A. H. WILLIAMS.

MACHINE FOR SHREDDING BAMBOO AND THE LIKE.

APPLICATION FILED JUNE 20, 1919.

1,376,789.

Patented May 3, 1921.

2 SHEETS—SHEET 1.

FIG. 1.

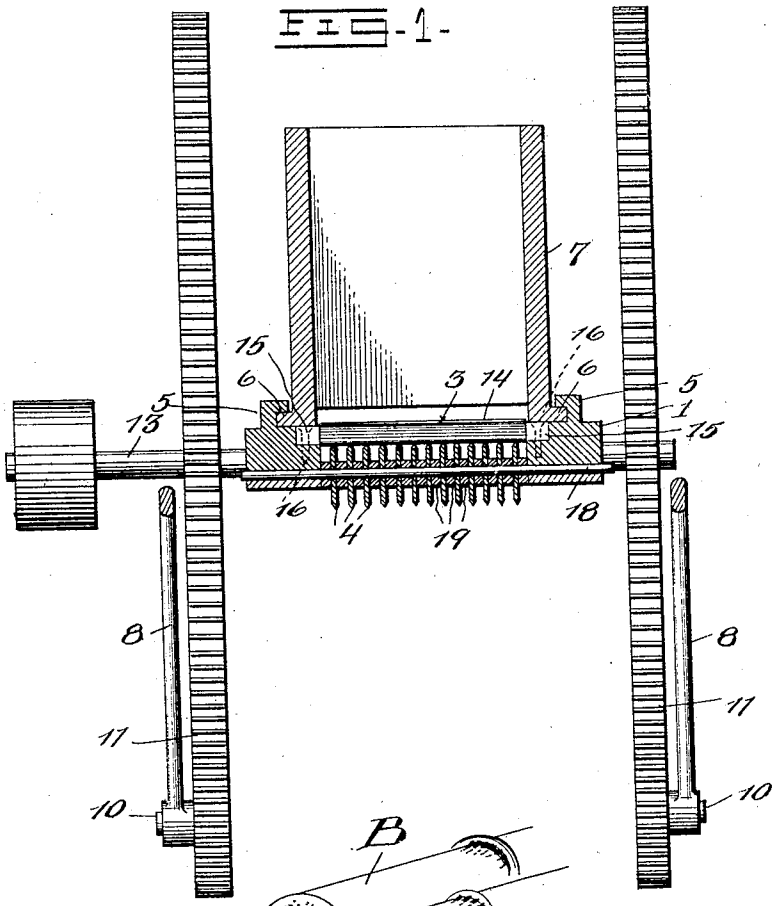
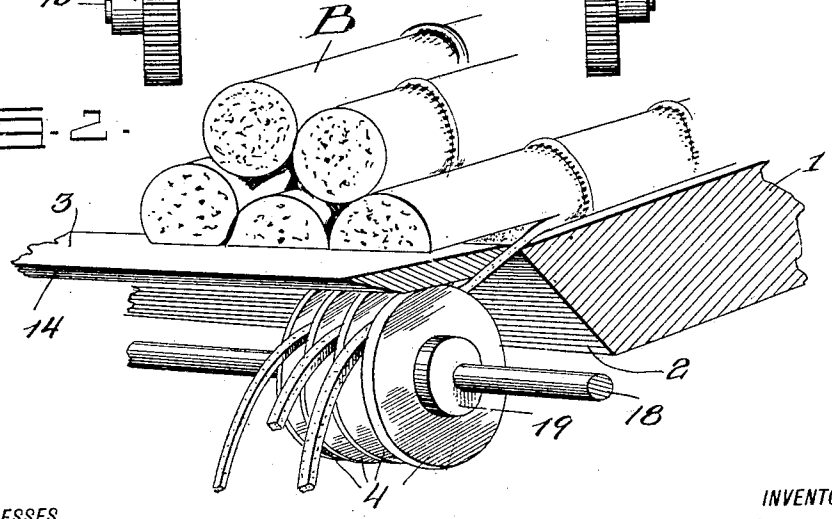


FIG. 2.



WITNESSES

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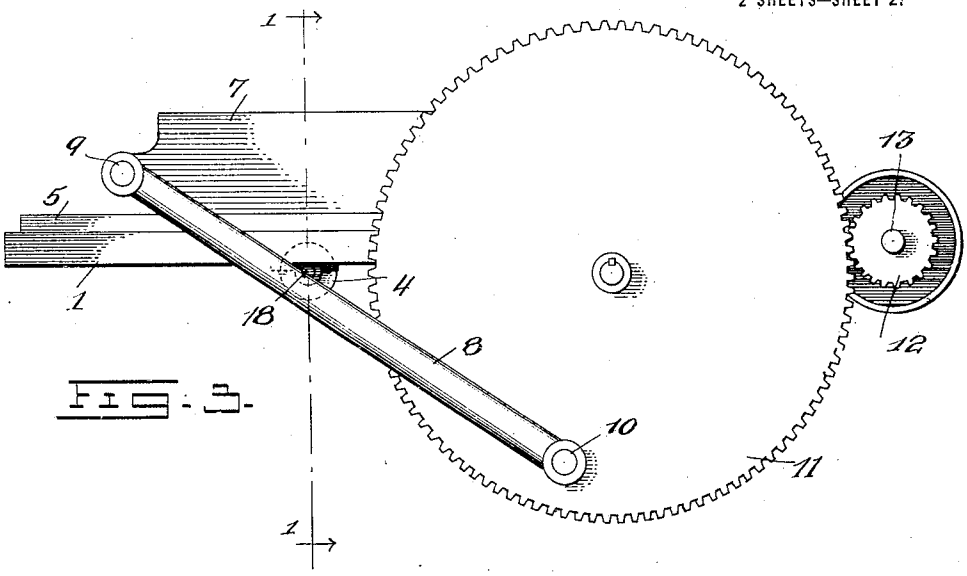


FIG. 3.

FIG. 4.

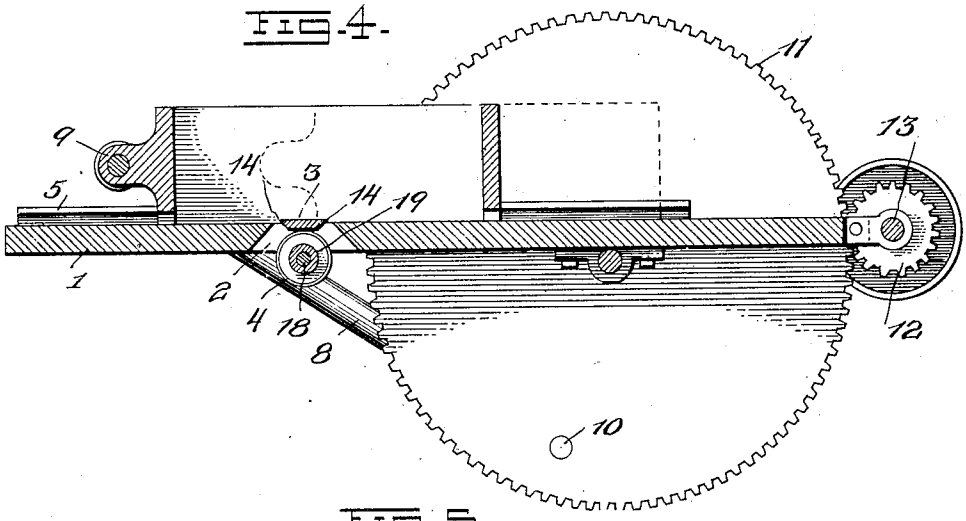
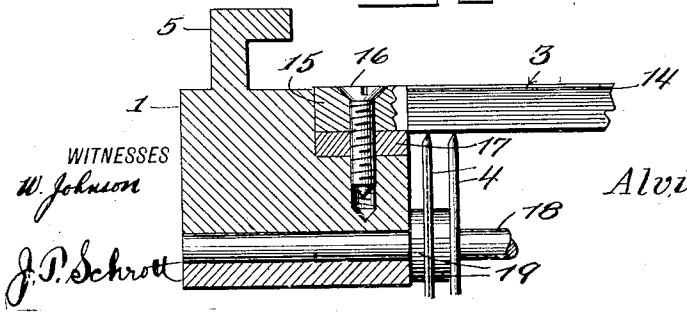


FIG. 5.



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MACHINE FOR SHREDDING BAMBOO AND THE LIKE.

1,376,789. Specification of Letters Patent. Patented May 3, 1921.

Application filed June 20, 1919. Serial No. 305,471.

To all whom it may concern:

Be it known that I, ALVIN H. WILLIAMS, a citizen of the United States, and a resident of Plant City, in the county of Hillsboro and State of Florida, have invented certain new and useful Improvements in Machines for Shredding Bamboo and the like, of which the following is a specification.

My invention relates to improvements in machines for shredding bamboo and the like, for the purpose of making brooms, and it consists in the constructions, combinations and arrangements herein described and claimed.

The foremost object of my invention is to provide a machine, which in one operation makes "straws" out of which brooms are to be manufactured.

A further object of the invention is to provide a machine for the purpose described, wherein the bamboo or similar material, is shredded by reciprocating lengths thereof over suitably arranged means for accomplishing the purpose.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawings, in which:

Figure 1 is a cross section of the machine, illustrating the relative arrangement of the plane knife and shredding knives,

Fig. 2 is a detail perspective view illustrating the shredding action,

Fig. 3 is a side elevation of the machine,

Fig. 4 is a longitudinal section of the machine, and

Fig. 5 is a detail sectional view, showing a slight modification wherein the plane knife can be vertically adjusted by means of a washer.

In carrying out my invention, I provide a frame 1, of metal or any other suitable material, which has a transverse opening 2. A plane knife 3 and a plurality of loosely and rotatably mounted circular shredding knives 4 are operatively mounted in this opening for the purpose of splitting or cutting the bamboo into shreds for "straws" as it is reciprocated in the manner described below.

Guides 5, on top of the frame 1, receive the flanges 6 of the bamboo hopper 7. Lengths of bamboo B are fitted lengthwise in the hopper 7. The hopper is reciprocated on the frame and with respect to the knives described above, by means of pitmen 8, which are operatively connected at 9 to the hopper, and at 10 to the drive gears 11. The drive gears are driven by pinions 12 on a drive shaft 13.

The lengths of bamboo placed in the hopper 7 do not necessarily have to be in one piece to fit the length of the hopper. If desirable, or necessary, a number of pieces may be set in end to end substantially as shown in Fig. 2. Obviously, by such an arrangement, the same function of shredding the bamboo is performed.

Consider now the construction of the knives. The plane knife 3 is sharpened on the transverse edges as at 14 so that a sliver of bamboo is cut from beneath each cane section upon each reciprocation of the hopper 7. The knife 3 is secured on the frame in suitable recesses 15, provided for the purpose, by suitable means 16.

By way of modification, should it be desired to provide for the adjustment of the plane knife 3 so that thicker slivers can be cut from the bamboo canes, washers 17, or equivalent means, can be used in connection with the securing means 16 as illustrated in Fig. 5.

The circular shredding knives 4 are mounted on a shaft 18. Washers 19 space the knives apart. These washers may be as thick or thin as desired. Thick washers are used when heavier and stronger "straws" are desired. Conversely, thin washers are used when lighter "straws" are desired.

The shaft 18 is so mounted on the frame 1 that it can be pulled out sufficiently far to one side to enable the knives and washers to be fitted on. The shaft 18 is shown round in the present instance, but it may be non-circular if desired. In the present instance, the knives rotate on the shaft. In the latter instance, the whole shaft will have to rotate in bearings at the respective ends.

The operation.

Sections of bamboo cane B are fitted lengthwise in the reciprocatable hopper 7. As explained above, the bamboo canes may be in sections equal to the length of the hopper, or they may be made up of a number of small pieces.

The weight of the canes is ordinarily sufficient to hold or press them against the cutting knives, but if found necessary, a

suitable weight or follower may be put on top. The hopper 7 is slid back and forth in the guides 5 by the means shown in Fig. 3, and as the hopper begins each reciprocation, a sliver is cut from beneath each cane as shown in Fig. 2.

As each sliver in turn engages the circular knives 4, it is cut into shreds or "straws." These "straws" are made into brooms. It is to be observed that the basic principle of this machine is the moving of a bamboo cane against knives that are so fixed as to cut layers from the cane into shreds, in one operation. It is not difficult to imagine how the same purpose can be obtained by reversing the operation, namely, by moving the same cutting knives against a bamboo cane which might be fixed.

It is to be observed that one of the important features of the invention resides in the fact that a sliver of bamboo is cut on each stroke of the reciprocating hopper 7, that is to say, a sliver is cut on the forward stroke and also on the return stroke. Both movements are thus utilized.

While the construction and arrangement of the bamboo shredding machine as herein described and claimed is that of a generally preferred form, obviously modifications and changes can be made without departing from the spirit of the invention or the scope of the claims.

I claim:

1. Double-edged single cutting means, a plurality of closely spaced cutters operatively associated in a plane at right angles to the single cutting means, means for containing a section of bamboo or like material above said single cutting means, means for reciprocating said holding means, causing the cutting of a sliver from said material and sub-dividing it into long shreds, in one operation at each stroke; operatively associated means for varying the spacing between the plurality of cutters, and means for adjusting the single cutting means in accordance.

2. A machine for shredding bamboo or similar material, comprising a frame plate with a transverse opening, cutting means operatively mounted in said opening, comprising a plane cutter sharpened on both edges, and a plurality of closely spaced circular cutters operatively mounted for free revolution beneath said plane cutter, with interposed space-adjusting means; containing means for sections of bamboo, means for retaining and guiding said means on the plate and in respect to said cutting means, and driving means carried by the frame plate, with operating connections to said containing means, for reciprocating the latter in respect to the cutting means.

ALVIN H. WILLIAMS.