FIG. 5 is a partial diagram in elevation when looking at the log from the end, the said diagram showing the appliance for the automatic position-setting of the log.

FIG. 6 is a view in side elevation of the same appliance which is assumed to be independent.

FIG. 7 is a diagram relating to the angular positioning of the log.

In the form of embodiment which is described in FIGS. 1 to 4, the device for positioning logs of large size is set in a pit 1 which is viewed by stairway 2. On the platform 3 which borders the pit 1 are provided roller-tracks shown diagrammatically at 4 (FIG. 2) for a sawing device which is not illustrated in the figure and which can be constituted by any known means such as, for example, a band-saw or chain-saw. Since the cutting element is placed at right angles to the longitudinal axis of the pit and the carriage moves in a direction parallel to the said axis, the corresponding sawing plane X-X is located above the pit 1 at a distance H from the ground.

The positioning device in accordance with the invention has for its object to bring a pre-determined plane of the log 5 to be sawn into coincidence with the plane X-X as defined above.

In particular, this device makes it possible to bring into plane X-X a plane which is defined geometrically in the log and which passes through the heart of the log.

In accordance with the present invention, the positioning device comprises two endless cables 6 disposed in two planes which are transverse with respect to the log 5, each of these cables being fitted over a set of four oppositely arranged pulleys consisting of two upper pulleys 7 and two lower pulleys 8 which are mounted on posts 9 placed opposite to each other and anchored in the bottom 11 of the pit 1.

The length of the cable 6 substantially exceeds the perimeter which is defined by the four pulleys 7 and 8. The slack length 12 thus formed is arranged between the two upper pulleys 7 and it receives the log 5 such as to ensure the tension of the other lengths. The log 5 is accordingly supported by a cradle constituted by the two lengths 12.

The system of means by which the cable 6 is displaced is also installed in the pit 1. This system comprises a jack 13 housed in a hollowed-out portion 14 of the pit 1. The jack 13 is carried by a frame 15 which is arranged between the posts 9. The sliding rod 16 of the said jack terminates in a clamp 17 which grips the cable 6 between the pulleys 8. In the position of withdrawal of the jack 13, the clamp 17 is adapted to take up the position designated by the reference 17a and the distance k (as shown in FIG. 3) existing between the two positions is greater than one quarter of the maximum diameter of the logs.

In combination with the system referred to above, the handling device comprises two supports 21 of adjustable height which are adapted to come into contact with the lower perimeter of the log. Each support 21 comprises a T-shaped frame, the vertical arm 22 of which is mounted inside a well 25 reached by means of a ladder 30. The arm 22 which is constituted by a U-shaped section is adapted to slide between guide-cheeks 24 which are supported by plates 25, the said plates 25 being anchored against the wall of the well 23. The top horizontal arm 26 of the support 21 comprises a wall 27 which serves as a bearing shoe for the log in the work position.

Each arm 26 carries on one of its vertical faces a dovetail section 29 which serves as a slideway for the slide-rod 29 fitted with dogs 31.

An operating device is provided for each support 21 and another operating device is provided for the dogs
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31. The first device comprises a vertical jack 32 (FIG. 1) which is housed inside the well 23 and which bears on a fixed plate 33 with the moving rod 35 of the said jack is secured at 36 beneath the arm 26 of the T-shaped frame.

The spacing of the dogs 31 is adjusted by means of a jack 37, the body of which is coupled to one of the slide-rods 39 and the rod 35 of which is secured to the second slide-rod.

The operation of the device as thus constituted is as follows: a log 5 is placed in the cradle formed by the cable-lengths 12. By actuating the jacks 13, the cables 6 are made to run through the pulleys, thereby causing the log to rotate about its geometrical axis and thus to roll over progressively as the cable carries out a longitudinal displacement. When the log has been brought into the desired angular position, the supports 21 are lifted by extension of the jacks 32 until the shoes 27 come into contact with the log. The jacks 37 are then retracted so that the dogs 31 are anchored in the body of the log which is thus firmly fixed in position.

The jacks 32 are then caused to carry out further extensions of either equal or different amplitudes according to the angle of slope at which it is desired to set the axis of the log. It is thus possible to bring the line 6 of the support 21 into the plane of the said frame 44 to and to proceed with the longitudinal sawing of the cable 6.

In order to split the log into four quarters, it is necessary after the first saw cut has been as previously indicated to join the two halves together by means of separate clamping dogs. When this has been effected, the supports 21 are moved downwards and the dog 31 are drawn apart, thereby permitting the log to take up a further position of rest in the cradle. The jacks 13 are then actuated so that one quarter of a revolution is imparted to the log, which is then raised after having brought the dogs 31 back into engagement. The second saw cut is then effected.

In the form of embodiment considered, it has been assumed that the jacks were of the hydraulic type. It is understood that it would not constitute any departure from the scope of the invention to make use of electric jacks.

It has also been assumed that the logs were brought over the pit by an overhead travelling crane or handling crane. The log could also be brought into position by pushing it along a longitudinal slide-way which is cut away to form transverse slits to make room for the cable and the supports 21. In this case, the cable 6 should be formed by two detachable lengths, so that it can be inserted in the slide-way slits when placing the log in position. Alternatively, a jack having an adjustable travel could be inserted in the perimeter of the cable, the said jack being extended as the log is brought into position and thus having the same result. Finally, it is obvious that the running of the cables 6 could be effected by means other than the jacks 13 and in particular by mounting motor reduction-gear units on the pulleys 7.

In a preferred form of embodiment of the invention, the handling device referred to above is employed in combination with a device for controlling the upward movement and angular rotation of the log about its own axis. This device, as shown in FIGS. 5 and 6, permits of the automatic sawing of the log in two sawcuts along two planes at right angles. The control device comprises two trolley-frames such as the trolley-frame 41, disposed alongside the pit 1 which are designed to move along rails 42 by means of rollers 43. The rails 42, disposed along longitudinal edges of the pit 1, are parallel to one of the rolling tracks 4 of the sawing-carrige referred-to above.

The trolley 41 has a vertical frame 44 which is adapted to roll along two rails 46 set at right angles with respect to the rails 42 and consequently at right angles to the longitudinal axis of the pit 1.

The frame 44 is provided on the pit side with an articulated parallelogram 47 located in the plane of the said frame which comprises two long rods 48 pivotally mounted at 49 on the frame 41 which correspond to the small side of the parallelogram and which are pivotally coupled at 50 and 52 to the two rods 48. The parallelogram 47 is fitted with balancing springs 53.

On the shaft 53 is mounted a guide-pin 54 parallel to the axis of the pit and a pivotal arm 55 fitted with a second guide-pin 56 which is parallel to the first guide-pin.

The link-rods 51 are disposed vertically and the angular displacement of the arm 55 is limited by an abutment 57 in a horizontal position which is substantially parallel to the sawing plane.

The control device additionally comprises two end-of-travel contacts 61, 62. The first contact 61 which is actuated by a cam 63 carried by one of the rods 48 effects by means of a relay 71 the stopping of the movement of extension of the jacks 32 which cause the log-supports 21 to move upwards.

The second contact 62 is actuated by a finger 64 of the arm 55. By means of a relay 72, the said second contact has the effect of stopping the movement of extension of the jacks 32 which produce the longitudinal displacement of the cables 6 and consequently the rotation of the log 5 about its own axis.

The operation takes place as follows:

When the log is located in the low position (I) with the heart at K2 (as shown in FIGS. 5 and 7), the guide-pin 54 is driven into each end face of the log and in a position which is well defined with respect to K2 (for example 100 mm. below and to the left), in such manner that the two parallelograms 47 do not have to be displaced at the time of the sawing operation.

The guide-pin 56 is also driven in while due care is taken to bring the arm 55 against the abutment 57, thereby ensuring the horizontal setting of the said arm.

The movement of extension of the jacks 32 is then effected, thereby initiating the upward movement of the log from the position 5 (I) to the top position 5 (II). During this displacement, the rods 48 pivot in the direction f about the fulcrums 49. When the log has reached the position 5 (II) in which the guide-pin 54 is located at 10 cm. below the sawing plane X—X while the rods 48 are located in the angular position 48 (II), the cam 63 actuates the contact 61 which has the effect of energizing the relay 71 which in turn cuts off the oil supply to the jacks 32.

At this moment, the line of the heart of the log has come into the position K2 in the sawing plane X—X.

The first sawcut can then be effected. The log is afterwards lowered in the cradle and removed from its clamps, whereupon the turning jack 13 is actuated. The cables 6 move the log 5 which turns about its own axis in the direction g about its geometrical centre O. During this movement of rotation, the heart K of the log describes a circular arc G and the rods 48 again rotate in the direction f, thereby thrusting back the trolley-frame 44 in the direction p as a result of the rolling movement of the rollers 45 along the rails 46.

When the log has effected a rotation from the position K1 to the position K2 so that the angle formed between K1 and K2=90°, the guide-pin 54 is located at 54 (III) and the guide-pin 56 is located at 56 (III), while the arm 55 is folded back alongside the link-rod 51. At this moment, the contact 63 is actuated by the finger 64. The relay 72 is energized and the jack 13 is stopped. The log has accordingly rotated about its own axis through an angle of 90°.

It is then sufficient to re-clamp the log and bring back the arm 55 to the horizontal position, then to proceed as above.

The positioning of the log for the sawing operation can
thus be carried out in a semi-automatic and very simple manner.

It is obvious that the present invention is not limited to the embodiments which have been described and that these latter can be made subject to alternative forms of construction.

In particular, the trolley which supports the parallelogram could have move on rails located in the bottom of the pit or in the walls thereof. In this latter case, the entire weight of the trolley should be balanced.

What I claim is:

1. A device for positioning logs, especially logs of large diameter, arranged for rotating a log about its own axis and for bringing into the sawing plane a predetermined plane of said log passing through the heart thereof, said device comprising four vertical supporting members fitted within a pit adapted to accommodate said log, said supporting members being symmetrically distributed relatively to a vertical plane of said pit containing said log axis, an upper and a lower pulley rotatably mounted on each of said supporting members, the set of four pulleys which are mounted on two symmetrical supporting members being located in a vertical plane perpendicular to said plane of symmetry, an endless cable fitted over said set of four pulleys, said cable having a slack length between two opposite upper pulleys for accommodating said log, a horizontal jack housed within said pit located in said vertical plane of said pulleys and connected to said endless cable, means for energizing said jack for displacing said cable relatively to said set of four pulleys when said log is accommodated within the cradle formed by both cables, two T-shaped supports each comprising a vertical arm and a horizontal arm slidably mounted within said pit, and adapted for contact of said horizontal arm with said log when the log is borne by said cradle, energizing means comprising vertically fitted jacks to raise said T-shaped supports above said cradle, a pair of adjustable, spaced apart dogs mounted on each of said horizontal arms and adapted for engagement with said log, jacks disposed on said T-shaped supports and operatively connected to said dogs, and means to energize said last mentioned jacks for displacement of said dogs.

2. A device for positioning logs, especially logs of large diameter, arranged for rotating the log about its own axis and for bringing into the sawing plane a predetermined plane of said log passing through the heart thereof, said device comprising, in combination, a cradle including two cables suspended between pulleys and adapted to receive the log in the horizontal position, means to run said cables relatively to said pulleys, so as to cause the log to roll about its own axis, supports of adjustable height adapted to come into contact with the bottom surface of the log, and means to raise said log supports, thereby lifting said log above said cradle formed by said cables, so as to bring said predetermined planes into said sawing plane, said device further including means for the automatic height setting of said log into said sawing plane, said height setting means comprising a rolling track parallel to the axis of said log, two trolleys movable along said rolling track and adapted respectively to be located substantially in line with the log terminal faces, a displaceable frame mounted on each of said trolleys, said frame being horizontally displaceable in a direction perpendicularly to said rolling track, an articulated parallelogram substantially located in a vertical plane connected to said frame, said parallelogram having four summits and two vertical sides, two of said summits being pivoted on said frame and one of the other summits carrying a guide pin adapted to be driven into said log terminal face at a predetermined position with respect to said log heart, and means controlled by the angular displacement of said parallelogram with respect to said frame for automatically stopping said raising means of said log supports when said log heart has reached said sawing plane.

3. A device for positioning logs, especially logs of large diameter, arranged for rotating the log about its own axis and for bringing into the sawing plane a predetermined plane of said log passing through the heart thereof, said device comprising, in combination, a cradle including two cables suspended between pulleys and adapted to receive the log in the horizontal position, means to run said cables relatively to said pulleys, so as to cause the log to roll about its own axis, supports of adjustable height adapted to come into contact with the bottom surface of the log, means to raise said log supports, thereby lifting said log above said cradle formed by said cables, so as to bring said predetermined plane into said sawing plane, said device further including means for the automatic height setting of said log into said sawing plane, said height setting means comprising a rolling track parallel to the axis of said log, two trolleys movable along said rolling track and respectively adapted to be located substantially in line with the log terminal faces, a frame mounted on each of said trolleys, said frame being horizontally displaceable in a direction perpendicularly to said rolling track, an articulated parallelogram substantially located in a vertical plane connected to said frame, said parallelogram having four summits and two vertical sides, with two of said summits being pivoted on said frame and one of the two other summits carrying a guide-pin adapted to be driven into said log terminal face at a predetermined position with respect to said log heart, and means controlled by the angular displacement of said parallelogram for automatically stopping said raising means of said log supports when said log heart has reached said sawing plane, said device further including means for the automatic height setting of said log into said sawing plane, said device further including means for the automatic height setting of said log into said sawing plane, said height setting means comprising a rolling track parallel to the axis of said log, two trolleys movable along said rolling track and adapted respectively to be located substantially in line with the log terminal faces, a displaceable frame mounted on each of said trolleys, said frame being horizontally displaceable in a direction perpendicularly to said rolling track, an articulated parallelogram substantially located in a vertical plane connected to said frame, said parallelogram having four summits and two vertical sides, two of said summits being pivoted on said frame and one of the other summits carrying a guide-pin adapted to be driven into said log terminal face at a predetermined position with respect to said log heart, and means controlled by the angular displacement of said parallelogram with respect to said frame for automatically stopping said raising means of said log supports when said log heart has reached said sawing plane.

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