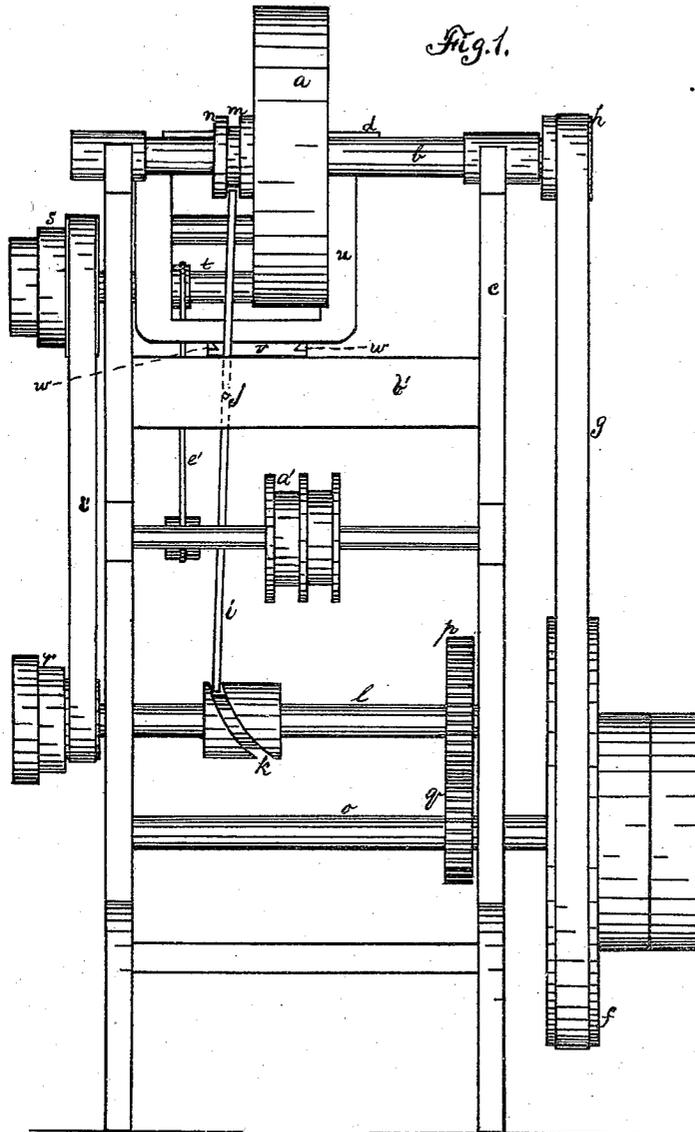


C. HARDY & C. E. MORRILL.
Machines for Evening Leather.

No. 147,770.

Patented Feb. 24, 1874.



Witnesses:
 Frank G. Jordan
 Edward B. Brown

Inventors:
 Charles Hardy
 Charles E. Morrill
 per Wm Henry Clifford
 atty.

C. HARDY & C. E. MORRILL.
Machines for Evening Leather.

No. 147,770.

Patented Feb. 24, 1874.

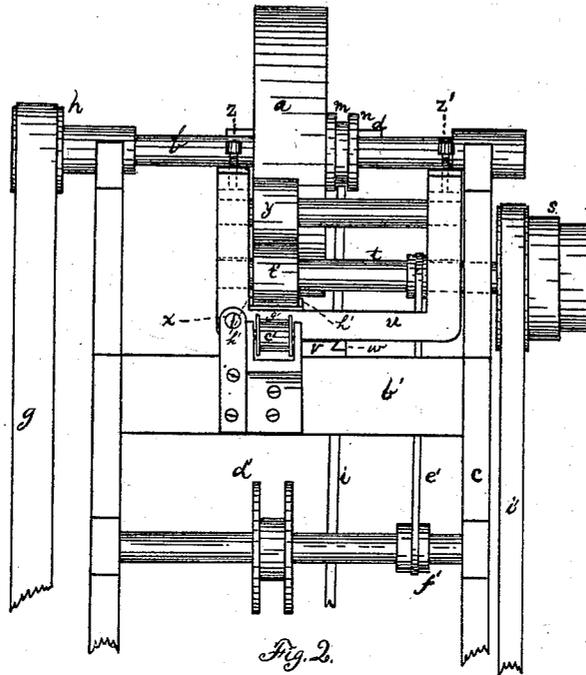


Fig. 2.

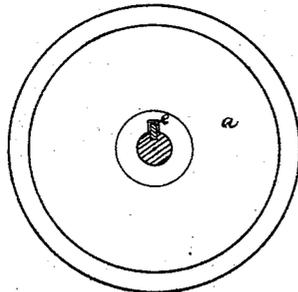


Fig. 3.

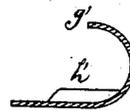


Fig. 4.

Witnesses:

Frank H. Jordan,
Edward Smith

Inventors:

Charles Hardy
Charles E. Morrill
per Wm Henry Coffin atty

UNITED STATES PATENT OFFICE.

CHARLES HARDY, OF BIDDEFORD, AND CHARLES E. MORRILL, OF DEERING,
MAINE.

IMPROVEMENT IN MACHINES FOR EVENING LEATHER.

Specification forming part of Letters Patent No. 147,770, dated February 24, 1874; application filed
October 4, 1873.

To all whom it may concern:

Be it known that we, CHARLES HARDY, of Biddeford, in the county of York, and CHAS. E. MORRILL, of Deering, in the county of Cumberland, and State of Maine, have invented certain new and useful Improvements in Method and Machines for Evening Leather, &c.; and we do hereby declare that the following is a full, clear, and exact description thereof, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a back view; Fig. 2, a front view, the lower part of the machine being broken away. Fig. 3 is a side view of the grinding-wheel, showing the tongue and groove. Fig. 4 is a side sectional view of the guide.

Same letters show like parts.

The purpose of our invention is to provide a machine for reducing to uniform thickness, splitting, and smoothing skins or strips of leather and other substances by the use of an emery-wheel, or any other material equivalent and suitable for the purpose. It also consists in certain machinery for operating said wheel, together with reels for winding and unwinding leather and other substances to be operated upon. It further consists in a carriage with feed-rolls, for the proper presenting and holding of the substance to be ground to the grinding-wheel. It further consists of a device for guiding the article to be operated upon, and holding the same to the roll over which it passes.

It is well known that heretofore leather to be reduced in thickness, split, or rendered uniform in thickness, has been operated upon by knives, either fixed or vibratory. For some purposes—for instance, the reduction, to a uniform thickness, of skins or continuous strips or ribbons of leather—the use of the knives has not proved satisfactory.

We employ the wheel *a*, composed of emery or any other equivalent substance, set upon the shaft *b* in the frame *c*. This wheel is loose on the shaft *b*, being carried with it, however, by the tongue *d*, fitting the groove *e*. Motion is imparted to this wheel and its shaft from

the motive-wheel *f*, band *g*, and fixed pulley *h*. The wheel *a* is loose upon its shaft in order that it may receive a traversing or vibratory motion. This motion is imparted by the lever *i*, which is pivoted in the machine-frame at *j*. The lower end of this lever works in a cam or scroll, *k*, on the shaft *l*. The upper end thereof fits the groove *m* in the truck or hub *n*, rigidly connected with one of the faces of the wheel *a*. As the shaft *l* rotates, the lever *i* is caused to tip or vibrate upon its pivot by the cam on the said shaft *l*. This slides the wheel *a* from side to side on its shaft as it is rotated. The purpose of this is evident. It is that the wheel may traverse the surface of an entire sheet, skin, or other substance which may be presented to it to be operated upon. The shaft *l* receives motion from the shaft *o* by means of the gears *p q*, the said shaft *o* having rigidly attached to it the motive-wheel *f*, by which it is revolved. On the shaft *l* is seen the fixed pulley *r*, communicating, by band, with the fixed pulley *s* on the shaft *t*. This pulley is set in a sliding carriage, *u*, which moves on a track or base, *v*. The dovetailed projections *w*, fitting spaces corresponding to them in shape in the base *v*, permit the motion of the carriage toward and from the wheel *a*. The motions of the carriage are controlled by the screw *x*. This arrangement is for the purpose of accurately regulating the distance of the shaft and roll *t t'* from the grinding-wheel *a*. The substance to be smoothed or ground passes between *t'* and *a*. Over the roll *t'*, also set in the carriage *u*, is the roll *y*. The rolls *y* and *t'* are made adjustable in a vertical direction by the screws *z z'*, as indicated in Fig. 2.

The substance to be ground is first wound upon the wheel *a'*. From thence it passes under the bed *b'*, over the pulley *c'*, under the roll *t'*, out between the two rolls *y* and *t'*, and then down to the reel *d'*, upon which it is wound up as fast as it is operated upon by the grinding-wheel *a*. Motion is imparted to the reel *d'* by the band *e'*, extending from the shaft *t* to the fixed pulley *f'* on the same shaft with the reel *d'*.

In order to insure the correct operation of the machine, the spring *g'* is fitted to the sliding carriage *u*, so as to press the substance to be operated upon closely against the periphery

of the roll *t'*. *h'* are guides to direct the article to be operated upon in the proper course as it is about to pass up between the wheel *a* and the roll *t'*.

The combined operation of the machine is as follows: By the revolution of the wheel *f* rotation is imparted to the wheel *a*, and at the same time, by the rotation of the shaft *o*, gears *q p*, cam *k*, and lever *i*, the wheel *a* is caused to slide to and fro upon its shaft. The band *v* communicates motion to the shaft *t* by means of the pulleys *r s*, and the motion of the shaft *t* is communicated to the reel *d'* by the band *e'*. Thus the sheet or strip to be operated upon by the grinder *a*, passing, in the manner hereinbefore described, between the rolls *t'* and *y*, and against the grinding-surface, is submitted to the operation of the wheel *a*, uniformly over its surface, and then wound in coils on the reel *d'*. Thus the flesh side of skins or ribbons of leather, for instance, can be reduced to smoothness and uniformity of surface, and the whole strip or sheet also to a uniform thickness.

The band *e'*, by means of the pulley *f*, can be so arranged as to slip when the coil on the reel *d'* is so large in diameter as that it would wind faster than would be conducive with the uniform movements of the machine.

We do not claim, broadly, the use of an abrading wheel or surface, when applied to leather. Our invention contemplates only the reduction of skins or sheets of leather to a uniform thickness; and, with this view, we impart to the abrading-wheel a traveling motion upon its own shaft. This motion is sufficient in extent to extend across the width of the piece of leather to be reduced to a uniform thickness. We do not design to claim the

application, broadly, of a grinding-wheel to smooth or give form to leather in various or all manufactured conditions; but we think we are the first to apply an abrading-wheel to sheets, skins, or strips of leather, to remove the fleshy portion thereof—a function heretofore performed by leather-splitting machines, using knives. We limit ourselves to the application of the wheel to such skins or sheets of leather.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In combination with the wheel *a*, as described, the adjustable sliding carriage *u*, with its rolls *y* and *t'*, operated as set forth, and for the purposes specified.

2. In combination with the wheel *a*, the cam *k*, the lever *i*, the truck *u*, projection *d*, and groove *e*, as herein set forth.

3. In combination with roll *t'*, the spring-guide *g' h'*, as set forth.

4. The combination of the reel *a'*, rolls *t' y*, wheel *a*, carriage *u*, and reel *d'*, as herein set forth.

5. The abrading-wheel *a*, having a simultaneously lateral and rotary movement, when applied in the manner herein shown and described, for the removal of the fleshy portions of skins or strips of leather, as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 29th day of September, 1873.

CHARLES HARDY.
CHAS. E. MORRILL.

Witnesses:

WM. HENRY CLIFFORD,
FRANK H. JORDAN.