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DOGGING MECHANISM FOR SAWMILL CARRIAGES

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This invention is directed to dogging mechanism for use in connection with the knees of a saw mill carriage, and particularly to dogging mechanism of the type wherein the dogs, through manual control, may operate at a minimum or maximum distance beyond the face of the knee and wherein the dogs are designed for relative and successive engaging movement under the same power means.

The main object of the present invention is the provision, in a dogging mechanism of the type described, of a guide bar on which the respective dogs are slidably mounted to permit either dog to move substantially through-out the height of the knee, the guide bar being mounted for operation under power means for movement toward and from the face of the knee to position the dogs for their maximum or minimum projection.

A further object of the present invention is the provision of means whereby the movement of the respective dogs to a normal or inoperative position is effectively cushioned to absorb the jar and strain on the parts.

The invention is illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of the improved dogging mechanism.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a section on line 3—3 of Figure 1.

Figure 4 is a perspective view from the side opposite that of Figure 1.

Figure 5 is a perspective view of the carrier for the lower dog.

Figure 6 is a perspective view of the carrier for the upper dog.

Figure 7 is a perspective view of the bracket for the upper end of the slide bar.

Figure 8 is a section on line 8—8 of Figure 5.

Figure 9 is a view of a detail.

As illustrated, the dogging mechanism of this invention is applied to a knee 1 illustrated conventionally and designed, of course, for the usual movement in the head block, not shown, and otherwise equipped as may be necessary in the particular instance.

The dogging mechanism proper comprises a guide bar 2 mounted for movement toward and from the face of the knee through the medium of upper and lower angle levers 3 and 4 pivotedly mounted at their angle on pivot pins 5 extending laterally from the knee with the terminal of one arm of each lever pivotedly connected to the guide bar, as at 6, and the terminal of the remaining arm connected to a rod 7.

The upper end of the rod 7 is connected to the piston rod 8 of a piston arranged in the cylinder 9 pivotedly mounted on a bracket 10 projecting from the guide bar. The cylinder is provided with service pipes 11 whereby pressure may be admitted to move the cylinder in the desired direction and thus through obvious operation of the angle levers 3 and 4 move the guide bar bodily toward or from the knee.

The guide bar is a length to extend substantially from the head block plane of the knee to a point materially above the knee, and the respective upper and lower dog blocks or carriers 12 and 13 are slidably mounted on and designed for movement relative to the guide bar 2.

The upper dog carrier comprises a casting providing a body portion 14 and an upstanding plate 15 having lateral edges 16 formed or recessed to provide channels 17 to slidably engage the edges of the guide bar 2. The wall 18 intermediate the recesses 17 is offset to provide a channel 18 to snugly receive a slide bar 19 to the lower end of which the upper dog carrier is securely bolted, as at 20.

The slide bar 19, hereinafter referred to as the slide, is of somewhat less width than the similar dimension of the guide bar 2 and extends upwardly above the upper dog carrier, its upper end being connected to a bracket 21 having guide channels 22 to slidably embrace the edges of the guide bar and a channel 23 to receive the slide. This bracket, which functions to support the dog operating means as will later appear, thus cooperates with the upper dog carrier to hold the slide 19 in contact with the guide bar and to guide such slide vertically of the guide bar in the movement of the upper dog.

The upper dog carrier 12 is formed with 100
a vertically extending appropriately formed opening 24 in which the upper dog arm 25 is pivotally mounted as on a pivot bolt 29 passing through the carrier. The lower end of the dog arm is formed with an appropriate dogging point 27, or obviously said point may be removably secured to such dog arm to provide for convenient renewal. The upper end of the dog arm is provided with a laterally extending pin 28 to one end of which is connected the terminal of a coil spring 29, the opposite end of which is secured at 30 to the slide. The spring functions to hold the upper end of the dog arm at its inward limit, thus projecting the dog point outwardly.

As it is desired that the dog point 27 be substantially in the plane of the face of the knee, or inwardly of such plane when the parts are in inoperative positions, to thereby prevent the dogs being engaged and damaged by the log thrown against the knee, the guide bar 2 is provided with a cam block 31 having a forwardly and outwardly inclined edge 32 arranged in the path of movement of the pin 28 as the upper dog is elevated to normal or inoperative position. As the pin 28 rides on the inclined face 32 of the cam block, the dog point is moved inwardly relative to the knee, and is thus positioned substantially in the plane of the face of the knee or inwardly of such face.

The lower dog carrier 13 comprises a substantially triangular casting, the inner face of which is formed to provide channels 33 to receive and slidably cooperate with the edges of the guide bar 2. The bottom edge of the carrier 13 has a transversely extending channel 34 to receive the lower dog arm 35, the latter extending longitudinally of the channel and being secured to the carrier 13 by bolts 36. The lower dog arm is provided with the usual dog point 37 which may be integral or removably secured to such dog arm. The channel 34 is so positioned that the lower dog arm, when secured therein, will be at one side of the guide bar 2, so that the lower dog carrier may move freely longitudinally of the guide bar while carrying the lower dog.

The upper and lower dogs are operated through the medium of a pressure cylinder 38 having a base casting 39 with a depending web 40 securely bolted to a rearwardly extending web 41 of the lower dog carrier. The cylinder 38 has upper and lower service pipes 42 leading from any suitable source of pressure and valve controlled as desired.

A piston 43 is arranged in the cylinder, the piston rod 44 of which extends above the cylinder and is connected to a sleeve terminal 45 of the bracket 21 secured to the upper end of the slide. A cushioning means is provided for the parts in moving to inoperative positions, such cushioning means including a rod 46 extending through a sleeve terminal 47 of a bracket 48 secured to the outer side of the guide bar at the upper end thereof, this rod 46 extending through an opening 49 in the cylinder base 39 and being provided below the base with a collar 50 and a terminal nut 51 to prevent displacement of the collar.

Above the sleeve 47, the rod 46 is encircled by a compression spring 83, the upper end of the rod being provided with a washer 54 to bear on the spring and the usual securing and lock nuts 55.

As thus described, it is apparent that the pressure fluid operating means including the cylinder 38 and piston rod 44 are connected to the lower and upper dogs respectively, the cylinder being connected to the lower dog and the piston rod being connected to the upper dog through the connection of such piston rod with the upper end of the slide.

Assuming the parts in the position shown in Figure 1, in which it will be noted that the guide bar is retracted relative to the face of the knee, in which the dogs will be projected at their minimum distance to engage a board or the like, power is admitted through one of the service pipes 42 above the piston in the cylinder 38, and as the piston moves downwardly the upper dog is depressed. As the upper dog moves downwardly, interrupting its cooperation with the cam 31, the spring 29 acts to project the point of the upper dog. The power movement continues until the upper dog engages the upper edge of the board, whereupon the piston becomes the fixed element and the continued application of power causes the cylinder 38 to move upwardly. This slides the lower dog bodily on the guide bar 2 to a position to engage the lower edge of the board.

On admission of power below the piston 43, the reverse operation takes place and the dogs are returned to normal positions. Obviously, in this return movement, the parts travel under the power augmented by their own weight and hence it is highly important that the cushion effect of the spring 53 be utilized to counteract the blow. Obviously, as the parts move to normal position, the base casting 39 of the cylinder 38 engages the collar 50, moving the rod downwardly against the tension of the spring 53 and so absorbing the shock.

If it is desired to project the dogs for operation at the maximum distance beyond the face of the knee, power is admitted to the cylinder 9, the angle levers 3 and 4 being moved on their pivots to correspondingly move the slide bar and all connected parts toward the face of the knee. Thus, when the dogs are operated, they will obviously move in a plane beyond the face of the knee which is considerably farther from such knee face than where the guide bar is at its limit posi-
tion rearwardly of the face of the knee, as indicated in Figure 1. The operation of the
dogs for the dogging movement is obviously identical whether the dogs are arranged to
slide at a maximum or minimum distance from the face of the knee, it being apparent
that all parts of the mechanism are carried by and movable with the guide bar to insure
identical operation of the parts in either position of the guide bar.

As will be seen in Figure 2, the base 39 of cylinder 28 is formed with spaced openings,
either of which, accordingly as the dogging mechanism is employed on the left hand or
right hand side of the knee, may be used to receive the cushioning bar 43. The upper
dog has a sliding and guided cooperation with the guide bar 2, while the lower dog
has a similar sliding and guided cooperation with such guide bar. Normally, the lower
dog is slightly below the upper plane of the head block while the upper dog is with-
drawn into the plane of or inwardly of the face of the knee. Therefore if, as may hap-
pen in cant or quarter saws of peculiar shape, the vertical movement of the upper dog
is comparatively slight before engaging such cant, and an unusually extended upward
movement of the lower dog is required to co-operate with the cant, it is apparent that
the present construction will insure a perfect dogging operation, for no matter where the
upper dog may be interrupted in its down-
ward movement, the lower dog will there-
after move upwardly to the necessary engag-
ing position, even for example, being brought substantially into contact with the upper
dog. Therefore, while the structure is designed to accommodate itself to ordinary logs
and materials, it is apparent that it is completely flexible to insure active engagement with any
and all types of logs, cants or the like which require unusual movements of either the
upper or lower dogs.

What is claimed as new is:

1. In a saw mill carriage, a knee, a dog-
ging mechanism including a guide bar car-
rried by the knee, a slide bearing against and
movable relative to the guide bar, an upper
dog secured to one end of the slide and formed
to slidably cooperate with the guide bar, a
bracket carried by the upper end of the slide
and formed to slidably cooperate with the
guide bar, a lower dog slidably engaging the
guide bar, a motor mechanism for operating
the dogs and including two relatively mov-
able members, one of said members being car-
rried by the lower dog and the other of said
members being carried by the bracket on the
slide, and a cushioning member supported by the
upper end of the guide bar and cooperat-

2. In a saw mill carriage, a knee, a dog-
ging mechanism including a guide bar car-
rried by the knee, a slide bearing against and
movable relative to the guide bar, an upper
dog secured to one end of the slide and formed
to slidably cooperate with the guide bar, a
bracket carried by the upper end of the slide
and formed to slidably cooperate with the
guide bar, a lower dog slidably engaging the
guide bar, a motor mechanism for operating
the dogs and including two relatively mov-
able members, one of said members being car-
rried by the lower dog and the other of said
members being carried by the bracket on the
slide, and a cushioning member supported by the
upper end of the guide bar and cooperat-

3. In a saw mill carriage, a knee, a dog-
ging mechanism including a guide bar, means for
adjusting the guide bar toward and from the
face of the knee, a slide including a bar of
somewhat less length than that of the guide bar,
said slide being adapted to bear through-
out on the guide bar, an upper dog mounting
secured to the lower end of the slide and
extended to overlie and slidably embrace the
edges of the guide bar, an upper dog pivot-
ally arranged in said mounting with a portion
thereof to overlie and bear against the edge
of the guide bar to limit the projection of the
operative end of the dog relative to the
guide bar, an independent bracket secured
to the upper end of the slide with its edges
formed to overlie and slidably embrace the
edges of the guide bar, a lower dog mount-
ing formed with channels to slidably receive
the edges of the guide bar, a lower dog in said
lower dog mounting, a cylinder secured to the
lower dog mounting, a piston therafter, and a piston rod extending beyond the
cylinder and secured to the bracket at the
upper end of the slide.

4. In a saw mill carriage, a knee, a dog-
ging mechanism including a guide bar, means for
adjusting the guide bar toward and from the
face of the knee, a slide including a bar of
somewhat less length than that of the guide bar,
said slide being adapted to bear through-
out on the guide bar, an upper dog mounting
secured to the lower end of the slide and
extended to overlie and slidably embrace the
edges of the guide bar, an upper dog pivot-
ally arranged in said mounting with a portion
thereof to overlie and bear against the edge
of the guide bar to limit the projection of the
operative end of the dog relative to the
guide bar, an independent bracket secured
to the upper end of the slide with its edges
formed to overlie and slidably embrace the
edges of the guide bar, a lower dog mount-
ing formed with channels to slidably receive
the edges of the guide bar, a lower dog in said
lower dog mounting, a cylinder secured to the
lower dog mounting, a piston thereto, and a piston rod extending beyond the
cylinder and secured to the bracket at the
upper end of the slide.
ably receive the edges of the guide bar, a
lower dog in said lower dog mounting, a
cylinder secured to the lower dog mounting,
a piston in the cylinder, a piston rod extend-
ing beyond the cylinder and secured to the
bracket at the upper end of the slide, a cam
block secured on the guide bar, and a projec-
tion on the upper dog to engage the cam
block to move the point of the upper dog
inwardly relative to the face of the knee in a
predetermined position of the slide with re-
spect to the guide bar.
In testimony whereof I affix my signature.

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