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BY A. P. C.

R. A. NIELSEN
WOOD CUTTING MACHINES
Filed Aug. 15, 1939

Serial No.
290,146
2 Sheets-Sheet 1

FIG. 1.

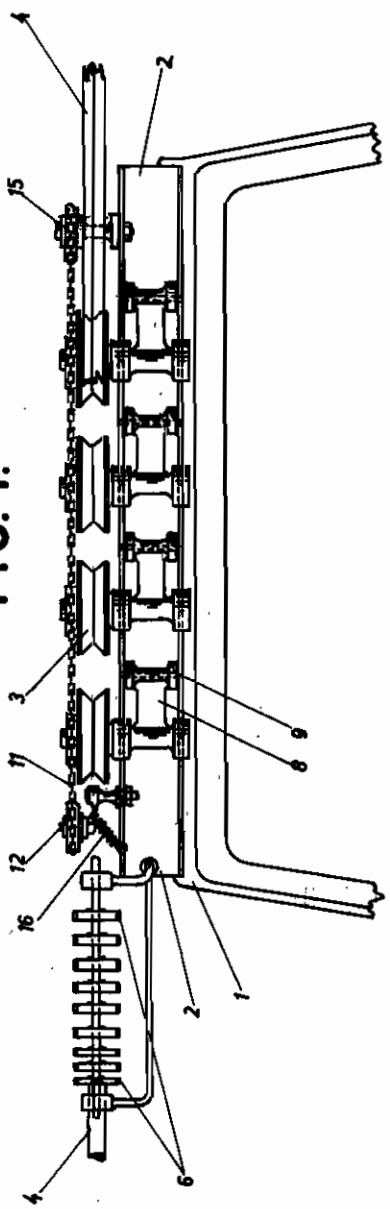

FIG. 2.

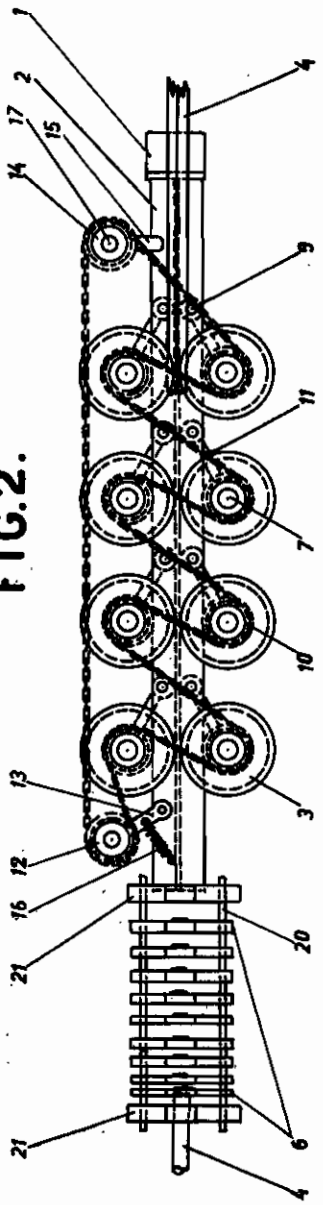

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FIG. 3.

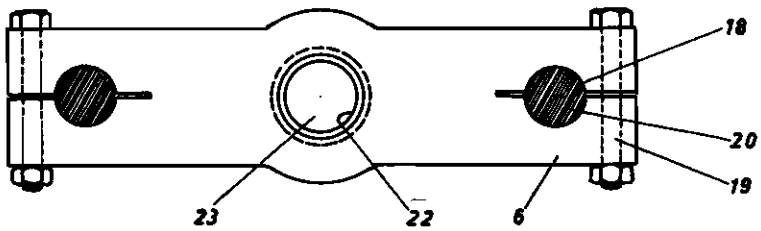

FIG. 4.

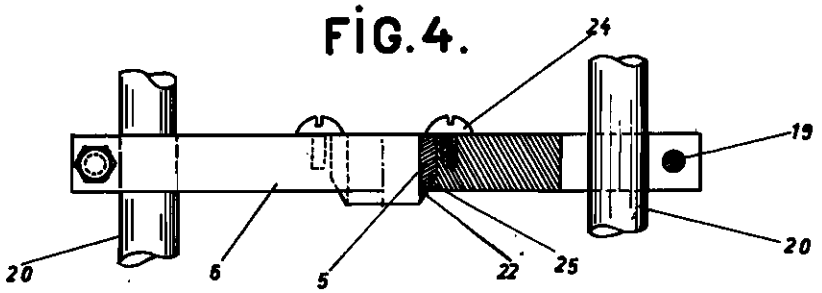

FIG. 5

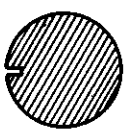

FIG. 6.

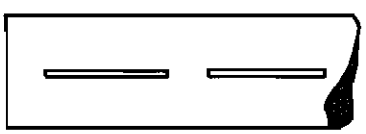

FIG. 7.

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ALIEN PROPERTY CUSTODIAN

WOOD CUTTING MACHINES

Robert Alexander Nielsen, Copenhagen, Denmark; vested in the Alien Property Custodian

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The present invention relates to an improved wood cutting machine for producing any desired profile on poles and similar work pieces by means of stationary cutter members arranged conaxially in relation to each other, and towards which the work piece is conveyed by means of feeding rollers.

In the hitherto known wood cutting machines of this kind it has been difficult to obtain a perfectly smooth surface on the completed work piece. The reasons of this are various. Thus variations in the surface of the work piece to be cut causes one or several of the feeding rollers to slip its hold, and the feeding process becomes irregular, which gives occasion to irregularities in the cutting. Furthermore the cutting edge of the cutter during operation is subjected to vibrations causing slight indentations in the finished surface of the work piece, and finally the cutting often causes the work piece to split along the grain, thereby injuring or in some cases entirely destroying the work piece.

The object of the present invention is to provide a wood cutting machine of the kind in question in which the above inconveniences are entirely obviated, and according to the invention this is obtained by employing two rows of horizontally disposed rollers mounted on oscillating arms attached to the machine, and which rollers are operated to rotation by means of a chain drive in such a manner that the work piece inserted between the two rows of feeding rollers is fed steadily to the cutters, which are provided with means that partly prevent the cutter edge of the cutter members in vibrating during operation, and partly serve to break the shavings immediately when formed by the cutter, thereby preventing the splitting of the work piece.

For operating the feeding rollers by means of a chain drive each roller is provided with a sprocket, and an endless chain is carried over the sprockets, so that none of the rollers can slip during the operation, and thus cause irregular feeding of the work piece, and any resistance arising will cause an increase of pressure upon the work piece of the feed rollers, and a steady feed is ensured.

One manner of constructing the wood cutting machine according to the invention is illustrated in the accompanying drawing, in which

Fig. 1 is a side elevation, and

Fig. 2 a top elevation of a wood cutting machine according to the invention,

Fig. 3 is a cutter holder on an enlarged scale in side elevation,

Fig. 4 same in top elevation and partly in section, and

Figs. 5–7 various profiles of work pieces formed by means of a cutting machine according to the invention.

Referring to Figs. 1 and 2 the machine frame is indicated by 1, and on the upper surface hereof there is attached a horizontal beam 2 made of for instance an iron bar of I-profile. This beam carries a number of feeding rollers 3 by means of which a work piece 4 is conveyed towards a number of coaxially disposed cutters 5, each of which is fixed within a holder 6. The feeding rollers 3 are arranged in two rows parallel to the axis of the work piece, one row on each side of the beam. Each feeding roller 3 is rotatably mounted on a vertical post 7 rigidly attached to the one end of an arm 8, which with its other end is arranged to oscillate on a stud 9 fixed to the beam 2. Each roller in one row is disposed just opposite a roller in the other row, and due to the oscillating arms 8 the rollers of each row may swing to and from the rollers in the opposite row.

To the upper side of each feeding roller there is attached a sprocket 10, and over all the sprockets an endless chain 11 is carried, the chain continuing over an idler 12, that is mounted on an arm 13 rotatably attached to the beam 2, and from there to a drive sprocket 14 mounted on a stationary arm 15 likewise attached to the beam 2. The idler arm 13 is actuated upon by a spring 16 inserted between the arm and the beam and serves to hold the idler in position to tighten the chain. The shaft 17 of the drive sprocket 14 is connected to a source of power not shown. An actuation of the driving sprocket 15 will tension the chain, causing the feed rollers 3 to be pressed against the work piece 4, to the effect that during the continued rotation of the rollers the work piece 4 is moved towards the cutters. The harder the actuation on the driving sprocket is, the more firmly will the feed rollers press against the work piece.

Each cutter 5 comprises a cylindrical body inserted in the centre of the holder 6, which consists of a bar provided with an aperture 18 in each end. The ends of the bar are provided with slits through the ends of which there are borings for clamping bolts 19. The holders are clamped to carrier arms 20 that traverse the apertures 18 and are fixed in any appropriate manner to the beam 2, the holders being arranged one behind the other with the centre of the cutters in alignment with the longitudinal

axis of the work piece. Guiding plates **21** through an aperture in which the work piece travels, are attached to the carrier bars in front and behind the cutters **5**. The cutters **5** may either be formed in a single piece, or they may comprise a number of segments.

The cutter edge is formed by means of a bevelled portion **22** on the outer side of the cutter member. The holder **6** is provided with an aperture **23** in which the cutter **5** or the cutter segments are disposed and fixed in position by means of screws **24**. The edge of this aperture **23** has on the front side of the holder an inwardly extending bevelled projection **25** that partly overlaps the bevelled edge **22** of the cutter, to the effect of supporting the cutter edge in order to prevent vibrations arising therein during operation. This projection **25** serves furthermore to break the shaving immediately after being produced by the cutter, thus preventing the possible splitting of the work piece during the continued treatment.

The machine described above is employed in the production of poles with circular section as shown in Figs. 5 and 6, as well as other sections of which there is shown one in Fig. 7 by way of example. It will be understood that for cutting such profiles the cutter **5** has a centre opening of a corresponding shape. It is possible by means of slight alteration in the shape of the holder **6** and in the cutters **5** to treat work pieces of flat form along the edges of which it is desired to cut projecting edges or grooves.

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