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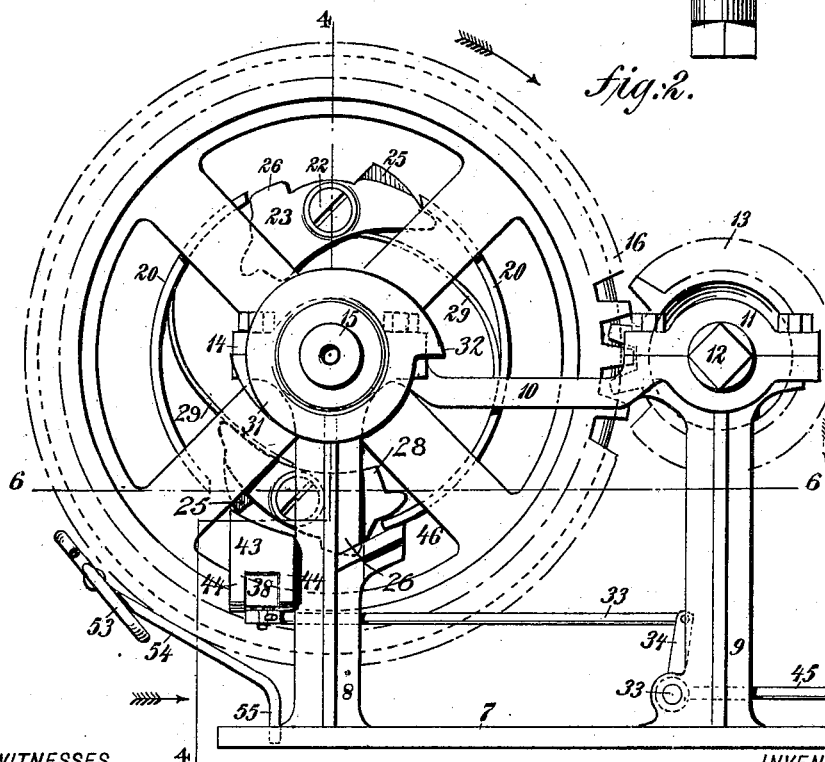
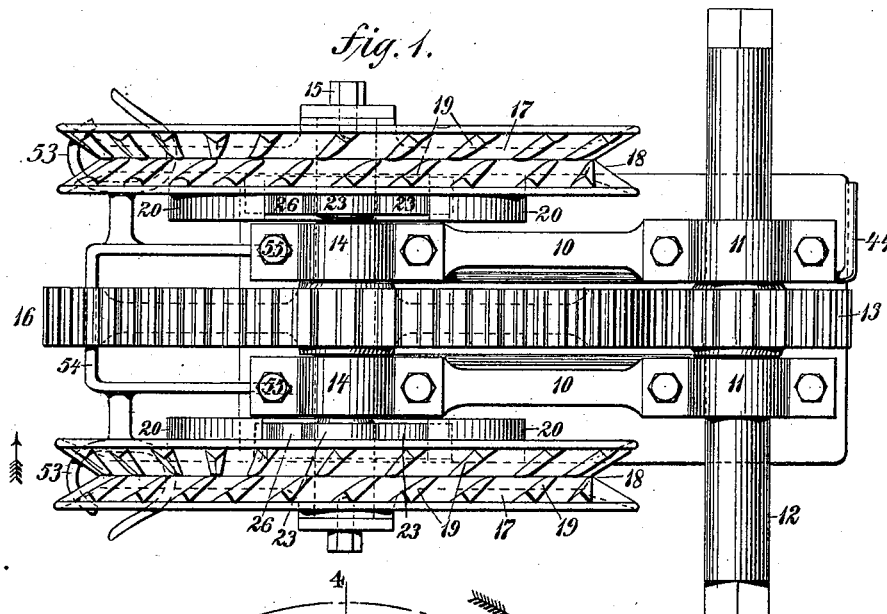
Patented May 8, 1900.

A. G. LUNDIN.  
NET OR SEINE DRAWING MACHINE.

(Application filed May 10, 1899.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES

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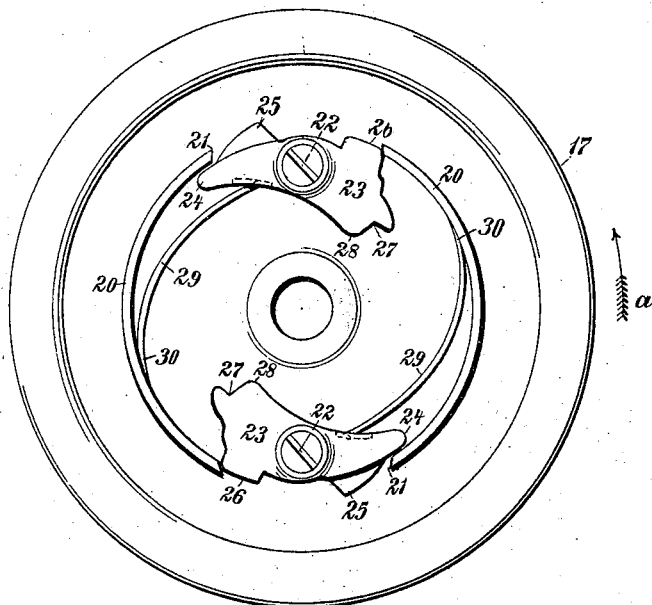
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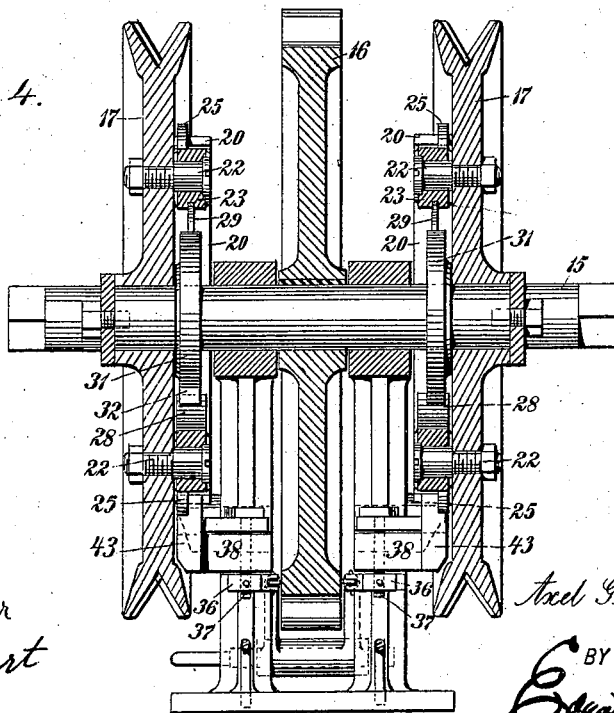
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*fig. 3.*



*fig. 4.*



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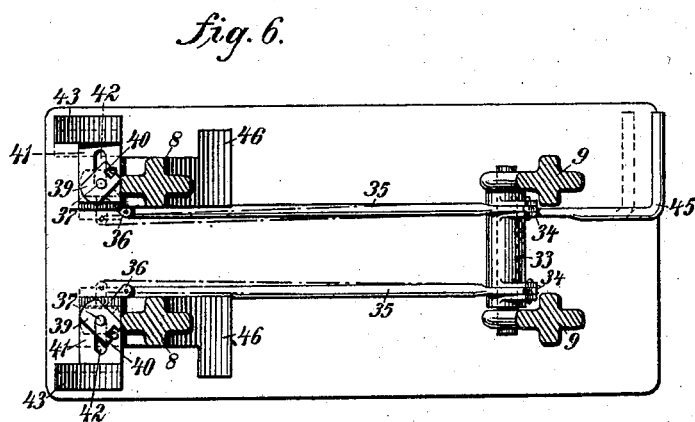
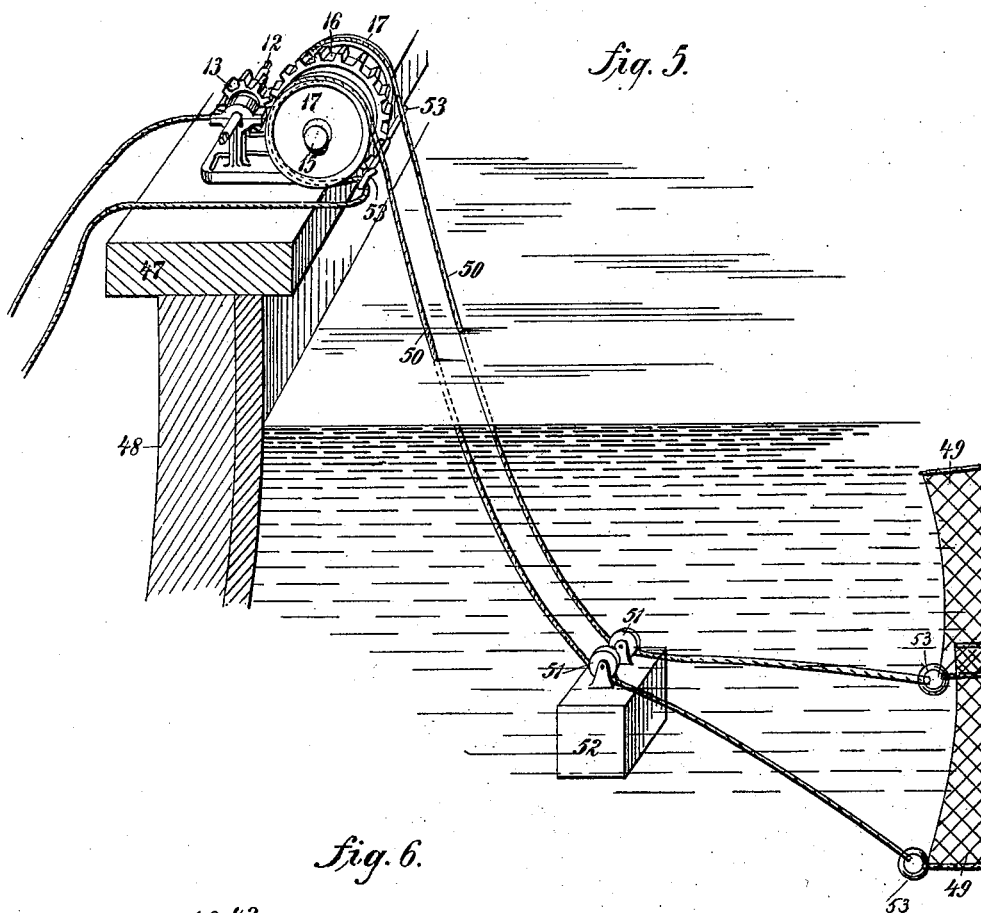
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# UNITED STATES PATENT OFFICE.

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## NET OR SEINE DRAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 649,064, dated May 8, 1900.

Application filed May 10, 1899. Serial No. 716,217. (No model.)

*To all whom it may concern:*

Be it known that I, AXEL G. LUNDIN, a citizen of Sweden, residing at New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Net or Seine Drawing Machines, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to net or seine drawing machines; and the object thereof is to provide an improved machine of this class which is adapted to be connected with the gunwale or other part of a boat and with which the end lines of a net or seine are connected in the operation of drawing said net or seine.

It is customary in drawing nets or seines to pull in the opposite ends thereof alternately, so as to distribute the strain and prevent the bursting or tearing of the net or seine occasioned by pressure applied to particular parts thereof when both ends are drawn simultaneously; and one of the objects of this invention is to provide a net-drawing machine which will draw the separate ends of the net alternately and also properly purse or bag the same as it is being drawn.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a plan view of my improved net-drawing machine; Fig. 2, a side view of my machine with one of the pulley-wheels which I employ removed; Fig. 3, an inside view of one of said pulley-wheels; Fig. 4, a section on the line 4 4 of Fig. 2; Fig. 5, a perspective view showing the application of my improved net-drawing machine, and Fig. 6 a section on the line 6 6 of Fig. 2.

In the drawings forming part of this specification the separate parts of my improvement are designated by the same numerals of reference in each of the views, and in the practice of my invention I provide a frame which comprises a base-plate 7, provided at each side with standards 8 and 9, which are connected at or near the top by horizontal side bars 10.

At the tops of the standards 8 are bearings 11, in which is journaled a shaft 12, provided centrally with a gear-wheel 13, and at the tops of the standards 8 are bearings 14, in which is journaled a shaft 15, and mounted on said shaft, between the bearings 14, is a large gear-wheel 16, which is operated by the gear-wheel 13.

Mounted on each end of the shaft 15, outside of the bearings 14, is a wheel 17, and these wheels 17 are each provided in its perimenter with a deep groove 18, which is triangular in cross-section and the side walls of which are provided with inclined transverse teeth 19, and the teeth 19 on the opposite side walls of said grooves are arranged alternately and project in opposite directions, as clearly shown in Fig. 1.

The gear-wheel 16 is preferably much larger than the gear-wheel 13, and said wheels are keyed to their respective shafts, while the wheels 17 are loosely mounted and free to revolve on the shaft 15.

Each of the wheels 17 is provided on its inner surface with a flange 20, which is cut out at the opposite sides so as to form open spaces 21, in each of which is pivoted, as shown at 22, a dog 23, and in the operation of the apparatus, as hereinafter described, these wheels revolve in the direction of the arrow *a*. (Shown in Fig. 3.)

The dogs 23 are pointed at one end and much wider at the other, the pointed ends 24 being in the direction in which the wheels normally revolve, and said dogs are convex on their outer and concave on their inner sides and are each provided on their outer sides, adjacent to their pointed end, with a triangular lug or projection 25 and adjacent to their wider ends with a shoulder 26, and each of said dogs is also provided at its wider end and inner side with a triangular notch or recess 27, forming a pointed shoulder 28. Each of the dogs 23 is also provided with a spring 29, which serves to force the pointed end thereof outwardly, and these springs, as shown in the drawings, are connected with the inner side of the flange 20, as shown at 30; but this connection may be made in any desired manner.

Keyed to the shaft 15, inside of each of the wheels 17, is a cam-disk 31, and these cam-disks are provided at their opposite sides with a lug or projection 32, and these lugs or projections 32 operate in connection with the shoulders 28 on the dogs 23, as hereinafter described.

Mounted forwardly of the base of the standards 9 is a shaft 33, provided with upwardly-directed arms 34, to each of which is pivoted a rod 35. The rods 35 extend backwardly between the standards 8, and the rear end of each is pivotally connected with an arm 36, secured to the bottom of a pin 37, which extends upwardly through a support 38, and the supports 38 are connected with the standards 8, and the upper ends of the pins 34 are each provided with a cross-head 39, which is recessed at one end and engages a pin 40, secured to a sliding plate 41, mounted on the supports 38, and in which is formed a slot 42, through which the pin 37 passes. The sliding plates 41 are each provided at their outer ends with a catch-head 43, and the catch-heads 43 are provided at their lower ends with side arms 44, which engage the sides of the supports 38, this construction being best shown in Figs. 2, 4, and 6.

The shaft 33 is provided with a forwardly-directed arm 45, and by raising said arm the catch-heads 43 will be thrown inwardly, and by depressing said arm said catch-heads will be thrown outwardly, and these catch-heads in their outer position operate in connection with the triangular projections 25 on the outer sides of the dogs 23.

Each of the standards 8 is also provided on the rear side thereof and slightly above the supports 38 with a rigid catch 46, as shown in Figs. 2 and 6, these catches consisting of projections or shoulders formed on said standards, and said projections extend laterally or outwardly from said standards and in the operation of the device engage the shoulders or projections 26 on the dogs 23, as hereinafter described.

In Fig. 5 I have shown the method of operating this apparatus, and in this figure the device or machine is mounted on the gunwale 47 of a boat, the side of which is shown at 48, and the ends of the net or seine are shown at 49, and connected therewith are the usual end lines 50, and in practice one of the end lines is held on the boat with which the machine is connected and the other is taken in a row-boat, and the net is planted or set, and said end line is then brought back to the boat with which the machine is connected. Both of the end lines are then passed through pulleys 51, connected with a heavy weight 52, and said weight is dropped overboard and sinks to the bottom and serves to hold the ends of the net to the bottom in the operation of drawing said net. The ends of the end lines are then passed around the wheels 17, as shown in Fig. 5, said lines being passed over and beneath said wheels and being

brought forward and passed through keepers 53, which are of the form shown in Figs. 1 and 2 and which consist of open rings connected with a yoke-shaped frame 54, which is connected with the base 7 at 55 in any desired manner. The shaft 12 is then turned forwardly by a crank or any suitable device; and the gear-wheel 13 engages with the gear-wheel 16 and turns the shaft 15 in a backward direction, and in this operation the wheels 17 are intermittently and alternately revolved in a backward direction. This backward movement of the wheels 17 is accomplished by means of the cam-disks 31 on the shaft 15, the projections 32 on said disks being on the opposite sides thereof and engaging with the shoulders 28 on the dogs 23. At the beginning of the operation of the machine, as above described, the arm 45 of the shaft 33 is depressed. This operation throws the catch-heads 43 outwardly, and as the wheels 17 revolve, said wheels being propelled by the projections 32 on the cam-disks 31, which engage with the shoulders 28 on the dogs 23, the catch-heads 43 engage with the triangular projections 25 on said dogs and force the pointed ends of said dogs inwardly, thus releasing the projections 32 on the cam-disks 31 from the shoulders 28 on the dogs 23. The rounded edges of the dogs 23 allow the projections 32 to slip past the same, forcing said dogs outwardly, and the projections 32 extend a sufficient distance about the cam-disks to keep the dogs 23 engaged with the catches 46, whereby they are held. When the connection between the projections 32 on the cam-disks and the shoulders 28 on the dogs is broken, the backward movement of the wheels 17 ceases and the strain on the net-lines tend to turn said wheels forwardly; but this result is prevented by means of the catches 46, which at this time engage with the shoulders 26 on the dogs 23, and this is done just at the time when the catch-heads 43 are engaged with the triangular projections 25, thus forcing the pointed ends of the dogs inwardly and the shoulders 26 outwardly, so that they may be engaged by the catches 46. The distance between the catch-heads 43 and the catches 46 is such that when the triangular projections 25 are operatively engaged by the catch-heads 43 the shoulders 26 will be in position to be engaged by the catches 46. Hence should the wheels 17 be moved forward farther than is necessary for the triangular projections 25 to be engaged by the catch-heads 43 the tension of the net-lines 30 will cause them to return after the cam-disks 31 have ceased to engage the shoulders 20 of the dogs, and the catches 46 will engage the shoulders 26, which latter will be thrown into position by the catch-heads 43 engaging with the triangular projection 25, as described. This movement of the wheels 17 is alternative by reason of the fact that the projections 32 are at the opposite sides of the cam-disks 31, and by reason of this con-

struction one of the wheels 17 is caused to make a half-revolution, while the other remains stationary. It will therefore be seen that the end lines 50 of the net 49 are drawn in alternately, and the length of these alternate movements will depend upon the diameter of the wheels 17, and said wheels may be of any desired size.

The grooves in the wheels 17 and the teeth on the opposite side walls thereof, together with the guides 53, hold the net-lines 50 on the wheels 17 and produce sufficient friction to prevent the lines from slipping on said wheels, and the ends of the lines are drawn through the guides 53 and coiled in the boat as the machine is operated.

The lines 50 are connected with the bottom portions of the net in the usual manner, as shown in Fig. 5, and connecting-links or other buffers 53 are provided, which when the ends of the net are drawn into the weight 52 strike against said weight or the pulleys 51 and the weight, and the ends of the net will be drawn up together by the machine, after which the end lines 50 are detached from the machine and the net is drawn into the boat by hand.

In the operation of drawing up the weight and the end of the net after the latter has been brought to the weight the arm 45 of the shaft 33 is raised so as to draw the catch-heads 43 out of the path of revolution of the triangular projections on the dogs 23, thus allowing the cam projections 32 to continuously engage the shoulders 28 on the dogs 23 and revolve both of the wheels 17 continuously in the backward direction, so as to raise the weight and both ends of the net at the same time.

In the operation of the apparatus the flanges 20 limit the outward movement of both ends of the dogs 23, as shown in Fig. 3, and the catch-heads 43 slide over the outer surface of said flanges.

The entire apparatus is simple in construction and operation and well adapted to accomplish the result for which it is intended; and it will be apparent that changes in and modifications of the construction herein described may be made without departing from the spirit of my invention or sacrificing its advantages.

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

1. In a machine of the class described, a frame or support, a shaft mounted therein, means for revolving said shaft continuously in one direction, and two wheels loosely mounted on said shaft, and means for giving said wheels alternate and intermittent motion in the same direction as said shaft, and devices for preventing the backward movement of said wheels on said shaft, substantially as shown and described.

2. In a machine of the class described, a frame or support, a shaft mounted therein, means for turning said shaft constantly in

one direction, two wheels loosely mounted on said shaft, each of said wheels being provided on its inner side with a circular flange cut out at opposite sides to form open spaces, a dog pivoted in each of said spaces, cam-disks secured to said shaft and provided at their opposite sides with projections operating in connection with said dogs, and movable devices for releasing said dogs from said cam-disks, substantially as shown and described.

3. In a machine of the class described, a frame or support, a shaft mounted therein, means for rotating said shaft, two wheels loosely mounted on said shaft and provided with peripheral grooves, each of said wheels being also provided on its inner side with a circular flange cut out at opposite points to form open spaces, dogs pivoted in said open spaces, cam-disks keyed to said shaft and provided at their opposite sides with projections, transversely-movable catch-heads operatively connected with said frame or support and adapted to engage said dogs to release them from the cam-disks, and means for operating said catch-heads, and catch devices connected with said frame or support and operating in connection with said dogs, substantially as shown and described.

4. In a machine of the class described, a frame or support, a shaft mounted therein, means for rotating said shaft, two wheels loosely mounted on said shaft and provided with peripheral grooves, each of said wheels being also provided on its inner side with a circular flange cut out at opposite points to form open spaces, dogs pivoted in said open spaces, cam-disks keyed to said shaft and provided at their opposite sides with projections, transversely-movable catch-heads operatively connected with said frame or support and adapted to engage said dogs to release them from the cam-disks, and means for operating said catch-heads, and catch devices connected with said frame or support and operating in connection with said dogs for preventing the reverse movement of said wheels, substantially as shown and described.

5. In a device of the class described, a frame or support, a shaft mounted therein, two wheels loosely mounted on said shaft and provided at their inner sides with circular flanges cut out at opposite points to form open spaces, spring-operated dogs pivoted in said open spaces, cam-disks connected with said shaft and operating in connection with said dogs to turn said wheels in one direction, said cam-disks being provided at their opposite sides with projections, and devices connected with the frame or support for releasing said dogs from said cam-disks, substantially as shown and described.

6. In a device of the class described, a frame or support, a shaft mounted therein, two pulley-wheels loosely mounted on said shaft and provided at their inner sides with circular

flanges cut out at opposite points to form open spaces, spring-operated dogs pivoted in said open spaces, cam-disks connected with said shaft and operating in connection with said dogs to turn said pulley-wheels in one direction, said cam-disks being provided at their opposite sides with projections, and devices connected with the frame or support for releasing said dogs from said cam-disks, consisting of a shaft mounted transversely of the frame or support, and provided with arms, rods connected with said arms, and laterally-movable catch-heads operated by said rods, substantially as shown and described.

7. In a machine of the class described, a frame or support, a shaft journaled therein, means for revolving said shaft continually in one direction, two wheels loosely mounted on said shaft, means for turning said wheels alternately in the same direction as said shaft, and devices for preventing the reverse movement of said wheels, and line-guides connected with the frame or support beneath and in front of the pulley-wheels, substantially as shown and described.

8. In a machine of the class described, a frame or support, two shafts journaled there-

in, one of which is provided with a large, and the other with a small gear-wheel, two wheels loosely mounted on one of said shafts, each of said wheels being provided on its inner side with a circular flange cut out at opposite points to form open spaces, spring-operated dogs pivoted in said open spaces, cam-disks mounted on said shaft and provided at their opposite sides with projections which operate in connection with said dogs to turn said wheels in one direction, transversely-movable devices connected with the frame or support and operating in connection with said dogs to release them from the cam-disks, and catch devices connected with the frame or support and operating in connection with said dogs to prevent the reverse movement of said wheels, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 8th day of May, 1899.

AXEL G. LUNDIN.

Witnesses:

F. A. STEWART,  
V. M. VOSLER.