

1,374,464.

Patented Apr. 12, 1921.

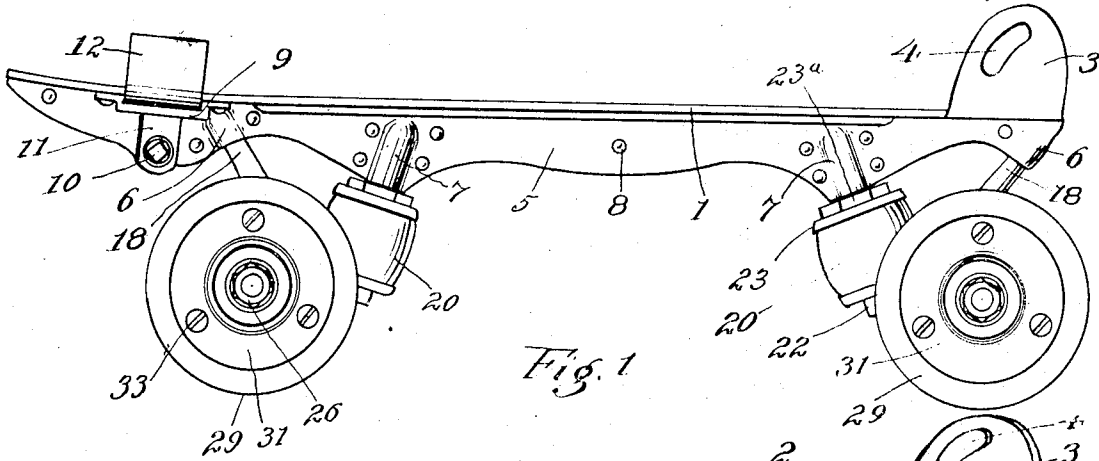


Fig. 1

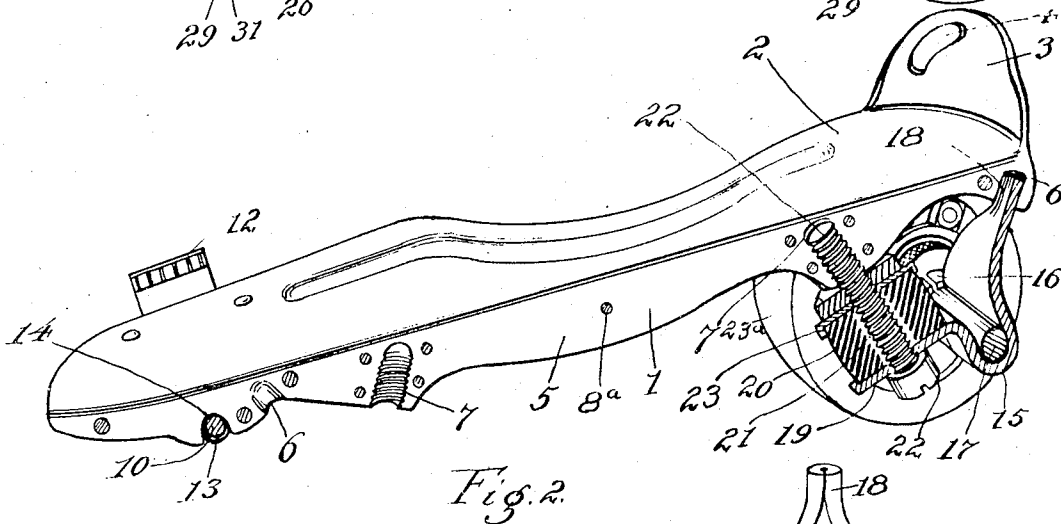


Fig. 2

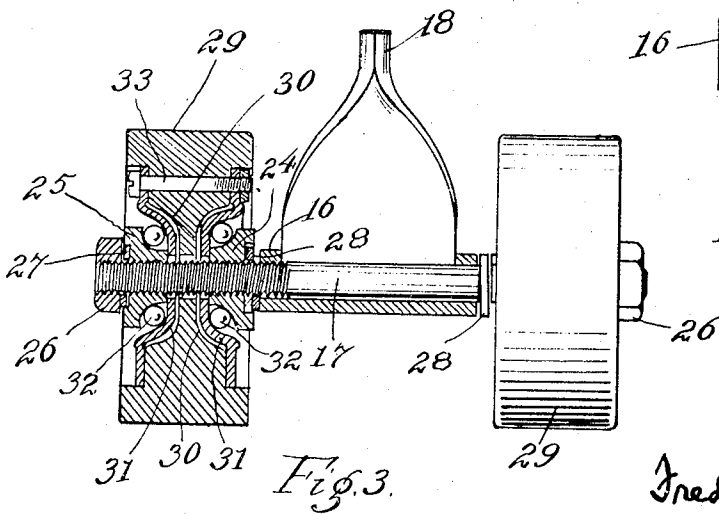


Fig. 3

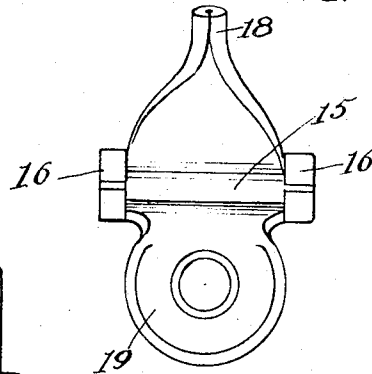


Fig. 4

Inventor:  
 Frederic W. Nall

By Allen & Allen  
 Attorneys.

# UNITED STATES PATENT OFFICE.

FREDERIC W. NALL, OF CINCINNATI, OHIO.

## ROLLER-SKATE.

1,374,464.

Specification of Letters Patent.

Patented Apr. 12, 1921.

Application filed June 9, 1919. Serial No. 302,709.

*To all whom it may concern:*

Be it known that I, FREDERIC W. NALL, a citizen of the United States, and a resident of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Roller-Skates, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to roller skates in general, and more particularly to roller skates in which cushions are interposed between the axle carriers and the body of the skate. It also relates to various improvements in the construction and operation of the parts of a skate.

It is highly desirable in a roller skate, to provide for a strong and well braced foot support and it is one of the objects to provide a foot supporting portion for the skate, which is not only of extremely simple and economical construction, but also which is braced longitudinally by a central truss, which extends from toe to heel thereof. Among other things, this improvement involves the construction of the foot plate of the skate, in two parts which are joined together longitudinally of the skate, thereby permitting the said parts to be stamped out, and cutting down cost of production.

In cushion supported skates, the great desideratum is to provide a roller carrier, or axle carrier, which not only is prevented from imparting shocks to the skater, but which permits a torsional movement of the roller carriers, so that the skater by exerting pressure upon one side or the other of the skate, can turn the carriers so as to steer the skate, dependent upon the amount of pressure exerted. This function I fully provide for in the construction and arrangement of the roller carrier and its cushioned support beneath the foot portion of the skate. In this connection, also, I provide the axle carrier in a unitary part, stamped out of metal, and interpose the cushion between the inside pivotal support of the carrier and the body of the skate which, it will be observed, provides the function of a spring both for torsional and tilting or rocking movements of the axle carrier. The outer pivot for the axle carriers and the angle of support on both outside and inside of the carriers, are added features of value.

The construction of the rollers in simplicity and durability is a feature of my invention, and the fiber, wooden or steel rim of the rollers is replaceable.

The various objects and advantages above indicated and other improvements to be noted, I accomplish by that certain construction and arrangement of parts to be hereinafter more specifically pointed out and claimed.

In the drawings,

Figure 1 is a side elevation of the skate.

Fig. 2 is a perspective view of one of the sections forming the foot support of the skate, showing in section one of the axle carriers.

Fig. 3 is a vertical section through one of the rollers showing the carrier and the other roller in elevation.

Fig. 4 is a top plan view of one of the axle carriers.

The foot plate of the skate is formed of two sections, 1 and 2, which when placed together longitudinally form the said foot plate. At the rear of each foot portion is a properly arranged heel plate 3, apertured at 4, for a strap. Extending the whole length along the meeting line of each section is a depending flange, or "truss" member 5.

The truss members form the means of attachment of the two sections together, and are, in addition, provided with matched depressions and notches which when placed together form the necessary sockets and notches for the axle carriers and the toe clips.

Thus it may be observed that the two sections when riveted or otherwise secured together form in two pieces the body portion of a skate. Instead of a complicated assembly of parts, I am thus able to provide two stampings which accomplish the purposes without further operations.

The two truss members have the inwardly inclined depressions 6, 6, at each end of the skate, which when placed together form the outer sockets for the axle carriers. Inside of the outer depressions, the threaded depressions 7, 7, are formed which provide the angling sockets for receiving the inner mounting screws of the axle carriers. The angles of the sockets thus provided are especially adapted to allow for the desired torsional movement, tipping and rocking of

the axle carriers. The outer angles are preferably more inclined from the vertical than the inner angles for this purpose.

As shown the trusses are pierced with matching holes 8, 8, for the reception of rivets 8<sup>A</sup>, as a means of securing the sections together, although this means of attachment is not necessary.

The toe clips are held by two guide plates 9, and a turn buckle screw 10. The screw engages the screw hole of the usual depending tongue 11, of the toe clips 12, which slide in the guide plates. The screw 10 has shoulders 13 at each side of the middle thereof, which are adapted to lie on each side of a groove or notch 14, cut in the two truss members. As a preferred method of mounting these parts, the clips assembled with the screw, are set with the notch 14, engaging the screw and the bracket plates are riveted in place, thereby retaining the parts permanently.

The axle carriers are each formed of a single stamping having a median groove 15, with its ends left approximately closed by lips 16. The axle 17 is set in this groove and the lips 16 clamped over the axle.

The outer portion, that is to say the portion of each stamping which extends toward the heel for the rear stamping and the toe for the forward stamping is cut and folded in so as to form a closed rounded end 18, which acts as a loose roller in the socket 6 for each carrier.

The remainder of the stamping is cut round and flanged so as to form the seating plate 19, for the rubber buffer 20. It is centrally pierced with a hole 21, through which loosely passes the screw 22.

This screw 22 passes loosely through the rubber buffer, or "shock absorber," which is curved out for this purpose, and is then threaded into the socket 7, there being one of the sockets for each axle carrier as noted.

I prefer to provide an inner seating plate 23, for the rubber buffer, which plate 23 is adjusted by a nut 23<sup>A</sup> on the screw, whereby the compression of the buffer may be regulated. This regulation is accomplished by adjusting the position of the nut 23<sup>A</sup> on the screw, since the length of the screw within the buffer will be shortened.

It will be remembered that the axles are clamped in the axle carriers, the construction of the rollers and their mounting on the axles will now be described. The axles are threaded to receive the inner and outer ball raceway nuts 24, 25, with the outer raceway nut held in place by a lock nut 26, and a spring washer 27. The inner raceway nut has merely a spring washer 28, which is positioned to abut against the side of the axle carrier.

The thread of the rollers is made up with a rolling surface 29, and a countersink 30 at

each side, to provide seats for the two cup members 31 of the bearing raceways. The raceway nuts provide the cones, and the countersunk members 31 form the cups for ball bearings 32. The axle, of course passes loosely through the roller treads, and the countersunk cups.

The cups are secured in place by bolts 33 which pass through the treads and engage the cup members on both sides thereof. The construction of the rollers in combination with the axle is thus very simple, and easily assembled, while at the same time, the treads are readily replaceable, and can be furnished to the dealers, with the holes pierced in them for the bolts that retain the countersunk cups in place.

Again in this instance, the cup members for the roller bearings are to be stamped out of metal, and furthermore the number of nuts necessary to hold the parts together, and yet provide a ball bearing is cut down to the lowest figure.

The axle carrier by reason of its method of mounting is capable of the widest range of movements, both torsional tipping and rocking so as to fully take up all jars, and permit of the steering of the skate. In view of the fact that the outer journal or socket for the carriers, is formed in the nature of a pocket, and the round end 18 of the stamping, forming the carrier, is made to loosely fit the said pocket, I am enabled to get practically a universal movement at this bearing point. That is to say, so far as the necessities of movement are concerned the joint performs all the functions of a ball and socket joint, with the additional advantage that the rounded end of the carrier is free to slide slightly, within the pocket.

As hitherto pointed out the placing of the two bearing points for the carrier, in sockets of the foot portion of the skate, these sockets being set at convergent angles, enables me to obtain a very marked torsional movement of the axle carriers, which at the same time is quite resilient and quickly returns to normal, due to the fact that the rubber buffer or shock absorber is placed at the twisting point of the carriers and not between the twisting point, and the outer journal members as is the case in other instances with which I am familiar.

A great factor of the axle carrier is their strength imparted by the deep fold forming the axle supporting groove and the fold at right angles to this, forming the cylindrical tip 18. Although termed axle carriers these members might readily be fitted with ice skate runners.

It should not be considered that by the mention of the above details of structure, I thereby indicate a desire that my claims that follow should be limited in construc-

tion to the precise means stated, where means generally, are claimed, since I include within my invention all of those changes in detail which would be apparent to the mechanic, who would be called upon to adapt the structure to varying conditions.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

10 1. In a roller skate, a foot plate therefor comprising two longitudinal sections, extending from heel to toe, having depending flanges along their meeting edges extending their full length, said flanges being united  
15 together in abutment with each other along the median line of the foot plate, to complete the foot plate and provide a truss therefor.

2. In a skate, a foot plate therefor com-

prising two longitudinal sections, having de- 20  
pending flanges along their meeting edges, said flanges being united in contact along the median line of the foot plate, to complete the foot plate and provide a truss  
therefor, said flanges having corresponding 25  
depressions therein, forming when united together complete suitable sockets for the roller carriers.

3. In a skate, the combination of a foot plate, in two longitudinal sections, a mem- 30  
ber located longitudinally of said foot plate on the under side thereof, in one piece with the plate and unitary with the sections, and converging sockets in said member, carriers for the tread portion of the skate, and means 35  
on said carriers for entering the sockets.

FREDERIC W. NALL.