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United States Patent
Rosensweig**4,149,620**
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Work transfer apparatus

Abstract

A work indexing apparatus is provided having a plurality of platens mounted on an endless conveyor adapted to be moved to a plurality of work stations in an indexing mode. The platens are positioned precisely by means of pins having a tapered surface rigidly attached to the platens and sockets adapted to receive the platens. The sockets are movable in an arcuate path to receive the pins and are linked to a common actuating means.

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Claims

of nut 52. Tapered pins 18 register with socket 56 which is bored in registry cup 58 attached to shaft 60. Shaft 60 is adjustable within and secured in registry arm 40 by means of set screw 62. The registry arms 40 are rigidly secured to and spaced by spacer shafts 62 and are mounted on rotatable shaft 42. The spacer shafts 62 position the registry arms 40 so that the sockets 56 receive the pins 18 when it is desired to properly position platen 16. Levers 44 are mounted on shaft 42 and shaft 64. The lever arms 44 are secured to bracket 66 by means of shaft 64. Bracket 66 is mounted on shaft 64 and plunger 55 which in turn is adapted to move vertically within a pneumatic cylinder 54.

In operation, the pneumatic cylinder 54 is manually or automatically actuated in response to the control means 32 when platen 16 is stopped below the registry arms 40 so that pins 18 are in registerable position with sockets 56. The plunger 55 moves vertically upward as does shaft 64. During this movement, shaft 64 slides in slot 70 to cause lever to move arcuately in a counter-clockwise direction. This movement, in turn, causes shaft 42 and registry arm 40 also to move in a counter-clockwise direction and causes the socket 56 to move arcuately in a counter-clockwise direction to receive tapered pins 18. When the tapered pins are received by sockets 56, the platen 16 is accurately and rigidly positioned to permit work to be done automatically on a work piece on the platen 16.

Referring to FIG. 4, conveyor drive sprocket 22 is mounted to shaft 11 which has mounted thereon an overload clutch coupling 13 and a drive shaft sprocket 15. The conveyor drive sprocket 22 is actuated by motor 17 coupled to a gear reducer 19. The gear reducer 19 is provided with a reducer sprocket 21 which is connected by chain 23 to clutch sprocket 25. Clutch sprocket 25 is mounted on shaft 27 which also has mounted thereon a single revolution clutch brake 29. Shaft 27 is connected to index drive 31 having an output shaft 33 and an index drive sprocket 35. Chain 37 connects index drive sprocket 35 and drive shaft sprocket 15.

An example of a suitable operation of the apparatus of this invention is as follows: In response to a signal from the control board 32 to begin a cycle, the drive motor 17 is actuated and the shaft 27 makes one revolution in response to the clutch brake 29. This causes the output shaft of the index drive 31 to make one third of a revolution thereby transmitting this movement to the index drive sprocket 35 through chain 37 and drive shaft sprocket 15 to overload clutch 13. In response thereto, conveyor drive sprocket 22 moves the conveyor chain 14 the equivalent the length of one platen 16. Upon completion of the indexing of chain 14, pneumatic cylinder 54 is actuated such as by a solenoid air valve so that the socket 56 moves arcuately to receive tapered pins 18 thereby locking the platen 16 into position. Upon completion of the desired dwell time for the platen 16, a solenoid air valve is actuated to deactivate pneumatic cylinder 54 and cause the socket 56 to move arcuately in a clockwise direction thereby unlocking the platen 16. The cycle then is repeated.

It is to be understood that any conventional means for actuating levers can be employed including electrical means, pneumatic means, or mechanical means. Similarly, it is to be understood that the tapered pin need not be in a shape of a solid cone as shown in the drawings but have any shape so long as they include a tapered surface adapted to be received by sockets of a suitable shape for mating therewith. Furthermore, the path of travel of the conveyor and platens need not be in a substantially horizontal plane as shown in the drawings but can be in a substantially vertical plane if desired.

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