To all whom it may concern:

Be it known that I, JOHN W. VON NEIDA, a citizen of the United States, residing at Sioux Falls, in the county of Minnehaha and State of South Dakota, have invented certain new and useful Improvements in Hard-Snow and Ice Plows for Railways, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to snow plows or snow shovels, such as are applied to railway cars, street cars, and other like vehicles, and particularly to plows used for removing snow, ice, mud, etc., from the rails of the track.

While the ordinary snow plow is designed to remove masses of snow from the track, it does not remove hardened snow or ice from the track itself, nor from the flangeway, whether this flangeway be formed in the rail, as is the case in cities, or whether it is simply formed by having the rail high enough to permit the flange of the wheel to operate. Accumulations of hard snow and ice on top of the rail and in the flangeway often cause the flanges of the locomotive or motor car to ride up on the hard snow or ice and the engine or motor car to jump the track. It is usual to clear this ice and packed snow away from crossings and from rail tracks by hand labor and this labor is particularly hard and it takes considerable time to properly clear the crossing.

The general object of my invention is to provide a snow plow or shovel adapted to be disposed on an engine or motor car and so constructed that it will not only throw loose snow and ice to the sides of the track, but will scrape off the hard snow and ice from the top of the rails and cut out the hard snow and ice from the flangeway.

A further object of this invention is to provide for the purpose of cutting a passage for the flange of the wheel, an auxiliary cleaning point which extends down on the inside of each plow and on the inside of the rail and which cuts out the hard snow and ice which may be gathered there.

A further object is to provide for a plurality of scraping members which are urged downward resiliently against the face of the rail and which act to cut away and scrape off the snow or ice which may have hardened upon the rail and in this connection it is an object to so mount these scrapers that they may ride over the rail and will not get caught at the joints or when passing other rail connections.

And still another object is to form the scraping ends of these scrapers of such form that they will ride properly over the rail, provide resilient means for forcing these points or scrapers down against the rail, and to provide means for preventing the points or scrapers from dropping too far.

A further object is to provide means whereby the rail scrapers may be readily removed to permit of resharping and replacement and to provide means for supporting each plow upon the rail so that in case a brace gives away, the plow points will not drop down so as to engage the rail or the ties.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, in which:

Figure 1 is a top plan view of a locomotive equipped with my improved ice and snow plow;

Fig. 2 is an inside view of my improved plow;

Fig. 3 is a fragmentary elevation of one of the plows;

Fig. 4 is a fragmentary front elevation of one of the plows;

Fig. 5 is an end view of the construction illustrated in Fig. 3;

Fig. 6 is a perspective view of one of the cutters 29 and its allied parts.

Referring to these figures, 10 designates the pilot of the locomotive engine, or other power driven vehicle running on the rails 11, which are illustrated as the ordinary standard rails. Disposed at each side of the pilot 10 are the main plows 12 which extend upward and laterally in the ordinary manner and extend downward to within a short distance of the rail and transversely across it and forward. Attached to the lower ends of each of the main plows 12 is a plow point 13 which is removably connected to the plow share 12 so that it may be removed for resharping. Extending inward from the lower end of each main plow share 12 is a relatively small shovel or share 14, which is braced from the main share 12 by means of the brace 15 and which has detachably connected to its lower end, the downwardly and forwardly extending cutting point 16, which extends down below the lower edge of the large point 13 and is
designed to operate very close to the inside of the rail 11, so as to cut a flangeway for the flange of the wheels.

It will be, of course, understood that the spring portion 26 is of such strength as to urge these lugs into firm cutting engagement with the surface of the rail but that because of the resilient mounting of these rail scrapers or points, they will yield on passing over joints. This movement of the rail-scrapers or cutters is also made easier by the beveling of the lower faces.

2. Designed to operate very close to the inside of the rail 11, so as to cut a flangeway for the flange of the wheels. Extending in a vertical plane rearward from the forward end of each share 12 is the runner 17, which is disposed a short distance above the rail and which, at its rear end, is attached to the pilot of the engine by means of braces 18 and which, at its middle, is connected to the pilot of the engine by means of the braces 19. A transverse brace 20 is attached to the middle of the pilot 10, in any suitable manner, and extends laterally therefrom and is connected to the runners 17 in any suitable manner. This brace 20 braces the shares 12 from each other and rigidly connects the shares to the pilot of the engine. A brace 21 connects each wing or share 12 to its corresponding runner 17 so as to brace the one from the other. Attached to each runner adjacent to its forward end is a block of extra hard steel designated 22, having upwardly rounded forward and rear ends. These blocks 22 slide on the face of the rail and act to keep the nose of each plow from dropping downward in case the brace gives way. These blocks 22 are about \( \frac{1}{2} \) inch wide and 3 inches long.

Adjacent the rear end of each runner 17 is a metallic member 23 which carries upon it a spring 24, which is coiled around a bolt or stud 25, this spring being coiled a plurality of times and then extending forward as far as 26 and being formed with a plurality of perforations. Also formed upon each runner 17 is a plurality of collars 27 which are perforated for the passage of the vertically extending stems of a plurality of scrapers 28. It will thus be seen that the stems 28 of the scrapers 29 may move vertically in the collars 27. The stems are slotted and pins 31 on the collars pass through these slots. The lower faces of the scrapers 29 are beveled so as to provide a cutting edge 30, which scrapes on the upper face of the rail. The cutters or scrapers are forced downward by the spring 24 and 26 and their downward movement is limited by the pins 31. These pins also prevent the stems 28 from dropping too far through the collars. The upper ends of the stems 28 are formed with studs 32 which pass through the perforations in the spring portion 26, these studs 32 being provided with cotter pins for holding the stems 28 to the spring portion 26. By removing these cotter pins, the scraping points 29 may be removed and new points substituted therefor. The scrapers or scraping points comprising the members 29 and 28 are preferably made of cast hardened steel and are designed to scrape off or cut away the thin ice which may have accumulated upon the face of the rail and which the snow plow proper has escaped.

3. The combination with a snow plow of a plurality of ice cutters mounted on the plow for vertical movement and resiliently forced downward, said cutters being adapted to travel over the upper surface of a rail, each cutter having at its forward end a beveled surface extending in one direction from the cutting edge.
a plurality of rail scrapers operatively mounted upon the plow, means for resiliently forcing said scrapers downward against the face of the rail, and means for limiting the downward movement of the scrapers, the under surfaces of the scrapers being beveled so as to form transversely extending cutting edges.

4. The combination with a snow plow, of a coiled spring mounted upon the plow and having a forwardly extending portion, a plurality of collars mounted upon the plow, and a plurality of rail scrapers having stems extending through said collars and vertically movable therein, the upper ends of the stems being connected to a spring, and means for limiting the downward movement of the stems under the action of the spring.

5. The combination with a snow plow, of a coiled spring mounted upon the plow and having a forwardly extending portion, a plurality of collars mounted upon the plow, and a plurality of rail scrapers having stems extending through said collars and vertically movable therein, the upper ends of the stems being connected to a spring, and means for limiting the downward movement of the stems under the action of the spring, and means for detachably connecting the stems to the spring.

6. A snow plow of the character described and adapted to ride over the rail of a track, comprising a main share, a vertically extending runner to which the main share is connected, a plow point detachably connected to the forward end of the share and extending transversely of the rail, an auxiliary point spaced from the last named plow point and extending downward on the inside face of the rail, and a plurality of rail scrapers mounted upon the runner and resiliently urged downward into contact with the rail.

7. The combination with a locomotive, of a pair of rail plows mounted upon the forward end of the locomotive and each comprising a main share extending downward, forward, and inward to a point above the rail, a removable plow point attached to the main share, an auxiliary point attached to the main share inward of the main point and adapted to cut a flangeway on the inside of the rail, an auxiliary share attached to the auxiliary point and extending rearward and inward therefrom, braces connecting the shares to each other and to the engine, vertically disposed runners connected to each of said braces and extending downward toward the rail, a block operatively mounted upon the forward end of each runner and having sliding engagement with the rail and acting to support the forward end of each plow, and a plurality of rail scrapers mounted upon the rear portion of each runner and resiliently forced downward into engagement with the rail.

8. The combination with a locomotive, of rail plows disposed at the forward end of the locomotive, and on each side thereof, each plow comprising a vertically disposed runner, an upwardly and rearwardly extending main share attached to the runner, a main point attached to the lower end of the share, an auxiliary point disposed inward of the main point and extending downward on the inside face of the rail, an auxiliary share attached to said auxiliary point, a brace connecting the auxiliary share to the runner, braces connecting the runner to the forward end of the engine, braces connecting one runner to the other and to the forward end of the engine, a brace connecting the main share to the runner, forwardly extending resilient members mounted upon each runner on the inside face thereof, collars formed upon the runner and a plurality of rail scrapers having stems extending through the collars and slidingly arranged therein, the upper ends of the stems being connected to said resilient member to be forced downward thereby, and means for limiting the downward movement of said scrapers.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

JOHN W. VON NEIDA.

Witnesses:
C. L. STONE,
ROY B. MARKER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."