

CONICAL PRESS FOR TREATING BEET PULP.

Exhausted beet pulp makes an excellent food for cattle, provided that it is neither too moist nor too dry; and, in order to bring it to the proper state for this purpose, Messrs. Selwig & Lange have invented a very ingenious conical press, which is illustrated in the accompanying cuts.

The apparatus is specially designed for expressing the juice contained in beet pulp that has been exhausted through the different processes of extraction. Figs. 1 and 2 represent it in longitudinal and transverse section, and Fig. 3 gives a perspective view of it.

The pulp, which is supplied continuously by a chain and buckets or an endless screw, enters the hopper, E, and falls at *a* between two openwork disks, whose sides are inclined and covered with perforated iron plate. These disks are surrounded by the cheeks of the frame, B B', and the latter is securely bolted to wooden blocks fixed to the flooring. The disks revolve very slowly, and at an equal rate of speed, around stationary drums, C C', that are connected by tie rods, *b*, and they form with each other an obtuse angle such as to make them further apart at their upper part, *a'*, than at *a*. The pulp thus fills a chamber whose sides taper downward in the form of a wedge, and moves constantly over inclined axes. Owing to this arrangement it is carried along by the friction of the revolving disks, and is brought progressively into the narrowest interval of the pressure chamber. During this motion it undergoes a strong pressure, which reaches its maximum at *a*, and all the juice that it contains traverses the strainer and the disks, A A'. The liquid afterward escapes through wide orifices in the lower part of the frame, and falls into a funnel, H, which connects with a drain.

As the rotary motion is continuous, the expressed pulp, on making its exit from the space, *a*, passes into a wider cavity, and afterward meets with a partition, F, which forces it to make its exit from the apparatus through the aperture, M, in a state of considerable cohesion.

In order to permit of regulating the pressure, which depends upon the distance apart of the disks, A and A', the builders have arranged, externally to each of these parts, a sleeve, whose position is determined by screws connected with the frame. Each sleeve is capable of moving upon its axis, C or C', in such a way as to increase or diminish the interval that exists between the strainers.

As shown in the figures, rotary motion is transmitted to the apparatus by a belt that passes over a pulley keyed to the shaft, L. Two gearings then drive the shaft, K, and this sets in rotation two pinions that gear with a system of tothing upon the circumference of the pressure disks, A and A'.

In order that the motion of these latter may be properly guided, each of them is put in contact with three conical rollers that pivot on the frame and run in bearings that permit of the position of their axes being regulated. All the running parts have to be carefully looked after and kept lubricated with tallow and black lead.

The use of this press in sugar works has demonstrated the fact that it is unnecessary to take out the strainers in order to clean them during one season's running.

This operation, although very easy, may be avoided by forcing in, from time to time, a powerful stream of water against the external surfaces of the disks, which will then preserve all their efficiency.—*Revue Industrielle*.

MACKEREL AND ALE.—Notices have been posted outside the various metropolitan hospitals in London, warning the public against the excessive use of mackerel and mild ale at this season of the year, as the larger fish are liable to contain a small worm, which would be injurious and likely to cause cholera and other diseases. The caution with regard to the drinking of large quantities of mild ale is given especially to the working classes. The beverage produces profuse perspiration, and renders the body liable to a chill, which would be likely to lead to serious consequences.

Sand Binding Plants for the Sea Shore.

The English Government, through her representatives at Madras, India, has received a report on the binding of the sands on the sea coasts by planting of indigenous plants to protect the beach and roads from the shifting sands. According to the report furnished the Revenue Department by Doctor Bidie, the planting of such plants was enforced by

thus arresting and consolidating sand are, viz., *Spinifex squarrosus*, *Ipomœa pes-capræ*, *Launœa pinnatifida* (formerly *Microrhynchus sarmentosus*); and to these may be added *Cyperus arenaria* and other *Cyperaceæ*, and *Tridax procumbens*. The locality which these plants frequent is that of the loose, shifting sands. The most common species found in these localities are *Canavalia obtusifolia*, *Hydrophyllax maritima*, *Sesamum prostratum*, *Pupalia orbiculata*, and *Crinum* sp.

"*Pandanus odoratissimus* is particularly useful when it is desirable to raise the sand drift in large heaps, and at the same time to afford shelter from the sea breezes. The *Calophyllum inophyllum* also thrives well when planted in such situations, and so does *Phoenix sylvestris*. If there is a backwater or canal, *Aviannia tomentosa* will be found most useful for consolidating the bank and catching the drift, as a dense miniature thicket of shoots springs up wherever the roots extend, and catches debris of all kinds as well as sand. If the water is fresh the tall grass, *Saccharum spontaneum*, also becomes a most valuable protecting agent from the moving sand. Other trees which thrive well near the coast, and which might be used for planting up reclaimed tracts of sand, are *Eugenia*

law on the beaches of Long Island as early as 1758, and in France, where successful and extensive operations have been carried on since 1780. In the south of France the first step toward arresting the progress of the sand is to erect a barrier to the drift, the usual form being composed of palings or boards about 4 feet high, and the sharpened ends driven into the sand. Each board is from 5 to 6 inches wide and 1½ inch thick. An inch space is left between the boards, so that as the sand drifts it is piled up in front of the boards, and passing also through the spaces is deposited behind. The boards soon become buried in the heap of sand which is collected around them, when they are raised without disturbing the heap. When the paling is first erected, a

jambolana, *Albizia lebbek*, *Sapindus emarginatus*, *Thespesia populnea*, *Paritium tiliaceum*, *Cordia myxa*, *Pongamia glabra*, *Odina Wodier*, *Mangifera indica*, *Feronia elephantum*, *Mimusops hexandra*, *Dalbergia paniculata*, *Acacia planifrons*, *Acacia latrosum*, *Pithecolobium dulce*, *Ficus indica*, *F. tsila*, and *Casuarina muricata*.

"Extensive plantations of this last named tree exist for many miles along the coast north and south of Madras, and these have greatly improved the appearance of what was before a sun beaten, sandy waste. There can be no doubt also that the plantations have rendered the fields behind them more valuable for affording shelter, and in some cases have permitted land to be brought under cultivation which would otherwise have remained in a waste state. The *Casuarina* is a very hardy plant near the sea, and will grow down to high water mark even among loose sand. The secret of its flourishing in such situations is due to the fact that the subsoil water is always near the surface, and that the sand, although apparently barren, is generally largely mixed with decayed organic matter. When the trees in a *Casuarina* plantation are left unpruned, they throw out decumbent horizontal branches, which develop roots and thus fix the sand."

Dr. Bidie says that the importance of the *Casuarina* in the reclamation of waste sandy tracts on the coast can hardly be overestimated. It is not likely that all the plants which thrive in the hot zone of India will do well in this latitude, but the desirability of protecting the sea shore in many places from shifting sands will no doubt induce some new experiments, with the hope of discovering some plant or shrub which is better suited for staying sand drifts than has been used before on our coasts.

The Orphan's Friend.

On the 9th of July a fine monument was unveiled at New Orleans in the presence of an immense assembly of the people, to the memory of Margaret Haughery, an unlettered Christian woman, who by her energy and industry amassed a competence. Although a devout and fervent Catholic, she knew no creed and recognized no faith in the dispensation of her benevolence. She responded to all worthy calls for assistance, she bestowed most of her bounty on the orphans, and when she died she was known as the orphan's friend. The statue represents Margaret sitting in a chair clasping an orphan to her side, while her hand rests upon the child, who is bending forward, looking up into her face. The pedestal surmounting the base is of Italian marble. The group is also of Italian marble. The entire cost of the decorations for the grand pedestal and statue will be \$6,500.

The value of the fish caught by Canadian fishermen during 1883 is placed at \$17,000,000.

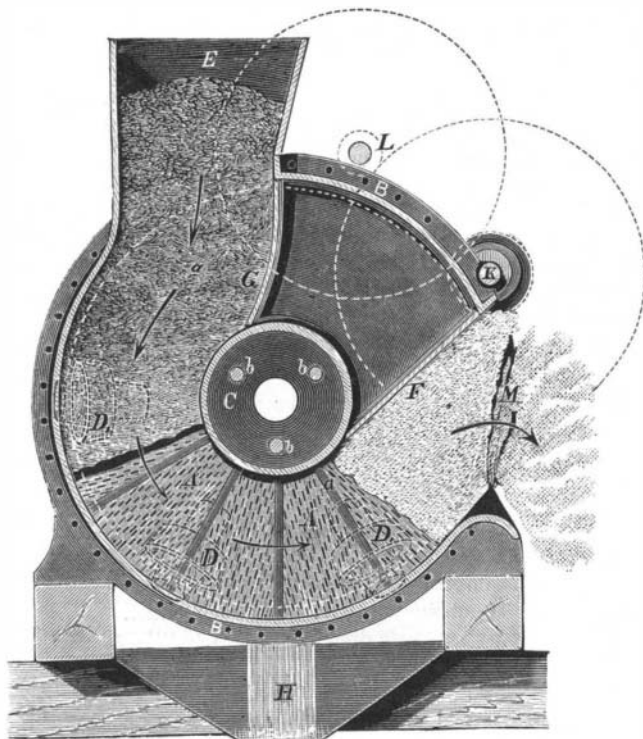


FIG. 1.

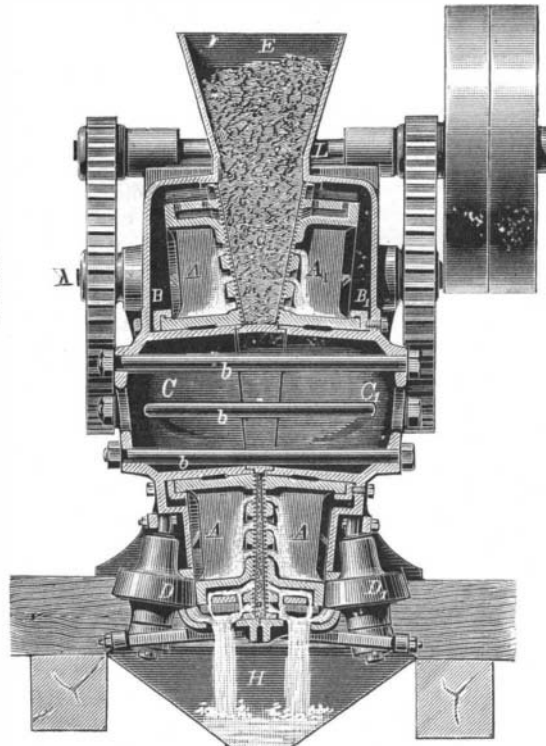


FIG. 2.

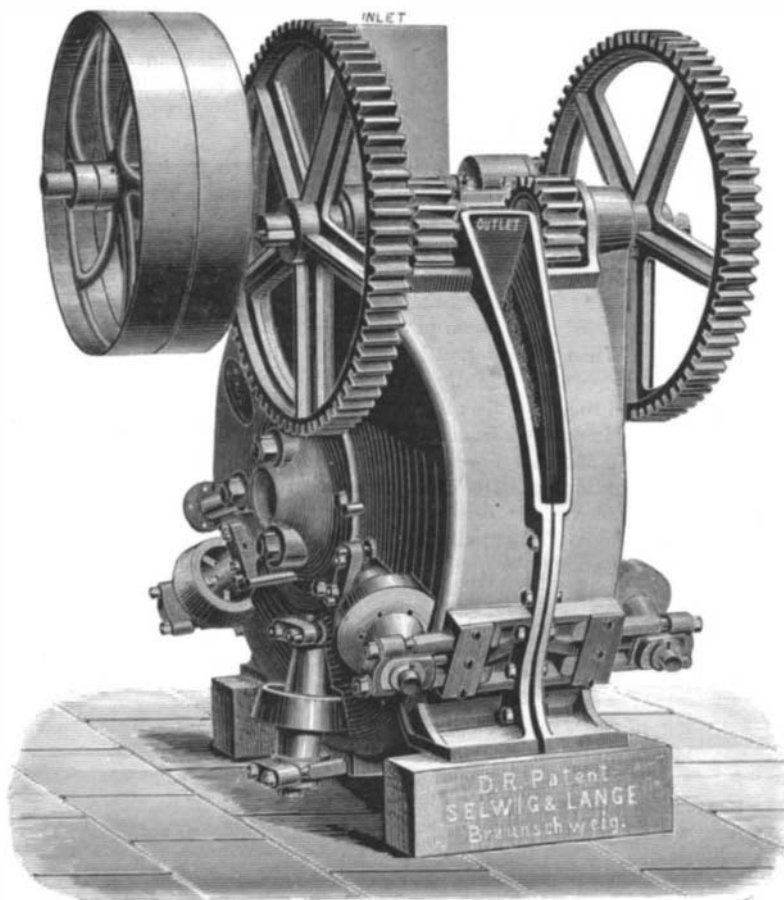
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FIG. 3.—PRESS FOR TREATING BEET PULP.

space on the windward side eight times wider than its height is planted with sand binding plants, those used in France being chiefly *Arundo arenaria*, a *Triticum*, *Cakile maritima*, and a *Salsola*. The dune thus secured rises higher and higher, and the plants as they are buried struggle upward and bind the drifted heap with a network of roots. The dunes in France increase in height at the rate of about a foot a year, and the top is sometimes covered with *Tamarisk*.

Dr. Bidie says: "The chief local plants instrumental in