

J. POPPING.  
 Machines for Splitting and Shaving Willow Withes.

No. 222,305.

Patented Dec. 2, 1879.

Fig: 1.

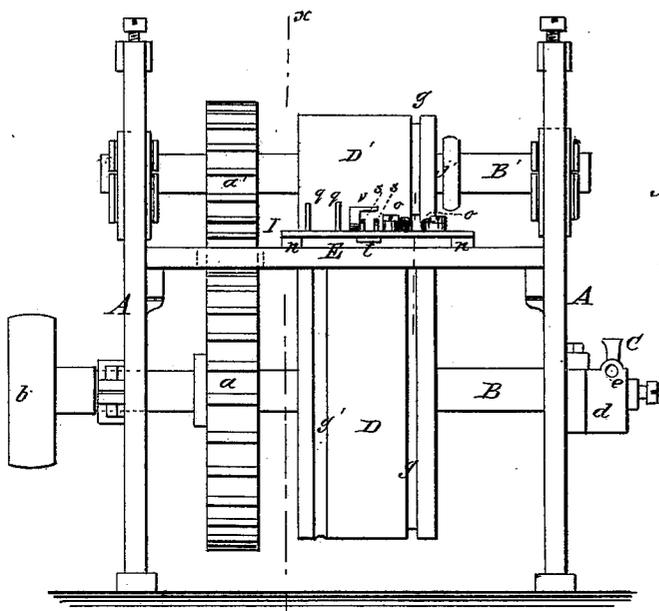


Fig: 2.

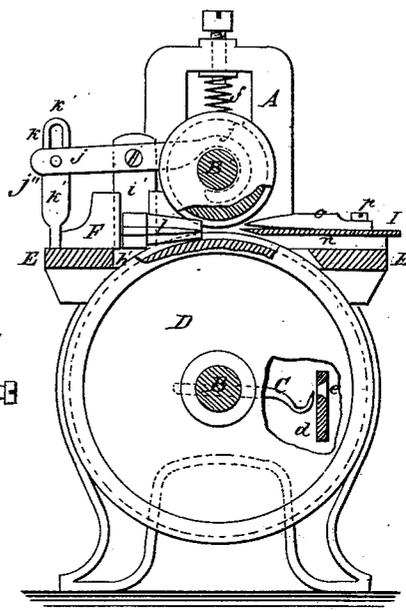


Fig: 3.

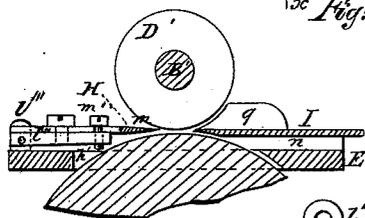


Fig: 4.

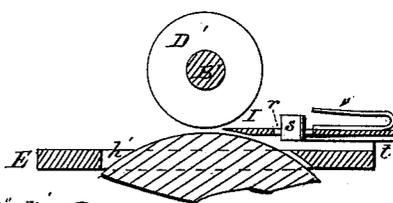


Fig: 5.

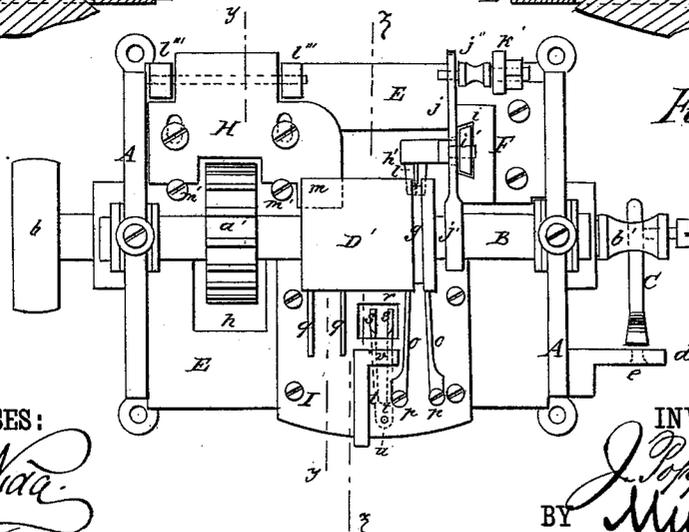


Fig: 6.

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# UNITED STATES PATENT OFFICE.

JOSEPH POPPING, OF NEW YORK, N. Y.

## IMPROVEMENT IN MACHINES FOR SPLITTING AND SHAVING WILLOW WITHEs.

Specification forming part of Letters Patent No. **222,305**, dated December 2, 1879; application filed November 30, 1878.

*To all whom it may concern:*

Be it known that I, JOSEPH POPPING, of the city, county, and State of New York, have invented a new and Improved Machine for Preparing Willow Withes, of which the following is a specification.

This invention relates to a machine for preparing, splitting, and finishing willow withes for use in making baskets, boxes, hoops for small kegs, and other purposes; the object whereof is to facilitate the splitting, butting, and finishing of the said withes to make them of uniform thickness and width, and to enable them to be produced more rapidly and in better condition than is now done.

It consists, first, of grooved rotary feeders, one fixed and the other adjustable, and an adjustable splitting-knife, so arranged that the round twig is fed against said knife and split into the desired number of parts from end to end evenly and without waste.

Secondly, it consists of feeding-rolls and an adjustable planing-knife, arranged so that the split withe is fed against the planer and smoothed and trimmed to the desired thickness.

Thirdly, it consists of knives and guides arranged to trim the sides of the withes to give them uniformity of width.

Lastly, it consists of details of construction and arrangement hereinafter specifically referred to and described.

In the accompanying drawings, Figure 1 is an elevation of my improvement, front view. Fig. 2 is a transverse section on line *x x*. Fig. 3 is a plan of the machine. Fig. 4 is a sectional detail of the planing-knife, feed-rollers, and table on line *y y*; and Fig. 5 is a sectional detail of the side-trimming knives, feed-rollers, and guides on line *z z*. Fig. 6 is a detail of the splitting-knife.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A A are the housings of the machine, in which are journaled the horizontal shafts B B', geared together by gear-wheels *a a'*, fixed to said shafts, respectively.

Shaft B is in fixed bearings, and one end projects through the housing, and is fitted with a band-wheel, *b*, if power is to be used, or a

crank, to be turned by hand, if preferred. The opposite end of shaft B likewise projects through the housing on that side, and is provided with a collar, *b'*, through which is thrust the shank of a knife, C, secured in said collar by a set-screw. This knife revolves with shaft B in close proximity to the plate *d*, secured to the housing on the side next the front of the machine. Through this plate is made a conical hole, *e*, in line with the knife. This arrangement is for butting or squaring off the ends of the round twigs previous to splitting. They are thrust into the hole *e* so as to just project through, and the knife revolving against them cuts them off square and even.

Shaft B' is journaled in vertically-moving or adjustable pillow-blocks and caps, the latter being connected with spiral springs *f*, which force them down, and thus oppose the upward pressure of the withes when fed through the rolls.

On shafts B B' are fixed feed-rollers D D', each having a circumferential groove, *g*, near one end in the same plane. Near the opposite end of roller D is a circumferential concave groove, *g'*, in which the half-round side of the withes is placed when they are to be used as hoops for small kegs, as will be hereinafter referred to.

In the housings, just below the top of feed-roller D, is fixed a horizontal table, E, with slots *h h'*, through which gear-wheel *a* and feed-roller D project or are inclosed.

On the rear side of table E, to one side, is fixed an upright plate, F, in the face whereof is a vertical dovetailed slot, *i*, made in its face which is parallel with the end of roller D'.

In the dovetailed slot *i* is fitted so as to move freely up and down a plate, *i'*, to the upper end whereof is fulcrumed a lever, *j*, one end formed into a hook, *j'*, partially encircling shaft B', while the opposite end is attached to a pivot, *j''*, moving in a slot, *k*, in standard *k'*, rising from the base of plate F.

On the lower end of plate *i'* is fixed, at right angles thereto, the splitting-knife *l*. This knife consists of one, three, or four blades, the cutting-edges being on the front ends, which project between the feed-rolls. If one blade is used, it is connected with plate *i'* on one edge, and divides the twigs in two parts

through one diameter; if three blades, it divides them into three parts, and if four blades, into four parts, the number of blades used depending on the size of the twigs and the desired fineness of the withes. When the withes are being split they are guided along the sides of the blades at 1 2 3 4. Fig. 6.

To get the requisite strength when four blades are used, as in the drawings, the edge of the upper blade is connected with the face of plate *i'* by a right-angular web, *k''*. This gives strength to the knife.

The blades of the knife project between the feed-rolls, (where four blades are used, the vertical blades being entered in the grooves *g*.) The knife must project well in between the rolls, so that as the twigs are fed they will be held firmly and steadily against the knife, so that there will be no opportunity for them to bend.

As it is essential that the twigs should be split through the center, the knife is vertically adjustable through plate *i'* and lever *j*, the adjustment of the lever with relation to the vertically-moving shaft *B'* and plate *i'* being such that when a twig is fed between the rolls, and roll *D'* is elevated to accommodate it, the lever, bearing upon the shaft of roll *D'*, is lifted also, and this lifts the splitting-knife, but only one-half the distance that the feed-roll is lifted.

By this arrangement it will be readily understood that the knife is adjusted by the movement of the lever and roller *D'* so as to center any twig fed against it, thus splitting them evenly at all times.

Opposite the splitting-knife, but on the same side of the table, is a planing-knife, *H*, attached to plate *l''*, which is pivoted at its rear edge between standards *l''' l'''*, rising from the table. The cutting-edge *m* of this knife projects around between the feed-rollers *D D'*. The knife-edge is vertically adjustable by means of the set-screws *m' m'*, which pass through plate *l''* and bear upon the table. The knife is designed to plane off and smooth the rough side of the withes, and by its vertical adjustment it can be adapted to the different thickness of the withes.

On the opposite side or front of the table is a metal plate, *I*, supported at its edges on strips *n n* and projecting well between the rolls. On one side of this plate are lateral guides *o o*, the outer ends connected with the plate by screws *p p*, while their opposite ends are tapered down, so as to project well up under rolls *D D'*. The free ends of these guides are laterally adjustable to accommodate them to different-sized twigs, which they guide between the rolls into the groove *g*, and thence to the splitting-knife.

On the opposite side of the plate *I*, in line with the planing-knife, are two more lateral guides, *q q*, which guide the split twigs to the roll, whence they are fed to the planing-knife.

Between these two guides a mortise, *r*, is made through the plate, up through which pro-

ject two knives, *s s*, joined underneath the table to the right-angular arms *t t*, lying against the under side of the plate, and secured at their end to the same by screw *u*. On the upper side of the plate is a spring-presser guide, *v*, just in front of the knives *s s*. The object of these knives is to gage the width of the withes where perfect uniformity is required in the manufacture of the finer articles.

The withe is placed under the spring-presser guide and forced against the edges of the knives, through the same to the rollers, which catch it and draw it through, the knives turning off the sides and reducing all the withes passed through it to one uniform width.

When the splitting is completed the split surface is rough and pithy. This has to be taken off before the withe can be used and a smooth flat surface given to it. For this purpose the withe is fed, with its half-round side down and the rough side up, through guides *q q*, thence to rolls *D D'*, which carry it against the planing-knife *H*, and this planes it off smooth and reduces the withes to a uniform thickness.

When the withes are to be used for hoops for small kegs, it is essential that the planed surface should be perfectly flat. If they are run through between the plain surfaces of the feed-rolls, they are slightly bent up in the middle, and the consequence is, they are not made perfectly flat.

To obviate this defect a circumferential concave groove is made in feed-roller *D*, and in this groove the half-round side is placed when the withe is fed to the planing-knife. A bearing being thus furnished for it, it is perfectly flat when planed off. This is not necessary when the withes are to be used for baskets, boxes, &c.; and in the practical machine the planing-knife can be made sufficiently wide to enable the withes intended for this purpose to be fed through the ungrooved part of the feed-rolls.

When the withes are to be used for very fine work, requiring them to be of uniform width, they are passed through knives *s s*, which trim off the sides, and thus make them uniform.

The vertical adjustment of the planing-knife permits different thicknesses of withes to be passed through and planed, and it either reduces them to the same thickness or else enables those of varying thickness to be produced.

In this way, it will be seen, the withes for making willow-ware, hoops, &c., can be cut out very rapidly with perfect evenness, and without waste of material. The trimming-knives can be adjusted so as to take off only that part that is absolutely useless. Then, too, a uniformity in the width and thickness of the withes is obtained that is not possible when they are produced by hand.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The fixed and spring-pressed feed-rolls

D D', the former provided with the circumferential groove *g'*, in combination with a planing-knife, H, arranged substantially as shown and described, for the purpose specified.

2. The combination, with the spring-pressed shaft, of the slotted plate F, lever *j*, having hook *j'*, pivot *j''*, slotted standard *k k'*, and the plate *i'*, carrying the splitter, as and for the purpose specified.

3. The combination, with set-screws and table E, of the pivoted plate *l''* and slotted knife H, thus made adjustable both vertically and horizontally, as and for the purpose specified.

4. The butting or squaring knife C, revolved by shaft B against the face of plate *d*, in combination with plate *d*, provided with conical hole *e*, substantially as described.

5. The splitting-knife *l*, connected with plate *i'*, and adjustable vertically by means of lever

*j*, and adjustable shaft B', in combination with grooved fixed feed-roll D, vertically-adjustable grooved feed-roll D', and adjustable guides *o o*, substantially as described.

6. The knives *s s*, for gaging the width of the withes, in combination with spring-presser guide *v* and feed-rolls D D', substantially as described.

7. Feeding-plate I, provided with adjustable guides *o o*, for feeding the twigs to the splitting-knife, and guides *q q*, for feeding the split withes to the planing-knife, in combination with feed-rollers D D', splitting-knife *l*, and planing-knife H, substantially as described.

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Witnesses:

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