

C. B. RASTELLO.  
 PROPELLER FOR SELF PROPELLED SLEDS.  
 APPLICATION FILED FEB. 7, 1912.

1,073,520.

Patented Sept. 16, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

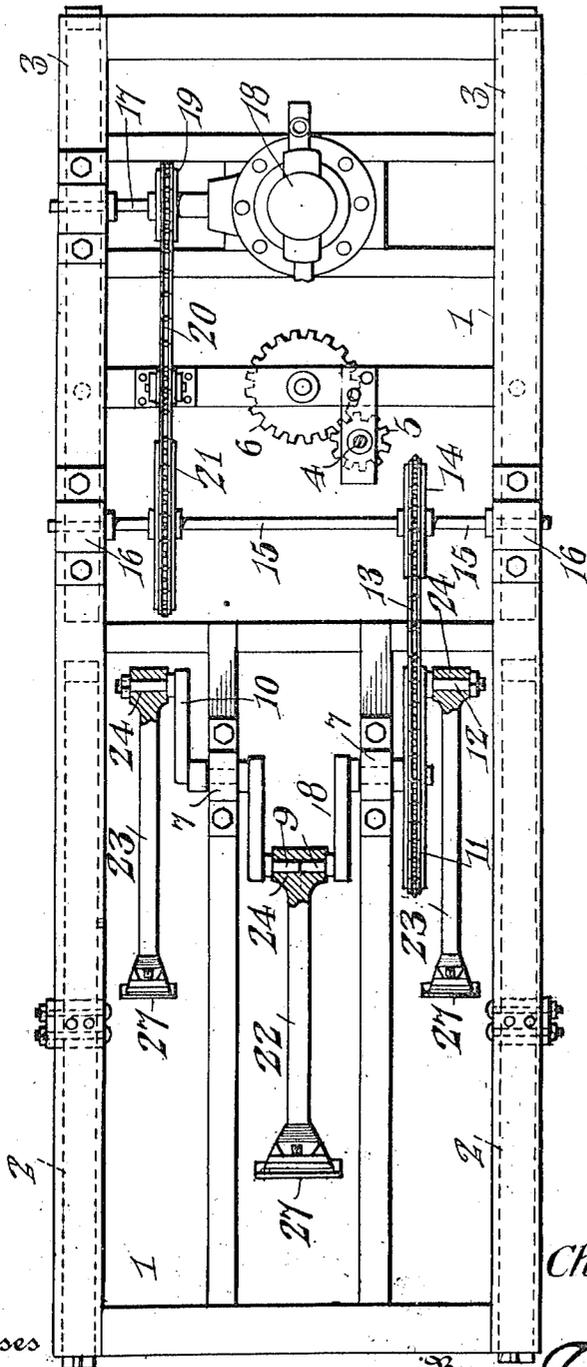


Fig. A.

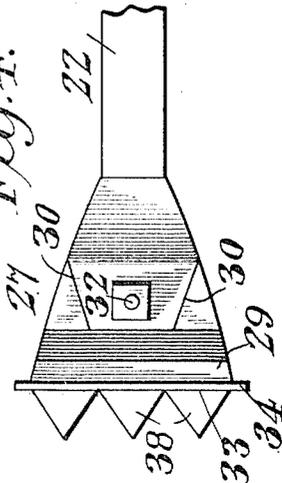
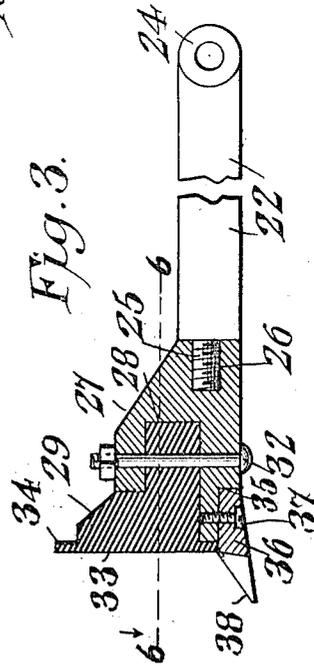


Fig. 3.



Charles B. Rastello,  
 Inventor

Witnesses

Jas. K. McLaughlin  
 H. J. Perry

B. G. Siggers  
 Attorney

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2 SHEETS—SHEET 2.

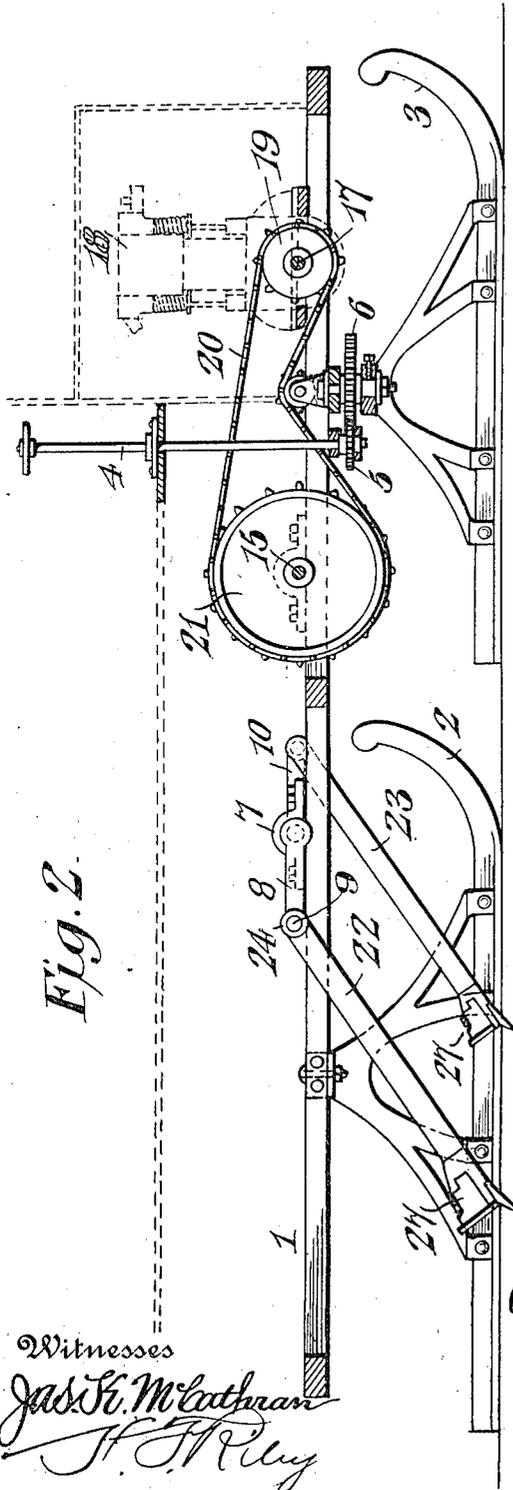


Fig. 2.

Witnesses  
*Jas. H. McLaughlin*  
*J. H. Kelly*

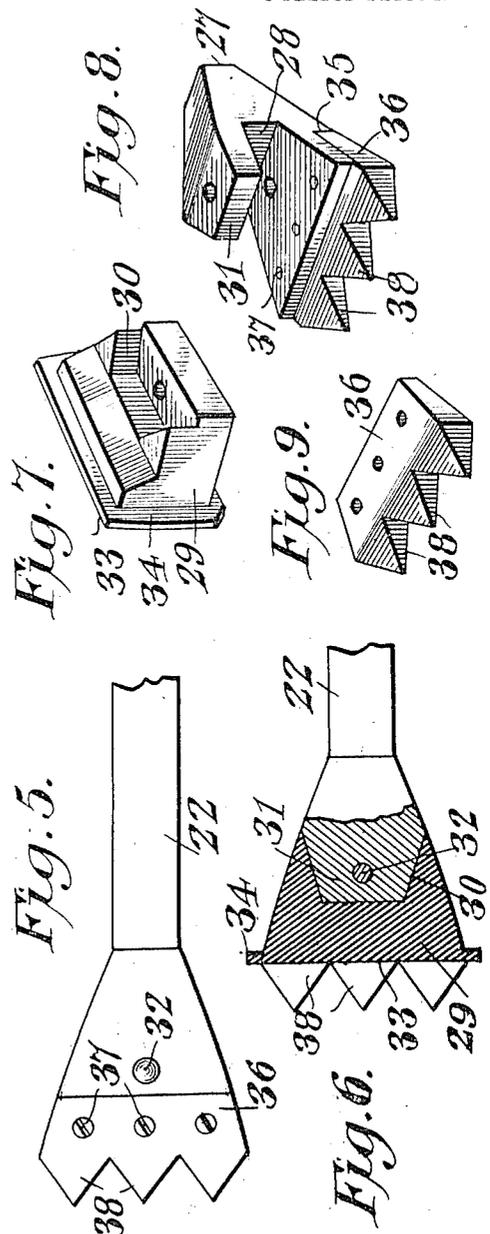


Fig. 7.

Fig. 8.

Fig. 5.

Fig. 9.

Charles B. Rastello, Inventor

By *E. G. Siggers*  
 Attorney

# UNITED STATES PATENT OFFICE.

CHARLES B. RASTELLO, OF HANCOCK, MICHIGAN.

## PROPELLER FOR SELF-PROPELLED SLEDS.

1,073,520.

Specification of Letters Patent.

Patented Sept. 16, 1913.

Application filed February 7, 1912. Serial No. 676,010.

To all whom it may concern:

Be it known that I, CHARLES B. RASTELLO, a citizen of the United States, residing at Hancock, in the county of Houghton and State of Michigan, have invented a new and useful Propeller for Self-Propelled Sleds, of which the following is a specification.

The invention relates to self propelled sleds.

The object of the present invention is to improve the construction of self propelled sleds, more especially the propeller bars or legs, and to provide a simple, efficient and comparatively inexpensive propeller bar or leg, equipped with cushions, capable of relieving a sled of jar and preventing snow from adhering to the propeller bars or legs.

A further object of the invention is to provide a propeller bar or leg, equipped with detachable toothed plates, adapted to positively engage snow and ice, and capable of being readily removed and renewed when worn.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a plan view of a self propelled sled, constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is an enlarged central longitudinal sectional view of one of the propeller bars or legs. Fig. 4 is a plan view of the foot portion. Fig. 5 is a reverse plan view of the same. Fig. 6 is a sectional view on the line 6—6 of Fig. 3. Fig. 7 is a detail perspective view of the rubber cushion or shoe. Fig. 8 is a similar view of the foot. Fig. 9 is a detail perspective view of the toothed plate.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

In the accompanying drawings in which is illustrated the preferred embodiment of the invention, 1 designates the frame of a

sled provided with front and rear runners 2 and 3, the front runners being pivotally mounted and connected with suitable steering mechanism, comprising a steering shaft 4 and gears 5 and 6 for communicating motion from the steering shaft to the front runners for guiding the sled. As the particular construction of sled and the means for guiding the same do not constitute a portion of the present invention, further description thereof is deemed unnecessary.

Mounted upon the sled in suitable bearings 7 thereof is a transversely disposed crank shaft 8, preferably composed of two sections and provided with central cranks 9 and a side crank 10, arranged at one end of the crank shaft, which is equipped at its other end with a sprocket wheel 11 having a crank or wrist pin 12 and forming a side crank for the adjacent end of the crank shaft. The sprocket wheel 11 is connected by a sprocket chain 13 with a sprocket pinion 14 of a main transverse shaft 15, journaled in suitable bearings 16 of the sled and connected by sprocket gearing with the shaft 17 of an engine or motor 18, which may be of any preferred construction. The sprocket gearing, which communicates motion from the engine or motor to the main transverse shaft, consists of a sprocket pinion 19, mounted on the engine shaft and connected by the sprocket chain 20 with a sprocket wheel 21 of the main transverse shaft.

The cranks of the crank shaft and the crank or wrist pin of the sprocket gear 11 receive central and side propeller legs or bars 22 and 23, equipped at their outer rear engaging ends with feet, the central propeller bar or leg and the foot thereof being preferably larger than the side propeller bars or legs and the feet of the same. The propeller bars or legs are arranged at an inclination and extend downwardly and rearwardly from the crank shaft, and each bar is provided at its upper end with an eye 24 for the reception of a crank pin, and it has a lower threaded reduced portion or shank 25 to screw into a threaded socket 26 of the foot 27. The foot 27 is tapered forwardly or inwardly and is provided at its enlarged outer or rear portion with an upper recess 28 for the reception of a rubber cushion or shoe 29, fitting in the recess 28 and provided in its upper portion with a tapered recess 30 to receive a tapered pro-

jecting upper portion 31 of the foot 27. The projecting portion 31, which overhangs the recess 28, is tapered outwardly or rearwardly reversely with respect to the inward or forward taper of the foot, as clearly shown in Fig. 4 of the drawings. The rubber cushion or shoe is secured to the foot 27 by an upright bolt 32, piercing the inner portion of the shoe and the top and bottom portions of the foot, as clearly shown in Fig. 3 of the drawings. The outer engaging face 33 of the cushion or shoe is flat, and the latter is provided at the said face with a marginal flange 34, arranged at the outer edge of the foot, the bottom portion of the flange 34 being fitted against the rear edge of the foot at the lower portion thereof.

The foot is also provided in its lower inclined face with a transverse recess 35, located at the outer or rear portion of the foot and receiving a plate 36, secured in the recess 35 by screws 37, or other suitable fastening devices and projecting rearwardly and downwardly from the bottom corner edge of the foot beyond the same and beyond the engaging face of the rubber cushion or shoe, and provided at such projecting portion with a transverse row of teeth 38 for engaging snow or ice, whereby the propeller bars or legs are effectually prevented from slipping, and are adapted when the crank shaft is rotated to positively propel the shoe. The screws 37 pierce the toothed plate and engage threaded openings in the upper wall of the recess 35, and they detachably secure the plate 36 to the foot to enable the plate to be readily removed for sharpening the teeth or applying new plates to the feet of the propeller bars or legs. The engaging face 33 of the cushion rises from the inner ends of the teeth of the bottom plate, and it is of a width substantially coextensive with the length of the transverse row of teeth.

When the engine or motor is started and the crank shaft is rotated, the propeller bars or legs are operated and alternately engage the surface to secure a continuous forward movement of the sled in the usual well known manner. The projecting teeth 38 embed themselves in the snow or ice and the rubber cushion or shoe contacts with the same and relieves the sled of jar, and being constructed of rubber, snow and ice will not adhere to them and interfere with the operation of the propeller legs or bars or the cushioning action of the shoes or cushions.

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

1. A stiff propeller leg provided at one end with means for connecting it to the crank element of a sled, a foot rigid with and located at the other end of the propeller leg and provided with projecting means

adapted to be embedded in snow or ice, and a cushioning device mounted on the foot above the inner ends of the said projecting means to limit the penetration of the same and relieve the sled of jar.

2. A stiff propeller leg provided at one end with means for connecting it to a crank element, a foot rigid with and arranged at the other end of the propeller leg and provided with projecting teeth, and a cushion or shoe mounted on the foot above and at the inner ends of the said teeth and arranged to engage the surface to limit the penetration of the teeth and to relieve the sled of jar.

3. A propeller bar or leg provided at one end with means for connecting it to the crank element of a sled, an inwardly tapered foot secured to the other end of the leg or bar and provided with a recess and having a reversely tapered projecting portion overhanging the recess, and a cushion secured in the recess of the foot and provided with a tapered recess receiving the tapered projecting portion of said foot.

4. A stiff inclined propeller leg provided at its upper end with means for connecting it with a crank element, a transverse row of teeth rigid with and projecting outwardly from the lower end of the leg at the bottom thereof, and an elastic cushion mounted on the leg at the lower end thereof and located above and at the inner ends of the teeth and presenting a flat engaging face rising from the said row of teeth and adapted to limit the penetration of the same and cushion the sled.

5. An inclined propeller leg provided at its upper end with means for connecting it with a crank element, a foot rigid with and arranged at the lower end of the leg and provided at the bottom with a recess, a rigid plate detachably secured in the recess of the foot and provided with a transverse row of teeth projecting outwardly beyond the foot, and a removable elastic cushion mounted on the foot and located above and at the inner ends of the said teeth and having an engaging face of a width substantially coextensive with the length of the row of teeth, said cushion being adapted to limit the penetration of the teeth and cushion a sled.

6. An inclined propeller leg provided at its upper end with means for connecting it to a crank element, a foot rigid with and located at the outer end of the leg and provided with a recess, a plate secured to the foot at the bottom thereof below the said recess and having a transverse row of projecting teeth, an elastic cushion mounted in the recess of the foot above the said plate and having an outer substantially flat engaging face and provided thereat with a marginal flange fitted against the outer edge of said foot at the inner ends of the pro-

jecting teeth of the said plate, said cushion being arranged to contact with the surface after the teeth have penetrated the same.

7. A propeller leg provided at one end with means for connecting it to a crank element, an inwardly tapered foot secured to the other end of the leg and provided with a recess and having a reversely tapered projecting portion overhanging the recess, said foot being also provided in its lower face with a bottom recess, a cushion secured in the first-mentioned recess of the foot and provided with a tapered recess receiving the

tapered projecting portion of the foot, and a plate rigidly secured in the bottom recess of the foot in substantially flush relation with a row of teeth located below and projecting beyond the said cushion.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CHARLES B. RASTELLO.

Witnesses:

CHARLES D. HANCHETTE,  
PEARL KENDALL.

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