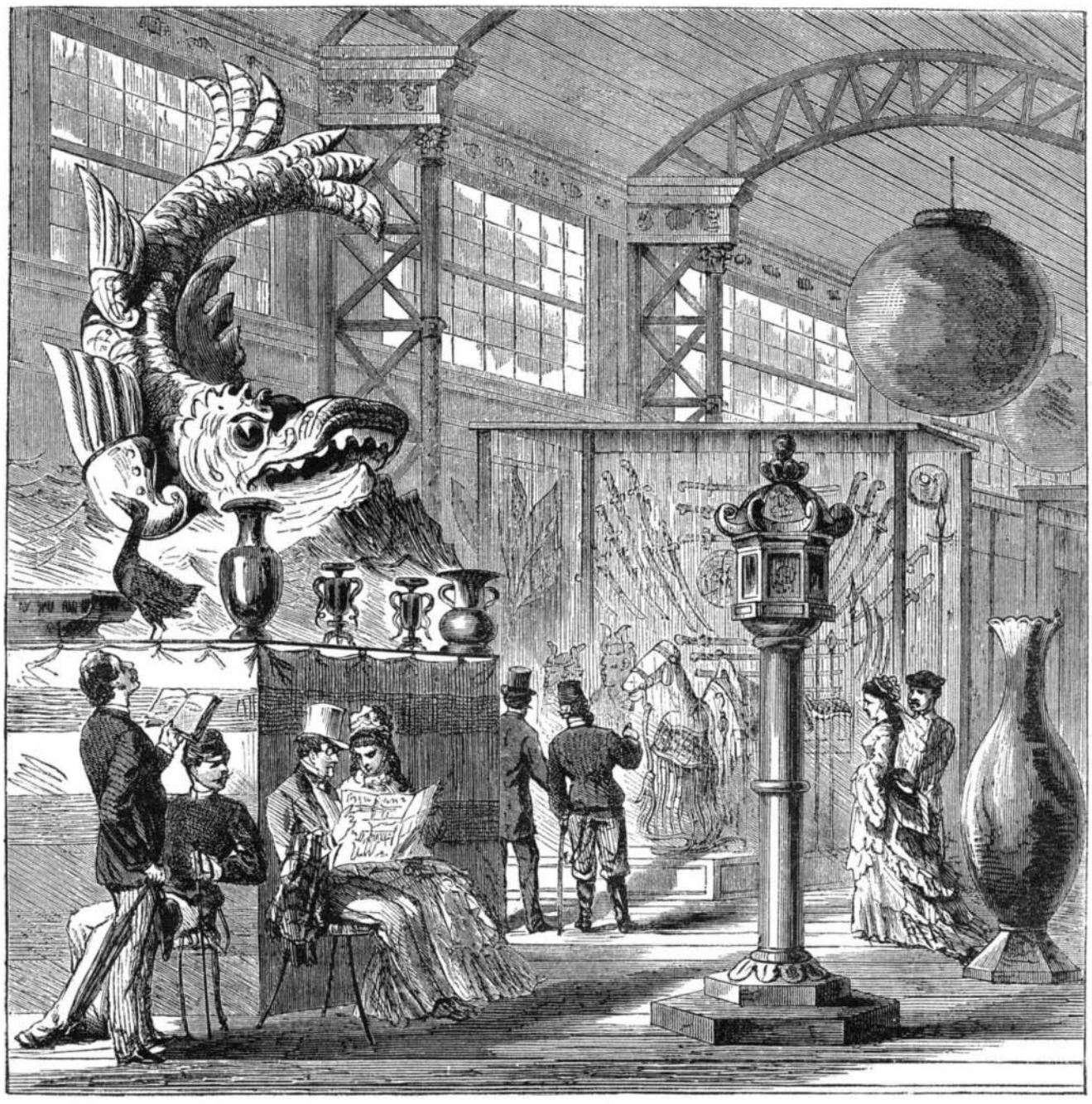
In these cases, and also where no alcoholometer is at hand, or the quantity of the liquid is too small to float one, Vogel's method may be employed. He found that, when dry starch paper was dipped into a solution of iodine in alcohol of 66·8 per cent or over, the starch was not turned blue. If the spirits contained less than 66·8 percent absolute alcohol, the paper is immediately blued. To apply the test to weaker alcohols, it is only necessary to add absolute alcohol until the reaction no longer takes place. From the quantity added it is easy to calculate the percentage. If the spirit tested is above 66·8, water is added from a graduated measure until the starch paper turns blue, and the percentage calculated from the quantity of water added. If potassium be thrown upon alcohol of specific gravity 0·830, it takes fire; but with spirits of specific gravity 0·823 and under, it will not take fire.

THE JAPANESE DEPARTMENT AT VIENNA.

Among the most interesting displays of Oriental productions at the Vienna Exposition is the Japanese department. Here are exhibited the choicest articles of workmanship, embracing those forms of art which, for ages, have satisfied the popular tastes of Japan, but which, under the rapidly improving ideas of her people, will soon for ever disappear. Remarkable sea monsters of grotesque form, birds, vases, globes, etc., having the appearance of solid materials, elaborately adorned, but in reality composed of paper, stretched and supported on bamboos, surprise and interest the visitor on every side. The display of Japanese trappings for horses, vehicles, saddles, bridles, and equestrian equipments is quite extensive and includes many peculiar forms. For example, instead of a stirrup like ours, the Japanese use a piece of wood bent at a sharp angle, to one end of which the stirrup strap is attached, while the foot rests on the portion below, which hangs horizontally. The stirrup is beautifully decorated. The wealthy Japanese, when they ride, present a gorgeous appearance, the animal being covered with gold-plated straps, bridles, and fringes, while the dress of the rider is adorned with golden emblems, and his belt filled with costly swords.

The show of Japanese arms is very fine, especially the collection of swords. These are of curious forms and elaborate workmanship, great pains being taken in the ornamentation of the hilts. The steel is of splendid quality.

In their mental power and readiness to appreciate the ideas and appliances of modern nations, the Japanese are decidedly in advance of other Eastern peoples; and now that the government is so fully committed to the re-education of the people, on the basis of Western civilization, the nation will soon take a high rank. Large numbers of Japanese young men, from the prominent families of the Empire, are now being educated in Europe and this country. At the Vienna Exposition a special delegation of Japanese students and officials are employed to copy and procure information about everything which they consider to be useful for introduction into Japan.



THE JAPANESE DEPARTMENT AT THE VIENNA SHOW.

POTATO BLIGHT AND ROT.

Dr. Thomas Taylor, of Washington, D. C., communicates to *The Lens* the result of experiments upon potatoes, for the examination into the chemical and structural theories of Dr. Lyon Playfair and the fungoid views of several leading mycologists. Among other tubers, one half of a potato brought from Santa Fé, New Mexico, was placed in water with a diseased specimen and the other half in water to which sugar had been added. An Ohio potato was similarly arranged, and the effect of allowing it thus to remain for a considerable period noted. On the twentieth day, the Ohio specimen had entirely dissolved, while the Santa Fé potato was uninjured. Comparing the portions in the sugared water, the Ohio tuber appeared a mass of infusorial life, mycelium, and budding spores, with a strong odor, no starch cells being discernible.

The New Mexican specimen showed few infusoria, and the starch granules arranged in cellulose, between which bundles of mycelium and budding spores appeared in profusion. No liberated granules were visible. Since the see experiments, other northern and eastern varieties have been tested by fungoid solutions in contrast with some of the New Mexican varieties, giving like results, clearly demonstrating the superiority of the Santa Fé potatoes, over all others thus far examined, in respect to their powers of resisting fungoid and infusorial action.

We note that the government is about to test, by samples