

ABSTRACT

LOWERING COLLISION AVOIDANCE DEVICE OF CRANE

A lowering collision avoidance device includes a hoisting accessory swing detector, a rope winding speed detector, an arithmetic unit, a rope winding speed controller, and if desired, a rope length detector. The arithmetic unit computes a command value for the lowering speed based on the results of comparison between the amount of swing of a hoisting accessory detected by the hoisting accessory swing detector and a predetermined threshold level or a plurality of predetermined threshold levels; the direction of changes in the amount of swing computed based on the amount of swing of the hoisting accessory; and the lowering speed detected by the rope winding speed detector. The rope winding speed controller controls the lowering speed based on this command value. The arithmetic unit also predicts maximum displacement by swing based on the amount of swing of the hoisting accessory, the positional change rate of the hoisting accessory computed based on this amount of swing, and the period of vibration of the hoisting accessory computed from the rope length detected by the rope length detector, and computes a command value for the lowering speed based on the results of comparison between the maximum displacement and a predetermined threshold level. The rope winding speed controller controls the lowering speed based on this command value as well.

FIGURE 1