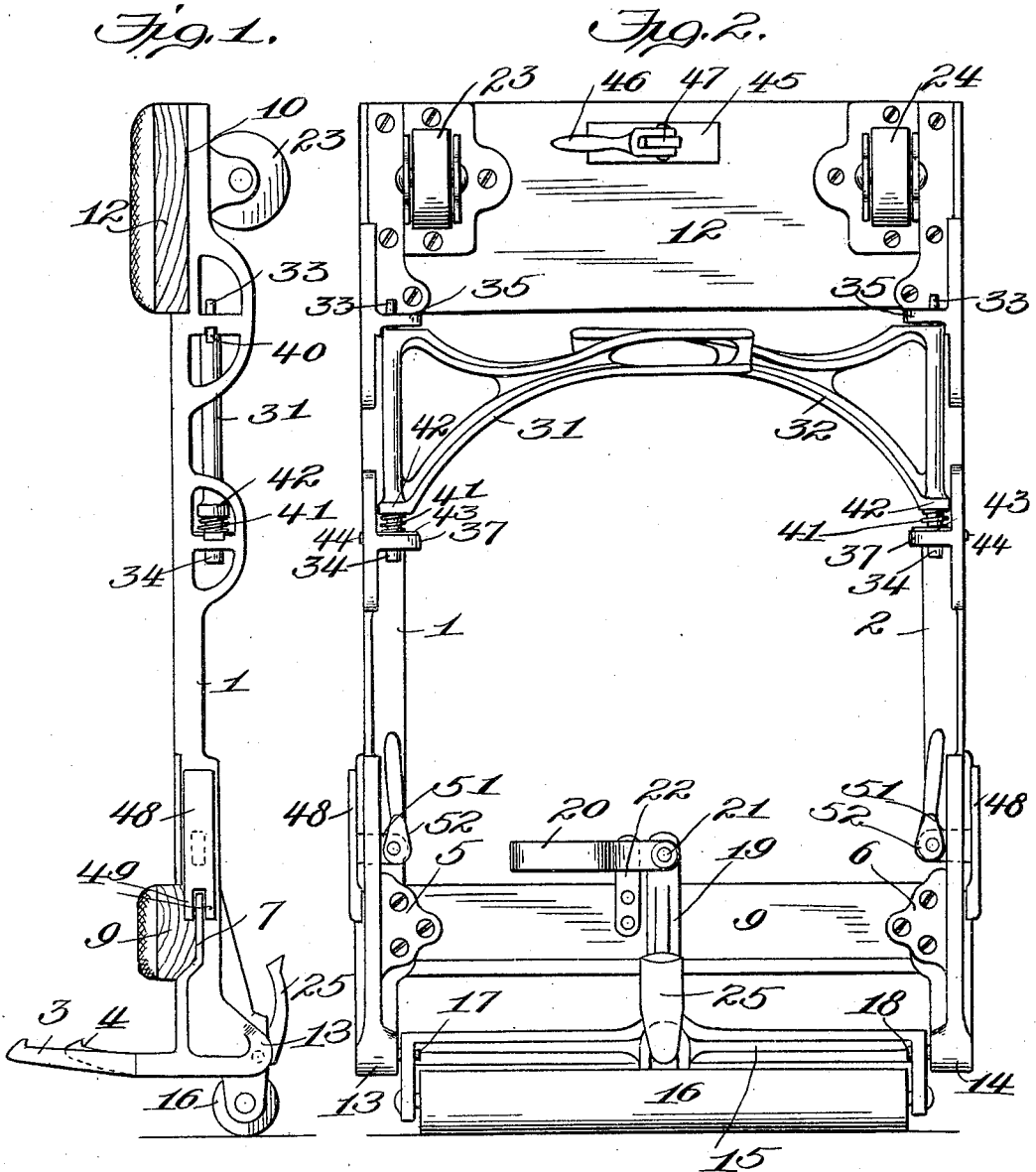


S. BILGER.
PIANO TRUCK.
APPLICATION FILED NOV. 27, 1908.

933,616.

Patented Sept. 7, 1909.
2 SHEETS—SHEET 1.



Witnesses:
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J. B. Keifer

Inventor
Samuel Bilger
By *James L. Norris*
Atty.

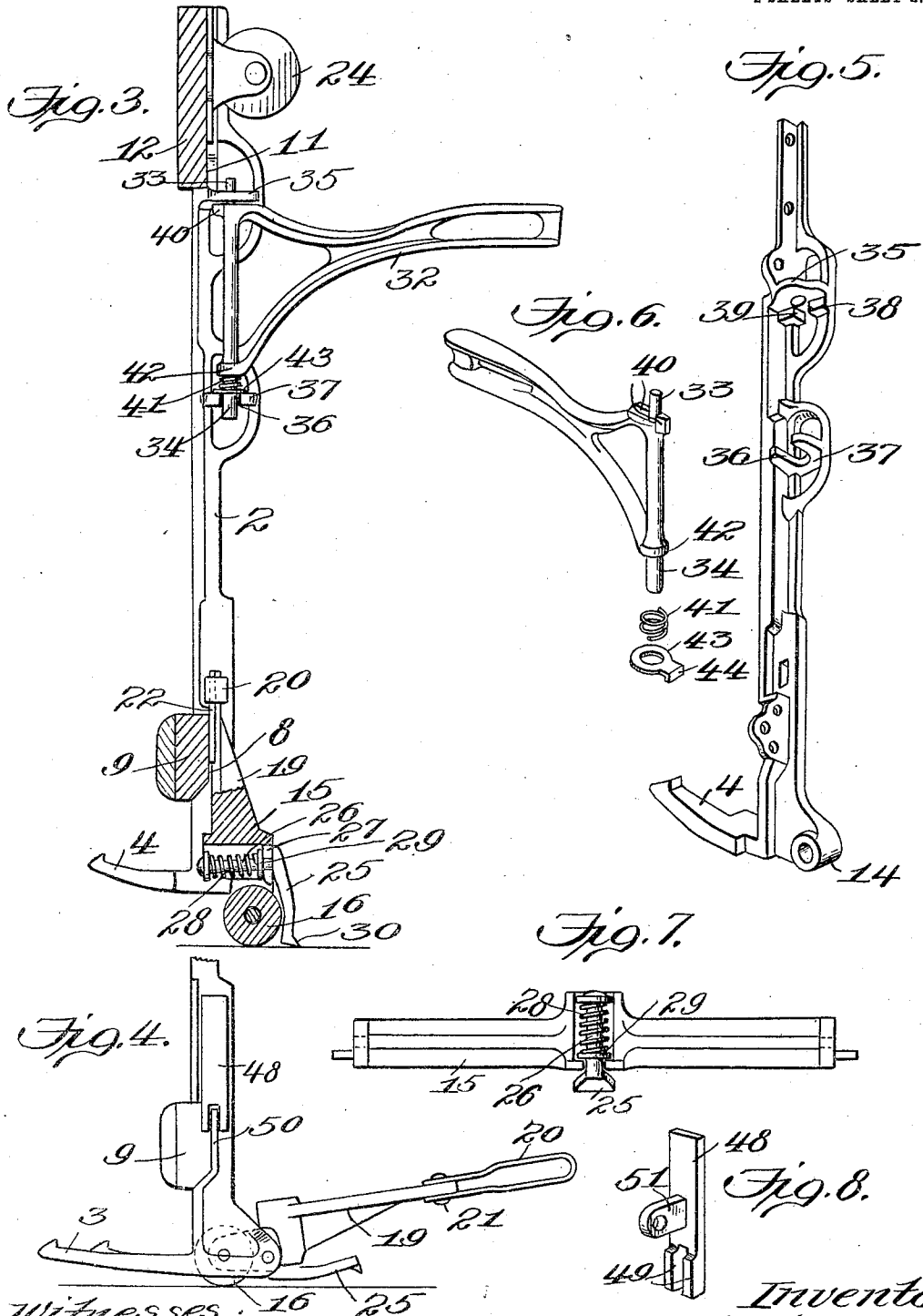
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UNITED STATES PATENT OFFICE.

SAMUEL BILGER, OF SILVERDALE, PENNSYLVANIA.

PIANO-TRUCK.

933,616.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed November 27, 1908. Serial No. 464,737.

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 especially of the type adapted for use in moving pianos and other relatively heavy objects, and it has for its object primarily to provide a simple and improved truck of this character having devices thereon to cooperate with and lift the piano and means for elevating the jack relatively to the floor or other support upon which it rests, the truck being first placed beneath the piano while in a depressed condition and then elevated, an improved device being provided for locking the truck in elevated position while the piano is being moved from place to place.

Another object of the invention is to provide handles of an improved construction whereby the truck may be manipulated with the greatest facility, these handles being movable into operative and inoperative positions and provided with means for locking them in both of said positions, and these handles when extended serving as supports upon which the piano may rest when tilted upon one of its corners.

Further objects of the invention are to provide improved devices for clamping webs or straps to the trucks whereby the latter will be securely retained in cooperative relation with the piano.

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 drawing:—Figure 1 represents a side elevation of a truck constructed in accordance with my present invention; Fig. 2 represents an elevation of the truck as shown in Fig. 1 and as viewed from the right; Fig. 3 represents a vertical section of the truck, the truck being in elevated position and the safety catch being shown in operative position; Fig. 4 is a detail view of the lower portion of the truck showing the latter in depressed position, preparatory to its application to the piano; Fig. 5 is a perspective view of one of the

side frames of the truck, the handles and other parts being detached; Fig. 6 is a collective view in perspective showing one of the handles, its spring for retaining it in operative or inoperative position, and the spring seat which locks the handle in the frame; Fig. 7 is a detail view of the pivoted base of the truck, the same being removed; and Fig. 8 is a perspective view of one of the web clamps.

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

In moving pianos with the aid of trucks of the character involved in my present invention, it is customary to employ a pair of trucks which are duplicates, one being mounted at each end of the piano. An illustration and description of one truck will therefore be sufficient to provide a clear disclosure of my present invention.

Each truck in the present embodiment of my invention comprises a pair of side frames 1 and 2 which may be formed of metal and are similar to one another, although they are of a reverse formation. These side frames are preferably of substantially angular form in cross section in order to insure the maximum rigidity with a given weight of metal, and a pair of lifting brackets project forwardly from the bottom of each side frame, the frame 1 in the present instance being provided with a relatively long lifting bracket 3 while the side frame 2 is equipped with a relatively shorter bracket 4, these brackets being adapted to engage beneath the piano and when the truck is elevated, the piano will be lifted from the floor or other support. Toward the lower portion of the two side frames, a pair of inwardly extending lugs 5 and 6 are formed and immediately in front of these respective lugs, recesses 7 and 8 are provided. In these recesses are seated the ends of a cross member 9 which connects the two frames rigidly, screws, bolts or other appropriate fastening devices serving to connect this cross member to the respective lugs 5 and 6. The upper portions of the two side frames are also preferably recessed as at 10 and 11 and in these recesses are seated the opposite ends of an upper cross member 12, the latter being bolted or otherwise secured to the respective side frame.

The forward sides of the upper and lower cross members are preferably padded as shown, as these members bear against the

respective ends of the piano and by padding them, injury to the piano is avoided. A pair of feet 13 and 14 project rearwardly from the lower end of the respective side frames at a point below the lower cross member 9, and between these rearwardly offset feet is mounted a base or frame, the latter in the present instance comprising a yoke 15 between the arms of which is rev-
 5 olubly mounted a roller 16, the latter being preferably of a length approximately equal to the width of the truck so as to provide a stable support therefor. This roller-carrying frame is pivotally connected to the side
 10 frames by means of a pair of pivot pins 17 and 18 which are arranged eccentrically relatively to the axis of the roller 16 so that a pivotal movement of the roller frame relatively to the truck will produce a verti-
 15 cal movement of the truck. In the present instance, these pivot pins are fixed in the rearwardly extending feet on the respective side frames and they coöperate with the arms of the yoke-shaped roller frame. In
 20 order to effect the pivotal movements of the roller-carrying frame to lift and depress the truck, this yoke-shaped frame is provided with an arm 19 which is formed rigidly thereon and projects from that side
 25 of the frame 15 which is opposite to the roller 16 so that when this roller-carrying frame is turned into a position to bring the axis of the roller 16 approximately below the axis of movement of its supporting
 30 frame, the arm 19 will stand in a vertical position and it preferably abuts against the lower cross member 9 so that further movement of this arm is thereby prevented. In
 35 order to lock this arm in such position so as to retain the truck in elevated position, a locking device 20 is mounted at or adjacent to its free end, this locking device in the present instance comprising a loop-
 40 shaped member the arms of which are pivoted to the arm 19 by a pivot pin 21, the locking device being thereby capable of a turning movement in a plane transverse to the plane of movement of the arm 19.

In operating the arm 19 to elevate or de-
 50 press the truck, this locking device which constitutes an extension of the said arm may be turned into a position in alinement with the arm 19, it thereby affording additional leverage to assist in the elevation or depres-
 55 sion of the truck. When the truck is elevated, however, this locking device is swung to one side or into a position approximately at right angles to the length of the arm 19 and as it swings into such angular position,
 60 it receives a locking projection 22 between its arms, this locking projection being secured to the lower cross member 9 and it thereby operates to firmly lock the roller-carrying frame 15 from pivotal movement.
 65 At the rear side of the upper cross member

is preferably mounted a pair of rollers 23 and 24, these rollers in the present instance being carried by appropriately formed brackets, and when the roller-carrying frame 15 is locked in such position as will
 70 elevate the truck, the roller 16 together with the rollers 23 and 24 may be employed as a support for the piano, the truck when used in this manner occupying a horizontal posi-
 75 tion and, as will hereinafter more clearly appear, no part of the truck will engage the floor or support when it rests upon these three rollers. The locking device for the roller 16 serves to prevent turning of such
 80 roller under the weight of the piano when the entire weight thereof is supported by one of the trucks lying in a horizontal position.

In moving pianos along a stairway, it is generally preferable to provide a plank
 85 upon which the roller 16 of each truck rests, and to prevent retrograde movement of the truck, an automatic check or safety device is provided, this check consisting of a claw
 90 25 which is provided with an angularly arranged pivot 26 which extends through a horizontally extending slot 27 formed in the frame 15 immediately below the lifting arm
 95 19 and this pivot pin is surrounded by a helical compression spring 28 one end of which abuts against a head upon the pivot pin and its opposite end bears against a
 100 spring seat or washer 29 which engages a portion of the frame 15 immediately in rear of the slot portion 27. This check or safety device may be turned into operative and in-
 105 operative positions about the pivot pin 26 as an axis and when in an operative position, it extends downwardly and bears upon the periphery of the roller 16. The lower end
 110 of the arm 25 of this check is preferably provided with a spur 30 which has a trailing action upon the plank as the piano moves upwardly thereon. Should the truck, how-
 115 ever, move rearwardly, this spur upon the lower end of the check will obtain a hold upon the plank and will thereby form a chock for the roller 16, further movement of the truck in a rearward direction being
 120 thereby prevented. The spring 28 serves not only to retain the check in operative and inoperative positions, but it also serves to hold the spur of the rear truck in frictional engagement with its respective roller as the trucks travel upwardly on the plank.

In order to facilitate the manipulation of the trucks, a pair of handles 31 and 32 are provided, these handles being so constructed that they may be set in operative and in-
 125 operative positions, and when in an inoperative position, they fold flatwise relatively to the truck and they are folded so compactly that they do not interfere with the placing of the truck in a horizontal position so that it may rest upon the rollers 16, 23 and 24.
 130

These handles are preferably formed of metal and are duplicates, the free end of each handle being comparatively narrow so as to provide a convenient grip for the operator, and their attached ends are preferably widened and provided with upper and lower pivot pins 33 and 34. The upper pivot pin 33 coöperates with an apertured hinge lug 35 formed upon the respective side frame while the lower pivot pin rests in a slot 36 formed in a hinge lug 37 which is also formed upon the respective side frame.

In order to automatically lock each handle in operative and inoperative positions, the lower side of the upper hinge lug 35 is provided with pairs of shoulders 38 and 39 which are arranged substantially at right angles to one another. The upper portion of each handle is provided with a pair of locking lugs 40 at opposite sides of the upper pivot pin 33, and when the respective handle is in an operative position, that is to say, it extends rearwardly substantially at right angles from the truck, these locking lugs 40 upon the handle will coöperate with the locking projections 38, and when the handle is in an inoperative position or is folded relatively to the truck, one of the locking lugs 40 will engage the locking projections 39. The handle is unlocked preparatory to shifting it either into an operative or an inoperative position by moving it downwardly in a direction axially of its pivot pins, and a suitable space is formed between the lower side of the handle and the lower hinge lug 37 to permit such a movement. In order to retain the handle in either of its locked positions, a helical spring 41 surrounds the lower pivot pin 34 and abuts at its upper end against a shoulder 42 formed upon the lower portion of the handle, and this spring rests upon a spring seat which in turn is supported by the hinge lug 37. In the present instance, this spring seat is composed of a plate 43 which is apertured to receive the lower hinge pin 34 of the handle and it is provided with an arm which has a down-turned lug 44 thereon which lug engages the outer side of the hinge lug 37 or the side thereof opposite to the opening of the slot 36, and the pressure of the spring 41 between the handle and this spring seat will retain the latter in locked position so that accidental displacement of the handle is prevented. However, in applying the handle to the frame, the lower pivot pin thereon is passed into the slot 36 and as the handle reaches its proper position the down-turned lug 44 of the spring seat will snap over the outer side of the hinge lug and will thereby lock the lower hinge pintle of the handle in the slot. Each handle may be readily removed by first lifting the spring seat so as to unlock the down-turned projection, the lower portion of the handle being then

moved inwardly so as to disengage it from the slot 36. A set of clamps are also provided upon the truck for securing the webs which extend around the piano to the trucks. In the present instance, a set of three clamps is provided, one of these clamps being arranged at the rear side of the upper cross member 12 and comprising a movable clamping plate 45 which is adapted to clamp the web between it and the rear side of the member 12, a locking lever 46 being provided which is pivoted to a pin or bolt 47 which extends loosely through an aperture in the plate 45 and is attached to the member 12, and the inner end of the lever 46 is provided with a cam which, when the lever is turned, will act on and produce a clamping movement of the plate. A pair of these clamping devices is also fitted to the lower portions of the side frames of the truck, each of these clamps comprising a plate 48 which is arranged at the outer side of the respective side frame and is provided with a pair of jaws 49 which straddle a rib 50 formed upon the outer side of the respective frame whereby a firm hold upon the web will be provided. A shank 51 is attached to the inner side of each of these clamping plates and extends through an aperture in the respective side frame, and a cam 52 is pivoted upon the inner end of these respective shanks and the cams are provided with handles by means of which they may be turned. These cams coöperate with the inner sides of the respective side frames and when turned in an appropriate direction, they draw the outer clamping plates inwardly so as to clamp the web to the opposite sides of the truck. In some cases, it may be desirable to rest the piano upon one of its corners, and this may be accomplished by first setting the handles in operative position so that they extend rearwardly from the truck. The truck may then be tilted about the roller 16 until it rests upon this roller at its lower portion and upon the ends of the two handles, and as these handles are locked in such position, accidental falling of the piano is avoided.

I claim as my invention:—

1. A truck of the class described comprising a suitable frame provided with means for engaging an object to be lifted, a base pivotally connected to the frame and having an arm turnable about the pivotal axis of the base for turning it relatively to the said frame, and locking means directly coöperative with said arm and a part on said frame.

2. A truck of the class described comprising a suitable frame provided with lifting means, a base movably connected to the frame and operable to lift and depress it, an arm rigidly attached to said base for operating on the latter, and a locking device movable laterally to said arm and coöperative with a part of the frame.

3. A truck of the class described comprising a suitable frame provided with lifting means, a base movably connected to the frame and operable to elevate and depress it, an
5 arm for operating said base, and a locking device pivotally connected to said arm and coöperative with a part on the frame for retaining the latter in elevated position.
4. A truck of the class described comprising
10 ing a suitable frame provided with lifting means, a base movably connected thereto and operable to elevate and depress the frame, an arm for operating the base, and an extension pivoted to swing laterally on
15 said arm and coöperative with a part on the frame to lock the latter in elevated position.
5. A truck of the class described comprising a suitable frame provided with lifting means, a base pivotally mounted on the
20 frame and provided with a supporting roller, an arm rigidly attached to the base for turning it, a part pivoted toward the free end of said arm for movement transversely of the plane of movement of said
25 arm, and a locking projection on the frame and coöperative with the pivoted part on said arm when said part is turned into angular relation to the arm.
6. A truck of the class described comprising
30 a suitable frame having means for engaging the object to be lifted, and a pair of handles movable transversely of the frame into operative and inoperative positions.
7. A truck of the class described comprising
35 ing a vertically-arranged frame provided with lifting brackets, and a pair of handles pivoted to swing horizontally with respect to the frame and movable thereby into operative and inoperative positions.
8. A truck of the class described comprising
40 ing a vertically-arranged frame provided with lifting means, a pair of arms movable horizontally with respect to the frame and into operative and inoperative positions,
45 and means for locking the handles in one of said positions.
9. A truck of the class described comprising
50 a frame provided with lifting means, a pair of handles mounted on fixed pivots and movable into operative and inoperative positions, and means for locking the handles in either of said positions.
10. A truck of the class described comprising a frame provided with lifting means, a
pair of handles pivotally mounted thereon
55 and capable of movement axially of their pivots, and locking means adapted to be locked and unlocked by the relative axial movements of the handles.
11. A truck of the class described comprising
60 ing a suitable frame provided with lifting means, a pair of handles pivoted thereon and capable of a folding and unfolding movement relatively to one another, and means for retaining the handles in one of
65 said positions.
12. A truck of the class described comprising a suitable frame provided with lifting means, a pair of handles pivotally mounted thereon and capable of a limited axial movement, locking means adapted to be engaged
70 and disengaged by the relative axial movements of the handles, and a spring for retaining the locking means in coöperative relation.
13. A truck of the class described comprising
75 ing a suitable frame having lifting means and provided with pairs of hinge lugs, certain of said lugs having open slots, a pair of handles pivotally mounted in respect to said
80 lugs, locking means formed upon one pair of lugs and capable of being locked and unlocked relatively to the respective handles by axial movements of the latter, springs
85 coöperating with the handles to move them axially into locked position, and spring seats resting upon the slotted hinge lugs and provided with retaining lugs which engage
90 the frame, said spring seats being held in position by the said springs.
14. A truck of the class described comprising
ing a suitable frame having lifting means thereon, and a web-receiving clamp having
a cam for operating it.
15. A piano truck comprising a frame
95 having a pair of side members provided with ribs, and a pair of clamps each having jaws to coöperate with the respective ribs at their opposite sides, and means for producing a
clamping action upon a web interposed between
100 said jaws and the side member.

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

SAMUEL BILGER.

Witnesses:

I. MEREDITH SNYDER,
Mrs. H. CLINTON REIFF.