

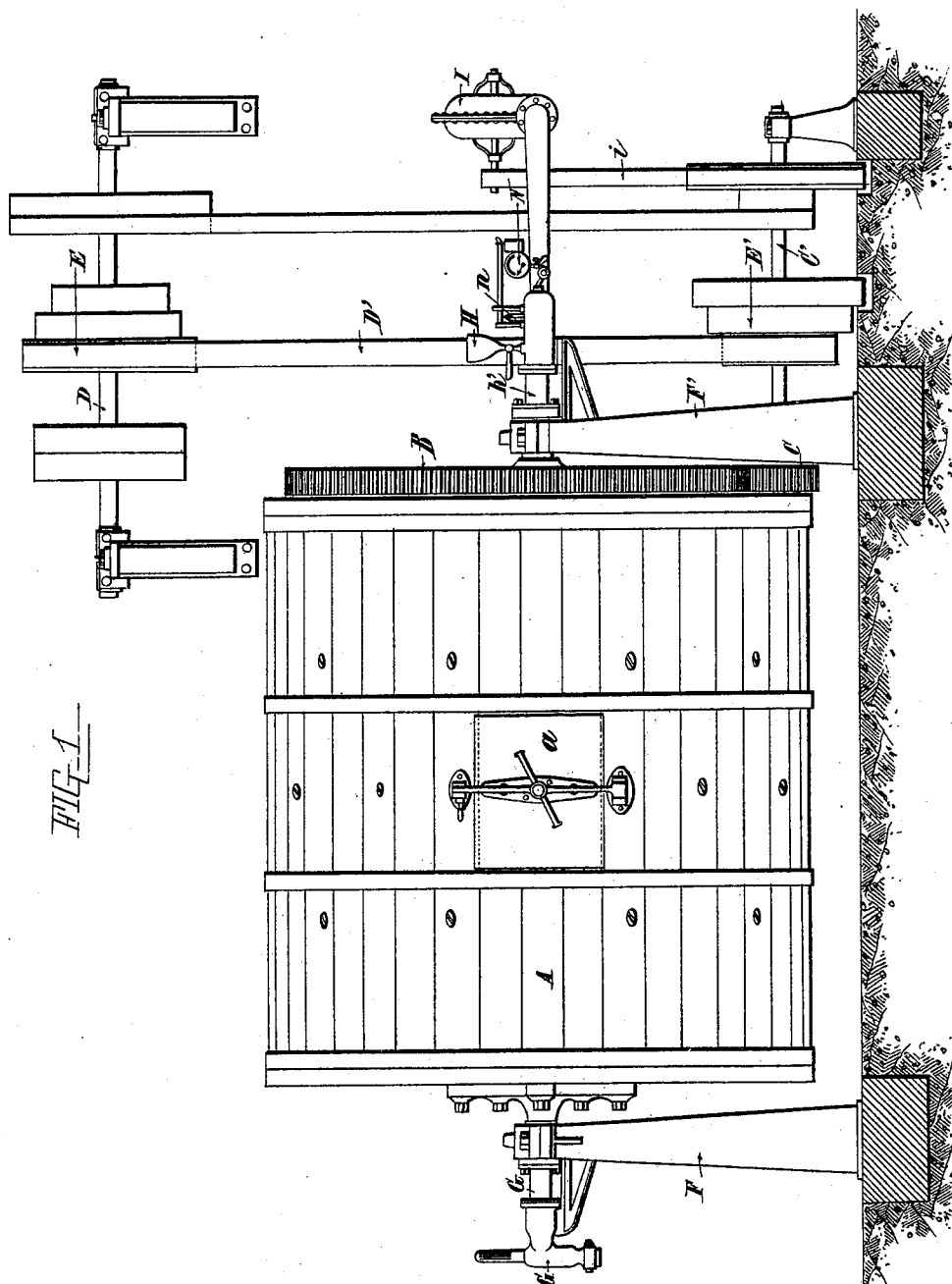
(No Model.)

3 Sheets—Sheet 1.

M. C. B. E. DUPIN.
APPARATUS FOR QUICK TANNING.

No. 583,792.

Patented June 1, 1897.



Witnesses.

Beve Lewis
W R Edelen

Inventor
M. C. B. E. Dupin,
by *J. J. Mauro*,
his attorney.

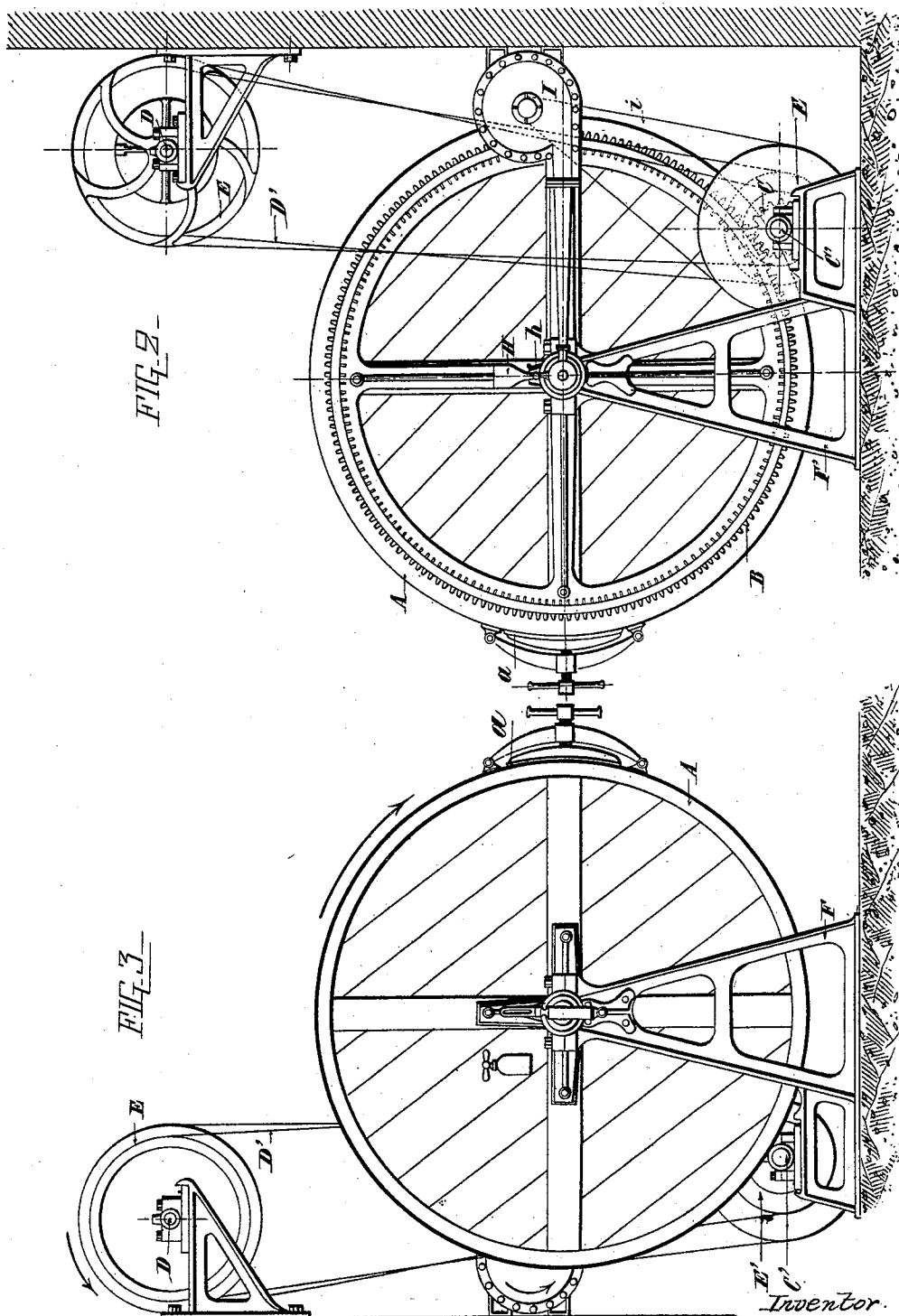
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Witnesses
John R. ...
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his attorney

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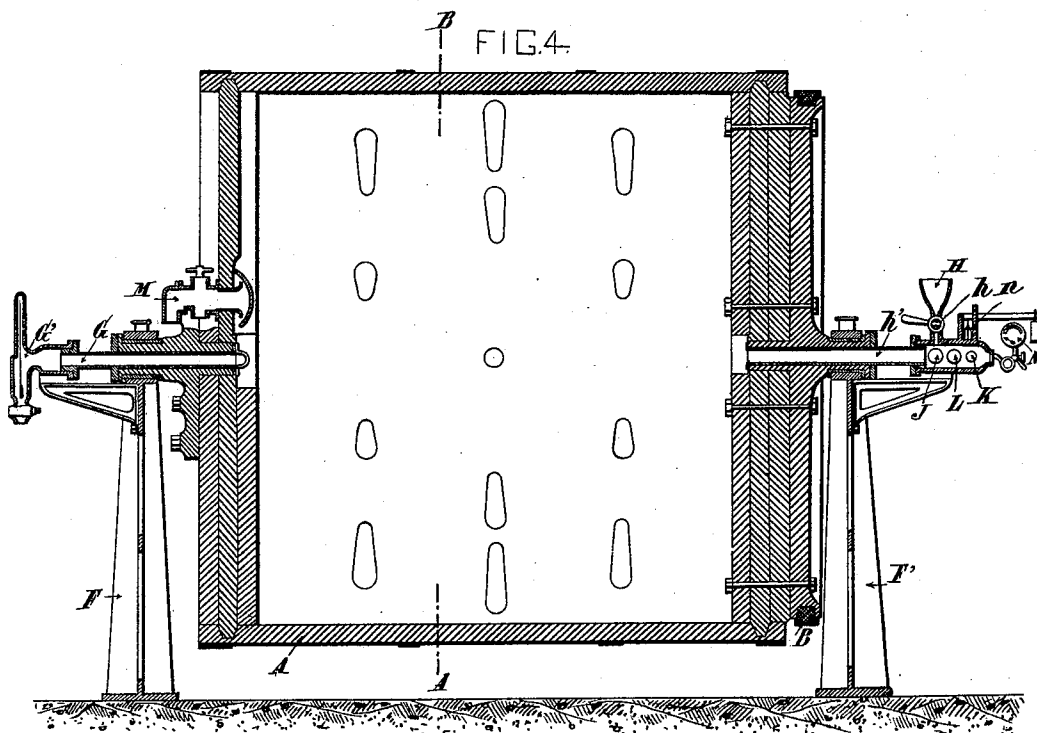
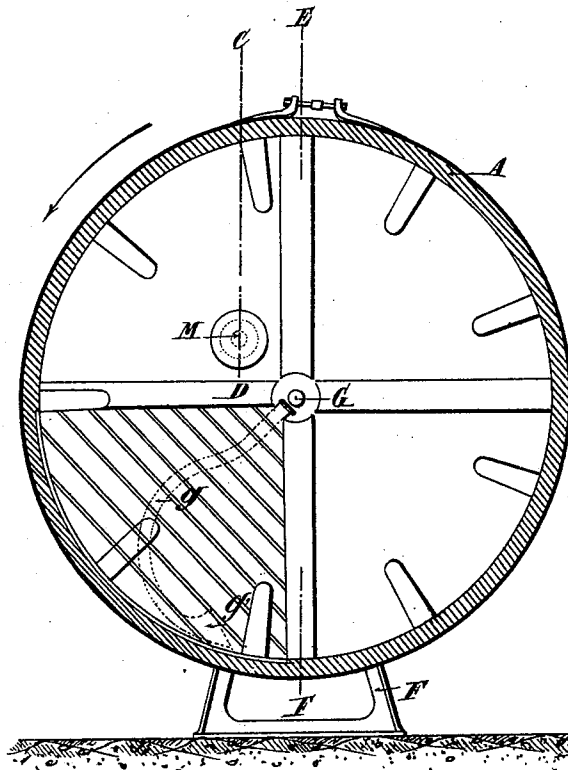


FIG. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

MARIE CAMILLE BONAVENTURE EUGÈNE DUPIN, OF PARIS, FRANCE,
ASSIGNOR TO LA SOCIÉTÉ DES MATIÈRES TANNANTES ET COLORANTES.

APPARATUS FOR QUICK TANNING.

SPECIFICATION forming part of Letters Patent No. 583,792, dated June 1, 1897.

Application filed June 13, 1896. Serial No. 595,475. (No model.)

To all whom it may concern:

Be it known that I, MARIE CAMILLE BONAVENTURE EUGÈNE DUPIN, a citizen of the Republic of France, residing at Paris, (Seine),
5 in said Republic, have invented certain new and useful Improvements in Apparatus for Quick Tanning, of which the following is a full, clear, and exact description.

Processes of very quick tannage by means
10 of fuller-vats, especially when carried on with very concentrated extracts, have not heretofore given satisfactory results because no account has been taken of the very important role played by the temperature in this kind
15 of tanning. It is necessary, however, that the temperature should not rise too high, for then a harsh brittle leather of bad quality and bad color is obtained. Attempt has, it is true, been made to remedy this excess of
20 temperature by stopping the fuller-vat to allow the temperature to fall to a suitable degree; but in thus remedying this difficulty another, equally serious, is encountered, for the production of leather is diminished,
25 the time of the stoppages being lost for the tanning operation. Further, it is necessary that the temperature should not be too low, for then the tannage takes place very slowly, which is altogether contrary to the end pro-
30 posed and causes the hides to remain too long in the vat. It is very important, therefore, to be able to vary at will the temperature in the interior of the fuller-vat and to bring it at any moment to a degree suitable for obtain-
35 ing leather of good quality and good color. For this purpose I have provided the following means:

First. If the temperature in the vat at the beginning of the tanning operation is too
40 low, or if during the operation it falls to too low a degree, steam is sent into the vat by an apparatus suitably arranged for the purpose and the temperature is thus raised at once to the desired degree. It is very im-
45 portant to be able at the commencement of the tanning to raise immediately the temperature to the desired degree, for the swelling and tannage of the skins take place better and more rapidly at temperatures between
50 about 20° to 40° centigrade (according to the kind of leather to be tanned) than in the

cold. By rotation alone of the vat it requires considerable time (especially when the exterior temperature is very low) to reach the desired temperature, which delay is contrary
55 to the principal object of rapid tanning, whereas by the introduction of steam into the vat a suitable temperature is attained at once. Another advantage in the use of steam is this, that it is not necessary to turn the
60 vat rapidly if it is desired to raise the temperature, and the vat can be given a slow movement very favorable to the preservation of the skins to be tanned.

Second. If the temperature rises too high, 65 air is sent into the vat by means of a blower suitably arranged for the purpose, so as to lower the temperature within the vat.

Third. The driving-shaft of the fuller-vat is provided with a suitable apparatus for vary-
70 ing at will the velocity of the vat.

In the accompanying drawings, which form part of this specification, a mechanically-operated fuller-vat is represented, by way of ex-
75 ample, whose arrangements are such that air or steam may at will be introduced into the vat and that its speed of rotation can be varied.

Figure 1 is a front elevation of the apparatus. Figs. 2 and 3 are elevations of the same,
80 looking at opposite ends; and Fig. 4 is a longitudinal vertical section on lines C D and E F of Fig. 5, which is a cross-section on the line A B of Fig. 4.

The fuller-vat is supported by hollow trun-
85 lions on two standards F F'. A tube K puts the hollow axle h' in communication with a steam-inlet pipe, which can be regulated at will.

To deliver the air into the vat, a blower is
90 arranged at I, which receives its motion from the shaft C' by means of a driving-belt i. This blower, which can be put into action at will, delivers cold air (taken from the at-
95 mosphere) into the interior of the vat. It is, as shown, connected with the interior of the vat by the tube J, Fig. 4, which opens into the hollow journal h. Between the two tubes J and K, just mentioned, is arranged a tube
100 L, by which the extract is introduced into the vat.

The fuller-vat A, which is provided with an

opening for the introduction and removal of the hides and a suitable closure *a* for said opening, is further provided with a gear-wheel B, which is engaged by the pinion C, fast on the shaft C'. This shaft C' receives its motion from an overlying shaft D by means of the driving-belt D'. The shaft D is driven directly by the motor or through any suitable mechanism, and it transmits its motion to the shaft C' by means of cone-pulleys E E'. It follows from this that according to the position of the belt D on the cone-pulleys E E' so is the speed of the vat modified.

As represented in the drawings, the cone-pulleys are shown for giving three different speeds; but it will easily be understood that the number of speeds may be increased by increasing the elements of the cone-pulleys. In order, therefore, to modify the speed of rotation of the vat, and consequently to modify the temperature in the interior of the vat, it is sufficient to shift the belt by means of a belt-shifter of any suitable system without being obliged to stop the vat.

In order to know how to modify the temperature, whether to increase or diminish it, it is necessary to determine the temperature at every moment. This can be effected in the following manner: On one of the hollow trunnions, that on the left hand in Fig. 1, is placed a proof-chamber G, provided with a thermometer G'. This journal or trunnion terminates in the interior of the vat near its periphery in a bucket *g'*, Fig. 5, which is connected by a tube *g* with the chamber G. In revolving with the vat the bucket fills with extract, and, as it rises, the extract flows by gravity into the chamber G into contact with the thermometer G', to which it communicates its own temperature, which is also that of the interior of the vat. It is thus possible, without stopping the vat, to ascertain the temperature in the interior thereof. The proof-chamber G also permits the removal at any moment of a specimen of the extract employed in the tanning, so that the condition of said extract, its degree Baumé, and other properties can be ascertained.

To replace the extract withdrawn from the vat, a funnel H, provided with a stop-cock *h*,

is arranged to communicate with the hollow journal of the vat. The extract withdrawn may be put into the funnel, and on opening the cock *h* it will flow into the vat through the hollow journal *h'*.

When air or steam is introduced into the vat, it is necessary to open a communication between the interior of the vat and the outside atmosphere in order to avoid the elevations of pressure. With this object a cock M is placed in the wall of the vat. A manometer or pressure-gage N and a safety-valve *m* complete the apparatus.

To tan with my fuller-vat, the skins and tanning extract are placed therein, the vat is put into rotation, and the temperature therein is raised to a suitable degree and maintained during the whole operation within the desired limits for obtaining a very good tannage by operating as just described.

As will be seen, in my fuller-vat the temperature inside the vat can be raised rapidly and at will and can be brought immediately and, so to speak, instantaneously to the proper degree and be maintained during the whole operation within the desired limits for obtaining the best results without ever arresting the rotation of the vat.

I claim as my invention or discovery—

1. In combination with a fuller-vat, a bucket connected with a hollow journal of the vat and arranged to dip up the liquid in the vat as the leather revolves and deliver it into or through the hollow journal, substantially as described.

2. In combination with a fuller-vat, a proof-chamber for holding a thermometer, and a bucket connected with a hollow journal of the vat and arranged to dip up the liquid in the vat as the leather revolves and deliver it into the said proof-chamber, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

DUPIN.

Witnesses:

A. ROUSSANNER, Jr.,
T. TOUSSET.