R. F. DOWNEY.

CONCRETE BLOCK CARRIER.

APPLICATION FILED MAR. 9, 1917.

1,235,017. Patented July 31, 1917.

Fig. 1.

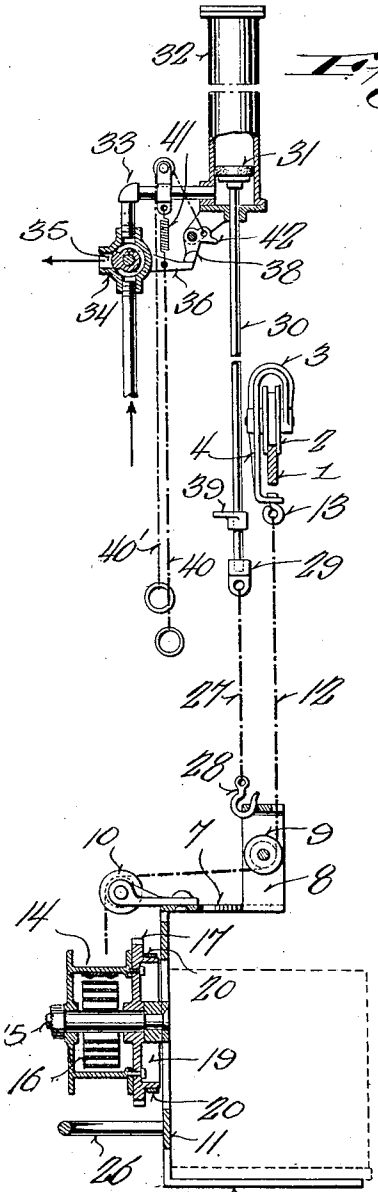


Fig. 2.

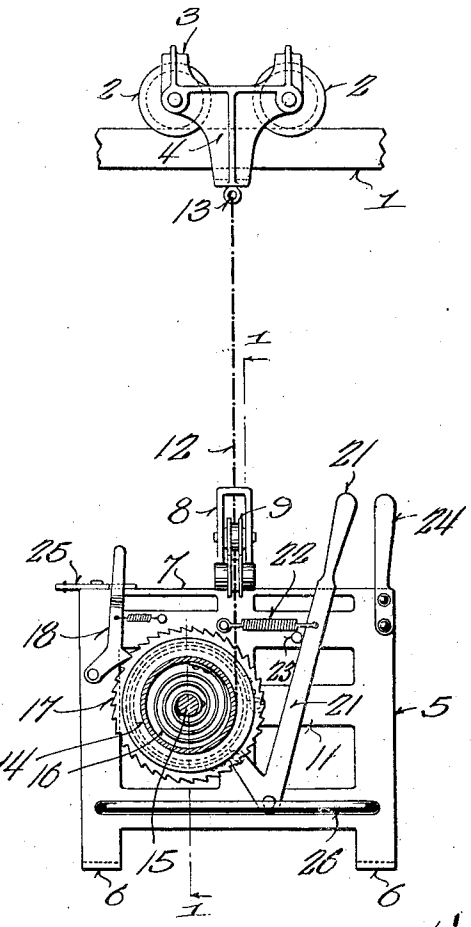
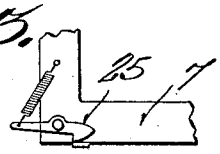


Fig. 3.



Witness

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CONCRETE-BLOCK CARRIER.

1,235,017. Specification of Letters Patent. Patented July 31, 1917.

Application filed March 9, 1917. Serial No. 153,568.

To all whom it may concern:

Be it known that I, RICHARD F. DOWNEY, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Concrete-Block Carriers; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to certain new and useful improvements in conveyers, particularly those which are adapted to move concrete building blocks and other similar objects from place to place.

In the concrete block industry up to the present time practically all transportation of the partially completed blocks from the molding machine to the drying room or kiln is done by unskilled labor. It is necessary to handle blocks made by what is familiarly known as "dry process," in which the concrete mixture with only a small quantity of water is pressed into shape in a block molding machine, very carefully, since such blocks are extremely fragile immediately after removal from the molds and until they are thoroughly dry.

Therefore, because of their nature, the blocks cannot be handled by a machine or conveyer of an ordinary construction inasmuch as there is more or less jarring and jolting of the same during movement. Another objection to ordinary conveyers is that in raising the carriage which contains the concrete block a sufficient distance above the block press to permit the same to be moved, extreme care must be taken or said block will fall to pieces. The present machine has been devised to meet these objections, the raising of the carriage being carried out by a suitable pneumatic or fluid pressure means so that a very even and steady force is applied during such elevating movement.

Another object of the present invention is to lower the carriage containing the concrete block in such a manner that there will be no possibility of the same being broken in depositing it in the drying room.

With these general objects and advantages in view the invention resides in the novel features of construction, combination and arrangement of parts which will be hereinafter more particularly described and claimed and shown in the drawing wherein:

Figure 1 represents a sectional elevation of the conveyer, said section being taken substantially on the plane of the line 1—1 of Fig. 2,

Fig. 2 is an elevation of certain parts of the device viewed at right-angles to Fig. 1, parts being broken away and in section, and

Fig. 3 is a detailed plan view of a portion of the carriage.

Referring more particularly to the several figures of the drawing, wherein similar reference characters denote like parts, the numeral 1 indicates a track upon which a pair of pulleys 2 rotatably mounted in brackets 3 of any preferred form of hanger 4 are adapted to run, said hanger supporting the weight of a carriage 5. The track 1 may be of any suitable length and preferably extends from a point adjacent the mold of a concrete block making machine to a room or other place where the partially completed blocks from the machine may be stored while drying.

The carriage 5 upon which a concrete block B is adapted to be carried consists of a substantially U-shaped frame, the base of which forms arm of the U and consists of a pair of spaced members 6 disposed horizontally and of sufficient length to underlie the block B. The opposite portion or top 7 of the carriage has an upwardly extending yoke 8 formed thereon between the sides of which a pulley 9 is rotatably mounted. This top portion of the carriage also has a second pulley 10 mounted thereon, said pulley extending beyond the upright part 11 of the U-shaped frame which forms said carriage.

These pulleys 9 and 10 are adapted to have a flexible connection such as a chain 12 trained thereover, one end being attached to an eye 13 on the hanger 4, while the other end is secured to a rotatable drum 14, the drum being mounted on the carriage 5. An axle 15 projects outwardly from the portion 11 of the carriage and is adapted to have the drum 14 disposed thereon for rotation. Since it is necessary to raise the carriage, the elevating means being hereinafter more particularly described, it is desirable that means be employed for shortening and lengthening the flexible element 12, particularly for providing means for automatically taking up the slack of said element when the carriage is moved toward the hanger 4.

The drum 14 forms a part of the means for shortening the connection between the

carriage and hanger, and this drum, which is hollow has disposed therein a spiral spring 16, one end of which is fixed to its housing and its other end is attached to the axle 15. It will be seen that this arrangement causes the drum 14 to be rotated in one direction, and that when there is no tension on the chain 12 the same will be wound thereabout. A ratchet plate 17 having ratchet teeth on its periphery, which forms the inner side of the spring housing, and a spring actuated pawl 18 for engagement with said teeth hold the drum against rotation in a direction opposite to that in which the spring 16 tends to move the same. Thus after the carriage has been raised to a desired height by the means to be later described or any other suitable means, it will be held in this position until the pawl 18 is released.

The ratchet plate 17 which is fixed to the drum 14 in turn carries a brake drum 19 around which is disposed a brake band 20, one end of latter being fixed to the portion 11 of the carriage, while the other end is secured to the free end of the short arm of a bell crank lever 21, the same also being carried by said portion 11. This braking mechanism operates in the ordinary manner to permit the carriage to be slowly and steadily lowered when the pawl 18 is disengaged from the ratchet teeth. From Fig. 2 it will be seen that a contracting spring 22 connected with the handle of the bell crank lever and the portion 11 moves the former in a direction to normally hold the brake band in inactive position, a stop 23, limiting movement of the lever in this direction. To aid the operator of the device a handle 24 is secured to the upper portion of the carriage and the handle of the lever 21 is disposed there adjacent so that when both of these handles are grasped at one time and moved toward each other the brake band will become active.

A spring actuated catch 25 pivoted to the top 7 of the carriage is so disposed so that its active end will engage the pawl 18 when the same is released from the ratchet teeth on the ratchet plate 17 and retain it in this released position.

The operator will thus not be bothered by the necessity of holding the pawl away from its teeth and can therefore devote all of his attention to lowering the carriage and guiding the same into position. He is assisted in directing the movements of the carriage by a substantially U-shaped bar 26 which projects outwardly from the portion 11 of the carriage adjacent the bottom thereof.

The chain 12 is used only to support the weight of the carriage and its block while the same is being moved along the track 1 and while it is being lowered, a second flexible connection in the form of a chain 27 being used to raise the carriage to the desired height to permit the same to be readily moved. This chain 27 has a hook 28 on one end for detachable engagement with an opening formed in the crown of the yoke 8, and its other end is secured in an eye 29 carried by one end of a vertically movable piston rod 30.

As hereinbefore mentioned it is most desirable to have the carriage elevated by a means which will exert an even and steady force upon the chain 27. This condition is best met by employing a compressed fluid operated piston in connection with the other parts, the rod 30 being fixed to such a piston 31 mounted for movement in a cylinder 32 of appropriate length. This cylinder is also preferably vertically disposed and is positioned, together with the other parts connected therewith, adjacent the mold of the block making machine. In other words these parts are stationary, while the carriage and its supporting members are movable on the track 1.

Compressed air is the most convenient medium to use for operating the piston 31, this being supplied to the lower end of the cylinder 32 through a pipe 33 which is connected with any suitable source of supply. A three-way valve 34 is positioned in a break in the pipe 33 and is adapted to control the flow of air to the cylinder and from the same. In Fig. 1 the valve is shown disposed in such a position that air may readily flow through the pipe 33 and into the lower end of the cylinder, the pressure of said air causing the piston to be raised a necessary distance therein, this movement of the piston causing the carriage 5 to be lifted, assuming, of course, that the hook 28 is engaged with the yoke 8. By changing the plug of the valve to another position the air may be permitted to flow from the cylinder and through the outlet 35, the piston descending as the amount of air decreases.

To simplify the operation of the parts supplying air to the cylinder an automatic stop mechanism is provided, the same consisting of an arm 36 extending from the plug of the valve, a gravity catch 38 and an adjustable stop 39 movable on the piston rod 30. Assuming that the valve is closed to prevent the flow of air to the cylinder and it is desired to raise the piston, an operating cord or chain 40 is pulled downwardly to move the arm 36 in the same direction against the tension of a spring 41, this movement being continued until the gravity catch 38 can engage said arm and prevent its being moved to its former position by said spring 41. This arrangement is shown in Fig. 1, the valve being open and the piston and its rod rising. As the upward movement of the rod continues the stop 38 is brought closer to a finger 42 on the gravity catch and

finally engages said finger, and causing the catch to be disengaged from the arm 36, thereby stopping the flow of air and moving the valve so that the air already contained in the cylinder will flow out through the outlet 35. By adjusting the stop 39 at various points on the rod 30 the lifting movement of the carriage may be varied and the same thereby raised to any predetermined point.

The complete operation of the entire machine, although obvious from the several figures of the drawing will be briefly described as follows:

The empty carriage is moved to a position adjacent the mold of the block making machine and lowered until a block supported on the bottom of the mold or pallet P may be readily placed on the arms 6. The hook 28 is then engaged with the yoke of the carriage and the air admitted to the cylinder 32 as above particularly set forth, thus raising the carriage and the block contained therein until it will conveniently clear the parts of the molding machine. The slack of the main supporting chain 12 is being taken up by the rotation of the drum 14 during the upward movement of the carriage, and the pawl 18 which has been released from its catch 25 will ride over the ratchet teeth so that it will be in a position to immediately engage in one of them and prevent retrograde movement of the drum. Furthermore it will also hold the carriage in its raised position should the chain 27 break or the force of the piston 31 otherwise suddenly be released.

After the stop 39 engages and throws the gravity catch out of engagement with the arm 36 the upward movement of the carriage will cease, and the piston and its rod begin to lower, the hook 28 thereby being readily removable from the yoke 8. Should anything happen to prevent a proper operation of the stop 39 and the gravity catch 38 a second operating cable or chain 40′ may be used to disconnect the catch and the arm 36.

The movable parts of the invention are now in position to carry the block to a point remote from the molding machine, for instance to the drying room or kiln. After reaching this point it may be necessary to lower the carriage until it is adjacent the floor or other support for the block. Therefore the operator grasps the handle of the lever 21 and the handle 24 to actuate the brake band and prevent a sudden dropping of the carriage when the pawl 18 is released from the ratchet teeth carried by the drum 14. The carriage may now be lowered as slowly or as speedily as is necessary or convenient and the block B deposited.

Various minor changes may be made in form and proportion of the various parts of the device to allow blocks of different sizes or weights to be carried thereby, without departing from or sacrificing any of the advantages or principles as set forth.

I claim:

1. A conveyer of the class described comprising a carriage, means for raising said carriage including a cylinder, a piston in said cylinder, a valve for controlling the flow of fluid to and from the cylinder, a gravity catch for holding said valve in position to permit the flow of fluid into the cylinder, a connection between the piston and carriage, and a stop on the connection to release said catch to stop the flow of fluid to the cylinder, and a track on which to move said carriage when raised.

2. A conveyer of the class described, comprising a carriage, means detachably connected with the carriage for raising the same, a track, a hanger movable on said track, means connecting the hanger and carriage for holding the latter in elevated positions after detaching the raising means therefrom, and means for moving said carriage horizontally.

3. A conveyer of the class described comprising a carriage, a stationary means for raising the same to a pre-determined elevation, a track, a hanger movable on the track, an extensible and contractible connection between said hanger and carriage, means for holding said connection in extended and retracted positions, said connection receiving the weight of the carriage when the raising means is detached therefrom.

4. A conveyer of the class described comprising a carriage, means for raising said carriage, a track, a hanger movable on said track, a flexible connection of variable length joining the hanger and carriage, and means for taking up the slack of said connection when the distance between the hanger and carriage is decreased.

5. A conveyer of the class described, comprising a carriage, means for raising said carriage, a track, a hanger movable on said track, a flexible connection of variable length having one end connected to the hanger, and a drum on the carriage having the other end of the connection fixed thereto, said drum including means for automatically rotating the same in one direction to take up the slack of said connection when the distance between the hanger and carriage is decreased.

6. A conveyer of the class described comprising a carriage, means for raising said carriage, a track, a hanger movable on said track, a flexible connection of variable length joining the hanger and carriage, and a spring actuated drum for automatically taking up the slack of said connection when the distance between the hanger and carriage is decreased.

7. A conveyer of the class described comprising a carriage, means for raising said carriage, a track, a hanger movable on the track, a flexible connection of variable length joining the hanger and carriage and supporting the weight of the latter when the raising means is released, a drum for automatically taking up the slack of said connection when the distance between the hanger and carriage is decreased, and means for preventing rotative movement of the drum in one direction.

8. A conveyer of the class described comprising a carriage, means for raising said carriage, a track, a hanger movable on the track, a flexible connection of variable length joining the hanger and carriage and supporting the weight of the latter when the raising means is released, a drum for automatically taking up the slack of said connection when the distance between the hanger and carriage is decreased, means for preventing rotative movement of the drum in one direction, and means for lowering said carriage when the last mentioned means is released.

9. A conveyer of the class described comprising a carriage, means for raising said carriage, a track, a hanger movable on the track, a flexible connection of variable length joining the hanger and carriage and supporting the weight of the latter when the raising means is released, a drum, a shaft for rotatively mounting said drum on the carriage, a spring fixed to said drum to cause the same to rotate in one direction, to cause the slack of said connection to be wound therearound when the distance between the hanger and carriage is decreased, ratchet teeth on the periphery of said drum, a pawl for engagement with said teeth to prevent rotation of the drum in the reverse direction, a brake band disposed around said drum, a lever for actuating said brake band, said lever being used to regulate the lowering of said carriage when the pawl is released.

10. A conveyer of the class described including a carriage comprising a substantially U-shaped frame, the bottom of said frame having a pair of spaced apart arms to receive a concrete block, an upright yoke on the top of said frame, a pulley disposed between the arms of said yoke, a second pulley carried by the top of said frame and projecting beyond one side thereof, a track, a hanger movable on said track, a flexible connection extending from said hanger and around said pulleys, a drum carried by the carriage and having one end of said flexible connection secured thereto, means for rotating said drum in one direction to wind connection there-around, and means for preventing rotation of the drum in the reverse direction.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

RICHARD F. DOWNEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."