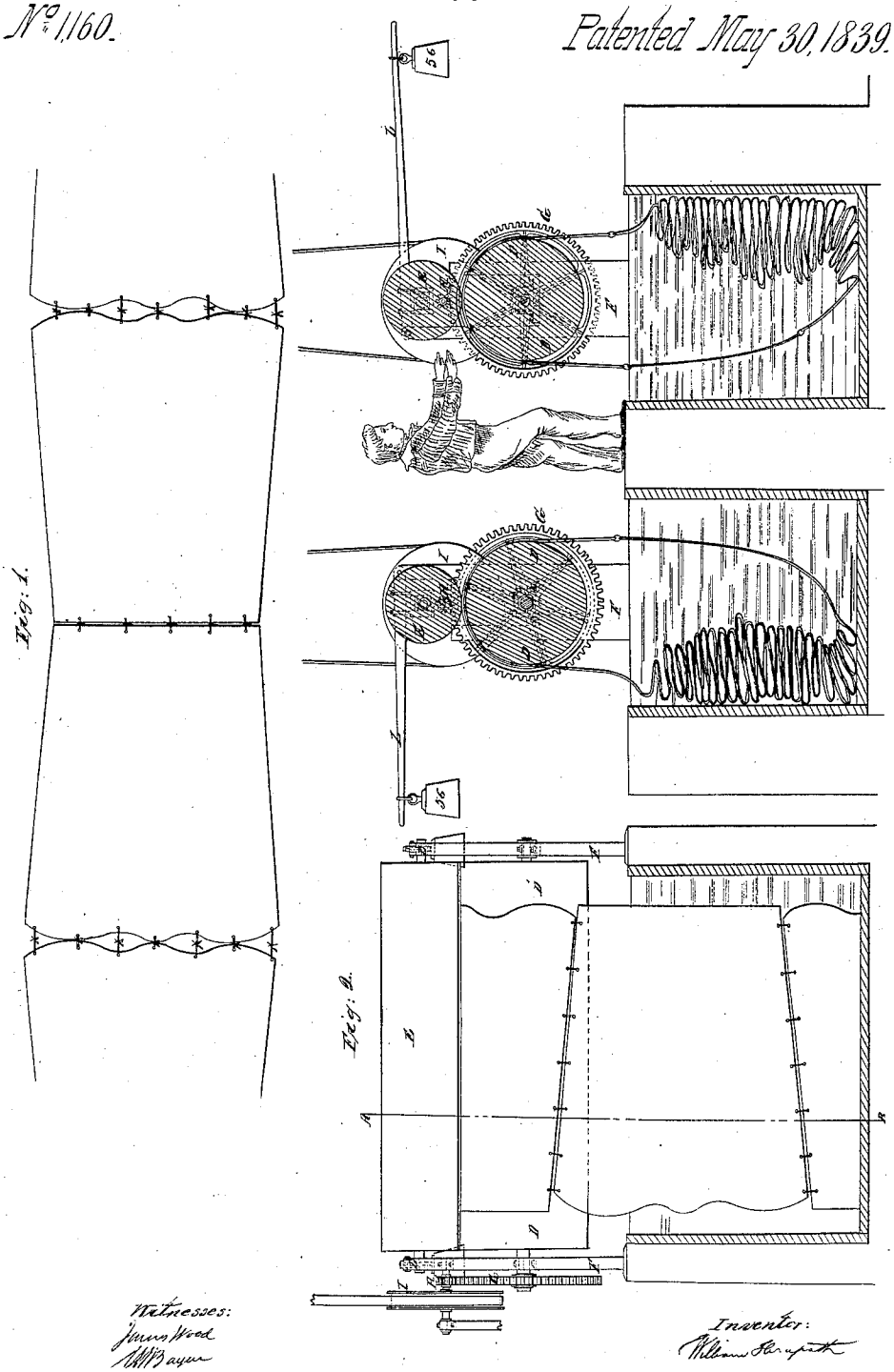
W. Heranath,

Tanning Apparatus,

No. 1,160. Patented May 30, 1839.



Witnesses:
James Wood
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UNITED STATES PATENT OFFICE.

WILLIAM HERAPATH, OF BRISTOL, ENGLAND.

PROCESS OF TANNING.

Specification of Letters Patent No. 1,160, dated May 30, 1839.

To all whom it may concern:

Be it known that I, WILLIAM HERAPATH, of Bristol, England, have invented an Improvement in Processes of Tanning; and I do hereby declare that the nature of the said invented improvement or improvements in the tanning of hides and skins consists in causing a more frequent absorption of fresh tanning liquor by them and a more frequent expression of partially-exhausted liquor from them within a given time than can be effected by any process hitherto in use; and I declare that the following is a particular description of the manner in which the said improvement or improvements is or are to be performed, reference being had to the illustrative drawing hereunto annexed—that is to say, I propose to show in the following description the mode and manner in which I tan the form of hides called "butts" or "bucks," the same mode or manner being applicable to the tanning of all sorts of hides or skins.

After the butts have undergone the usual preparatory processes such as unhairing, rounding, fleshing and graining, I take as many as a pit will conveniently hold, the number varying according to the size of the pit, and attach them together by means of ligatures of strong twine or by some other convenient method either endwise, as shown in Figure 1, of the drawing hereunto annexed, or sidewise, as shown in Fig. 2 of said drawing, taking care in the former case to join the hides butt to butt and shoulder to shoulder and in the latter to join the butt side of each to the shoulder side of that next to it, so that the band formed may be as nearly straight and even as the form of the butts will allow. I then connect the said band of butts with the system of rollers represented in the Figs. 2 and 3 of the said drawing hereunto annexed and next hereinafter described, Fig. 2 being a front view thereof with the side of the tan pit removed for the sake of greater clearness and Fig. 3 a transverse section of the same through the line A B of Fig. 2.

D D is a roller of wood or other suitable material supported by the standards F F, which roller stretches across the top of the pit containing the tanning liquor; to one end of the axis of this roller there is affixed a cogwheel G into which the pinion H on the shaft of the speed I is geared, which pinion is connected by a drum and strap in the usual way with a steam engine or other moving power. The standards F, F, support also at top two weighted levers L L from which there is suspended a second roller E of smaller dimensions than D. By adjusting the weights on which levers, according to the degree of pressure required, the roller, E, is made to press, with more or less force, on the under roller D, and to derive a rotatory motion therefrom. I make the roller, D, of larger diameter than the roller, E, in the proportion of 10 to 6, but I do not confine myself to that or any other rate or proportion. One end of the band of butts being brought over the roller, D, is fastened to the last of the butts at the other end of the series by ligatures, in like manner as is before directed or by some other convenient method, so as to form of the whole one endless band or belt. A rotatory motion being now communicated to the under roller, D, from the cogwheel and pinion, G and H the endless band of butts is raised at the rate of about 6 feet per minute from the pit and as each butt passes between the rollers D and E the partially exhausted liquor is pressed, or squeezed out of it by the weighted roller, so that it descends again into the pit with its pores open for the reception of a fresh supply of tanning liquor. A boy attends to the endless band as it emerges from the pit (as shown in Fig. 3) to lay each butt smooth and even upon the under roller D and I find in practice that one boy can readily attend upon 2 adjoining pits and pairs of rollers at a time, by subjecting the butts to this frequently repeatedly alternate submersion and expression the quantity of tanning necessary to be combined with the gelatin and gelatinous fibrin, in order to convert the hide into leather is taken up in a much shorter space of time and with less loss of substance, than by any process known to me to be heretofore in use, while the leather produced is longer waterproof than the best sole leather known in the market. The pits I have hitherto used are of the ordinary size and form, but I recommend that they should be made at bottom of a semicylindrical form which I think will allow of the endless band of butts turning around with greater ease, and though I have hereinbefore directed the band or series of butts to be formed into an

endless band, and though that is the form which I consider to be the best I declare that I do not limit myself to that form of connection but that by giving an alternating, or reciprocating action to the machinery employed, a band of butts such band being free and unconnected at both ends, may be subjected to a sufficiently continuous and alternate submersion and expression for the purpose hereinbefore described; and I further declare, that it is not essential that the rollers should be placed above the liquor as in the arrangement before described, but that my improved process of tanning may be equally well performed if the rollers are placed wholly, or partially, beneath the surface of the liquor; and I declare further that though I have hereinbefore directed 2 rollers to be employed, finding the process of expression to be thereby most effectually accomplished in the generality of cases yet that I occasionally employ one roller only by turning which the belt is carried around continuously as before described, the weight of the belt of hides, causing by its pressure on the roller a considerable expression of the exhausted liquor to take place, though not so complete an expression as when 2 rollers are employed. And having now fully described my said invention and the manner in which the same is performed, I declare that I do not claim any parts of the machinery hereinbefore described as being in themselves new, or newly combined; but

What I claim as new, and of my invention is—

The tanning of hides and skins, by connecting or fastening them together as is hereinbefore directed for the purpose of subjecting them to a quick and repeated alternation of absorption and expression (absorption of fresh tanning liquor and expression of the liquor when exhausted of its tannin, or partially so) by means of a continuous application of one, two or more rollers placed, adjusted, moved, and regulated, and fed or supplied, in the manner hereinbefore directed, and such my invention being to the best of my knowledge and belief, entirely new, and never before used. I do hereby declare this to be my specification of the same, and that I do verily believe this my said specification doth comply in all respects, fully, and without reserve or disguise with the proviso in the said hereinbefore in part recited Letters Patent contained. Wherefore I do hereby claim to maintain exclusive right and privilege to my said invention, and I propound this description and signed drawings as my specification for the United States of America.

Sworn at the Bristol Council House, this 18th day of September, 1838.

WILLIAM HERAPATH.

Witnesses:
JAMES WOOD,
L. W. BAYNE.