

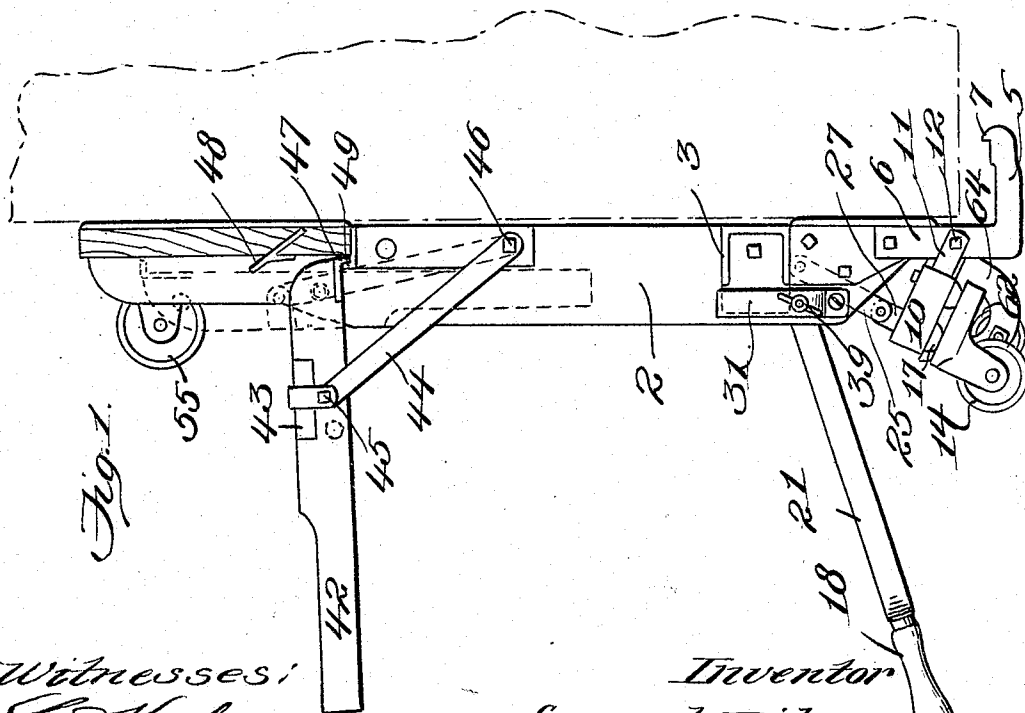
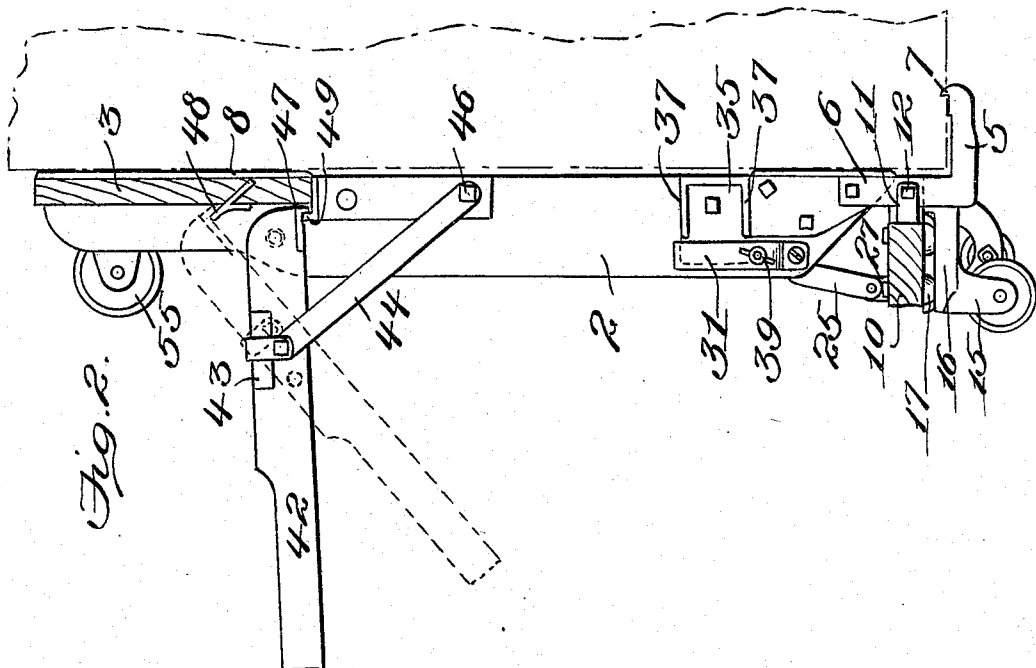
S. BILGER.
PIANO TRUCK.

APPLICATION FILED NOV. 30, 1907. RENEWED DEC. 8, 1908.

937,043.

Patented Oct. 19, 1909.

3 SHEETS—SHEET 1.



Witnesses:
Ed. Hesler
Robert Everett,

Inventor
Samuel Bilger
By James L. Norris.

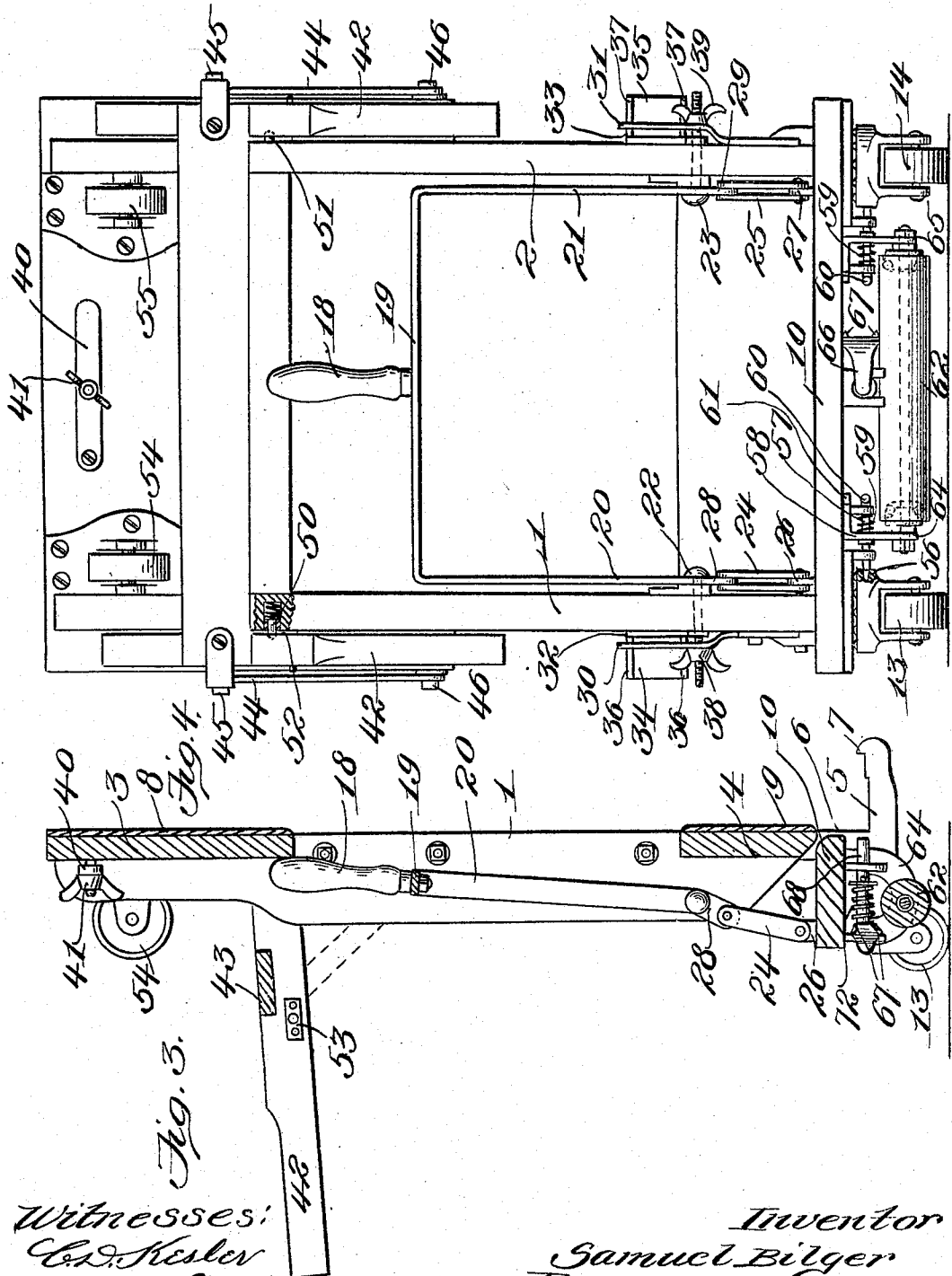
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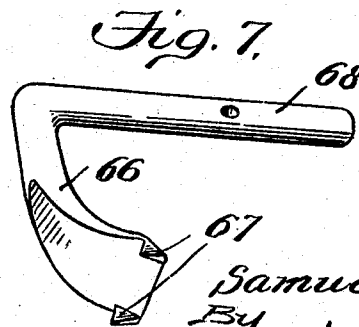
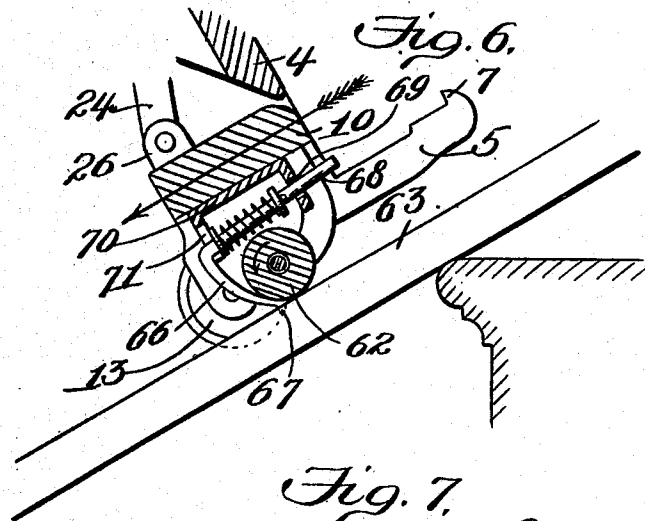
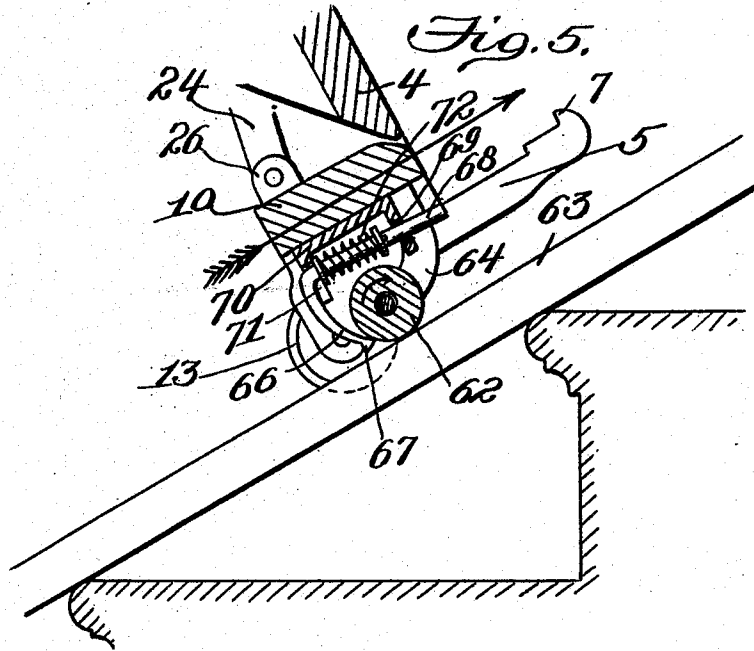
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3 SHEETS—SHEET 3.



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Ed. Hesler
Robert Everett

Inventor
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By *James L. Norris*
Att'y

UNITED STATES PATENT OFFICE.

SAMUEL BILGER, OF SILVERDALE, PENNSYLVANIA, ASSIGNOR TO PARKER MANUFACTURING COMPANY, OF SOUDERTON, PENNSYLVANIA.

PIANO-TRUCK.

937,043.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed November 30, 1907, Serial No. 404,550. Renewed December 8, 1908. Serial No. 466,559.

To all whom it may concern:

Be it known that I, SAMUEL BILGER, a citizen of the United States, residing at Silverdale, in the county of Bucks and State of Pennsylvania, have invented new and useful Improvements in Piano-Trucks, of which the following is a specification.

My present invention relates to improvements in trucks of the character especially adapted for use in piano moving, being of the type covered by my prior Letters Patent, No. 867,099 granted September 24, 1907, and it has for its object primarily to provide an improved lifting jack for elevating the piano above the floor or other support and transferring its weight to the truck in order that the piano may be moved from place to place, the jack employed in the present instance being relatively simple in construction, and capable of easily withstanding the weight imposed on it.

Another object of the invention is to provide means for facilitating the movement and manipulation of the piano on stairways or in other places where the piano is being moved on an incline, a safety device being provided which acts automatically to prevent backward or retrograde movement.

A further object of the invention is to provide a truck of this character which is capable of use while the piano occupies a normal upright position or when it is stood on end, a pair of casters being provided which are swiveled to permit them to operate in both instances, and they are equipped with locking devices which serve to prevent turning of the casters while supporting the piano in endwise position.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawings—Figure 1 is a side elevation of a piano truck constructed in accordance with the present invention, the parts being adapted for application to the piano; Fig. 2 is a view similar to Fig. 1 showing the piano lifted upon the truck and in readiness for transportation; Fig. 3 represents a vertical section of the truck with the parts occupying the positions shown in Fig. 2; Fig. 4 is an end view of

the truck as it appears from the left in Fig. 2; Fig. 5 is a detail sectional view showing the supplemental roller adapted to cooperate with a plank in moving the piano on a stairway, the safety device being shown in inoperative position while the piano is ascending; Fig. 6 is a view similar to Fig. 5 showing the safety device in operation to prevent retrograde movement of the piano; and Fig. 7 is a detail perspective view of the safety device removed.

Similar parts are designated by the same reference characters in the several views.

In moving pianos in the customary way, that is to say, while the piano occupies an upright position, a pair of trucks, of course, are employed, the trucks being arranged at the opposite ends of the piano, but as the trucks may be duplicates, I have considered it sufficient to illustrate and describe a single truck only, a similar truck being applied in the same manner to the opposite end of the piano.

The truck shown in the present embodiment of my invention comprises generally a frame embodying a pair of uprights 1 and 2 and upper and lower cross pieces 3 and 4 rigidly connecting them, the frame thus provided being preferably composed of wood of a suitable strength so as to insure lightness in weight. At the lower end of the frame thus provided are bolted or otherwise secured a pair of brackets 5, those shown comprising an arm 6 which is rigidly secured to the outer vertical side of the respective uprights, and its lower portion is extended horizontally forward beyond the surfaces of the cross pieces 3 and 4 and is adapted to engage beneath the body of the piano, the latter, of course, resting upon the usual casters and thereby being spaced a sufficient distance above the floor to permit introduction of the brackets beneath it. In order to prevent accidental disengagement of the brackets from the piano, it is preferable to provide them with upturned claws 7 which are capable of obtaining a firm hold in the wood composing the piano. When the piano is thus supported on the brackets the end thereof, of course, engages at the forward surfaces of the cross pieces, and in order to prevent marring or injury to the polished surfaces of the piano, it is preferable to carpet or otherwise pad these cross pieces, as shown at 8 and 9.

In order to transfer the weight of the piano from its own casters to the truck with the greatest facility, the truck is provided with a lifting jack which is capable of elevating the frame carrying the brackets and thereby lift the piano from the floor. In the present instance the truck frame is provided with a transverse base 10 having a pair of hinge lugs 11 extending forwardly from one of its edges and pivotally attached to the attaching arm 6 of the respective brackets by means of pivot bolts 12, and at the under side of the base are mounted a pair of casters 13 and 14 having the axes of their rollers located toward the rear edge of the base in order that a sufficient vertical movement thereof relatively to the truck frame will occur as the base is turned about its pivots. This result is accomplished in the present instance by employing a pair of casters wherein the roller supporting lugs 15 extend substantially downwardly from one of the peripheral edges of the turn table 16, the latter being mounted to turn on a cup 17 which is secured to the under side of the base.

The necessary pivotal movements of the base for the purpose of elevating and lowering the truck frame and the brackets thereon, are affected in the present instance by means of a handle 18 connected by a cross piece 19 to a pair of operating levers 20 and 21, the latter being fulcrumed on the truck frame by the bolts 22 and 23, and those ends thereof that are extended beyond the pivots are connected to links 24 and 25, the latter being pivotally attached to the base by means of brackets 26 and 27 which are located in proximity to the rear edge thereof and immediately above the rollers of the casters thereon. Obviously, by turning the levers about their axes by means of the handle 18, a turning movement of the base about its axis will be accomplished, causing vertical movement of the brackets that will serve to elevate and depress the truck frame relatively to the floor or other support. It is preferable to render the operating mechanism of the jack self-locking, and this is accomplished in the present instance by offsetting the portions 28 and 29 of the respective rollers so that they will carry the pivot connections between them and the links 24 and 25 out of alinement with the pivot bolts 22 and 23 and the brackets 26 and 27, respectively, when the operating handle is moved into the position shown in Figs. 3 and 4, the truck frame at this moment being elevated to its extreme height.

The trucks at the opposite ends of the piano may be secured from disengagement therewith by means of webs or tapes which extend at the front and back of the piano and are attached at their ends to the respective trucks by means of a pair of clamps, a pair of these being shown in the present

instance attached to the uprights of the frame and embodying flexible clamping arms 30 and 31 which are arranged to cooperate with the relatively fixed surfaces 32 and 33 formed on the upper ends of the respective bracket arms, and the ends of the webs are held from disengagement relatively to the clamping arms by means of guides 34 and 35, the latter being formed on the upper ends of the respective arms of the brackets and in line with the clamping arms and being provided with raised flanges 36 and 37 which have parallel portions between which the webs engage so that vertical movement thereof is prevented. The clamping arms are operated in the present instance by thumb nuts 38 and 39 which are threaded on the outer ends of the pivot bolts 22 and 23 which support the jack operating levers. The trucks at the opposite ends of the piano may be further secured by means of a web which extends over the top of the piano, each truck being provided with a clamping arm 40 having a thumb nut 41 by means of which it may be operated to clamp the respective ends of the web, and thereby prevent the trucks from dropping off the piano in case the weight thereon should be momentarily relieved.

In order to facilitate manipulation of the trucks, they are each provided preferably with a pair of handles 42 which are connected by a cross piece 43 and are pivotally attached to the truck frame by means of a pair of links 44 which are attached to the said handles at points intermediate between their ends, as at 45, and their opposite ends are attached to the respective uprights by the bolts 46. The inner ends of the handles are provided with downturned projections 47 which are arranged to cooperate with the vertically spaced stops 48 and 49 located on the truck frame, these stops being so positioned that the handles are capable of occupying two different angular positions relative to the frame, that is to say, they may occupy a substantially right angle position, as shown in full lines in Figs. 1 and 2 when the projection 47 engages the lower stop 49, and they may occupy an inclined position, as shown in dotted lines in Fig. 2 when the projection 47 engages the upper stop 48. These handles also perform the function or purpose of supporting the piano when the latter is stood on one of its corners, the truck in this instance being supported by the ends of these handles and the casters 13 and 14. In order to facilitate the manipulation of the truck, it is preferable to provide a device for yieldingly retaining these handles in operative and inoperative positions, and for this purpose a pair of spring operated plungers 50 and 51 are provided which are preferably mounted in the uprights of the frame and are adapted to cooperate with

either of a pair of apertured locking plates 52 and 53 formed in each handle, the plate 52 coöperating with the plunger to retain the handles in a horizontal position as shown in Figs. 1 and 2, and the plate 53 co-operating therewith to retain the handles in inoperative position, that is to say, in folded relation to the frame.

In some cases it may be necessary to stand the piano on one of its ends while handling it, and in that case one of the trucks sustains the whole weight of the piano, and in order to facilitate the manipulation of the piano under these circumstances, it is preferable to provide an additional pair of rollers 54 and 55 which are attached rigidly to the side of the cross piece 3 and when so employed the lower casters 13 and 14 should be locked in a position with their axes in parallel relation to those of the upper casters. In the present instance this result is accomplished by providing the turn tables of the lower casters with locking apertures 56 in which the end of a plunger 57 engages, this plunger being guided on a bracket 58 secured to the under side of the base 10 and is normally operated toward locked position by means of a helical spring 59 encircling it. Each plunger is provided with a laterally turned end 60 which is capable of being turned into and out of coöperative relation with the projecting end 61 of its guide so that the plunger may be set into operative or inoperative positions as may be desired. Of course, in moving the piano about while it rests upon the two trucks, it is usually desirable to obtain the swiveling action of the lower casters, and in this case the laterally turned end 60 of each plunger will be engaged with the part 61 so that it cannot lock the casters from pivotal movement, but when the truck occupies a horizontal position with all four casters resting on the floor, the lower casters are locked from pivotal movement by the plungers.

In order to facilitate the handling of the piano in ascending and descending stairways and other inclines, it is advantageous to employ a supplemental roller 62 having a relatively wide bearing surface to coöperate with a plank 63 which is adapted to be laid upon the steps, the roller being supported at its opposite ends by means of a pair of brackets 64 and 65 which are rigidly fixed to the under side of the base, the roller shown in the present instance being mounted on ball bearings in order to reduce the friction thereof. A safety device or check is preferably employed in connection with this roller for the purpose of preventing backward or retrograde movement of the piano when the lifting effort thereof is temporarily discontinued, the check shown in the present instance being controlled automatically according to the direction of rota-

tion of the roller, and it embodies a claw 66 which has frictional engagement with the periphery of the roller, and is provided at its opposite or under side with one or more spurs 67, the claw being supported by an arm 68 having one end guided in an aperture 69 of a bracket 70 securely fastened to the under side of the base, and the portion of the arm adjacent to the claw rests loosely in a vertical slot 71 in the bracket so as to permit a relative vertical movement of the claw. A helical compression spring 72 encircles the arm and serves to normally retain the claw in frictional engagement with the periphery of the roller. As the piano moves upwardly the roller rotates in a direction indicated by the arrow in Fig. 5, consequently the frictional engagement between the roller and the claw will tend to lift the latter into the upper portion of the vertical slot 71, and thereby retain the spurs on its under side out of engagement with the supporting plank. However, should the piano move backwardly as indicated by the arrow in Fig. 6, the roller will reverse its direction of rotation, the frictional engagement between it and the claw serving to move the latter downwardly toward the lower end of the vertical slot 71 and thereby carry the spurs 67 beneath the roller into engagement with the plank, thereby obtaining a hold that will arrest the further backward movement of the truck. In descending the stairway, the check may be set into inoperative position by withdrawing it rearwardly and then turning it about the arm 68 as an axis, and when so adjusted the claw will be clear of the roller as indicated in Figs. 3 and 4, and consequently the truck may move downwardly on the plank.

I claim as my invention—

1. A piano truck embodying a frame having lifting means thereon, a supporting base mounted for swinging movement about a single fixed axis relatively to said frame, and a device connecting said frame and base and turnable about an axis parallel to the axis about which the base swings to elevate or depress the frame relatively to the base.

2. A piano truck embodying a frame provided with a lifting bracket, a supporting base mounted in pivotal relation to said frame so as to turn on a fixed axis, and a jack connecting said frame and base and operable about axes parallel to the pivotal axis of the base to turn the base relatively to the frame and about said fixed axis.

3. A piano truck embodying a pair of lifting brackets, a supporting base pivoted to the brackets so as to turn about a fixed axis at its forward edge and having supporting devices beneath it and adjacent to its rear edge, and means for retaining the base and bracket in coöperative relation.

4. A piano truck embodying a frame pro-

vided with lifting brackets, a supporting base pivotally connected to said frame and turnable about a fixed axis thereon, and a lever pivoted on one of said parts so as to turn about an axis parallel to the axis of movement of the base and having a link connection with the other part to effect relative pivotal movement between said base and frame about said fixed axis to elevate or depress the latter.

5. A piano truck embodying a frame having lifting brackets thereon, a base pivotally connected thereto, and an operating lever having pivotal connections with the frame and the base and turnable about an axis parallel to the axis of pivotal movement of the base, said lever serving to turn the latter relatively to said frame for elevating and depressing the frame relatively to the base.

6. A piano truck embodying a frame having lifting brackets thereon, a supporting base pivotally connected to the frame, and an operating lever pivotally connecting the frame and base and turnable about an axis parallel to the axis of movement of the base, said lever being capable of automatically locking the frame in elevated position.

7. A piano truck embodying a frame having lifting brackets thereon, a supporting base pivotally connected to the frame, a pair of operating levers connected to the frame and turnable about axes parallel to the plane of pivotal movement of the base, the ends of said levers being laterally offset, and links connecting the offset ends of the levers to the base for effecting the elevating and lowering of the frame and for locking the latter in elevated position.

8. A piano truck embodying a frame having lifting brackets thereon, a base operatively connected to the frame, and casters having swivel connections with the base and having means for locking them with their axes in alinement.

9. A piano truck embodying a frame having piano supporting brackets thereon, a base operatively connected to the frame, a pair of casters on the base having locking apertures in the movable parts thereof, and locking plungers adapted to cooperate with the said apertures to retain the casters in fixed relation.

10. A piano truck embodying a frame having piano supporting brackets thereon, a base operatively connected to the frame, casters pivotally mounted on the base and having locking apertures, and a locking plunger for each caster having a spring for normally retaining it in locking engagement with the aperture therein.

11. A piano truck embodying a frame having piano supporting brackets thereon, a base operatively connected to the frame, casters pivotally mounted on the base and

having radial locking apertures, spring operated plungers adapted to cooperate with the respective apertures in the casters, and means for retaining the plungers in inoperative position.

12. A piano truck embodying a frame having supporting brackets thereon, a base operatively connected to the frame, swiveled casters mounted on the base having radial locking apertures, spring operated plungers guided to reciprocate into and out of engagement with the respective apertures and having laterally turned ends capable of rotary adjustment, and a projection adapted to cooperate with the said ends to retain the plungers in inoperative position.

13. A piano truck embodying a frame having supporting brackets thereon, a base operatively connected to the frame, a pair of casters swiveled on the base and adapted to support the truck when the latter occupies vertical or horizontal positions, locking devices for retaining the said casters in predetermined positions, and a pair of cooperating casters mounted on the upper end of the frame.

14. A piano truck embodying a frame having supporting brackets thereon, a base operatively connected to the frame, and handles pivotally connected at intermediate points to the frame and devices cooperating with the inner ends of the handles for locking them in either of two different angular positions relatively to the frame.

15. A piano truck embodying a frame having lifting brackets thereon, and a base operatively connected to it, a pair of handles having link connections with the frame and provided with retaining projections at their ends, and upper and lower stops on the frame adapted to cooperate with the projections on the handles and thereby retain the latter in either of two positions.

16. A piano truck embodying a frame having supporting brackets thereon, and a base operatively connected to the frame, a pair of handles pivotally connected at intermediate points with the frame and adapted to occupy one position in parallel relation thereto, and another position in angular relation thereto, and locking devices cooperating with the inner ends of the handles for retaining the latter in either of the two positions.

17. A piano truck embodying a frame having supporting brackets thereon, a base operatively connected to the frame, a pair of casters mounted on the base, and a supplemental roller extending between the casters and having its periphery arranged above the periphery of the casters.

18. A piano truck embodying a frame having supporting brackets thereon, a base operatively connected to the frame, a roller journaled on the base, and an automatic

check controlled by the roller and adapted to engage the support on which the roller rests.

19. A piano truck embodying a frame 5 having supporting brackets thereon, a base operatively connected to the frame, a roller journaled on the under side of the base, and a check frictionally engaging the roller and having spurs adapted to engage the support 10 on which the roller rests when the roller is turned in one direction and to rest clear of the said support when the roller rotates in an opposite direction.

20. A truck of the character described embodying a frame having supporting brackets 15 thereon, a base operatively connected to the frame, a roller journaled on the base, and a safety check having a portion adapted to frictionally engage the periphery of the roller and provided with spurs adapted to be 20 carried into engagement with the support on which the roller rests when the roller turns in one direction.

21. A truck of the character described embodying a frame having supporting brackets 25 thereon, a base operatively connected to the frame, a roller journaled on the under side of the base, and a safety check embodying an arm guided on the base, a claw arranged 30 to frictionally engage the periphery of the

roller and provided with downwardly directed spurs arranged to cooperate with the support on which the roller rests, and a spring encircling the said arm and operating to retain the claw in frictional engagement with the periphery of the roller. 35

22. A truck of the character described embodying a frame having supporting brackets thereon, a base operatively connected to the frame, a roller journaled on the under side 40 of the base, and a safety check embodying an arm guided to reciprocate on the base and capable of a turning movement, a claw carried by the arm and adapted to frictionally engage the periphery of the roller and 45 provided with downturned spurs adapted to engage the support on which the roller rests, the claw being moved into and out of cooperative relation with the roller by a turning movement of the said arm, and a spring 50 for retaining the claw in operative or inoperative positions.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SAMUEL BILGER.

Witnesses:

EMMA GROOVER,
VIOLA S. GROOVER.