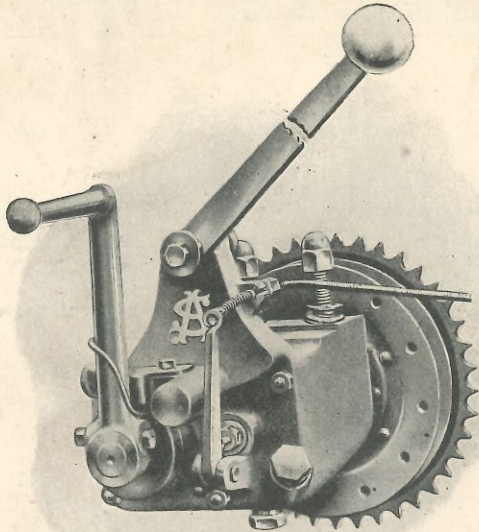


JANUARY 1926

STURMEY-ARCHER

COUNTERSHAFT GEAR



Patent No. 224663

F. W. TYPE

3-SPEED for CHAIN-CUM-BELT
and ALL-CHAIN DRIVE

STURMEY ARCHER GEARS LTD.

LENTON — NOTTINGHAM — ENGLAND

Telegrams : "TRIPLE, NOTTINGHAM."

Tel. 4155

"F.W." TYPE 3-SPEED STURMEY-ARCHER GEAR

SUITABLE FOR ENGINES UP TO 200 C.C.

FOREWORD.

THE FEATHERWEIGHT MOTORCYCLE has proved beyond doubt that it is capable of serious work, and is recognised to-day as being a satisfactory mount for solo riding when the cost of the new machine and its maintenance is a consideration.

The development of this type of machine is largely due to the wonderful progress that has been made in the efficiency of Motor Cycle Engines.

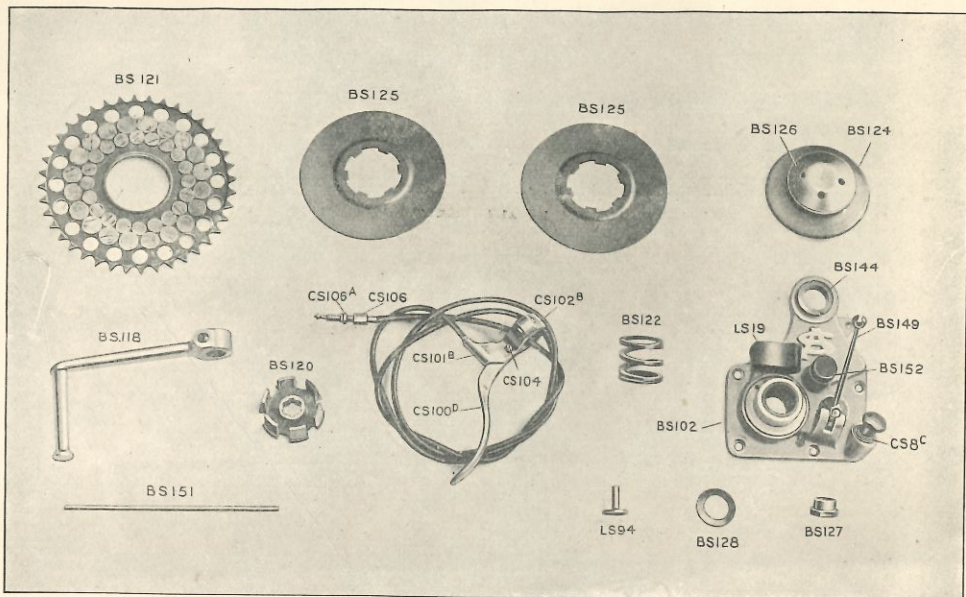
It is also noteworthy that the same progress has been made in the design and efficiency of Motor Cycle Countershaft Gears.

This new Featherweight Gear is a valuable addition to the Sturmev-Archer range ; it is designed expressly to fulfil the requirements of the modern Featherweight Motor Cycle, being light in weight and simple in construction.

It is an established fact that the smaller the engine, the more necessary it becomes to increase the number of speeds in the gear-box, that is if the best results are to be obtained from the engine.

Whilst the 2-speed may serve its purpose, and enable the rider to go up any hill on ordinary roads, the bottom gear has to be arranged so low that it will take the worst hills encountered. with the result that, on ordinary hills, the engine is "revving" away unduly, while the machine is only crawling along at little more than walking pace. This is where the extra gear proves to be an inestimable advantage.

TO AVOID MISTAKES WHEN ORDERING SPARES, PLEASE QUOTE THE LETTERS AND NUMBER STAMPED ON BOX.

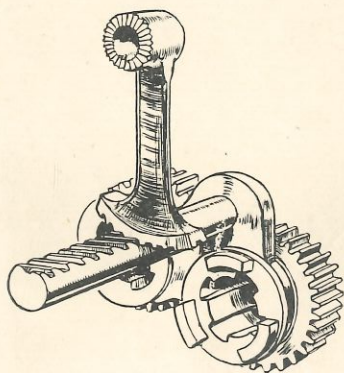


BS 121	Clutch Sprocket (40T)	...	16	0						
BS 122	" Spring	...	1	0	CS 10	Gear Box Cover Nut	...	0	2	
BS 123	" Sprocket (35T)	...	16	0	CS 11	" " Spring	...	0	6	
BS 124	" Spring Cup	...	2	0		Washer (set of 4)	...	0	6	
BS 125	" Plate	...	1	6	CS 63	Pulley Locking Plate	...	0	5	
BS 126	" End Cap	...	1	0	CS 73	Wire Nipple	...	pair	0	1
BS 127	" Adjuster Nut	...	0	6	CS 94a	Gear Lever Knob	...	...	0	9
BS 128	Adjuster Nut Washer	...	0	1	CS 95	Knob Washer	...	...	0	1
BS 129	Sprocket Bearing Ring	...	1	6	CS 100	Clutch Control Lever	...	...	4	0
BS 131	Long Gear Lever with Knob	...	5	0	CS 101	" " Fulcrum	...	...	2	6
BS 132	Control Plunger	...	0	4	CS 102	" " Half-Clip	...	...	1	0
BS 133	" " Stud	...	0	1	CS 104	" " Fulcrum Pin	...	...	0	1
BS 134	" " Spring	...	0	4	CS 106	Clutch Control Lever Screw	...	...	0	1
BS 142	Actuating Quadrant	...	6	0	CS 106a	Clutch Control Lever Screw	...	...	0	1
BS 143	Gear Operating Rack	...	6	0		Lock Nut	...	...	0	1
BS 144	Quadrant Bush	...	1	0	CS 108	Split Pin	...	doz.	0	6
BS 145	" Cover Plate	...	0	3	CS 118	Clutch Centre Washer	...	...	0	1
BS 146	" Bolt	...	0	3	CS 143	Pulley Locking Plate Screw	...	...	0	1
BS 148	Spring Washer for Control	...	0	3	CS 151	Gear Control Washer for BS	...	...	0	1
BS 149	Clutch Operating Lever	...	3	6		146	...	...	0	1
BS 150	" Lever Fulcrum Pin	...	0	3	CS 98a	Collar for Lever Knob	...	...	0	2
BS 151	" Rod	...	0	9	TS 8	Axle Nut	...	...	0	5
BS 152	Cover for Control Boss	...	0	1	TS 31	Pulley Lock Nut	...	...	0	9
BS 153	Clutch Lever Screw	...	0	1	TS 44	Axle Sprocket, $\frac{3}{16}$ in.	...	...	7	6
BS 157	K.S. Cam Rivet	...	0	1	TS 44a	" " $\frac{3}{16}$ ths	...	...	7	6
CS 6	Spring Washer for Fixing Stud	...	0	2	TS 56	Clutch Cork Insert $\frac{1}{8}$ in.	doz.	...	0	5
CS 7	Gear Box Nut	...	0	3	TS 57	" " $\frac{1}{8}$ in.	...	...	0	5
CS 7a	Gear Box Nut, Domed and Plated	...	0	8	TS 62	Main Axle Thrust Washer	...	...	0	8
CS 8a	Oil Plug	...	0	9	LS 19	KS Stop Spring	...	...	0	7
CS 9	Gear Box Cover Stud	...	0	3	LS 94	Thrust Pin	...	...	0	10
						6ft. Clutch Inner Wire	...	...	0	8
						5ft. Sins. Bowden Outer Cable	...	...	2	8

GEARS.—3-speeds and a kick-starter are provided by using only six pinions, these are constantly in mesh, hence there is no danger of damaging the teeth when changing gear.

CLUTCH.—This is of the cork insert type, single plate, and of ample strength for engines up to 200 c.c.

GEAR CONTROL.—The control is built integrally with the box, is entirely enclosed and thus rendered dust and oil proof: it marks a real improvement in this respect. The hand operating lever is fixed by a serrated lock, and can be easily set at any desired angle.



The method of operating the gears can readily be followed from the illustration. This is accomplished by a very neat and simple arrangement. The various gears are obtained by rocking a segment, the underside of which is cut with skew teeth, which engage with corresponding teeth in the gear shifting rod. On the opposite end of this rod, and part of it, is a plate which fits into grooves formed in the middle gear pinions. When the segment is rocked to and fro, it imparts a lateral movement to the two gears already mentioned.

On the underside of this rod or rack are cut notches which engage with a spring loaded plunger to register the various gear positions.

GEAR CONTROL ADJUSTMENT.—The gears are correctly adjusted before they are sent out. The various positions are automatically indexed so that it is impossible for the gears to get out of adjustment. The forward position of the lever gives top

or high gear, then middle, and low gear when the lever is pulled right back.

CLUTCH CONTROL ADJUSTMENT.—The clutch is operated with a lever having a direct pull, which is very easy to handle and sweet in action. It is essential to see that there is $\frac{1}{32}$ " of clearance between the end of the push rod and the ball end of the adjusting screw. A screw and lock-nut are provided so that this necessary clearance may be maintained.

CHANGING GEAR.—When starting from rest, with engine running and gear in neutral, release clutch and pull gear control lever sharply into first or low position, when throttle may be opened to the required amount, and clutch engaged gradually. As sufficient momentum is obtained, clutch and gear control may again be manipulated for second and finally high gear as above.

LUBRICATION.—Use "Speedwell Crimsangere Light" or Wakefield "Castrolase" Light, which are specially prepared for Sturmey-Archer Gear-boxes; $\frac{1}{4}$ lb. is sufficient for a charge. Recharge with half this amount every 1,000 miles. All gears are carefully charged before being sent out, but we advise adding a little more lubricant after the first 500 miles.

DO NOT lubricate the Clutch, as this is designed to run dry.

PARTICULARS OF GEARS.—Gear ratios: 1 : 1.54 : 2.75.

Chain-cum-belt and All Chain drive.

Engine Chain Line, $21\frac{5}{8}$ "

Belt and Chain Line, $1\frac{3}{4}$ "

Pulley, $5\frac{1}{2}$ " diameter for $\frac{5}{8}$ " or $\frac{3}{4}$ " belt.

Chain Sprockets, 35T or 40T and 20T for $\frac{3}{16}$ " chain.

Weight of Gear complete, 12lbs.

N.B.—Can also be supplied with Chain Lines 3" and $2\frac{3}{16}$ ".
If a Shock-absorber is ordered the Clutch Sprocket must have 42 Teeth.