

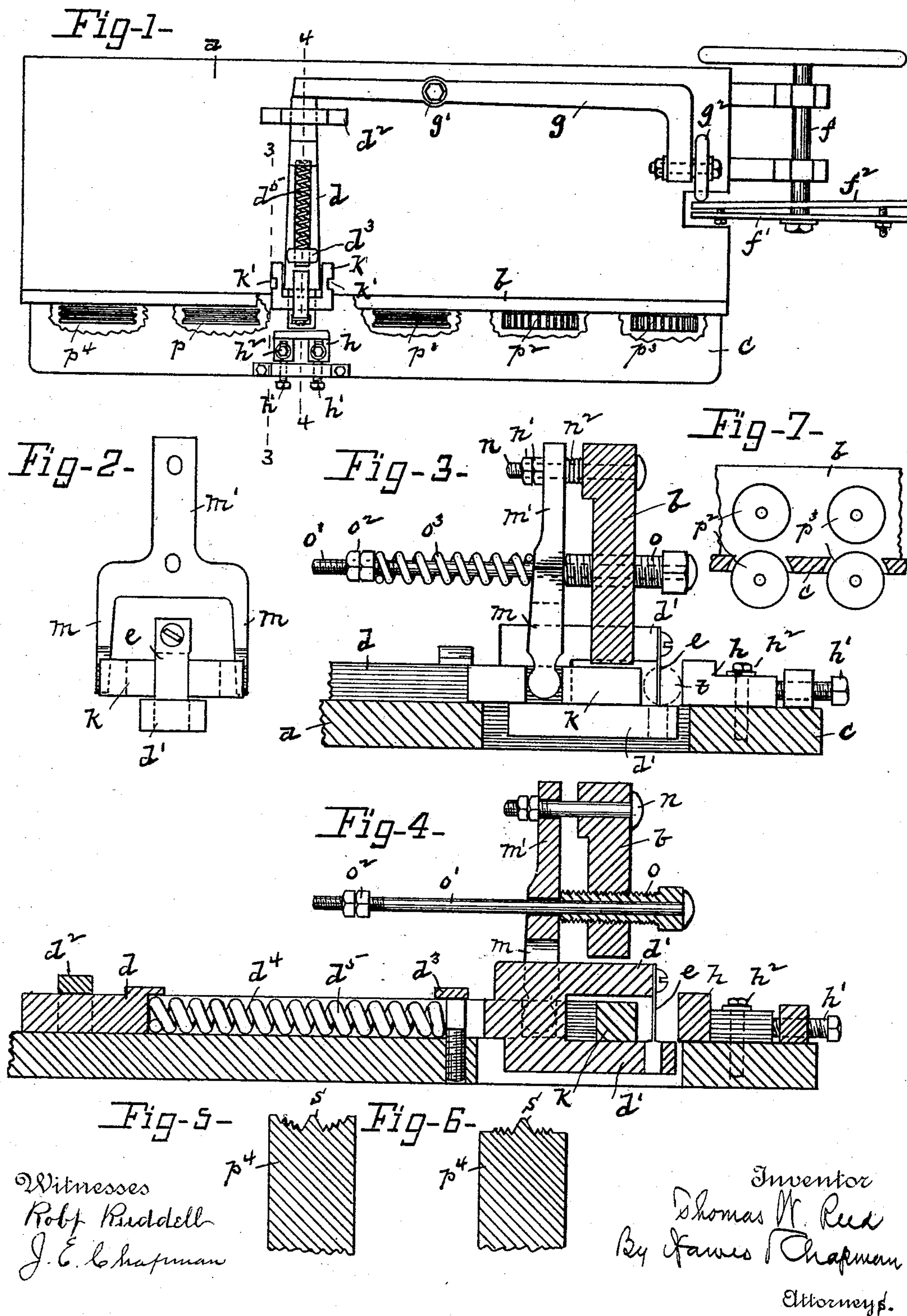
(No Model.)

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STALK SPLITTING MACHINE FOR WHIPS.

No. 495,430.

Patented Apr. 11, 1893.



UNITED STATES PATENT OFFICE.

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STALK-SPLITTING MACHINE FOR WHIPS.

SPECIFICATION forming part of Letters Patent No. 495,430, dated April 11, 1893.

Application filed March 30, 1892. Serial No. 427,072. (No model.)

To all whom it may concern:

Be it known that I, THOMAS W. REED, of Osborn, in the county of Greene and State of Ohio, have invented a new and useful Improvement in Stalk-Splitting Machines for Whips, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

In Letters Patent No. 454,497, dated June 23, 1891, I have shown and described a machine for splitting the stalks of rattan from which whip-centers are formed, said machine comprising a stationary knife, a series of guiding rolls having their peripheries serrated for directing the stalk to said knife, a portion of said series of rolls also having their peripheries concaved transversely to hold the stalk against rotation about its axis, and a cam-actuated guide for gradually imparting a lateral movement to that portion of the stalk immediately in front of the knife, whereby the knife is caused to split the stalk in a line extending diagonally from end to end of the latter. While the said machine operates very successfully to secure the desired result, and is so far as I am aware the first machine ever devised whereby a stalk of rattan can be successfully split into corresponding halves, with the line of division at an angle to the longitudinal center of the stalk, I have found that I can secure even better results by employing in connection with the peculiarly constructed feed-rolls for rigidly holding the stalk against rotation about its axis while imparting a rapid longitudinal movement thereto, a laterally movable knife, and means for accurately holding and moving said knife whereby the angle of the line of division between the halves of the stalk can be accurately predetermined.

My present invention consists, therefore, in the stalk-splitting machine embodying this feature, constructed and operating as hereinafter fully described and particularly pointed out in the claims.

Referring to the drawings, in which like letters designate like parts in the several views, Figure 1 is a plan view of the machine, with a portion of the vertical standard broken away in the plane of the knife-operating de-

vices. Fig. 2 is a side elevation of the knife and of the stalk-presser. Fig. 3 is a partial cross-section of the machine, taken upon line 3—3 of Fig. 1. Fig. 4 is a cross-section taken upon line 4—4 of Fig. 1. Fig. 5 is a cross-section of one of the pairs of feed-rolls. Fig. 6 is a similar view showing a slightly modified form of roll. Fig. 7 shows two of the pairs of feed-rolls.

The letter *a* designates the horizontal bed of the machine, which bed terminates at its front side in the vertical standard *b* extending from end to end thereof, and suitably secured to said bed, in front of the standard *b*, is the table *c* upon which the stalk rests in its passage through the machine, the peripheries of the lower rolls of the series of pairs of feed-rolls projecting through slots in said table, as in the machine shown in my said previous Letters Patent.

The letter *d* designates the knife-carrier, which consists of a bar, resting upon the bed *a* and projecting through an opening in standard *b*, and terminating at its front end in the forked arms *d'*, to the ends of which arms the knife *e* is secured at both ends. A loop *d²* embracing the rear end of said bar and a bolt *d³* passing through the slot *d⁴* therein into the bed and having a T-shaped head bearing against the upper side of the bar, serve to guide the latter in such manner as to render it capable of a limited longitudinal movement upon the bed, in a plane at a right-angle to the path of movement of the stalk through the machine.

A shaft *f* supported in suitable bearings at the end of the machine carries a wheel *f'* to the side of which is adjustably secured a cam-ring *f²*, or other form of face cam, said shaft also carrying a suitable band-pulley (not shown) or other means whereby motion can be transmitted thereto from a moving part of the machine. A lever *g*, pivoted at *g'* to the bed, bears at one end against the rear end of the knife-carrier *d* and at its opposite end engages the cam *f²*, preferably through the medium of an anti-friction roll *g²* as shown, whereby revolution of shaft *f* will, through said cam, impart a swinging movement to said lever and, through the latter, longitudinal

movement to the knife-carrier in one direction, a spring d^5 , located within the slot d^4 of said carrier and bearing at one end against the latter and at its opposite end against the bolt d^3 , serving to move said carrier in the opposite direction and to keep the end of lever g in constant engagement with the cam f^2 .

A guide-block h is adjustably secured upon the table c , at a point opposite the knife e , screw-bolts h' and check-screws h^2 serving to adjust said block toward and away from the knife and to rigidly secure it in its adjusted position. The acting face of said guide-block is by preference slightly beveled as represented in Fig. 1, for a purpose which will be mentioned presently.

A spring-actuated guide-block k rests upon the bed in such manner as to be capable of a limited movement through the opening in standard b and in a plane parallel with that of the movement of the knife-carrier. Said block k is recessed at its rear side to adapt it to embrace the knife-carrier, and is provided with notches or recesses k' in its opposite sides to receive the ball-shaped ends of the arms m of a forked bar m' , which bar is supported upon a bolt n projecting from the standard b in such manner as to be capable of a limited rocking movement upon said bolt. As herein shown, see Fig. 3, said bar is held upon said bolt n by means of check-nuts n' upon the latter, bearing against one side of the bar, and an interposed coil spring n^2 bearing against the opposite side of the latter, but the particular means thus shown for the purpose are not essential, so long as the bar has a rocking bearing at its upper end upon a suitable support. A screw-bolt o passing through standard b is bored to receive a rod o' , which rod, passing through said bolt and the bar m' , carries at its rear end the check-nuts o^2 , and a spring o^3 surrounding said rod and bearing at one end against said nuts and at its opposite end against the rear side of bar m' , serves to press said bar and the guide-block k toward the stationary guide-block h , the screw-bolt o serving to limit the forward movement of said parts and the nuts o^2 serving to regulate the tension of said spring. The series of pairs of feed-rolls p, p', p^2, p^3 are preferably of the form shown and described in my previous patent, that is to say, the upper roll of each of said pairs and both rolls of the pairs p^2, p^3 have serrated peripheries, with the serrations extending horizontally across said peripheries, while the lower rolls of the pairs p, p' have their peripheries circumferentially serrated and also concaved transversely, whereby they are caused to engage the stalk in such manner as to securely hold it against rotation about its longitudinal axis while passing through the machine, as clearly set forth in said patent.

I have shown in Fig. 1 only the lower rolls of the several pairs, as being all that is necessary to be shown for a clear understanding

of the present invention when considered in connection with the machine shown in my aforesaid prior patent. Of the final pair of rolls, designated by p^4 , which I will term the delivery rolls, the lowermost roll has its periphery provided with an annular rib s , located midway between the two edges thereof, and is provided with serrations upon each side of said rib, the peripheral surface being concaved transversely upon each side of the rib as shown in Fig. 5, or made horizontal as shown in Fig. 6, as may be desired. Said rib s serves to separate the two divisions of the stalk, made by the knife, and to deliver them at the end of the machine in two separate piles, the pieces composing the two piles having their butts and tips turned in opposite directions.

The stalk to be split, represented by broken lines at t in Fig. 3, is fed to the knife by inserting the end thereof between the first pair of feed-rolls p^3 , a rapid revolving movement being imparted to the rolls of each of the pairs by any suitable driving gear, as stated in my prior patent. The stalk is thus carried at a high speed to and past the knife, the latter entering the end thereof at one side of the axial center and, by reason of the lateral movement imparted to the knife by its carrier d through the action of lever g and cam f^2 , it is caused to split the stalk in a diagonal line, terminating at the rear end of the latter upon the opposite side of said axial center. In addition to the guiding and holding action of the feed-rolls, the stalk is pressed laterally against the rigid guide-block h by the spring-actuated guide-block k , at the point at which the knife is located, in such manner that any deflection of the stalk from a right line is rendered impossible. I am thus enabled to divide each stalk into two exactly corresponding halves, with even greater accuracy than has heretofore been done by hand labor, and with great rapidity, the corresponding halves of successive stalks being delivered at the end of the machine in two separate piles, as before described. The adjustability of the guide-block h in connection with the yielding pressure of the block k , provides for accurate operation of the knife upon different sizes of stalks, and the adjustability of the cam f^2 enables the angle of the line of separation of the stalk to be predetermined with entire accuracy. It will be noted that with both my present machine and that previously patented the stalk is separated without loss of material, as is the case when a saw is employed, and the operation is performed much more rapidly than could be done with a saw. It will be observed also that the stalk-splitting machines devised by me are quite distinct in their action from machines which merely shave a portion from the surface of the stalk to lessen its size, such for example as the Moore machine referred to in my previous patent, the shaving removed by such

machines being necessarily thrown away as waste, whereas my machines avoid all waste and perform the same operation upon the stalk that, prior to the date of my previous invention, had been performed by hand labor.

Both my present machine and that previously patented are adapted to form independent machines, as herein described, or to be applied as an attachment to such machines as the Moore machine as set forth in my previous patent, but I prefer to construct them as independent machines.

The details of construction of the machine herein shown and described can be modified in various ways without departure from the spirit of my invention.

By slightly beveling the acting face of guide-block *h*, longitudinally of said face, as described, provision is made for the slight separation of the two divisions of the stalk by the knife without impairing the holding action of the two guide-blocks upon the stalk.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a stalk-splitting machine, the combination with a movable knife-carrier and a vertically disposed splitting knife carried thereby, of a series of pairs of feed-rolls for carrying the stalk past said knife in a plane at a right-angle to the plane of movement of the latter, and means for holding the stalk against lateral deflection, substantially as set forth.

2. In a stalk-splitting machine, the combination with a vertically disposed splitting knife and means for imparting lateral movement thereto, of a series of feed-rolls for carrying the stalk to and beyond said knife, a stationary guide adjustably secured at one side of the knife for affording lateral support to the stalk, and a spring-actuated guide located upon the opposite side of the knife and adapted to press the stalk against said stationary guide, substantially as and for the purpose described.

3. In a stalk-splitting machine, the combination with a series of feed-rolls adapted to impart longitudinal movement to a stalk, of a sliding knife-carrier having its path of movement intersecting that of the stalk at a right-angle, a vertically disposed knife secured to said carrier, a cam-shaft carrying a cam, intermediate connections between said cam and the knife-carrier whereby the latter is moved in one direction by the former, and a spring for moving said carrier in the oppo-

site direction, arranged and operating substantially as set forth.

4. In a stalk-splitting machine, the combination with the upright knife and means for imparting lateral movement thereto, of the series of serrated feed-rolls for imparting longitudinal movement to the stalk, a portion of said rolls having their peripheries concaved transversely, substantially as and for the purpose described.

5. In a stalk-splitting machine, the combination with the laterally movable knife, serrated feed-rolls, and guides for preventing lateral deflection of the stalk, of a pair of delivery rolls located in rear of the knife, one of said rolls being provided with a centrally disposed annular rib as described, and having its periphery serrated upon each side of said rib, substantially as and for the purpose described.

6. In a stalk-splitting machine, the combination with feeding mechanism for passing a stalk longitudinally through the machine, of a knife-carrier movable in a plane at a right-angle to that of the movement of the stalk, said carrier terminating at its front end in two forked arms, a knife secured at each end to one of the arms of said carrier, and means substantially as described for imparting movement to said carrier, arranged and operating substantially as set forth.

7. In a stalk-splitting machine, the combination with the adjustable guide-block *h*, the forked knife-carrier, and the knife carried thereby, of the recessed guide-block *k* working within the fork of said knife-carrier, bar *m'* suspended from a suitable support and having its arms *m* in operative engagement with said block *k*, and a spring operatively engaging said bar in such manner as to press the lower end of the latter and the block *k* toward the block *h*, substantially as described.

8. In a stalk-splitting machine, the combination with the cam-actuated knife-carrier and knife carried thereby, of the pairs of feed-rolls *p*² *p*³ having their peripheries transversely serrated, and the pairs of feed-rolls *p* *p'* having their peripheries circumferentially serrated and concaved transversely, substantially as and for the purpose described.

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Witnesses:

D. M. McCONNELL,
W. H. H. HEBBLE.