June 18, 1957 H. A. PRASCHAK 2,796,178

DEVICE FOR HANDLING BUILDING BLOCKS AND OTHER BUILDING PRODUCTS

Filed July 23, 1954 3 Sheets-Sheet 1

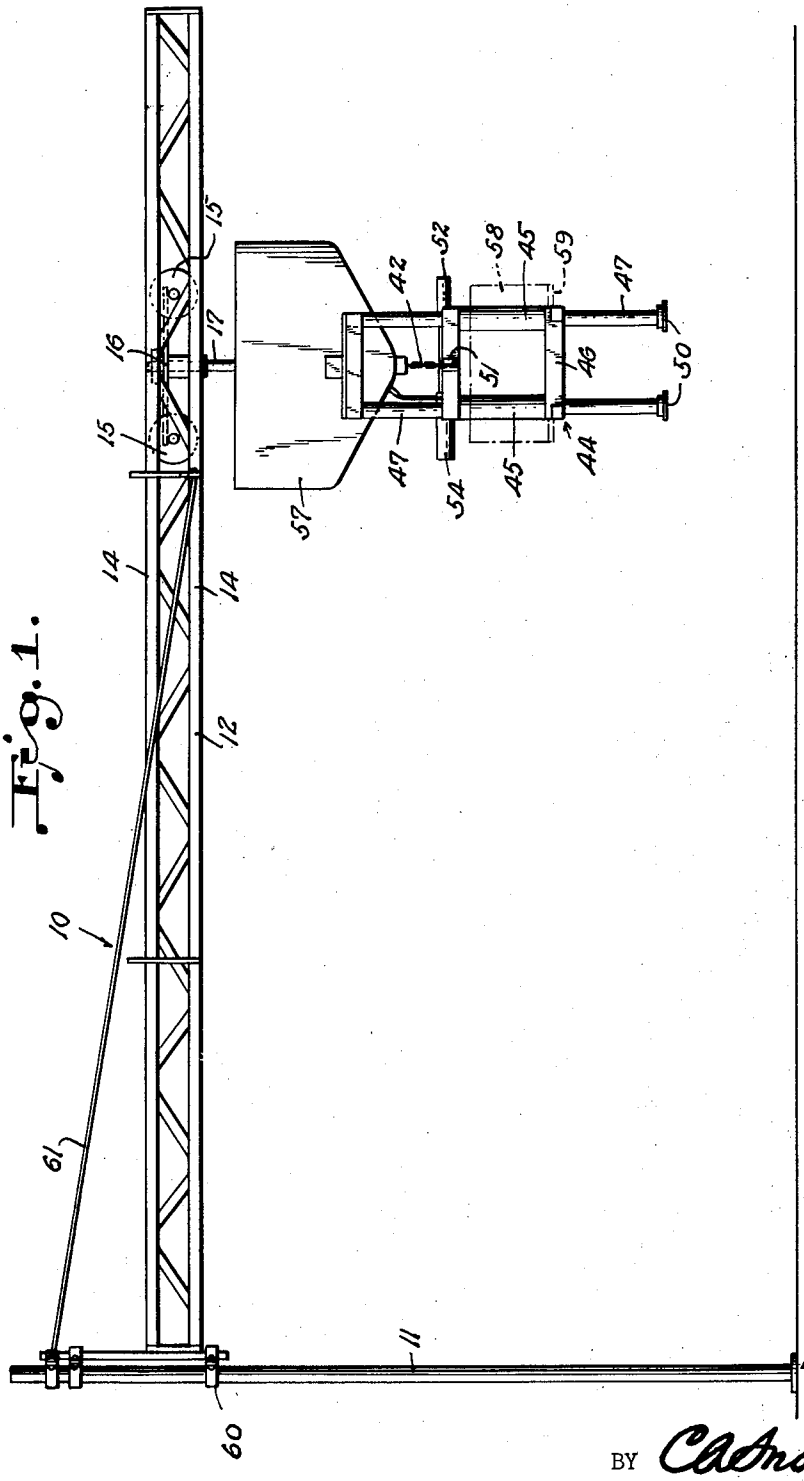


Fig. 1.

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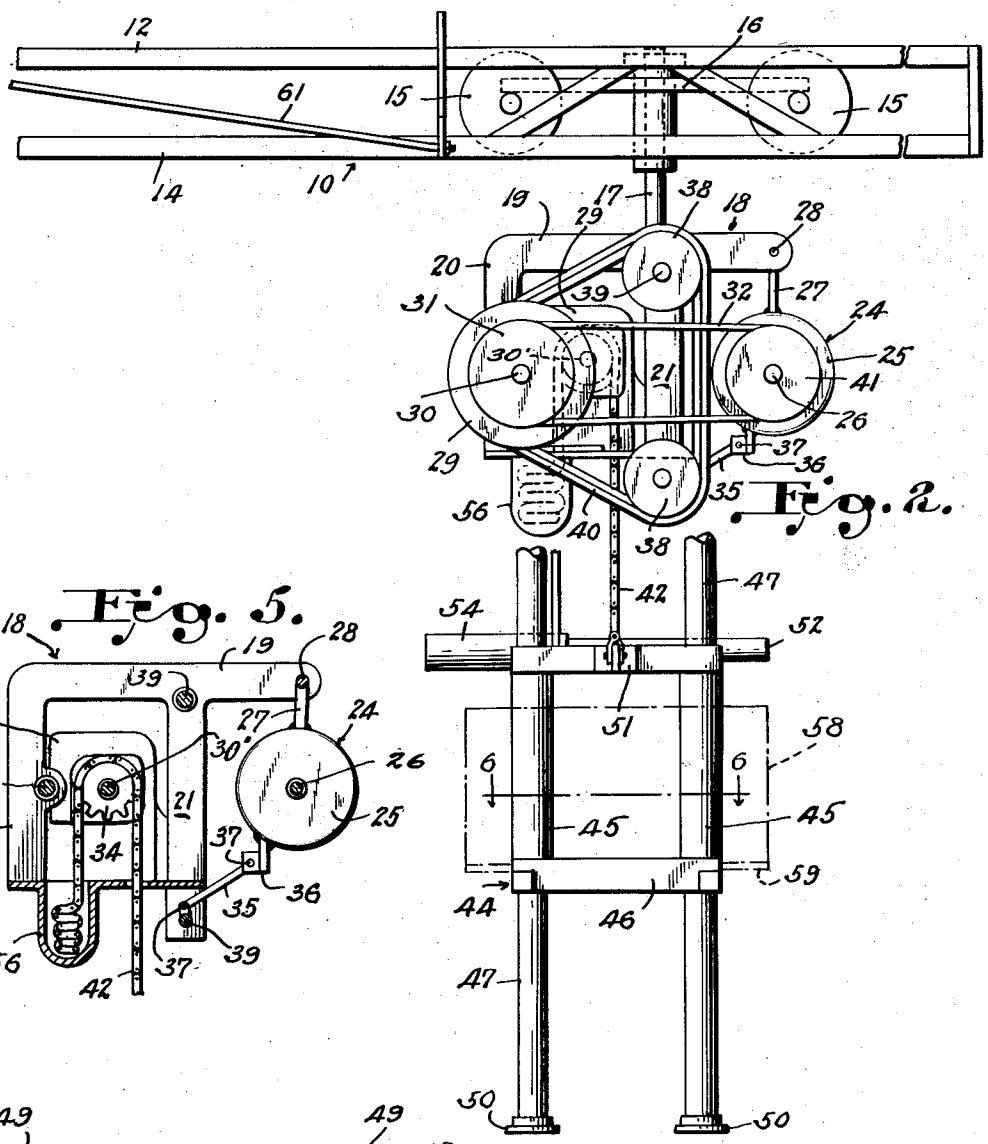


Fig. 2.

Fig. 5.

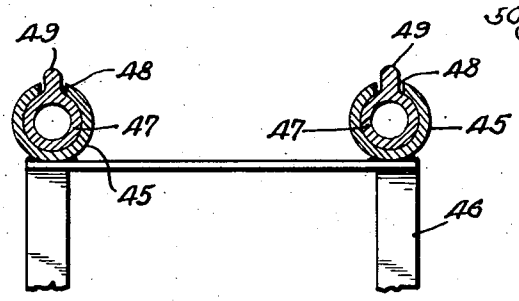


Fig. 6.

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Fig. 3.

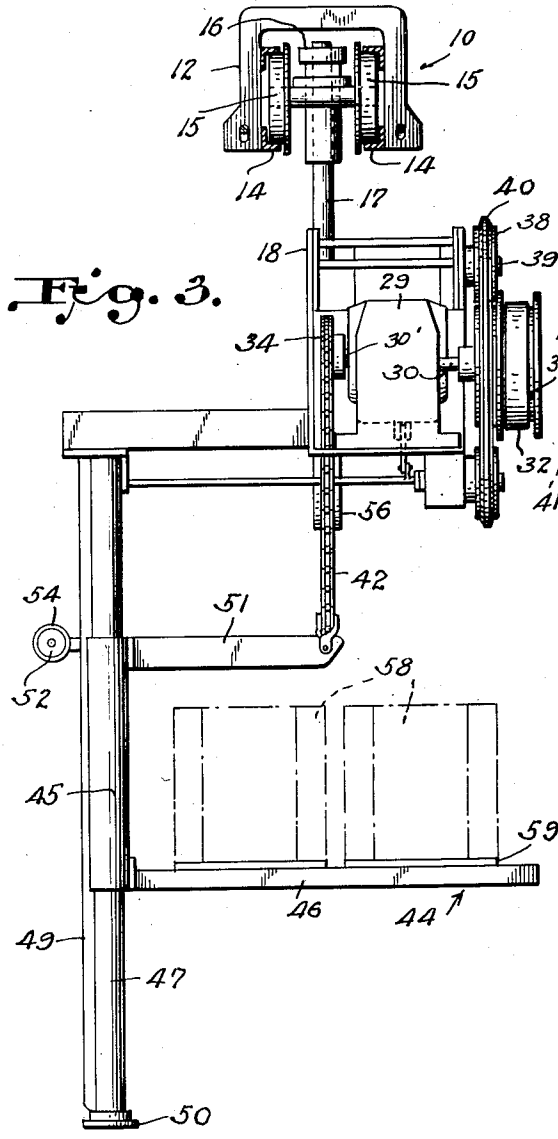
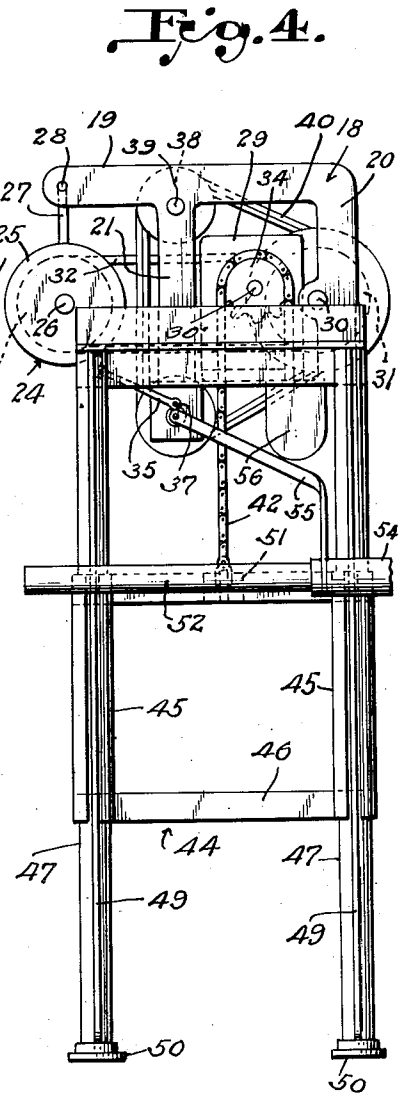


Fig. 4.



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DEVICE FOR HANDLING BUILDING BLOCKS AND OTHER BUILDING PRODUCTS

Henry A. Praschak, Marshfield, Wis.

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2 Claims. (Cl. 212—41)

This invention relates to a device for handling building blocks or other products before and during construction work, wherein such products are being used in the erection of such buildings.

It is a principal object of this invention to provide an apparatus for mechanically lifting, transporting and placing concrete blocks and other products from the point of their production or treatment to racks, shelves, etc., for storing such products and in so doing moving the material in a smooth and gentle manner so as not to cause damage to the material being handled.

Another important object of this invention is to provide a mechanical means for handling concrete blocks or other products which have heretofore been accomplished by means of hand labor in a manner that causes physical fatigue due to the gentle manner in which concrete blocks and other products must be handled when in an uncured or semi-plastic state and also due to the weight of the concrete blocks and other products.

A still further object of this invention is to provide a simple self-contained, mechanical means for lifting, transporting, and placing of concrete blocks and other products in a gentle manner which heretofore required other elaborate and costly devices to assist in making such handling possible. Heretofore such other auxiliary equipment such as air or hydraulic systems were incorporated requiring large and costly air compressors or hydraulic equipment which are costly to maintain and operate.

Other and further objects and advantages of the invention will be hereinafter described and the novel features thereof defined in the appended claims.

In the drawings:

Fig. 1 is a side elevation of a material handling device constructed according to an embodiment of my invention.

Fig. 2 is an internal side elevation, partly broken away, of one end of the device.

Fig. 3 is a front end elevation.

Fig. 4 is an enlarged side elevation of one side of the inside of the material handling device.

Fig. 5 is a fragmentary detailed longitudinal section, partly broken away, opposite to the side shown in Fig. 4.

Fig. 6 is an enlarged fragmentary horizontal section taken on the line 6—6 of Fig. 2.

Heretofore in the building industry it has been customary to manufacture building materials, especially building blocks at a certain place and then store the blocks and building materials at another place before it is desired to use such materials. As such materials have been of considerable weight special carts have been manufactured for lifting the building materials and blocks at the time it has been manufactured to a cart or the like so that the building material may be stored in a special rack or location until such time as a use for the building block or building materials has been set. This type of handling requires not only special, expensive, handling equipment but it also requires a considerable

amount of expensive time for the user of the building material.

It is therefore a primary object of this invention to provide a building material handling device to properly and satisfactorily handle the building material, especially the building blocks, from the time they have been manufactured until a time when they are to be used.

The building material handling device 10, constructed according to an embodiment of my invention has a vertically upstanding column 11 which may be engaged at its lower end on the ground or other substantial space. The column 11 is provided with a boom 12 which is rotatably mounted on the upper end of the column 11 as clearly indicated in Fig. 1 of the drawings the boom 12 extending laterally outwardly from the column 11 so that the building materials handled by the material handling device 10 may be stacked one upon the other in a location so desired.

The boom 12 is provided with longitudinally extending guides 14 for the wheels or rollers 15 carried by a carriage 16 which is then slidably engaged with the boom when the boom is raised, for movement along the length thereof.

Intermediate the length of the carriage 16 a vertically extending supporting rod or shaft 17 is secured having a frame 18 secured to the lower end of the rod 17. The frame 18 has an upper horizontal arm 19 with a vertically extending intermediate arm 20 formed thereon and a second vertically extending intermediate arm 21 spaced horizontally from the outer vertically extending arm 20, as clearly shown in Fig. 2 of the drawings.

A motor 24 is suspended from the horizontal arm 19 at one end thereof remote from the vertically extending arm 20, the motor 24 including a motor housing 25 and a motor shaft 26 therein. The motor 24 is hingedly mounted to the horizontal arm 19 by a link 27 pivotally connected to the horizontal arm 19 and motor 24 by a pivot pin 28 so that the motor is swingable about this horizontal axis of the links.

A speed reducer 29 is carried by the building material handling device 10 having a shaft 30 which extends through the frame 18, as clearly noted in Fig. 5 of the drawings.

A pulley 31 on the speed reducer shaft 30 is rotated with the shaft at the time of rotation thereof. The pulley 31 is particularly adapted for receiving a belt 32 to be hereinafter described.

A sprocket 34 is secured on the speed reducer shaft 30' of the speed reducer 29 for rotation therewith. The sprocket 34 is rotated indirectly through reduction gearing and pulley 31, the sprocket 34 being the driving means for lifting the material to be handled by the material handling device 10.

Ordinarily the belt 40 which engages about the pulley 41 on the motor drive shaft will rotate the speed reducer pulley 31 and the speed reducer shaft 30 when sufficient tightness is caused to result on the belt 40.

The tautness of the belt 40 is manually controlled by the movement of the motor 34 toward or away from the speed reducer 29.

The motor 24 is swung from the upper horizontal arm 19 by an arm or link 35 one end of the arm or link 35 being carried by a bracket 36 fixed to the motor housing 25 so that the motor shaft 26 will be moved toward or away from the speed reducer 29. The pivot pin 37 engages through the bracket 36 at one end of the arm or link 35 whereas a similar pivot pin 37 carried by the frame 18 will provide for such swinging movement of the motor.

An idler pulley 38 having an idler pulley shaft 39 therethrough is rotatably carried by the frame 18 between the motor and the speed reducer so that the speed of the

motor 24 will be transmitted to the idler pulley 38 when and as the motor 24 is moved to tighten up the belt 40 which engages about the pulley 41 on the motor shaft, and both of the idler pulleys 38 on the idler pulley shafts 39.

A chain 42 is trained about the sprocket 34 having one end of the chain connected to the building material handling device 44 which is movable in a vertical direction upon actuation of the motor 24.

The material handling device 44 is fixedly carried by and between the slidable guide tubes 45 having the actual material lifting frame 46 on the lower end of the sliding tubes 45.

The guide tubes 45 are slidable vertically on the vertically extending guide rods 47 secured at their extreme upper ends to the frame 18. There is provided a slot 48 along the length of each of the tubes 45 which have slidable therein a longitudinally extending bead 49 on each of the rods 47 so that when the motor is actuated for lifting the building material handling device frame 46 the frame 46 will be moved upwardly along the length of each of the guide rods 47 with the respective guide tubes 45.

Feet 50 are provided on the extreme lower end of each of the rods 47 limiting downward travel of said guides, by contact therewith.

A horizontally extending arm 51 is carried by the upper end of the building material handling frame 46 with the free end of the chain 42 attached thereto.

A substantially rigid control arm 52 is attached to the bead 49 and extends outwardly therefrom, said bead having a rotatable handle 54 on one end thereof, there being provided an actuating bar 55 fixed to the rotatable handle 54.

The horizontally extending control arm 52 is to be used in moving the carriage 16 along the length of the boom 12 while the rotatable handle 54 is to be rotated relative to the arm when the material handling frame 46 is to be moved upwardly relative to the building material handling device.

The building material handling device 10 is provided with a chain locker 56 adjacent to and below the chain driving sprocket 34 for collecting the other end of the chain 42 and the intermediate portions thereof remote from the building material handling device 44. The chain locker 56 extends vertically upwardly from the chain receiving recesses therein to provide a chain cover 57 to protect the chain from damage during the use of the building material handling device 10 during the horizontal movement of the carriage 16 and the vertical movement of the material lifting frame 46.

A building block 58 is particularly adapted to be raised and lowered by the lifting frame 46, the building block or blocks 58 being engaged on the upper surface of a pallet 59 which pallet and building blocks are ordinarily used in the transportation of the building blocks from one place to another after the building blocks have been manufactured and before they have been fully cured.

As the boom 12 is to be rotated horizontally relative to the column 11 there is provided a rotatable bearing 60 on the adjacent end of the boom 12 so that the boom 12 may be swung from one side to another to accurately position the building blocks 58 after they have been lifted upwardly by the building material handling device 10. Great care must be taken in the handling of the building blocks so that they will not become split or otherwise deteriorated before they reach the site of the building.

In view of the great weight of the building blocks and the subsequent horizontal sliding movement of the carriage 16 a guy wire or rod 61 is supported at one end

thereof over one end of the boom 12 and the other end of the guy is fixed to the boom 12 at some location remote from the rotatable hinge bearing 60 as clearly shown in Fig. 1 of the drawings.

The building material handling device 10 may be used in substantially the manner described above for handling great weights of building blocks without damaging the building blocks during the vertical and horizontal movement thereof before they are located in a position for the building.

While the specific details of one embodiment of this invention have been herein shown and described, the invention is not confined thereto as changes and alterations may be made without departing from the spirit and scope thereof as defined in the appended claims.

I claim:

1. A device of the kind described for handling building material comprising a vertically extending column, a laterally extending boom rotatably mounted at one end of said column, a carriage movable on said boom along the length thereof, a motor housing mounted on said carriage, said motor housing including a motor having a rotatable shaft, a material handling member movable along a vertical path below said carriage, a pair of depending fixed guides below said carriage, tubular slidable guide members engaging said fixed guides, said material handling member being fixed to said slidable guide member, a pivoted link connected at the ends thereof to said motor housing and one of said fixed guides, a motor speed manually actuatable control arm secured at one end thereof to one of said tubular guide members, a rotatable handle on said arm, a link pivotally connected at one end on said handle and at the other end of said motor housing for pivoting said motor housing relative to said carriage, a speed reducer on one of said fixed guides operatively connected to said motor shaft, a sprocket rotatable on said speed reducer operatively driven by said motor, and a chain trained about said sprocket and secured at one end to said material handling member for raising the same upon rotation of said handle.

2. A building material handling device of the kind described comprising a fixed vertically extending column, a laterally extending boom pivotally mounted for movement on a vertical axis relative to said column, a carriage movable along the length of said boom, a motor on said carriage and pivotally connected thereto for movement about a horizontal axis, a motor speed reducer on said carriage adjacent said motor, tensionable driving means between said motor and said speed reducer, a driving sprocket on said driving means, upper guide rods depending from said carriage, lower guide tubes slidable on said rods, a material handling member extending laterally of said tubes and connected thereto, a chain trained about said sprocket and connected at one end to said material handling member, and a motor positioned control member on said tubes for controlling the position of said motor and the tension of said driving means between said motor and said speed reducer whereby the speed of said material handling member is controlled by said motor position control member.

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