A. Richardson,

Splitting Leather,

No. 3,541. Patented Apr. 17, 1844.

Fig. 1.

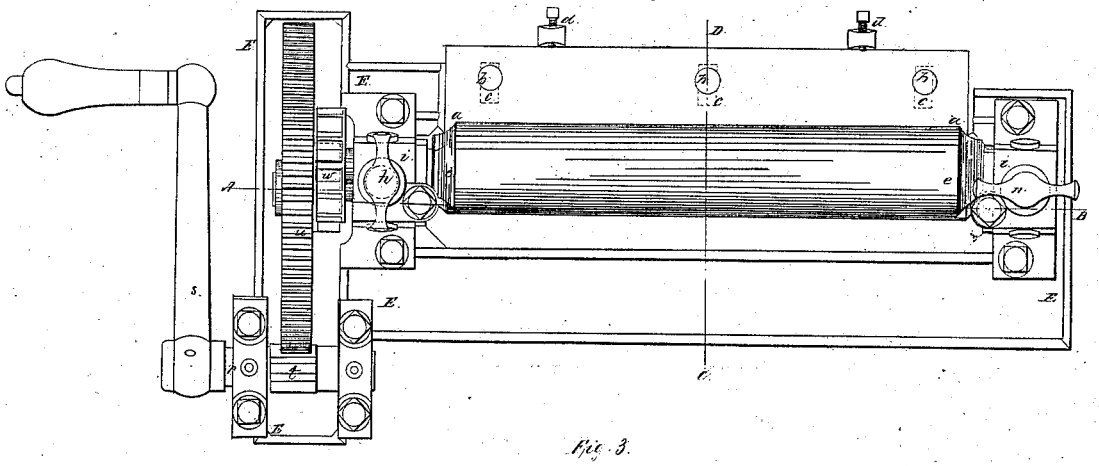


Fig. 3.

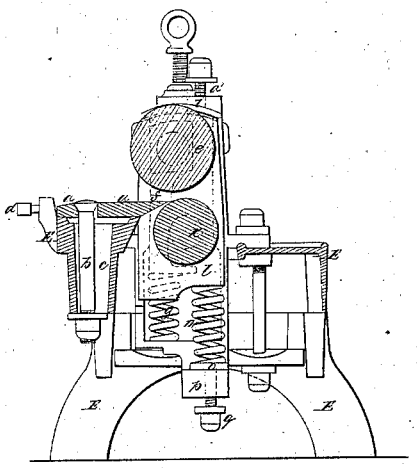
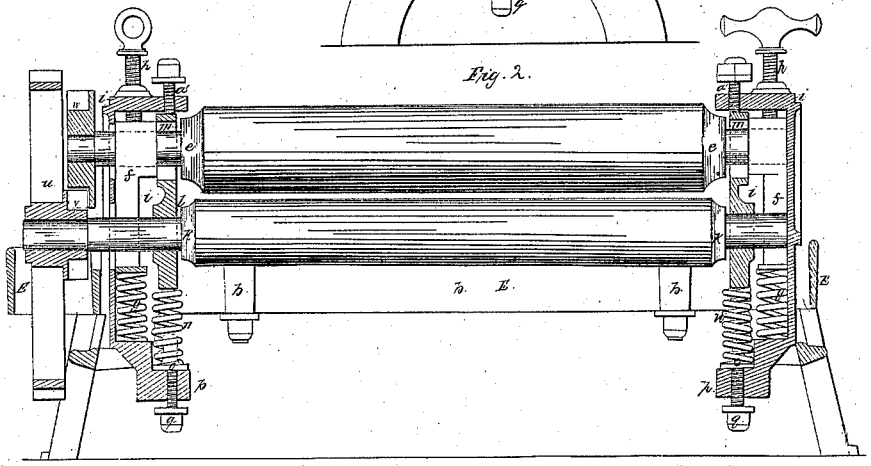


Fig. 2.



UNITED STATES PATENT OFFICE.

ALPHA RICHARDSON, OF BOSTON, MASSACHUSETTS.

MACHINE FOR SPLITTING LEATHER.

Specification of Letters Patent No. 3,541, dated April 17, 1844.

To all whom it may concern:

Be it known that I, ALPHA RICHARDSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Machinery for Splitting Strips or Pieces of Leather for the Use of Harness-Makers, Shoemakers, &c., and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvement by which my invention may be distinguished from others of a similar class, together with such parts or combinations of parts as I claim and desire to have secured to me by Letters Patent.

In the machines which have heretofore been used for the purpose above specified, the cutting edge of the knife has always been made of a wedge shape, that is with a bevel both on the upper and under side, and the gage and feed rollers have always been arranged one above the other, with their axes in the same vertical plane, the edge of the knife being directed to the "bite" of the rollers or their line of contact when brought close together. In these machines it has been found impossible to adjust the edge of the knife in such a manner as to cut a piece of leather evenly, or so as to have the "cut" of an uniform thickness, and in fact, the strip of leather frequently runs or passes down on the underside of the knife, without being operated upon by the same. The reason for this is that the beveled faces of the knife come in contact with the surfaces of the rollers, before the edge can be brought sufficiently near to the "bite" of the same, to prevent the effects aforesaid.

My improvement will effectually prevent the bad results above set forth and consists in forming a knife with its underside only beveled and in arranging the bilge of the underside of the upper or gage roller directly over the edge of the knife so as to guide the strip of leather accurately to the same; while the bilge of the upper side of the lower or feed roller is placed at a little distance from the edge of the knife, so that the said edge may be brought very near to the surface of the said roller and prevent the leather from passing down without being split. In other words the rollers are arranged, so that a vertical plane drawn through the axis of the lower or feed roller will pass by and be a tangent to the edge of the knife, while a plane passing through the axis of the lower or feed roller will be at some little distance from said edge.

My improvement is represented in the figures of the accompanying plate of drawings where the above described novel arrangement is clearly shown.

Figure 1, is a top view of the machine. Fig. 2, is a longitudinal vertical section taken in the plane of the line A B Fig. 1, and Fig. 3, is a transverse vertical section taken in the plane of the line C D Fig. 1.

E E E, &c. in the several drawings represents the framework, which is made of cast iron, and shaped as seen in the several figures.

a a, Figs. 1, and 2, is the knife having its underside only beveled, as shown in section Fig. 3, which gives it a more acute edge. This knife is confined to the framework E E by means of the long clamp screws and nuts shown at *b*, *b*, in Figs. 1, 2, and 3, which screws pass through elongated slots in said framework as shown at *c*, *c* by dotted lines in Fig. 1, which arrangement in conjunction with the horizontal pressing screws *d*, *d*, Fig. 1, provides the necessary means of adjusting the knife *a*, *a*.

e e is the gage roller, which is arranged as herein before specified with its bilge directly over the edge of the knife *a a*. The journals of this roller rest and revolve in movable bearings *f*, *f*, Fig. 2, which are supported on the spiral springs *g*, *g*, and are operated upon at the top by the compressing screws *h*, *h*, Figs. 1 and 2. These compressing screws work in proper female screws cut in the top plate of the vertical chambers *i*, *i*,—*i i* in which the boxes *f*, *f*, and springs *g*, *g*, are arranged. The above arrangement of parts, provides, it will be seen, for a vertical adjustment of the gage roller to accommodate it to various thicknesses of leather.

k, *k*, is the lower or feed roller, the journals of which rest and revolve in proper bearings in the vertical sliding plates *l*, *l*, arranged on the inner sides of the chambers *i*, *i*,—*i i*. This plate has proper slots in its upper part as shown at *m*—*m* Fig. 2, to allow the free movement of the journals of the gage rollers *e*, *e*, and rest at their bottoms on the spiral springs *n*, *n*, Figs. 2 and 3, so that it will be seen that the lower roller can be depressed in case of any bunch

in the leather which cannot get through without some yielding of the parts. This roller *k k* is prevented from flying up against the edge of the knife by means of the screws *a'*, *a'*, which work on the top of the vertical plates *l*, *l*. The springs *n*, *n*, rest at their lower ends on the movable buttons *o*, *o* Fig. 2, which buttons are supported on the projecting nuts *p*, *p*. Suitable screws *q*, *q*, are arranged in these nuts, which work upon the movable buttons *o*, *o*, raising and depressing them, and thereby making the springs *n*, *n*, more or less rigid and providing for varying the space between the knife and the surface of the lower roller *k*, *k*. The feed roller *k k* is placed as herein before suggested, so that its axis is not in the same vertical plane with that of the gage roller, but a little distance from the same, and so that the edge of the knife instead of being directed toward the bilge of said roller has a direction toward the side of the same (so to speak), or in other words to a line on the surface, below the line of the bilge.

The above described arrangement of the rollers and knife enable the machine to be worked with great accuracy and success, as by adjusting the space between the edge of the knife and the surface of the roller *k*, *k*, so as to allow only one part of the leather to be split to pass, and depressing the gage roller over the edge of the knife, so as to guide the leather properly to said knife, a piece of leather may be split in any way that is desirable, whereas the machines which are now in use cannot be depended upon for good work, for the reasons herein before set forth.

The rollers *e e* and *k k* are driven by the following arrangement of geared wheels &c.: *r* is the driving shaft suitably supported in the framework, and having a winch or crank *s* by which it is driven, and a cogged pinion *t* fixed on it, which engages with the cogged wheel *u*, one one journal of the feed roller *k k*, and turns said roller. A cogged pinion *v* arranged on the journal of the feed roller engages with a similar one *w* on one journal of the gage roller *e e* and turns the same.

The proportions of the gearing should be such as to give the requisite motions to the rollers. As has been before suggested it is indispensably requisite that the axis of the gage roller should be in the same vertical plane with the edge of the knife—and if the axes of the two rollers were in the same vertical plane before the edge of the knife could be brought to the position specified, the beveled face of the same would come in contact with the surface of the lower or feed roller and prevent the "split" or lower half of the leather from passing down. For this reason the arrangement of the rollers as herein before specified is very essential and effectual.

Having thus described my improvement I shall state my claim as follows—

I claim the arrangement, herein before specified, of the gage and feed rollers of a leather-splitting machine, so that the bilge of the lower side, or the axis, of the former shall be directly over or in the same vertical plane with the edge of the knife, while the axis of the latter is a little distance out of said vertical plane, and its upper bilge is a litle above the level of the edge of the knife, for the purposes recited in the foregoing specification.

In testimony that the foregoing is a true description of my said invention and improvement I have hereto set my signature this twenty ninth day of January in the year eighteen hundred and forty four.

ALPHA RICHARDSON.

Witnesses:
EZRA LINCOLN, JR.,
T. H. BORDEN.