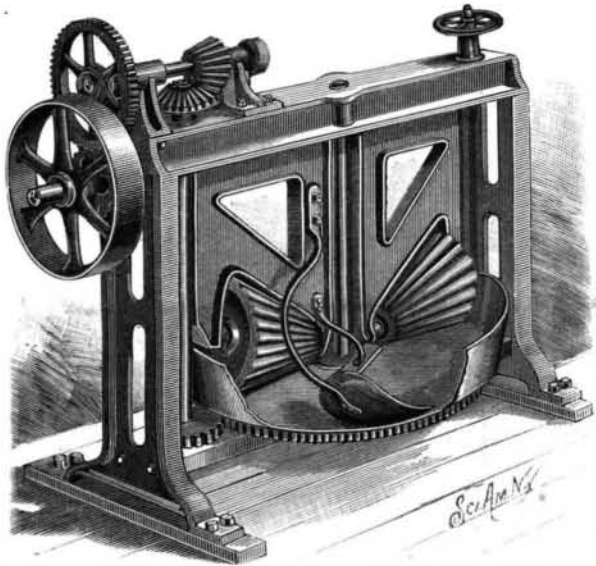


A KNEADING OR MIXING MACHINE.

This machine is adapted for kneading or mixing paste of any description, especially such as is used in making macaroni. The machine was awarded a medal at the Columbian Exposition, and each machine makes between 3,500 and 4,000 pounds a day. The improvement has been patented by Mr. Auguste Witz, No. 138 James Street, New York City. Mixing rolls, which may be of the usual construction, are journaled in hangers forming part of a suitable frame, and the mixing pan is connected with a central shaft journaled in upper and lower cross beams of the frame. The lower cross beam is adjustable as to height by means of an adjusting shaft, whose lower end is threaded, the upper end having a hand wheel. Around the pan at the bottom are teeth adapted to engage a gear on the lower end of a vertical shaft, to be driven according to any of the usual methods of applying power. The shovels in the bottom of the pan, which constitute the principal feature of the invention, are of sheet metal, bent upon itself to a substantially U-shape in cross section, the upper member considerably overhanging the lower member. The shovels are placed on opposite sides of the central shaft, their contracted portions facing in opposite directions, and one shovel is located near the center of the pan while the other is near its periphery. The shovels are held stationary within the pan by a shank secured to the hangers, and the reduced end of the shovel near the periphery of the pan may be brought practically in engagement therewith, while the pointed end of the opposite shovel is located a predetermined distance from the center of the pan. As the pan is revolved, the outer shovel curves the outer edge of the paste upward and toward the center of the pan, the inner shovel also curving the inner edge of the paste over on the mass, which is thus presented to the rolls in

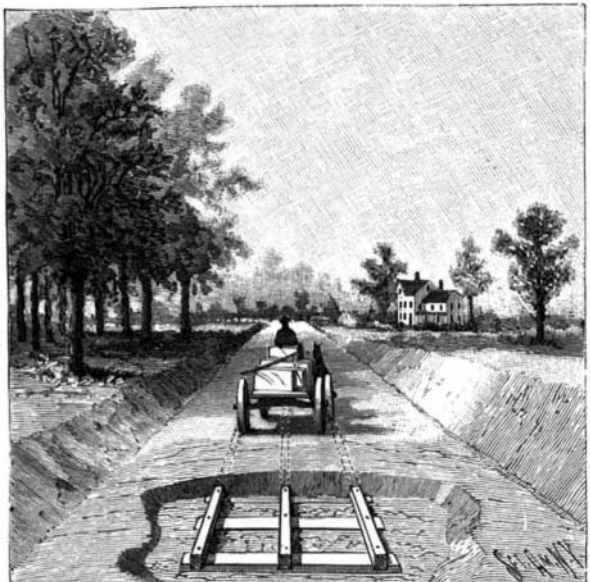


WITZ'S KNEADING OR MIXING MACHINE.

such manner that all the particles will be thoroughly and effectively operated upon. A diagonally placed central shovel returns to the mass any fragments which may be thrown into the middle of the pan.

A CHEAP AND NOVEL ROAD BED.

An invention designed to facilitate the construction of improved roads and highways is shown in the accompanying illustration, and has been patented by Mr. John Platten, of Fort Howard, Wis. The road-bed is made with a crib formed of transverse parallel planking, on top of which are secured parallel longitudinal stringers, a filling of loose earth, gravel or broken stone being compacted between the planking and the stringers to form the road proper and completely conceal the crib, the latter protecting the road material from lateral displacement. A greater or less

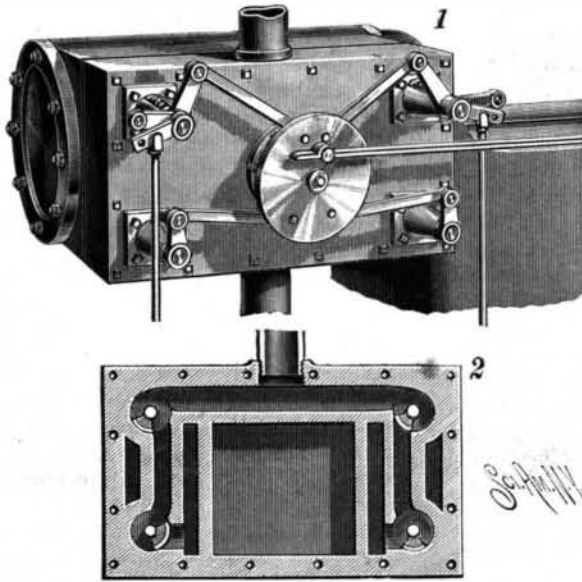


PLATTEN'S UNDERGROUND TIMBER ROAD.

number of stringers may be used, as desired, and the timbers and planks may be treated, if preferred, with any cheap preservative from decay. The impact of travel on such a road is designed to thoroughly pack the ballast material about the crib frame and render the road solid and durable.

AN IMPROVED STEAM ENGINE VALVE CHEST.

This valve chest is adapted for convenient application upon the valve seat of a slide valve steam engine, to convert it into one on which multiple rocker valves



MYERS' STEAM ENGINE VALVE CHEST.

and their actuating gear can be used. The improvement has been patented by Mr. William H. Myers, of No. 103 Freeman Street, Brooklyn, N. Y., and has been for some time in practical and highly satisfactory use. Fig. 1 shows the application of the improvement, with the rocker valve actuating gear, Fig. 2 being a sectional side view of the valve chest and valves. Extending along one face of the cylinder is the elongated valve seat, with the usual live steam and exhaust ports in its face, the ports being duplicated, so that there will be a pair near each end of the cylinder. The valve chest is adapted to fit upon the valve seat and conform at its outer edge with the margin of the latter, the face of the chest having contact with the seat being made true and steam tight, and the chest being secured upon the cylinder by studs or bolts. There are two transverse steam passages near each end of the chest, the outer one of each conforming with the live steam port and the inner one with the adjacent exhaust port, a rectangular central cavity and a smaller cavity near each end rendering the valve chest light and yet sufficiently strong. Near each of the four corners of the chest are transverse cylindrical steam chambers for the reception and proper action of the rocking valves, the pair of chambers at the top receiving live steam alternately from the live steam duct in the wall of the chest, and the steam passage at each end of the chest extending to one of the lower transverse chambers, which are designed to relieve the cylinder of exhaust steam by the proper action of the valve. The lower transverse chambers are intersected by branches from the exhaust steam passages, and a rocking movement of the valve permits the escape of steam into the exhaust duct. The rocking valves are set as shown in Fig. 2, one live steam port in an upper chamber being open when the one at the other end of the cylinder is closed, and in the lower chambers the valve directly beneath the opened valve is closed, while that beneath the closed valve is open. The rocker valves are actuated by a gear of well known construction, comprising a rotatably supported crank disk rocked a proper degree by an eccentric rod, from an eccentric disk on the main shaft. Downwardly extending rods enter dash pots (not shown) and crank arms connect each live steam valve with a governor, completing the rocker valve gear.

To Soften and Whiten the Hands.

- Borate of soda..... 3ij.
- Glycerine..... 3iv.
- Lanolin..... 3j.
- Eucalyptol..... 3j.
- Ess. of bitter almonds..... m xx.

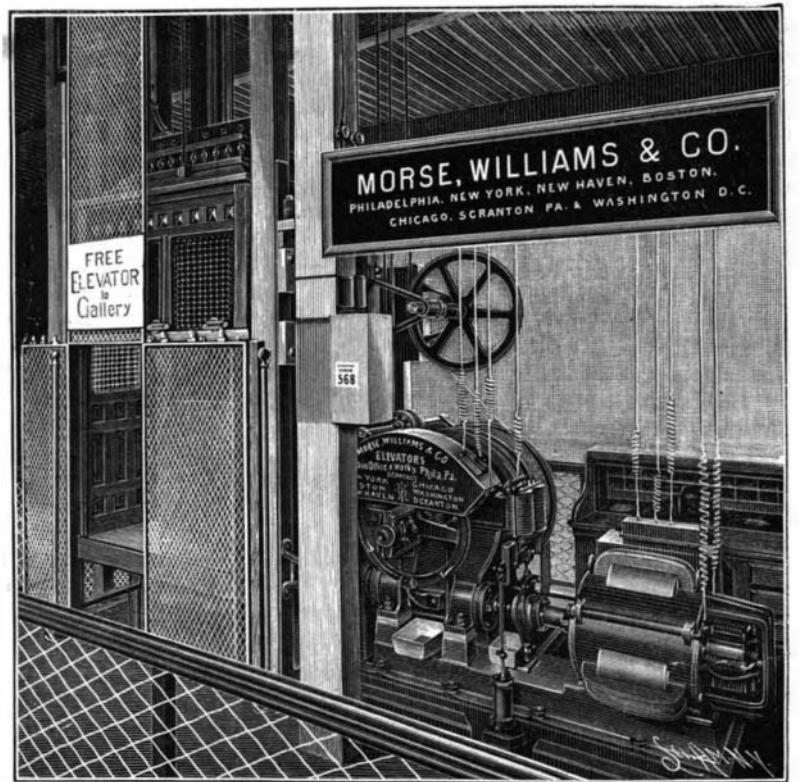
Apply at night, and afterward dust the hands with Indian chestnut flour, and cover with gloves.—*Med. Press.*

Early Chemistry.

Long before chemistry became a science many of its processes and apparatus were in common use. Professor H. Carrington Bolton has made a list of some of these, finding that the Egyptians were acquainted with the process of glass making at least as far back as 2500 B. C.; that crucibles of the 15th century B. C. are now in the Berlin Museum; and that siphons also were used in the 15th century B. C. Blowpipes and bellows were early employed. The earliest chemical laboratories now known were those of the Egyptian temples, in which the priests prepared the incense, oils, etc., used in the temple services. The Bible contains frequent chemical allusions. Cupellation is plainly described by Jeremiah, metallurgical operations by Job, Ezekiel, and others, and bellows by Jeremiah. Geber, the Arabian physician of the eighth century, wrote minutely of chemical processes. He described solution, filtration, crystallization, fusion, sublimation, distillation, cupellation, and various kinds of furnaces and apparatus. Perhaps the earliest drawings of strictly chemical apparatus are the figures of distilling apparatus in a Greek papyrus of the 11th century. An alchemist's laboratory of the 6th or 7th century was uncovered in Egypt in 1885, and its contents included a bronze furnace, about fifty bronze vases with beaks, and some conical vessels resembling sand baths. The balance as an instrument of precision reached a high development under the Arabians as early as the 12th century, when very accurate specific gravity determinations were described.—*Ceylon Advt.*

AN ELECTRIC PASSENGER ELEVATOR AT THE EXPOSITION.

An exhibit which won a medal for its superior merits and in a notable degree was made to serve the public convenience, while at the same time illustrating one of the most recent and valuable applications of electricity, is shown in accompanying illustration, and was made by Messrs. Morse, Williams & Co., of Philadelphia. The exhibit was well planned and located to permit the inspection of parts to a sufficient degree to afford an understanding of the working of this very simple and efficient passenger elevator, in which is employed the improved Hindley worm gearing, which has been made a specialty by this firm for



THE WORLD'S COLUMBIAN EXPOSITION—EXHIBIT OF MORSE, WILLIAMS & CO

years. The motor is attached to the worm shaft by means of a coupling, the shaft being provided with a powerful double shoe brake, which is released by the action of an electro-magnet and applied by a weight; so that in case the electric current should be accidentally cut off, the brake could be instantly applied to stop the machine. The brake also acts as a governor to check the descent of the car, should it attain too great a speed. The motor is of the low speed, multipolar type, with self-oiling bearings and carbon brushes, requiring a minimum of attention. The reversing switches and controlling apparatus are of simple and improved forms, their action causing the elevator to start easily and gently with and without a load. The makers claim that the average of current used, both in raising the load and lowering the empty car, is less than in any direct electric elevator in the market. The machines are designed to raise average loads at speeds as high as 250 feet a minute. Besides these electric elevators, the firm are also manufacturers and builders of hydraulic, steam, belt, and hand power passenger and freight elevators, as well as hoisting machinery, dumb waiters, automatic hatch doors, etc.