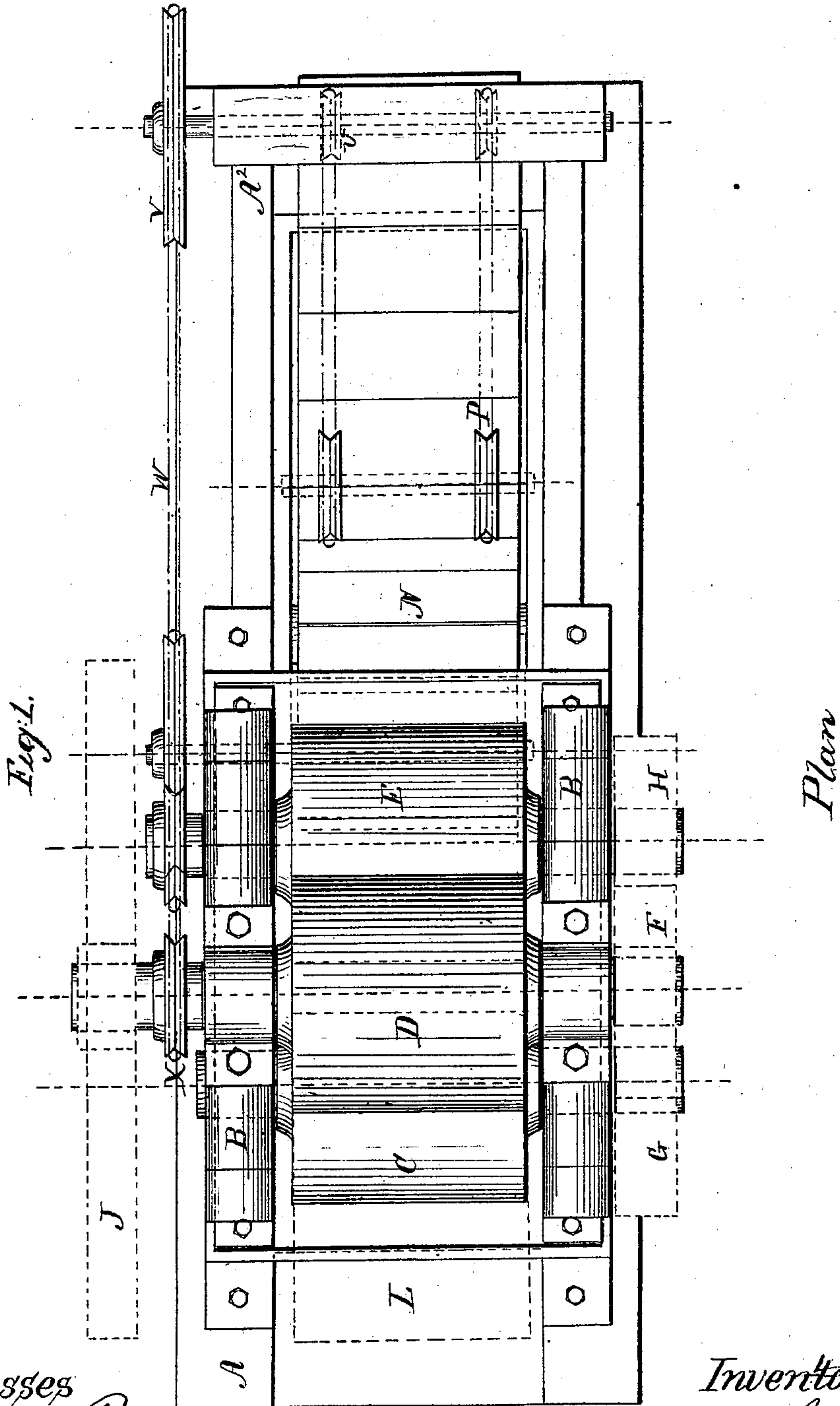


*B. Irving. Sheet 1, 2 Sheets.*  
*Bark Mill.*

*N<sup>o</sup> 85,172.*

*Patented Dec. 22, 1868.*



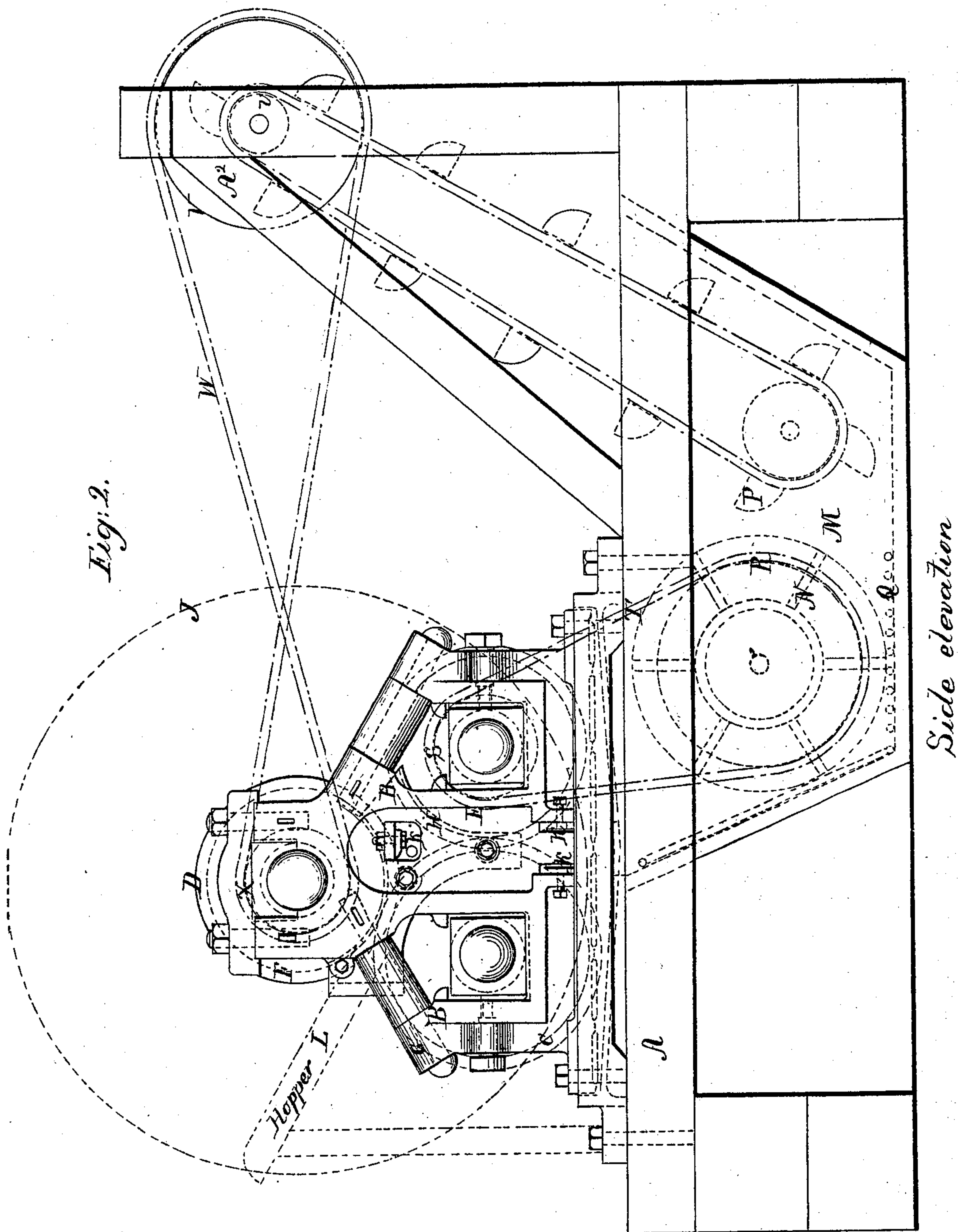
*Witnesses*  
*Charles S. Barrett*  
*Franklin Barrett*

*Inventor*  
*B. Irving*

*B. Irving. Sheet 2, 2 Sheets.*  
*Bark Mill.*

*N<sup>o</sup> 85,172.*

*Patented Dec. 22, 1868.*



*Fig. 2.*

*Side elevation*

*Witnesses*  
*Charles C. Barrett*  
*Franklin Barrett*

*Inventor*  
*B. Irving*



# United States Patent Office.

BENJAMIN IRVING, OF NEW YORK, ASSIGNOR TO H. A. TAYLOR,  
OF MALONE, NEW YORK.

Letters Patent No. 85,172, dated December 22, 1868.

## IMPROVED BARK-CRUSHER.

The Schedule referred to in these Letters Patent and making part of the same.

### To all whom it may concern:

Be it known that I, BENJAMIN IRVING, of the city, county, and State of New York, have invented certain new and useful Improvements in Mechanism for Crushing Bark, for obtaining the extract thereof for tanning and other purposes; and I do hereby declare that the following is a full description of the same.

The nature of my invention consists,

First, in combining and arranging a series of three rollers, in such a way as to cause the upper and front rollers to have a differential motion, and the front and back rollers to have a uniform motion, so that the bark, in passing between the upper and front rollers, will not overwork or crowd the front and back rollers in passing between them, as would be the case if the speed of all the rollers were the same.

Second, in combining, with the said series of rollers, a series of adjustable knives or scrapers for clearing the surface of the rollers from the dirt or extract of tannin adhering thereto during the crushing-operation.

Third, in combining, with the said series of crushing-rollers, a water-bath, in such a position, in reference to the rollers, as to receive the bark and extract discharged from the crusher-rollers.

Fourth, in combining, with the said water-bath, a coil of heater-pipes, to heat the water in the bath.

Fifth, in combining, with the said water-bath, a revolving, agitating, or distributing-wheel, for carrying the tan-bark to an elevating-apparatus.

Sixth, in combining, with the said water-bath, an endless elevator.

But, to describe my invention more particularly, I will refer to the accompanying drawings, forming a part of this specification, the same letters of reference, wherever they occur, referring to like parts.

Figure 1, sheet 1, is a plan view of the machine.

Figure 2, sheet 2, is a side elevation of the machine.

Letter A is the frame of the machine, which may be made of wood or metal, as circumstances may require.

On the front end of this frame is arranged, in suitable bearings, B, a series of three rollers, C, D, and E, of uniform diameter, so that the front roller, C, acts upon the top roller, D, and back roller, E, at the same time, to give the bark two successive crushings before it escapes from the rollers.

These rollers are geared together by cog-wheels, F G H, secured on their journals, and propelled by means of a large cog-wheel, J, on the opposite end of the axis of the top roller D.

This roller is geared so as to run faster than the front roller, C, while the front and back rollers are geared so as to have a uniform speed.

The object of this differential speed is to crush the bark more thoroughly, and, at the same time, facilitate the delivery of the bark through the series of rollers.

Letters K are knives or scrapers, arranged across the machine, at the lower sides of the rollers, for the purpose of freeing them from dirt and any extract of tannin adhering to their surfaces.

Letter L is a feed-table or hopper, on which the slab of bark is fed into the machine.

Letter M is a water-bath, arranged in the lower side of the frame A, so that its front end extends under the crushing-rollers, and of sufficient depth back to admit of the operation of an agitating-wheel, N, and elevator-buckets, P, therein, to resoak the crushed bark, and take the same out of the bath.

It is intended to use hot water in the bath, and for the purpose of heating the water, a coil of steam-pipes, Q, is arranged in the bottom of the bath, or other suitable part of it, to heat the water readily.

The form of the agitator-wheel is not material, so long as it accomplishes the twofold object of agitating the crushed bark in the water, and forcing it back upon or against the elevator-buckets, so that it may be carried up out of the bath as fast as it is fed into it by the crushing-rollers.

For the purpose of rotating the agitator-wheel, pulleys, R and S, are attached to the journals of the back crusher-roller and that of the agitator-wheel, and, by means of an endless band, T, the wheel is kept in motion.

Letter U is a roller, secured in suitable bearings in the upper ends of the elevator-frame A<sup>2</sup>, on the outer end of which is a pulley, V, which, by means of an endless belt, W, running over a pulley, X, on the top crusher-roller shaft, communicates motion to the endless chain or band of elevator-buckets P.

These buckets are formed of sieve-wire, or other suitable open work, of metal or other material, so as to admit of the rapid escape of the water, or extract of tannin, therefrom, before passing over the roller U, to discharge the spent crushed bark from the machine.

The height to which the elevator-buckets are carried, before discharging their contents, is obvious, and, therefore, becomes a substantial part of the operations of the machine in leaching the bark. It, therefore, is essential for the successful operation of the machine, for the purpose for which it is used, that the elevation-frame should be high enough to admit of a thorough drainage of the load of bark in each bucket before reaching the top of elevator-frame.

Having now described my invention, I will proceed to set forth what I claim, and desire to secure by Letters Patent of the United States.

1. I claim the combination of the rollers C and D, having a differential motion, with the roller E, having a uniform motion with the roller C, arranged and operating substantially as described, and for the purposes set forth.

2. I also claim, in combination with the water-bath and agitator-wheel, the elevator P, substantially as described, and for the purposes set forth.

B. IRVING.

Witnesses:

FRANKLIN BARRITT,  
CHARLES L. BARRITT.