Oct. 15, 1929. A. W. PLATT 1,731,318

REARWARDLY ACTING STOWING MECHANISM

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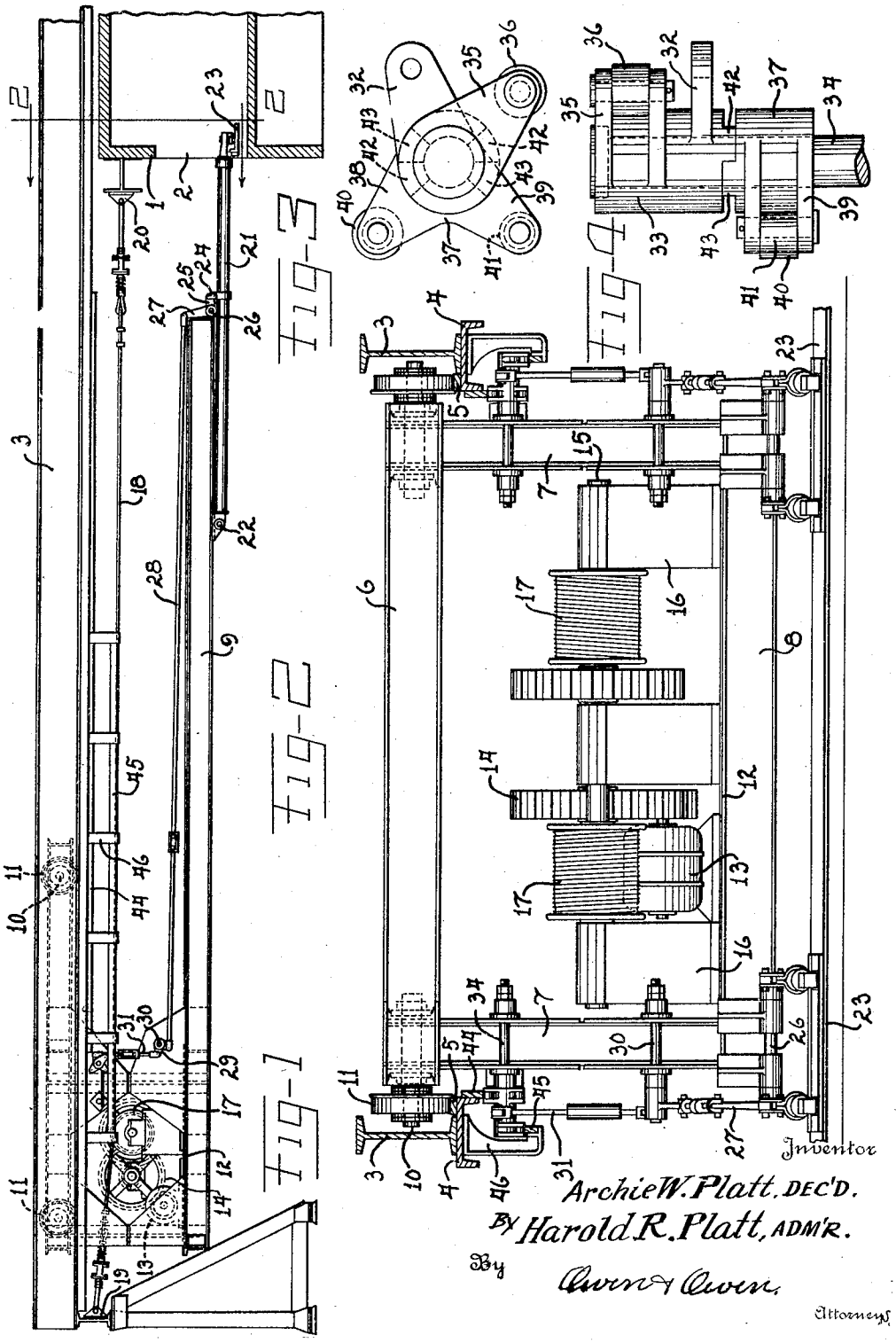


Fig-1

Fig-2

Fig-3

Fig-4

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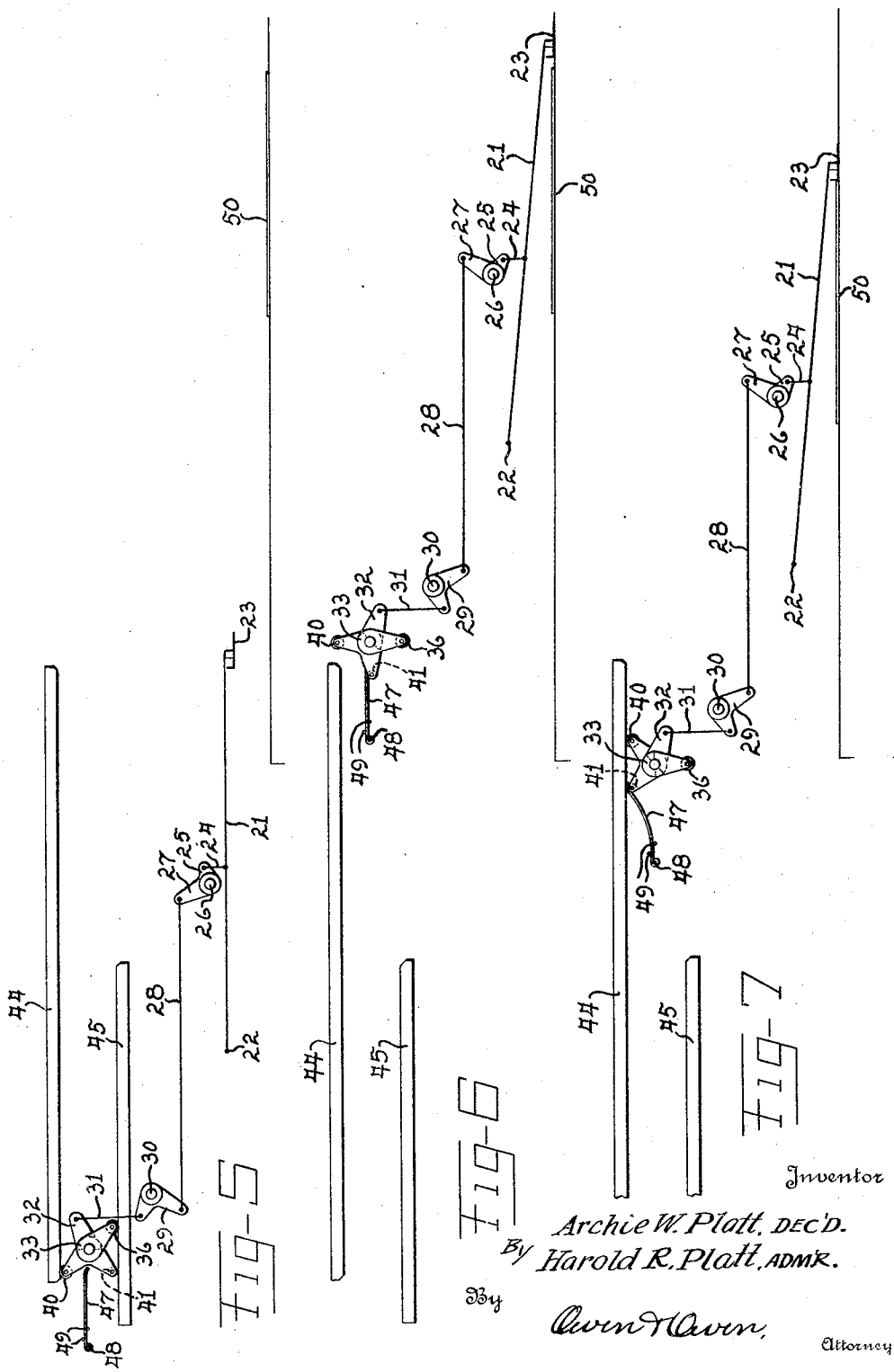


Fig. 5

Fig. 6

Fig. 7

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Patented Oct. 15, 1929 1,731,318

UNITED STATES PATENT OFFICE

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REARWARDLY-ACTING STOWING MECHANISM

Application filed February 13, 1928. Serial No. 253,939.

This invention relates to stowing mechanism adapted to be used in moving plastic or semi-plastic material over a flat surface, as for example, in transferring plates of hot glass by successive stages from the hot end of a leer toward the cooler end. In the manufacture of glass, in order to cool the same slowly so as not to leave any internal stresses, it is passed through a series of ovens, each having a lower temperature than the preceding one. In order to simplify and expedite the process, it has been proposed to arrange a number of ovens in line.

Having in mind a line of ovens as above described, the primary object of the present invention is to provide improved stowing mechanism particularly adapted for moving a plate into the last oven of the line, and in the present embodiment thereof, the tool is inserted from the rear, passing above the rearmost plate, and is then lowered so as to engage the plate upon its return stroke.

The invention consists further in various details of construction and combinations of elements which together with their mode of operaiton will be more particularly described in connection with the accompanying drawings illustrating one embodiment thereof.

In the drawings:

Figure 1 is a side elevation of a stowing mechanism constructed according to the invention, a portion of the adjacent leer oven being shown in section.

Fig. 2 is a front elevation of the invention with the runway shown in section.

Fig. 3 is a detail view in side elevation of a combination of levers for controlling the position of the stowing tool.

Fig. 4 is a bottom plan view of the levers shown in Fig. 3.

Fig. 5 is a diagrammatic view illustrating the position of the parts controlling the stowing tool at the beginning of its forward stroke.

Fig. 6 is a similar view showing the position at the end of the forward stroke.

Fig. 7 is a similar view showing the position during the first part of the rearward or active stroke.

The invention, as illustrated, is associated with the rear end 1 of a line of leer ovens having a rear door 2 through which the tool is inserted into the oven. The stowing mechanism is supported by a suitable overhead runway which, in its present embodiment, comprises I-beams 3 with channel-beams 4 secured to their lower sides and supporting tracks 5 on which a carriage 6 is guided for movement to and fro. This carriage includes vertical side beams 7 connected by transverse beams 8 and by longitudinal beams 9. The carriage 6 is provided with stub axles 10 carrying wheels 11 which ride on the tracks 5.

The lower beams 8 and 9 support a platform 12 upon which is mounted a motor 13. This motor is connected by a train of speed reduction gearing 14 to a shaft 15 which is journaled in suitable blocks 16 mounted on the platform 12. Drums 17 are secured to the shaft 15, and wrapped around each of these drums is a cable 18. One end of this cable is anchored, as at 19, to the structure which supports the runway at its rear end, and it is anchored at its other end, as at 20, at a point above the rear end of the line of ovens, in connection with which the stowing mechanism is used. The motor is reversible and at the will of the operator may be operated to wind the cables about the drums 17 in one direction or the other to advance or retract the carriage 6. The beams 9 extend forwardly from the carriage for a considerable distance and tool supporting beams 21 are pivoted at their rear ends thereto, as at 22. The stowing tool 23 is carried at the free ends of the beams 21 and is adapted to engage the remote edge of the glass and move it rearwardly during the retractive stroke of the tool.

For controlling the up and down movement of the tool 23, each beam 21 is connected between its ends by a link 24 to one arm 25 of a member 26 which is mounted for rocking movement at the front end of the beam 9. The other arm 27 of this rockable member is connected by a rod 28 to one arm of a bell crank 29 which is fulcrumed on a shaft 30 projecting laterally from the carriage. The other arm of the bell crank 29 is connected to one end of

a link 31, the other end of the link being connected to an arm 32 of a bell crank 33 which is fulcrumed on a shaft 34 projecting from the side of the carriage. The bell crank 33 has another arm 35 extending at an acute angle to the arm 32 and carrying a roller 36 at its free end.

A second bell crank 37 is fulcrumed on the shaft 34 adjacent the bell crank 33. This second bell crank has arms 38 and 39 extending at an angle to each other and carrying the respective rollers 40 and 41 at their free ends.

The hubs of the bell cranks 33 and 37 are formed on their adjacent faces with lugs 42 and 43, respectively, and these lugs are so positioned as to engage each other during the forward movement of the carriage, the relative positions of the bell cranks 33 and 37 at this time being as illustrated in Figs. 3 and 4. Upon the retractive movement of the carriage, however, the lugs 42 and 43 separate, permitting the relative movement of the two bell cranks as will be hereinafter more fully explained.

Each pair of bell cranks 33 and 37 is guided between an upper track 44 secured to the channel bar 4 and a lower track 45 supported on hangers 46 which are secured to the channel bar 4. The roller 40 rides on the track 44 while the roller 36 rides on the track 45.

In front of each pair of bell cranks 33 and 37, a spring 47 is mounted at one end on a pin 48 projecting from the carriage and extends toward the bell cranks between pins 49.

In the operation of the stowing mechanism, as it moves forwardly from the initial position, shown in Fig. 5, the roller 40 rides on the track 44, the rollers 36 and 41 ride on the track 45, the lugs 42 and 43 are in engagement and the arm 32 extends forwardly and upwardly from its fulcrum, thereby supporting the tool 23 in raised position so that as it is inserted into the oven it passes over the glass 50. As the roller 36 passes beyond the end of the track 45 the arm 32 and consequently the stowing tool 23 are still maintained in their uppermost position by the engagement of the roller 40 with the track 44. As the roller 40 reaches the end of the track 44, however, both of the bell cranks 33 and 37 are released and move to the position shown in Fig. 6, while the tool 23, which has passed the plate 50, drops until it rests upon the floor of the oven. When the carriage begins its retractive movement the roller 40 engages the end of the track 44 and the bell crank 37 is rocked relatively to the bell crank 33, while the roller 41 engages the spring 47 and places it under tension, as shown in Fig. 7. The arm 32 and the tool 23, however, remain down until the plate 50 is moved into the rearmost oven of the line. At this point the roller 36 engages the end of the track 45 and forcibly raises the arm 32 and the tool 23 so that the plate 50 remains in the rearmost oven when the tool is withdrawn therefrom. As the carriage completes its retractive stroke the roller 40 passes beyond the rear end of the track 44 while the roller 36 still remains on the track 45. The tension of the spring 47 then returns the bell crank 33 to its initial position relative to the bell crank 37 and the mechanism is in position to commence its next forward movement as illustrated in Fig. 5.

While the present embodiment of the invention has been shown and described in considerable detail it is, of course, to be understood that this is merely for the purpose of illustration and that various modifications may be made therein without any material departure from the scope of the invention as defined in the claims.

What is claimed is:

1. In a stowing mechanism, the combination with a carriage and means for moving the carriage forwardly and backwardly for a predetermined distance, of a tool supporting member mounted on said carriage and movable upwardly and downwardly between two limiting positions, means for maintaining said member in its uppermost position during all of its forward travel, means for maintaining it in its lowermost position, between predetermined points only, during the first part of its return travel, and means for maintaining it in its uppermost position during the remainder of its return travel.

2. In a stowing mechanism, the combination with a carriage and means for moving the carriage forwardly and backwardly for a predetermined distance, of a tool supporting member mounted on said carriage and movable upwardly and downwardly between two limiting positions, a track adjacent the path of the carriage, and means cooperating with said track for automatically moving said member to its lowermost position at the end of its forward travel, for moving said member to its uppermost position before it again travels forwardly, and for preventing any other upward or downward movement of said member.

3. In a stowing mechanism, the combination with a carriage and means for moving the carriage forwardly and backwardly, of a tool supporting member mounted on said carriage and movable upwardly and downwardly between two limiting positions, means for automatically moving said member to its lowermost position at the end of its forward travel, means for automatically moving said member to its uppermost position at an intermediate point in its return travel, and means for preventing upward or downward movement of said member at any other point.

4. In a stowing mechanism, the combination with a carriage and means for moving the carriage forwardly and backwardly, of a forwardly projecting arm pivotally connected at its rear end to the carriage, a tool

carried at the free end of said arm, means for limiting the upward and downward movement of said arm about its pivot, means for maintaining said arm in its uppermost position during all of its forward travel and the last part of its rearward travel, and means for maintaining it in its lowermost position, between predetermined points only, during the first part of its rearward travel.

5. In a stowing mechanism, the combination with a carriage and means for moving the carriage forwardly and backwardly, of a forwardly projecting arm pivotally connected at its rear end to the carriage, means for limiting the upward and downward movement of said arm about its pivot, means for maintaining said arm in its uppermost position during all of its forward travel, means for automatically moving it to its lowermost position at the beginning of its rearward travel, and means for automatically returning it to its uppermost position at an intermediate point in its rearward travel and for maintaining it in that position during the remainder of its rearward travel.

6. In a stowing mechanism, the combination with a carriage and means for moving the carriage forwardly and backwardly, of a tool supporting member pivoted at its rear end to said carriage and adapted to be swung upwardly and downwardly between two limiting positions, control means for said member comprising two levers mounted on said carriage and fulcrumed on a common axis, and means cooperating with said levers to control the movement of said member about its pivot during the travel of the carriage.

7. In a stowing mechanism, the combination with a carriage and means for moving the carriage forwardly and backwardly, of a tool supporting member pivoted at its rear end to said carriage and adapted to be swung upwardly and downwardly between two limiting positions, control means for said member comprising two levers mounted on said carriage and fulcrumed on a common axis, means rendered effective by the travel of the carriage for rocking both levers together at one point and for rocking one of the levers independently at another point, and means connected with the last mentioned lever to control the movement of said member about its pivot.

8. In a stowing mechanism, the combination with a carriage and means for moving the carriage forwardly and backwardly, of a tool supporting member pivoted at its rear end to said carriage and adapted to be swung upwardly and downwardly between two limiting positions, control means for said member comprising two levers mounted on said carriage and fulcrumed on a common axis, link mechanism connecting an arm of one lever to the tool supporting member to control the movement of the latter about its pivot, and means acting directly on the last mentioned lever at one point in the carriage travel and acting on the same through the other lever at another point in the travel to shift the position of the tool supporting member about its pivot.

9. In a stowing mechanism, the combination with a carriage and means for moving the carriage forwardly and backwardly, of a tool supporting member pivoted at its rear end to said carriage and adapted to be swung upwardly and downwardly between two limiting positions, control means including two co-axial rockable members mounted on the carriage and having hubs with co-engageable shoulders permitting only a limited rocking movement of one member with respect to the other, means for rocking the respective control members in predetermined order during the travel of the carriage, and means connecting said control means with the tool supporting member to control the movement of the latter about its pivot.

10. In a stowing mechanism, the combination with a carriage and means for moving the carriage forwardly and backwardly, of a tool supporting member pivoted at its rear end to said carriage and adapted to be swung upwardly and downwardly between two limiting positions, control means including two rockable members, tracks on which the respective rockable members travel from end to end during the travel of the carriage, means cooperating with the ends of the tracks to shift said rockable members, and means connecting the control means with the tool supporting member to control the movement of the latter about its pivot.

11. In a stowing mechanism, the combination with a carriage and means for moving the carriage forwardly and backwardly, of a tool supporting member pivoted at its rear end to said carriage and adapted to be swung upwardly and downwardly between two limiting positions, control means connected with said tool supporting member for controlling its movement about its pivot, said control means including two rockable members, a track on which one of said rockable members is held during substantially its entire travel and a second shorter track on which the other rockable member rides during a portion only of its travel, and means cooperating with the ends of the tracks to rock the respective rockable members to shift said tool supporting member.

In testimony whereof I have hereunto signed my name to this specification.

HAROLD R. PLATT,
Administrator of the Estate of Archie W. Platt, Deceased.