

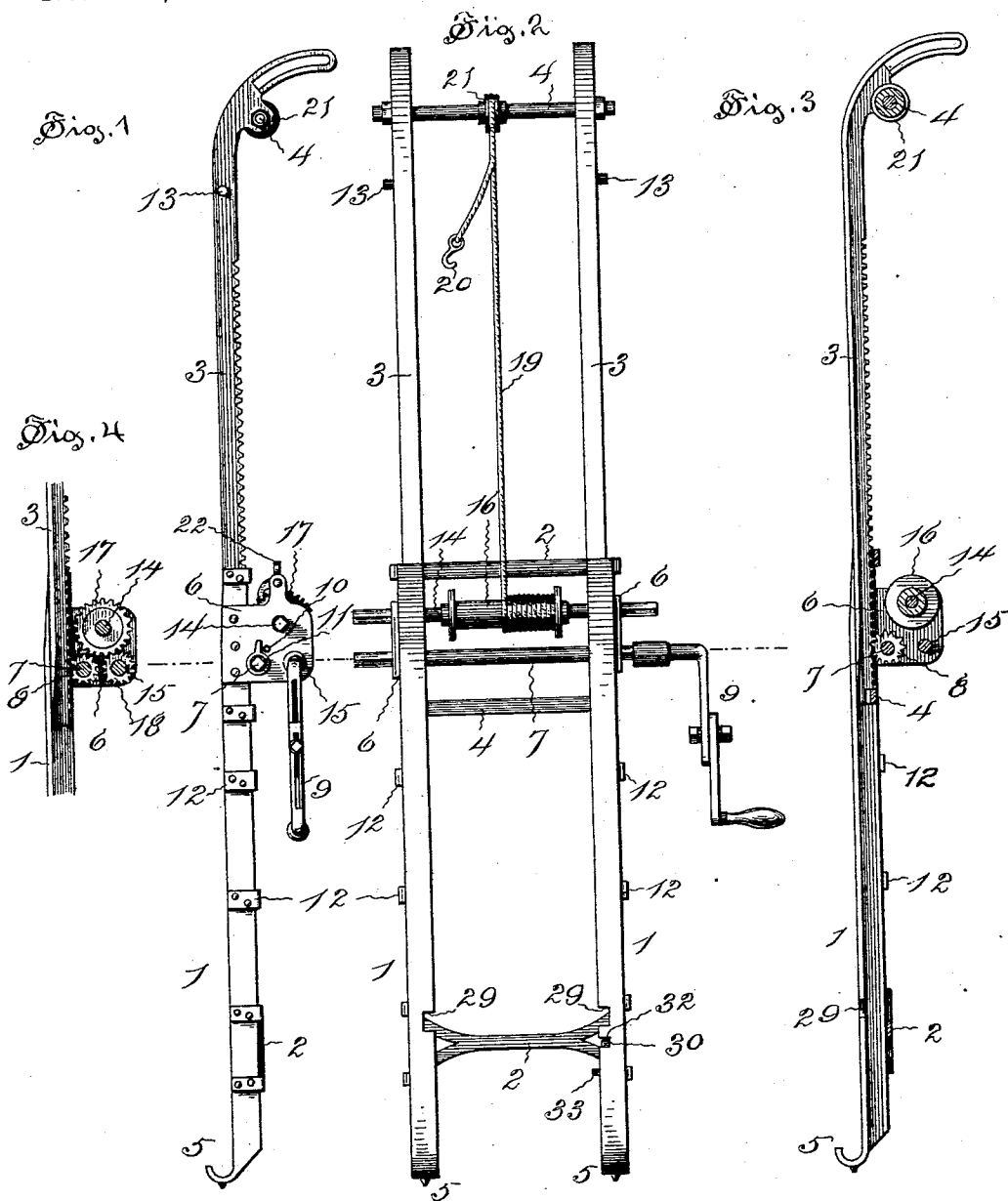
(No Model.)

2 Sheets—Sheet 1.

H. E. WILLIAMS.
PORTABLE POWER SKID.

No. 573,630.

Patented Dec. 22, 1896.



Witnesses:

E. J. Hyde.

Andrew Ferguson.

Inventor,

Henry E. Williams, by
Harry P. Williams
Atty.

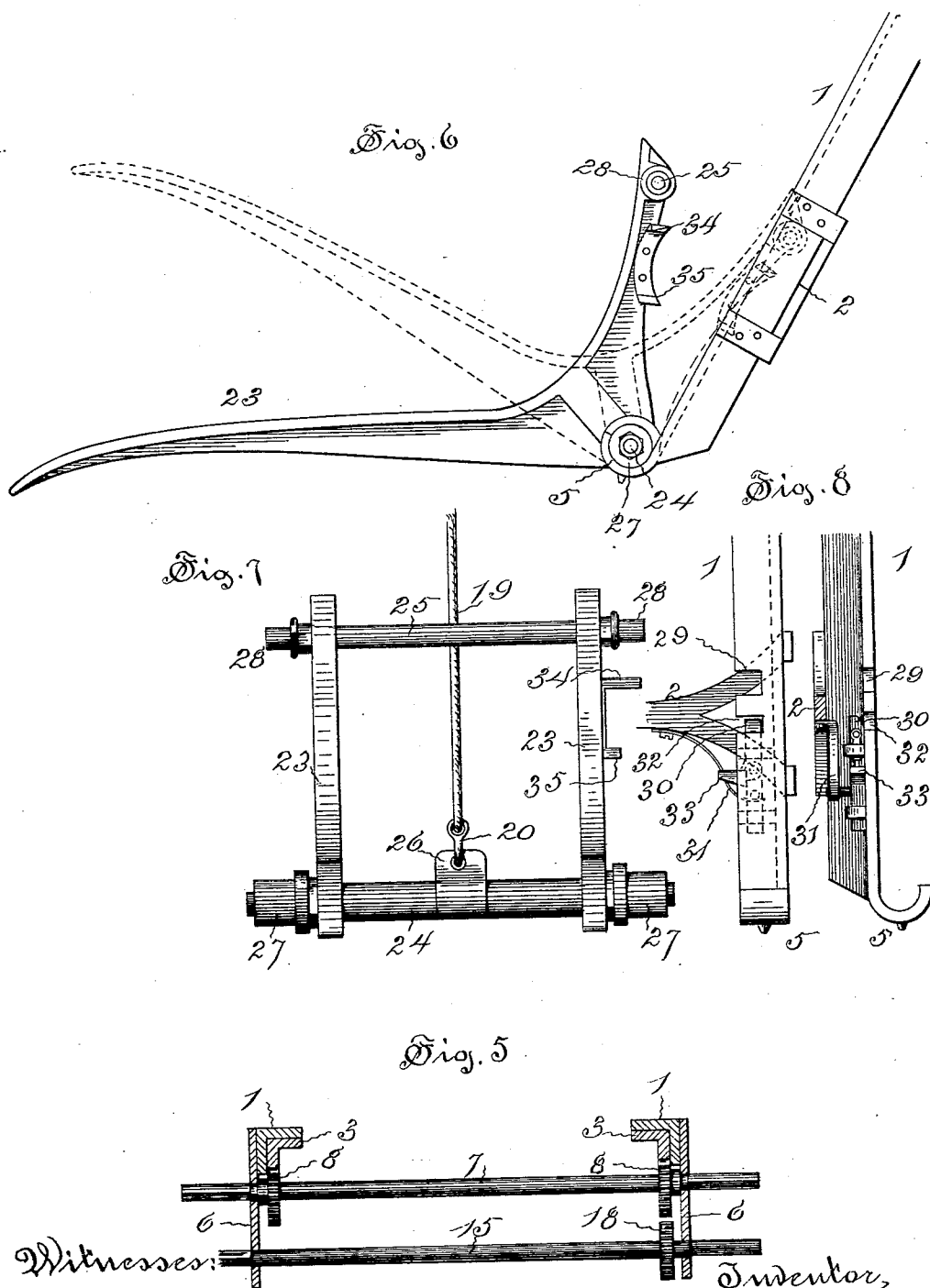
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UNITED STATES PATENT OFFICE.

HENRY E. WILLIAMS, OF HARTFORD, CONNECTICUT, ASSIGNOR OF TWO-THIRDS TO WILLIAM A. WILLARD AND LEWIS W. RIPLEY, OF SAME PLACE.

PORTABLE POWER-SKID.

SPECIFICATION forming part of Letters Patent No. 573,630, dated December 22, 1896.

Application filed November 25, 1895. Serial No. 570,037. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. WILLIAMS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Portable Power-Skids, of which the following is a specification.

The invention relates to the class of portable skids that have means whereby boxes, barrels, bales, or similar heavy packages of merchandise can be easily and quickly lifted and deposited at the desired level.

The object of the invention is to provide a cheap, light, and strong skid that can be readily moved from place to place, that can be employed to elevate light or heavy packages, that can be adapted to piles of varying height, that will automatically, when in use, leave the truck or carriage at the base of the skid in position to easily receive a package, and that will automatically unload when the package being elevated reaches the upper end of the skid.

To this end the invention resides in a skid formed of extensible bars shaped to insure lightness and strength, having simple and powerful extending and also elevating means, and a truck that can be rolled free from the bars and utilized for conveying packages to the base, where the truck can be quickly connected with the elevating means and with its package be easily drawn up the bars, which are so formed that when the upper end is reached the truck will be made to occupy such a position that the package will be unloaded and deposited on the pile, and which are also provided with such an unlocking device that when the base is reached the emptied truck will automatically release itself and turn down, so that the packages can be easily rolled upon its arm or so that it can again be rolled free and utilized for trucking purposes.

Referring to the accompanying drawings, Figure 1 is a side view of the bars of the skid, the truck being removed. Fig. 2 is a front view of the same. Fig. 3 is a central longitudinal section of the same. Fig. 4 is a detail view illustrating the bar extension and truck-elevating gears. Fig. 5 is a transverse

section of the bars on plane denoted by the broken line of Fig. 2. Fig. 6 is a detail enlarged view of the lower end of one of the bars, showing the truck in one position in full lines and in its other position by dotted lines. Fig. 7 is a front view of the truck. Fig. 8 shows a front view and an inside view of the lower end of one of the bars.

The bars of the skid are made extensible and of any suitable material, but those shown in the views are formed of angle-iron arranged parallel, so as to open toward the inside. The lower sections 1 of the bars are the larger in cross-section and are connected by cross-ties 2, while the upper sections 3, that are connected by cross-ties 4, are the smaller in cross-section and are placed so that they move within the larger lower sections. The lower ends of the sections 1 may be turned up to provide the curved shoes 5, which may be roughened or have on the outside pointed studs to prevent slipping on a smooth floor, and the upper ends of these are tapered or inclined so that there will be a smooth and almost continuously plane outer surface between the upper and lower sections of the bars. The top ends of the upper sections of the bars are considerably curved and the lower ends of these sections are tapered or inclined so there will be a smooth and almost continuously plane surface on the inside between the lower end of the upper bar-sections and the inside of the lower bar-sections. The inner edges of the sides of the upper sections of the bars are cut to form teeth or are provided with a rack of any suitable length.

Plates 6 are secured to or form a part of the sides of the bars, preferably near the upper ends of the lower sections. Supported in bearings formed in these plates is a shaft 7, that has pinions 8 located near the bars, so as to mesh with the teeth of the racks along the edges of the upper sections of the bars. The outer ends of this shaft are shaped to receive a crank 9, whereby the shaft and the pinions may be rotated, with a consequent movement up and down of the sections of the bars bearing the teeth that mesh with the pinions. This shaft may be locked against ro-

tation, so as to hold the sections of the bars in proper adjustment by means of a pin 10, that may be thrust into a perforation in one of the plates in the path of a lug or shouldered collar 11, secured to the shaft. When this locking-pin is removed and the crank is applied to the shaft bearing the pinions in mesh with the racks on the inner edges of the upper sections, the rotation of the crank, which is easily accomplished, adjusts the sections with relation to each other so as to lengthen or shorten the bars, as desired, according to the height at which the packages are to be piled. Brackets 12 may be secured to the lower sections of the bars in such manner as to project along the inner edges of the lower sections to guide the movement of the upper sections up and down within the angle of the lower sections, and stop-pins 13 may be secured to the upper sections of the bars to limit by contact with the lower sections the downward movement of the upper sections. The plates 6 also bear a rotary shaft 14 and a rotary shaft 15, the ends of both of which are shaped to receive the crank 9. The shaft 14 bears a drum 16, upon which the truck-drawing cord, cable, or rope 19 may be wound, and it also bears a gear 17, that meshes with a pinion 18, borne by the shaft 15. The rope that is wound upon the drum may be provided with a hook 20 or other suitable means for connection with the truck. The rope passes from the drum over a pulley 21, that is free to rotate on the topmost of the cross-ties 4 of the upper skid-bar sections, and then to the truck, so that the truck can be drawn up by the rope to the elevation of this pulley, the height of which can of course be changed by adjusting the skid-bar sections. The crank may be applied to the end of the shaft 14 for elevating a light load with considerable rapidity, or it may be applied to the end of the shaft 15 when it is necessary to lift a heavy load.

The crank 9 is formed to fit both ends of either of these shafts which extend or shorten the length of the skid-bars and which rotate the lifting-rope drum, and this crank is preferably made extensible by forming it in two slotted sections and connecting these sections with a clamping-nut, for it is often desirable to employ the skid where it is impossible or inconvenient to use the crank extended to its full normal length. A pawl 22 is pivoted to one of the plates and arranged so that it can be turned into the teeth of the gear 17 when it is desired to hold the drum and the truck, with its load, at any elevation.

The carriage or truck which bears the load is preferably formed of metallic side pieces 23, each formed to have arms projecting at an angle with each other, the short arms forming the floor of the truck and the long arms the handles or package-holding horns of the truck. These side pieces are joined to-

gether at the angle by the cross-tie 24 and near the ends of the short arms by a cross-tie 25. The cross-tie 24 bears a bail with an eye 26, to which the hook on the end of the elevating-cord may be easily connected. Rolls 27 are mounted on the ends of the cross-tie 24 at the angle, and rolls 28 are mounted on the ends of the cross-tie 25 at the ends of the other arms. The rolls 27 at the angle are preferably considerably larger than the other rolls and are flanged on the inside, the smaller portions of the rolls being adapted to ride up on the outside of the flat top surface of the side bars of the skid and the flanges traveling along the inside of the bars to keep the rolls in position on the upper surfaces. The rolls 28 at the ends of the short arms are of such size and shape that they will pass into openings 29 in the top portion of the side bars of the skid and run along the inside of the top or flanged portion as the truck is being elevated. These forward rolls are also preferably flanged, so that when the smaller portions are under the top part of the side bars the flanges will guide the rolls in their travel.

A spring-catch is connected to one of the side bars of the skid near one of the openings 29. This catch consists of a sliding bolt 30, that is normally projected by means of a spring 31, so as to stand beneath the opening 32 in the upper part of the side bar near the opening 29. Pivoted to this bolt is a finger 33, that has a free upward movement independently of the bolt, but does not have a free downward movement. On the side of the truck is a bracket having two arms 34 and 35. The arm 34 projects outward in such manner that when the truck is tipped up, as shown by the dotted lines in Fig. 6, and the small rolls pass through the openings 29 this arm will spring through the opening 30, forcing back the spring-bolt and then allowing the spring-bolt to move forward and prevent the arm from coming out, and thus holding the truck in position to be elevated. The arm 35 projects outward in such manner that when the truck moves upward this arm simply turns the finger projecting from the bolt out of the way, but when the truck comes down the skid-bars this arm 35 makes contact with the finger 33 and drags the spring-bolt backward, so as to release the arm 34, and then the truck can tip downward by gravity, the small rolls coming out through the openings 29. In this position the long arms of the truck rest upon the floor, so that a package can be rolled upon them or the truck can be freely removed after unhooking the lifting-rope, so as to be serviceable for conveying loads from a distance to the base of the skid-bars ready to be elevated.

The truck shown in Figs. 6 and 7 may be used independently as a truck, and barrels, bales, boxes, or similar articles of heavy merchandise may be placed on it and rolled from

one location to another or may be rolled to the base of the skid-bars. When the truck is rolled with its load to the base of the skid-bars and the wheels at the angles are lifted into the curved shoes at the ends of the bars, the rope of the elevating means is instantly connected by catching the hook into the eye provided for that purpose on the cross-bar of the truck. The truck is then turned by lifting the handle ends so as to cause the forward rolls to move through the openings in the top part of the side bars, the catch, as previously described, allowing the rolls to move into the grooves and then slipping over the arm, so that the truck will be there held in place. When the truck is in this position and the crank is turned, it will be elevated on the skid-bars, the forward rolls traveling beneath the upper flat part of the side bar, while the larger rolls travel on the outside of the top part of the bars. The arms of the truck that form the handles now support the package being elevated, and the truck is guided up the skid-bars by the forward rolls beneath the upper portion of the bars. As the forward rolls beneath this upper portion of the angle-iron bars reach the top and pass around the curve they guide the truck into such position that the longer arms now tip the package off from the truck onto the pile into the position where it is desired that it shall be located. This unloading is automatically accomplished at the upper end without the operation of any catches or trips, and the truck is allowed to return down the bars by its own weight. When the truck reaches the bottom, as above described, contact is made with the latch in such manner as to draw back the bolt and free the opening, so that the forward rolls of the truck may come out, allowing the truck to tip down ready for another load or for removal, which removal, as stated, can be instantly accomplished by disconnecting the rope-hook.

The device is simple, cheap, and efficient. Large packages of heavy weight can be readily elevated and deposited automatically in any desired localities with ease, and smaller packages can be quickly elevated, if desired.

The device can be quickly lengthened or shortened, so that it can be used for elevating packages to various levels, and the crank-handle, which can be used to lengthen or shorten the skid-bars or to elevate the load, is adjustable so that it may be used in contracted spaces, if desired.

I claim as my invention—

1. A skid consisting of a pair of bars curved at their upper ends, a tilting truck having rolls adapted to ride up and down said bars, and elevating means supported by the bars and adapted to be detachably connected with the truck near its center of gravity so the truck will automatically tilt forward to unload at the upper curved ends of the bars and automatically tilt backward for receiving a

load at the lower ends of the bars, substantially as specified.

2. A skid consisting of a pair of bars, a truck having two sets of rolls adapted to ride up and down said bars, one set engaging the under side of the bars and the other set engaging the upper side of the bars, said bars having openings near the lower ends to permit the rolls that engage the under side to pass through, and elevating means supported by the bars, said elevating means being adapted to be detachably connected with the truck near its center of gravity, substantially as specified.

3. A skid consisting of a pair of bars, a truck having rolls adapted to ride up and down said bars, elevating means supported by the bars and adapted to be detachably connected with the truck near its center of gravity, and a spring-catch supported by the bars in the path of a part of the truck, said catch being adapted to be unlocked by the descent of the truck which, when the catch is unlocked, is free to automatically tilt forward, substantially as specified.

4. A skid consisting of a pair of extensible bars forming a track with practically a smooth tread, one section of the bars having a rack with teeth on its underside and the other having a rotary shaft with a pinion meshing with the teeth, a truck having rolls adapted to ride up and down the smooth tread-surface of said bars, and elevating means supported by the bars and adapted to be connected with the truck, substantially as specified.

5. A skid consisting of a pair of extensible bars forming a track with practically a smooth tread having curved upper ends, one section of the bars having a rack with teeth on its underside and the other having a rotary shaft with a pinion meshing with the teeth, a tilting truck having rolls adapted to ride up and down the smooth tread-surface of said bars and around the curved upper ends, and elevating means supported by the bars and adapted to be connected with the truck, substantially as specified.

6. A skid consisting of a pair of sectional bars with curved upper ends, said bars being formed of angle-iron arranged parallel so as to open toward each other with one section moving within the other section, rack-teeth formed on one section, and a rotary shaft bearing a pinion in mesh with the teeth supported by the other section, a truck with rolls adapted to ride up and down said bars, a rotary shaft with a drum borne by one of the bar-sections, a pulley borne by the other section, a rope passing over the pulley and connecting the drum with the track, and a catch supported by one of the bar-sections in the path of a part of the truck and adapted to be unlocked by the descent of the truck, substantially as specified.

7. A skid consisting of extensible side bars formed of angle-iron, one section being smaller

in cross-section than and slidable within and
below the other, power mechanism for adjust-
ing the relative length of said bars, a truck
having a pair of rolls adapted to ride up and
5 down on the top of the angle-iron and a pair
of rolls adapted to ride up and down on the
bottom of the angle-iron, and elevating means

supported by the bars and adapted to be con-
nected with the truck, substantially as speci-
fied.

HENRY E. WILLIAMS.

Witnesses:

HARRY R. WILLIAMS,
E. J. HYDE.