

on the left. A central shaft works the three rakes which agitate, during the cleaning, the pounded flint with which each filter is filled. Each triple filter is washed by revolving the agitators and admitting, by the outlet valves, the filtered water of its neighbor under the layer of flint through which it passes upward to be drawn off by the valve system on the left.

In a recent test the ozone consumption per cubic meter of water was 1.19 grammes, and the current consumption 122 watts, the colonies were 149 before and 2 after ozonization. In another test the above figures were respectively 2.039 grammes, 236 watts, and 2,680 before and 3 colonies after ozonization.

AN IMPROVED ASH SIFTER.

Those who are in habit of building their kitchen fires afresh each morning will be interested in the improved ash-sifting device which we illustrate herewith. The device is arranged to permit of sifting the ashes without filling the surrounding air with dust. The improved sifter comprises a box consisting of the main or body section and an upper auxiliary section. These sections are fitted together with a tight joint and are securely fastened with hasps and turn buttons. The upper section is provided with a hinged cover which, when closed, forms a dust-tight joint therewith. A hasp and turn button lock the cover in closed position. A handle on this cover provides means for carrying the device. Sockets are formed in the upper edge of the auxiliary section, at opposite sides to provide bearings for a shaft. This shaft carries a tray which is rigidly attached to it. The cover of this tray consists of a screen of semi-cylindrical form. The shaft is operated by a lever thereon which carries a crank handle at one end. Normally the shaft is prevented from turning by studs at each end of the lever, engaging lugs on the outside of the upper section. In use the pan of ashes which is to be sifted is placed in the tray and the screen cover is then fastened down, also the main cover of the device. Then the lever on the shaft is pulled outward so as to clear the lugs. The handle may now be rotated to invert the tray and pan of ashes, after which it should be rocked back and forth to sift the ashes through the screen. When the screen has been sufficiently rocked, the lower section may be disengaged to permit removal of the ashes. This body section is provided with two bails which may be swung over to the dotted position shown in the section view, when the body part may be readily lifted and carried in one hand. Legs are formed on the bottom of this section to space it from the floor and thus prevent scorching the floor or carpet when



AN IMPROVED ASH SIFTER.

hot ashes are sifted. A patent on this ash sifter has recently been granted to Mr. Eugene A. Bagby, Bowling Green, Ky.

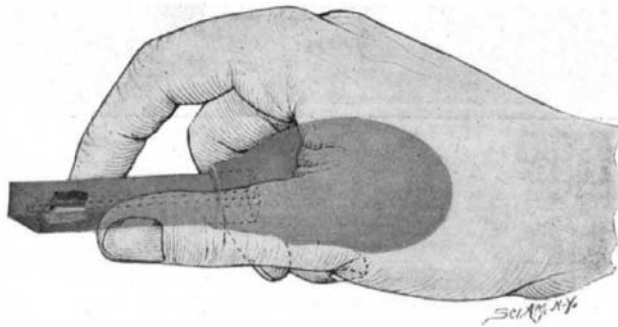
American Opium.

In view of the fact that the Department of Agriculture at Washington has inaugurated practical experimental study in the planting and cultivation of the opium poppy in one of the Southern States, it is timely that Dr. Emil Weschke, of San Francisco, who has most extensively worked along these lines, advances his views, deductions and conclusions in the August number of the Pacific Medical Journal. The author states that he knows of but one instance where opium, i. e., a marketable product, was grown in this country. Prof. Flint, of San Francisco, obtained good opium in the Sacramento Valley, which answered to requisite tests and possessed the physical attributes of a good article, but its production was unprofitable. It was a question of cheap labor to produce it, and this was not procurable. For his own experimental opium farming the doctor was furnished with varieties of poppy seed grown at the Jardin des Plantes, of Paris, and the Royal Botanical Gardens, Berlin. In addition to this, he procured some seeds grown in the State of New York. The seeds were planted in rich dark

loam. He incised the capsules of the poppy in the usual way in the evening and the following morning gathered the concrete juice by scraping it off with a blunt knife on to porcelain plates. The product was of a rich, dark-brown color, had a bitter taste and strong odor, and, when dry, was of conchoidal fracture. The amount of morphine yielded from this opium was 15.28 per cent, narcotine 0.325 per cent, codeine 0.416 per cent, meconic acid 3.5 per cent. The author concludes that the production of opium in this country can only become profitable when the cheapest labor can be procured, and when scientific and expert supervision rules over the planting, cultivation, etc.

A PNEUMATIC ERASER.

We illustrate in the accompanying engraving an eraser which possesses some decidedly novel features.



A PNEUMATIC ERASER.

The inventor, who is a stenographer and court reporter, felt the need of some simple device for brushing or blowing away the dust of an erasure. The common habit of using the hand to sweep away the particles is objectionable when operating on manuscripts written with a copying ribbon, for unless the hand is perfectly dry it will smear the ink. Neither is the alternative of clearing away the dust by blowing one's breath on it entirely satisfactory, for moisture blots are liable to occur which sometimes destroy a whole page of matter. Furthermore, the inventor found that bending over to blow away the dust every time he made an erasure was very trying on his patience. As a solution to the difficulties it occurred to him to use a rubber syringe to blow away the dirt and a further development was to combine the eraser and the syringe, as shown in the illustration, so that the two operations could be done with one tool in the hand. An eraser of standard type is used in which a hole is bored, as indicated by dotted lines. The eraser is fitted into a rubber bulb and serves as a nozzle of the syringe. In use the eraser is held as illustrated, with the bulb in the palm of the hand. After rubbing out the desired mark, the eraser is lifted a trifle from the paper so as not to close the air duct, then on squeezing the bulb the dust and dirt of the erasure will be blown away. When one eraser is used up it may be removed and another inserted in the bulb. Mr. C. S. McGill, of Owensboro, Ky., is the inventor of this novel eraser.

Power Transmission to Stockholm.

According to a note in "Teknik Tidsskrift" an agreement has been arrived at between the managers of the Stockholm Gas Works and the Söderfors Bruks A. B. with a view to the purchase of two waterfalls of the Dalelf. These waterfalls, which are situated on the same branch of the Dalelf River, give a head of 7 meters with a volume of 250 cubic meters of water per second, which will be obtainable after regulation. With a minimum water supply of 100 cubic meters per second, about 10,000 electrical horse-power is obtained in Stockholm, and with 250 cubic meters as much as 26,000 horse-power. The cost of installation in the latter case has been calculated at 525 to 550 kronor per transmitted electrical horse-power, the purchase price being 1,150,000 kronor. The distance is 125 kilometers from Stockholm.

Water Power in the German Alps.

Since the construction of the numerous valley dams in Rhenania, Westfalia, and Silesia, more attention has been paid to an adequate utilization of the water power stored up in the German Alps, which has so far been rather neglected. According to a statement of the Hydrotechnical Bureau, only 75,000 horse-power, that is to say, 10 per cent of the available amount, has been utilized so far in the Bavarian Alpine districts. Out of the numerous mountain lakes, Walchen Lake, according to a recent article in the Kölnische Zeitung, would be especially suitable for power purposes. This lake, 6 kilometers in length and 5 kilometers in breadth, extends through a magnificent mountain region at the considerable height of 803 meters above the level of the sea. Now, the most remarkable feature of this lake is the fact that it approaches close to the edge of the mountains, where the latter abruptly fall to the plateau for a distance of a hundred meters. Near the foot of the latter (some 2 kilometers distance as the crow flies), Kochel Lake is situated at only 601 meters height above the level of the sea.

Now, as this lake is likewise of considerable size, the head of 202 meters between the two lakes would no doubt have long been utilized for the production of electrical power but for the fact that Walchen Lake would be exhausted very shortly in case a juncture be effected with Kochel Lake. Now, nature seems to have afforded a possibility of supplying enormous amounts of water to Walchen Lake from the immediate neighborhood. In fact, the Isar River, which has an extremely heavy flow of water in the spring and summer, passes at a few kilometers to the south of Walchen Lake at a still greater height above the level of the sea. Whereas, throughout the larger part of the distance a high mountain separates Walchen Lake from the Isar, two rivulets joining the river and Walchen Lake respectively pass close by one another in the neighborhood of the Munich-Mittenwald-Innsbruck road. To lead the water of the Isar into Walchen Lake, this relatively level ground could be made use of, or else a tunnel would have to be pierced. In any case the cost of a similar installation would be relatively low, the dam basin being available. The amount of power that could be derived with the head of 202 meters from the water masses of the Isar is thought to be sufficient to warrant the electrical operation of a great part of the Upper Bavarian state railways. As the neighboring district has up to now no industries worth speaking of, the electrical power would, indeed, have to be used for a similar purpose, unless it be preferred to transmit it to Munich. From the fact that the above projects are at the present moment being considered by the department of communications, we may infer that it is the intention to introduce an extensive electric railway system.

A NEW TOY.

In the accompanying engraving we illustrate a recently patented amusement device, a novel form of see-saw, the invention of Mr. Edwin D. Smith, of 248 Fourth Avenue, Pittsburg, Pa. The device was designed to provide a light, simple, and portable construction adapted more particularly for the entertainment and amusement of children, and for this purpose the inventor made use of the principle of the lazy-tongs, as shown by the illustration.

The central post, consisting of two similar and parallel pieces, is erected upon a suitable base. In this case the longitudinal member of the base is firmly bolted between the two pieces of the central post, rigidly joining it with the base, and at the same time separating the said pieces at the proper distance. The



A NEW TOY.

cross-piece of the base may be turned about a pivot bolt into a longitudinal position, to facilitate the storing or shipping of the see-saw. Three parallel bars, the upper one shorter than the other two, are pivoted by means of bolts between the two sections of the central post. Vertical shanks carrying seats are pivoted to the two lower bars at their extremities. Two other vertical bars pivoted to all three longitudinal bars, and at the extremities of the upper, shorter one, are provided with handle bars and foot-rests. The see-saw is shown in the drawings adapted for persons of approximately the same weight. The parallel longitudinal bars are provided with several bolt-holes so that it is possible to adjust the device for persons of varying weight by shifting the bars lengthwise upon the posts. The operation is easily understood from the illustration. The persons see-sawing when in the seats, as well as in mounting and dismounting, rest their feet upon the foot-rests, and grasp the handle bars. Then to operate the see-saw it is merely necessary for the two occupants to push and pull with both hands and feet, if desired, in opposition to each other. This see-saw is simple, light, and an inexpensive article, which may be easily shifted from place to place, while at the same time affording much pleasure and amusement.