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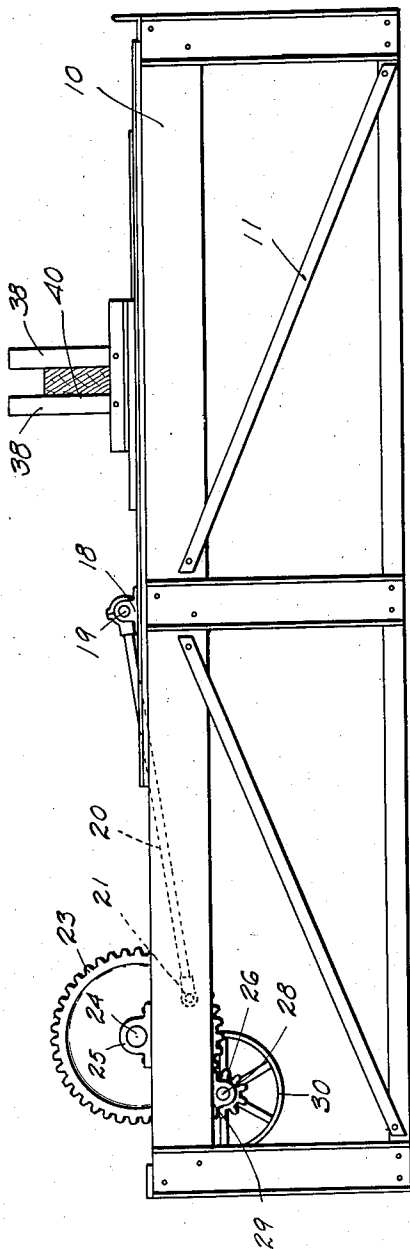
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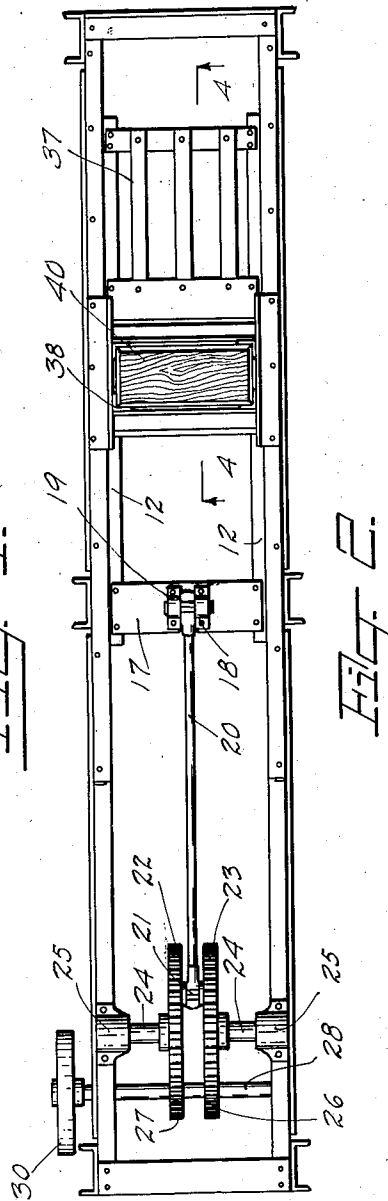
DEVICE FOR FORMING PULP CHIPS

Filed Nov. 21, 1932

2 Sheets-Sheet 1



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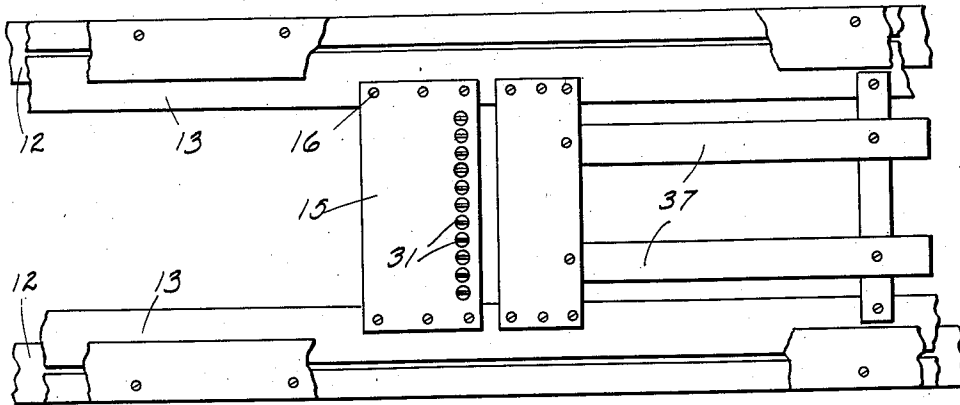


Fig. 3.

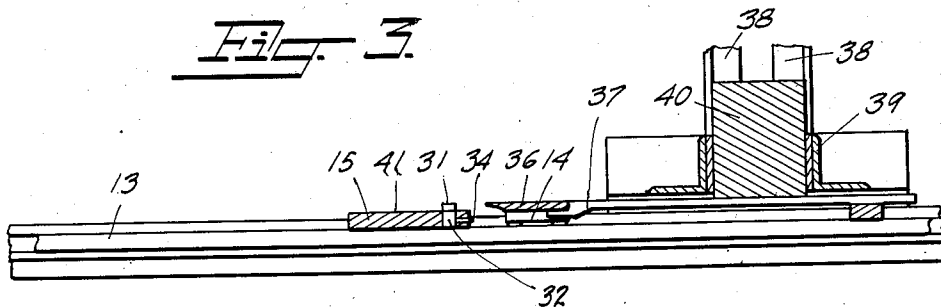


Fig. 4.

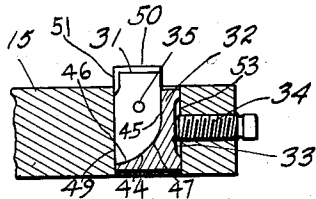


Fig. 5.

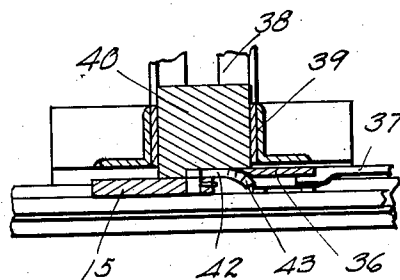


Fig. 6.

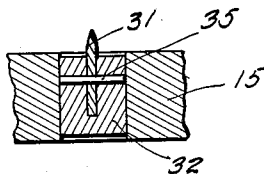


Fig. 7.

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UNITED STATES PATENT OFFICE

1,985,479

DEVICE FOR FORMING PULP CHIPS

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1 Claim. (Cl. 144-186)

This invention relates to an improved device for forming pulp chips, and is specially directed to means whereby pulp chips of uniform size are produced.

The usual method of forming chips from wood pulp for the manufacture of paper and cellulosic materials, is to provide chippers which chip the wood in such manner as to leave thin or feather edges, and which machines do not form a uniform product.

When these non-uniform chips are placed in the respective pulp solutions, the thinner portions of the chips and the smaller chips are completely acted on before the heavier chips have had the reaction completed, and by the time the heavier chips have been fully acted on, the smaller chips and the thinner portions have become formed into a gelatinous mass having no utility in the manufacture of the product, but instead being a hindrance to the successful and efficient operation of the pulping unit.

The purpose of this invention is to provide means for producing chips from pulpwood, which are of uniform size and dimensions, so that all the chips will be acted on simultaneously and to the same degree, whereby losses are obviated due to the gelatinizing of smaller, or thinner portions of chips.

Another object of the invention is to provide a machine for forming equi-dimensional wood chips, the machine being adjustable to provide chips of different thicknesses so that chips of the most suitable thickness can be prepared.

A further object of the invention is to provide these chips in rectangular form whereby no feather edges or thin portions are produced on the chip, the chip having all opposite faces parallel.

Other objects and advantages of the invention will become apparent as the following description is read on the drawings forming a part of this specification, and in which similar reference characters are used to indicate similar parts throughout the several views, of which:

Fig. 1 is a side elevation of my invention.

Fig. 2 is a plan view of Fig. 1.

Fig. 3 is an enlarged plan view of the knife and slitters and the reciprocal mounting means therefor.

Fig. 4 is an enlarged section taken on line 4-4 of Fig. 2.

Fig. 5 is an enlarged sectional view similar to that shown in Fig. 4, except indicating the slitting and shearing knife in operation, slitting the undersurface of a block of wood and shearing the slit surface off.

Fig. 6 is a sectional view through one of the slitters.

Fig. 7 is a sectional view through the slitter taken at right angles to that shown in Fig. 6.

The invention consists of a frame 10 formed of any suitable material, that shown in the drawings being formed of structural shapes and bars, and being suitably braced as indicated at 11.

A guideway 12 is formed interiorly of one end adjacent the top of the frame 10, in which is slidably mounted a pair of guides 13 to which the knife carrying element 14 and slitter carrying element 15 are secured, these members being secured by means of bolts or screws 16 to permit convenient replacement.

The head, consisting of the slides 13 and cross members or knife slitter supports 14 and 15, is provided with a cross head 17 which is provided with a bearing 18, this cross head being fixedly secured to, and spanning the members 12, the bearing 18 rotatably receiving a connecting rod pin 19, which connecting rod pin is fixedly secured in one end of the connecting rod 20, the other end 21 of the connecting rod 20 being rotatably mounted on a crank pin, the opposite ends of which are secured respectively in the gears 22 and 23, these gears being fixedly secured on shafts 24, which shafts are rotatably mounted in bearings 25. Pinions 26 and 27 cooperate with the gears 23 and 22, and are fixedly secured on the shaft 28, which shaft is rotatably mounted in the bearings 29. Suitable driving means such as a pulley 30 is mounted on the end of shaft 28 for driving the machine.

The slitting or scoring devices for scoring the block 40 in parallel lines across the grain consists of a plurality of flat blades 31 set and firmly secured in radial slots 44 in cylindrical bases 32. Said slot extends inwardly from one side of the base leaving an intact bearing wall 45 at the rear of the slot. Similarly the slot does not extend through the bottom of the base but a supporting wall 46 is there provided for the blade while the marginal edge 47 between the walls 45 and 46 is curved, as shown in Fig. 6. The blades 31 are each formed on their rear edges to conform snugly to the described configuration of the respective slot and at their advance edges 49 are flush therewith. The blades project upwardly above the bases and support 15 in a knife-edge 50 about its upper perimeter and along its advance edge 51. A transverse key 35 extends through registering holes in the blade and base with its ends wholly retained within the base. On its circumference

diametrically opposite to the slot 44 each base is formed with a vertical groove 52.

The support 15 is formed with a plurality of vertically disposed cylindrical holes 53 arranged in an evenly spaced transverse line adjacent the rear edge of the support and which are adapted to receive in close fits the respective bases 32. Adjustment and securing screws 34 are threaded through the rear edge of the support 15 and engage within the grooves 33 to secure the bases against turning and to secure the blades at adjusted elevations. When set within the support 15 in the manner described the blades may be readily raised or lowered as required by the character of the work by loosening the screws 34 and after elevating or lowering the bases the proper distance again tightening the screws.

The shear blade 36 is fixedly mounted on the support 14 and has the cutting edge advanced in the same direction as the cutting edge on the slitters, but at right angles thereto, and is continuous throughout the width of the operative portion of the machine or the wood block receiving hopper, the slitters also extending throughout the width of the wood block receiving hopper. A support 37 of any suitable form, and shown as consisting of bars, has the upper surface in the same plane as the top of the blade 36 so as to provide a rest for the wood block as the knife 36 passes from under the block in a forward movement.

The wood block hopper consists of suitable guides 38 which may be formed of angles, is mounted on the frame 10 in fixed position by means of the cross members 39, this hopper being adapted to receive wood blocks of standard size therein, the hopper being of such size as to slidably receive the block and permit the block to feed by gravity to the cutters or knives.

In operation, the pulley 30 is driven by suitable power means which rotates the gears 22 and 23 by cooperation with the pinions 27—26, reciprocating the head while the hopper 38 remains stationary. A block of wood 40 is placed in the hopper in such manner as to dispose the grain of the wood transversely to the slitters 31, or with the grain of the wood running crosswise of the machine.

As the head moves to the right as viewed in the figures, the block drops down onto the sur-

face 41 of the member 15, and as the direction of movement of the head is reversed, the head moving to the left, the slitters 31 cut a plurality of slits transversely through the block of wood as shown at 42 in Fig. 5, these slitters being followed by the shear blade or knife 36 which slices off the slitted portion of the block as indicated at 43, this operation producing a plurality of chips equal in length to the distance between the slitters 31, equal in thickness to the parallel separation between the top of the blade 36 and the top surface 41 of the slitter carrying element.

As the shearing knife passes through under the block, the block is carried by the supports 37, the head reversing its motion, and the block again dropping down to the left of the slitters 31 for a succeeding operation.

From this it will be noted that a block of wood will be cut into a multiplicity of equi-dimensional sections or chips, that the chips may be of any desired size within limits, and that the entire block of wood can be uniformly cut to the desired size sections.

The slitting blades 31 are conceived and arranged in an ingenious and practical manner to accomplish the work intended. The blades are fully protected and supported in the bases 32 and can therefore be formed of relatively thin sheet steel which may be readily sharpened, kept in order, and renewed. The blade is pressed against the forward wall of the bore 53 and firmly held against the bearing wall 45 so that a convenient, strong and practicable mounting for the bases is provided.

I claim:

A slitting tool for pulp chippers, consisting of a support, having a plurality of bores formed therein, a base adjustably secured in each said bore formed with a vertical slot entering from one side of the base, said slot opening through the upper end of the base and terminating short of the lower end of the base and being provided with an intact bearing wall at its rear side, a flat blade mounted in each slot and having a portion projecting upwardly from the base and provided with sharpened top and front edges, and a pin extending through each base and blade to secure the blade in the slot, the pin being in turn secured against displacement by the walls of said bore.

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