

New Inventions.

Vats for Tanning.

The preservation of skins and the transforming them from gelatinous sheets to the flexible, and peculiarly enduring material known as leather, is an art of great age, and justly ranked among the most important. The process is a chemical one, and, as generally conducted, consists in changing the albumen of the animal substance by the absorption of certain salts or acids, ordinarily termed "tannin." Tannin is produced in solution in the cheapest and most practicable form by steeping astringent vegetable substances in either hot or cold water, and although to facilitate the operation and reduce the expense, when conducted on a large scale, the strength is sometimes extracted from the bark and infused into earth for more convenient shipment—as is the case with *terra japonica*, imported from Australia and other distant points—the process is substantially the same in all cases; the hides and tannin are simply brought together and allowed to produce a mutual action on each other.

While this is true of the general process, the details admit of almost an infinite variety of modifications. The old practice, still scarcely excelled so far as the quality of the leather is concerned, was to spread the hides, pack on all sides with finely broken bark, cover the whole with cold water, and wait patiently several years for the production of leather. In some cases, leather which had been accidentally forgotten and allowed to remain some half a century too long, has been found rather overdone, and possessing a character somewhat resembling horn, very difficult to soften into a flexible condition even with long soaking; but these are rare instances, for the process is simple and little liable to mistake or failure. But it is far too slow for modern times, and the great hide and leather dealers, whose offices and warehouses crowd that portion of our city known as "The Swamp," and whose tanneries are scattered over the country—located in any regions which are readily accessible and abound in bark—generally count on receiving the leather in tolerable condition in from six to ten months after the raw hides have been started on their journey. But it is only by many and laborious handlings that this is effected—the bark having been first leached with heat, to extract its strength, and the hides turned over and laid down in liquors of various strengths some twenty times.

The devices now to be described are the invention of Elias A. Eliason, a practical tanner of much experience, and have been tested with success on a large scale, in his own establishment. The intent is to diminish the labor and increase the certainty of equally and rapidly tanning all parts of each hide. It is also a means of varying the tanning effect on the flesh and grain sides, tanning either faster or slower than the other, at pleasure. This feature of the improvement being based on the fact that the effect is greatest on the upper side of a skin, and that it is in some degree proportioned to the depth of the stratum of tanning liquor lying immediately over it. The principal features of the apparatus are shown in the accompanying figures.

A frame or false vat is constructed with a series of horizontal ranges of small bars or sticks, upon each of which is placed a hide for the purpose of keeping each separate from the others and in a horizontal plane, so that the liquor may surround each and every hide, and be in constant contact with every part of their surface, in order that the strength of the liquor (which is stirred up when the hides are immersed) may penetrate in nearly equal quantities into each hide.

Figure 1 represents an end view of this apparatus; figure 2 a side elevation of a part on a larger scale, and figure 3 a side elevation of the same.

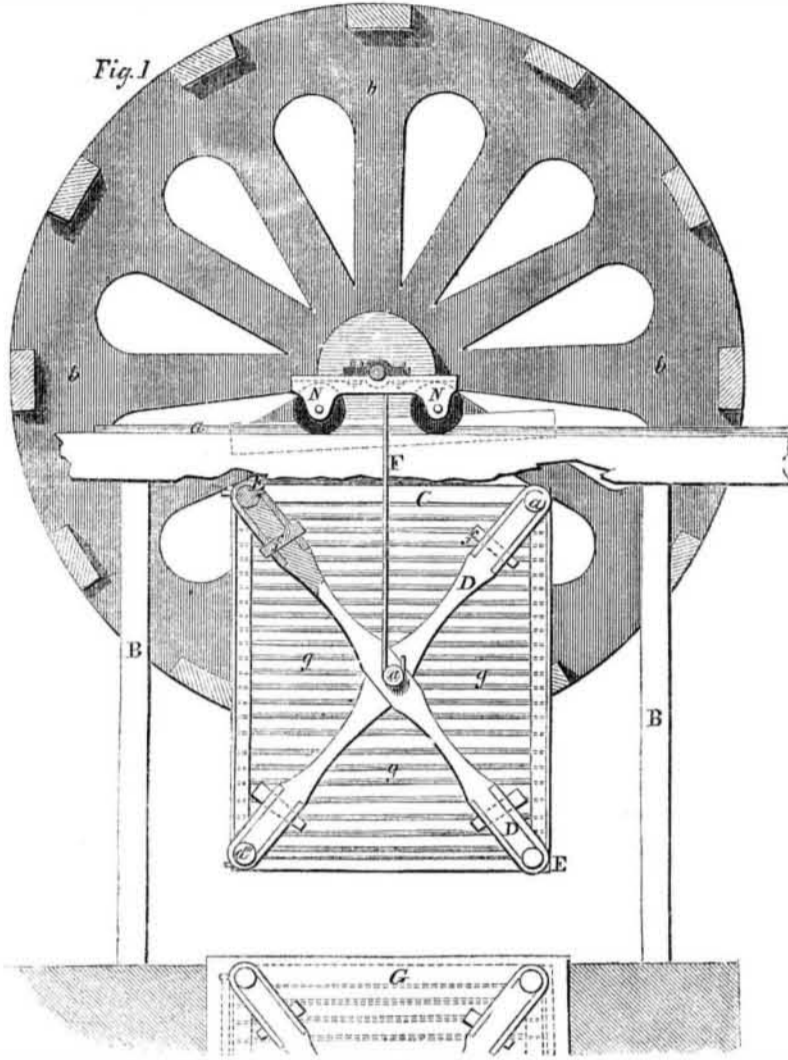
The false vat or frame, C, is made in a rectangular form, corresponding in size to the vat, G, in which it is to be immersed; into this frame are fixed a series of ranges of small bars, *h*, at regular intervals apart, in horizontal planes, and in such a manner (they being

rectangular in their cross section) that each hide, *g*, shall rest on the bars, *h*, as upon knife edges, so as to give free access to the tanning liquor to the greatest extent possible under the circumstances, allowing the liquor to

keep in contact with the entire surface of every hide.

The tendency of the tanning liquor being to penetrate more on the upper side of each hide, it is advisable frequently to turn the

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hides bottom side up; and here the special advantage of this arrangement is made apparent. By inserting a couple of cross bars, one at each end, under the upper rails of the frame, C, and securing to them a couple of hooks attached to the end of ropes wound upon a pair of drums, C. The frame may be raised up out of the vat by turning the large treadwheel, *b*, secured upon the shaft of the drums. Whilst in this position the hides may be ex-

amined, and if deemed ready the whole is tilted over together, after simply putting upon the ends of the frame a pair of cross-trees, D, having journals, *d*, upon which are fitted a pair of hooks, F, suspended from the shaft of the drums, as represented. It may then be lowered into the vat by the same means used in raising it, but as it is frequently necessary to transpose the hides from one vat to another, the shafts, *e*, of the drums, *c*, are mounted

be communicated to both sides of the hide, as the time during which the flesh and grain sides shall each be subjected to the action of the strength of the liquor can be regulated at pleasure. In practice one side of a hide requires to be exposed longer than the other.

In placing the hides in the frame or false vat, C, a false side is first removed, which exposes the ends of the bars upon which the hides rest. These bars are then withdrawn, with the exception of the bottom range, upon which a hide is then placed. Another range of bars is then inserted, and a hide placed upon it, and so on until the whole frame has been filled with hides, taking care to lay the hides all the same side up, after which the false side is again put in its place, so as to prevent the bars from slipping out. It is then ready to be transported and placed in the vat, and so with the removal of the hides from the frame, save that the operation is reversed.

From the foregoing description it will readily be seen that the apparatus possesses numerous advantages over any other now in use, and which will readily suggest themselves to those conversant with the business. The details of the false vat, C, and the means employed for fastening its parts together, etc., may be inferred from the engraving.

The specific gravity of the hides is so nearly that of tanning liquor, that the slats, *h*, can hardly be said either to support the hide or to hold it down, but only to keep it in place, allowing the liquor to touch all points on both its upper and under surfaces. But when hoisted to examine and turn, they serve to drain off the liquor and sediment, and particularly to admit the air in a very superior manner, and to this perhaps may be partly due the superior effect of this mode of treatment. The inventor affirms that leather can be tanned on this principle, in one-third the time usually consumed, making it more solid and firm where the hide is best, and of course much more profitable to the manufacturer. But the greatest point, he continues, "is, that I can make from five to eight pounds more leather to the hides than by the old system, having proved it at different times by marking the weights on each hide separately, tanning twenty-five hides so marked in the frame, and a corresponding number in the old way, with the above results, as the appended certificates will show.

The expense of filling up an old yard, so as to tan from two to three thousand hides is very trifling, perhaps not over \$150 at most, and the facts above stated can be tested in one frame, with the fixtures for hoisting, as well as with a number, and at a trifling expense, and making no alterations about the yard.

Applications for rights or for further information may be addressed to the inventor, E. A. Eliason, Georgetown, D. C., to whom a patent was issued on the 7th of October last.

Paying for the Whistle.

One of the Assistant Examiners of the Patent Office being called upon as a witness by the Investigating Committee on Bribery in Congress, states that the clerks were assessed two and a half per cent. to pay an attorney to explain matters to Members of Congress, in order to secure additional compensation, in a bill before the last session of Congress.

The lobbying system in Congress is a disgrace to our country, but Congress itself is responsible for it. The opinion is quite prevalent in the community that Members not only can be approached, but that they court the approach of interested lobbyists—who are mostly ex-Members, and know how "to pull the wires."

Large Plates of Iron.

Some plates for the *Great Eastern* recently rolled at the Parkgate Iron Works, England, exceed, particularly in length, anything in their line. One recently described was 27 feet 3 inches long, 3 feet 3 inches wide, and 1 1/4 inches thick. The weight was over 2 tons.

The storeship *Supply* has landed another lot of camels in Texas. They are forty-four in number, and were landed in good order during the last month.

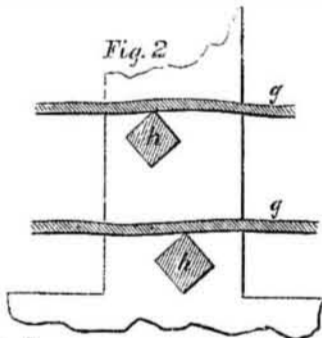
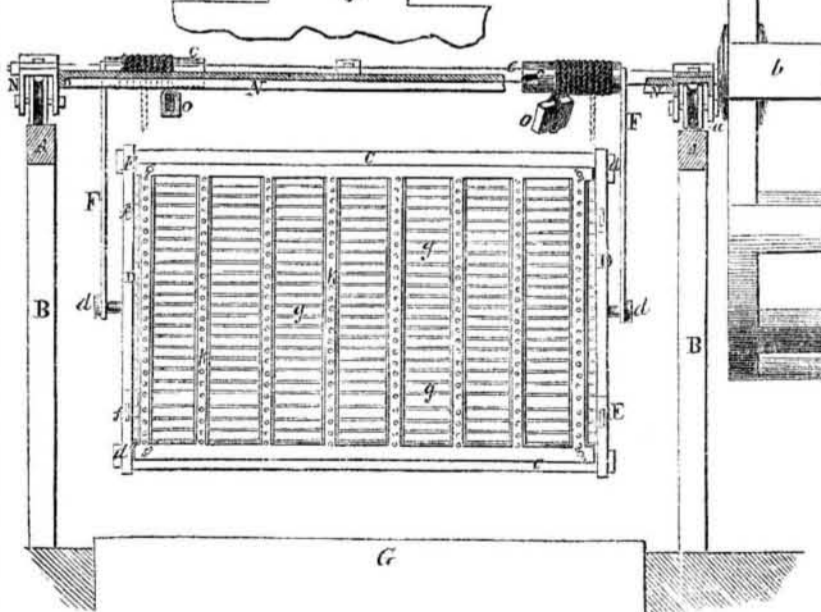


Fig. 3



upon bearings formed in small carriages, N, by which the whole are moved along upon the railway, *a*, which runs along the line of the vats, as desired. In this way this hitherto

t tedious and laborious process can be conducted in as short a time as it would take to remove one or two of the hides. It will readily be seen that the same degrees of tanning can