Nov. 15, 1966 T. W. NICHOLSON 3,285,305

MOBILE LOG-PROCESSING APPARATUS

Original Filed Oct. 8, 1962 3 Sheets-Sheet 1

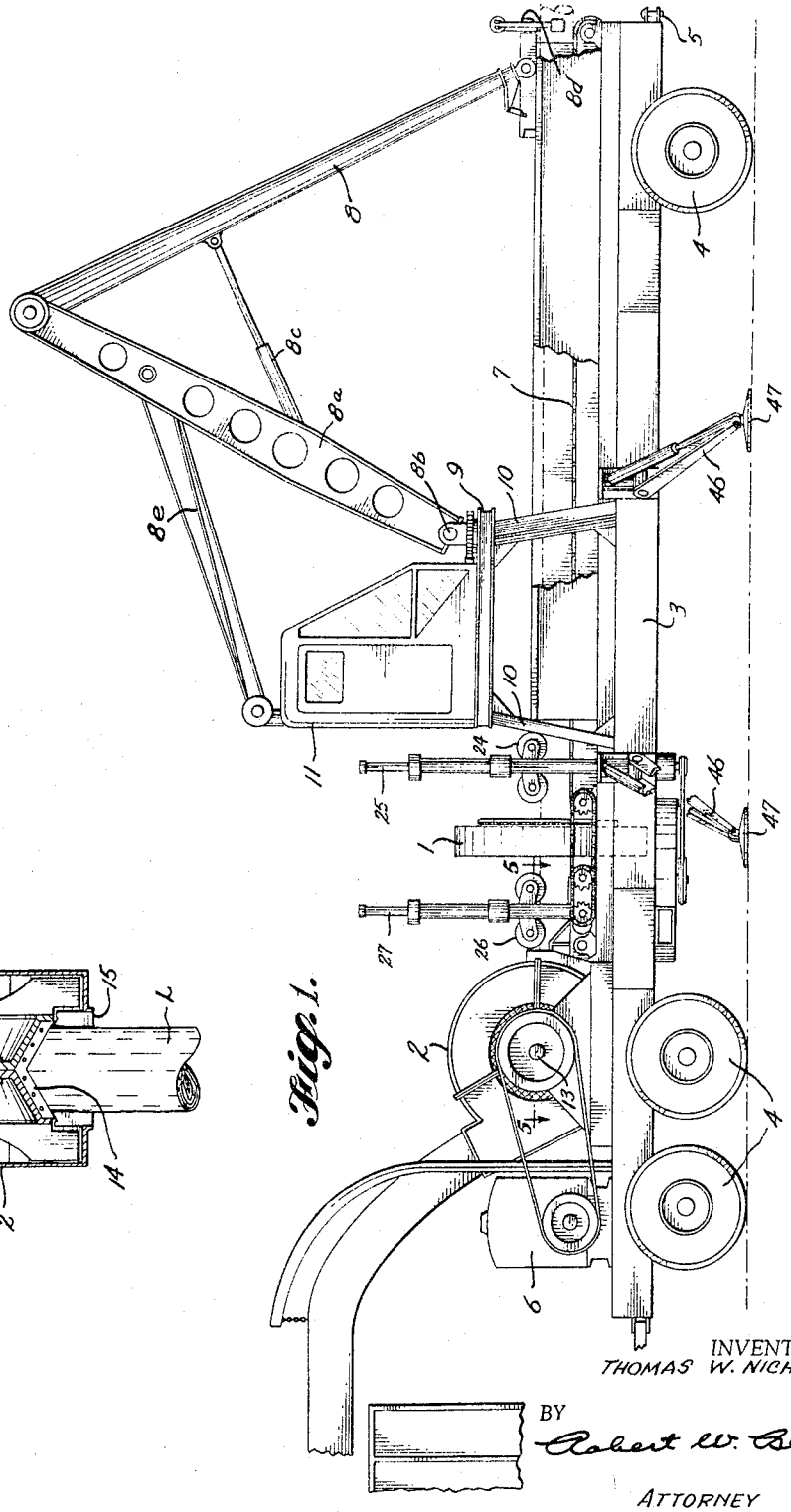


Fig. 1.

Fig. 5.

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MOBILE LOG-PROCESSING APPARATUS

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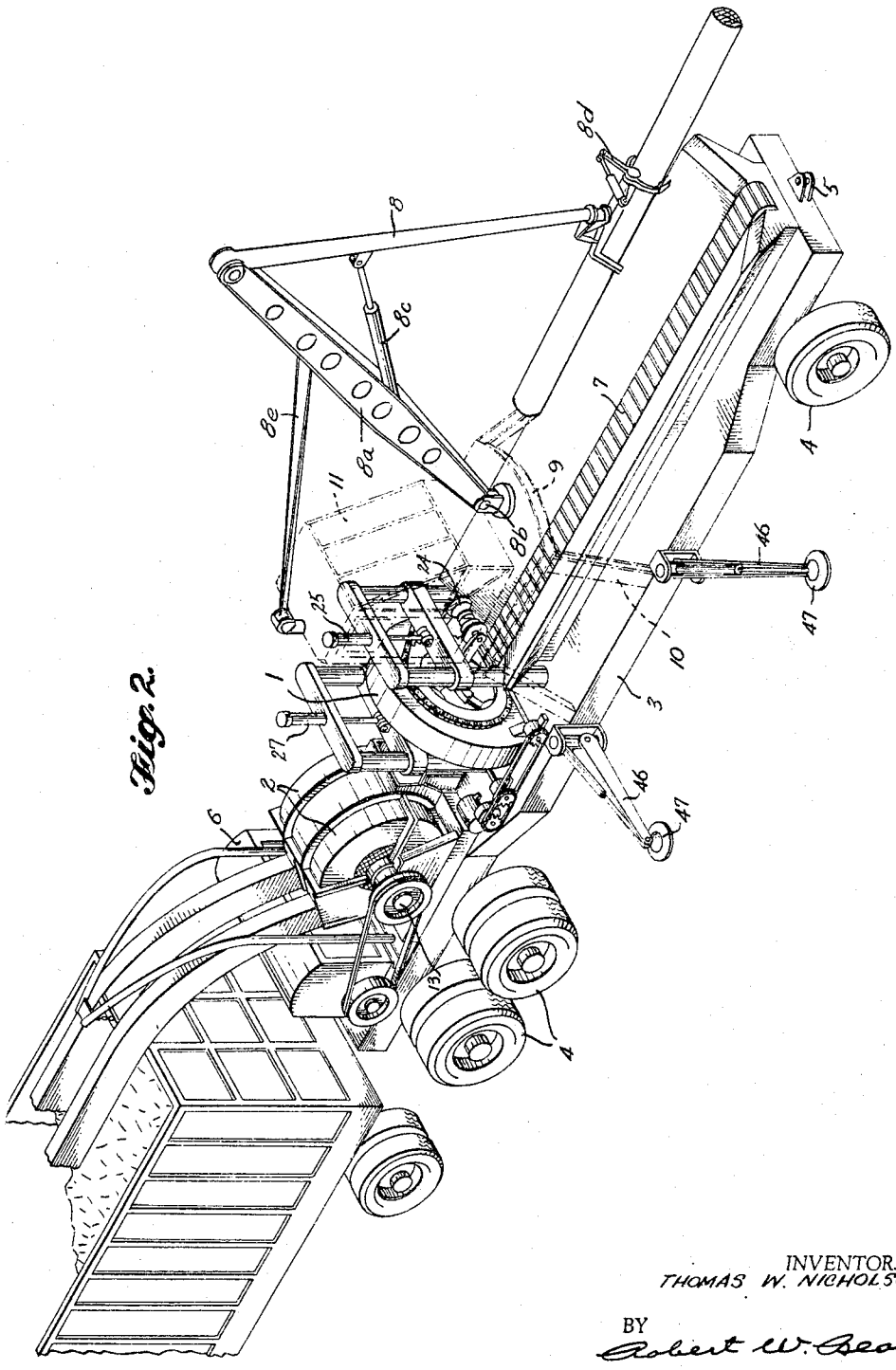


Fig. 2.

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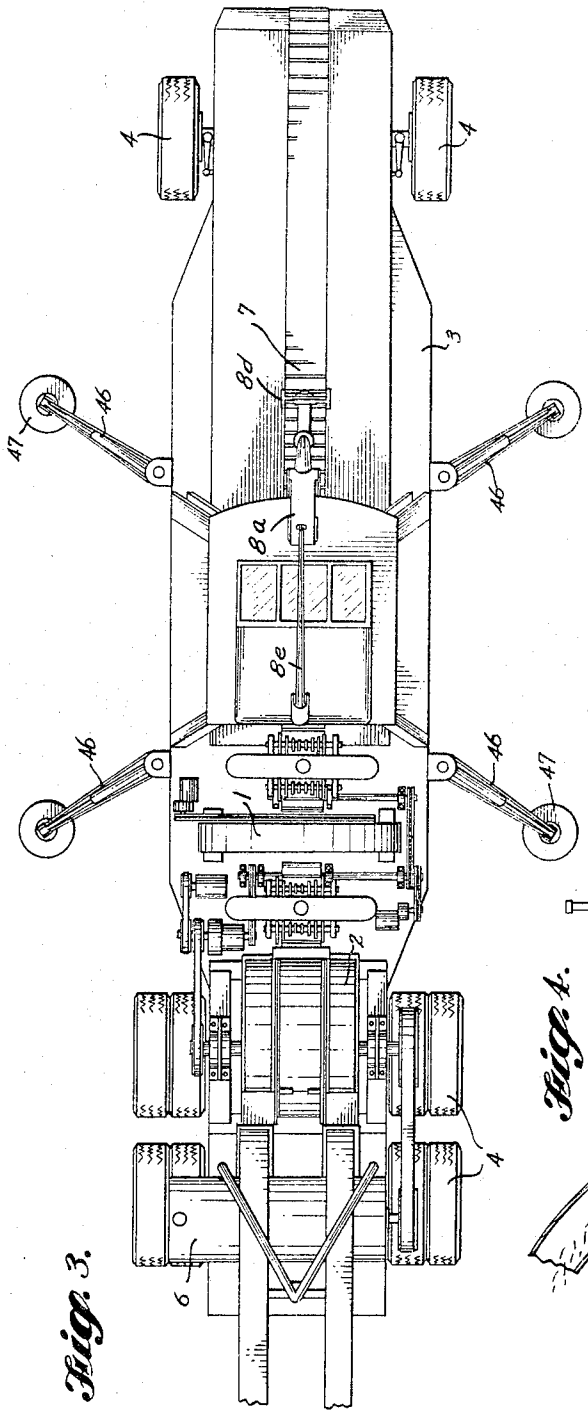


Fig. 3.

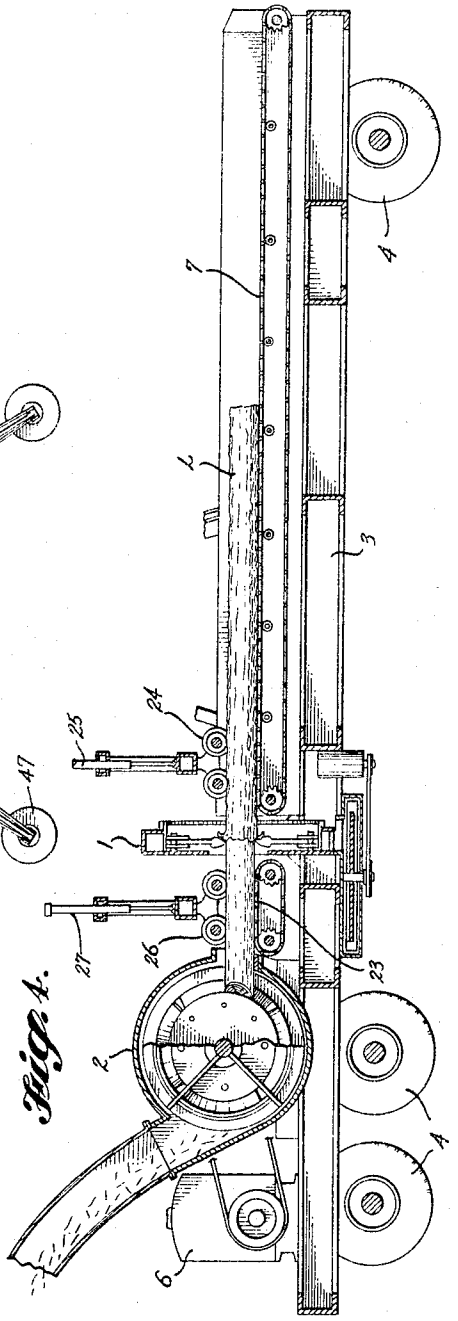


Fig. 4.

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MOBILE LOG-PROCESSING APPARATUS

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Original application Oct. 8, 1962, Ser. No. 229,064, now Patent No. 3,223,129, dated Dec. 14, 1965. Divided and this application Mar. 24, 1965, Ser. No. 442,452
1 Claim. (Cl. 144—208)

This application is a division of application Serial No. 229,064, filed October 8, 1962, for a Mobile Log Barker-Chipper, issued as Patent No. 3,223,129. This invention relates to an apparatus for processing logs such as a barker-chipper for reducing whole logs to chips which are free of bark and suitable for use in the manufacture of pulp.

A principal object of the invention is to provide a log-processing apparatus such as one which is capable of cutting whole logs into chips of consistently uniform length, and free from bark, which apparatus, is compact and mobile so that it can be moved readily from one location to another in the woods and along roads, and which is adaptable to be handled as a trailer or to be self-propelled.

An additional object is to provide a log-processing apparatus, such as a barker-chipper, which will include convenient and compact log handling equipment and specifically, a crane for placing logs on the log-processing apparatus.

Log-processing apparatus capable of accomplishing the foregoing objects may include a barker component of the rotary ring type and a chipper component of the rotary drum type mounted on a chassis in adjacent relationship and arranged with the rotative axis of the barker's rotor extending lengthwise of the chassis, and the rotative axis of the chipper's rotor extending transversely of the chassis and substantially perpendicular to the rotative axis of the barker's rotor. Common feed mechanism is provided for feeding logs to and through the rotary ring of the barker and into the chipper. The barker-chipper chassis is mounted on wheels to provide mobility and log hoist means also mounted on the chassis can be used to hoist logs onto the barker feed mechanism. Such log hoist means is a crane mounted on a crane-supporting platform in a position on the chassis straddling a conveyor by which logs are fed to the barker and chipper. Stabilizing legs can be provided to assist the wheels in supporting the chassis during operation of the barker-chipper.

FIGURE 1 is a side elevation of the mobile log barker-chipper, with parts broken away.

FIGURE 2 is a top perspective of the barker-chipper, parts being shown in phantom.

FIGURE 3 is a plan of the barker-chipper.

FIGURE 4 is a longitudinal section through the barker-chipper, with parts omitted.

FIGURE 5 (Sheet 1) is a detail horizontal section through a portion of the chipper component on line 5—5 of FIGURE 1.

Barkers of the rotary ring type have been used heretofore for removing bark from logs prior to being sawn into lumber, or peeled in the manufacture of veneer, for use in making plywood. Also, chippers of the drum type have been used heretofore usually for chipping log trimmings. Such barkers and chippers have been used at mills and there has not been mechanism available for reducing logs to chips in the woods. The apparatus of the present invention is intended primarily for use in the woods so that it is not necessary to haul logs out of the woods and then process them, but the logs can be reduced efficiently to the form of chips in the woods

and the chips can be hauled to a pulp mill. Such operation eliminates the necessity of using log transporting vehicles for removing the logs from the woods and makes the provision of log handling equipment at the mill, or at some intermediate location, unnecessary. Being mobile the barker-chipper can be operated for a period of time at one log collection location and then can be moved to another log collection location quickly and easily because it is self-contained and may be self-propelled or capable of being hauled.

The barker-chipper includes a barker component **1** of the rotary ring type so that it can remove the bark from logs of indeterminate length fed nonrotatively through its rotating ring, and a chipper component **2**. Such barker and chipper components are mounted on a chassis **3** which preferably is mounted on wheels **4** to make it readily mobile, although the chassis could be mounted on skids if it were simply to be hauled through the woods. A coupling **5** can be provided on one end of the chassis to which a tractor vehicle can be connected to haul the barker-chipper as a trailer, or an engine **6** mounted on the chassis can be connected by suitable transmission mechanism to drive adjacent wheels so that the chassis will be self-propelled.

The barker component **1** and the chipper component **2** are mounted on the chassis **3** in adjacent relationship so that a long log, such as one sixty or seventy feet in length, can be processed and different parts of such log will be operated on simultaneously by the barker and the chipper. Such a log L (FIGURES 4 and 5) is fed nonrotatively lengthwise to the barker and chipper by a feed conveyor **7** located attheside of the marker opposite the chipper. A log can be hoisted onto the feed conveyor by a log crane mounted on a platform **9**, which is supported above and straddling the feed conveyor **7**, by legs **10** extending alongside opposite sides of the conveyor and anchored on the chassis **3**. The platform **9** may, or may not, be rotatable as desired and carries a cab **11** for the operator, which houses the controls for the crane and, if desired, the controls for the barker and chipper components.

The log crane includes an upright arm **8**, the upper end of which is pivotally supported by the upper end of a crane boom **8***a*. The lower end of such crane boom is mounted by a pivot **8***b* on the platform **9**. The pivot **8***b* guides the boom **8***a* to swing about the axis of pivot **8***b* for displacing the arm **8** farther from or closer to the platform **9**. The arm **8** and boom **8***a* are connected by a fluid-pressure jack **8***c* which can be extended to swing the lower end of the arm **8** away from the platform **9** or contracted to swing the lower end of such arm toward the platform. A log to be loaded onto the conveyor **7** is gripped by a grapple **8***d* mounted on the lower end of arm **8**.

When a log is to be loaded onto the conveyor **7**, therefore, the jack **8***c* normally will be extended to move the lower end of arm **8** away from the platform **9** and the boom **8***a* will be swung downward about pivot **8***b* by lengthening the cable rigging **8***e* until the grapple **8***d* is in a position to grasp the log. The rigging **8***e* can then be shortened to swing boom **8***a* upward for lifting the log until it is elevated above the conveyor **7**. By contracting the jack **8***c*, the lower end of arm **8** will then be swung toward the platform **9** as indicated in FIGURE 2 so as to move the log into position over the conveyor **7**. By further contracting the jack **8***c* if necessary and again lengthening the rigging **8***e*, the boom **8***a* can be swung downward enough to deposit the log on the feed conveyor **7**. The log can then be moved lengthwise by the conveyor toward the barker **1** and chipper **2**.

In order to provide a practical mobile barker-chipper

which can be moved along highways it is necessary for such mechanism to be compact. Also, it is desirable for the barker and chipper components to be mounted on the chassis in such relationship that the operation of each component will aid the operation of the other component. It is also necessary for the barker and chipper components to be of a type which can process logs of considerably different diameters and will be arranged so that the operation of the two components will be compatible when logs of different diameters are being processed. It is necessary that the rotative axis of the rotary ring of barker component **1** coincide with the longitudinal axis of the log and consequently, the barker component must be supported by conventional mechanism (not shown) so as to enable its rotary ring to be shifted vertically without interfering with the operation of the chipper component.

A drum type chipper **2** includes a rotor **12** (FIGURE 5) rotatively supported by an axle **13** and having a circumferential V-groove. At locations spaced circumferentially of this groove V-shaped blades **14** are mounted on the drum. A log L can be fed lengthwise to such chipper in a direction perpendicular to the axis of rotation of the drum defined by axle **13** through a feed opening **15**, as shown in FIGURE 5. The axis of such log should lie in the central plane of the drum **12**, whatever the size of the log may be, and the bottom of the log may always be at the same elevation.

Different portions of a single log can be processed simultaneously by the barker component **1** and the chipper component **2** of the present combination by mounting the barker and chipper components in adjacent positions on the chassis **3** with the axis of rotation of the barker's rotary ring disposed substantially perpendicular to the rotative axis of the chipper component's drum. As shown best in FIGURE 3, the rotative axis of the barking ring extends lengthwise of the chassis **3** in its vertical central longitudinal plane and the rotative axis of the chipper component **2** extends transversely of the chassis in a vertical plane perpendicular to the rotative axis of the barking ring. The feed conveyor **7** establishes the position of the bottom of the log fed to the barker component and to the chipper component, except for the small variation of the thickness of the bark removed by the barker component. The feed mechanism including the conveyor **7** will thus feed the log both to the barker component and to the chipper component.

The log feed mechanism includes the main log conveyor **7** by which a log is moved to the barker **1**, and an intermediate conveyor **23** (FIGURE 4) between the barker and the chipper **2**. Adjacent to the infeed side of the barker is a hold-down **24** vertically movable to engage the upper side of logs of different size. Such hold-down can be urged downwardly by a fluid jack **25** containing oil under pressure. Hold-down means are also provided between the barker and chipper, including the hold-down rolls **26** mounted for vertical movement and pressed downward by a fluid pressure jack **27**, also of the hydraulic type. The hold-downs **24** and **25** are shown in FIGURE 2 as including rolls having concave peripheries journaled in slides which are guided for vertical movement by guideposts supported at opposite sides of the conveyors. Various types of hold-downs may be provided for this purpose.

A log to be reduced to chips will be picked up by the grapple **8***d* on the crane arm **8** and placed on the feed conveyor **7**. It may be necessary for the crane to retain its grip on the log until its leading end has passed under the hold-down **24** if the log is quite long so that its center of gravity would be behind the conveyor **7**. The hold-down **24** will hold the leading end of the log in position to enter the barker ring. As the log passes through the barker ring the upper side of the log at the discharge side of such ring will be engaged by the hold-down **26**. The leading end of the log will then enter the feed opening **15** (FIGURE 5) of the chipper and be engaged by the cutting blades **14** of the chipper rotor.

Because logs are heavy, rotation of the ring or barker **1** may produce considerable centrifugal force about one axis, rotation of the chipper drum may cause considerable centrifugal force about a transverse axis and the impact of the chipper knives against the log tends to produce vibration, it is desirable to provide stabilizing legs **46**. The upper ends of such legs are pivotally mounted on the chassis **3** and the lower ends of the legs carry pads **47** which can be swung downward and pressed against the ground to assist the wheels **4** in stabilizing the chassis and supporting the load on it during operation of the barker-chipper. Also, such legs will deter tilting of the chassis by the weight of a log picked up by the crane arm **8** from a location spaced a considerable distance to the side of the chassis.

I claim:

Mobile log-barking apparatus comprising an elongated chassis, a log-feed conveyor extending longitudinally of said chassis and having a feed end, a ring-type log-barking device mounted on said chassis at a location spaced from the feed end of said conveyor for receiving through the barking ring thereof a log fed endwise thereto by said conveyor, a crane-supporting platform having spaced legs mounted on opposite sides of said chassis, respectively, to dispose said platform in a position straddling said conveyor at a location spaced from the feed end of said conveyor toward said log-barking device and located between such conveyor feed end and said log-barking device, and a log-hoisting crane supported by said platform and including an upright crane arm, an upright boom having its lower end mounted pivotally on said platform and guiding said boom for swinging and the upper end of said boom pivotally supporting the upper end of said crane arm, a log-engaging grapple mounted on the lower end of said crane arm and means for swinging said crane arm relative to said boom to move lengthwise a log grasped by said grapple for placing the log on said conveyor.

References Cited by the Examiner

UNITED STATES PATENTS

653,618	7/1900	Cody	212—5
2,843,165	7/1958	Sherron	144—34 X
2,936,008	5/1960	Brown	144—208 X
2,983,291	5/1961	Dick	144—208 X

FOREIGN PATENTS

621,584	6/1961	Canada.

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