June 11, 1929. C. K. PRINCE 1,716,664

DEVICE FOR CONTROLLING INDEPENDENTLY AN INTERMITTENT MOTION ON GRAVITY CONVEYERS

Filed March 14, 1925 2 Sheets-Sheet 1

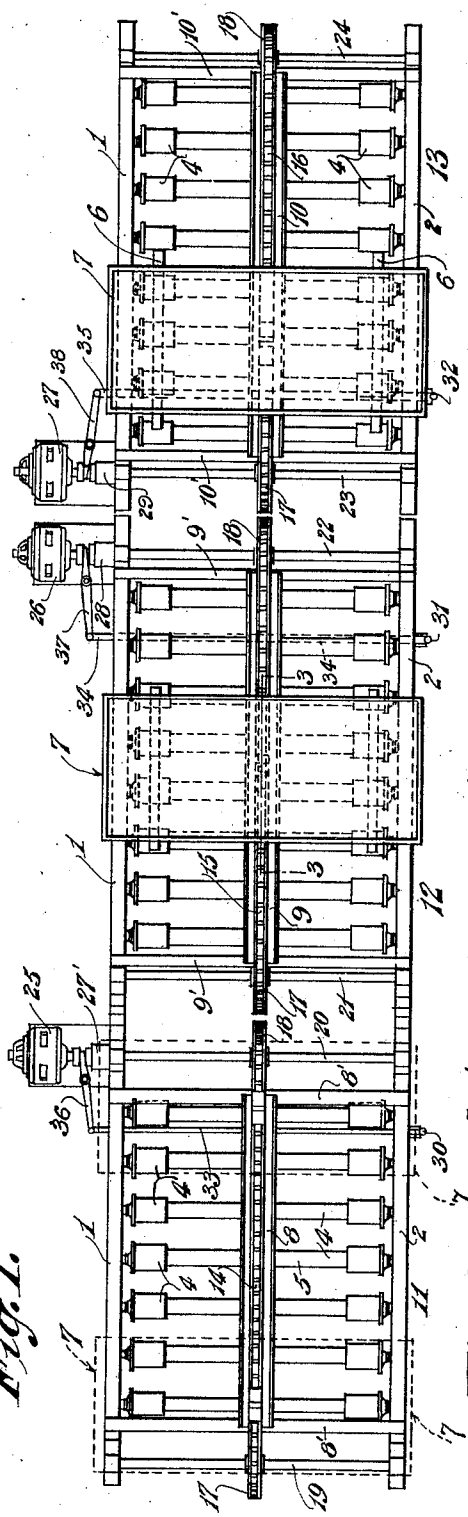


Fig. 1.

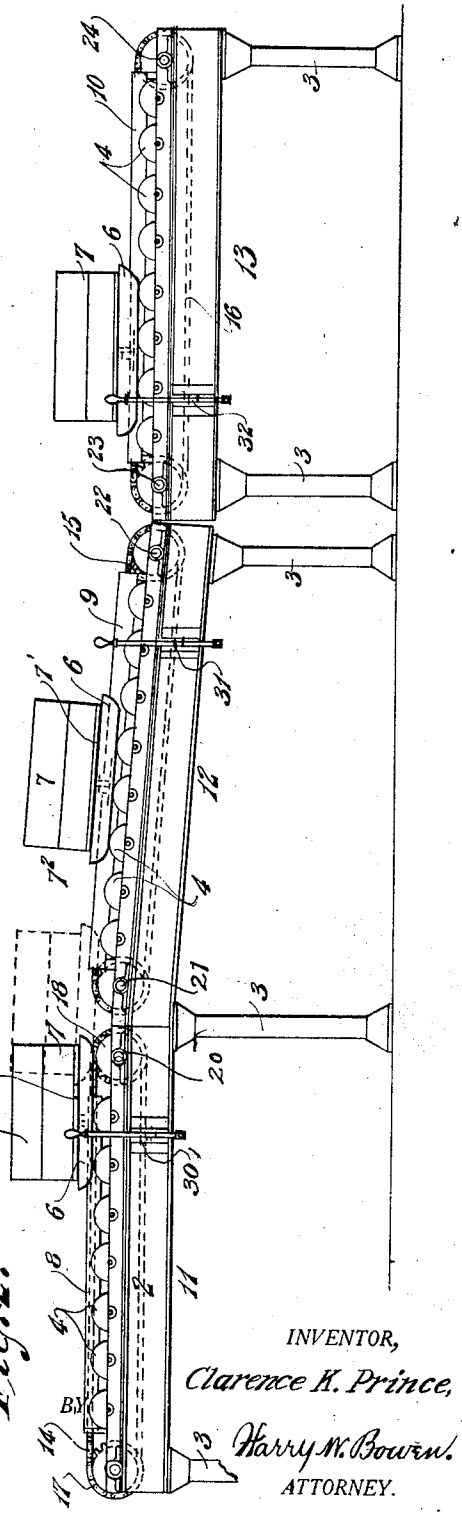


Fig. 2.

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Fig. 3.

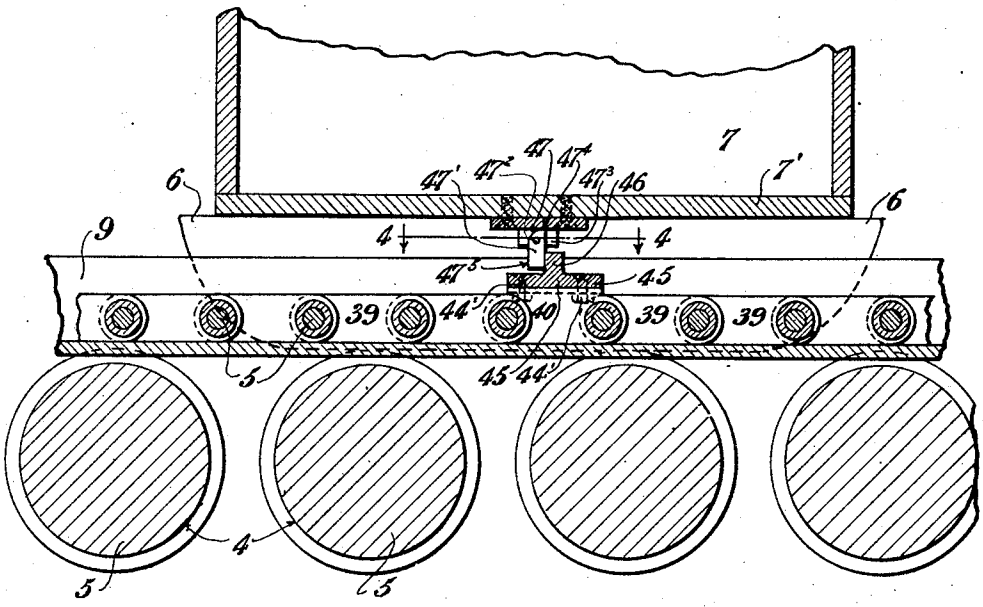
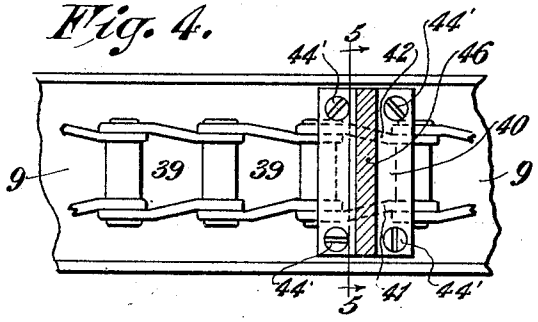


Fig. 4.



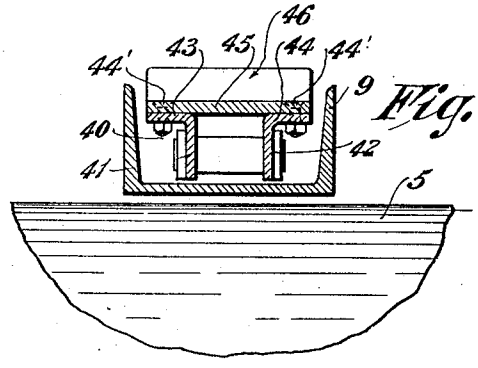


Fig. 5.

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UNITED STATES PATENT OFFICE.

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DEVICE FOR CONTROLLING INDEPENDENTLY AN INTERMITTENT MOTION ON GRAVITY CONVEYERS.

Application filed March 14, 1925. Serial No. 15,493.

One of the applications and objects of the invention is to increase the production, or quantity of castings in foundries that may be turned out in a given time. Heretofore, it has been a common practice for the moulders in foundries, after the flasks have been poured to push or roll them along an inclined runway one after the other, permitting them to move by gravity down and along the runway to the point where the castings are to be removed from the flasks. This operation has been found to be objectionable in that the loaded flasks do not always move along a gravity runway or conveyer sufficiently fast enough in order to materially increase the quantity of production. For some reason or other, the flasks often become stalled on the runway. My invention is, therefore, directed to devices for controlling this motion on such conveyers.

My invention has for a further object to provide a gravity runway, or conveyer, which may be intermittently operated by machine attendants who are stationed along the runway at suitable points, and, by the use of a suitable travelling link belt, a temporary connection may be made with any one, or several of the loaded flasks so that they may be quickly moved along the runway to the point where the flasks are to be emptied and the castings and molding sand conveyed away in the usual manner, usually by travelling conveyers.

My improvement comprises several sections of trackway each of which is provided with the usual rollers on which the skids of the flasks run, also, a channel shaped member in which an endless link belt is located which is provided with an upwardly extending part or parts that is attached to some of the links for temporarily engaging a depending part on the bottom board of the flask so that the loaded flask may be intermittently moved along the gravity trackway at the will of the attendants or operators and thus prevent a number of loaded flasks from accumulating on the trackway; suitable devices are also provided for intermittently operating the link belt, as will be described.

Referring to the drawings:

Fig. 1 is a top plan view of three sections of the conveyer, or runway showing two of the flasks in full lines and two in dotted lines; also the means for intermittently applying power from suitable motor power to operate the link belt which co-operates with the bottom boards to move the flasks along the runways, as desired.

Fig. 2 is a side elevational view of Fig. 1 showing the handles for throwing into or out of operation the motors which operate the link belts of each section of the runway.

Fig. 3 is a vertical and longitudinal sectional view on an enlarged scale on the line 3—3 of Fig. 1, showing the channel iron and link belt in section and in which iron the link belt travels, also the rollers on which the skids of the flasks travel and the co-operating and connecting means between the link belt and the bottom board of the flask.

Fig. 4 is a partial sectional plan view on the line 4—4 of Fig. 3 looking in the direction of the arrows showing the cooperating member which is inserted in the link belt that is provided with a part that co-acts with the part on the bottom board of the flask, also a portion of the channel iron in section, and

Fig. 5 is a transverse sectional view on the line 5—5 of Fig. 4, showing the special link member inserted in the link belt and having the upwardly extending part which cooperates with a part on the bottom board of the flask, the channel iron in which the link belt travels, and a portion of one of the supporting rollers on which the flask travels.

Referring to the drawings in detail:

1 and 2 designate the oppositely located irons of the frame work which are supported by the posts 3. Rotatably supported in bearings in these oppositely located irons are the anti-friction rollers 4 which are connected together by the shafts 5. Resting on or engaging these rollers are the skids or shoes 6 of the flasks 7. Located slightly above the shafts 5 and extending the length of the sections are the channel irons 8, 9, and 10. These irons are supported on the transversely located members 8′, 9′, and 10′ which are located on the side pieces 1 and 2 of the three sections or units designated by the numerals 11, 12, and 13. Travelling in each of these channel irons is the upper strand of the link belts 14, 15, and 16 which belts are supported at the opposite ends of each of the sections by the sprocket wheels 17 and 18. These wheels are secured to the shafts 19, 20, 21,

22, 23, and 24. The shafts 19, 21, and 24 rotate idly in bearings of the side pieces 1 and 2 when the belts are operated. Connected to the shafts 20, 22, and 23 are the electric motors 25, 26, and 27 by means of a suitable clutch construction indicated at 27′, 28, and 29. These clutches are operated by the machine attendants from the handles 30, 31, and 32, which are connected to the clutches by means of the rods 33, 34, and 35, and the levers 36, 37, and 38. The detail construction of the link belts 14, 15, and 16 in these various sections are formed as shown in Figs. 3, 4, and 5 which comprises a series of links 39 and a special link indicated in Figs. 4 and 5 at 40. This link comprises the two side members 41 and 42 which are pinned together and horizontal flange portions 43 and 44. Attached to these flanges by the bolts 44′ is a plate 45 which is provided with an upwardly extending part 46. 47 is a part which is secured to the bottom board 7′ of the flask and having a downwardly extending pivotal projection 47′ with which the part 46 of the link 40 engages when any one of the link belts are operated from the motors. The projection 47′ is pivotally connected to part 47 as indicated at 47^2 in the lug 47^3. The projection 47′ is curved at its upper end to permit it to freely pass over the part 46 in the link 40 when the link is stationary and the flask moves down the conveyer by gravity.

The operation may be described as follows: After a suitable number of the flasks have been poured, the attendant, by means of the handle 30 throws in the clutch 27′ which couples the motor 25 to the shaft 20. This causes the link belt 14 in the channel iron 8 to travel. The upwardly extending part 46 on the special link 40 will during the travel of the link belt engage the downwardly extending pivotal projection 47′ on the bottom board 7′ of the flask. This will move the flask along on the rollers 4 until it passes onto the inclined section 12 as indicated in dotted lines at 7^2, where it can proceed downward by force of gravity. If it does not roll down the incline the attendant by operating the handle 31 may start the link belt 15 from the motor 26 which will move the flasks down the inclined section 12 and onto the third or horizontal section 13. The operator moving the handle 32 may connect the link belt 16 to the motor 27 through the clutch 29. The attendants at each of the stations may therefore intermittently and independently control the movements of a number of flasks on any one of the sections as described. This construction permits the number of flasks to be intermittently and independently controlled on any one of the sections as described. The upper end of the pivotal depending projection 47′ is formed with a flat part 47^4 which will engage the lower side of the plate 47 and prevent its moving any further. This operation will occur when the link belt is set in motion when the projection 46 will engage the surface 47^5 and move the flask along the conveyer. In operation the attendents usually push the flasks along the conveyers. If they do not readily move by force of gravity the attendants by operating the link belts can cause them to be intermittently and independently moved along the gravity runway.

The production can therefore, be readily controlled so that it may not accumulate on any one of the sections, thus interrupting the quantity of production.

What I claim is:

1. In combination, a sectional runway having a plurality of disconnected sections for conveying purposes and designed to receive the skids of molding flasks, independently operable chain mechanisms cooperating with the molding flasks for moving the flasks, one at a time and to different distances along any one of the sections of the runway from one point to another of each section, and manually operated means for intermittently and independently connecting a source of power for controlling the movement of a flask or flasks on any one of the sections of the runway.

2. A device for the purpose described, comprising in combination, a runway which is divided into separated sections which are arranged end to end, one of which sections is inclined, roller bars on the runway for receiving the skids of and for supporting molders' flasks, motor means at each section for intermittently and independently moving the flasks along on the roller bars of a section comprising an endless movable chain member for each section, cooperating means between a link of each of the endless chain members and the flask or flasks, a separate motor for operating each flask moving chain member, and manually operated clutch means for connecting or disconnecting a motor to one of the flask moving members and independently of the other flasks on the runway.

3. A conveyer mechanism for molders' flasks, or the like, comprising, in combination, a plurality of separated sections placed end to end, one of which is inclined, each section having oppositely located side bars, roller bars in a plane having their ends supported on said bars, the bottom boards of the flasks having skids or shoes which engage the rollers near their ends, a channel iron section supported above the center part of each roller of each of the sections, a chain conveyer in each of the channel iron sections, a device on each of said chain conveyers adapted to cooperate with the bottom board of a flask, motor means for intermittently and independently operating the conveyers in one direction only, manual means for independently connecting a motor to any one of said chain conveyers, selectively, whereby any

one or more of the flasks may be independently operated on or moved on each section, as desired.

4. A gravity runway conveyer mechanism for conveying molders' flasks comprising in combination independent or sectional frame work, cylindrical rollers supported at their ends, in each section, the bottom boards of the molders' flasks, each having skids or shoes which engage the rollers near their ends, a channel form section supported above the central portion of the cylindrical rollers of each section and on the end portions of the frame work, a link belt section in the channel iron of each section, a cooperating device between each of the belts and the bottom board of a flask for moving the flask in one direction only, electric motors, means for intermittently and independently operating each of the link belts from the motors, and manually controlling means for each motor whereby the flasks may be operated independently of each other on the runway as desired, and independent of the force of gravity as described.

5. A conveyer mechanism for molders' flasks comprising in combination, a plurality of disconnected sections each having side bars, and some of which sections are inclined, roller bars having their ends supported on the side bars, the bottom boards of the flasks each having skids or shoes which engage the cylindrical roller bars, a channel iron supported on each of the sections and above the middle part of the rollers, a link belt in each of the channel irons of each section and movable in one direction only, a cooperating latch device between the sectional belts and each of the bottom boards, motor means for intermittently and independently operating the said sectional belts whereby the flasks may be independently operated on each section, as desired, said cooperating device comprising a pivotal projection on each of the bottom boards, and a rigid projection on one of the links of each of the belts.

6. In a sectional conveyer mechanism for molders' flasks, a supporting frame having side members, rollers thereon, a channel iron member having the open part of the channel extending upward and supported on the frame and above the middle part of the rollers, a link belt located in each of the channel iron sections and movable in one direction only, means for independently operating the link belts, and a part on the belt for engaging and moving a molders' flask member along on the rollers.

7. In combination, a plurality of sectional supporting frames some of which are inclined, cylindrical rollers mounted thereon with enlarged ends, U-shaped members extending the length of the sectional frames and above the center part of the rollers, a link belt having its upper strand located in each of the U-shaped members, means for supporting the belts at the ends of each section, a molders' flask, shoes thereon for engaging the enlarged ends of the rollers, cooperating devices between the flasks and the belts for moving the flask in one direction only, and manual means for putting the operating belts in motion and independently of each other, said devices being so constructed and arranged as to permit the flasks to be manually moved along on the rollers in one direction, or moved by the belt, as desired.

8. An intermittently operated conveyer mechanism for molders' flasks comprising in combination, a supporting frame work, longitudinally spaced roller members rotatably mounted on the frame work and extending from one side of the frame to the other, a bottom board, skids on the bottom board and engaging the said spaced roller members, means for moving the board along the members comprising a belt, a channel shaped member located centrally over the middle part of the rotatably and longitudinally spaced members in which the upper strand of the belt travels, a cooperating latch device between the belt and the bottom board comprising a swinging member on the board and a projection on the chain, and means for intermittently operating the belt.

9. In combination, a supporting frame, a U-shaped channel member mounted along the longitudinal center line of the frame, a link belt having its upper strand in the U-shaped member, a motor, a clutch device for manually and intermittently throwing the link belt into or out of operation, cylindrical roller means on the frame for supporting the skid of a molders' flask on the frame, and cooperating means between the belt and the molder's flask, said means comprising a pivotal depending part on the flask and a rigid projection on the belt, the said pivotal part being constructed to permit a flask to pass freely by the rigid projection on the belt when the belt is stationary but which, when engaged by the rigid projection on the belt when operated, will cause the flask to be moved along on the rollers.

10. In a conveyer system for molders' flasks, in combination, three spaced and unconnected sectional members, the middle one of which is located in an inclined position and the other two in horizontal planes, each section having side bars, a plurality of cylindrical or elongated roller bars having their ends rotatably mounted in the side bars of each sectional member, molders' flasks with their skids resting on said roller bars and near their ends, a channel shaped member supported at the ends of each sectional member and located above the mid-length of the roller bars and with its open side upward, an endless link chain having one strand in the channel, sprocket wheels at the ends of each section

for supporting the chain for each section, and an independent electric motor drive for each chain strand for each sectional member, cooperating means between the sectional chain strands and bottom boards of each section for moving the flasks along on the roller bars, and means for manually throwing in and out the independent electric motor drive of each section, whereby the flasks in each section may be independently operated any desired distance on the section.

11. A conveyer mechanism for transferring molders' flasks which comprises, in combination, a plurality of separated disconnected sections placed end to end, each section having side bars, cylindrical rollers with enlarged ends and having bearings mounted in the side bars and extending from one side bar to the other and on the enlarged ends of which rollers the skids of the molders' flasks travel, a U-shaped channel member attached to each section and located above the rollers with the open side uppermost, a sprocket chain for each section and having its upper strand located and travelling in the U-shaped channel member, means for supporting the flask moving chain on each section, cooperating parts on each chain and flask for moving the flasks along on the said rollers, and manually operated clutch means at each section for connecting and disconnecting the motor of each section, whereby the flasks on each section may be moved independently of the flasks on another section.

CLARENCE K. PRINCE.