May 10, 1938. J. H. KENNEDY 2,117,026

LEVELING SKID

Filed Dec. 16, 1936

Fig. 1.

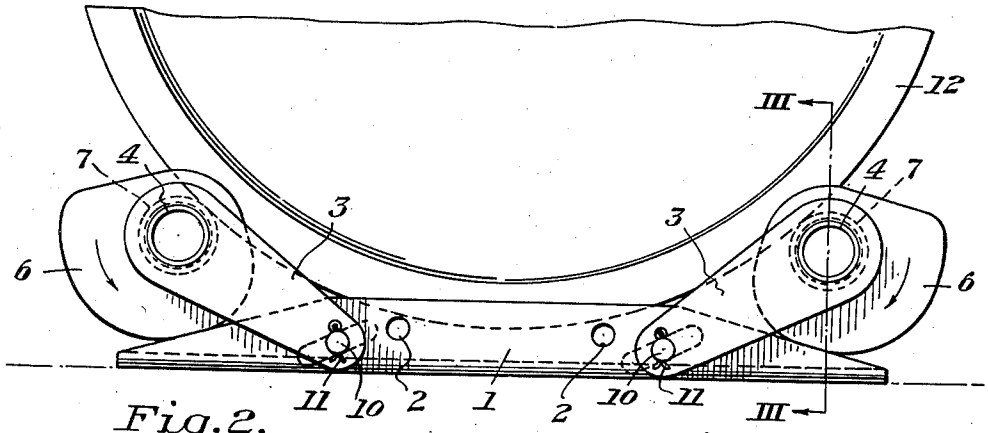


Fig. 2.

Fig. 3.

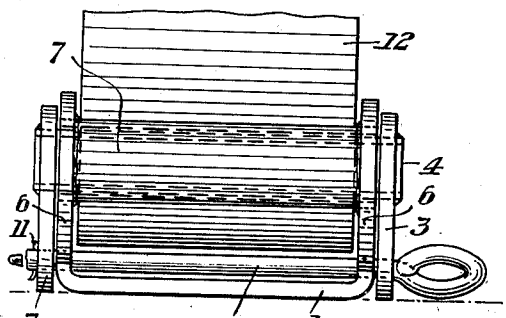


Fig. 4.

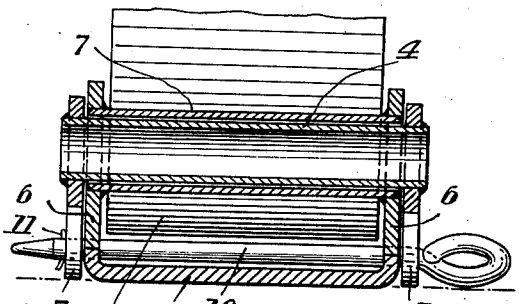


Fig. 5.

Fig. 6.

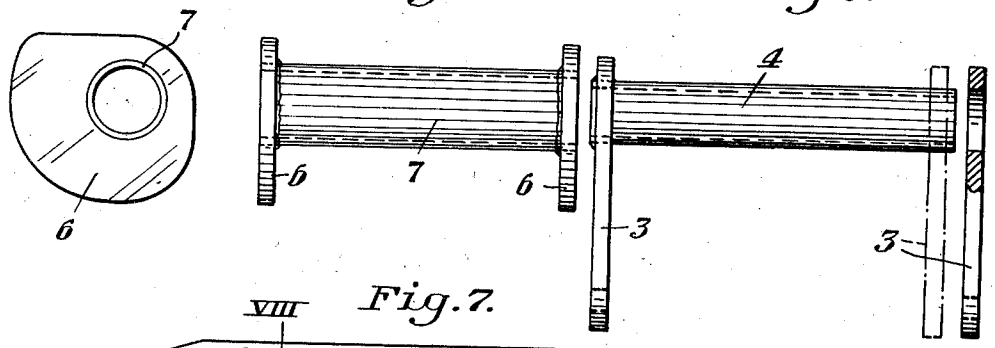


Fig. 7.

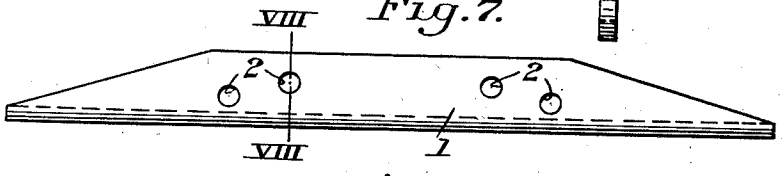
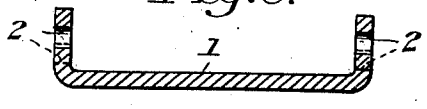


Fig. 8.



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UNITED STATES PATENT OFFICE

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LEVELING SKID

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Application December 16, 1936, Serial No. 116,094

9 Claims. (Cl. 188—32)

This invention pertains to positioning devices for portable machines, etc., and more particularly, to leveling skids.

In one aspect, my invention deals with the provision of a device for holding heavy machinery at a desired level and for providing a larger base contact with the floor or ground than is possible with the wheels of portable units. Portable units, such as are mounted on movable trucks or wheels, are advantageous for many types of machines, particularly, for example, for machines such as are employed at placer locations for separating out minerals or other desired materials from undesired materials.

Of course, it is advantageous to lock or set the machine or unit at a location which may be termed semi-permanent or which will be used, for example, until the materials at a given location are exhausted.

In locking and holding these units or machines in a given position, considerable difficulty has been encountered, particularly where the units are mounted on wheels. In the first place, the wheels tend to move even when blocked up. They are also subjected to considerable strain during the operation of the machine, since the weight is concentrated upon points at which the wheels contact the ground. In many cases, it is advantageous to have the machine at a height or level which is best for its operation.

For these reasons, there is a need for a simple form of device for supporting the machine at a given location and at a desired level.

And, it has been an object of my invention to provide a new and improved form of device for the purposes enumerated.

Another object of my invention has been to provide a skid that may be employed in connection with heavy machinery and that can be easily and quickly adjusted.

Another object of my invention has been to devise a leveling skid which will positively and effectively hold a machine in a desired position.

A further object of my invention has been to more effectively and/or efficiently control the positioning of machinery of the type that may be moved from one location to another.

These and other objects of my invention will appear to those skilled in the art from the description thereof, the claims, and the drawing, in which:

Figure 1 is a side elevation showing a device constructed in accordance with my invention and showing how it may be employed for supporting the wheel of a machine unit;

Figure 2 is an end elevational view of the device of Figure 1;

Figure 3 is an end section taken along the line III—III of Figure 1;

Figure 4 is a side view in elevation showing a detail of a cam;

Figure 5 is an end elevation of the detail of Figure 4;

Figure 6 is a view similar to Figure 5, but showing a preferred form of structure for mounting the cam arrangement of Figures 4 and 5;

Figure 7 is a side view in elevation of a bed or base plate member of the device of Figure 1; and

Figure 8 is a section taken along the line VIII—VIII of Figure 7.

As seen from the drawing, I preferably provide a complete leveling skid unit for each wheel of the machine.

In the device chosen for the purpose of illustrating my invention, the numeral 1 designates a longitudinally-extending metal bed plate member of substantially U-shape, see particularly Figures 1, 7, and 8. As seen, the body portion of the member 1 is provided with spaced-apart and upwardly-extending flange portions which have an opposite relationship with respect to each other, and which at each end of the member 1, have upwardly sloping or inclined sides. These sides, see particularly Figures 1 and 7, serve as cam tracks for the device.

Each bed plate member 1 is preferably provided with a set of cooperating cams 6. Each set of cams 6 includes a pair of oppositely-positioned cam discs or wheels which are securely mounted (preferably by welding) on opposite ends of a pipe or rotatable sleeve member 7 of cylindrical proportions. Each cam disc 6 is adapted to ride upon the upwardly extending edges of the side flanges of the bed plate 1. Each cam set 6—7 is rotatably mounted on a mount structure which includes an axle 4, preferably of tubular or cylindrical form, and also a pair of spaced-apart side bar members 3. The side bar members 3 are preferably secured to opposite ends of the mount axle portion 4 after the cam assembly 6—7 has been slid over the axle. Both side bars 3 may be secured by welding, although I contemplate removably securing one bar, for example, by employing complementary threads.

Each cam assembly or set 6—7 is adapted to be pivotally mounted adjacent one end of the bed plate member 1 and is adjustably held in position by a lock pin 10. The lock pin 10 at one end has a suitable pull loop and at the other end is drilled out to receive a cotter pin 11 or other

suitable form of locking means. The pin 10 extends through opposite connecting bars 3 and through opposite flanges of the bed plate member 1 to pivotally hold the assembly in an operative relationship. The oblong dotted line shape indicated in Figure 3 adjacent the pins 10 represents the loop end of such pin and not a slot in the bed plate 1.

Any suitable number of holes 2 may be drilled in the bed plate to take care of the various sizes of wheels or other structures which are to be supported by the cam assembly 6—7. For the purpose of illustration, I have shown two holes adjacent each end of the bed plate member 1.

In employing devices constructed in accordance with the present invention, the machine or unit is preferably jacked up to the desired height and a complete leveling unit is then slid under each wheel. Each wheel 12 (see Figures 1–3, inclusive) will rest upon the cylindrical portions 7 of the cam sets and will be held against lateral movement by the lateral faces of the discs 6. It will be apparent that an operator can quickly adjust the device to the desired level and securely lock it in position both with respect to longitudinal as well as with respect to lateral movement by turning the cam discs 6 and/or by moving them along the tracks provided by the bed plate member 1.

I have found that skid devices constructed in accordance with the present invention are very effective for handling machinery that has considerable weight. For example, skids having 3 inch diameter rotating portions 7, and 2½ inch diameter axle portions 4, constructed of aluminum, were sufficient for carrying the wheels of a unit weighing about sixteen tons. Since the other dimensions of the device are substantially in proportion to the given dimensions, no further explanation is deemed necessary.

The several sets of holes 2 not only provide for various adjustments of a given cam structure 6—7, but also permit the operator to use either smaller or larger cam discs as the need may arise. The cams shown for the purpose of illustration provide a substantially 3 inch rise in each set of holes; of course, greater variation can be obtained by employing larger cams or more sets of holes.

The weight of the machine is held at the point the cams are set by reason of the friction of the edges of the cams on the inclined edges of the cam tracks of the bed plate member 1. Great stability in positioning machinery mounted on wheels is obtained, since the wheels are not only held with at least a two-point contact, but forward and backward movement are also eliminated.

Any suitable material, preferably, a metal, such as steel, aluminum, etc., can be employed in making these skids, although we prefer the lighter metals where the machine is to be moved frequently.

Another method of employing the device has been found to be very practical and successful. When jacking up the machine unit, the wheels at one end of the unit may be placed on leveling skids, say, at about an inch or so off the ground; the wheels at the other end of the machine are then raised by jacks or other suitable means to the desired height. This method is particularly advantageous where the machine is to be set up upon soft ground where much danger exists from the skidding of the jacks. In this case, the machine is held against forward or backward movement by the skids at one end thereof, and thus the danger of accident from the slipping of the jack is overcome.

Where the machinery is to remain in one position for long periods of time, bolts may be substituted for the pins 10 to provide a tighter connection which may be less subject to vibration.

The size of the bed plate members will, of course, be controlled by the diameter of the wheels or the type of other members which are to be held, as well as by the width of the face of such wheels or members and the loads which are to be carried.

Although I have shown an embodiment of my invention for the purpose of illustration, it will appear to those skilled in the art that many modifications, substitutions, changes, omissions, additions, and/or combinations thereof may be made without departing from the spirit and scope of the invention, as indicated in the appended claims.

I claim:

1. In a device for holding a machine in a desired position with respect to the ground or a floor, a bed member adapted to rest on the floor, cam tracks on said bed member, cam discs pivotally mounted on said bed member and cooperating with said cam tracks, means associated with said cam discs for receiving the machine and cooperating with the machine, so that the machine may be held in the desired position.

2. In a device for holding a machine against backward and forward movement and on a given level with respect to the ground or a floor, a bed member having oppositely-spaced flange portions, an axle member, connecting members mounting said axle member on flange portions of said bed member, a turnable member mounted on said axle and cooperating with the machine for holding it in a desired position.

3. In a device for holding a machine against backward and forward movement and on a given level with respect to the ground or a floor, a bed member having oppositely-spaced flange portions, an axle member, connecting members mounting said axle member on said flange portions, a cylinder rotatably mounted on said axle, discs mounted on said cylinder and cooperating with said flange portions, said rotatable cylinder being adapted to receive and cooperate with a portion of the machine in such a manner that the machine will be held in a desired mounted position.

4. In a device for holding the wheels of a machine in a desired position on the ground or a floor, a bed member adapted to rest on the floor, a pair of flanges extending upwardly from said bed member, a support structure pivotally mounted on said flanges and extending upwardly therefrom, cam means turnably mounted on said support structure and cooperating with said flanges and a wheel of the machine for holding the wheel at a desired raised position from the floor and also holding it against backward and forward movement with respect to the floor.

5. In a device for holding the wheels of a machine in a desired position on the ground or a floor, a bed member adapted to rest on the floor, a pair of flanges extending upwardly from said bed member, a support structure pivotally mounted on said flanges and extending upwardly therefrom, a tubular member rotatably positioned on said support structure, a pair of cams mounted at opposite ends of said tubular member, said cams cooperating with edges of said flanges, said cams and said tubular member receiving a wheel

of the machine in such a manner that edges of said cams hold such wheel in a desired raised relationship with respect to the floor, that the sides of said cams hold such wheel against lateral movement with respect to the device, and that said tubular members will hold such wheel against backward and forward movement with respect to the floor.

6. In an apparatus for holding a machine in a desired position, a bed member, two turnable cam devices associated with said bed member, said cam devices having a variable length of radius about their respective peripheries, said cam devices contacting with different parts of the machine and being constructed and arranged on turning to present different lengths of radial support to adjustably raise and lower such parts.

7. In an apparatus for holding a machine in a desired position, a bed member, an adjusting device associated with said bed member and having a continuous inclined surface of variable length of radius about its periphery co-acting with said bed member, and means for adjusting said surface to bring different radius portions thereof into contact with said bed member.

8. In an apparatus for holding a machine in a desired elevated position, a bed member, a cam device, an arm adjustably mounting said cam with respect to said bed member, said means providing a rough elevational adjustment of said device, said cam device being arranged to contact with part of the machine, said cam device also being arranged to turn about its mounting and to thereby provide a fine adjustment with respect to the elevation of such contact.

9. In an apparatus for holding a machine in a desired position, a bed member, a turnable device associated with said bed member, said device having a variable length of radius about its periphery, the association of said device being adjustable, said device being constructed and arranged to contact with part of the machine and to present a variable length-radius of peripheral contact to said part of the machine as it is turned to thereby control the position of the machine.

JAMES H. KENNEDY.