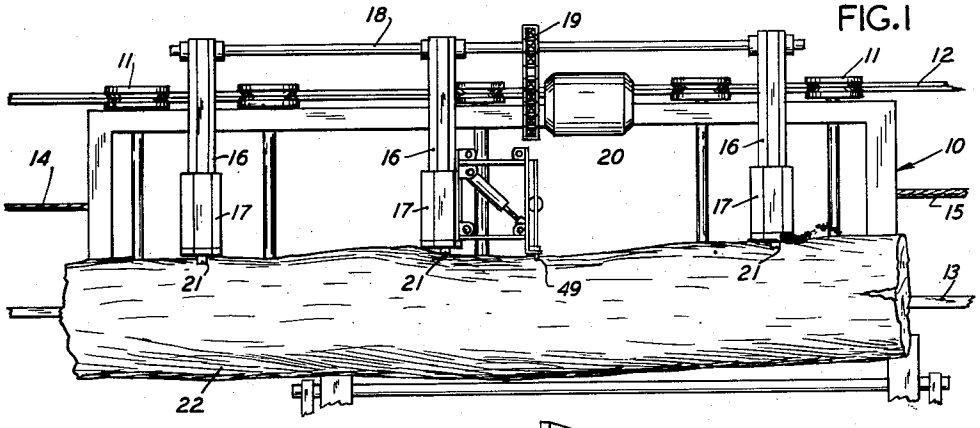
Sept. 15, 1959 M. H. MATER 2,904,083

RETRACTABLE WING KNEE

Filed Nov. 17, 1958

FIG. 1



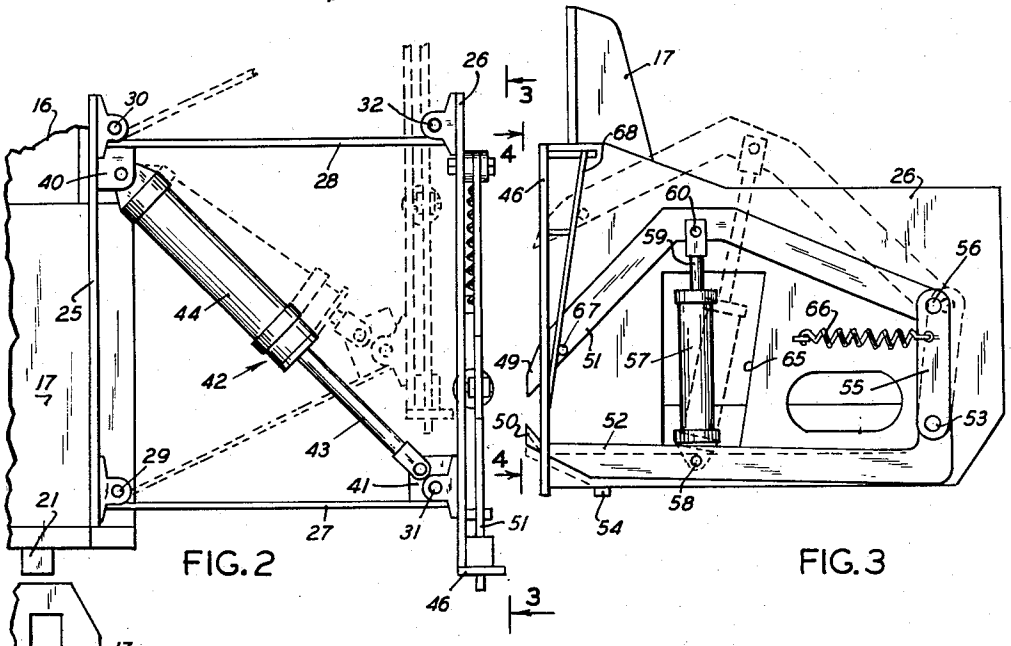


FIG. 2

FIG. 3

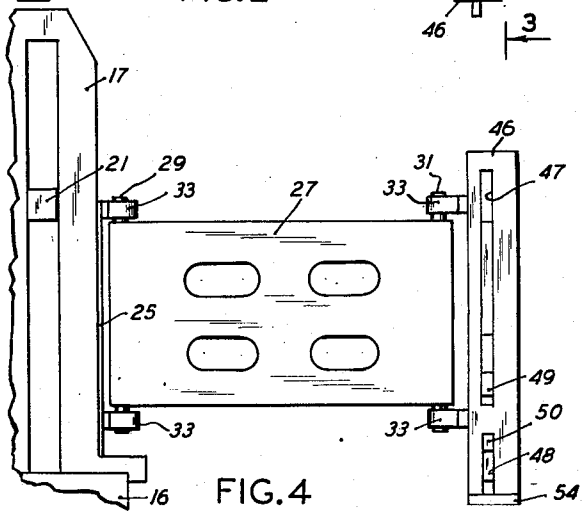


FIG. 4

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RETRACTABLE WING KNEE

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2 Claims. (Cl. 143—122)

My present invention comprises a retractable wing knee for sawmill carriages. The purpose of the present invention is to provide a supplementary knee which may be added to one of the usual knees of a sawmill carriage for the purpose of supporting crooked or springy logs, or cants.

A further object of the present invention is to provide such a device which may be actuated for utilization when necessary, or withdrawn to a retracted poistion when not needed, which device will not interfere with the action of the ordinary sawmill knee.

The objects and advantages of the present invention will be more readily understood by reference to the following specification taken in connection with the accompanying drawings wherein like numerals refer to like parts throughout and in which a preferred form of the present invention is described and illustrated.

In the drawings,

Fig. 1 is a plan view of a sawmill carriage having the present invention mounted thereon;

Fig. 2 is a plan view, on an enlarged scale, of the retractable wing knee mounted in position of use;

Fig. 3 is a side view looking from the plane of the line 3—3 of Fig. 2; and

Fig. 4 is an end view looking from the plane of the line 4—4 of Fig. 3.

A conventional sawmill carriage **10** is illustrated in Fig. 1, the same comprising a sturdy frame supported by wheels **11** engaging a track **12** and opposed wheels (not shown) engaging a track **13**. The carriage is reciprocated longitudinally of the rails by suitable means such as exemplified by the cables **14** and **15**. A plurality of head blocks **16** is mounted transversely on the carriage and a plurality of knees **17** is respectively mounted upon and guided by the head blocks for movement toward and away from the plane of the saw (not shown). The knees are controlled by means of a set shaft **18** suitably connected thereto in any of several well-known fashions, which shaft is rotated by means of a sprocket chain drive **19** and motor **20** mounted on the frame of the carriage. The forward face of each knee is vertical and knee dogs such as indicated at **21** project therethrough so as to be capable of engaging and holding a log **22** or other wooden member to be sawed into cants or planks. As indicated in Fig. 1 a log sometimes may be so shaped as to prevent the knee dogs **21** from engaging the log unless the sawyer releases and replaces the log, a time consuming operation. In such instances the retractable wing knee of the present invention may be brought into use. Also, in the event a small and springy log is being cut it may be desired to support portions of the log intermediate the usual knees, for which purpose the wing knee of the invention may be brought into use. One wing knee is herein illustrated but it is to be appreciated that others may be employed, for example, one in association with each carriage knee, or even two on the opposite sides of a single carriage knee.

The retractable wing knee of the present invention

comprises a parallelogram linkage frame having four linkage sides of substantial height pivotally connected by vertical pivots at the corners of the frame. As illustrated, the frame comprises a first side **25**, an opposite side **26** providing the retractable wing knee itself, and the connecting parallel sides **27** and **28**. Side **25** is pivotally connected to the sides **27** and **28** respectively by vertical pivots **29** and **30**, and the knee **26** is pivotally connected to the sides **27** and **28** respectively by vertical pivots **31** and **32**. The pivots are conveniently mounted in ears, such as indicated at **33**, welded to the respective plates **25** and **26**. Sides **27** and **28** are conveniently formed as rectangular plates having their ends shaped to embrace the pivots. It is to be appreciated that side **25** may be conveniently mounted in vertical position on a side of the knee **17** so as to support the side **26** laterally from the knee. It is also to be appreciated that the pivots **29** and **30** may be mounted directly upon the knee **17**, but that mounting them upon a plate such as illustrated eliminates the necessity of accurately locating the pivots **29** and **30** so as to space them the same distance apart as the pivots **31** and **32**.

A bracket **40** is conveniently mounted upon the plate **25** adjacent the pivot **30**, and a bracket **41** is conveniently mounted upon the plate **27** adjacent the pivot **31**. A piston and cylinder device **42** comprising a piston **43** and a cylinder **44** is pivotally connected between the brackets **40** and **41** so as to lie in a horizontal position extending diagonally across the parallelogram frame. The device is a conventional double acting piston and cylinder device which, when extended as illustrated in full line in Fig. 2, causes the parallelogram frame to assume a right angle relationship, in which position side **28** is limited by the bracket **40** and side **26** is limited by the bracket **41**. As illustrated in dash line in Fig. 2, the frame assumes a rhomboidal shape when the piston **43** is retracted.

The forward vertical edge of side **26** has affixed thereto a vertical plate **46** forming the face of the retractable wing knee. When the knee is projected this plate **46** is advanced to the region of the plane of the face of the knee **17**, and it may be retracted to various positions behind said plane. An elongated, upper slot **47** and a shorter, lower slot **48** are provided in the face plate **46**. An upper dog **49** extends through slot **47** and a lower dog **50** extends through slot **48**, the dogs forming the respective tips of upper and lower dog levers **51** and **52**. The lower dog lever **52** is pivotally connected to plate **26** by a pivot **53**, and is limited in its downward movement by an abutment **54**. A vertical link **55** extends upward from the pivot **53** and a pivot **56** thereon is pivotally connected to the inner end of the dog lever **51**. A cylinder **57** is pivotally mounted in upright position on a pivot **58** mounted on the lower dog lever **52**. A piston **59** extending from the cylinder is pivotally connected to an intermediate portion of the upper dog lever **51**. The cylinder **57** is positioned in an opening **65** in the plate **26** so that the dog levers **51** and **52** may be closely adjacent the plate. A spring **66** is tensioned between the upright link **55** and a forwardly spaced portion of the plate **26** whereby the upper dog lever **51** is urged forwardly. The forward movement of the upper dog lever is limited by a pin **67** which bears against a guide **68** mounted on the rear surface of the knee plate **46**. When the piston **59** is extended the dogs are separated, and when retracted the dogs are caused to bite into the surface of an adjacent log. The dog levers **51** and **52** and the associated link **55**, spring **66**, cylinder **57** and piston **59** constitute dogging means mounted upon the retractable wing knee. It is to be appreciated that such dogging means may be of any suitable type.

It will be appreciated that the construction of the retractable wing knee is relatively light, since it does

not have to carry the main load, but merely supplements the regular sawmill carriage knees. The light construction thereof does not add materially to the load on the knee setworks mechanism.

I have illustrated the device of the present invention as being capable of advancing beyond the plane of the knee so as to engage a crooked log as illustrated. I have found, however, that the greatest use of the present invention is in supporting the last section of a log being sawn, or a narrow can which, while normally straight may spring between the knees when subjected to the forces acting upon it in the sawmill. In such cases it is preferred to so mount the wing knee that the face of the wing knee lies in the plane of the regular knees when the parallelogram linkage is fully extended. Alternatively, stops may be so arranged as to limit the forward movement of the wing knee to this plane. Either alternative eliminates any necessity of accurately adjusting the position of the knee in order that it may properly engage springy but straight cants or logs.

Having illustrated and described the present invention, it will be apparent to those skilled in the art that the same permits of modifications in arrangement and detail. I claim as my invention all such modifications as come within the true spirit and scope of the following claims.

I claim:

1. A retractable wing knee for mounting on a sawmill carriage knee comprising a parallelogram linkage frame having four linkage sides of substantial height pivotally connected together by pivot means at the corners of the frame, one of said linkage sides being mountable vertically on a side surface of a sawmill carriage knee so that said pivots are maintained in vertical relation, a piston and cylinder device mounted horizontally within said frame, said device extending along a diagonal of said frame and being pivotally connected at its ends to said frame, and dogging means mounted on the side of said frame opposite said one side.

2. A retractable wing knee comprising a pair of rectangular plates, a first pair of pivot means adapted to be mounted vertically in spaced apart relation on a side of a sawmill carriage knee, said first pair of pivot means respectively mounting said plates so as to extend laterally from said sawmill carriage knee, a second pair of pivot means mounted vertically at the respective outer ends of said plates, a wing knee pivotally connected to said plates by said second pair of pivot means, said pivot means thus providing the corners of a parallelogram linkage frame projecting laterally from the sawmill carriage knee, a piston and cylinder device extending horizontally between and pivotally connected at its ends to diagonally opposed corners of said frame, said device when extended projecting the forward face of said wing knee to proximity with the plane of the forward face of said sawmill carriage knee and when retracted withdrawing said forward face of the wing knee to positions behind said plane, and dogging means mounted on said wing knee.

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