

No. 734,768.

PATENTED JULY 28, 1903.

H. L. STALEY.
MULTIPLE BARK SPLITTING MACHINE.

APPLICATION FILED DEC. 30, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

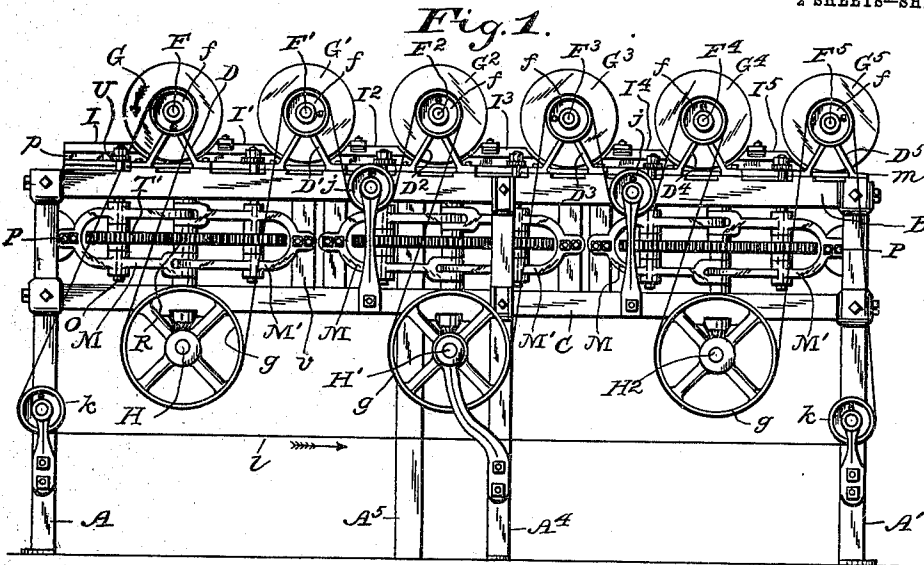
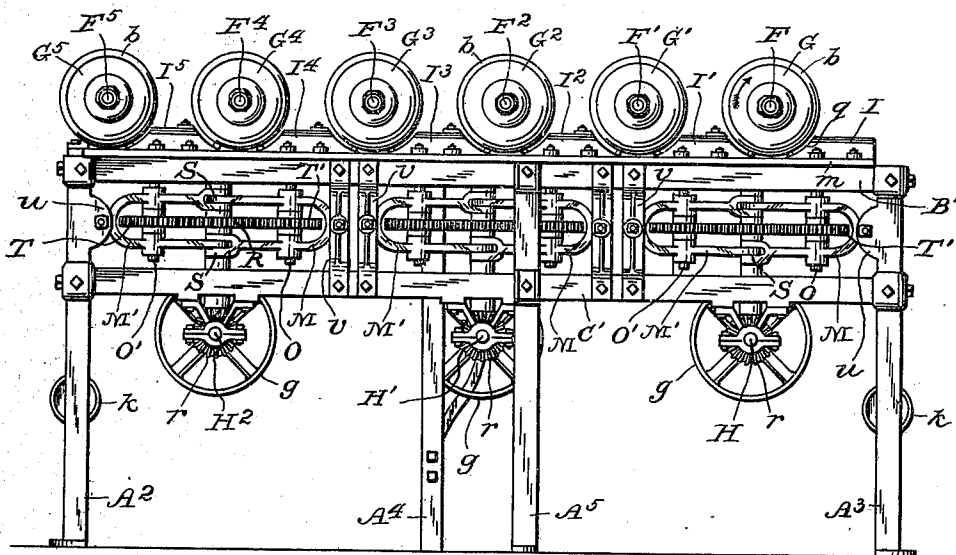


Fig. 2.



WITNESSES:

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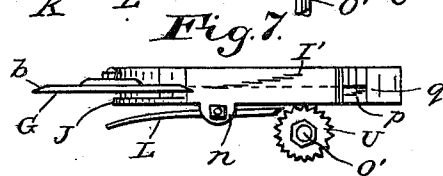
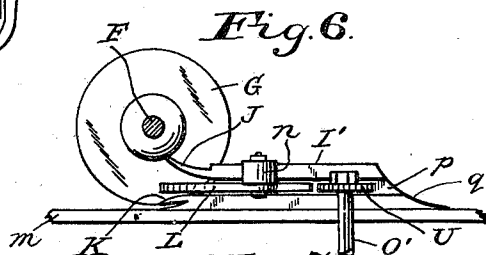
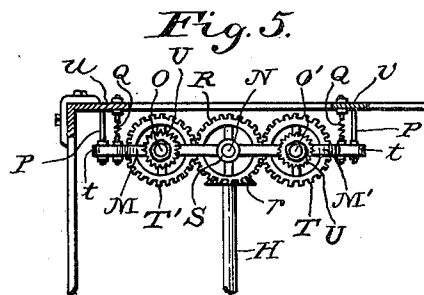
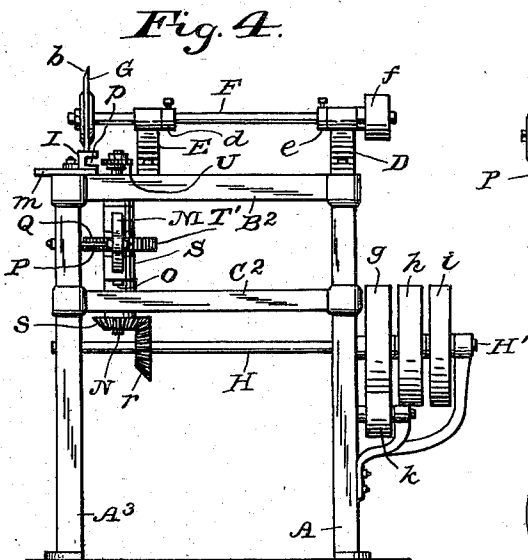
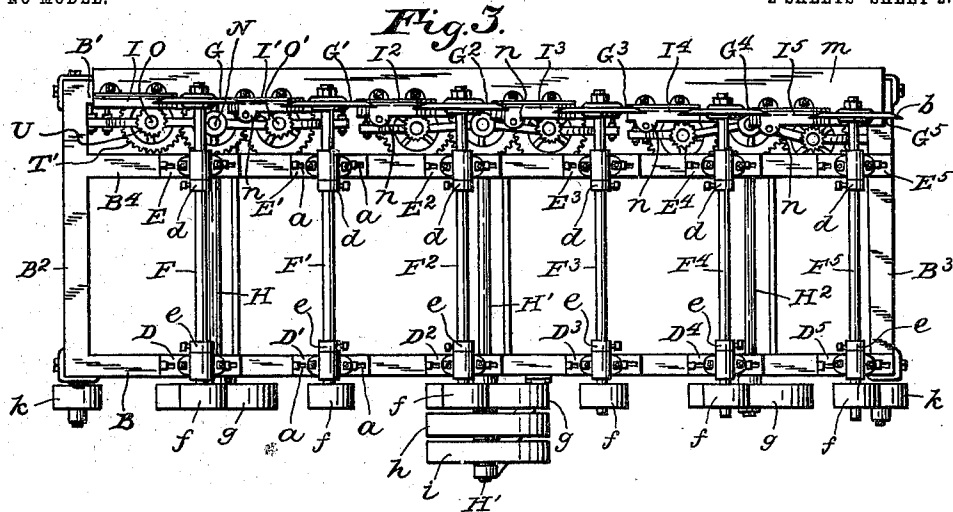
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UNITED STATES PATENT OFFICE.

HARRISON L. STALEY, OF MARTINSVILLE, INDIANA.

MULTIPLE BARK-SPLITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 734,768, dated July 28, 1903.

Application filed December 30, 1902. Serial No. 137,211. (No model.)

To all whom it may concern:

Be it known that I, HARRISON L. STALEY, a citizen of the United States, residing at Martinsville, in the county of Morgan and State of Indiana, have invented new and useful Improvements in Multiple Bark-Splitting Machines; and I do declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The invention relates to machines that are designed to be employed for splitting bark after the same may have been cut into strips of suitable lengths and widths for manufacturing purposes, and it has particular reference to machines of the above-mentioned character that are designed to split each strip in a single passage through the machine into as many parts as the strip may be capable of being divided into.

My object is to provide a cheaply-constructed machine for splitting bark that may be operated to the greatest economical advantage, thus cheapening the product, and one that will prove to be durable in use.

The invention consists in a series of rotative splitters mounted so as to cut a plurality of ribbons or thin strips at the same time, and the invention also consists in the novel parts and in the novel combination of parts, as hereinafter particularly described and claimed.

Referring to the drawings, Figure 1 is an elevation view of one side of the machine, and Fig. 2 is an elevation view of the opposite side thereof, showing a construction substantially in accordance with my invention; Fig. 3, a top plan view of the machine; Fig. 4, an elevation view of the end at which the feeding is performed; Fig. 5, a fragmentary plan view showing a group of feeding-gears; Fig. 6, a fragmentary side elevation showing feed-guides, and Fig. 7 a fragmentary top plan view showing feed-guides and a feed-roll. Parts that would obscure other parts are omitted in some of the figures, as understood, and are shown in other views.

Similar reference characters in the drawings designate corresponding parts.

In construction I provide a suitable stiff

metallic frame for supporting the operative mechanism, the rotative shafts of which are preferably arranged horizontally, as shown. It will be obvious, however, that the whole machine may be operated in different positions than herein indicated, a modification in the arrangement of the supporting-legs only being required.

The frame comprises vertical corner-posts $A A' A^2 A^3$, intermediate posts $A^4 A^5$, all serving also as legs, horizontal rails, as $B B' B^2 B^3 B^4$, attached to the upper portions of the posts, rails $C C' C^2$, attached to the posts below the other rails, and other suitable members that may be found desirable.

Suitable stands having journaled bearings, as $D D' D^2 D^3 D^4 D^5$, are mounted upon the frame at one side thereof and similar stands, as $E E' E^2 E^3 E^4 E^5$, are mounted upon the frame near the opposite side thereof, the stands all having slots a in their bases, so as to be adjustably bolted to the frame in order that they may be shifted for readjustment of the splitters as they become worn and reduced in diameter. The stands are arranged in pairs, one stand of each pair being in a row and the other stands in a parallel row, so that either pair of stands may be moved in direction toward and from the adjacent pairs. Rotative shafts $F F' F^2 F^3 F^4 F^5$ are mounted in the bearings of the stands, a shaft in each pair, and each shaft is provided with movable collars $d e$, (preferably of the safety type,) secured thereto against the nearer ends of the stand-bearings. Each shaft has a pulley f adjustably secured thereto at the outer side of one of the stands.

The splitters $G G' G^2 G^3 G^4 G^5$ are formed as disks having beveled edges b and are secured to the rotative shafts, as F , &c., at the ends thereof opposite the ends having the pulleys and beyond the supporting-stands, the beveled side being outermost, or at the side of the disk farthest from the nearer stand. The splitter at the feeding end of the machine is set outward in a plane farther than the others and that at the opposite or tail end is set in a plane farthest inward, while the other splitters are in different intermediate vertical planes, as will be seen in Fig. 3, somewhat exaggerated.

Horizontal shafts $H H' H^2$ are mounted ro-

tatively in suitable bearings at lower portions of the frame, the shafts being parallel to the splitter-shafts and having pulleys *g* secured thereto, one to each shaft, for driving the feed-gearing, there being half as many shafts as there are splitters. One of the shafts also has two pulleys *h i* thereon, one of which is loose and the other secured to the shaft, whereby a belt may be employed for driving the machine. The pulleys *h* and *i* are usually placed close together in practice, as will be understood. A pair of idler-pulleys *j* are mounted in a plane between the pulleys *f* and *g* and one being in a vertical plane between two of the pulleys *f* and the other in a plane between two other pulleys *f*. Idler-pulleys *k* are mounted below the plane of the pulleys *g*, being supported by corner-posts, a pulley at either end of the machine. Thus the pulleys *f*, *g*, *j*, and *k* are all in the same vertical plane at one side of the machine, and a driving-belt *l* connects all of these pulleys, extending over the pulleys *f* and under the pulleys *g*, *j*, and *k*, and from one to the other of the two pulleys *k*, running in the direction of the arrow when in operation.

A table *m* is attached to the top of the frame below the splitters and it extends substantially from end to end of the frame. Feed-guides *I I' I² I³ I⁴ I⁵* are mounted upon the table, one in advance of the first splitter at the feeding end and the others between the other splitters, so that each splitter has a guide at the front of it. The guides are supported fixedly, each having a groove *p* in the inner side thereof, and the guide *I* has a curved end *q* adjacent to the splitter *G*, the other guides having both ends thereof curved, so that the ends extend partially below the splitters. Each guide except the first of the series preferably has an ear *n* at the inner side thereof above the groove *p*. Each guide except the first guide *I* (and that, too, if desired) has mouth-guides *J K L*, suitably supported, the guide *L* being preferably attached to the ear *n* for insuring the entrance of the stock strips into the guide-grooves *p* and behind the feed-rolls. The guides are situated so as to correspond to the positions of the splitters above described; but the positions of the guides being fixed the splitters must be adjusted thereto. The bottoms of the grooves *p* being the gages for thickness of strip to be made, each following guide is set with the bottom of its groove in a plane slightly at one side of that of the one in advance.

A plurality of feed-gear frames arranged in pairs, as *M M'*, are mounted so as to swing radially in a horizontal plane, each pair being connected, preferably, to a common pivot, which in the present case is a vertical rotative feed-gear shaft *N*, which is suitably supported and is driven by means of a bevel-wheel *r*, attached to a horizontal shaft, as *H*, and a bevel-wheel *s*, attached to the shaft *N* and meshing with the wheel *r*. A shaft *N* for

each two splitters is provided. The swinging frames carry rotative feed-roll shafts *O O'* near their ends and also stop-studs *P*, that are adjustable at their ends, the studs normally bearing against portions of the machine-frame, limiting the movements of the swinging frames and the feed-rolls carried thereby. Springs *Q* are connected to the machine-frame and also to the ends of the swinging frames and tend to seat the stop-studs. Each shaft *N* has a toothed wheel *R* attached thereto, being preferably arranged between a pair of knuckles *S*, whereby the swinging frames are preferably connected together in pairs and to the pivotal shafts or their journal-box ends. Like gear-wheels *T T'* are mounted on the shafts *O O'* and are engaged by the wheels *R*, a driving-wheel *R* being between two driven wheels *T T'*. Feed-rolls *U* are attached to the shafts *O O'* at the tops thereof, the rolls being situated at the fronts of the grooves *p* and normally extending near to the bottoms of the grooves. Ears *t* are usually attached to the swinging frames *M M'*, to which the studs *P* and the springs *Q* are connected, the latter being also connected to suitable frame parts *u* or *v*.

In practical use the machine being in motion the stock strips of bark are to be fed endwise into the groove *p* of the guide *I*, with the smooth side of the bark against the bottom of the groove, the rough outer side of the strips being engaged by the first feed-roll *U*, whereby a strip will be forced against the first splitter *G* and thereby split as the strip emerges from the rear end of the groove, the thin strip or ribbon thus removed from the inner side of the bark being forced outwardly by the beveled side *b* of the splitter. The remaining portion of the stock strip will pass on to the next guide and feed-roll and be further split by the second splitter *G'* of the series, which will throw out a second thin strip or ribbon, and so the stock strip will pass along until entirely split into available thin portions. In the operation the feed-rolls may be forced outwardly more or less by the stock strip against the pressure of the springs *Q*, the frames *M M'* moving slightly above their pivots. When a guide-groove is empty, the feed-roll will be prevented from touching the bottom of the groove by the stop-stud *P*. It will be understood that the driving-belt *l* will transmit power to all of the splitters simultaneously and also to the feed-rolls, the relative speed of the latter being predetermined when designing the pulleys therefor. In setting the splitters so as to divide the bark into thin strips of the required thickness the splitter-shafts are to be moved endwise in their bearings, the collars *d* and *e* being moved and adjusted accordingly. After the splitters have been resharpened and their diameters thus reduced the curved ends *q* of the guides should be reground, so as to have a lesser radii, conforming to the curvature of the splitter edges, and the stands supporting

the splitter-shafts are to be readjusted, so as to advance the splitters toward the rear ends of the guides.

Having thus described the invention, what I claim as new is—

1. A bark-splitting machine including a frame, a plurality of rotative shafts mounted on the frame, a plurality of rotative splitters mounted on the shafts, a plurality of feeding-guides mounted on the frame having each an end extending between the frame and an adjacent splitter edge, a plurality of feed-roll shafts mounted in the frame, a plurality of feed-rolls attached to the feed-roll shafts, curved vertical guides coöperating with the feeding-guides, and curved lateral guides coöperating with the feed-rolls.

2. A bark-splitting machine including a plurality of splitter-shafts, a plurality of rotative splitters mounted on the shafts in different parallel planes, a plurality of guides having curved ends adjacent to the splitters and also having grooves the bottoms of which are in different parallel planes, a plurality of movable feed-roll-shaft frames, a plurality of feed-roll shafts mounted in the frames, a plurality of feed-rolls attached to the feed-roll shafts, springs for the feed-rolls, and stops for the feed-rolls.

3. A bark-splitting machine including a plurality of rotative circular splitters, a plurality of grooved guides between the splitters, each guide extending partially under adjacent splitters and having at the entrance end of the groove therein opposing vertical guides and also a lateral guide, feed-rolls coöperating with the guides, feed-roll shafts, and frames supporting the feed-roll shafts.

4. A multiple bark-splitting machine comprising a frame, a plurality of bearings mounted adjustably on the frame, a plurality of splitter-shafts mounted adjustably in the bearings, a plurality of circular splitters mounted on the splitter-shafts in different parallel vertical planes, a plurality of guides having curved ends adjacent to the front edges of the splitters and also having grooves extending to the curved ends thereof, the bottoms of the grooves being in different parallel vertical planes, means for driving the splitters; a plurality of vertical rotative shafts, one to each pair of splitters, a plurality of laterally-swinging frames pivoted substantially to the vertical shafts, a pair of frames to each shaft; a plurality of feed-roll shafts mounted in the swinging frames, one in each frame; a plurality of feed-rolls attached to the feed-roll shafts, one to each shaft; means for driving the vertical shafts; a driving gear-wheel attached to each vertical shaft; a gear-wheel attached to each feed-roll shaft engaging opposite sides of the driving gear-wheel, each vertical shaft transmitting motion to a pair of feed-roll shafts; a spring connected with

each swinging frame, and a stop member for each feed-roll.

5. In a multiple bark-splitting machine, the combination of a frame, a plurality of stands mounted upon the frame in parallel rows, a plurality of parallel horizontal splitter-shafts mounted rotatively on the stands, driven pulleys attached to the splitter-shafts, circular splitters attached to the splitter-shafts and having beveled edges oppositely from the stands, guides having curved ends adjacent to the splitters and also having grooves therein, a plurality of horizontal feed-gear shafts mounted in a plane below the splitter-shafts, driven pulleys on the feed-gear shafts, a plurality of vertical feed-gear shafts operatively connected with the horizontal feed-gear shafts, driving gear-wheels attached to the vertical feed-gear shafts, swinging frames having their pivots identical with the vertical feed-gear shafts, feed-roll shafts mounted in the swinging frames and having gear-wheels engaging the driving gear-wheels, feed-rolls attached to the feed-roll shafts above the swinging frames, springs connected with the swinging frames, stops for the swinging frames, idler-pulleys supported by the frame, and a belt extending in contact with the driven pulleys and the idler-pulleys, substantially as set forth.

6. In a multiple bark-splitting machine, the combination with a frame, rotative splitters mounted near the frame, and spring-pressed feed-rolls mounted near the splitters, of feeding-guides fixed on the frame and each extending between the frame and a splitter edge, and opposing vertical guides and also lateral guides for the feeding-guides situated at the ends thereof opposite to the portions that extend between the frame and the splitter edges, substantially as set forth.

7. In a bark-splitting machine, the combination of the frame, the plurality of stands mounted adjustably on the frame, the plurality of splitter-shafts mounted rotatively on the stands, the pulleys attached to the splitter-shafts, the circular splitters attached to the splitter-shafts and having beveled edges oppositely from the stands, the feeding-guides extending between the splitters and having the grooves therein, the curved vertical and lateral guides coöperating with the feeding-guides and extending at the plane sides of the splitters, driving-belts connecting the pulleys on the splitter-shafts, the feed-roll shafts, the feed-rolls on the feed-roll shafts, and means for driving the feed-roll shafts in unison.

In testimony whereof I affix my signature in presence of two witnesses.

HARRISON L. STALEY.

Witnesses:

ROY STOCKING,
ISAAC L. MITCHELL.