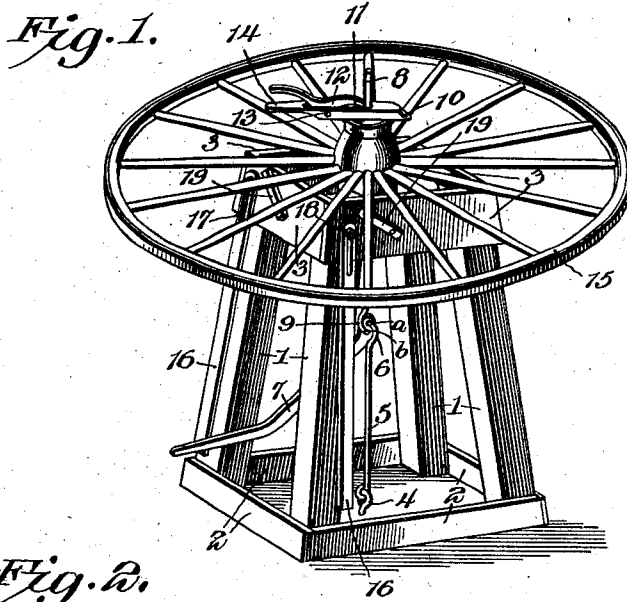
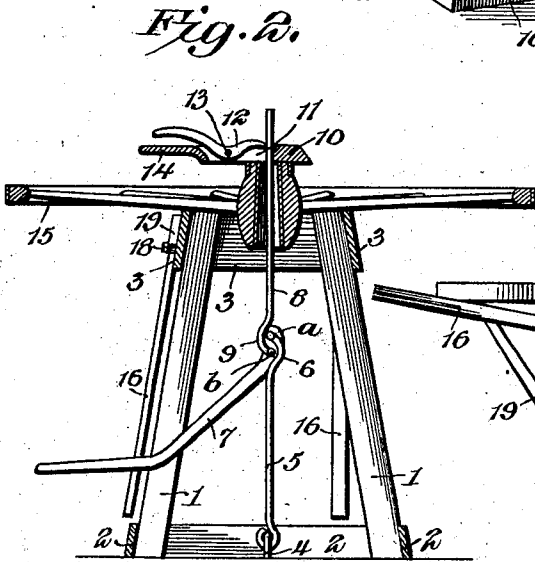
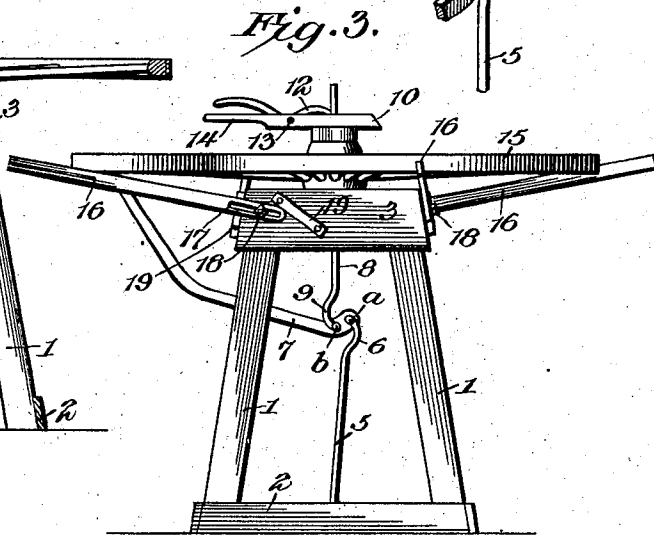
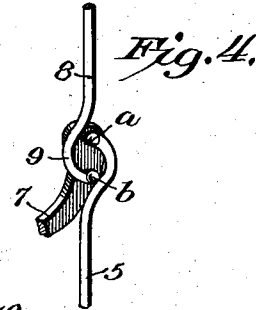


No. 721,613.

PATENTED FEB. 24, 1903.

J. D. SMITH.  
WHEEL HOLDING MACHINE.  
APPLICATION FILED FEB. 20, 1902.

NO MODEL.



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# UNITED STATES PATENT OFFICE.

JAMES D. SMITH, OF ARLINGTON, SOUTH DAKOTA.

## WHEEL-HOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 721,613, dated February 24, 1903.

Application filed February 20, 1902. Serial No. 95,000. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES D. SMITH, a citizen of the United States, residing at Arlington, in the county of Kingsbury and State of South Dakota, have invented a new and useful Wheel-Holding Machine, of which the following is a specification.

This invention relates to apparatus for holding vehicle-wheels for convenience in repairing the same.

The object of the present invention is to provide an improved apparatus which is arranged to support a wheel in a substantially horizontal position and hold the same rigidly, so as to obviate wobbling and looseness when the wheel is being operated upon, it being particularly adapted for the use of blacksmiths, wheelwrights, and wagon-builders.

Another object of the invention is to support the wheel at points adjacent to the hub, so as to prevent accidental dishing of the wheel, and also to support the wheel upon the rim thereof for setting a tire and also when it is desired to dish the wheel.

It is furthermore designed to provide for conveniently clamping a wheel upon the support regardless of the size thereof without requiring a complicated adjustment of the clamping means.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a perspective view of a wheel-supporting apparatus constructed and arranged in accordance with the present invention. Fig. 2 is a longitudinal sectional view thereof. Fig. 3 is a side elevation of the apparatus arranged for dishing a wheel. Fig. 4 is a detail perspective view of the connection between the operating-lever and the connecting-links.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

In carrying out the present invention I employ a stand or supporting-frame comprising four corner-uprights 1, which are connected at their lower ends by means of cross bars or sills 2, applied to the outer sides of the uprights or legs, the latter being inclined inwardly and upwardly and connected at their upper ends by means of cross-bars 3, applied to the outer sides of the legs, with their upper edges flush with the tops of the legs, thereby forming an open head or top for the stand or frame. At the center of the bottom of this stand and secured to the floor or otherwise anchored is an eyebolt 4, from which rises a rod or link 5, having its lower end hooked into the eyebolt 4 to form a loose or pivotal connection therewith, the upper end of the rod or link being provided with a laterally-offset bowed portion 6. A vertically-swinging operating-lever 7 has its inner end pivotally connected to the upper terminal of the rod 5, and from this lever rises another rod or link 8, the lower end of which has a laterally-offset bowed portion 9, which is disposed reversely with respect to the offset portion 6 and is pivotally connected to the lever, whereby the latter forms a toggle connection between the two rods or links. It will of course be understood that the lever is sufficiently long to project laterally beyond the stand or frame so as to be in position for convenient manipulation.

The rod or link 8 is projected above the top of the stand and carries a hub-engaging clamp 10, which is provided with a longitudinal slot or opening 11 for the reception of the rod or link, which normally lies at one end of the slot. Within the slotted portion of the clamp is a dog or clutch 12, which is intermediately fulcrumed or pivoted, as at 13, near that end of the slot which is opposite the rod 8, one end of the dog being disposed to frictionally engage the rod and the opposite end being projected out of the slot to form a handle for releasing the dog or clutch from the rod. That end of the clamp-body which is beneath the handle portion of the dog is formed into a hand-grip 14, whereby the dog may be conveniently released by gripping the part 14 and the handle of the dog in one hand.

In using the device the clamp 10 is re-

moved from the rod 8 and a wheel 15 placed  
 upon the top of the stand, with the rod projected  
 upwardly through the opening in the hub, after  
 which the clamp 10 is applied to  
 5 the rod and slid downwardly into engagement  
 with the upper end of the hub. After the wheel  
 has been applied to the stand and before the clamp  
 has been fitted to the rod or link the lever 7 is  
 10 elevated to raise the rod 8, and after the clamp  
 has been fitted in place against the end of the hub  
 the lever is depressed, so as to draw the rod and  
 the clamp downwardly, and thereby grip the  
 wheel between the top of the stand and the  
 15 clamp. By reason of the toggle connection  
 between the lever and the two rods the joint is  
 locked when the lever is depressed to its limit  
 by reason of the fact that the pivotal connections  
 20 *a* and *b* between the rods and the lever are  
 drawn into vertical alinement, it now being  
 understood that the rods or links are provided  
 with the bowed offset portions 6 and 9 to  
 accommodate the ends of the rods when the  
 joint is locked. The wheel  
 25 may be released by raising the lever and  
 removing the clamp from the rod or link 8,  
 after which the wheel may be lifted from the  
 stand.

To support the wheel at the rim thereof for  
 30 convenience in setting the tire, each side of  
 the top or head portion of the stand is provided  
 with an arm 16, which has one end provided  
 with a longitudinal slot 17 for the reception  
 of a bolt or similar fastening 18, which  
 35 is carried by one of the cross-pieces 3 and  
 forms a pivotal and slidable connection between  
 the arm and the top of the stand. When not in  
 use, the arm hangs downwardly, as shown in  
 40 Figs. 1 and 2, but when in use is swung  
 upwardly, so as to project laterally from the  
 stand and inclined upwardly, with its slotted  
 end bearing against an inclined abutment or  
 shoulder 19, carried by the cross-piece 3, so  
 as to support the arm in its elevated position.  
 45 It will be understood that the arm has a  
 pivotal movement in order that it may be swung  
 up and down, and the slot 17 is to permit of  
 this endwise adjustment of the arm in order  
 50 that it may be shifted into and out of  
 engagement with the shoulder or abutment 19.  
 The arms correspond in number to the sides  
 of the frame and are mounted to swing in  
 planes substantially parallel to the respective  
 55 sides of the stand or frame and are disposed  
 at the corresponding ends of the sides of the  
 stand. When the arms are adjusted into their  
 elevated positions, the outer end portions thereof  
 60 extend above the plane of the top of the stand,  
 so that the wheel may be supported solely upon  
 its rim, which engages the arms, the spokes of  
 course being out of contact with the top of the  
 stand. When supported in this position, downward  
 pressure upon the hub, preferably imparted by  
 65 the lever 7, the rods 5 and 8, and the clamp 10,  
 will give the required dish to the wheel. The  
 arms are also designed for supporting the

rims of light wheels, such as carriage-wheels,  
 when setting the tires thereof, and they are  
 adjusted beneath the rim of a wheel after the  
 same has been firmly clamped upon the sup-  
 70 porting frame or stand.

The vertical rods, lever, and clamp could  
 be used with a stand having a solid head, as  
 commonly employed by wheelwrights and  
 75 wagon-builders, the only change required being  
 the provision of an opening through the head  
 for the reception of the upper rod or link 8.  
 When a solid head is employed, the hub of the  
 wheel rests thereon instead of the 80 spokes.

Should the dog 12 engage the rod 8 at a  
 point above the body of the clamp, the rod  
 would be bent by the pressure thereon, and  
 therefore it is preferable to have the inner  
 85 end of the dog engage the rod at a point just  
 below the top of the clamp-body, so that the  
 adjacent end wall of the slot 11 may brace  
 the rod and prevent bending thereof.

A very important structural feature of the  
 90 present device resides in disposing the inner  
 end of the operating-lever 7 at an upward and  
 outward inclination, with the links 5 and 8  
 connected to the opposite end portions of  
 this inclined part, whereby the pivotal con-  
 95 nections *a* and *b* normally lie in different  
 horizontal planes, and it requires only a com-  
 paratively short movement of the lever to  
 bring the pivotal connections into vertical  
 alinement so as to lock the toggle connection  
 100 and apply a powerful pressure to hold the  
 wheel between the top of the stand and the  
 clamp 10.

From the foregoing description it is appar-  
 105 ent that the present device possesses several  
 very important features of advantage, among  
 which it will be noted that by the employ-  
 ment of a toggle connection for the lever it  
 is not necessary to provide means upon the  
 frame for locking the lever to hold the clamp  
 110 or abutment 10 against the hub of a wheel,  
 wherefore the device may be very conveniently  
 manipulated and the lever automatically  
 locks itself when forced to its downward limit.  
 Another important advantage resides in the  
 115 ease of adjustment of the clamp or abutment  
 10 and finally in the provision of the rim-  
 engaging arms, which normally are disposed  
 out of the way when not in use and may be  
 conveniently brought into position for use  
 120 without interfering with the other parts of  
 the device.

What I claim is—

1. In a wheel-holder, the combination of a  
 stand, upper and lower links, the lower link  
 125 being anchored at its lower end, the upper  
 link being extended above the stand, a lever  
 pivotally connected to the adjacent ends of  
 the links and arranged to swing the same past  
 each other and in approximate vertical align-  
 130 ment to form a lock, and a wheel-clamp re-  
 ceiving the upper link and provided with a  
 pivoted dog, the engaging portion of the dog  
 being of greater length than the distance be-

tween the pivot and the link, whereby the clamp is adapted to engage the link at any point, substantially as described.

2. In a wheel-holder, the combination with  
5 a stand having an open top, of an upstanding link within the frame with its lower end loosely anchored, the upper end of the link being terminated short of the top of the stand and provided with a bowed laterally-offset  
10 portion, a vertically-movable lever having its inner end set at an upward and outward inclination and terminally pivoted to the upper end of the link, an upper link rising through and above the open top of the stand with its  
15 lower end bowed and offset laterally and pivoted to the inner end portion of the angular end of the lever, the two offset portions of the links being reversely disposed, and a wheel-clamp having a longitudinal slot receiving the upper end portion of the upper link  
20 and provided with a dog pivoted intermediately within the slot with its inner end disposed to grip the rod against the opposite end of the slot, the outer end of the dog being  
25 projected above the slot and formed into a handle.

3. In a wheel-holder, the combination with a stand, of laterally-projected arms carried thereby and inclined upwardly above the top  
30 of the frame to form rim-engaging supports, and means for applying pressure to the center of a wheel.

4. In a wheel-holder, the combination with a stand, of rim-supporting arms which hang  
35 from the upper end of the stand when not in use, and are capable of adjustment into upwardly and outwardly inclined positions with their upper end portions rising above the top of the stand, and means for applying downward pressure upon the center of a wheel.  
40

5. In a wheel-holder, the combination with a stand, of rim-supporting arms mounted to swing vertically upon the sides of the upper end of the stand and also capable of endwise  
45 adjustment, abutments or shoulders carried by the sides of the upper end of the stand

and disposed to lie against the inner ends of the arms and support the same when swung upwardly into operative positions, and means for applying downward pressure upon the center of a wheel. 50

6. In a wheel-holder, the combination with a stand, of stop shoulders or abutments upon the outer sides of the upper end portion of the stand, pivot-pins projected outwardly from  
55 the stand adjacent to the shoulders or abutments, rim-supporting arms having longitudinal slots pivotally and slidably embracing the respective pivot-pins, the slotted ends of the arms being disposed to lie in supporting  
60 engagement with the shoulders or abutments when swung upwardly into operative positions, and means for applying downward pressure upon the center of a wheel.

7. In a wheel-holder, the combination with  
65 a stand having an open upper end, of rim-engaging arms which hang from the upper end of the stand when not in use and are capable of being swung upwardly into inclined positions with their outer end portions rising  
70 above the top of the stand, an upstanding link loosely anchored within the frame with its upper end terminated short of the top thereof, a lever fulcrumed upon the upper end of the link, an upper link pivotally connected to and  
75 rising from the lever with its upper end projected through and above the open top of the stand, and a wheel-clamp adjustable longitudinally upon the upper projected end portion  
80 of the upper link.

8. In a wheel-holder, the combination with a stand, of shoulders or abutments upon the upper portions of the sides thereof, and vertically-swinging rim supporting and engaging arms mounted upon the stand and also  
85 capable of being shifted in endwise directions into and out of supporting engagement with the respective shoulders or abutments.

JAMES D. SMITH.

Witnesses:

E. W. FARNBROW,  
E. W. SMITH.