

Dec. 30, 1947.

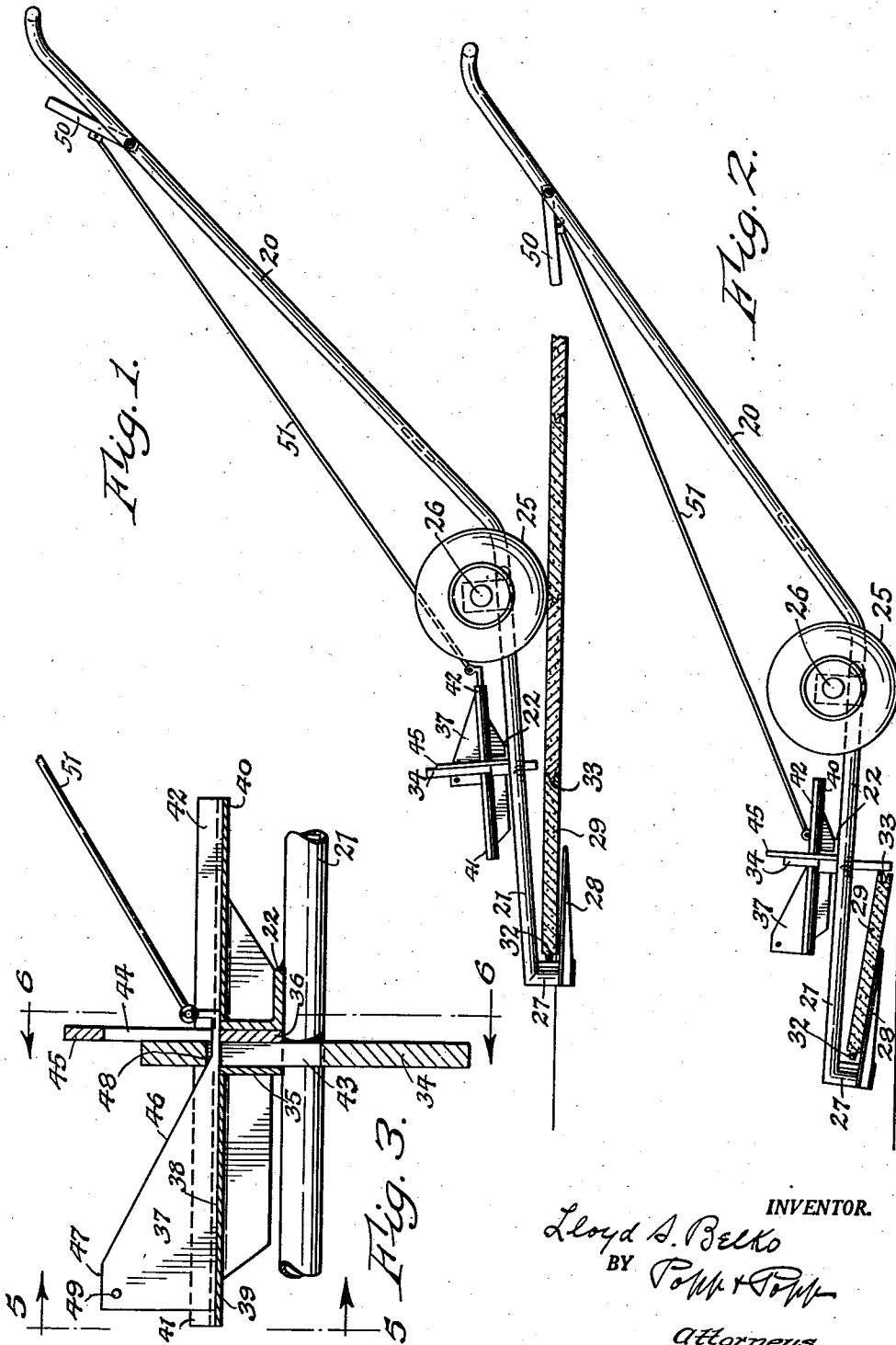
L. S. BELKO

2,433,754

TRUCK FOR ASSEMBLING CONCRETE PLANKS AND LIKE ARTICLES

Filed Feb. 27, 1946

3 Sheets-Sheet 1



Dec. 30, 1947.

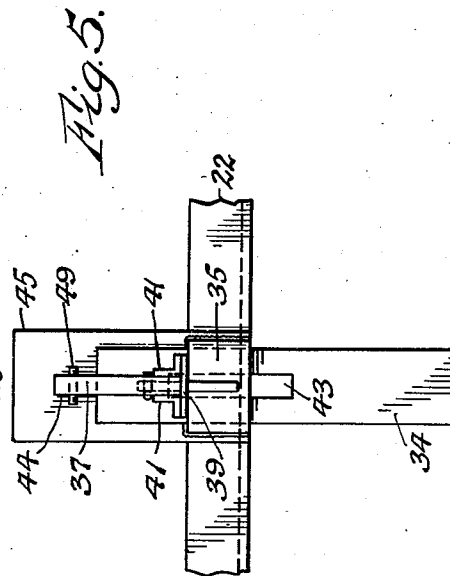
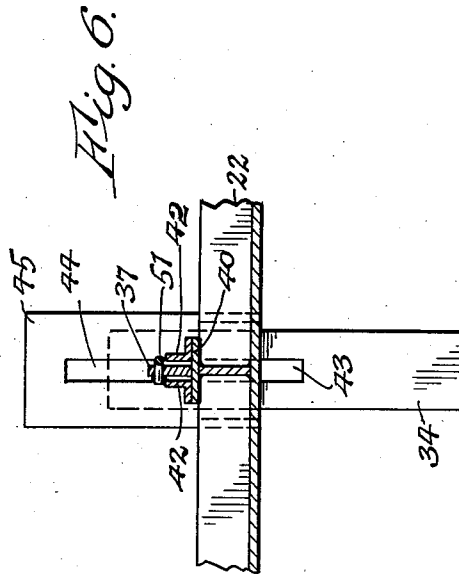
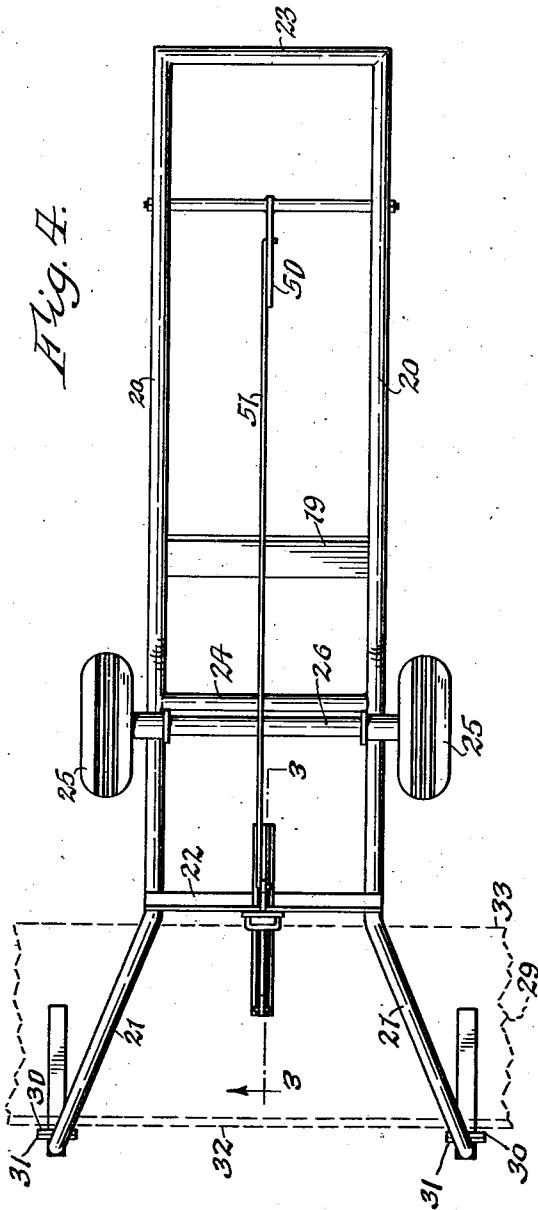
L. S. BELKO

2,433,754

TRUCK FOR ASSEMBLING CONCRETE PLANKS AND LIKE ARTICLES

Filed Feb. 27, 1946

3 Sheets-Sheet 2



Lloyd S. Belko INVENTOR.
BY *Pope & Pope*
Attorneys.

Dec. 30, 1947.

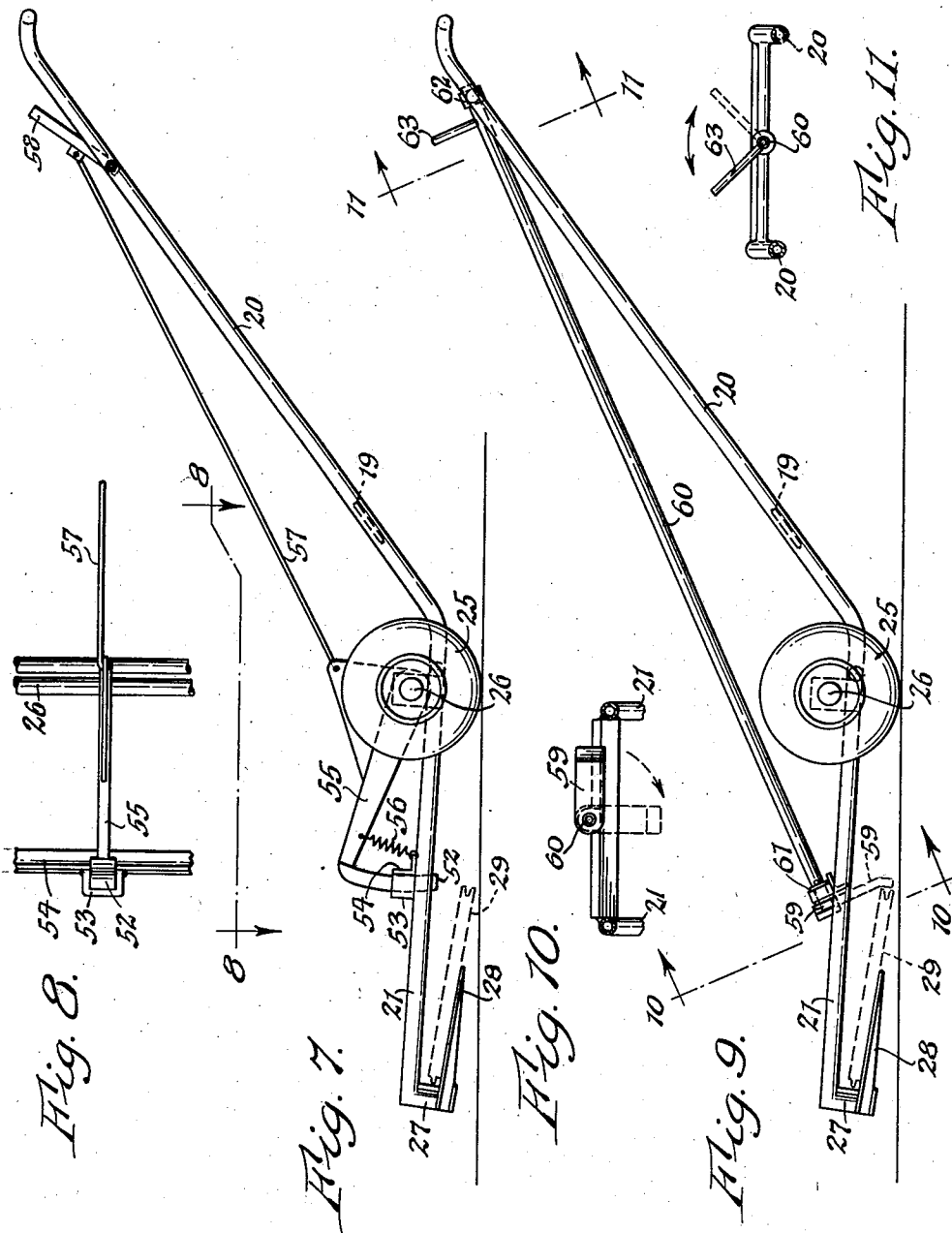
L. S. BELKO

2,433,754

TRUCK FOR ASSEMBLING CONCRETE PLANKS AND LIKE ARTICLES

Filed Feb. 27, 1946

3 Sheets-Sheet 3



Lloyd S. Belko INVENTOR.
BY *Popp & Popp*
Attorneys.

UNITED STATES PATENT OFFICE

2,433,754

TRUCK FOR ASSEMBLING CONCRETE
PLANKS AND LIKE ARTICLESLloyd S. Belko, Silver Creek, N. Y., assignor to
Martin Fireproofing Corporation, Buffalo,
N. Y., a corporation of New York

Application February 27, 1946, Serial No. 650,529

12 Claims. (Cl. 214—65.5)

1

This invention relates to a truck or apparatus for assembling articles on a structure from a standing position to a position in mid air at the side of the structure and more particularly to an apparatus for assembling concrete slabs or planks on the roofs of buildings.

These slabs or planks are successively assembled by the operator while the latter stands on the finished part of a roof which necessitates reaching out into mid air at one side of the finished part of the roof for placing additional planks or slabs against the planks or slabs which have been previously placed in position on the roof. This operation, as heretofore practiced, has been very slow and laborous and also dangerous to the workman.

It is the object of this invention to provide means whereby concrete planks or slabs may be easily and expeditiously assembled on a roof with absolute safety for the workman and at a substantial reduction in cost for doing work of this character.

In the accompanying drawings:

Fig. 1 is a side elevation of a plank or slab assembling truck or apparatus embodying this invention and showing the same in a position in which the assembling of a plank with others which have been previously placed on a roof has been completed and the apparatus is ready to be withdrawn from the placing position and used for transferring another plank from a source of supply and adding the same to the edge of the finished part of the roof.

Fig. 2 is a similar view showing the position of the parts of the assembling apparatus when a concrete plank or slab has been loaded on the apparatus and is ready to be transported over the roof and assembled in mid air at the edge of another plank which has already been placed in its proper position on the roof.

Fig. 3 is a fragmentary vertical longitudinal section, on an enlarged scale, taken on line 3—3, Fig. 4.

Fig. 4 is a top plan view of the plank or slab assembling truck or apparatus embodying this invention and showing a plank or slab mounted thereon by dotted lines.

Fig. 5 is a front elevation, on an enlarged scale, of the means for retaining a concrete plank or slab on the cradle of the assembling apparatus, shown in Figs. 1—4, this view being taken on line 5—5, Fig. 3, looking rearwardly.

Fig. 6 is a cross section taken on line 6—6, Fig. 3, looking forwardly.

Fig. 7 is a side elevation of a plank or slab assembling truck or apparatus embodying this

2

invention and showing the same equipped with a modified form of the means for retaining the plank on the cradle of the apparatus, while being transported and placed.

Fig. 8 is a fragmentary top plan view of the apparatus shown in Fig. 7 and taken on line 8—8, in this last mentioned figure looking downwardly.

Fig. 9 is a side elevation of a plank or slab assembling apparatus or truck embodying this invention showing another form of the retaining means whereby the plank or slab which is being transported and assembled is held against displacement on the truck while being transported preparatory to being assembled with other planks or slabs of like character.

Figs. 10 and 11 are vertical sections taken on the correspondingly numbered lines in Fig. 9.

In the following description, similar characters of reference indicate like parts in the several figures of the drawings:

This apparatus has the general form of a truck which is adapted to be moved about on the roof from the place where the concrete planks or slabs are supplied to the place where these articles are successively assembled and is provided with means whereby these slabs or planks are supported on the truck, and retaining means whereby the slabs or planks are prevented from becoming disengaged from the truck while being handled.

The main frame or body of the truck comprises two longitudinal side bars or members which are spaced transversely so that the rear part of this frame is comparatively narrow and the front part of the same is relatively wide. For this purpose the rear parts or sections 20, 20 of the side bars of the frame are arranged parallel and comparatively close together, while the front parts or sections 21, 21 of these bars are inclined and diverge forwardly and their front ends are spaced farther apart than the parallel rear parts 20 of the frame. These longitudinal members of the main frame are held in this spaced relation by a plurality of horizontal cross bars which include a front cross bar 22 connected at its opposite ends with the side bars at the angle between the parallel rear parts and the inclined front parts thereof, a rear cross bar 23 which connects the rear ends of the parallel side sections 20, and intermediate cross bars 24 and 19 connecting the side bar sections 20 at suitable points between the front and rear cross bars.

This main frame or body of the truck is trundled about on the roof of a building or elsewhere by providing the same with supporting wheels 25 arranged adjacent to the outer side of the longitudinal bars and journaled on opposite

ends of an axle 25 which is mounted transversely on the main frame adjacent to the intermediate cross bar 24 thereof.

The front parts of the longitudinal side bars of the frame are arranged comparatively low and close to the top of the roof over which the truck is adapted to run, while the rear parts of the same are inclined upwardly so that the rear cross bar 23 is within convenient reach of the operator and enables him to utilize this last mentioned cross bar as a handle for manipulating the truck.

The means for supporting a concrete plank or slab on the truck frame while being transported and placed in accordance with this invention comprise a cradle which comprises two supporting hooks, each of which includes a vertical neck 27 extending downwardly from the end of one of the inclined front sections 21 of a frame side bar, and a horizontal horn 28 extending longitudinally rearward from the lower end of this arm, as shown in Figs. 1 and 2.

When the truck is loaded with an article which is to be transported and placed, such for example as the concrete plank 29 shown by full lines in Figs. 1 and 2 and by dotted lines in Fig. 4, this plank is placed crosswise in the mouth or gap of the two hooks of the cradle so that the horns of these hooks engage with the underside of this plank, the forward movement of this plank on the cradle being limited by the vertical necks of these hooks forming front stops for this purpose. In order to prevent the front edge or side of the plank from being injured upon engaging with these front stops, elastic cushioning means are provided which preferably consist of strips or blocks 30 of rubber or other resilient material which face rearwardly and are mounted on supporting plates 31 attached to the rear sides of the necks 27, as shown in Figs. 1, 2 and 4. By means of these cushions the complementary tongues 32 and grooves 33, which are usually formed on the opposite longitudinal edges of concrete planks for the purpose of interlocking adjacent planks are not liable to be injured by engagement with the front stops or necks 27 of the cradle, this being particularly important when assembling planks made of concrete which has not yet thoroughly dried or seasoned.

By making the front part of the truck frame comparatively wide and the rear part thereof relatively narrow the two hooks of the cradle can be spaced apart a considerable distance so as to effectively control the plank which is being handled and still leave the rear part of the truck compact and more easily maneuverable.

For the purpose of conveniently and quickly handling the planks or slabs which are to be transported and placed in some particular position the horns 28 of the cradle hooks are made shorter than the width of the planks or slabs intended to rest thereon.

For the purpose of retaining the load on the cradle and preventing the same from slipping rearwardly off the supporting horns of the hooks, particularly when handling planks which are of greater width than the length of the horns of the cradle hooks, retaining means are provided which may be variously constructed but that form shown in Figs. 1-6 being constructed as follows:

The numeral 34 represents a rear stop having preferably the form of a vertical bar which is mounted on the truck frame preferably midway between the hooks of the cradle and capable of vertical movement thereon for the purpose of bringing its lower end into or out of the path

of the article while being loaded on the supporting cradle and unloaded therefrom. This stop bar slides with its upper part in a vertical guideway formed between front and rear guide plates 35, 36 mounted on the front side of the foremost cross bar 24 of the truck frame. Upon pushing this stop bar downwardly so that its lower end is arranged in rear of the plank or similar article on the cradle, as shown in Fig. 2, this rear stop will prevent the plank from sliding rearwardly off the cradle and instead retain the plank securely thereon so that the same can be freely transported and handled by the operator.

When it is desired to release the plank and permit the same to slide off the cradle, for depositing the same in some particular place or assembling the same with other like members, the stop bar is raised so that it clears the rear edge of the plank, as shown in Fig. 1, thereby enabling the operator to manipulate the truck for depositing the plank carried by the cradle in front of previously placed planks and also assemble the same therewith.

In the construction of the stop mechanism shown in Figs. 1-6 the stop bar is made heavy enough so that when free it will drop automatically into its lowered or operative position, but raising of this stop bar into its inoperative position for releasing the plank from the truck cradle is effected by manual means which are constructed as follows:

The numeral 37 represents a wedge or cam movable back and forth lengthwise on the truck and guided by sliding its lower horizontal edge 38 on a lower horizontal guide plate which is secured to the main frame and composed of a front section 39 arranged in front of the stop bar 34 and a rear section 40 arranged in rear of this stop bar. The wedge is confined on the lower guide plate sections by means of side guide plate sections 41, 42 which are secured to the upper side of the lower guide plate sections and adapted to engage opposite sides of the lower part of this wedge. This wedge tapers rearwardly and passes through a vertical slot 43 in the guide bar 34 and through a vertical slot 44 formed on an upward extension 45 of the rear vertical guide plate 36. The upper rear edge portion 46 of the wedge 37 is inclined rearwardly and the upper front portion 47 of this edge is arranged horizontally, as shown in Fig. 3. When this wedge is in its foremost position the same is withdrawn from the slot of the guide bar substantially its full extent and thus permits the stop bar to drop by gravity, but when this wedge is moved rearwardly its inclined face 46 engages with the upper end 48 of the slot 43 in the stop bar, whereby the latter is raised into its inoperative position. The rearward movement of this wedge is limited by a stop pin 49 arranged on the upper front part of the wedge and adapted to engage with the front side of the extension 45, and when this wedge is in its rearmost position the horizontal upper edge portion 47 engages with the upper end 48 of the slot 43, thereby holding the latter in its elevated position until such time as the wedge is again moved manually forward.

The forward and backward reciprocating movement of this wedge may be accomplished in various ways, those shown in Figs. 1-4 comprising a vertically swinging hand lever 50 pivoted on the rear parts 20 of the frame side bars, and a longitudinal shifting rod 51 connected at its front end with the rear end of the wedge 37 while

its rear end is connected with this hand lever.

5

Upon swinging this hand lever forwardly into a position in front of its axis the wedge 37 will be moved forwardly into its inoperative position and permit the stop bar to drop into its lowered position in which it serves to prevent the escape of the plank or other load on the truck cradle, as shown in Fig. 2, but when this hand lever is moved rearwardly into a position back of its axis, as shown in Fig. 1, the wedge 37 will be moved rearwardly and cause the stop bar to be elevated out of the path of the plank or load on the truck cradle and thereby permit this load to be discharged.

If desired the stop mechanism for either holding the load on the truck cradle or permitting the same to slide rearwardly therefrom may be constructed in the form shown in Figs. 7 and 8 and comprises a vertically swinging stop 52 of segmental form which is guided in a curved guide-way 53 on a cross bar 54 which connects the front sections of the truck frame, this curved stop bar being raised and lowered by means which comprise a vertically swinging stop arm 55 connected at its front end with the stop 52 and pivoted at its rear end on the axle 25 of the truck, a spring 56 connecting this rock arm with the adjacent part of the truck frame, a longitudinal rod 57 connected with the rear part of the stop arm 55, and a vertical swinging hand lever 58 mounted on the rear part of the truck frame in a manner similar to the hand lever, shown in Figs. 1, 2 and 4, and connected with the rear end of the rod 57. Upon swinging the hand lever 58 backwardly the stop 52 will be lifted into its inoperative position and out of the path of the load on the truck cradle so as to permit of unloading the latter but when the rearward pull on this hand lever is released the spring 56 lowers this stop and holds the same yieldingly across the path of the plank on the truck cradle.

Another modified form of stop means for accomplishing this purpose is shown in Figs. 9, 10 and 11 and comprises a rear stop 59 adapted to swing in a vertical plane crosswise of the truck frame in rear of the cradle thereof so that in its lowered position this stop will be arranged in the path of the load along the rear side thereof, as shown by dotted lines in Figs. 9 and 10, but when this stop is raised into an elevated horizontal position, as shown by full lines in these figures, the same will clear the path of the load on the truck cradle and permit the latter to slide off from the cradle. The means for moving this stop 59 into its operative and inoperative position include a longitudinal rock shaft 60 which has its front end secured to this stop and is journaled at its front and rear ends by means of bearings 61, 62 on the front and rear parts of the truck frame, and a handle 63 projecting laterally from the rear part of this shaft and adapted to be manipulated by the operator for shifting the stop either into its lowered operative or into its raised inoperative position.

Owing to the simplicity in construction of this apparatus for transporting and placing planks, slabs and the like the same can be produced at comparatively low cost. The same is very light, strong and durable and not liable to get out of order under severe use.

It is to be particularly noted that this machine permits the "driving up" of each additional slab against the one previously laid, so that they are tightly wedged together. In this type of slab the cooperating complementary tongues and grooves thereon are so designed that they fit tightly

6

against one another and it is therefore necessary that each slab be driven up so that the several slabs will not rock after the roof deck of a plurality of slabs has been erected. If such rocking occurred it would cause damage to the waterproof covering which is usually applied on top of the roof deck.

A further advantage in the use of this machine is that it permits the operator to work conveniently from off the erected areas of the roof instead of having to lean over the edges of the erected areas to place and drive-up successive slabs.

Moreover, the same permits of transporting and placing concrete planks for assembling them with others of a like character in erecting the roof of a building or like structure with ease and facility and without endangering the safety of the operator.

I claim as my invention:

1. A truck for placing planks and like articles on a structure, comprising a body adapted to be moved on the structure to and from a position in which part of the body projects into mid air from the structure, and means for mounting an article on said body including a fixed cradle arranged on the front part of said body and projecting permanently downwardly and rearwardly therefrom and adapted to support said article on its underside, and means for retaining said article on said cradle.

2. A truck for placing planks and like articles on a structure, comprising a body adapted to be moved on the structure to and from a position in which part of the body projects into mid air from the structure, and means for mounting an article on said body including a fixed cradle arranged on the front part of said body and projecting permanently downwardly and rearwardly therefrom and adapted to support said article on its underside, and means for retaining said article on said cradle, including stop means mounted on said body and adapted to engage the rear side of the article and movable out of engagement therefrom.

3. A truck for placing planks and like articles on a structure, comprising a body adapted to be moved on the structure to and from a position in which part of the body projects into mid air from the structure, and means for mounting an article on said body including a fixed cradle arranged on the front part of said body and projecting permanently downwardly and rearwardly therefrom and adapted to support said article on its underside, and means for retaining said article on said cradle, including stop means mounted on said body and adapted to engage the rear side of the article and movable into and out of the path of said article while the same is carried by said cradle.

4. A truck for placing planks and like articles on a structure, comprising a body adapted to be moved on the structure to and from a position in which part of the body projects into mid air from the structure, and means for mounting an article on said body including a fixed cradle arranged on the front part of said body and projecting permanently downwardly and rearwardly therefrom and adapted to support said article on its underside, and means for retaining said article on said cradle, and elastic stop means arranged on the front part of the cradle and adapted to engage the front side of said article.

5. A truck for placing planks and the like on a structure, comprising a body adapted to be

moved on the structure to and from a position in which the body projects into mid air from the structure, a fixed cradle arranged on the front part of the body and including a plurality of hooks arranged transversely side by side and each having a vertical neck projecting downwardly from the body and forming a front stop adapted to engage the front edge of the article being placed and a horizontal horn projecting permanently rearwardly from the lower end of said neck and adapted to engage with the underside of said article, and stop means arranged on said body and adapted to engage with said article between said hooks and movable out of engagement therefrom.

6. A truck for placing planks and the like on a structure, comprising a body adapted to be moved on the structure to and from a position in which the body projects into mid air from the structure, including two longitudinal side bars and cross bars connecting the rear parts of said side bars, supporting wheels which are mounted on the central part of said body and whereby the same may be trundled from one place to another on the structure, and fixed cradle hooks projecting permanently downwardly and rearwardly from the front ends of said side bars and adapted to support the article to be placed on the under side of the same.

7. A truck for placing planks and the like on a structure, comprising a body adapted to be moved on the structure to and from a position in which the body projects into mid air from the structure, including two longitudinal side bars and cross bars connecting the rear parts of said side bars, supporting wheels which are mounted on the central part of said body and whereby the same may be trundled from one place to another on the structure, and fixed cradle hooks projecting permanently downwardly and rearwardly from the front ends of said side bars and adapted to support the article to be placed, the rear part of said body being comparatively narrow and the front part of the same relatively wide.

8. A truck for placing planks and like articles on a structure, comprising a body adapted to be moved on said structure to and from a position in which the front part of the body projects into mid air from the structure, a cradle arranged on the front part of the body and adapted to support an article in mid air alongside of the structure and provided with a fixed front stop adapted to engage the front side of said article, and rear stop means for retaining said article on said cradle including a stop bar adapted to engage the rear side of the article being placed and guided on the body for vertical movement into and out of the path of said article on the cradle, and wedge means for shifting said stop bar.

9. A truck for placing planks and like articles on a structure, comprising a body adapted to be moved on said structure to and from a position in which the front part of the body projects into mid air from the structure, a cradle arranged on the front part of the body and adapted to support an article in mid air alongside of the structure and provided with a fixed front stop adapted to engage the front side of said article, and rear stop means for retaining said article on said cradle including a stop bar adapted to engage the rear side of the article being placed and provided with a vertical slot, a vertical guideway on said body in which said stop bar slides vertically into and out of its operative position, a horizontally movable wedge adapted to engage the upper end of said slot for lifting the stop bar into its inop-

erative position, a horizontal guideway on the body for said wedge, and manually operable means mounted on said body for actuating said wedge.

10. A truck for placing planks and like articles on a structure, comprising a body adapted to be moved on said structure to and from a position in which the front part of the body projects into mid air from the structure, a cradle arranged on the front part of the body and adapted to support an article in mid air alongside of the structure and provided with a fixed front stop adapted to engage the front side of said article, and rear stop means for retaining said article on said cradle including a stop bar adapted to engage the rear side of the article being placed and provided with a vertical slot, a vertical guideway on said body in which said stop bar slides vertically into and out of its operative position, a horizontally movable wedge adapted to engage the upper end of said slot for lifting the stop bar into its inoperative position, a horizontal guideway on the body for said wedge, and manually operable means mounted on said body for actuating said wedge, including a shifting lever pivoted on the rear part of the body, and a shifting rod connecting said lever and wedge.

11. A truck for placing planks and like articles on a structure, comprising a body adapted to be moved on said structure to and from a position in which the front part of the body projects into mid air from the structure, a cradle arranged on the front part of the body and adapted to support an article in mid air alongside of the structure and provided with a fixed front stop adapted to engage the front side of said article, and rear stop means for retaining said article on said cradle including a vertically movable rear stop adapted to engage the rear side of the article being placed, a vertically swinging arm pivoted on said body and carrying said rear stop, a shifting lever pivoted on said body, a shifting rod connecting said lever and arm, and a spring for yieldingly holding said rear stop in its operative position.

12. A truck for placing planks and like articles on a structure, comprising a body adapted to be moved on said structure to and from a position in which the front part of the body projects into mid air from the structure, a cradle arranged on the front part of the body and adapted to support an article in mid air alongside of the structure and provided with a fixed front stop adapted to engage the front side of said article, and rear stop means for retaining said article on said cradle including a stop arm adapted to engage the rear side of said article and rotatable crosswise of the body into and out of the path of said article, a longitudinal operating shaft journaled on the body and connected at its front end with said stop arm, and an operating lever connected with the rear part of said shaft.

LLOYD S. BELKO.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,079,719	Schuetze	May 11, 1937
2,086,318	Jackson	July 6, 1937

FOREIGN PATENTS

Number	Country	Date
220,482	Great Britain	Aug. 21, 1924
646,251	Germany	June 11, 1937