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Dunham

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[54] **STREET ROLLER**

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[58] **Field of Search** 404/85, 86, 122, 123, 125, 404/126, 128; 180/20; 172/212, 276

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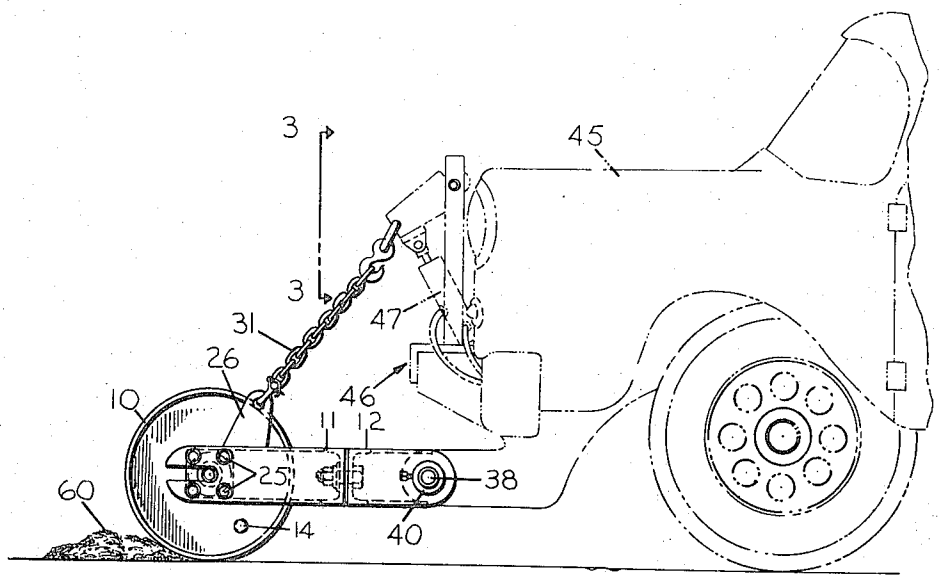
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[57] **ABSTRACT**

A street roller for attachment to tthe plow frame of a highway vehicle by a transverse pin and lift chain. The roller is mounted on bearings and a two piece support frame, the two pieces being joined by a pivotal connection permitting the roller to follow the road contour.

4 Claims, 4 Drawing Figures



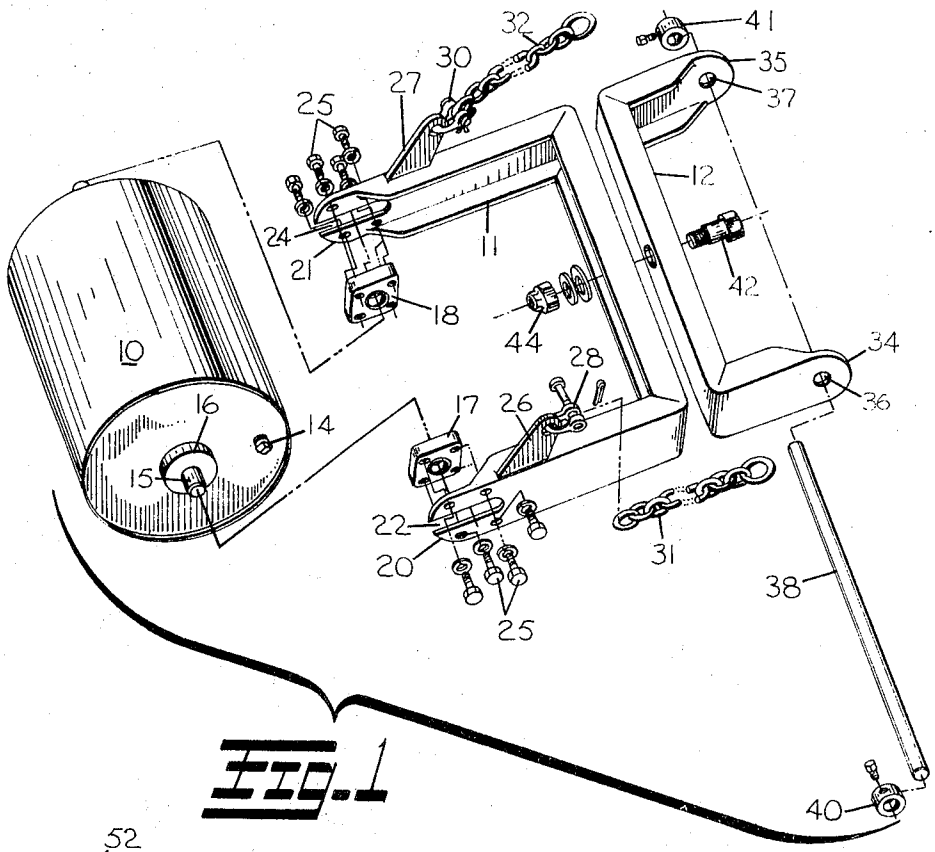


Fig. 1

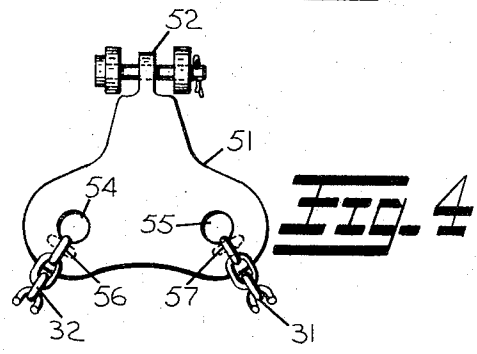


Fig. 4

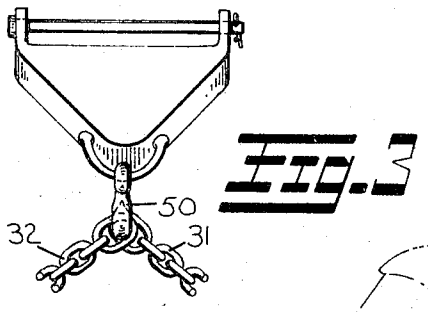
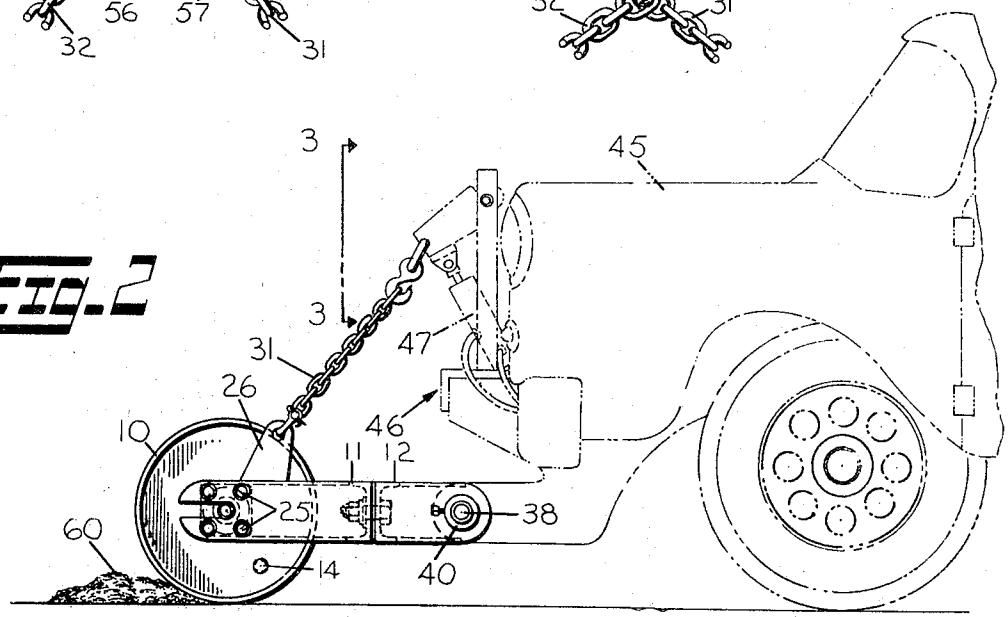


Fig. 3

Fig. 2



STREET ROLLER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to street roller for attachment to a highway maintenance vehicle for rolling pavement patches or the like.

2. Relation of the Prior Art

Highway maintenance crews in cities and towns, and sometimes even state road maintenance crews, in making small patches to rectify road defects or to fill in sections that have been open for access for underlying water mains, etc. frequently leave loose pavement material to be rolled haphazard by passing cars. Many of the maintenance vehicles carry manually operated rollers slung to the side of the vehicle for the purpose of rolling patches. These become quickly battered and are sufficiently difficult to secure and detach so that the maintenance crews do not use them conscientiously. Some crews use tamps which are slow and arduous. To facilitate rolling of these patches, many devices have been conceived for securing to the rear of a maintenance vehicle so that after a patch is laid, the roller may be dropped and the vehicle backed up over the patch to smooth it. These devices have been fairly expensive and a little awkward since the truck driver is unable to see what he is doing.

U.S. Pat. No. 2,386,025 to Wills, discloses a complex mounting frame for handling either a snowplow or a roller. The Wills mounting frame is expensive and the shifting between plow blade and roller is difficult and cumbersome. Almost all highway maintenance vehicles carry snowplow frames for hydraulically operated snowplows. However, rollers readily attachable to standard snowplow frames are not readily available.

SUMMARY OF THE INVENTION

Now in accordance with the present invention a street roller assembly readily attachable and detachable from most standard snowplow frames is provided. This roller assembly is simply devised of a conventional barrel roller fillable with water, sand, or other weighty material. The barrel is mounted for rotation on bearings secured to a first member of structural metal bent into the shape of a "U" and carrying connectors for a chain or cable to be attached to the hydraulic lift mechanism of a plow frame. A second member of structural metal again formed in a "U" shape is connected back-to-back with the first member by a single pivotal attaching means. Holes in the ends of the second member are arranged to align with holes in the lower mounting members of a snowplow frame and a pin or pins are provided for passing through the aligned holes and securing the assembly to the snowplow frame.

Thus, it is an object of the invention to provide a novel street roller attachment for quick and easy adaptation to a hydraulic snowplow frame.

It is a further object of the invention to provide a novel economic street roller assembly consisting of three major components plus connections.

Further objects and features of the invention will become apparent upon reading the following description together with the drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is an exploded view in perspective of the inventive roller assembly.

FIG. 2 is a side elevation of the roller of FIG. 1 assembled and connected to a snowplow frame on the front of a maintenance vehicle.

FIG. 3 depicts one form of connection for connecting the lifting chains for the street roller to the hydraulic lift mechanism of the snowplow frame viewed along line 3—3 of FIG. 2.

FIG. 4 is an alternative attachment arrangement to that depicted in FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT:

A street roller according to the invention is made of three main components depicted in FIG. 1 as roller **10**, first support member **11** and second support member **12.** Roller **10** is suitably a water roller with plug **14** for filling with and emptying water. This permits easier handling when the roller is dismounted from the vehicle. However, the roller may be filled with another liquid to avoid rust or for greater weight, or it may be loaded with concrete or any other material conventionally used to add mass to such rollers.

Axle **15** suitably passes through the roller and is secured solidly at each end by flanges **16.** However, stub axle shafts may be used that do not pass through the roller but are only welded or bolted at each end. Bearings **17** and **18** for rotatably supporting axle **15** are depicted as self-aligning sleeve bearings. Permanently lubricating bearings of this type are readily available at low cost.

First support member **11** is made of a length of structural steel depicted as channel iron bent into a "U" shape with the legs of the "U" slightly farther apart than the width of barrel **10.** The legs of the "U" terminate in flat ends **20** and **21** which are slotted with slots **22** and **24** to receive the ends of axle **15.** Bearings **17** and **18** fit over the ends of axle **15** inside of ends **20** and **21.** Bearings **17** and **18** are then mounted to ends **20** and **21** by bolts **25** to secure the roller in place. Tabs **26** and **27** are depicted welded to and rising vertically from the legs of support member **11.** Shackles **28** and **30** connected through eyes in the top of tabs **26** and **27** provide connection means for lifting chains **31** and **32.** Chains **31** and **32** are shown in broken form to indicate their length is greater than shown in the illustration. Support member **12** is made almost identical to support member **11** except that it has shorter legs since they do not have to encompass the radius of barrel **10.** Ends **34** and **35** of the legs of member **12** are each drilled with single holes **36** and **37** instead of slots, the holes being of a like size and arranged to mate with holes in the bottom support of a conventional snowplow frame. A single elongated pin **38** is made of a size to pass through holes **36** and **37** and the aligned holes of a snowplow frame to connect support member **12** to a snowplow frame with free rotational movement in a vertical direction. Collars **40** and **41** are depicted for connection to opposite ends of pin **38** with set screws to hold pin **38** in place. It will be understood that these collars are only exemplary and many other means are available for holding such a pin in position. For example, one end of pin **38** could be headed with a permanent head while the other end could be drilled or grooved to take a cot-

ter pin, bridge pin, or snap clip. Since spacing of the lower mounting points on various snowplow frames differs, collars such as **40** and **41** that may be set at different points along pin **38** may readily be utilized as adaptors to prevent support member **12** from drifting sideways. Support member **12** is assembled back-to-back with support member **11** by a pivot pin **42** centrally located to couple members **11** and **12** together. Pivot pin **42** is secured in place by use of a lock nut **44** and permits support member **11** to rotate around an axis aligned longitudally with a maintenance vehicle from which it is mounted.

FIG. **2** depicts in phantom front end **45** of a highway maintenance vehicle carrying snowplow frame **46.** Pivot pin **38** is depicted passing through the lower mounting points of the snowplow frame with collar **40** securing pin **38** in position. Chain **31** is shown connected between tab **26** and a connection to hydraulic actuator **47** of the snowplow frame. Chains **31** and **32** are used only to lift the roller off the road surface when not in use as similar chains are used on snowplows. Sometimes steel cables are used instead of the chains. The chains or cables are connected to the hydraulic actuator by various connection means. Generally speaking, the ones used on the snowplows are likewise readily usable on the roller.

Examples of the upper connector for the chains are shown in FIGS. **3** and **4.** In FIG. **3** the loops in the ends of the chains are each looped in single hook **50.** In FIG. **4,** plate **51** adapted for connection to a hydraulic actuator at top end **52** carries two spaced holes **54** and **55** in its lower end large enough for the chain links to pass through. Each of the holes **54** and **55** has a small slot **56** and **57** in its bottom edge into which a link of the respective chain may be secured and permitting ready adjustment of the chain length.

In use the roller of the present invention can be readily connected to a conventional snowplow frame by bringing the maintenance vehicle into mounting position, raising support member **12** into alignment with the snowplow frame, sliding pin **38** into position and securing it. Chains **31** and **32** are then connected to hydraulic lifting device and the equipment is ready for use. Complete connection can usually be made in two or three minutes.

When the roller is to be transported for extended distances over rough roads in the raised position, some type of snubbing device or blocking against which the hydraulic lifter may constrain the roller can be readily provided.

In use, when rolling fresh paving material as depicted by material **60** in FIG. **2,** support member **11** has freedom of movement around two mutually perpendicular axes by virtue of pivot pin **42** and pin **38** whereby roller **10** is free to follow the paving contour in desired rolling action.

While the invention has been described with relation to a specific embodiment, obvious variations are contemplated. For example, other types of bearings can be used, the support members **11** and **12** can be cast, stamped, or welded to provide a similar assembly rather than being forged or otherwise bent from channel iron. Chains **31** and **32** can also be connected to apertures cut or drilled in support member **11** or to eyebolts secured thereto rather than two tabs appended to the member.

Thus, it is intended to cover the invention within the scope of the following claims.

I claim:

1. A roller attachment for snowplow frames adapting a conventional snowplow frame mounted on the front of a road maintenance vehicle to accept a roller for packing and smoothing pavement patches and the like comprising:

a. a roller;

b. a first U-shaped frame in which the legs of the "U" carry bearings at their ends rotatably supporting said roller;

c. a second U-shaped frame extending in a substantially common plane with said first U-shaped frame (connected) and adjacently coupled back-to-back with said first U-shaped frame by a pivot pin aligned perpendicular to the axis of said roller in said common plane, the legs of said second U-shaped frame having holes arranged to align with matching holes in the bottom support of a snowplow frame so as to receive an interlocking pin; (and,)

d. at least one interlocking pin for passing through the holes in said second U-shaped frame and said matching holes; and,

e. connectors mounted on the legs of said first U-shaped frame for connection of flexible lifting means to a hydraulic lift device on said snowplow frame, all whereby said first U-shaped frame supporting said roller has freedom of movement around two mutually perpendicular axes and may be raised and lowered hydraulically.

2. A roller attachment according to claim **1** wherein the leg ends of said first U-shaped frame contain slots open at one end for receiving axle ends of said roller and said bearings are directly secured to the ends of said first U-shaped frame in alignment with said slots by removable fasteners whereby upon removal of said fasteners said roller and said bearings may be separated from said first U-shaped frame.

3. A roller attachment according to claim **1** wherein said first U-shaped frame and said second U-shaped frame are bent from channel iron.

4. A roller attachment according to claim **1** wherein the entire frame of the attachment consists in said first and second U-shaped frames.

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