

# Welland Vale

## BICYCLES.

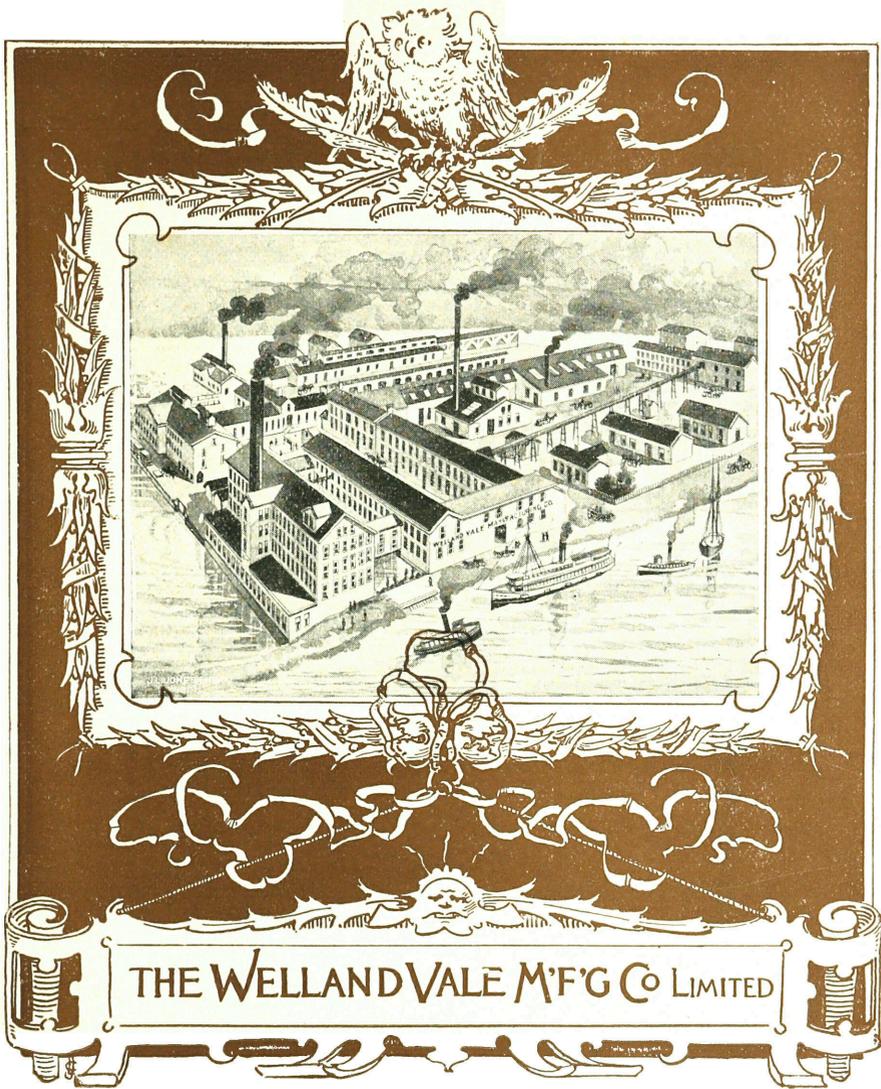
1898



WELLAND VALE M'FG. CO. LIMITED,  
ST. CATHARINES, CANADA.

JOHN EDWARDS & CO.  
WHOLESALE MERCHANTS  
GRANTFORD





MAKERS OF

Perfect, Garden City and Dominion  
Bicycles.



OFFICE AND WORKS:

ST. CATHARINES, Ont., Canada.

**AGENCIES ALL OVER THE WORLD.**

PRINTED BY  
MILN-BINGHAM PRINTING CO., TORONTO.

### *Bicycle Guarantee.*

**WE** agree with the purchaser of each **Welland Vale** Bicycle to make good by repair or replacement when delivered to our factory, transportation prepaid, any imperfection or defect in material or manufacture of such bicycle, provided that the factory serial number shall be on such bicycle at the time the claim is made, and that all imperfect parts shall be referred to us before any claim for repair or replacement shall be allowed. This guarantee does not cover the cost of repairing said bicycle when damaged by accident, misuse or neglect.

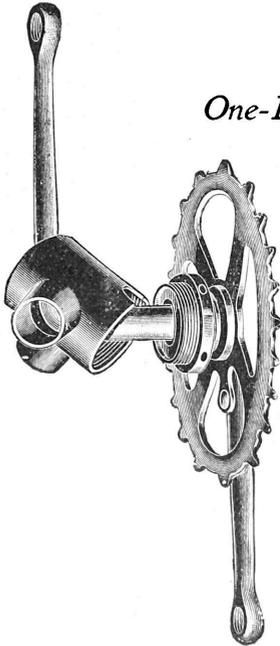
This guarantee does not include any Tire with which our bicycles may be equipped. Claims for defective or damaged Tires must be made direct with the makers.

No Wood Guards or Lacing guaranteed.

This Guarantee continues for sixty days from date of sale by the agent.

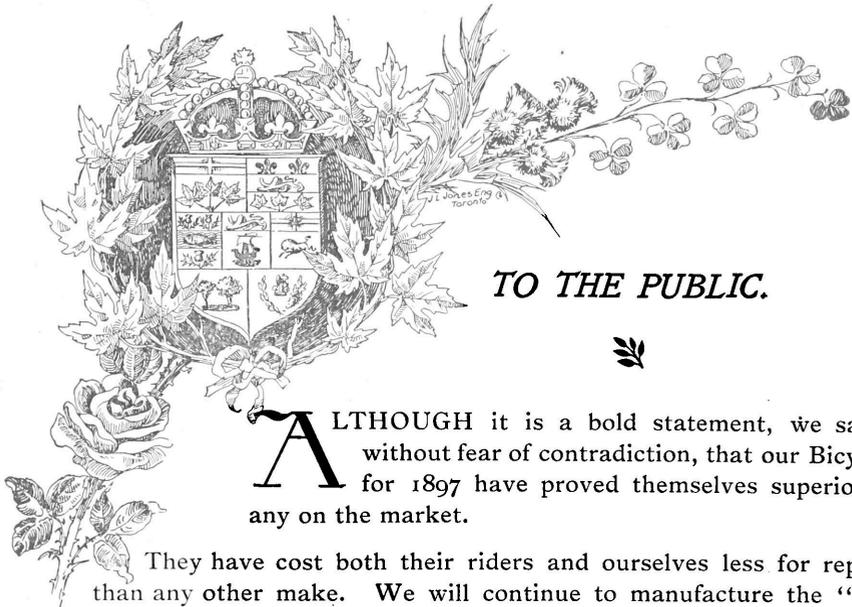


### *One-Piece Cranks.*



**WE** Guarantee One-Piece Cranks used on all **Welland Vale Bicycles** unconditionally, and will replace without charge any such cranks broken or defective within one year from date of purchase of bicycle.





## TO THE PUBLIC.



**A**LTHOUGH it is a bold statement, we say it without fear of contradiction, that our Bicycles for 1897 have proved themselves superior to any on the market.

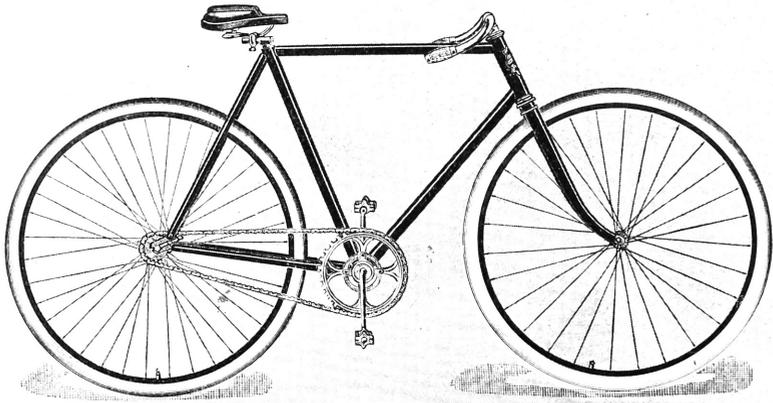
They have cost both their riders and ourselves less for repairs than any other make. We will continue to manufacture the "Perfect," "Garden City" and "Dominion" lines of Chain Bicycles, and in addition we will make the Perfect *Chainless* machine, which will be a favorite with a large class of riders for 1898. In putting our Chainless wheel on the market, the rider does not take any chances incident to experimental work as this machine is no longer an experiment with us. It has had every possible test that actual service can give, having had it in use during the greater part of the riding season of 1897. It has exceeded our expectations and in all points is equal, and in some respects superior, to any Chainless Bicycle manufactured. We will equip the "Perfect" for 1898 with our special Handle-Bar fastening which dispenses with the unsightly and clumsy clamp bolt and nut (see description). The "Perfect" will be fitted with the "New Departure" friction brake on both Ladies' and Gentlemen's models when ordered, which is the neatest and most effective brake yet invented; always ready for use and not observable.

Our one-piece cranks, self-oiling hollow axles, self-locking and adjustable handle-bars, oval rear forks, ball-retaining and dust-proof bearings, will still continue to be features of our "Perfect" bicycle.

Our "Garden City" will be equipped with one-piece cranks; hollow self-oiling axles, and oval rear forks.

The "Dominion" will also have the one-piece cranks.

We invite careful attention to specifications for full particulars of our different machines.



*“Perfect” Model.*

PRICE, \$85.00.



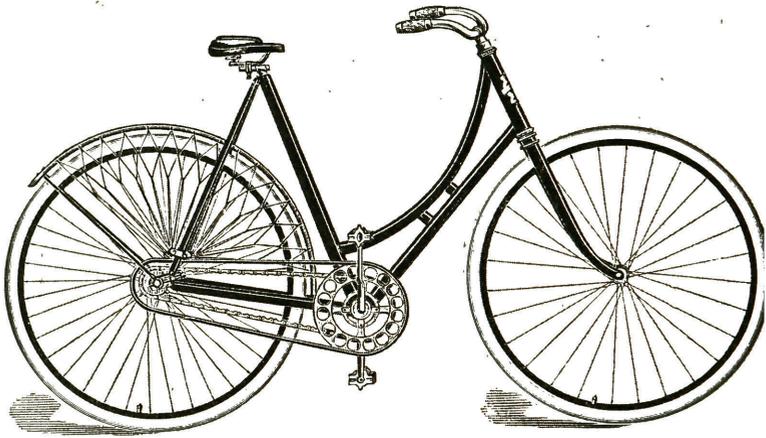
*Specification of  
Gentleman's "Perfect" Roadster.*



- Frame** ..... Twenty-two, 24 or 26 inches high, with invisible Flush Joints all around ;  $1\frac{3}{8}$ -in. Head ;  $1\frac{1}{8}$ -in. Upper Tube ;  $1\frac{1}{4}$ -in. Bottom Tube ;  $1\frac{1}{4}$  in. tapered to  $1\frac{1}{8}$ -in. Seat-Post Tube ;  $\frac{3}{4}$ -in. Rear Braces ;  $\frac{7}{8}$ -in. Oval Rear Forks ; Short Head with Dropped Bracket.
- Crank Shaft** Patent One-Piece, Self-Oiling,  $6\frac{1}{2}$ -in. Throw ; 5-in. Tread.
- Forks**..... Made of Weldless Tubing, nicely tapered ; Double Crown, nicked.
- Saddle Post** Special Adjustable Saddle Post, held by our "Perfect" Saddle-Post Clamp (see cut).
- Wheels** ..... Twenty-eight inch, with 28 Spokes in front and 36 Spokes in rear ; Dust-proof Bearings with Ball-Retaining Washers ; Hollow Oil-containing Axles ; Wood Rims ; Wheel Base, 43 inches.
- Weight**..... Twenty-four to 27 pounds—according to size of frame and fittings used.
- Pedals**..... Best Combination Rubber and Rat-Trap ; our own make.
- Handle Bar**. Adjustable Steel No. 7 (see cut) ; held by our Patent Handle-Bar Binder (see cut).
- Chain and Gear** ..... Baldwin Adjustable Chain,  $\frac{3}{8}$ -in. ; front and rear sprockets detachable, nine-tooth rear sprocket, making gear 62, 65,  $68\frac{1}{2}$ ,  $71\frac{1}{2}$ ,  $74\frac{1}{2}$ , 77, 81 or 84.
- Saddle** ..... Christy.
- Tires**..... Dunlop, Hartford or Vim.
- Finish**..... Black, Maroon or Green Enamel ; plain or decorated as desired.



This machine is, as the name indicates, a *perfect* bicycle for road riding, strong, speedy, and serviceable. Every conceivable requirement, combined with the utmost mechanical skill, is embodied in our "Perfect" Bicycle, and it is a marvel of durability and beauty, and the best that can be produced at any cost.



*“Perfect” Model.*

PRICE, \$85.00.



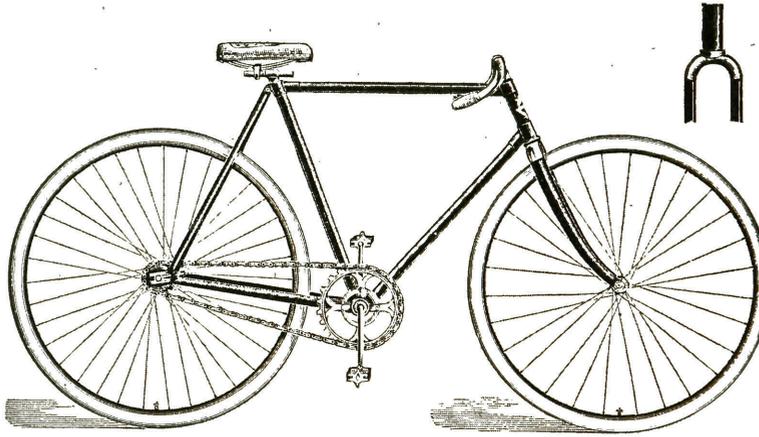
*Specification of  
Lady's "Perfect" Roadster.*



- Frame** ..... Drop Frame, 19, 21, or 23 inches high, with invisible Flush Joints all around;  $1\frac{3}{8}$ -in. Head;  $1\frac{1}{8}$ -in. Upper Tube;  $1\frac{1}{4}$ -in. Bottom Tube;  $1\frac{1}{4}$ -in. tapered to  $1\frac{1}{8}$ -in. Seat-Post Tube;  $\frac{3}{4}$ -in. Rear Braces;  $\frac{7}{8}$ -in. Oval Rear Forks; Short Head with Dropped Bracket.
- Crank Shaft** Patent One-Piece, Self-Oiling, 6-in. or  $6\frac{1}{2}$ -in. Throw, as desired; 5-in. Tread.
- Forks** ..... Made of Weldless Tubing, nicely tapered; Double Crown, nickeled.
- Saddle Post** Special Adjustable Saddle-Post, held by our "Perfect" Saddle-Post Clamp (see cut).
- Wheels** ..... Twenty-eight inch, with 28 Spokes in front and 36 Spokes in rear; Dust-proof Bearings with Ball-Retaining Washers; Hollow Oil-containing Axles; Wood Rims; Wheel Base, 43 inches.
- Guards** ..... Wood; Chain Guard, one continuous piece with guard to protect dress from sprockets; Wheel Guard with eyelet lace holes.
- Weight** ..... Twenty-four to 27 pounds, according to size of frame and fittings used.
- Pedals** ..... Best Combination Rubber; our own make.
- Handle Bar** Any Style shown per cuts in Catalogue; held by our Patent Handle-Bar Binder (see cut).
- Chain and Gear** ..... Baldwin Adjustable Chain,  $\frac{3}{16}$ -in.; front and rear sprockets detachable, eight-tooth rear sprocket, making gear 63,  $66\frac{1}{2}$ , or 70.
- Saddle** ..... Christy.
- Tires** ..... Dunlop, Hartford or Vim.
- Finish** ..... Black, Maroon or Green Enamel; plain or decorated, as desired.



Everything to meet the convenience and requirements of lady riders has been studied in designing this machine. Beauty and grace are evident in every outline. The comfortable position of the rider and ease in mounting are two of the principal features of it; making the same a perfect lady's mount.



*“Garden City” Model.*

*PRICE, \$70.00.*



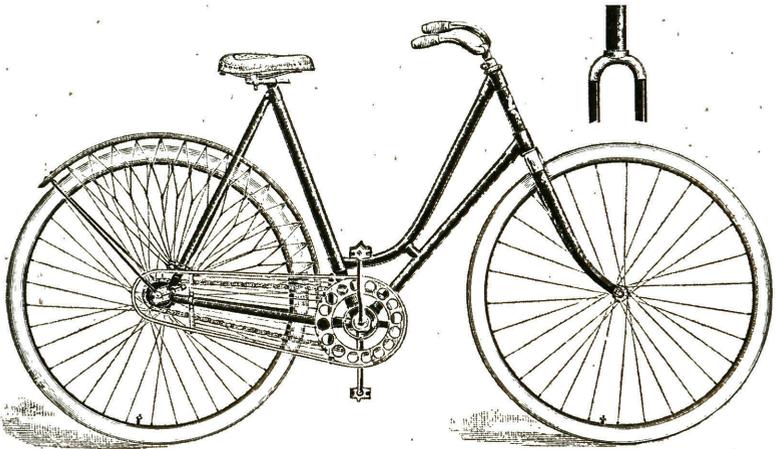
*Specification of*  
**Gentleman's "Garden City" Roadster.**



- Frame**..... Twenty-two, 24, or 26 inches high;  $1\frac{3}{8}$ -in. Head;  $1\frac{1}{8}$ -in. Upper Tube;  $\frac{1}{4}$ -in. Bottom Tube;  $\frac{1}{4}$ -in. tapered to  $\frac{1}{8}$ -in. Seat-Post Tube;  $\frac{3}{4}$ -in. Rear Stays, and  $\frac{7}{8}$ -in. Oval Rear Forks; Short Head with Dropped Bracket.
- Crank Shaft** Patent One-Piece, Self-Oiling,  $6\frac{1}{2}$ -in. Throw; 5-in. Tread.
- Forks**..... Made of Weldless Tubing, nicely tapered; Arched Crown, nickeled.
- Wheels**..... Twenty-eight inch, with 28 Spokes in front and 36 Spokes in rear; Dust-proof Bearings with Ball-Retaining Washers; Hollow Oil-containing Axles; Wood Rims; Wheel Base, 43 inches.
- Weight**..... Twenty-four to 27 pounds—according to size of frame and fittings used.
- pedals**..... Best Combination Rubber or Rat-Trap; our own make.
- Handle Bar.** Any of our regular patterns—not adjustable.
- Chain and Gear**..... Chain,  $\frac{1}{4}$ -in. Hardened Blocks and Rivets; B pattern; front and rear sprockets detachable; nine-tooth rear sprocket, making gear 62, 65,  $68\frac{1}{2}$ ,  $71\frac{1}{2}$ ,  $74\frac{1}{2}$ , 77, 81 or 84.
- Saddle**..... Laced Hygiene, Brown Pattern, Christy or Welland-Vale.
- Tires**..... Dunlop, Hartford or Vim.
- Finish**..... Black, Maroon or Green Enamel; plain or decorated as desired.

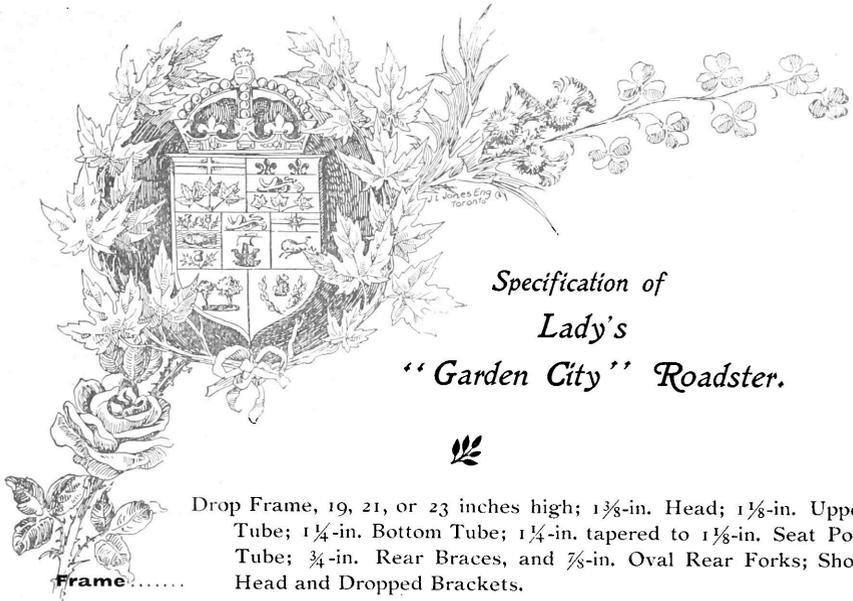


It is with our "Garden City" Bicycle that most other high grade machines must be compared, as our "Perfect" is in a class by itself. For thoroughness of construction and quality of material our "Garden City" is equal to any machine produced. While not fitted with some of the expensive attachments of our "Perfect," it is strictly high grade in every respect, and the best value for the money on the market.



*“Garden City” Model.*

**PRICE, \$70.00.**



*Specification of  
Lady's  
"Garden City" Roadster.*



**Frame**..... Drop Frame, 19, 21, or 23 inches high;  $1\frac{3}{8}$ -in. Head;  $1\frac{1}{8}$ -in. Upper Tube;  $1\frac{1}{4}$ -in. Bottom Tube;  $1\frac{1}{4}$ -in. tapered to  $1\frac{1}{8}$ -in. Seat Post Tube;  $\frac{3}{4}$ -in. Rear Braces, and  $\frac{7}{8}$ -in. Oval Rear Forks; Short Head and Dropped Brackets.

**Crank Shaft** Patent One-Piece Self-Oiling Cranks; 6-in or  $6\frac{1}{2}$ -in Throw, as desired; 5-in. Tread.

**Forks** ..... Made of Weldless Tubing, nicely tapered; Arched Crown, nickeled.

**Wheels**..... Twenty-eight inch Wheels, with 28 Spokes in front and 36 Spokes in rear; Dust-proof Bearings with Ball-Retaining Washers; Hollow Oil-containing Axles; Wood Rims; Wheel Base, 43 inches.

**Guards** ..... Wood Chain Guard, one continuous piece with guard to protect dress from sprockets; Wheel Guard with eyelet lace holes.

**Weight**..... Twenty-four to 27 pounds—according to size of frame and fittings used.

**Pedals**..... Best Combination Rubber; our own make.

**Handle Bar.** Any of our regular patterns, not adjustable.

**Chain and Gear**..... Chain,  $\frac{1}{4}$ -in. Hardened Block and Rivets; B pattern; front and rear sprockets detachable; eight-tooth rear sprocket, making gear 63,  $66\frac{1}{2}$ , or 70.

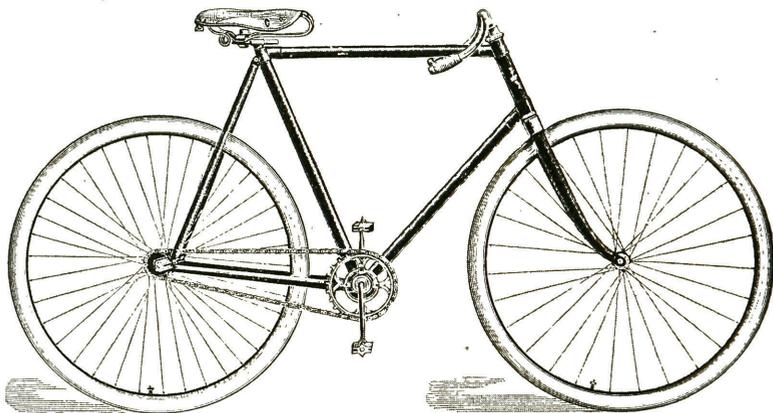
**Saddle**..... Laced Hygiene, Brown pattern, or Christy.

**Tires**..... Dunlop, Hartford or Vim.

**Finish**..... Black, Maroon or Green Enamel; plain or decorated, as desired.



The same features of ease and convenience are carried out in the "Garden City" Lady's as in our "Perfect." Our aim has been to put a high-grade machine on the market at a popular price, and we have accomplished it by producing the "Garden City."



*“Dominion” Model.*

*PRICE, \$60.00.*



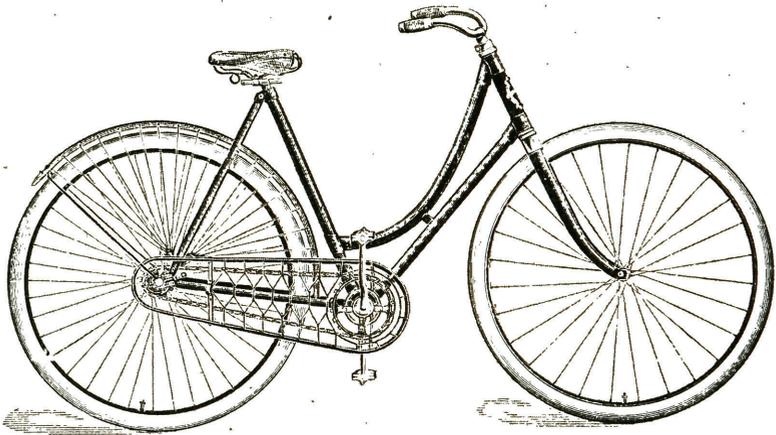
*Specification of*  
**Gentleman's "Dominion" Roadster.**



- Frame** ..... Twenty-two, 24 or 26 inches high,  $1\frac{3}{8}$ -in. Head;  $1\frac{1}{8}$ -in. Upper Tube;  $1\frac{1}{4}$ -in. Bottom Tube;  $1\frac{1}{4}$ -in. tapered to  $1\frac{1}{8}$ -in. Seat Post Tube;  $\frac{3}{4}$ -in. Rear Stays;  $\frac{7}{8}$ -in. Oval Rear Forks.
- Crank Shaft** Patent One-Piece,  $6\frac{1}{2}$ -in. Throw; 5-in. Tread.
- Forks** ..... Made of Weldless Tubing, nicely tapered; Humber Pattern Crown, nickeled.
- Wheels** ..... Twenty-eight inch, with 28 Spokes in front and 36 Spokes in rear; Dust-proof Bearings with Ball-Retaining Washers; Wood Rims; Wheel Base  $42\frac{1}{2}$  inches.
- Weight** ..... Twenty-four to 27 pounds—according to size of frame and fittings used.
- Pedals** ..... Best Combination Rubber or Rat-Trap; our own make.
- Handle Bar**. Any of our Regular Patterns, not Adjustable.
- Chain and Gear** ..... Chain,  $\frac{1}{4}$ -in. Hardened Blocks and Rivets, B. Pattern; front and rear sprockets detachable; eight-tooth rear sprocket, making gear  $66\frac{1}{2}$ , 70,  $73\frac{1}{2}$ , 77 or  $80\frac{1}{2}$ .
- Saddle** ..... English, Brown Patterns or Welland Vale.
- Tires** ..... Dunlop, Hartford or Vim.
- Finish** ..... Black, Maroon or Green Enamel.

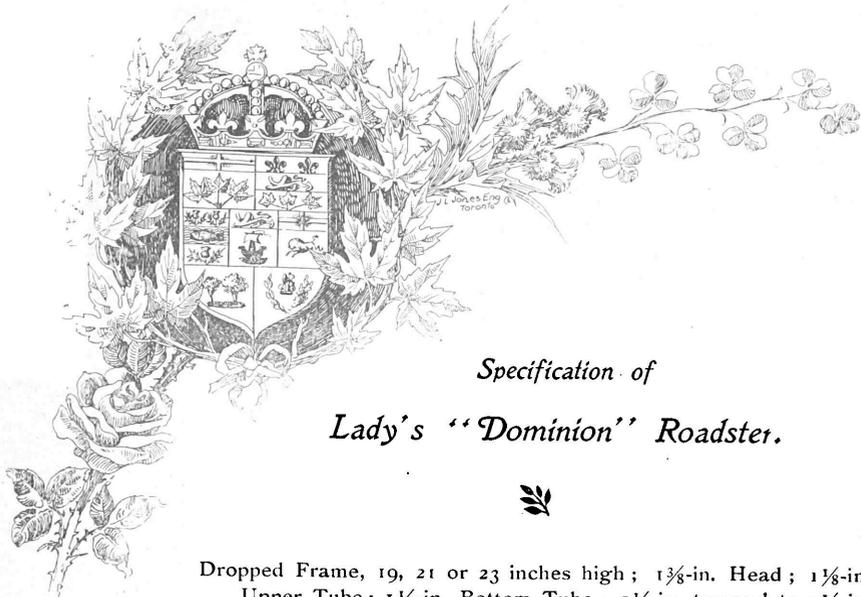


This machine is for the "masses" and we challenge the world to produce anything better for the money. We equip our Dominion with the one-piece cranks and guarantee every part just as much as our higher priced machines.



*“Dominion” Model.*

PRICE, \$60.00.



*Specification of*  
**Lady's "Dominion" Roadster.**



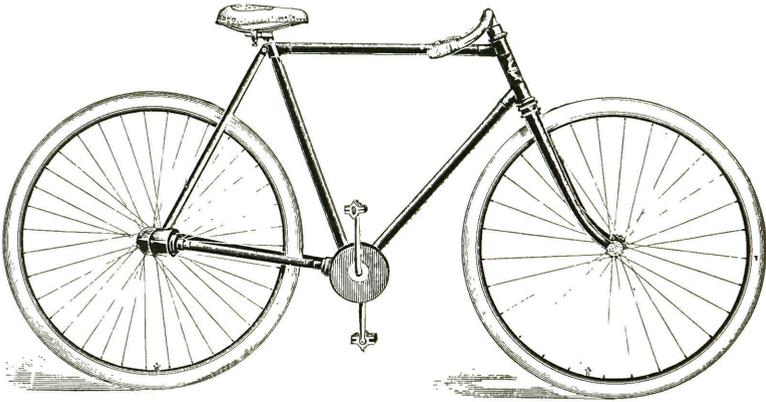
- Frame** ..... Dropped Frame, 19, 21 or 23 inches high ;  $1\frac{3}{8}$ -in. Head ;  $1\frac{1}{8}$ -in. Upper Tube ;  $1\frac{1}{4}$ -in. Bottom Tube ;  $1\frac{1}{4}$ -in. tapered to  $1\frac{1}{8}$ -in. Seat Post Tube ;  $\frac{3}{4}$ -in. Rear Stays, and  $\frac{7}{8}$ -in. Oval Rear Forks.
- Crank Shaft** Patent One-Piece Cranks ;  $6\frac{1}{2}$ -in. Throw ; 5-in Tread.
- Forks** ..... Made of Weldless Tubing, nicely tapered ; Humber Pattern Crown, nickeled.
- Wheels** .... Twenty-eight inch ; 28 Spokes in front and 36 Spokes in rear ; Dust-proof Bearings with Ball-Retaining Washers ; Wood Rims ; Wheel Base,  $42\frac{1}{2}$  inches.
- Guards** .... Wood Chain Guard, one continuous piece with guard to protect dress from Sprockets.
- Weight** ..... Twenty-four to 27 pounds—according to size of frame and fittings used.
- Pedals** ..... Best Combination Rubber ; our own make.
- Handle Bar.** Any of our regular patterns—not adjustable.
- Chain and Gear** ..... Chain,  $\frac{1}{4}$ -in. Hardened Blocks and Rivets ; B pattern ; front and rear sprockets detachable ; eight-tooth rear sprocket, making gear 63,  $66\frac{1}{2}$  or 70.
- Saddle** .... English or Brown patterns.
- Tires** ..... Dunlop, Hartford or Vim.
- Finish** ..... Black, Maroon or Green Enamel.



Realizing the requirements of a numerous class of riders for a thoroughly reliable mount at a low price, we have endeavored to meet this demand and the "Dominion" is the result. We defy competition at the price.



*Sectional parts of Gentleman's Chainless.*



*"Perfect" Chainless Model.*

PRICE, \$125.00.



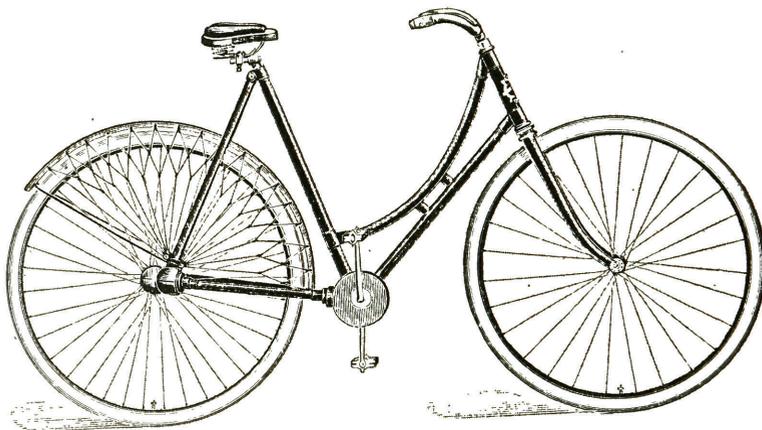
Specification of  
*Gentleman's Chainless Roadster.*



- Frame** ..... Twenty-two, 24 or 26 inches high, with Flush Joints at both head connections ;  $1\frac{1}{8}$ -in. Head ;  $1\frac{1}{8}$ -in. Top and Bottom and Seat Post Tubes ;  $\frac{3}{4}$ -in. Rear Braces ;  $\frac{7}{8}$ -in. Rear Forks ; Short Head with Dropped Bracket.
- Crank Shaft** Patent One-Piece, Self-Oiling,  $6\frac{1}{2}$ -in. Throw ; 5-in. Tread.
- Forks** ..... Made of Weldless Tubing, nicely tapered ; Double Crown, nicked.
- Saddle Post** Special Adjustable (see cut).
- Wheels** ..... Twenty-eight inch, with 28 Spokes in front and 36 Spokes in rear ; Dust-proof Bearings with Ball-Retaining Washers, Hollow Oil-containing Axles ; Wood Rims ; Wheel Base, 43 inches.
- Weight** ..... Twenty-seven to 29 pounds—according to size of frame and fittings used.
- Pedals** ..... Best Combination Rubber or Rat-Trap ; our own make.
- Handle Bar**. Adjustable Steel No. 7 (see cut), held by our Patent Handle-Bar Binder (see cut).
- Gear** ..... Sixty-six or 73.
- Saddle** ..... Christy.
- Tires** ..... Dunlop, Hartford or Vim.
- Finish** ..... Black, Maroon or Green Enamel ; plain or decorated.

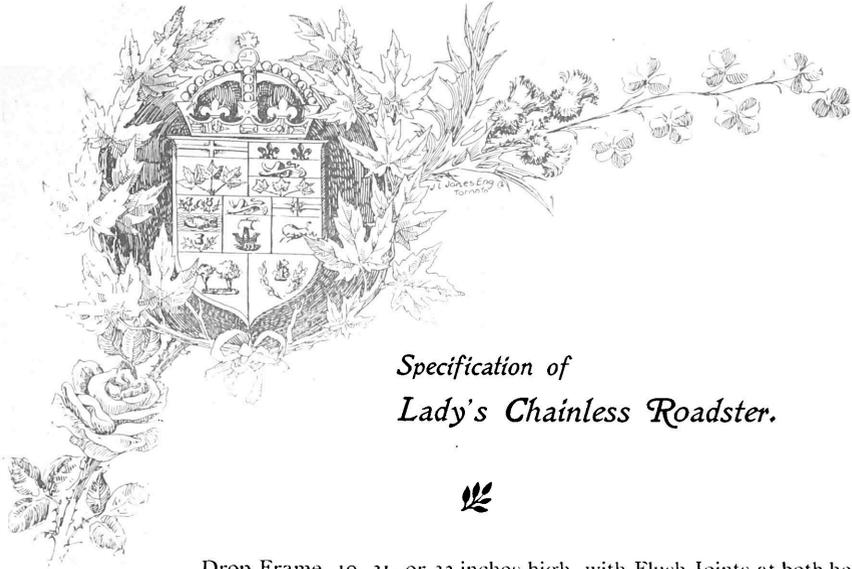


Among the principal advantages that we claim for our Chainless Bicycle over all others are the use of One-Piece Cranks ; Hollow Oil-containing Axles ; Frame all Brazed together, making it practically one piece, and quite as rigid as our Chain Machines. There are no hinged or moveable parts in the construction of our frames, which alone is an important feature. The gears are made from the best material obtainable, carefully prepared for the purpose. They are cut by special machines, making them absolutely accurate in contact and noiseless in operation.



*“ Perfect ” Chainless Model.*

**PRICE, \$125.00.**



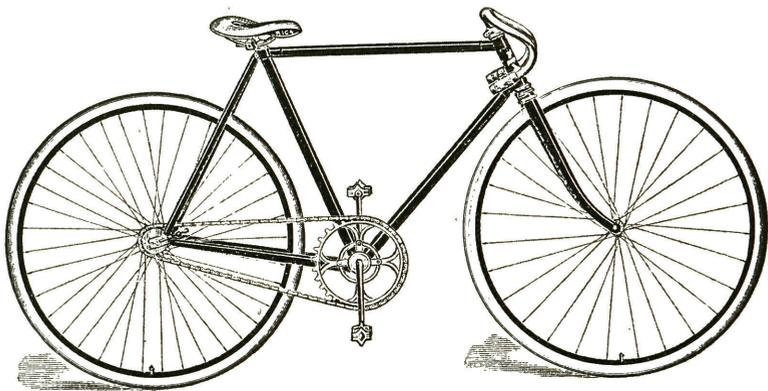
## *Specification of Lady's Chainless Roadster.*



- Frame** ..... Drop Frame, 19, 21, or 23 inches high, with Flush Joints at both head connections;  $1\frac{3}{8}$ -in. Head;  $1\frac{1}{8}$ -in. Top and Bottom and Seat Post Tubes;  $\frac{3}{4}$ -in. Rear Braces;  $\frac{7}{8}$ -in. Rear Forks; Short Head with Dropped Bracket.
- Crank Shaft** Patent One-Piece Self-Oiling, 6-in. or  $6\frac{1}{2}$ -in. Throw, as desired; 5-in. Tread.
- Forks** ..... Made of Weldless Tubing, nicely tapered; Double Crown, nickeled.
- Saddle Post** Special Adjustable (see cut).
- Wheels** ..... Twenty-eight inch, with 28 Spokes in front and 36 Spokes in rear; Dust-proof Bearings with Ball-Retaining Washers; Hollow Oil-containing Axles; Wood Rims; Wheel Base, 43 inches.
- Weight** ..... Twenty-seven to 29 lbs., according to size of frame and fittings used.
- Pedals** ..... Best Combination Rubber; our own make.
- Handle Bar.** Any Style, per cuts in catalogue; held by our Patent Handle-Bar Binder (see cut).
- Gear** ..... Sixty-six or 73.
- Saddle** ..... Christy.
- Tires** ..... Dunlop, Hartford or Vim.
- Finish** ..... Black, Maroon or Green Enamel; plain or decorated, as desired



The many advantages of a Lady's Chainless Bicycle over a Chain Machine are very apparent. There is nothing about it to "catch things." It is much less trouble to clean and more easily kept so. The running gear is all enclosed and not subject to the weather; and as all parts are absolutely dust and mud proof it necessarily runs faster and further with less effort.



*“Perfect” Racing Model.*

*PRICE, \$85.00.*



*Specification of  
Track Racer.*

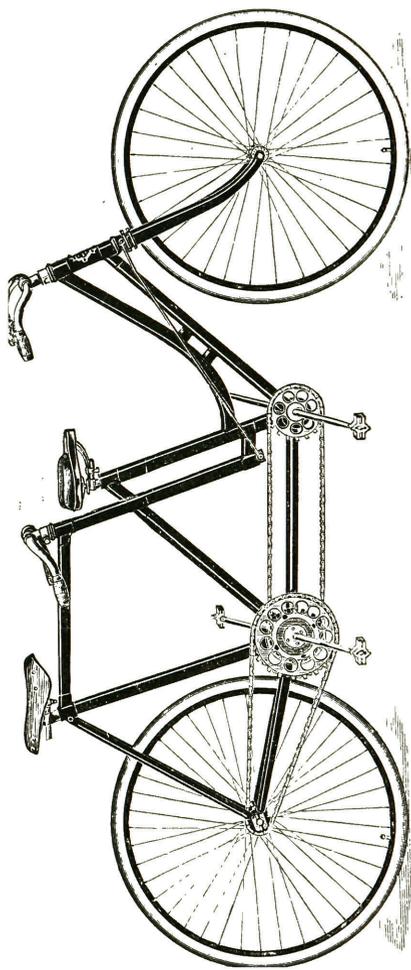


- Frame** ..... Twenty-two inches high ; 5-in. Head ; Tubing,  $1\frac{1}{4}$ -in. Head ; 1-in. Top Rail ;  $1\frac{1}{8}$ -in. Bottom Rail and Seat Post Tube ;  $\frac{3}{4}$ -in. Rear Forks ;  $\frac{5}{8}$ -in. Rear Stays ; Low Dropped Bracket.
- Crank Shaft** Patent One-piece ;  $6\frac{1}{2}$ -in. or 7-in. Throw ; 5-in. Tread.
- Forks** ..... Weldless with Crown Doubly Re-inforced.
- Seat Post**... Ordinary L Style, pointing either forward or backward.
- Wheels** ..... Twenty-eight inch, with 28 Spokes in front and 36 Spokes in rear ; Dust-proof Bearings ; Wood Rims ; Wheel Base, 43 inches.
- Weight** ..... Eighteen and one-half pounds.
- Pedals**..... Rat-Trap.
- Handle Bar.** Special Ram's Style.
- Chain and Gear** ..... Baldwin Adjustable Chain,  $\frac{3}{16}$ -in. ; front and rear sprockets detachable ; eight or nine tooth rear sprockets, geared anything up to  $9\frac{1}{2}$  as desired.
- Saddle**..... Light Weight, made especially for racers.
- Tires** ..... Hartford or Vim.
- Finish**..... Black, Maroon or Green as desired ; plain or decorated.

**Special Sizes Built to Order.**



Our racing machines are built strong enough for use upon the road as well, and when equipped with light road tires, make the speediest road wheel possible. The greatest care is taken to secure a rigid frame and forks without having an unnecessary ounce of weight. That we have attained perfection is evident by the winnings both on the track and road of riders of the "Perfect."



*“Perfect” Tandems.*

PRICE, \$125.00.



“ Perfect ” Tandems.



Besides the style shown in opposite cut, we make a Tandem for two gentlemen, which is the same in design excepting that the Frame is a Diamond instead of the Drop Curved Frame as shown.

**Frame** ..... One and one-quarter inch, and  $1\frac{1}{8}$ -in. Tubing, all Doubly Re-inforced and made specially strong and with Low Dropped Brackets.

**Crank Shaft** Patent One-Piece  $6\frac{1}{2}$ -in. Throw ; Tread  $5\frac{3}{8}$ -in., rear and 5-in. front.

**Forks** ..... Made of Weldless Tubing, Doubly Re-inforced, with Double Crown ; nickeled.

**Saddle Post** Ordinary T styles.

**Wheels** ..... Twenty-eight inch Wheels, front and rear ; Dust-proof Bearings with Ball-Retaining Washers all around ; Hollow Oil-containing Axles ; Extra Heavy Spokes, and Wood Rims made specially for our Tandems ; Wheel Base, 67 inches.

**Pedals** ..... Best Combination Rubber and Rat-Trap. Our own make.

**Handle Bar** Any style per cut in catalogue.

**Chain and Gear** ..... Baldwin Adjustable  $\frac{1}{4}$ -in. Chain ; Geared 84, 91 or 105.

**Saddles** ..... Christy.

**Tires** ..... Dunlop, Hartford or Vim.

**Finish** ..... Black, Maroon or Green Enamel ; plain or decorated.

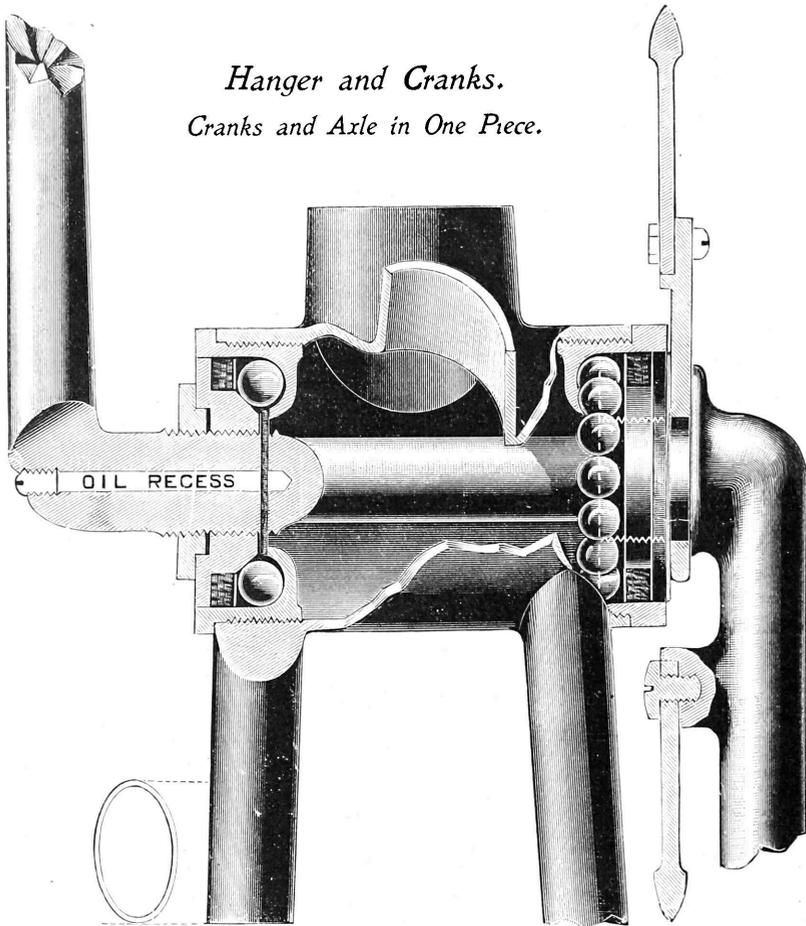
**Weight** ..... About 45 pounds.

**Racing Tandems built to order.**

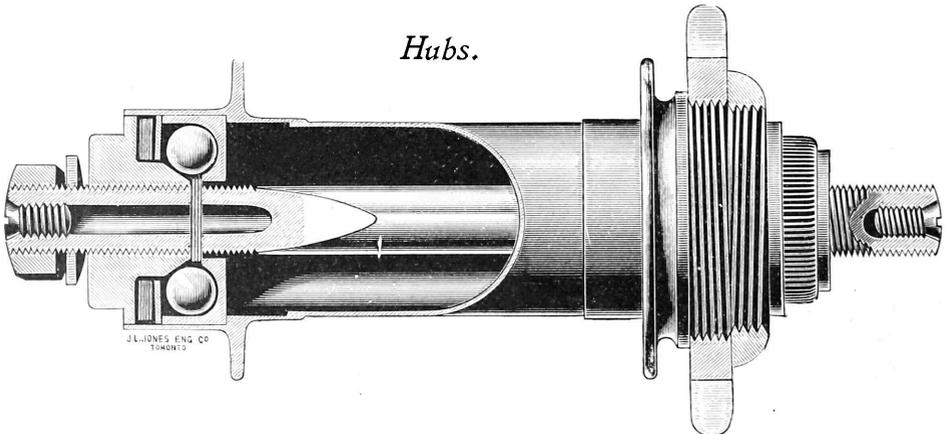


Our aim in building Road Tandems is to combine strength, ease and comfort, and our machines are peerless in every detail. All such points as ease of position, strength of Fork Crown, rigidity of frame, have been made perfect in this machine. It is on the simplest lines possible and will meet the desires of the most fastidious.

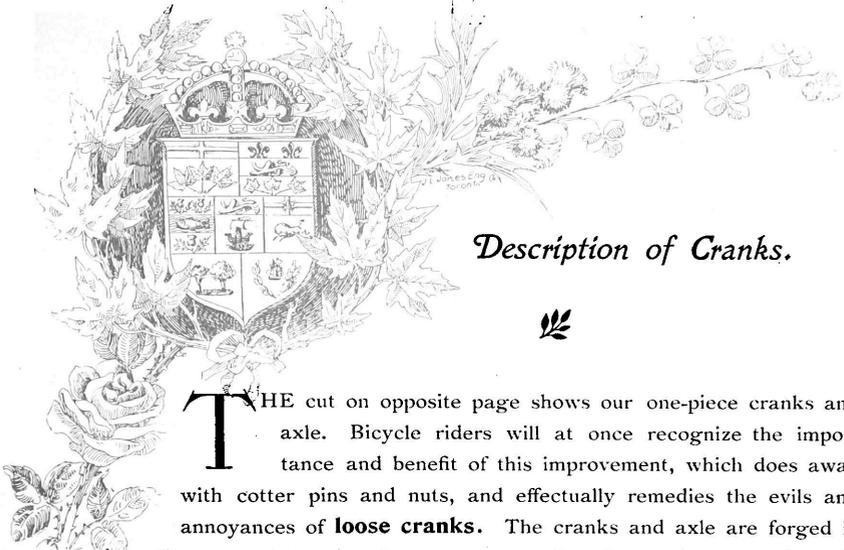
*Hanger and Cranks.  
Crank and Axle in One Piece.*



*Hubs.*



*New Design of Barrel Hub and Hollow Axle.*



## *Description of Cranks.*



**T**HE cut on opposite page shows our one-piece cranks and axle. Bicycle riders will at once recognize the importance and benefit of this improvement, which does away with cotter pins and nuts, and effectually remedies the evils and annoyances of **loose cranks**. The cranks and axle are forged in one piece, the hanger being just large enough to allow the crank to pass through. The cases are screwed into the hanger and are ball-retaining. The cones are screwed on the axle, and the bearings are dust-proof. They are also self-oiling, there being an oil chamber at each end of the axle fitted with screw stopper and having openings at the inner end fitted with wicking leading directly to the bearings. The sprocket wheel is attached to the spider on the axle by bolts and nuts, and is also attached to the crank in such a manner that all cross-strain is removed from the bolts and nuts, so that there is little tendency to their working loose, thus avoiding the annoyance of lost nuts and bolts and loose sprocket wheel. A loose sprocket wheel is always liable to break; a very serious and dangerous mishap.

The self-oiling axles are used only on our "Perfect" and "Garden City" bicycles. The same axles, without the self-oiling chambers, are used on our "Dominion" wheels.



## *Description of Hub.*

**T**HIS Hub is our own design and has many new and advantageous features. The Cases are Ball Retaining and the Cones can be easily adjusted with the thumb and finger. Felt washers that cannot get out of place, render the bearings dust-proof. The axles are hollow to hold a supply of oil for the bearings, dispensing with the use of oil cups in the hubs. A small wick leads the oil directly on to the bearings at each end. By removing the screw in end of axle the chamber can be refilled with oil. One filling will last a season with ordinary riding.

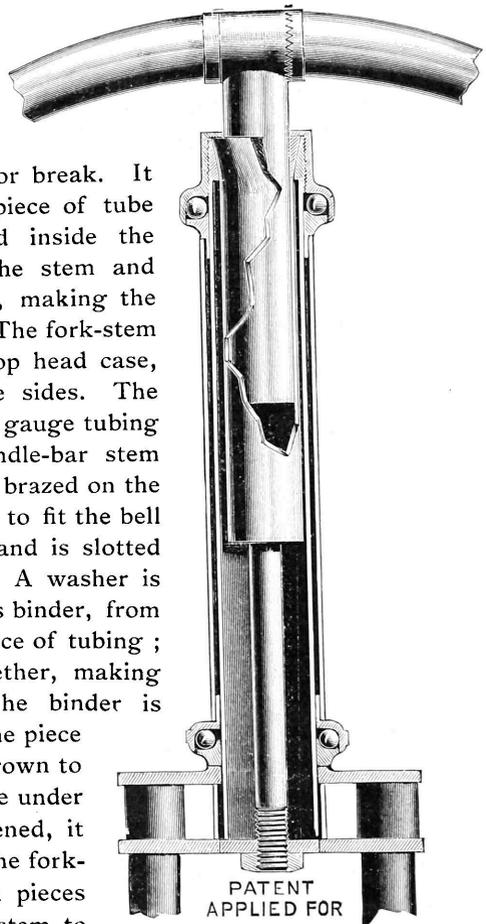
The hollow axles are used on our "Perfect" and "Garden City" Bicycles only. The same hub with solid axles is used on our "Dominion."



## The Handle-Bar Binder.

*Used on Our "Perfect" Bicycles only.*

THE Handle-Bar Binder or Clamping Device used on our Chain and Chainless "Perfect" Models is entirely new to the trade. It gives the head of the bicycle a very neat appearance, being completely enclosed within the head as shown by accompanying illustration. There are no lugs or clamping bolts or parts of any kind to get out of order or break. It is constructed as follows:—A piece of tube about  $\frac{3}{4}$ -in. long is first brazed inside the upper end of the fork-stem. The stem and tube are then reamed on a taper, making the former bell mouthed at the top. The fork-stem is then threaded to receive the top head case, and is also slotted on opposite sides. The binder is made from a piece of 22 gauge tubing large enough to receive the handle-bar stem and has a ring about  $\frac{3}{4}$ -in. long, brazed on the outside at upper end and tapered to fit the bell mouthed end of the fork-stem, and is slotted at the upper end with four slots. A washer is inserted in the lower end of this binder, from the centre of which projects a piece of tubing; these parts are then brazed together, making them practically one piece. The binder is placed inside the fork-stem and the piece of tubing projects through the crown to receive a nut. As the nut on the under side of the fork-crown is tightened, it draws the tapered portions of the fork-stem and binder together (both pieces being slotted), causing the fork-stem to expand and bind the head case. The binder contracts and binds the handle-bar, and when drawn tight holds the bar perfectly rigid.

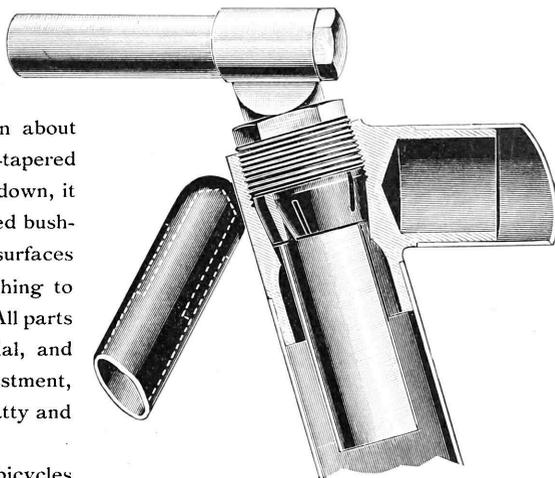




*Description of  
"Perfect" Saddle Post Clamp.*



THE accompanying cut shows the Saddle Post Clamp used on our "Perfect" models and is constructed as follows:—The frame forging is threaded at the upper end to the depth of about  $\frac{3}{4}$ -in. to receive a ring made hexagon at the upper end, which projects about  $\frac{1}{4}$ -inch above the seat post tube. Immediately below the threaded portion is a tapered section about  $\frac{3}{4}$ -in. long to receive a split-tapered bushing. As the nut is forced down, it comes in contact with the tapered bushing and forces the two tapered surfaces together, causing the split bushing to contract and bind saddle post. All parts are made from the best material, and are strong and perfect in adjustment, besides giving the machine a natty and finished appearance.

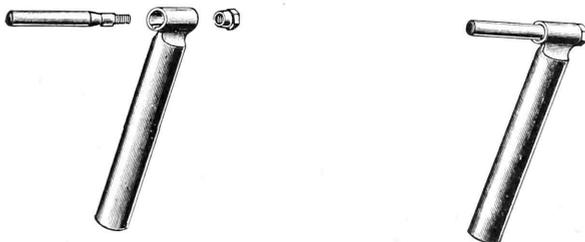


Used on our "Perfect" bicycles only.

*Cut of "Perfect" Saddle Post Clamp.*



*Cut of "Perfect" Adjustable Seat Post.*

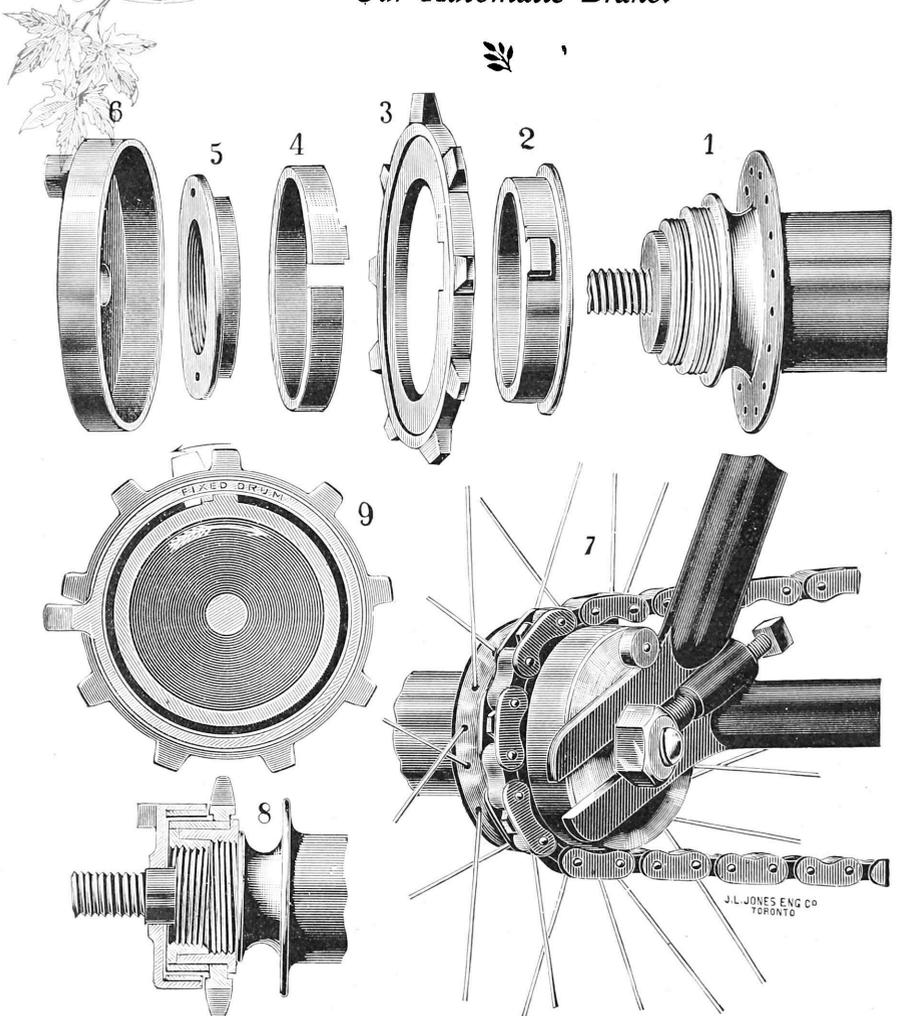


These cuts explain themselves. The part that carries the saddle sits equally in front or rear of the post and the rider has an adjustable carrier with nothing to interfere with the free movement of the springs of the saddle.

Used on our "Perfect" bicycles only.



*Parts of  
Our Automatic Brake.*



*Patent Automatic Brake used on our "Perfect" Bicycles only.*

Fig. 1—Hub.

Fig. 4—Expansion Ring.

Fig. 7—Brake in place.

Fig. 2—Collar.

Fig. 5—Set Nut.

Fig. 8—Cross Section.

Fig. 3—Sprocket.

Fig. 6—Drum.

Fig. 9—Cross Section.

## **Attention.**

Riders of Welland Vale Bicycles having the Automatic Brake attached are particularly requested to keep the Brake **WELL OILED**. There is a Screw or Oiler on lug that bears against the upper edge of fork end, where the oiling should be done, and it is absolutely necessary to oil frequently to keep the Brake in proper condition.

**Welland Vale Mfg. Co., Limited.**





Description of  
*New Departure Automatic Brake.*



THE illustrations opposite show *The New Departure Bicycle Controller* in its several parts, and in position on the rear hub. The Brake is *Absolutely Automatic*, giving complete control of the wheel, either for slackening up or coming to a full stop suddenly in case of danger from obstruction of any sort, with no conscious effort on the part of the rider, and without the slightest danger of straining any part of the bicycle.

It adds practically nothing to the weight of the machine, in no way changes the normal condition of machine or rider, and is not conspicuous when applied to the machine.

It occupies the space between the Sprocket and Fork on the rear hub, and the Brake proper consists of but two pieces, viz: the Expanding Ring and the Drum, brought into action when the rider holds back on pedals.

When sent out from the factory the Brakes are already assembled, so that it is merely necessary to remove the present Sprocket from the rear hub, screw on Brake, put in the Set Nut, place the Drum over all, and put the wheel back into the frame, full instructions for doing which accompany each Brake, so that mistake is impossible.

The Brakes are made in two sizes, viz: for hubs up to and including  $1\frac{1}{2}$ -in. diameter, the other for hubs above  $1\frac{1}{2}$ -in. diameter. The diameter of hub is measured at thread and upon which Sprocket is seated.

For the smaller sized hubs all Sprockets are interchangeable from eight teeth and upwards. For the larger sized hubs, Sprocket must have nine teeth or more. The Brake cannot be furnished for Sprocket having less than eight teeth.

The several parts are as follows: Figure 2 is a small hardened steel Collar, which screws into the hub in place of the old Sprocket.

Upon this Collar is mounted the Sprocket, figure 3, which turns loosely between the small square lug and the flange.

Figure 4 is a finely tempered steel spring which slips over the Collar (2), the spring being opened so that the small end rests against the underside of the lug on the collar, the large end against the upper side, and the projection setting into the space cut away in the Sprocket.

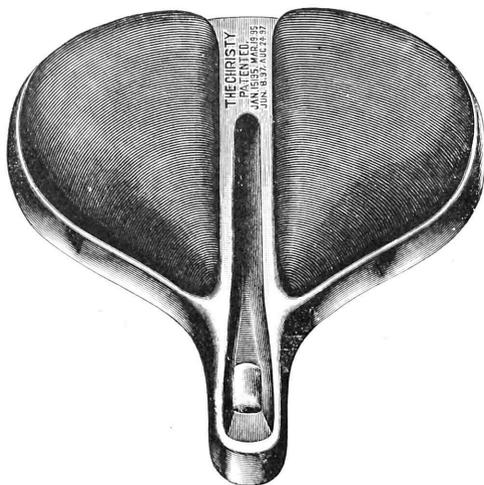
The Set Nut (figure 5) is now screwed in, the flange setting up against face or edge of spring and with the wrench set up firmly.

This Set Nut has a left-hand thread. The Drum (figure 5), is then slipped on in place and the wheel put into the frame and fastened in usual way.

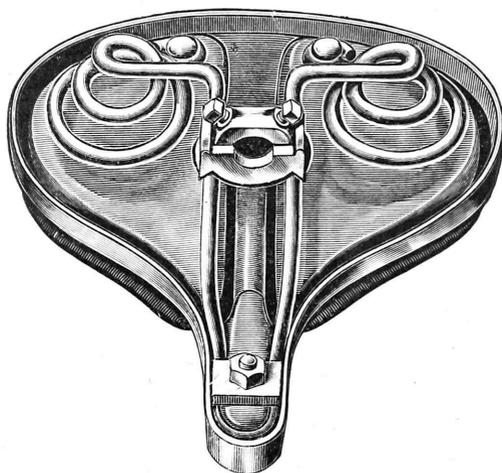
The Sprocket is now locked against all forward motion of its own, but with the influence of the chain travels forward carrying all parts with it. When the rider ceases to pedal forward and attempts to hold back, the Sprocket travels backward on the collar, opening Spring (4) until its outer surface is brought into contact with the inner surface of the cap, causing powerful braking action, and giving the rider absolute control of the wheel, allowing him to stop gradually or quickly as necessity may demand.

When the hub is constructed specially to include the Brake as a component part, the end of the hub, instead of being formed with right and left hand screw threads, is formed with a flange and lug, as shown on the Collar, (figure 2). This does away with the necessity for this Collar, and also for the Set Nut (figure 5) and reduces the Brake to two pieces, the Spring and Cap above noted, the Sprocket, of course, being necessary in any event.

## SADDLES.



*Christy—Top View.*



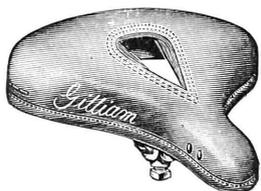
*Christy--Bottom View.*

**THE CHRISTY SADDLE** will be the regular equipment for our "Perfect" Bicycles. It has been recognized by the riders and is confirmed by testimonials from the leading physicians and surgeons of the country as the only correct anatomical saddle on the market, and the only one that positively prevents saddle injury.

No. 1—Men's Models, medium size, 8¼-in. seat.

No. 3—Men's Models, large size, 9-in. seat.

No. 8—Women's Models, large size, 9-in. seat.



*Laced Hygiene Pattern.*

We will continue to equip our bicycles with the Laced Pattern Saddles as we have found them very satisfactory to a large number of riders.

This will be a favorite saddle for 1898 and we recommend it as a strong and comfortable seat.



*Brown Pattern.*

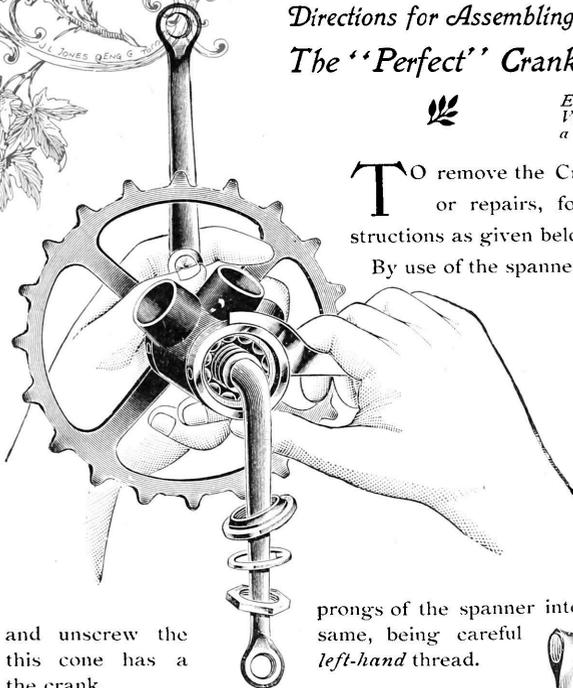


## Directions for Assembling and Removing The "Perfect" Crank Axle.



Every '98 Model Welland  
Vale Bicycle is supplied with  
a Wrench or Spanner.

**T**O remove the Crank Axle, for cleaning or repairs, follow carefully the instructions as given below:



and unscrew the this cone has a the crank.

Next apply the spanner to the left-hand cup, as page and unscrew the same. This cup also has a turn to the *right* to loosen. Remove the cup by passing over the crank.

After doing this, slide the axle to the right about one inch, so as to allow using the spanner on the right-hand or sprocket side.

The cup on the right-hand side has a *right-hand* thread. Apply the spanner the same as on the left-hand cup, but turn to the *left* to loosen. Unscrew until free from the bracket, then remove the crank by tipping, as per cut below.

To assemble, reverse the order given for removal.

To adjust bearings, loosen the lock-nut and apply spanner to cone, tightening same until perfect adjustment is secured, after which securely lock by tightening hexagon nut.

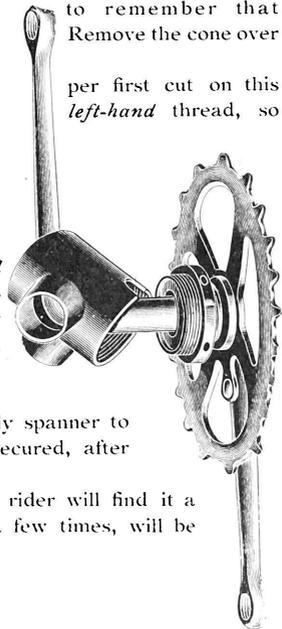
If these instructions are carefully followed, the rider will find it a very simple matter to remove the axle, and after a few times, will be able to assemble and remove very rapidly.

By use of the spanner, unscrew the hexagon lock-nut on the left-hand side. Be careful to note that this nut has a *left-hand* thread.

After removing the nut, also remove the lock washer, which is directly underneath.

Then insert the two prongs of the spanner into the holes in the cone same, being careful to remember that *left-hand* thread.

Remove the cone over per first cut on this *left-hand* thread, so

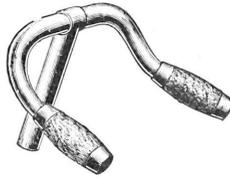




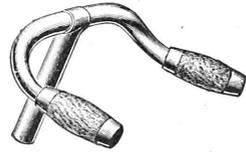
*Handle Bars.*



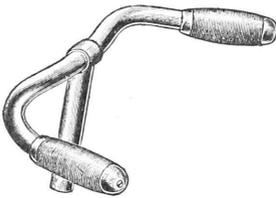
1



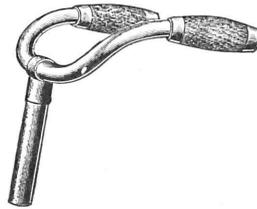
2



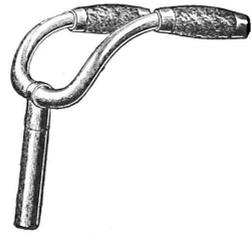
3



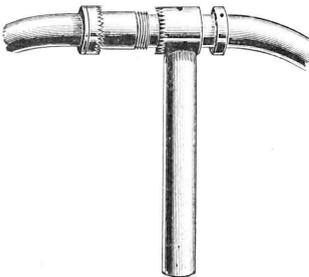
4



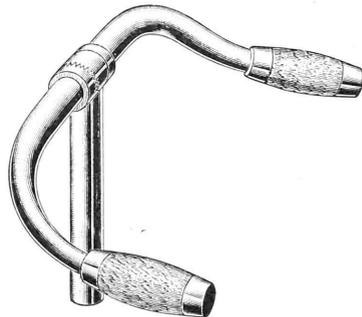
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6

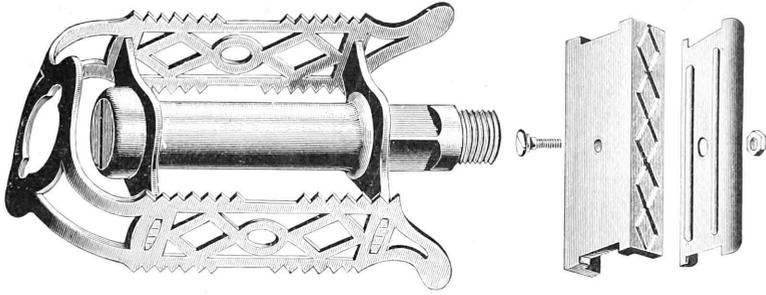


7

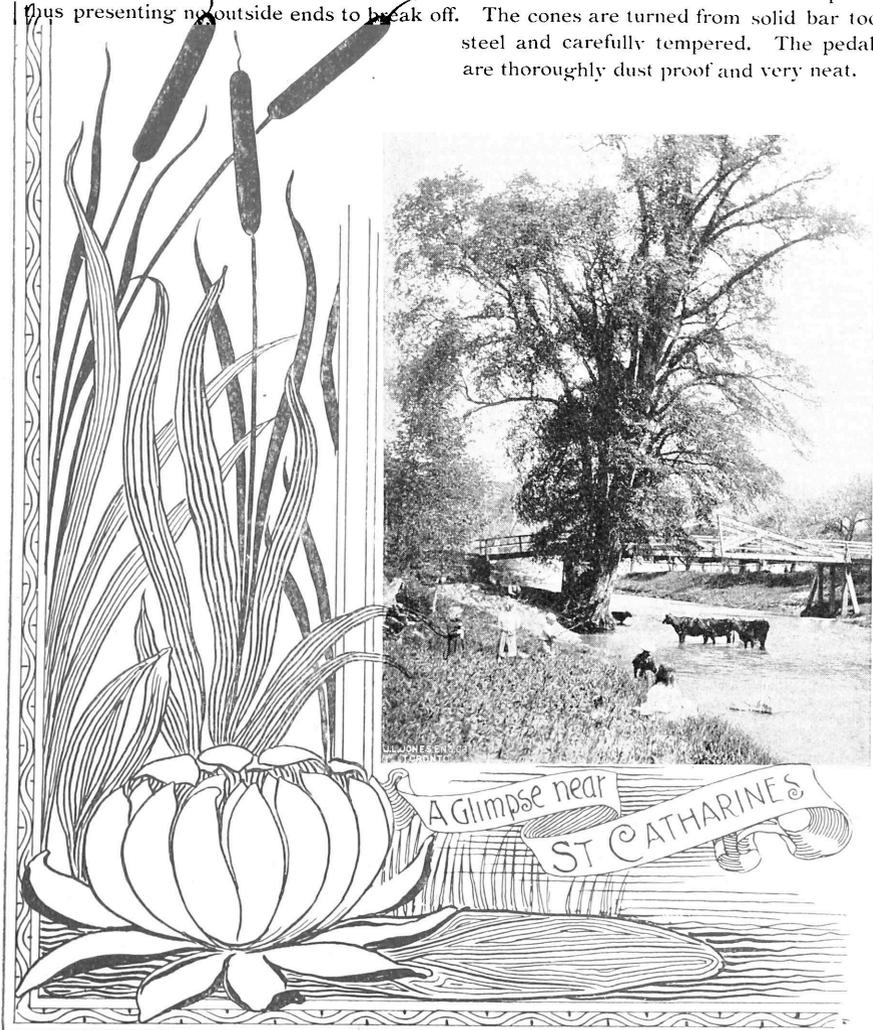


All of the above styles made with  $\frac{7}{8}$ -in. and 1-in. stems. The No. 7 Bar is fitted to our "Perfects" only, and is the neatest and safest adjustable Handle-Bar made. It can be quickly and easily set at any desired angle, or can be completely reversed. It is self-locking and absolutely safe, and is fitted with best cork grips.

*Wood Handle-Bars.*—We will furnish Wood Bars when ordered, but do not recommend or guarantee them. The purchaser must take the risk of them warping and getting out of shape.



**PEDALS.** We make our own pedals, which are of the barrel pattern. The centre piece or barrel is turned out of solid bar steel. The side or frame is formed in one piece, thus presenting no outside ends to break off. The cones are turned from solid bar tool steel and carefully tempered. The pedals are thoroughly dust proof and very neat.



# Price List of Parts for Repairs.

In ordering parts never fail to give number of your wheel.

	1896			1897			1898			CHAIN-LESS
	PERFECT	GARDEN CITY	DOMINION	PERFECT	GARDEN CITY	DOMINION	PERFECT	GARDEN CITY	DOMINION	
<b>FRAME GROUP.</b>										
Frame.....	\$30 00	\$25 00	\$22 00	\$30 00	\$25 00	\$22 00	\$30 00	\$25 00	\$20 00	\$30 00
Name Plate.....	35	25	25	35	25	25	35	35	25	35
Name Plate Screws, each.....	03	03	03	03	03	03	03	03	03	03
Seat Post Bolt.....	20	20	15	20	20	20	20	20	20	20
Nut for same.....	05	05	00	05	05	05		05	05	05
Top Head Case.....	50	50	50	50	50	50	75	50	50	75
Top Head Cone.....	50	50	50	50	50	50	50	50	50	50
Bottom Head Case.....	50	50	50	50	50	50	50	50	50	50
Bottom Head Cone.....	35	25	15	50	50	50	50	50	50	50
Seat Post, Nickeled.....	1 25	1 25	75	3 00	1 50	1 25	3 00	1 50	1 50	3 00
Seat Post, Bushing.....			50			50				
<b>FRONT WHEEL GROUP.</b>										
Front Wheel, without Tire.....	14 00	14 00	12 50	14 00	14 00	12 50	14 00	12 00	12 00	14 00
Front Hub, including Case.....	3 50	3 50	3 00	5 00	4 50	4 00	5 00	4 50	4 00	5 00
Front Hub Case.....	50	50	35	50	50	35	50	50	35	50
Front Oil Band.....			05							
Oil Cup.....					15	15				15
Front Cone.....	50	50	35	50	50	35	50	50	35	50
Front Axle.....	75	35	35	75	35	35	75	75	35	75
Front Axle Nut.....	05	05	05	05	05	05	05	05	05	05
Front Spokes, Nickeled.....	10	10	10	10	10	10	10	10	10	10
Front Axle Washer.....	05	05	05	05	05	05	06	05	05	05
Front Nipples, Nickeled, each.....	05	05	05	05	05	05	05	05	05	05
Washers for Wood Rims.....	03	03	03	03	03	03	03	03	03	03
Front Rim Drilled for Spokes.....	1 75	1 75	1 40	1 75	1 75	1 40	1 75	1 75	1 50	1 75
Steel Balls, per dozen.....	25	25	25	25	25	25	25	25	25	25
Ball Retaining Washer.....				10	10	10	10	10	10	10
<b>REAR WHEEL GROUP.</b>										
Rear Wheel without Tire.....	17 50	17 50	16 00	17 50	17 50	16 00	17 50	17 50	15 00	20 00
Rear Hub, including Cases.....	5 50	5 50	4 50	7 00	6 50	5 50	7 00	5 00	5 00	8 00
Rear Hub Case.....	75	75	50	75	75	50	75	75	50	1 00
Rear Hub Sprocket.....	1 75	1 50	1 50	1 75	1 50	1 50	1 75	1 50	1 50	
Rear Hub Sprocket Lock Nut.....	75	50	50	75	50	50	75	50	50	
Rear Hub Oil Band.....			05							
Oil Cup.....					15	15				15
Rear Axle.....	90	50	50	90	50	50	75	50	50	75
Rear Axle Washer.....	05	05	05	05	05	05	05	05	05	05
Rear Cone.....	60	60	50	60	60	50	1 00	60	50	1 00
Rear Axle Nut.....	10	10	10	10	10	10	10	10	10	10
Steel Balls, per dozen.....	50	35	35	50	35	35	50	50	50	50
Rear Step.....	35	25	25	35	35	25	35	35	25	35
Ball Retaining Washer.....				10	10	10	10	10	10	10
Rear Rim, drilled for 32 spokes.....	1 75	1 75	1 40	1 75	1 75	1 75	1 75	1 75	1 50	1 75
Rear Rim Washer.....	03	03	03	03	03	03	03	03	03	03
<b>FRONT FORK GROUP.</b>										
Front Fork, complete.....	6 00	5 00	4 50	6 00	6 00	5 00	6 00	6 00	5 00	6 50
Fork Sides, each.....	50	50	50	50	50	50	50	50	50	50
Fork Crown Tube.....	75	75	75	1 00	1 00	1 00	1 00	1 00	1 00	1 25
Handle Bar, complete.....	5 00	4 50	4 00	7 50	5 00	4 50	7 50	5 00	4 50	7 50
Handle Bar, Cork Grip, each.....	50	30	30	50	30	30	50	30	30	50
Handle Bar Clamp.....	1 00	1 00	1 00	1 25	1 25	1 00		1 25	1 00	
Handle Bar Clamp Bolt.....	20	20	20	25	25	20		25	20	
Handle Bar Clamp Bolt Nut.....	05	05	05	05	05	05		05	05	
Coasters, complete.....	20	20	20	20	20	20	20	20	20	20
Coaster's Nut and Bolt.....	10	10	10	10	10	10	10	10	10	10
Handle Bar Bind.....							1 50			1 50
Seat Post, Tapered Bushing.....							10			10
Seat Post Nut.....							15			15
Nut for Handle Bar Binder.....							05			05

*Price List of Parts for Repairs.—Continued.*

	1896			1897			1898			CHAIN- LESS
	PERFECT	GARDEN CITY	DOMINION	PERFECT	GARDEN CITY	DOMINION	PERFECT	GARDEN CITY	DOMINION	
<b>CRANK BRACKET GROUP.</b>										
Crank Bracket Case.....	\$1 00	\$1 00	\$ 60	\$1 50	\$1 50	\$ 75	\$1 50	\$1 50	\$ 75	\$1 50
Crank Bracket Adjusting Cone.....	75	75	90	1 25	1 00	90	1 25	1 00	90	1 25
Crank Bracket Stationary Cone.....	75	75	50	75	75	50	75	75	50	1 00
Lock Nut.....				50	50		50	50	50	50
Washer.....				10	10		10	10	10	10
Ball Retaining Washer.....				15	15		15	15	15	15
Crank Bracket, Spring Oilers.....	10	10	10			10			10	
Crank Shaft.....	4 50	4 50	75	4 50	4 50	1 50	4 50	4 50	4 50	4 50
Cranks, each.....			1 25			2 00				
Crank Key and Nut.....						25				
Crank Cone, Adjusting Dog.....	50	50	10							
Sprocket, Front, 16, 17, 18, 19 teeth, each.....			1 50			1 50				
Sprocket Rim Bolts.....	10	10		10	10		10	10	10	
Sprocket Rim Nuts.....	05	05		05	05		05	05	05	
Sprocket Rim, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, teeth.....	2 00	2 00		2 50	2 00		2 50	2 00	2 00	2 50
<b>MISCELLANEOUS.</b>										
New Departure Brake, Complete...							6 00			
New Departure Drum, No. 6.....							1 00			
New Departure Lock Nut, No. 5.....							50			
New Departure Spring, No. 4.....							65			
New Departure Sprocket, No. 3.....							1 00			
New Departure Collar, No. 2.....							1 00			
Side Shaft for Chainless Machine...										2 50
Side Shaft, front gear, " ".....										2 00
Side Shaft, rear gear, " ".....										2 50
Rear Wheel Gear, " ".....										2 50
Crank Shaft, " ".....										4 00
Side Shaft, ball cup, " ".....										1 00
Side Shaft, Stationary Cone, Chain- less Machine.....										1 00
Side Shaft, Adjusting Cone, Chain- less Machine.....										1 25

**PEDALS.** *Always state what pedal you require repairs for.*

Pedals Complete, per pair.....	\$ 5 00
Pedal Pin or Axle.....	50
Pedal Balls, per dozen.....	25
Pedal Rubbers, per set.....	50
Pedal Cap.....	25
Pedal Cone.....	25
Pedal Nut.....	05
Pedal Adjusting Washer.....	05
Pedal Side or End.....	25

**CHAIN GROUP.**

Hardened Block and Hardened Pin Chain.....	\$ 6 00
Extra Link.....	10
Chain Bolt and Nut.....	10
Chain Adjuster.....	25

**SADDLE REPAIRS.** *Always state make and style of saddle when asking for repairs.*

Screws, each.....	10 and 15
Clamps, each.....	50
Springs, each.....	60 and 75



*The Following is the  
Tire Companies' Guarantee  
for 1898.*



**W**E agree with the purchaser of each tire to make good by repair or replacement when delivered to us, transportation prepaid, any imperfection or defect in material or manufacture of such tire, not caused by misuse or neglect, provided such tire is accompanied by a *signed statement from the owner, giving date on which the tire was purchased by him, together with the name and number of the wheel on which it was used*, and that all imperfect or defective tires shall be referred to us, before any claim for repair or replacement shall be allowed.

We agree to repair, free of charge, any tire that can be repaired, provided such tire is delivered to us, *transportation prepaid*.

This guarantee continues for six months from the date of the sale by the agent, but expires in any event on May 1st, 1898.

This agreement does not apply to tires into which any so-called anti-leak preparation has been introduced, or to racing tires.

All claims for defective tires must be made direct to the tire manufacturers.



*General Directions.*

Discounts to the trade will be made known on application.

Goods sent C. O. D. when sufficient amount accompanies the order to provide for express charges both ways.

We cannot guarantee the safe delivery of goods. Our responsibility ceases when goods are delivered at Post Office, Express Office or Freight Depot.

In sending in repairs always tag and address them distinctly, with the full name and address of the sender, and promptly advise us by letter and by what route they are shipped.

*Charges must be prepaid* on all goods thus sent or they will not be accepted.

*Welland Vale Mfg. Co., Limited.*



JOHN BISHOP & SON,  
HARDWARE MERCHANTS,  
BRANTFORD.

