

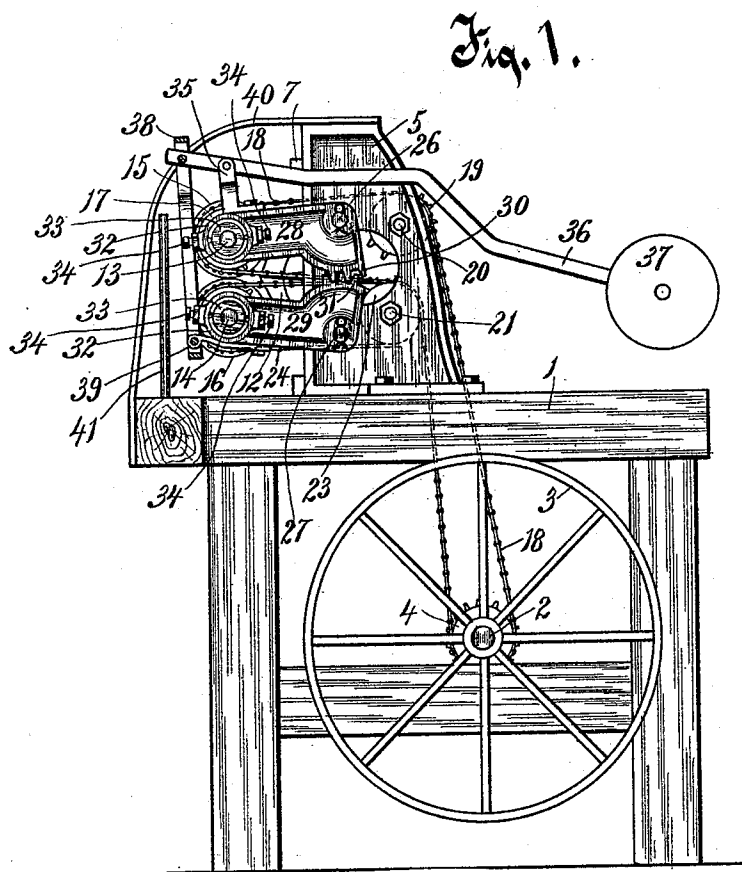
(No Model.)

2 Sheets—Sheet 1.

D. MURRAY & A. ROBBINS.  
POLE SPLITTING MACHINE.

No. 497,333.

Patented May 16, 1893.



Witnesses.

*A. Keeney,*

*Anna P. Faust.*

Inventors.

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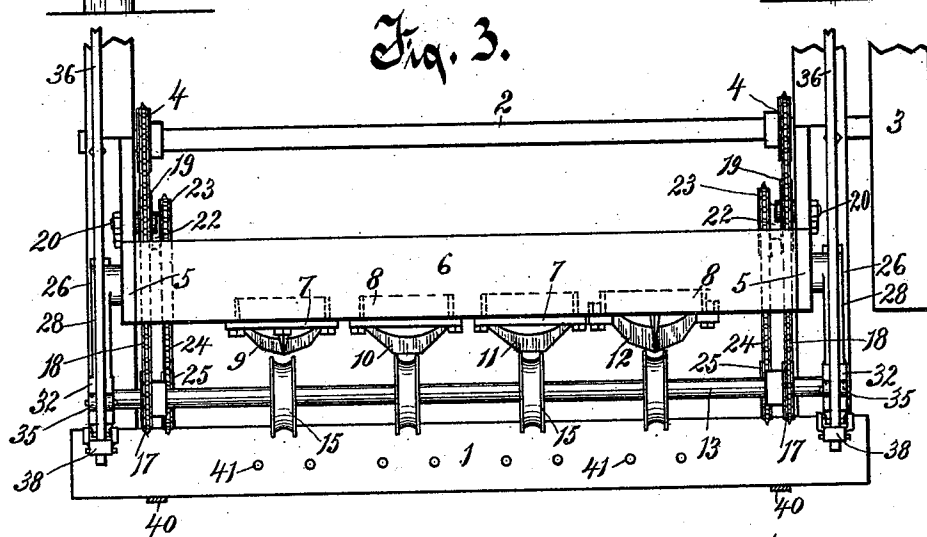
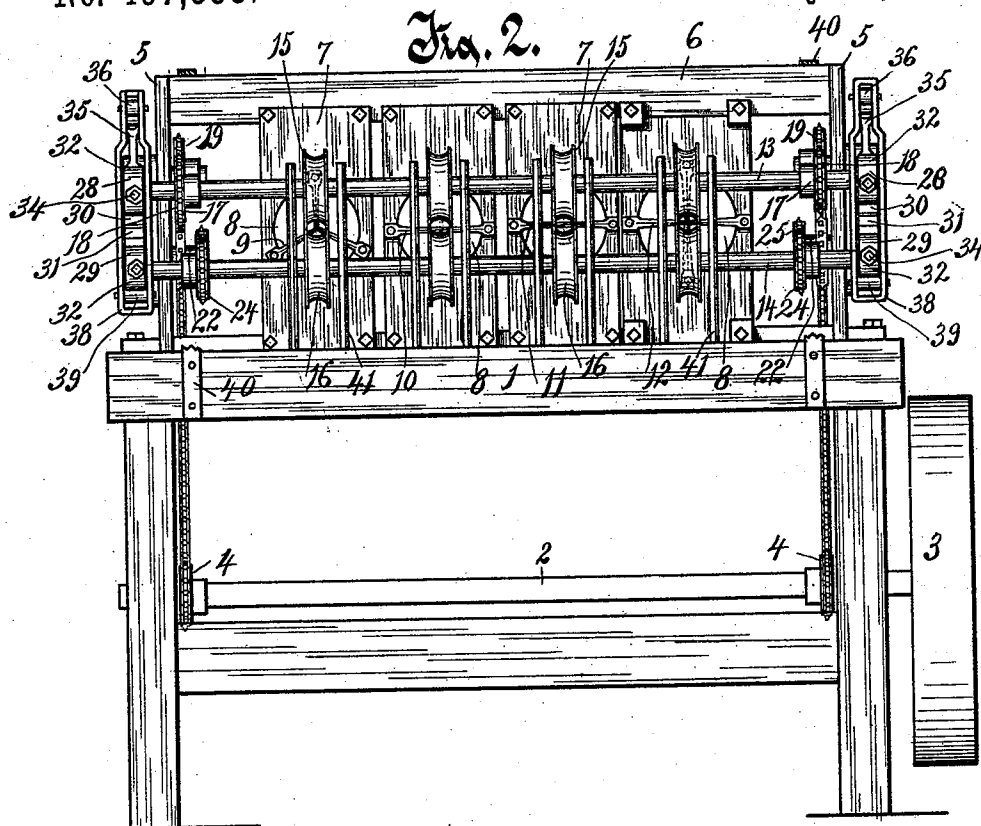
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# UNITED STATES PATENT OFFICE.

DAVID MURRAY, OF MILWAUKEE, WISCONSIN, AND ADDISON ROBBINS, OF  
FITCHBURG, MASSACHUSETTS.

## POLE-SPLITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 497,333, dated May 16, 1893.

Application filed April 23, 1892. Serial No. 430,309. (No model.)

*To all whom it may concern:*

Be it known that we, DAVID MURRAY, of Milwaukee, in the county of Milwaukee and State of Wisconsin, and ADDISON ROBBINS, of Fitchburg, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Pole-Splitting Machines, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

Our invention has relation to improvements in machines for splitting poles to be used for barrel hoops and the like.

The primary objects and designs of the machines are to provide for the automatic splitting of poles of different sizes with rapidity, to insure an even and regular cut thereof, and the provision and arrangement of cutting mechanism capable of dividing the poles into two or more pieces, dividing the same into sections of different thicknesses, and accomplishing the splitting of a plurality of poles simultaneously.

The invention consists in the improved construction and combination of parts as hereinafter more fully set forth.

In the accompanying drawings, Figure 1, is an end elevation of the machine, the rear link being shown in section to clearly disclose certain parts. Fig. 2, is a front elevation, and Fig. 3, is a plan view.

Like numerals of reference designate like parts throughout the several views.

Referring to the drawings, the numeral 1 indicates the table or stand, provided with bearings for a driving shaft 2, said shaft carrying a pulley wheel 3, upon one extremity thereof. This shaft has also located thereon, near opposite ends, sprocket wheels 4, 4. Upon the top of the table or stand are located standards or supports 5, 5, connected by a top piece 6. A series of partitions or boards 7 are secured to the top piece and to the supporting table or stand, each of said partitions being provided with a large circular aperture 8. Each partition has attached thereto a

splitting knife, said several knives being indicated by the numerals 9, 10, 11 and 12. The ends of these knives are attached to the partitions in the manner clearly shown in the drawings, while the cutting edges thereof project out in front of the apertures as shown in Fig. 3. The medial knives 10 and 11 consist merely of single transverse blades, while knife 9 consists of three radial arms joining each other at the center. The other end knife 12 consists of two blades crossing each other at rights angles. In front of the partitions, 7, are located upper and lower shafts 13 and 14, respectively, having secured thereon fixedly grooved feed rolls 15 and 16 respectively, the peripheral edges of said wheels registering, and normally contacting. Shaft 13 carries two sprocket wheels 17, 17, which receive sprocket chains 18, 18, leading from the sprocket wheels 4, 4, of the main or drive shaft.

Idle pulleys 19, 19, are journaled on short shafts 20, 20, extending from the standards 5, 5, and receive thereover the upper portions of the sprocket chains. Also extending inwardly from the standards are lower short shafts 21, 21, having mounted revolubly thereon sleeves 22, 22, said sleeves carrying fixedly inner and outer sprocket wheels 23, 23, the outer sprocket being shown clearly in the end view, Fig. 1, and the inner sprocket in the plan view Fig. 3. The outer wheels receive thereover the lower portion of sprocket chains 18, whereby the motion of said chains is communicated to the revoluble sleeves. The inner sprocket wheels, 23, are connected with shaft 14, through the medium of sprocket chains 24, 24, which also pass around sprocket wheels 25, 25, located on said shaft. It will thus be seen that the motion of the main or drive shaft is communicated by the arrangement of the sprocket wheels and chains just described to the roll-carrying shafts 13 and 14. Each standard has pivoted to the outer side thereof, at the points 26 and 27 two arms 28 and 29, the former having upon its under edge, near the forward end thereof a seg-

mental rack 30, meshing with a similar rack 31 upon the upper edge of arm 29. These several arms are hollowed out or cup shaped and have formed therein at their rear ends rings, 32, surrounding collars 33, the latter serving as bearing boxes for shafts 13 and 14. These collars are held pivotally in position by means of pivot pins 34, which pass through the rings and enter slight indentations in said collars.

The upper pivoted arms 28, have secured thereto angle brackets 35, which form fulcras or pivots for levers 36, said levers carrying at their rear ends counterpoise weights 37, and having their forward extremities pivoted to the upper portions of loop links 38, 38. The side pieces of links 38 receive therebetween the forward set screws 34, and are pivotally connected at their lower ends, to arms or links 39, 39, attached to and extending forwardly from the lower pivoted arms 29.

The numerals 40, 40, indicate curved straps, which serve as guards to the sprocket wheels, while the numeral 41 indicates a series of rods extending up vertically from the table or stand, arranged in couples upon each side of the feed rolls, and serving to obviate the danger of the operator's hand being caught between said rolls when the machine is in operation.

The effect of the counterpoise weights, 37, is to normally keep the feed rolls in juxtaposition and contact, and when a pole is introduced between any of the set of wheels, to bring said wheels as firmly as possible against the work.

In operation if, for instance, a pole be inserted between the feed rolls leading to knife, 11, the right hand ends of shafts 13 and 14 will be diverged considerably, while the left hand extremities will be converged or brought closer together. The same effect would be produced by inserting the pole between the rolls leading to knife 12, whereas, if the pole is inserted between any of the rolls upon the left of the center of the shafts a reverse movement occurs, that is to say, the left hand extremities of the shafts are diverged, and the right-hand extremities converged. The movements just explained are due to the movable bearings for the shafts. Of course the pivoted arms 28 and 29 allow for the movement between the shafts, while the meshing segmental rack portions absolutely insure a uniform movement of the shafts toward and from each other. It is to be noted, however, that pivot pins, 34, 34, play a very important part in the convergence and divergence of the opposite ends of a the shafts. If these pivots were not provided a separation of any set of the rolls would have the effect of spreading apart the shafts throughout their lengths, instead of convergence at one end and a divergence at the other. While the pivot pins 34, hold the collars or bearing boxes secure

against turning with the shafts, still said shafts may have upward and downward swings at opposite ends by reason of their passage through the collars or boxes and the horizontal pivots 34 of the latter.

It will be seen that the arrangement of knife 9, is such as to cut the pole in three parts, while knife 12 makes four cuts thereof. Knives 10 and 11 simply cut the pole into two parts. Knives 9, 11 and 12 are arranged to be exactly in line with the center of the space between their rolls and as each roll of any set when spread out moves the same distance from the knives an equal cut of the pole is thus insured. In regard to knife, 10, however, as this falls slightly below the center line, an unequal split of the pole results, whereby the "heart" of the wood is taken out with the greatest thickness or width above the knife.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a pole splitting machine, the combination, of a plurality of cutting knives, bearing arms constructed to be moved the same distance toward and from each other, and parallel rotatable shafts carrying a set of grooved feed rolls for each cutting knife, the ends of said shafts mounted upon horizontal pivots in the bearings to secure a simultaneous divergence and convergence of opposite ends when a pole is introduced between a set of the feed rolls, substantially as set forth.

2. In a pole splitting machine, the combination, of splitting mechanism, parallel rotatable shafts carrying grooved feed rolls, bearing boxes constructed to move toward and from each other, said boxes receiving the ends of the shafts rotatably therein and also turning upon pivotal points to secure a simultaneous divergence and convergence of opposite ends of the shafts when a pole is introduced between the feed rolls, substantially as set forth.

3. In a pole splitting machine, the combination, of splitting knives parallel rotatable shafts carrying grooved feed rolls, pivoted arms on opposite sides of the machine, said arms carrying meshing toothed segments and also provided at their free ends each with an annulus or ring, bearing boxes surrounded by the rings, said boxes receiving the opposite ends of the shafts, pivot pins passing through the rings and engaging the bearing boxes, weighted levers connected medially with one of each set of pivoted arms, and links pivotally connecting the front end of said levers with the other of the set of pivoted arms, substantially as set forth.

4. In a pole splitting machine, the combination, of a main or drive shaft carrying sprocket wheels thereon, roll-carrying shafts also provided with sprocket wheels, sprocket

chains connecting said several wheels of the  
main shaft with the similar wheels of one of  
the roll carrying shafts, short inwardly pro-  
jecting shafts, revoluble sleeves mounted  
5 thereon, sprocket wheels carried by said  
sleeves, the inner ones of which constructed  
to be engaged by the drive sprocket chains,  
and sprocket chains connecting the outer of  
the sprocket wheels carried by the sleeves to  
10 the sprocket wheels carried by the other roll  
shaft, substantially as set forth.

In testimony whereof we affix our signa-  
tures in presence of two witnesses.

DAVID MURRAY.  
ADDISON ROBBINS.

Witnesses to David Murray:

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