United States Patent [19]

Sato

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[54] **WOOD FEEDING DEVICE FOR BARK STRIPPING MACHINE**

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[52] **U.S. Cl.** ..... **226/184,** 144/242 C, 144/246 F, 144/247, 226/187, 226/188, 226/193

[51] **Int. Cl.** **G03b 1/46**

[58] **Field of Search** ..... 144/208 R, 208 E, 242 R, 144/242 C, 246 R, 246 C, 246 E, 246 F, 247, 2 Z; 226/181, 184, 187, 188, 193

[56] **References Cited**

UNITED STATES PATENTS

2,564,904	8/1951	Jacobson	144/246 R
2,983,291	5/1961	Dick	144/242 R
2,994,352	8/1961	Johnson	144/146 C X
3,045,728	7/1962	Hutchinson et al.	144/246 R X
3,501,077	3/1970	Wigner et al.	144/247 X
3,724,518	4/1973	Zehavi et al.	144/208 E X

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Attorney, Agent, or Firm—Wenderoth, Lind & Ponack

[57] **ABSTRACT**

A device for feeding wood to a bark stripping machine while centering the wood longitudinally with respect to the bark stripping machine, in which a pair of roller assembly units each comprising a pair of parallel arms rotatably supporting a feed roller between one ends and respectively having gears fixed to the other ends thereof are put together on one side of fixed shafts, with said feed rollers and gears of the respective units in engagement with each other, and pivotably mounted on said fixed shafts respectively with said fixed shaft extending through the centers of said gears, and another pair of similar roller assembly units are similarly put together on the other side of said fixed shafts and pivotably mounted on said fixed shaft, and further plate springs are provided to urge said engaging feed rollers each toward the center of the other one, said feed rollers being driven to cooperatively transfer the wood from one to the other side of the device to be fed to the bark stripping machine.

3 Claims, 5 Drawing Figures

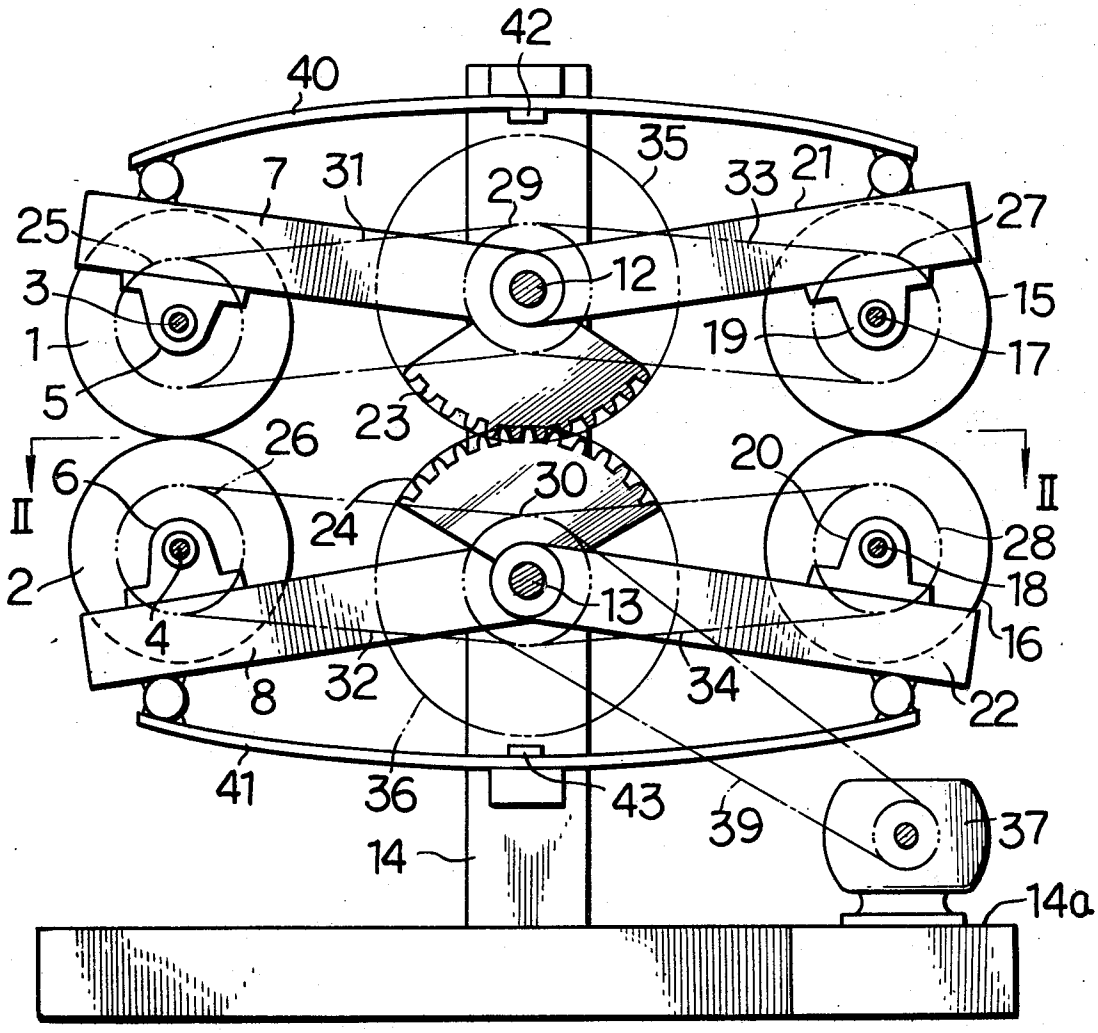

Fig - 1

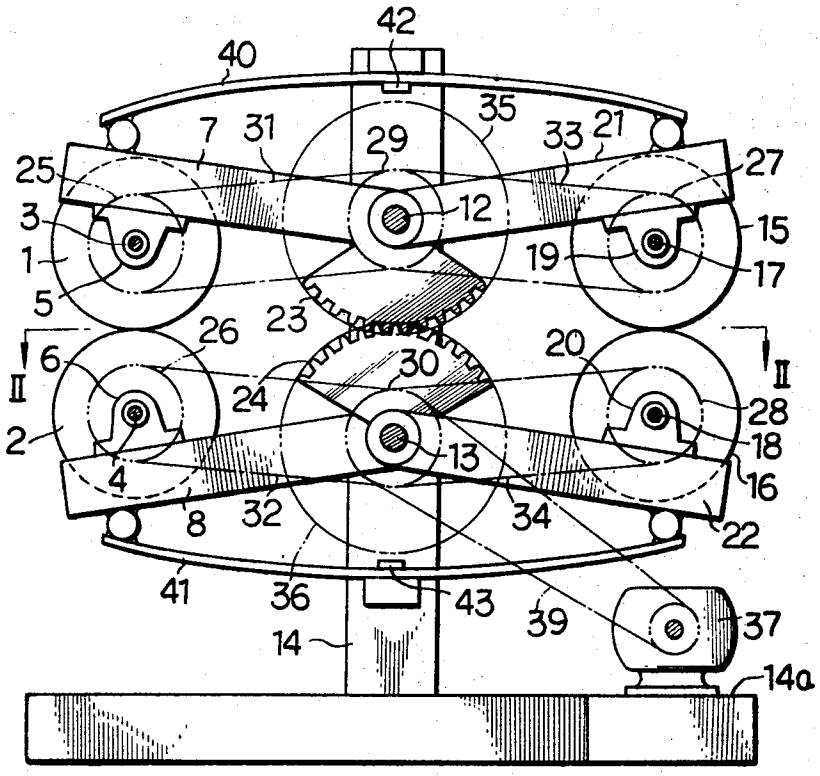
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Fig - 2

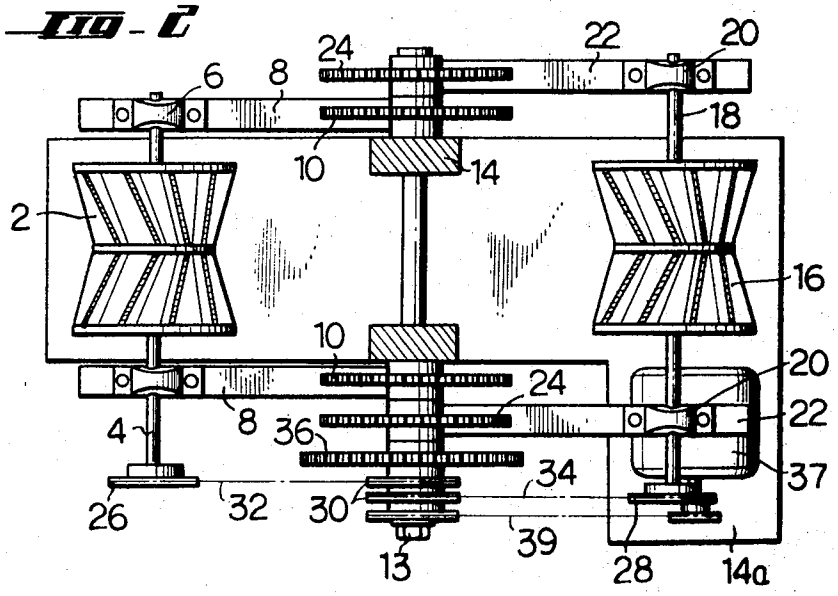
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Fig. 3

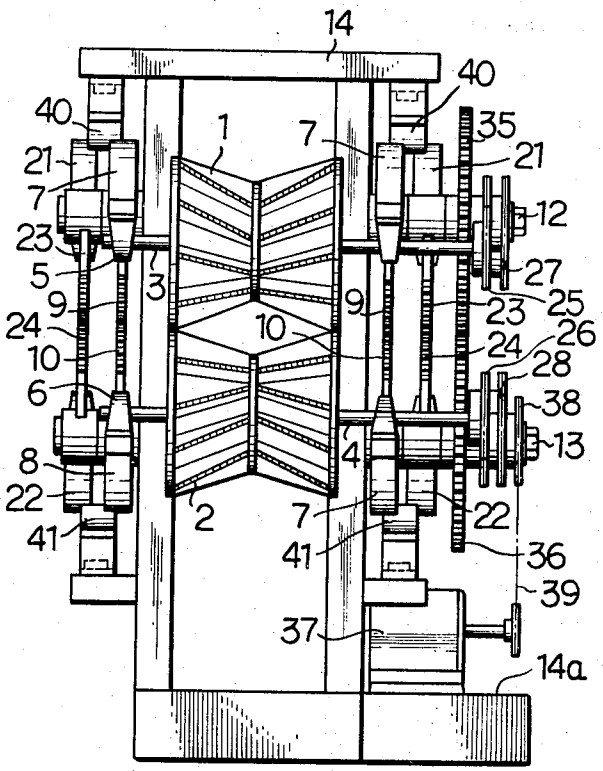
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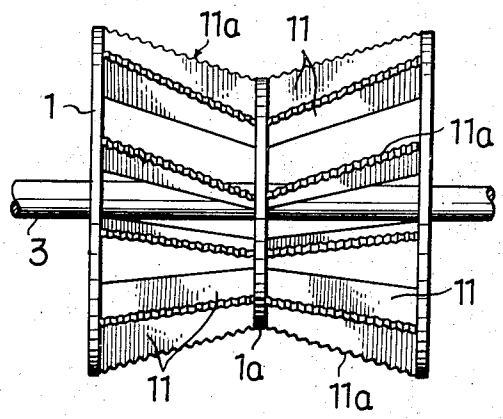
Fig. 4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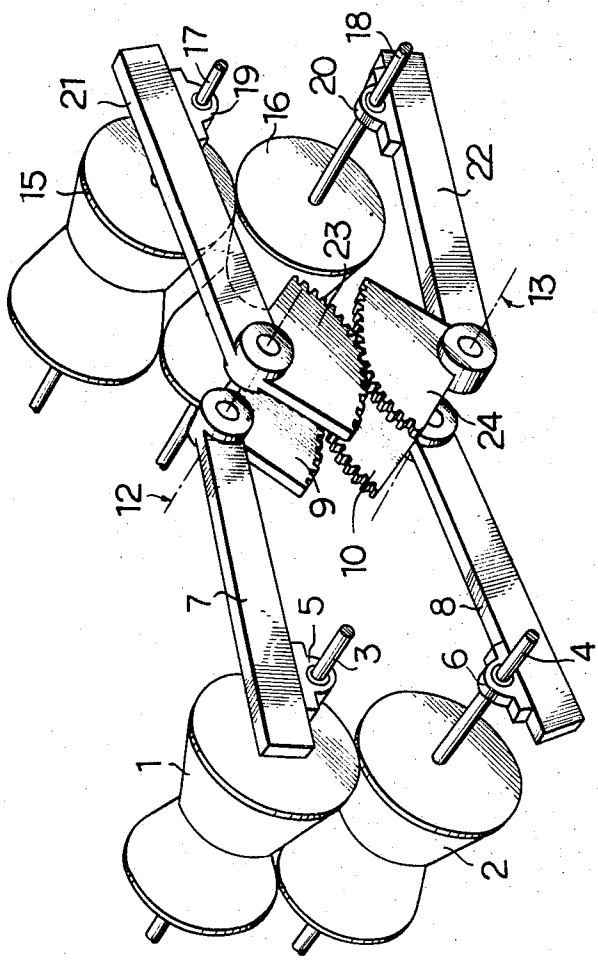

Fig. 3

WOOD FEEDING DEVICE FOR BARK STRIPPING MACHINE

This invention relates to a device for feeding wood to a bark stripping machine of the type in which the bark of a wood is stripped by stripping knives provided on the inner peripheral wall of a rotating rotary drum during passage of the wood through said rotary drum.

Various types of bark stripping machines are known but a bark stripping machine of the type having knives provided on the inner wall of a rotary drum is so constructed that the cutting portions of the knives are urged toward the center of the rotary drum during rotation of said rotary drum and a wood fed toward the center of the rotary drum is stripped by the knives during passage through said rotary drum. This type of machine requires the wood to be fed always toward the center of the rotary drum during operation and therefore, calls for a wood feeding device specialized for use with said particular machine.

The present invention consists in a device for feeding wood toward the center of such type of bark stripping machine having knives on the inner wall of a rotary drum, and an object thereof is to provide a device which is capable of feeding a wood while centering the wood longitudinally with respect to the bark stripping machine even when the diameter of the wood varies.

Another object of the invention is to provide a device which is capable of feeding a wood while centering the wood longitudinally with respect to the bark stripping machine even when the wood is crooked in shape.

Still another object of the invention is to provide a device which serves as a feeding device when provided on the front side of the bark stripping machine and as a drawing device when provided on the back side of the machine, and enables the bark stripping efficiency of the machine to be enhanced when provided on each side of the machine.

FIG. 1 is a front elevational view of the entire wood feeding device according to the present invention;

FIG. 2 is a sectional view taken along the line II—II of FIG. 1;

FIG. 3 is a side elevational view of the entire device;

FIG. 4 is a side elevational view of the feed roller; and

FIG. 5 is a perspective view illustrating the engagement of the interlocking gears.

As stated, the wood feeding device of the invention can be used as a feeding device when provided on the front side of the bark stripping machine and as a stripped wood drawing device when provided on the back side of the machine. However, the device will be described herein with reference to the drawings as being provided on the feeding side of the machine for the sake of description.

In the drawings, reference numerals **1, 2** designate feed rollers having their shafts **3, 4** respectively journaled in bearings **5, 6** fixed at one ends of arms **7, 8.** The arms **7, 8** respectively have interlocking gears **9, 10** fixed to the other ends thereof. Such arms are provided on both sides of each feed roller to rotatably support said feed roller. Since the range of angular displacement of the interlocking gears is small, gears of a type having gear teeth only at a limited portion of the peripheral edge thereof, as shown, may be used for these interlocking gears. Each of the feed rollers **1, 2,** as seen in FIG. **4,** is reduced in diameter at the central portion **1a** as viewed in a direction perpendicular to the axis of the roller. Further, in order to facilitate the feeding of wood, each roller is made up of plate members **11, 11** arranged obliquely and each having a knurled outer edge **11***a*.

The two arms, the feed rollers rotatably supported between one ends of said arms and the fixed gears provided at the other ends of said arms, constitute a roller assembly unit. A pair of the roller assembly units are put together vertically symmetrically in such a manner that the feed rollers **1, 2** of the respective units are in contact with each other and the interlocking gears **9, 10** thereof are in meshing engagement with each other, as best shown in FIG. **5,** and are pivotably mounted on shafts **12, 13,** fixed to a machine frame **14,** respectively with said shafts extending through the centers of said gears **9, 10.** Thus, it will be seen that the feed rollers **1, 2** can make a pivotal movement about the shafts **12, 13** respectively. Since the interlocking gears **9, 10** are not fixed to the shafts **12, 13,** they are freely rotatable about said shafts.

The state of the roller assembly units pivotably mounted on the machine frame **14** in the manner described is shown at the left half portions of FIGS. **1** and **5.** Another pair of similar roller assembly units are similarly put together and pivotably mounted on the machine frame on the other side of the shafts **12, 13.** Namely, roller assembly units respectively comprising feed rollers **15, 16** of the same construction as the aforesaid rollers **1, 2,** two parallel arms **21, 22** rotatably supporting shafts **17, 18** of said rollers **15, 16** through bearings **19, 20** fixed at one ends of said arms and gears **23, 24** fixed to the other ends of said arms, are put together with said rollers **15, 16** in contact with each other and said gears **23, 24** in meshing engagement with each other, and pivotably mounted on the shafts **12, 13** respectively, in the same manner as described above. The gears **23, 24** are freely rotatable on the shafts **12, 13** respectively and the feed rollers **15, 16** are arranged in symmetrical relation with the feed rollers **1, 2** with respect to the shafts **12, 13.**

The gears **9, 10** of the arms **7, 8** and the gears **23, 24** of the arms **21, 22** are mounted on the shafts **12, 13** at different locations, and the gears **9, 23** are mounted on the shaft **12** and the gears **10, 24** on the shaft **13.** The relative position of these gears as mounted on the shafts will be understood from FIG. **5.**

The shafts **3, 4, 17, 18** of the feed rollers **1, 2, 15, 16** are extended at one ends outwardly through the respective bearings and have sprockets **25, 26, 27, 28** mounted on the outwardly projecting ends thereof respectively. On the other hand, the shafts **12, 13** respectively have sprockets **29, 30** rotatably mounted at one ends thereof, and intermeshing gears **35, 36** are fixedly mounted on a common boss of the sprockets **29, 30** respectively. Thus, it will be understood that, when either one of the sprockets **29, 30** is rotates, all of the four feed rollers are rotated concurrently.

A motor **37** for operating this device is mounted on a mounting block **14a** fixed to the machine frame **14.** The drive shaft of the motor **37** has a sprocket mounted thereon and a chain **39** is engaged around said sprocket and a sprocket **38** which is mounted on the common boss of the sprockets **30** and gear **36,** rotatably mounted on the shaft **13,** for rotation with said sprockets and gear.

In the invention, it is essential that the feed rollers **1, 2** and **5, 6** are respectively constantly held in contact with each other, and to this end, plate springs **40, 41** are provided, respectively urging the arms **7, 21** and **8, 22,** extending from the shafts **12, 13** in opposite directions to each other, toward each other. These plate springs **40, 41** are connected at their centers to the machine frame **14** by means of fittings **42, 43** respectively.

When the feed roller **1** is rotating in a counterclockwise direction as viewed in FIG. **1,** upon energization of the motor **37,** a wood is supplied from the left side of the device also as viewed in FIG. **1.** Therefore, the bark stripping machine is provided successive to the right hand feed rollers **15, 16,** and the device of the invention is further provided on the back side of said bark stripping machine adjacent thereto.

The feeding device of the invention operates in the following manner: Namely, when the motor **37** is set in motion, the drive of the motor is transmitted through the chain **39,** the sprocket **38,** the sprockets **30,** chains **32, 34** to the feed rollers **2, 16** to drive the same, and through the chain **39,** the sprocket **38,** the gears **36, 35,** the sprockets **29,** chains **31, 33** to the feed rollers **1, 15** to drive the same. A wood supplied to the junction of the engaging feed rollers **1, 2,** therefore, is carried forward by said feed rollers while forcing the feed rollers outwardly against the biasing forces of the springs **40, 41.**

The two upper and lower feed rollers **1, 2** are interconnected through the intermeshing interlocking gears **9, 10** fixed to the arms **7, 8,** so that when the feed roller **1** is displaced upwardly, the feed roller **2** is also displaced downwardly by the same amount. Thus, it becomes possible to transfer the wood while maintaining the center of the wood at a fixed position, even when the diameter of the wood varies continuously over the length of said wood.

The wood having once been clamped between the feed rollers **1, 2** is forced toward the right side as viewed in FIG. **1,** as said feed rollers are rotating. When the wood reaches the positions of the feed rollers **15, 16,** it is moved forward by said feed rollers while expanding the rollers, and fed to the bark stripping machine. The plate springs **40, 41** prevent the lower feed rollers **2, 16** from sagging under the weight of the wood, during passage of the wood through the subject feeding device. Namely, the plate springs **40, 41** are arranged respectively to act on those portions of the arms **7, 21** and **8, 22** where the feed rollers are supported, so as to hold the lower arms **8, 22** against pivotal movement about the shaft **13.**

As described hereinbefore, the feeding device of the invention is capable of transferring a wood in the longitudinal direction while maintaining the center of the wood at a fixed position even when the diameter of the wood varies, and therefore, is highly adapted for use with a bark stripping machine of the type having knives along the inner wall of a rotary drum, for feeding wood toward the center of said rotary drum.

I claim:

1. A device for feeding wood to a bark stripping machine while maintaining the longitudinal center of the wood to be fed in a fixed position, comprising a pair of roller assembly units, each having a pair of parallel arms rotatably supporting a feed roller between one ends and respectively having gears fixed to the other ends thereof; said roller assembly units being put together on one side of fixed shafts with said feed rollers in contact with each other and said gears in meshing engagement with each other, and being pivotably mounted on said fixed shafts with the latter extending through the centers of said gears; another pair of similar roller assembly units similarly put together on the other side of said fixed shafts and pivotably mounted on said fixed shafts respectively; plate springs urging the cooperating ones of said feed rollers into engagement with each other; and means for driving said feed rollers to transfer the wood longitudinally from one to the other side of the device.

2. A feeding device according to claim **1,** wherein each of said feed rollers is reduced in diameter at the central portion thereof as viewed in a direction prependicular to the axis of said roller.

3. A feeding device according to claim **1,** wherein each of said feed rollers is reduced in diameter at the central portion thereof as viewed in a direction perpendicular to the axis of said roller and has a knurled surface.

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