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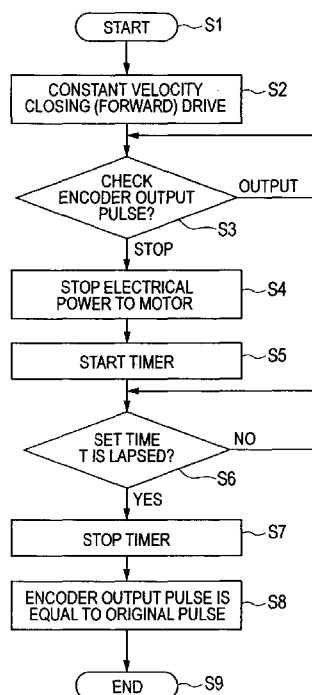
— with international search report (Art. 21(3))

— with amended claims and statement (Art. 19(1))

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(54) Title: GRIPPING DEVICE

[Fig. 4]



(57) **Abstract:** A gripping device capable of detecting an origin with high precision regardless of the elastic deformation of a gripper generated by closing impact is provided. When a pinion 6 which is attached to a drive shaft 2a of an electric motor 2 is rotationally driven, a pair of racks 7 and 7 which mesh with the pinion 6 linearly moves and the pair of grippers 5 and 5 is driven so as to be opened and closed. An encoder 3 is connected to the electric motor 2, and a pulse with the rotation of the drive shaft 2a is output from the encoder 3. A driving control circuit 102 rotationally drives the electric motor 2 so that the pair of grippers 5 and 5 is closed, and the supply of a current to the electric motor 2 is stopped by detecting whether the pair of grippers 5 and 5 come into contact with each other so that the rotation of the electric motor 2 stops based on the pulse output from the encoder 3. Then, the driving control circuit 102 detects the pulse which is output from the encoder 3 as the origin pulse after a predetermined time elapses.



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Amended Claims**[Received by the International Bureau on 26 September 2012 (26.09.2012)]**

[Claim 1] A gripping device comprising:

an electric motor that includes a rotating drive shaft;
a rotary-linear motion converting mechanism that converts a rotary motion of the drive shaft into a linear motion;
a pair of grippers that is opened and closed by the rotary-linear motion converting mechanism;
an encoder that generates a pulse with a rotation position of the drive shaft;
closing operation command means for commanding the pair of grippers to be closed;
current supply stopping means for stopping a supply of a current to the electric motor when the closing operation of the pair of grippers using the closing operation command means stops; and
origin pulse detecting means for detecting an origin pulse which corresponds to a pulse generated in the encoder at a time point at which the time necessary for stopping the operation of the pair of grippers after stopping the supply of the current to the electric motor using the current supply stopping means elapses.

[Claim 2] The gripping device according to claim 1, further comprising:

timer means for starting timekeeping from a time point at which the supply of the current to the electric motor is stopped by the current supply stopping means; and
time setting means for setting a time at which the timer means starts the timekeeping,
wherein the origin pulse detecting means detects the origin pulse which corresponds to the pulse generated in the encoder at a time point at which the timekeeping using the timer means ends.

[Claim 3] The gripping device according to claim 2, further comprising:

current stop time counting means for counting the number of pulses generated in the encoder from a time point at which the timekeeping starts using the timer means to a time point

at which the timekeeping ends;
pulse number upper-lower limit value setting means for setting of upper and lower limit values of the number of pulses; and
comparison means for comparing the upper limit value and the lower limit value of the number of pulses counted by the counting means when the supply of the current stops, wherein when the number of pulses counted by the current stop time counting means is within the range between the upper limit value and the lower limit value as a comparison result using the comparison means, the origin pulse detecting means detects the origin pulse which corresponds to the pulse generated in the encoder at a time point at which the timekeeping using the timer means ends.

[Claim 4](New) The gripping device according to claim 1, wherein the current supply stopping means stops the supply of the current to the electric motor when the closing operation of the pair of grippers stops at a point where the elastic deforming force of the pair of grippers and the driving force of the electric motor are balanced.

[Claim 5](New) The gripping device according to claim 1, wherein the pair of grippers are elastically deformable.

Statement under Article 19(1)

New claims 4 and 5 have been added so as to meet the requirements as discussed by the Examiner at Re Item VIII in the International Search Report.