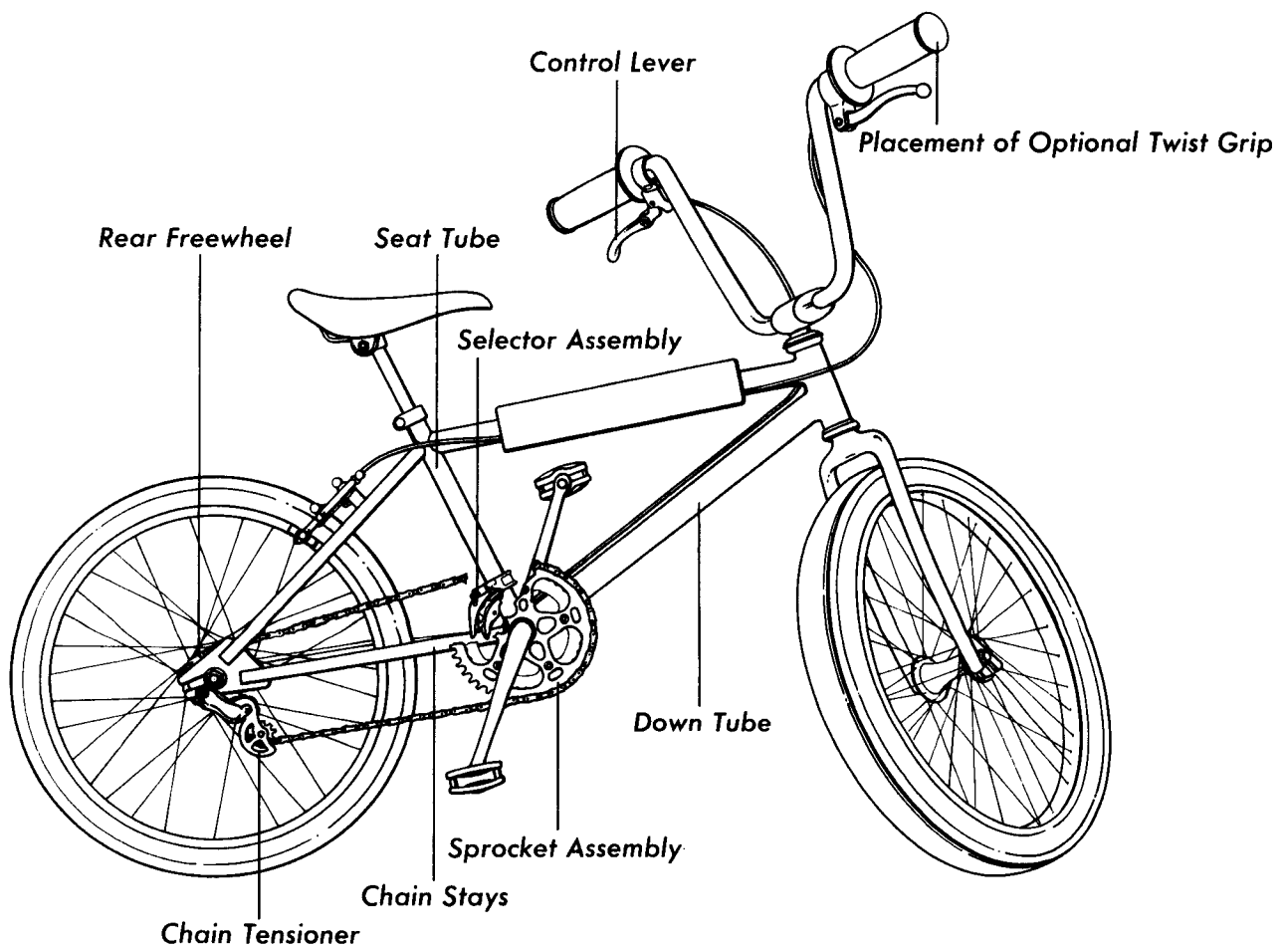


INSTALLATION
AND
MAINTENANCE
MANUAL

BMX
2SPEED

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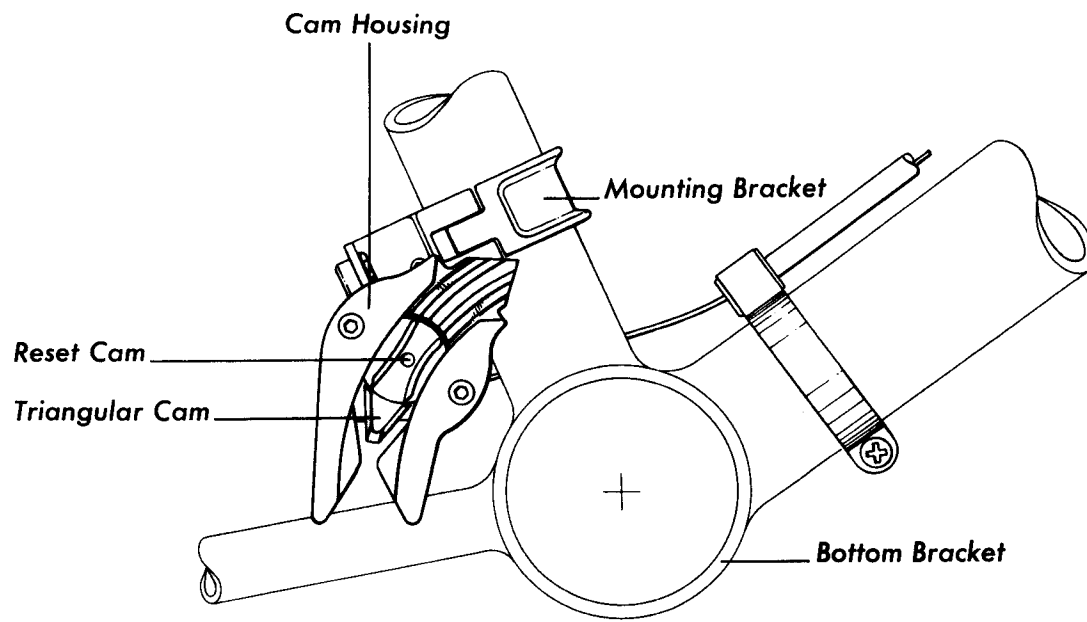
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ILLUS 1 BICYCLE COMPONENT TERMINOLOGY.

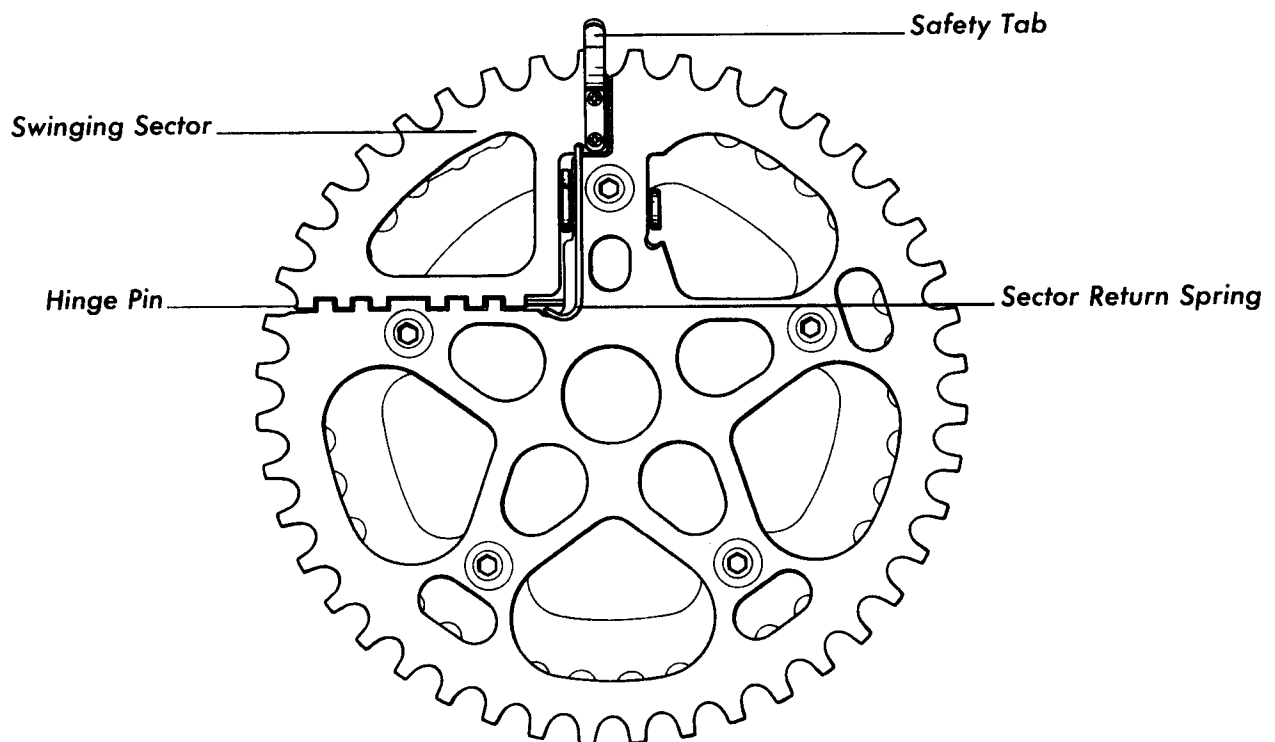
SAFETY INSTRUCTIONS

- 1- The Browning Transmission must be installed by Browning Authorized and Trained Dealers. The installation instructions in this manual are intended as a reference for skilled bicycle mechanics only.
- 2- Do Not Modify Bicycle Frames or the design of components to accommodate the Browning Transmission. Many standard bicycles and components are compatible with the Transmission.
- 3- This manual contains a list of recommended accessories which are required to ensure the safe operation of the transmission.
- 4- **When a bicycle with a Browning Transmission is utilized for street operation, the use of two hand brakes [one for the front wheel and one for the rear wheel] is required. The transmission selector assembly may be activated by a twist grip control.**
- 5- The Browning Transmission must be kept clean. Please refer to maintenance instructions for specific details.



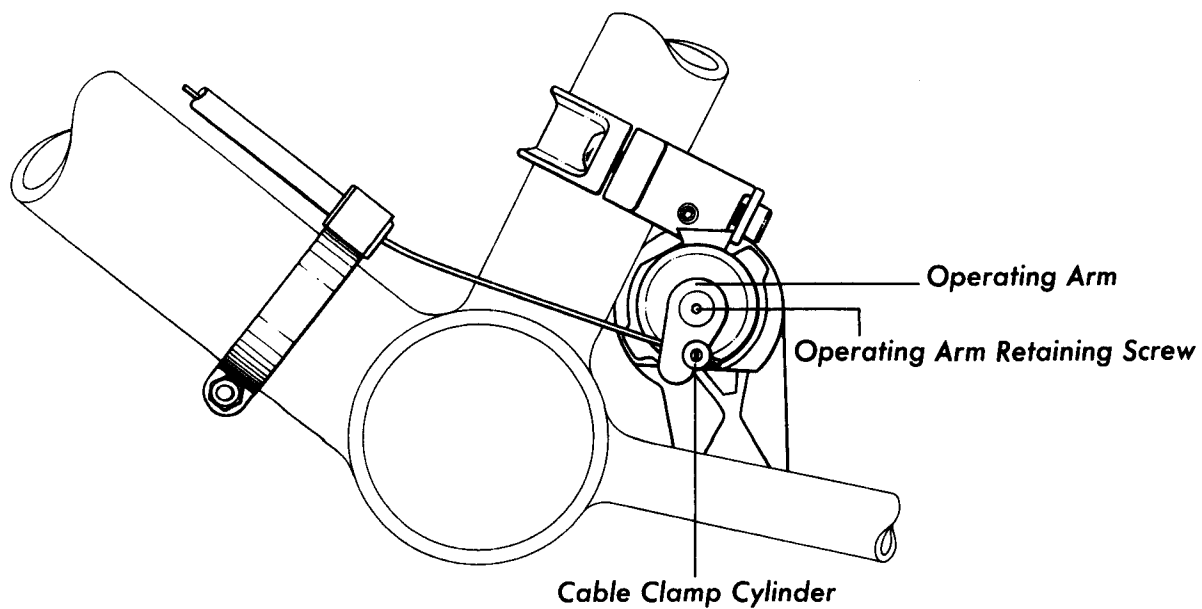
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FRONT VIEW OF SELECTOR ASSEMBLY IN POSITION ON SEAT TUBE.

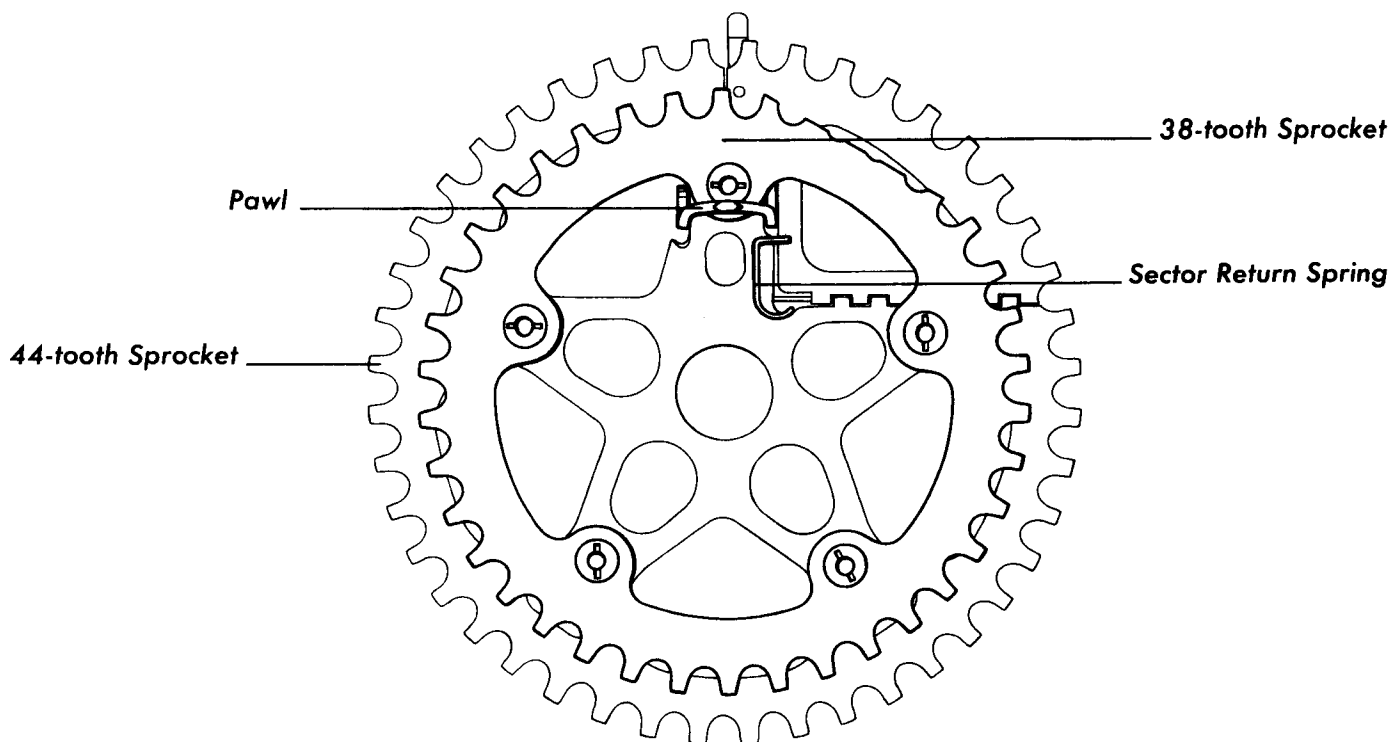


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FRONT VIEW OF SPROCKET ASSEMBLY.



ILLUS
3 REAR VIEW OF SELECTOR ASSEMBLY IN POSITION ON SEAT TUBE.



ILLUS
5 REAR VIEW OF SPROCKET ASSEMBLY.

BICYCLE AND EQUIPMENT RECOMMENDATIONS

The Browning BMX Two Speed Transmission manufactured by Browning Automatic Transmissions is intended for use on bicycles and with bicycle components having certain characteristics. The equipment recommendations are as follows:

Bicycle

The transmission has been designed to work with the one piece crank, although various three piece cranks, such as "Red Line Flight Cranks®", can be used. Please consult the factory prior to installation.

The Browning transmission is used with rear hubs having one sprocket. Three and five speed internally geared hubs are acceptable. Since a chain tensioner is required, do not use rear hubs which have coaster brakes.

Sufficient clearance must exist between the crank and the chain stays to accommodate a two sprocket cluster and to allow room for the selector assembly and mounting bracket assembly (Illustration # 14).

The mounting bracket assembly for the controls is available to fit the following seat tube diameters: 7/8", 1", 1 1/8"

Chain

The Browning transmission uses a 3/32" derailleur-type chain. We recommend the Sediport 1/2" x 3/32" - (12.7 mm x 2.38 mm)

Chain Tensioner

Shimano #54801010

Lever

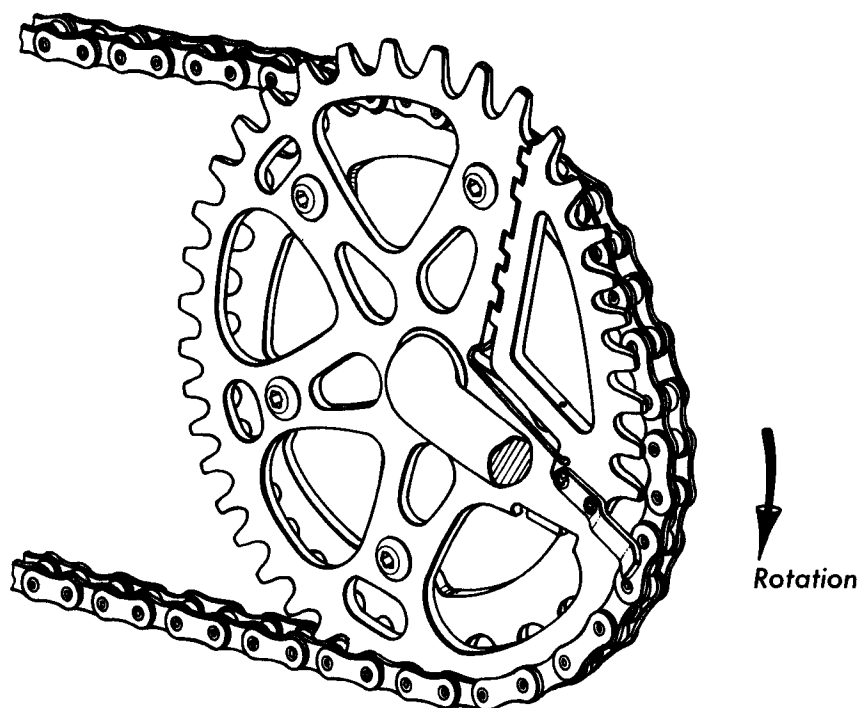
Dia-Compe "Tech 111"
SunTour Holeshoot

Cable Tensioner

Dia-Compe #69

Twist Grip

Sturmey Archer # HSJ-763



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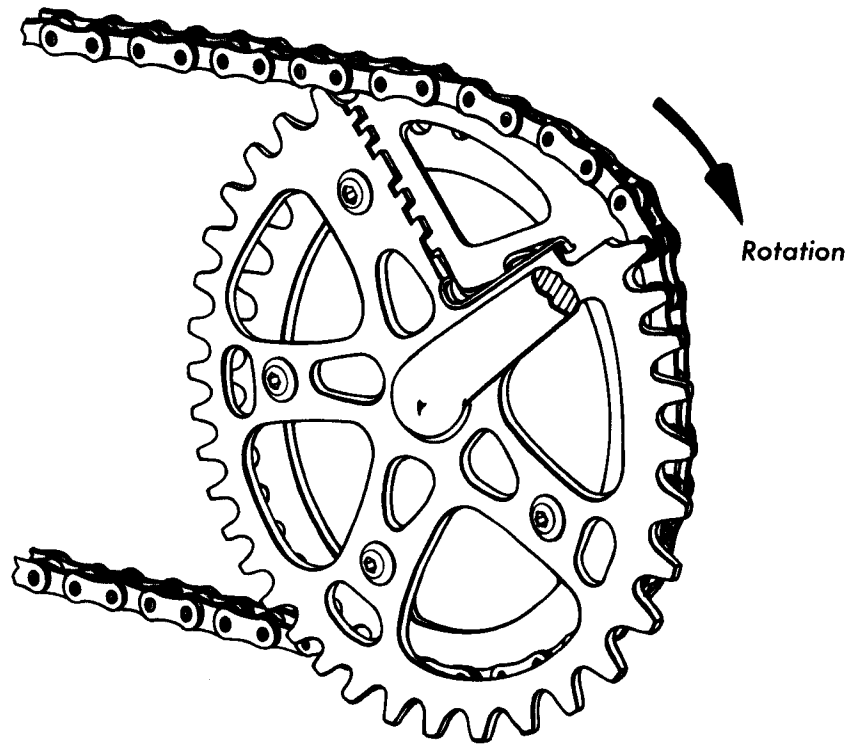
6

SIDE VIEW OF CHAIN BEING SWITCHED DOWN TO SMALL SPROCKET.

TRANSMISSION OPERATION

The Browning Two Speed Transmission is an entirely new method of switching gear ratios on a bicycle. The rider may switch up or down while turning the crank with full pressure on the pedals. The transmission requires no skill or special procedures to operate and is therefore ideal for the difficult conditions of BMX riding.

- 1- When the control lever is depressed, the chain is switched to the small sprocket and stays there as long as the lever is depressed (Illustration # 6).

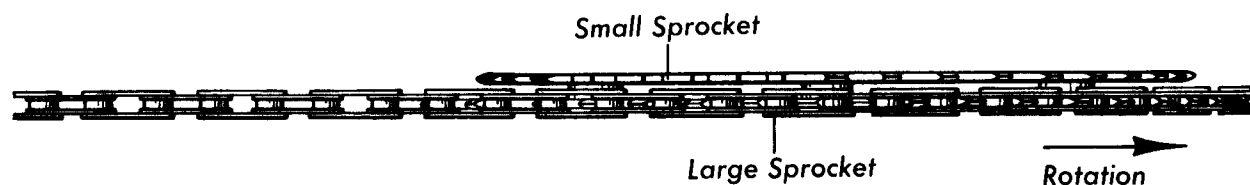


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SIDE VIEW OF CHAIN BEING SWITCHED UP TO LARGE SPROCKET.

2- When the control lever is let go, the chain is switched to the large sprocket and stays there as long as the lever remains in the released position (Illustration #7).

The gear switch is achieved only when the crank is turning in the forward direction. However, the lever may be pulled or released at any time without any damage to the mechanism.



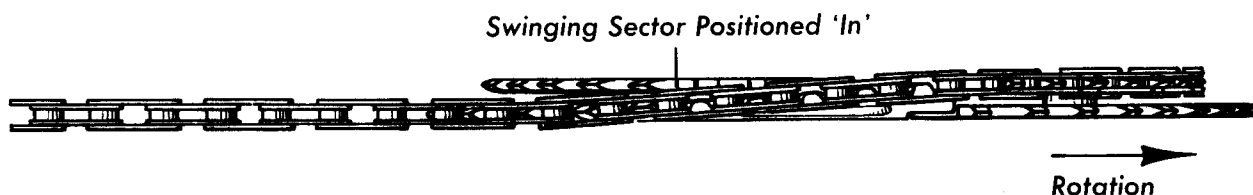
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TOP VIEW OF CHAIN ON LARGE SPROCKET.



ILLUS
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TOP VIEW OF CHAIN BEING SWITCHED DOWN TO SMALL SPROCKET.



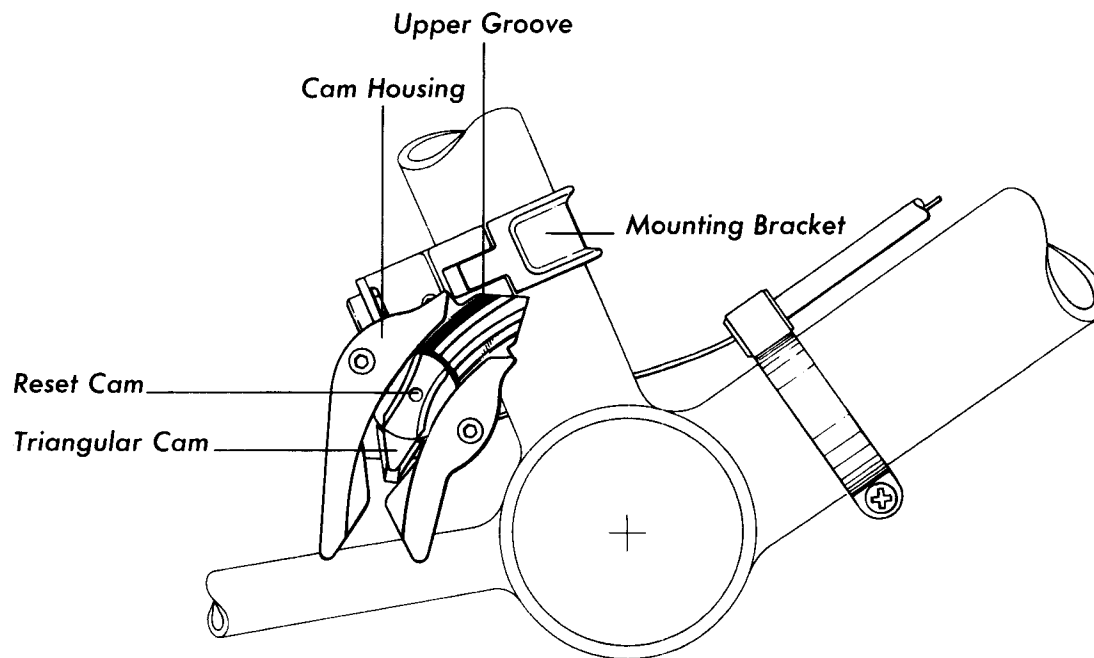
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TOP VIEW OF CHAIN BEING SWITCHED UP TO LARGE SPROCKET.

HOW IT WORKS

If the sprockets of the Browning Transmission assembly are compared to parallel railroad tracks, then the swinging sector on the big sprocket of the transmission is the same as a switch between the two railroad tracks. The train is switched from one track to the other without derailing. In the same way, the transmission moves the chain from one sprocket to the other without ever letting go of the chain. The railroad train is switched by moving a part of the track, and in the same manner, the transmission switches the chain by moving a part of the sprocket.

The movable part of the sprocket is called the swinging sector. On the Browning Transmission, the swinging sector is moved by a lever called the pawl to switch the chain up or down. When the pawl pivots up and out toward the sprocket teeth, the swinging sector swings away from the bicycle and the chain moves from the large sprocket to the small sprocket. When the pawl pivots in and down from the sprocket teeth toward the hub, the swinging sector swings toward the bike and the chain moves from the small sprocket to the large sprocket.



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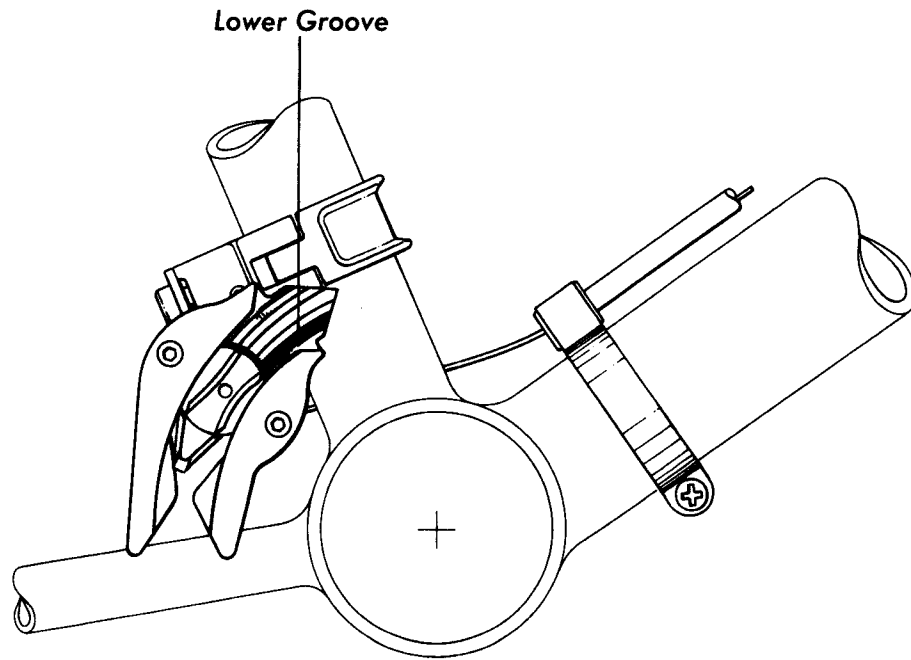
CAM IN SWITCHED 'DOWN' POSITION – PAWL WILL TRACK UPPER GROOVE.

The pawl is pivoted up or down by the triangular cam. The reset cam and the grooves in the cam housing hold the pawl in the 'up' or 'down' position for the time necessary to accomplish the switching operation. The triangular cam has three positions-switch down (Illustration # 11), switch up (Illustration # 12), and neutral (Illustration # 13).

Generally, without listing all of the combinations, the triangular cam is turned between neutral and the switching positions, up or down on one of two ways:

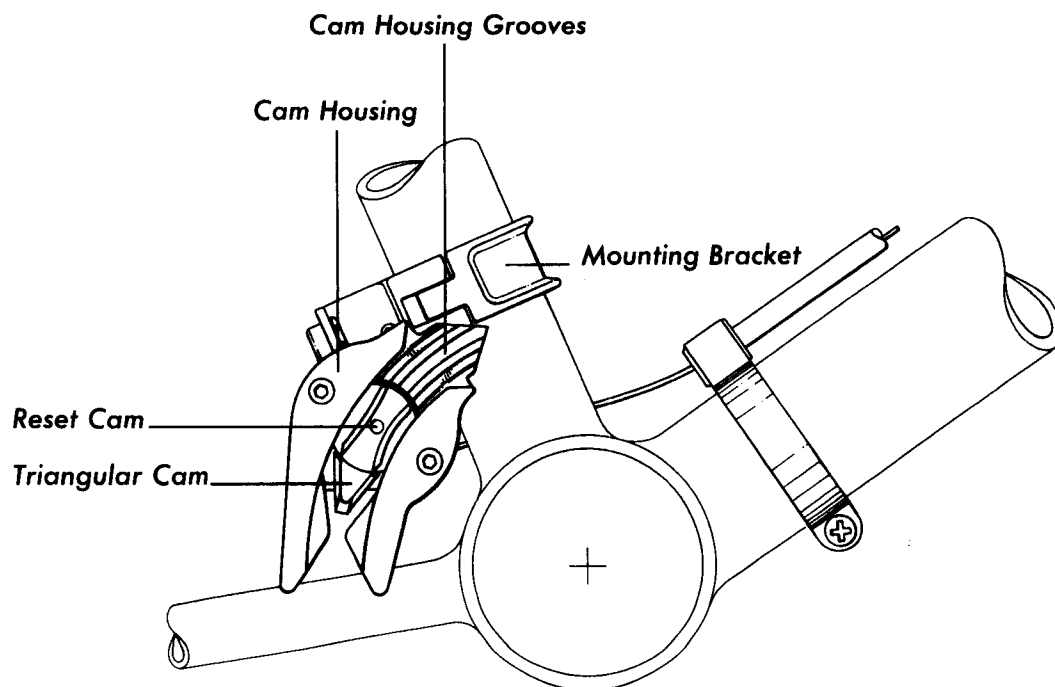
- 1- The control lever, which has two positions, turns the triangular and reset cams between a switch position and a neutral position.
- 2- The interaction of the pawl with the reset cam turns the triangular cam between a switch position and a neutral. This interaction occurs when the pawl is traveling in the switch down position (while switching the chain to the small sprocket), or when the pawl is traveling in the switch up position (while switching the chain to the large sprocket).

Thus the pawl, after being pivoted up or down by the triangular cam and traveling in either the upper groove or the lower groove, turns the triangular and reset cams into the appropriate position in anticipation of the next turn of the crank. This occurs when the rotation of the crank is forward or backward.



ILLUS
12

CAM IN SWITCHED 'UP' POSITION – PAWL WILL TRACK LOWER GROOVE.



ILLUS
13

CAM IN NEUTRAL POSITION.

INSTALLATION ON BICYCLE

List of items in Box:

- Mounting Bracket Assembly
- Selector Assembly
- Sprocket Assembly
- Registration/Warranty Card

Other items required for installation: (Not included)

- Chain
- Chain Tensioner
- Cable Tensioner
- Spacing Washers
- Control Cable and Control Lever
- Twist Grip (For street use)



Refer to "Bicycle and Equipment Recommendations" to determine suitability of bicycle frame to which the Browning BMX two speed transmission is to be assembled.

On assembled bicycles the crank must be disassembled from the bottom bracket and the old sprocket removed from the crank.



Examine the Browning Sprocket assembly. The movement of the pawl and swinging sector should be free. The swinging sector should pivot easily 5 degrees each side of the large sprocket. The return spring should snap the sector back to the center position in a lively manner.

Assemble the crank, the sprocket assembly, washer, and bearing raceway. This is a trial assembly to determine the proper thickness of the washer(s), if needed. Assemble crank and sprocket with bearings to the bottom bracket. Tighten raceways fingertight for trial measurements. Increase or decrease thickness of washer(s) as required.