(No Model.)

J. H. SURTIN.

HAND SHAFT FOR CAR BRAKES.

No. 501,031. Patented July 4, 1893.

Fig. I.

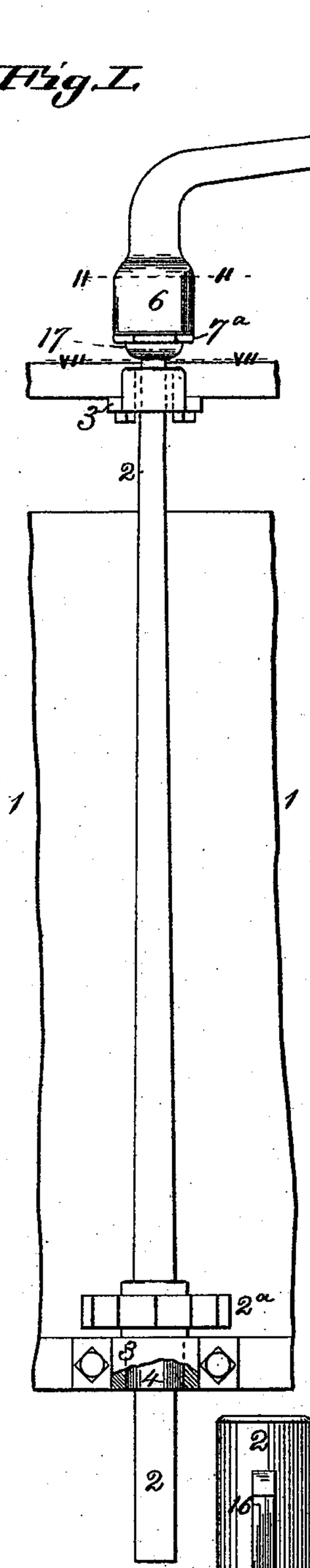


Fig. II.

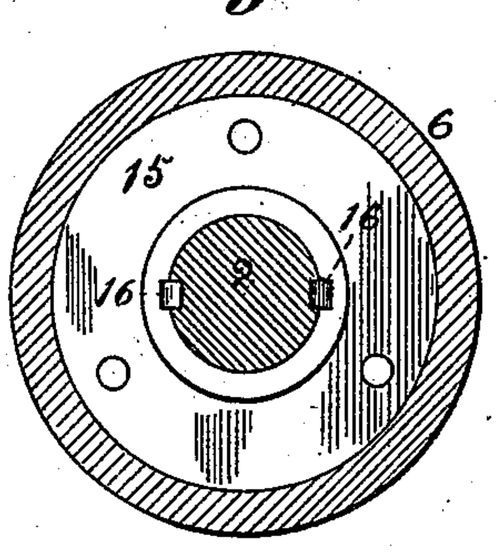


Fig. III.

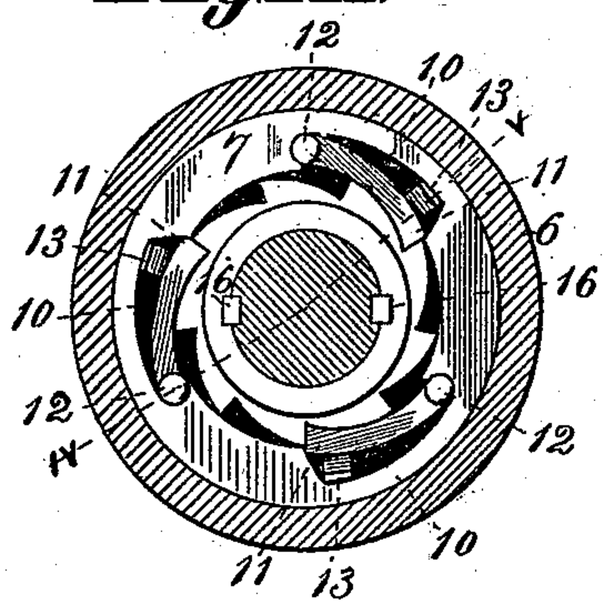


Fig. IV.

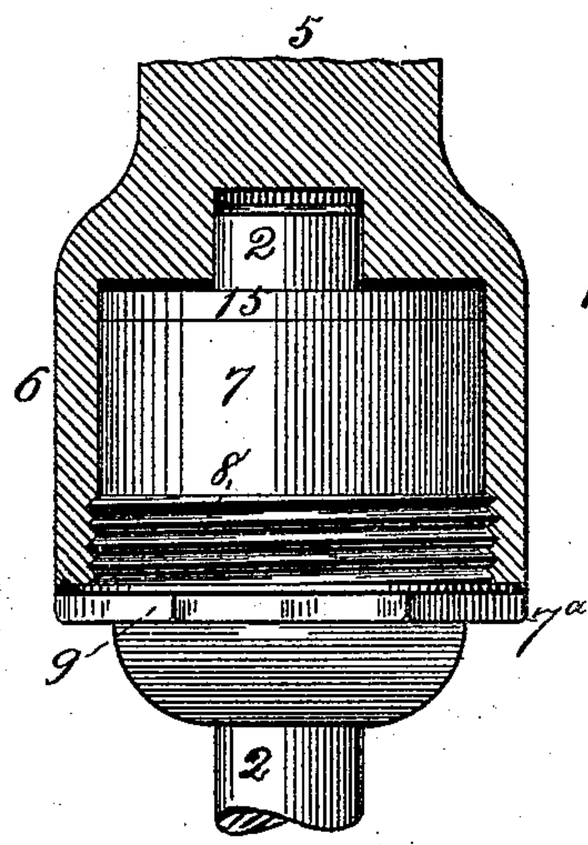


Fig. V.

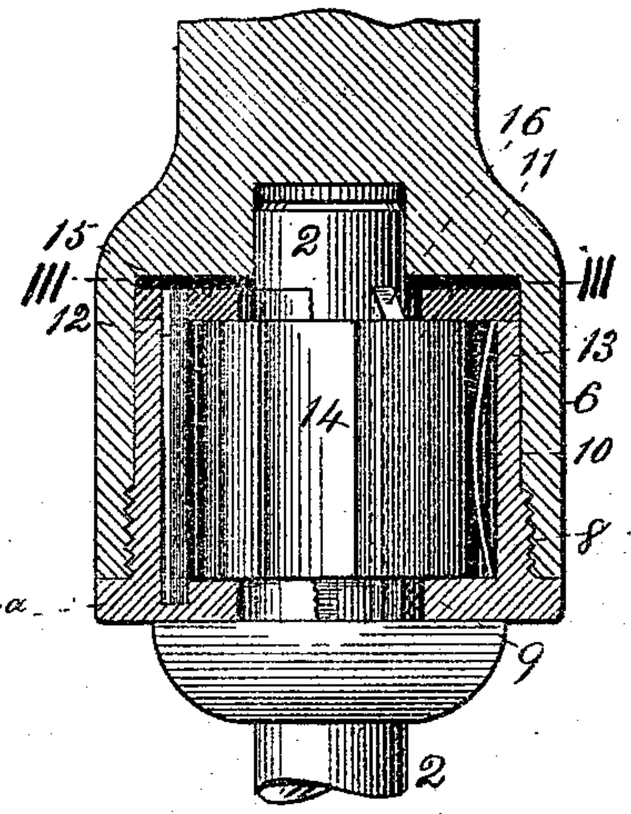


Fig. VII.

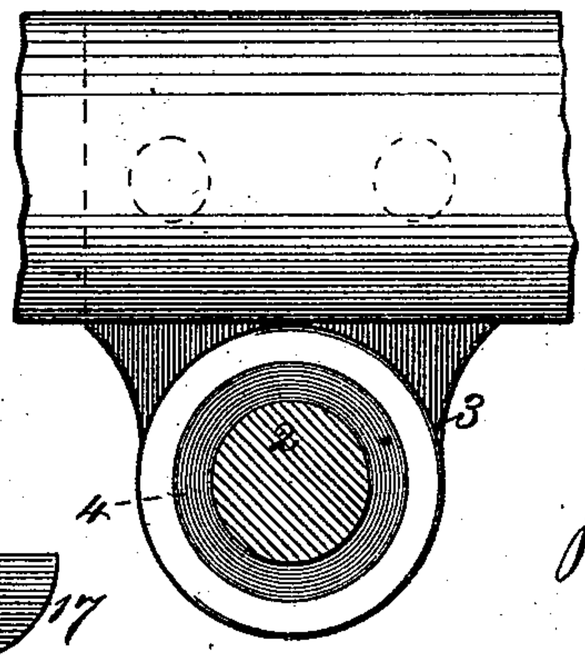


Fig. VI.

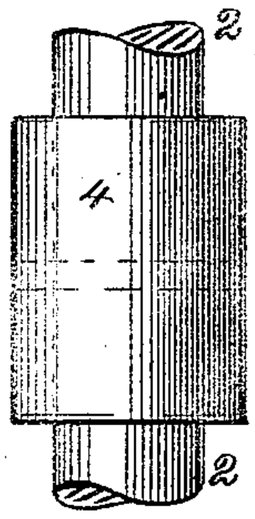
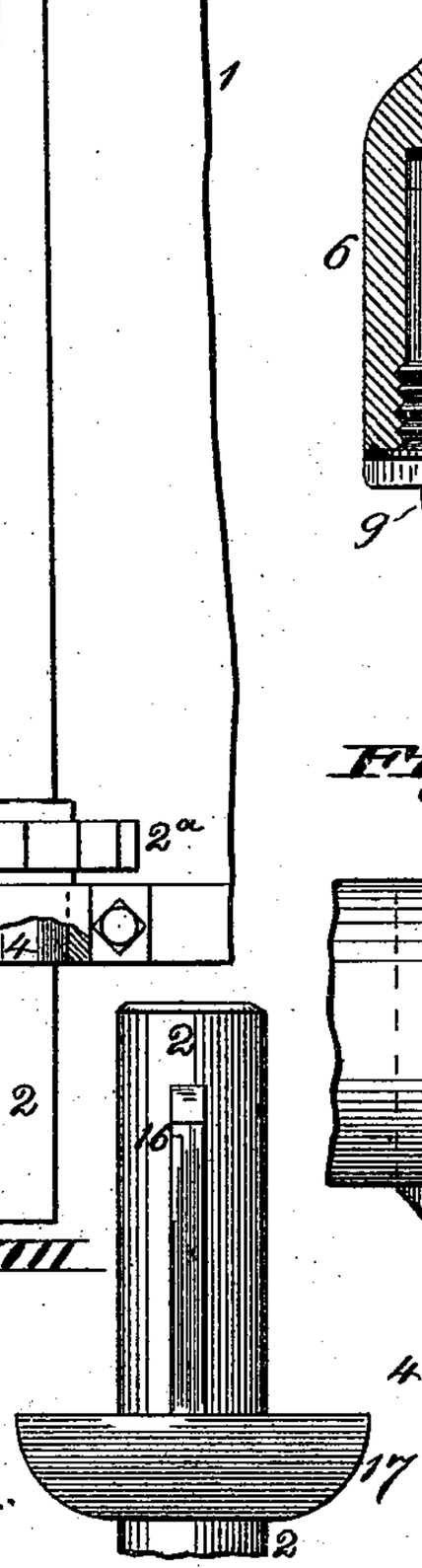


Fig. VIII



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Geo. E. Crowe.

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By Knight Bros.
Attys.

UNITED STATES PATENT OFFICE.

JOHN H. SURTIN, OF ST. LOUIS, MISSOURI, ASSIGNOR OF TWO-THIRDS TO ROBERT McCULLOCH AND WILLIAM SUTTON, OF SAME PLACE.

HAND-SHAFT FOR CAR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 501,031, dated July 4, 1893.

Application filed October 24, 1892. Serial No. 449,840. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. SURTIN, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Hand-Shafts for Car-Brakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This improvement applies to the removable handle or hand crank, the same having a ratchet device allowing the winding up of the brake chain by a number of rotary reciprocating movements.

The invention contains details of construction specifically set forth in the claims.

Figure I is an elevation of the shaft in position. Fig. II is an enlarged horizontal section taken at II—II, Fig. I. Fig. III is a horizontal section taken at III—III, Fig. V. Figs. IV and V are views partly in elevation and partly in vertical section at IV—V, Fig. III. Fig. VI is an enlarged detail elevation; and Fig. VII is an enlarged detail top view showing the upper bearing of the shaft on the line VII—VII, Fig. I. Fig. VIII is a side view of the top of the hand-brake shaft.

1 is a part of the dash-board of a car, and 2 is the hand-brake shaft, having the usual ratchet-wheel 2^a by which the backward rotation of the shaft is prevented and the brakes held to the wheels. It has been found that these brake shafts wear quickly in their bearings 3 owing to the presence of dust and want of lubrication. In order to prevent the wearing away of the shaft I supply it with removable collars 4 at the points of bearing, these collars being fixed to the shaft so as to turn with it, and in such a manner as to be readily removed when worn out.

5 is the removable handle or hand-crank having a socket 6 in which is secured a tubular barrel or cylinder 7. This barrel is shown with a screw thread 8 engaging the threaded lower part of the socket, the barrel having a flange 9 bearing against the lower edge of the socket. The barrel has in its interior one or more recesses 10, (three being shown,) said recesses containing dogs 11, the dogs swinging on pivots 12 and being pushed toward the shaft by springs 13.

14 is a ratchet wheel having teeth engaged by the dog or dogs 11. The ratchet wheel is held between the lower end 7^a of the barrel and a top plate 15. The upper end of the shaft passes through the bottom and top plates 7^a and 15 and through the wheel 14. The fit of the shafts in these parts is not so tight that they cannot be readily slipped from the top of the shaft. The ratchet wheel 14 has connection with the shaft by means of a feather or spline 16 upon the shaft or wheel engaging in a key seat of the other part. I have shown two feather keys 16 upon the shaft engaging in key seats of the wheel. The extreme upper end, 1^a, of the shaft is shown fitting in a recess of the handle. This handle is removable from one end of the car to the other or from car to car. It has all the advantages both of the non-removable ratchet handle and the removable handle of common construction.

As a modification the ratchet wheel 14 may be firmly fixed to the shaft and the barrel drawn off it with the handle; but this would necessitate some means of preventing the interference of the spring dogs 11 with the teeth of the wheel 14 in slipping the handle upon the shaft.

17 is a collar upon the shaft beneath the barrel 7.

It will be seen that there are neither rivets, set screws, machine screws nor bolts in the handle so that there is no part that can become loose, and cause failure in any way.

It has been said that there is one or more of the recesses 10 each recess containing a spring dog, three being shown. It has been found in practice that the dogs may become defective from the breaking of a spring or other cause and where only a single dog or a single spring is used that the lever is liable to become inoperative, and the brake cannot be applied. This danger is avoided by the use of three of the dogs 11 each worked by a separate spring.

There are two important practical advantages in having the brake handle removable: First, in case a handle is disabled another one can be immediately applied thus avoiding delay; second, the handle may be removed from the rear end of the car so that meddlesome

people cannot cause inconvenience by setting the brakes.

I claim as my invention—

1. The combination, with the brake shaft 2 of the ratchet wheel having spline connection with the shaft and the removable handle having a dog adapted to engage the teeth of the ratchet wheel, substantially as set forth.

2. The combination in a hand shaft for car brakes, of the shaft, a removable handle having a socket with a barrel fixed therein and containing a ratchet wheel confined by the ends of the barrel and capable of rotation therein, a dog within the barrel engaging the ratchet teeth of the wheel, the said wheel having spline connection with the shaft and being removable from the shaft with the handle, substantially as set forth.

3. The described combination with a hand shaft for car brakes, of the removable handle having dog 11, with spring 13, the ratchet wheel retained within the handle and adapted to fit over the upper end of the shaft and spline connection between the wheel and the shaft, substantially as, and for the purpose set forth.

JOHN H. SURTIN.

Witnesses:
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ED. S. KNIGHT.