No. 852,570. PATENTED MAY 7, 1907.

C. F. MILLER.

ROLLER SKATE TRUCK.

APPLICATION FILED SEPT. 24, 1906.

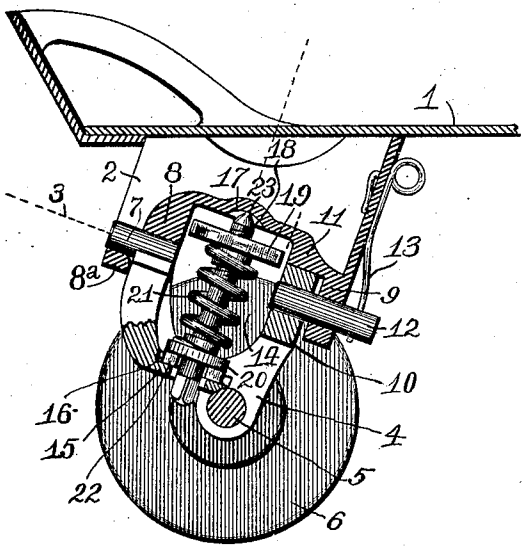


Fig. 1.

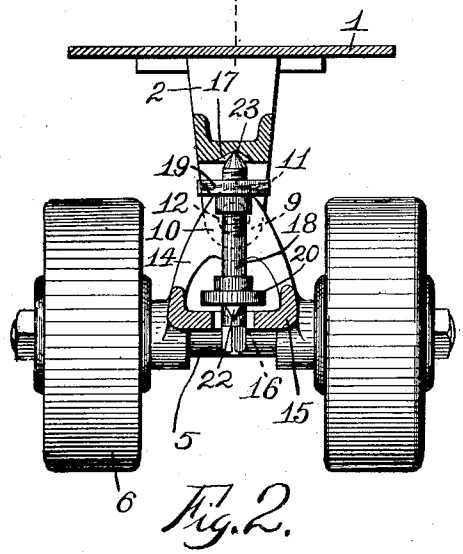


Fig. 2.

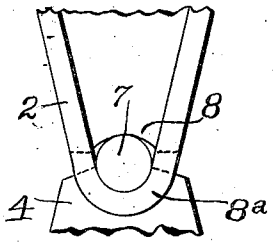


Fig. 3.

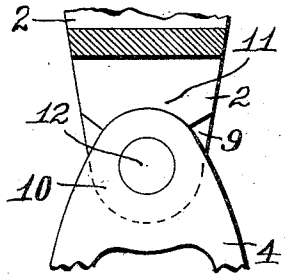


Fig. 4.

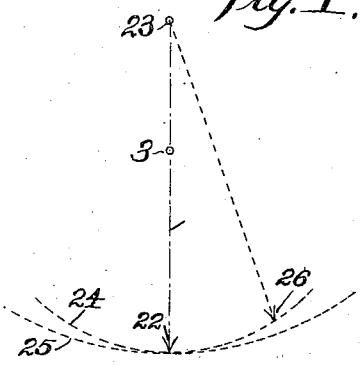


Fig. 5.

Witnesses:
Elmer R. Shipley
M. S. Belden.

Cornelius F. Miller
Inventor
by James W. See
Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CORNELIUS F. MILLER, OF HAMILTON, OHIO.

ROLLER-SKATE TRUCK.

No. 852,570. Specification of Letters Patent. Patented May 7, 1907.

Application filed September 24, 1906. Serial No. 336,001.

To all whom it may concern:

Be it known that I, CORNELIUS F. MILLER, a citizen of the United States, residing at Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Roller-Skate Trucks, of which the following is a specification.

This invention will be readily understood from the following description taken in connection with the accompanying drawing in which:—

Figure 1 is a side elevation part section in a vertical central plane, of a skate truck embodying my invention in its preferred form: Fig. 2 a vertical section of the same in the plane parallel with the wheel axle, viewed from the rear: Fig. 3 a rear elevation of the rearmost housing-bearing: Fig. 4 a rear elevation of the forward housing bearing: Fig. 5 a demonstrative diagram illustrating the action of the spring.

In the drawing I illustrate the truck for the heel of the skate, it being understood that the forward truck of the skate will be of the same construction but oppositely arranged as regards the angle of oscillation of the housing. In herein using the terms "front", "rear", etc., reference is had to the relation of parts as illustrated in Fig. 1 and the terms are to be considered merely as relative.

In roller skates it has been, so far as I know, the universal practice to hold the oscillating wheel housing to neutral position by means of a spring or some arrangement of springs, and the construction has been such that there would be a deficiency in the suppleness of the oscillating motion, due to the fact that, however the spring was arranged it would suddenly and vastly increase its resistance the instant the housing was oscillated out of the normal neutral position. Delicate adjustment of the spring would, under such conditions, be practically useless owing to the enormous variation in spring resistance resulting from extremely slight variations in the angular position of the wheel housing. Again, in most arrangements of springs, the oscillation of the housing would bring about a bending of the spring, or a lateral distortion of the spring if it happened to be of the helical form. In my improved construction the resistance of the spring does actually increase as the housing is oscillated away from the neutral position but to such a very slight extent as to be negligible. Peculiarly happy results for the skater flow from this arrangement, whether the spring be adjusted to greater or less tension, within reasonable limits, and if the tension of the spring be adjusted for best results then the beneficial results become practically favorable throughout the entire degree of the practical oscillating motion of the housing. I speak of the oscillation of the wheel housing in the relative sense, it being understood that the skate-body is the member partaking of the main motions of oscillation.

In the drawing:—1, indicates the heel portion of the skate-body: 2, the bracket secured thereto as usual: 3, the usual inclined axis of oscillation at which the wheel housing is united to the bracket: 4, the wheel housing: 5, the axle: 6, the wheels: 7, the rear journal of oscillation uniting the housing to the bracket, this journal being, in the present case, cylindrical in its rearward portion and semi-cylindrical in its forward upper portion: 8, a concave bearing carried by the bracket and engaging over the forward portion of the journal 7: 8^a, a concave bearing carried by the bracket and engaging under the rearward portion of the journal 7: 9, the forward bearing carried by the bracket, its axis coinciding with that of journal 7: 10, an eye carried by a horn of the wheel housing rearward of the bearing 9, the upper surface of this eye being on a segmental curve concentric with the axis of oscillation 3: 11, a segmental bearing carried by the bracket, forward of the bearing 9, and engaging the upper outer surface of eye 10: 12, a coupling pin removably disposed in bearing 9 and eye 10: 13, a spring carried by the bracket and engaging the coupling pin and permitting the ready removal of the latter in a forward direction: 14, a spring chamber formed between the front and rear bearings by giving a general open or skeleton form to the bracket and wheel housing, the roof of this chamber being some distance above the axis of oscillation 3 and the base of the chamber being a considerable distance below that axis: 15, the floor of the chamber: 16, an upwardly open V-shaped groove in the floor of the spring chamber, this groove extending lengthwise in planes parallel with the axis of oscillation 3 and at right angles to the wheel axle 5: 17, a downwardly open countersink in the roof of the spring chamber in the common vertical plane of groove 16 and the axis of oscillation 3: 18, a stud disposed axially in the spring chamber and having its

upper end threaded and its lower end squared for an adjusting key: 19, a block threaded upon the upper end of the stud and of an exterior form to so engage a wall of the spring chamber as to be prevented from rotation: 20, a collar loose on stud 18 above the floor of the spring chamber: 21, a spring, illustrated as of helical type, compressed between block 19 and collar 20, which, by preference, are provided with projecting bosses to enter and center the ends of the spring: 22, a vee-shaped rib projecting from the lower surface of collar 20 into free rocking engagement with the vee-shaped groove 16 in the floor: and 23, the pointed upper end of the stud, engaging upwardly within the countersink 17.

Disregard for the present any peculiarities of the spring action and assume it to be or act as usual in roller skates. The rear portion of journal 7 serves merely as a coupling element the thrust due to the load being borne by the bearing portion 8 of the bracket engaging over the forward portion of journal 7, and this forward portion, it will be observed, does not have its strength limited by the diameter of a cylindrical journal, being amply and integrally reinforced by the rear horn of the wheel housing of which the journal 7 forms a part. The coupling pin 12, while capable to some extent of rendering service as a journal, is primarily a coupling element merely, the thrust of the load at the forward journaling being met by the upper portion of eye 10 engaging under the roof 11. By displacing coupling pin 12 in a forward direction the wheel housing and its parts are readily separated from the bracket. The keeper spring 13 for the coupling pin is a common expedient in roller skates.

Now, giving consideration to the action of the spring, its tendency is to hold the housing to normal position relative to the bracket, the spring exerting compressive strain between the roof of the bracket and the floor of the housing. By turning the stud in proper direction the block 19 may be moved downwardly upon the stud, thus putting the spring under greater compressive strain, and the strain of the spring may be reduced by turning the stud in the opposite direction. In this construction the action of the spring is such that the resistance it offers to the oscillation of the housing is practically constant throughout the ordinary range of oscillating motion. This will be understood by analyzing Fig. 5.

In Fig. 5, 23 indicates the axis of oscillation for the upper end of the stud; 22 the axis of oscillation for the lower portion of the stud; and 3 the axis of oscillation of the housing relative to the bracket. As the housing oscillates relative to the bracket, on point 3 as an axis, the point 22 will be moved in the arc 24 struck from the center 3. This point 22 may be brought to the point 26 on that arc. The spring structure, in thus having its base moved through the arc struck from center 3, itself swings from point 23. If the spring structure, in thus swinging on plint 23 swung normally, it would tend to describe arc 25 struck from point 23, and if it did this the length of the spring structure would be unaltered during the movement and the spring would be without centralizing effect on the skate. But it is to be observed that the lower end of the spring structure, represented by point 22, is compelled to move in the arc represented by the distance 3, 22, the consequence being that when point 22 has reached point 26 the distance between itself and point 23 is lessened, such lessening representing the increased tension under which the spring has been put as the result of such range of oscillating motion. This increase in tension, while perfectly effective, is very slight, due to the slight difference between the two arcs 24 and 25. The spring thus tends to hold the housing to neutral central position and to resist departure therefrom with practical constancy during all practical oscillations. It is also to be observed that the oscillating motion of the parts brings no lateral bending strains upon the spring structure, and it is also manifest, as has been found in practice, that the friction imposed upon the oscillating motion by reason of the presence of the spring structure is extremely slight.

The described principle of action is available in a variety of specific constructions. For instance, it is obvious that any type of spring compressed between the points 22 and 23 might be substituted for the preferred helical metallic spring illustrated; adequate devices for adjusting the tension of the spring might be substituted for the preferred threaded stud and block arrangement illustrated; and other admirable forms for the thrust bearings of the spring structure might be substituted for the preferred countersink and point and the rib and groove structures illustrated. I have simply described the principle of my invention and have set forth the best mode in which I at present contemplate embodying that principle.

I claim:—

1. A roller skate truck comprising a bracket, a wheel housing united thereto by an inclined pivot of oscillation, a compression spring-structure, a joint of oscillation between the upper end of the spring and the bracket at a point above and in the vertical plane of the axis of the pivot of oscillation of the general structure, and a joint of oscillation between the lower end of the spring-structure and the housing at a point below and in the vertical plane of the axis of the pivot of oscillation of the general structure, combined substantially as set forth.

2. A roller skate truck comprising a

bracket, a housing united thereto by an inclined pivot of oscillation, a downwardly presenting countersink in the bracket in the vertical plane of the pivot of oscillation, a collar below the pivot of oscillation, a coöperating rib and groove lying in the vertical plane of the pivot of oscillation and at right angles to the axle and forming a bearing of oscillation between said collar and the housing at a point below the pivot of oscillation of the main structure, a compression spring resting on said collar, a block over the upper end of this spring, and a connection between the block and said countersink to form a pivot of oscillation for the upper end of the spring, combined substantially as set forth.

3. A roller skate truck comprising a bracket, a housing united thereto by an inclined pivot of oscillation, a downwardly presenting countersink in the bracket in the vertical plane of the pivot of oscillation, a collar below the pivot of oscillation, a coöperating rib and groove lying in the vertical plane of the pivot of oscillation and at right angles to the main axle and forming a bearing of oscillation between said collar and the housing at a point below the pivot of oscillation of the main structure, a stud passing freely through said collar and having its upper end pointed and in free engagement with said countersink, a block adjustably threaded upon the upper end of said stud and held against rotation by the bracket, and a spring compressed between said collar and block, combined substantially as set forth.

4. A roller skate truck comprising a bracket, a housing united thereto by an inclined pivot of oscillation, a downwardly presenting countersink in the bracket in the vertical plane of the pivot of oscillation a collar below the pivot of oscillation, a coöperating rib and groove lying in the vertical plane of the pivot of oscillation and at right angles to the axle and forming a bearing of oscillation between said collar and the housing at a point below the pivot of oscillation, a compression spring resting on said collar, a block resting on the spring, and a stud engaging the block and having its upper end in pointed engagement with said countersink, combined substantially as set forth.

5. A roller skate truck comprising a bracket having a downwardly presenting horn provided with a bearing having a semi-circular half at its outer lower portion and a semi-circular half at its forward upper portion, and having a second horn provided with a circular bearing at its outer portion and with a semi-circular bearing at its upper inner portion, a housing having a journal engaging over one and under the other bearing of the first-mentioned horn of the housing and having an eye with a segmental upper surface engaging under the semi-circular bearing of the other horn of the housing, a coupling pin engaging said eye and the circular bearing of the second horn, and a spring disposed between the housing and bracket and tending to hold them in normal angular relationship, combined substantially as set forth.

6. A roller skate truck comprising three pivot-points of articulation in a common normal vertical plane, a bracket and wheel housing pivotally united at the intermediate one of said pivot-points, and a compression-spring pivotally united to the bracket at the upper one of said points and to the wheel-housing at the lower one of said points, combined substantially as set forth.

CORNELIUS F. MILLER.

Witnesses:
M. S. BELDEN,
ELMER R. SHIPLEY.