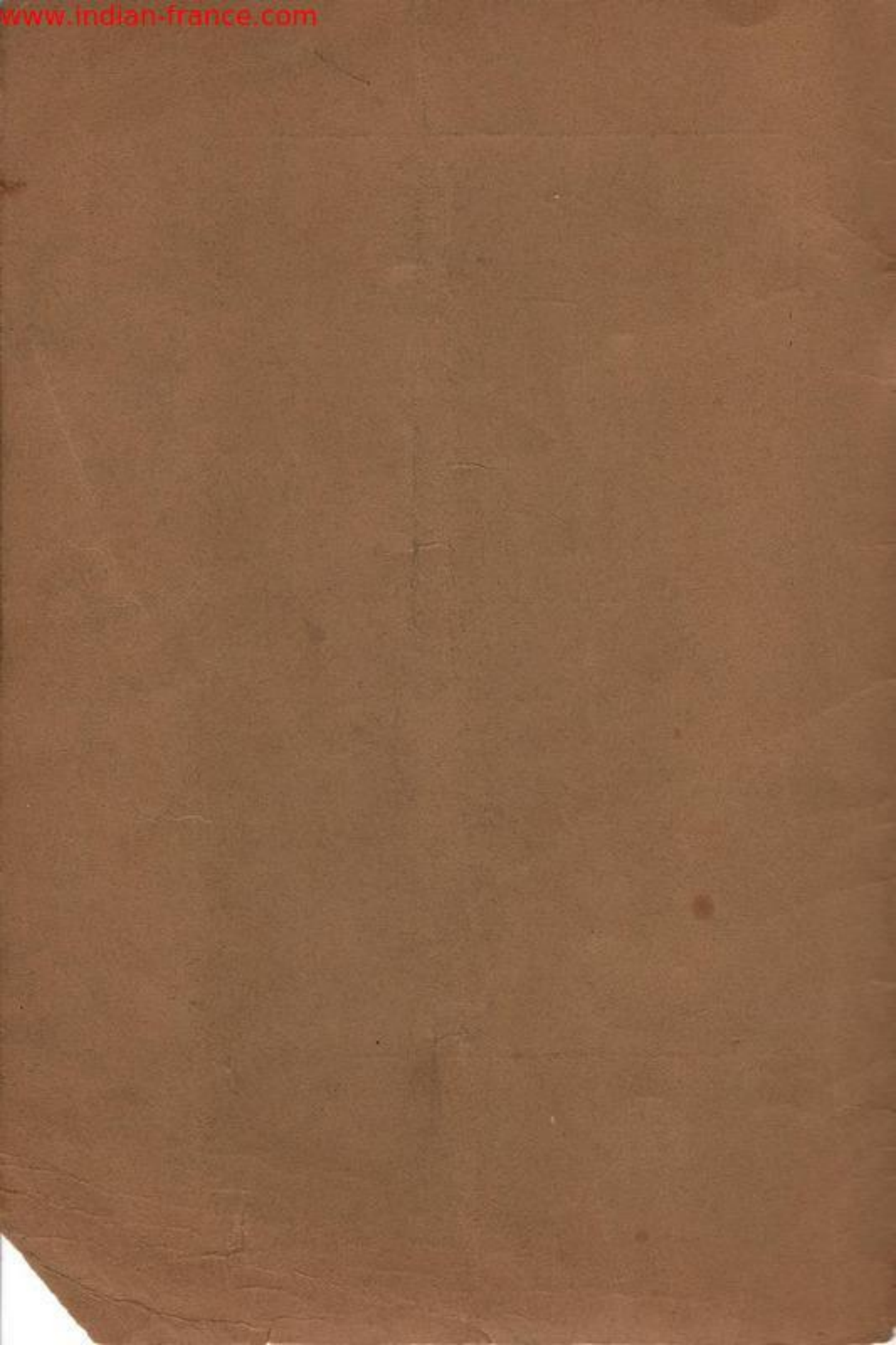


Indian

CHIEF
and
SCOUT

Instruction Book





A Textbook for the
Guidance of the Indian Rider in the Proper
Operation, Care, Maintenance
of his Machine



HENDEE MANUFACTURING COMPANY

SPRINGFIELD, MASS., U. S. A.

Largest Motorcycle Manufacturers in the World

Branches: - CHICAGO, ILL. - LONDON, ENG.

Indian Motorcycles

CHIEF - SCOUT

Operation, Care, Maintenance

Note:—All instructions apply to both Chief and Scout models, unless stated otherwise

HOW TO UNPACK THE MACHINE

In the majority of cases, the customer will take delivery from an Indian dealer and the dealer will attend to the unpacking and setting up of the machine before turning it over to the customer. This is part of Indian Service to owners.

When the purchaser receives the machine direct he should commence to uncrate it by removing the side boards from the left side of the crate. Next unfasten and remove the parts of the equipment found attached to the machine; knock out the stay blocks holding the machine in the crate and lift out the machine.

On the Chief and Scout models, the saddle, footboards and handlebars are tied to the sides of the machine and not assembled on it. Other parts of the equipment are in separate packages attached to the crate. The tools are in a box attached to the top board of the crate.

Take out all parts of the equipment and check them up with the catalog specifications. Check up tools with the printed list in the tool box. The tool box key is inside the tool box.

Any claims for shortage should be made at once to the dealer. Do this before working on the machine, as tools are liable to be mislaid and the dealer blamed unjustly.

SETTING UP THE MACHINE

Attach the saddle front connection to the lug on the top tube. Take out the bolt from the forked top of the spring seat post and lower the saddle bar into the slot in the top of the seat post. Put the hexagon-head bolt through the holes in the forked end of the seat post and put the nut on, just tightening this nut so that there will be no side play of the saddle bar, but not so that the saddle bar binds in the forked end of the seat post.

Put on the footboards. Put on the handlebars and tighten the bracket screws. Put on the hexagon stem nut and washer and tighten them. Turn both grips outward as far as they will go.

The flexible casing for the magneto control (coming from the right side of handlebars) should be passed between the frame head and upper left end of fork sides and brought through to left side of the machine. Push up the magneto breaker lever as far as it will go and attach the end of the control sleeve at A, Fig. 1. Put the casing in the frame clip just below the frame head.

The flexible casing for the throttle control (coming from the left side of the handlebars) should be passed between the frame head and upper right end of fork side and brought through to the carburetor. Push carburetor throttle lever back as far as it will go and attach clevis to throttle as at C, Fig. 1.

The flexible casings are now crossed in front of frame head and should be adjusted so that the handlebars can swing freely from side to side without damaging the casings or exerting a pull on them.

The Throttle casing goes through the clip D, Fig. 1, on the control wire bracket and the magneto casing through the clip B. Make adjustments by moving the flexible casings back and forth in their clips.

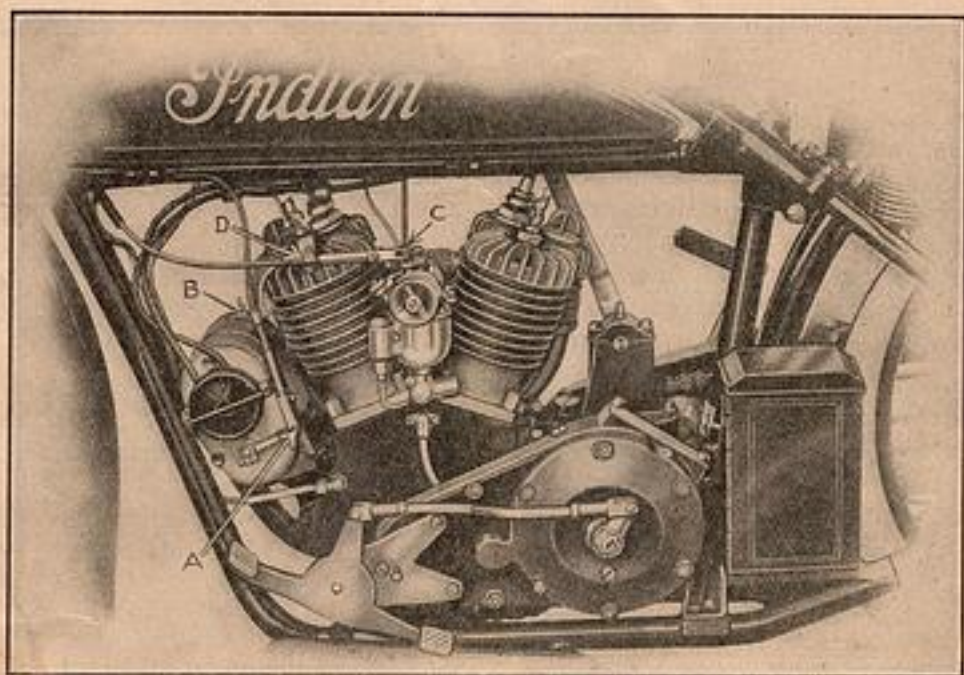


Fig. 1

Attaching the Control Cables. Note that spark control cable is held at clip B and attached at A. Throttle control cable is held at clip D and attached at C. Adjustments are made by sliding cables in clips B and D.

On the Chief models, the external brake is operated by a finger lever on the left handlebar. Attach the clamp of this lever on the handlebar close to the rubber grip. For adjustment of this brake, see page 7, Fig. 2.

Try all nuts and screws before proceeding to start the motor.

FILLING TANKS

After the machine is set up and the equipment fitted, fill the gasoline and oil tanks. The gasoline tank is filled through the rear opening by unscrewing the priming syringe which forms a filler cap. There is a shut-off valve to rear of the gasoline filler opening. When screwed in all the way this valve cuts off the flow of gasoline to the carburetor.

The gasoline capacity of the Chief is 3½ gallons. The gasoline capacity of the Scout is 3 gallons.

The oil tank is filled through the front filler by taking out the screw cap. The oil capacity of the Chief is 3½ quarts and of the Scout 3 quarts.

The hand oil pump is fitted with its barrel inside the oil compartment of the tank. The plunger is locked in position by turning the handle to the right. To release the plunger turn the handle to the left until it is free of the locking device.

FUEL AND OIL

Use only the best grade of gasoline obtainable and strain it before putting into the tank, to catch any sediment and water. A good strainer is a piece of clean cheese cloth, which arrests both water and sediment.

Never fill the gasoline tank in the presence of a flame. It may result in a fire which will injure the machine or yourself. Keep the filler cap tight and the shut-off valve closed when the machine is not in use.

Use Indian Oil, obtainable from all dealers. This is a specially compounded lubricant, manufactured from our own formula and makes the motor run sweeter, hold its power and wear longer. Inferior and unsuitable oils may ruin the bearings and surfaces and cause a heavy repair bill.

Don't put oil in the gasoline tank or gasoline in the oil tank.

The oil is drained from the motor base before leaving the factory, hence it is necessary to **inject two or three pumpfuls of oil into the motor base with the hand oil pump.** Be sure that the pump draws oil and not air. Pull out the handle slowly, noting that there is some resistance when pulling on it. Press down firmly and slowly to send the oil to the motor base.

The Mechanical Oiler commences to deliver the proper quantity of oil as soon as the motor starts, unless the pump is air-locked. To be sure that there is no air-lock after filling the oil tank, test the Oiler as per directions on page 11. **Do not neglect an air-lock or a big repair bill will be the result.**

MANIPULATION OF CONTROLS

The spark advance and throttle are controlled by twisting grips. Turning the left grip inward (toward the machine) opens the throttle; turning it outward (away from the machine) closes the throttle. Turning the right grip inward (toward the machine) advances the spark; turning it outward (away from the machine) retards the spark.

A simple rule to remember is: turning both grips **inward increases** the speed and turning them **outward decreases** the speed.

When the throttle is fully closed, the motor draws a small charge of gas through a by-pass. This charge is sufficient to permit a speed of 15 miles per hour by using the spark grip alone. Opening the throttle gives an increase in speed.

The press lever on the gasoline tank lifts the exhaust valves. On releasing the lever, the valves drop automatically.

The clutch is controlled by a rocker pedal at the left footboard. Pressing down the toe or forward pad disengages the clutch. Pressing down the heel or rear pad engages the clutch.

The brake on the Scout and the internal expanding brake on the Chief are operated by a pedal at the right footboard. The external brake on the Chief is operated by a finger lever on the left handlebar. All brakes release automatically when the pedals or lever are released.

The gear shift lever is at the right of the frame. It has four positions: low, neutral, intermediate and high. The rearmost position is low gear; next forward is "neutral" when no gears are engaged. The third position (just forward of the "neutral") gives the intermediate or second gear, while the foremost position gives high gear. The different gear positions can be distinctly felt when shifting.

WHAT TO DO BEFORE STARTING

Put the machine on the stand.

Unscrew the gasoline needle shut-off three or four turns. Draw up on the plunger of the priming syringe in the filler opening and unscrew the syringe. Open the priming device (on side of Chief cylinders, cups in head of Scout cylinders) and inject a charge into each cylinder with the syringe. (This is necessary only in cold weather.) Close the priming devices.

Press down on the heel pedal to engage the clutch and have the gear shift lever in "neutral."

If you have not already done so, inject two or three pumpful of oil into the motor base with the hand oil pump. Be sure that there are no air-locks in the oiling system.

STARTING THE MOTOR

Lift the valves by means of the press lever on the gasoline tank. Place the foot on the starter crank, seeing that it meshes with the ratchet pinion, and press down quickly and firmly. When the crank is half way down, release the exhaust valve press lever but continue the thrust on the starter crank until it reaches the bottom.

If the motor starts, open the throttle a little to warm the motor but not so much as to cause it to race. Release the starter crank, when it will come up against its stop. Disengage the clutch by pressing down on the toe pedal.

When the motor will not start or misfires when running, see page 16. When the motor warms up, turn the starting stem until its pin fits into the slot in the guide, which is the normal running position for the stem.

Weather conditions affect ease in starting and more than one stroke of the starter may be necessary. Relieving the compression (by lifting the exhaust valves) allows the motor to be cranked faster, while the gasoline injections cut the oil and loosen the piston rings.

Don't open the throttle wide for starting, as this will cause the motor to race. Racing a motor is the worst abuse that can be inflicted on it and should never be permitted at any time.

STARTING THE MACHINE

The clutch must be disengaged before starting or shifting gears. Taking the machine off the stand, mount the saddle and draw back on the gear shift lever until low speed is engaged. The gears will engage easily when the lever is properly operated; it is not necessary to force them in mesh. Advance the spark fully and open the throttle slightly, at the same time pressing gradually down on the heel pedal. The motorcycle will then move off on the road.

Always operate throttle and clutch simultaneously when getting the machine under headway. When the motorcycle is moving on the road, close the throttle to slow it down to the speed desired.

Do not engage the clutch suddenly, as it will stop the motor.

Always start on low gear, as it imposes the least strain on the driving mechanism.

If the machine runs jerkily, disengage the clutch gradually by pressing down on the toe pedal until the jerking is eliminated. The clutch must serve as a cushion for the stream of power impulses produced by the motor explosions and transform this power into a smooth drive to the rear wheel. Experience will quickly indicate what position of the rocker pedal will give the best results.

SHIFTING THE GEARS

The clutch must be disengaged before shifting gears. Neglect of this may cause breakage of some part of the driving mechanism or transmission. Disengagement must be complete in order to have a proper shift.

SHIFTING UP—Press firmly and quickly on the toe pedal to disengage the clutch. Draw back on the gear shift lever to engage low gear. To shift to second (intermediate) gear, close the throttle and simultaneously disengage the clutch. Move the shift lever past the "neutral" point to the intermediate gear position and immediately engage the clutch by pressing down on the heel pedal. Open the throttle to speed up the machine. To shift to high gear, proceed as above, except that the gear shift lever is moved to the foremost position.

SHIFTING DOWN—The speed of the motorcycle must be reduced by partially closing the throttle before a shift is made. Disengage the clutch and shift quickly to the next lower gear when the clutch is immediately engaged again. Shifting to a lower gear should be done the instant the motor shows signs of laboring, as when ascending a steep hill, going through deep sand, etc.

If the speed of the motorcycle is not reduced when shifting to a lower gear, heavy strains are set up on the whole machine when the clutch is engaged.

After getting into high gear, regulate the speed of the motorcycle by the throttle. **Always drive with the spark as far advanced as possible without causing the motor to knock.** If knocking occurs, slightly retard the spark by turning the right grip outward, when the knocking will cease.

ADJUSTING THE BRAKES

The Chief models are fitted with an improved extra heavy and powerful brake as illustrated. This internal expanding brake has a range of action and braking surface greatly in excess of every ordinary requirement so as to positively and quickly take care of any emergency. By a simple adjustment to the brake band operating lever the brake action may be controlled to harsh and quick action for side car service and smooth and gradual action for solo work.

TO ADJUST BRAKE, CHIEF MODELS—For side car service place rear brake rod clevis in lower adjustment A (Fig. 2) of brake band operating lever. This adjustment is for heavy duty service and gives harsh, quick action. For solo service place rear brake rod clevis in upper adjustment B of brake band operating lever. This provides smoother and more gradual action. To reduce or increase action of either adjustment, loosen or tighten fly nut C on rear brake rod clevis.

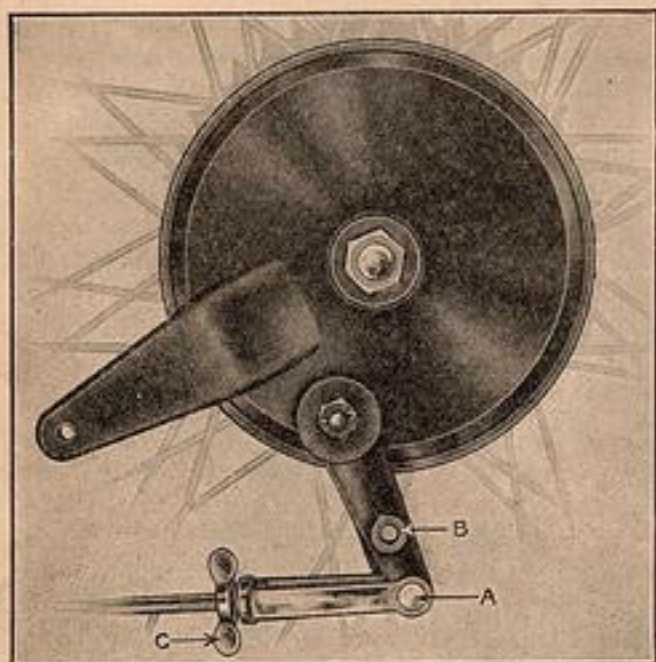
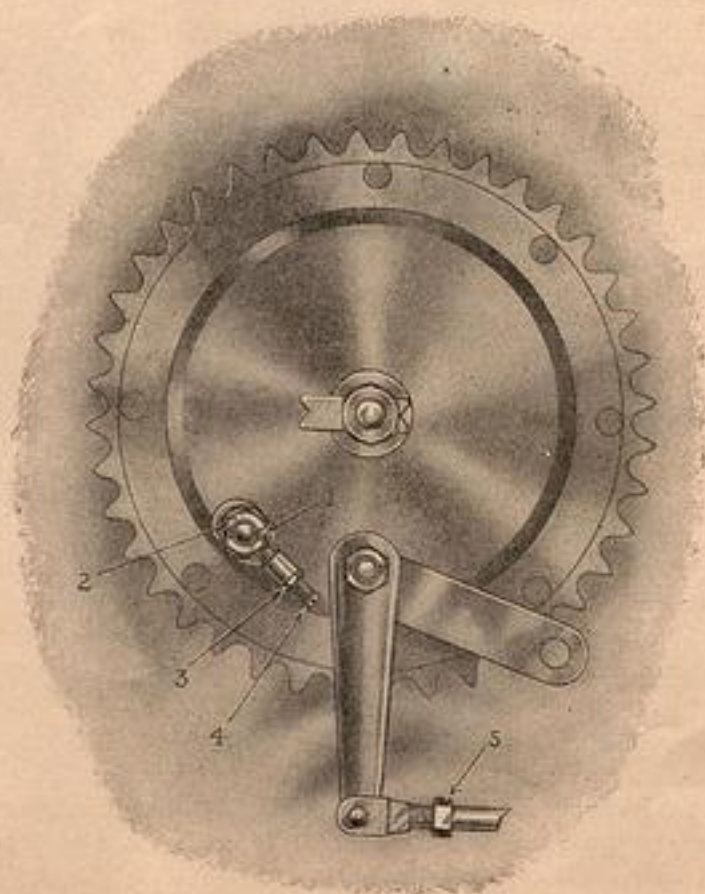


Fig. 2

Adjusting the Brake, Chief Models. Note that all adjustments are made from the exterior.

Fig. 3

Adjusting the Brake, Scout. This adjustment is provided to compensate for wear on the brake lining. After the pin on which nut 2 is threaded has reached the limit of travel it is probable that the brake lining may need renewal.



TO ADJUST THE BRAKE, SCOUT—Remove cotter pin 1 (Figure 3) and loosen nut 2 by turning to left; then loosen lock nut 3 and turn screw 4 to the right three or four turns. Test brake with motor running on the stand. When brake is hard on the pedal should not be less than 1 inch above the footboard.

After proper brake adjustment is made, tighten nuts 2 and 3 and replace cotter pin 1. Whenever the rear wheel has been moved to adjust the drive chain, see that the brake operates properly.

POINTS ON BRAKE OPERATION

Always apply the brake gradually. This avoids unnecessary strain on the tire and wheel and is more effective. Locking the wheel is not good braking; a motorcycle is brought to a stop quicker by gradual application of the brake than by locking it suddenly.

Never apply the brake without first disengaging the clutch, closing the throttle and retarding the spark.

Test the brake occasionally while riding and always before starting on a trip. When an emergency arises, you need the brake and you will have no time to fix it. You cannot pay too much attention to your brakes. They are the cheapest and best form of motorcycle insurance.

When descending steep hills additional braking power can be had by engaging low gear and letting the motor turn over against compression. Bring the machine practically to a stop before doing this.

Keep all brake nuts tight and see that all cotter pins are in place. Put a few drops of oil on all working joints once a week. By keeping the brake linkage well oiled and free working, the brakes will always release promptly and there will be no tendency to drag and consume power.

Keep oil away from the brake linings. Examine the linings at regular intervals. When they become worn, have them replaced by your dealer.

When any brake is released it should not drag on the drum. To test for dragging, spin the wheel by hand with gear in neutral and clutch engaged. If the wheel does not spin freely, there is dragging. Adjust the brake to overcome this.

THE SPRING SEAT POST

The Indian Spring Seat Post is adjustable to the weight of the rider. If the seat post seems to strike bottom in going over bad bumps it will be necessary to increase the tension on the spring inside the seat tube. If the saddle seems to ride hard, it will be necessary to decrease the tension of the spring.

To Adjust the Tension: Take out the bolt A, Fig. 4, and swing the saddle bar S and saddle forward. Unscrew the plug B carefully and pull the seat post out. At the

lower (threaded) end will be found tension nut D and lock nut C. The position of these nuts on the threaded end gives the correct adjustment for the weight of the rider.

If the seat post seems to strike bottom, nuts CD should be lowered on the threaded end. Thus, if with the nuts at position 1 (Fig. 4) the post "bottoms," they should be run down the threads until they are near position 2. If at position 2 they are not satisfactory, they should be run down toward position 3. At this latter position the seat post is set for heavyweight riders.

If the seat post is too rigid, run nuts CD upward along the threads (toward position 1) until the correct adjustment is obtained. It may be necessary to make the adjustment two or three times before it is satisfactory for the individual rider. In all cases, the hexagon plug B must be screwed home before trying the adjustment.

Lubrication: Two or three drops of oil should be put around the spring seat post

at the hexagon plug B every week or so. At least once a season, the seat post and the tension spring G should be removed and lubricated with heavy grease.

The saddle should be placed on the seat-bar so that the saddle springs are parallel with the seat-mast. In this position it will afford the maximum of comfort.

ADJUSTMENT OF MECHANICAL OILER

The Indian Mechanical Oiler is driven by worm gear from the motor. It delivers a positive charge of oil to the motor, the quantity being proportionate to the speed and variable to meet road conditions.

The oiler is entirely automatic in its action and is adjusted at the factory to feed sufficient oil for average operating conditions. Ordinarily, it will require no attention from the rider and will guarantee positive lubrication of the motor while there is oil in the tank. The oil compartment should be filled daily to ensure ample lubrication for emergencies.

The Mechanical Oiler can fail to pump oil only

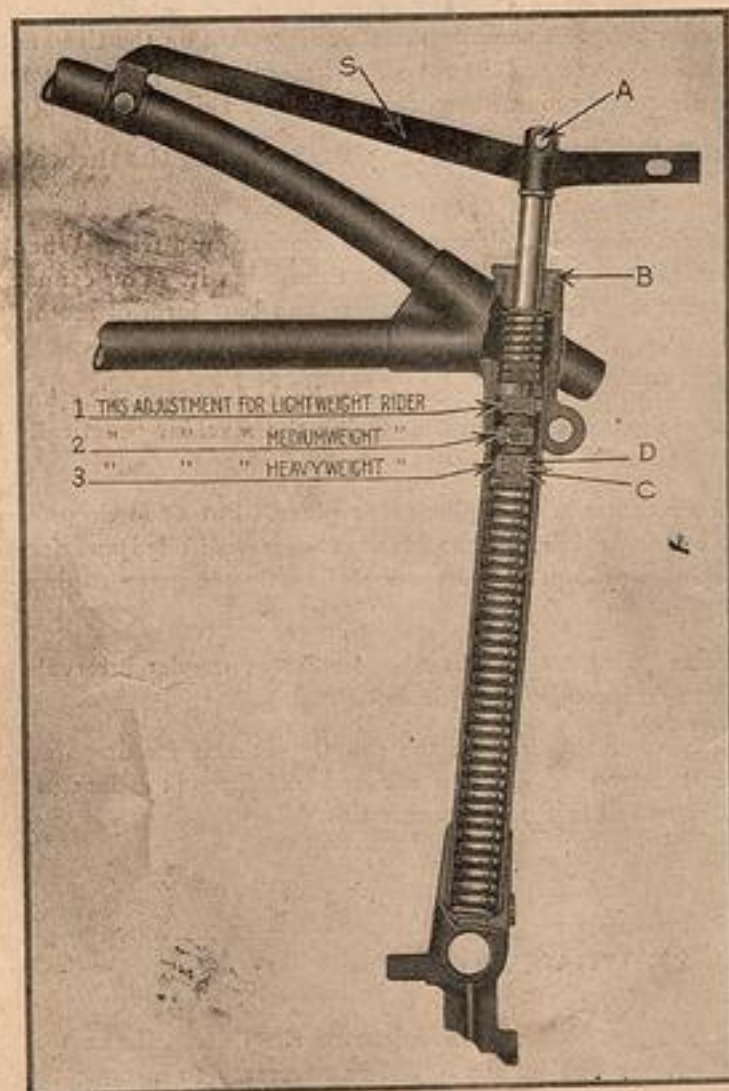


Fig. 4

Adjustment of Spring Seat Post. For detailed instructions see page 9

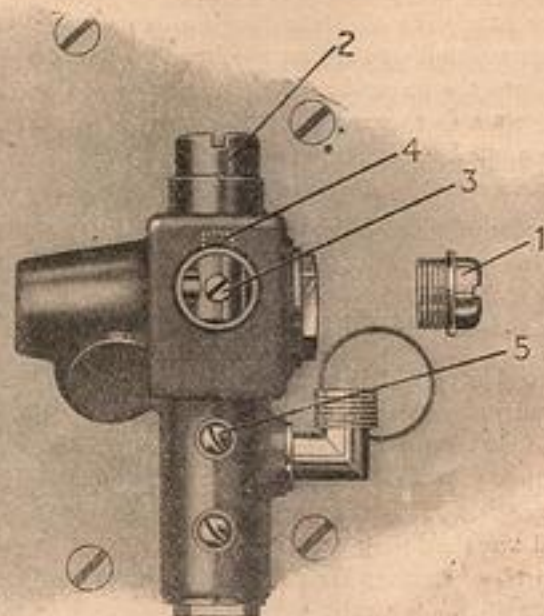


Fig. 5

Adjustment of Mechanical Oiler. If nature of the country where the motorcycle is operating makes it desirable to alter the oil adjustment, proceed as follows: Remove caps 1 and 2, loosen but do not remove screw 3 and turn screw 4 to the right to increase oil supply or to the left to decrease supply. Screw 4 should be turned not more than half a turn at a time. Tighten screw 3 and replace caps 1 and 2. If adjustment is still incorrect repeat after machine has been ridden and oil level tested.

when the tank becomes empty. When this occurs, the pump draws air and an air-lock forms which prevents oil flowing until the lock is relieved. To do this, fill the tank, remove the small bleeder screw 5, Fig. 5, and run the motor a few minutes until oil flows freely and regularly from this hole. Replace the screw, making sure that it is tight.

If the pipe leading from the tank to the oiler has been disconnected, remove screw 5 to make sure oil is passing.

Continuous smoke from the tail pipe indicates too much oil. When convinced that the motor is over-oiling, the oil pump should be readjusted. Sluggishness of the motor with a tendency to overheat and a falling off in speed and power indicates too little oil.

The crank case is provided with two screw plugs on the lower left side. The upper plug is set at the correct oil level. If, when it is removed, oil flows freely from the opening excess lubrication is indicated. Allow this excess oil to drain off until the proper level is reached. Replace the plug securely. The lower plug is for draining the crank case completely. It should be removed every 500 miles to drain out old, burnt oil. Inject 2 or 3 pumpful with the hand pump after draining.

USING THE HAND OIL PUMP

The hand oil pump is located in the oil compartment of the tank on the right side forward. It is used only for supplying additional oil for speed work, for supplementing

the mechanical oiler when driving on the lower gears in heavy sand, mud or hills and for recharging the motor base with oil after flushing or draining it.

To operate the pump pull upward on the handle at moderate speed to ensure sufficient vacuum to bring oil into the pump barrel. The downward pressure on the handle must be steady and powerful enough to get the oil into the motor base.

If the handle is pulled up quickly, mostly air and a little oil will be drawn into the pump barrel and the rider will be deceived as to what quantity of oil was sent to the motor. There must be considerable resistance to drawing up the handle to ensure oil getting into the pump barrel.

LUBRICATION OF PRIMARY DRIVE

Primary Drive: On top of the casing at the rear is a large screw plug, for putting oil into the primary drive and three-speed gear. Just below the clutch operating arm is an oil level plug. To determine the oil level, remove this plug and see if oil runs out. If not, take out the upper plug and put oil into the primary drive until the oil runs out at the level plug aperture and stops running. The proper level of oil is then obtained. Replace both plugs and see that they are tight at all times.

The oil level in the Primary Drive should be verified regularly; at least once a week, or every 500 miles. This is important.

ADJUSTING THE VALVES

Upon the good condition of the valves depends in a large measure the proper running of the motor. All valves have adjustable tappets to compensate for wear. The intake valves are those nearest the carburetor in each cylinder, while the exhaust valves are those farthest away from the carburetor.

It is important to have the clearance or distance between the tappet and the end of the valve stem correct, if the motor is to run quietly and keep its power and speed. The proper clearance for the intake valve is three-thousandths of an inch. The proper clearance for the exhaust valve is six-thousandths of an inch. **THE MOTOR MUST BE COLD FOR ALL TAPPET ADJUSTMENTS.** No upward pressure should be exerted by the lifter on the tappet and the valve must be fully seated if satisfactory adjustments are to be made.

The exhaust valve expands with the cylinder and the clearance remains the same whether the motor is hot or cold. The intake valve does not expand with the cylinder but when the latter gets hot it lifts the intake valve stem, leaving six-thousandths of an inch between the stem and the tappet.

To inspect the clearance, unscrew the lower half of the dust cover sleeve A, Figure 6 by turning it to the left; then raise the sleeve. Directions for adjusting the clearance are found under Figure 6.

Be sure to tighten lock-nut B on the valve tappet after making the adjustment. Lower dust cover sleeve A and screw it down. Inspect all valve tappets once a week.

Clearance should be accurately measured and not guessed at.

GRINDING THE VALVES

If the motor shows a falling off in speed and power and there is no undue play between the valves and tappets, test the compression by standing on the starter pedal with valves dropped or by pulling the rear wheel over slowly with the clutch engaged.

If the motor turns easily against compression there is a leak past the piston rings or valves. It is usually the valves and is remedied by grinding them.

To remove a valve, unscrew the hexagon cap in the cylinder head directly over the valve. A special wrench is provided which fits these caps. They unscrew to the left.

Unscrew the dust cover sleeve and slide it upward. The valve spring retaining ring is now exposed. Push up on the spring retaining washer with a screw driver to free the retaining ring. This ring is a split ring thus () and fits into a groove in the valve stem.

Stuff a rag or piece of waste in the passage leading to the cylinder to prevent any valve grinding paste entering the cylinder and injuring the piston and cylinder walls. The grinding material is made of fine emery flour mixed with oil to a paste or is a ready mixed grinding compound, which can be bought from your dealer. Place a small quantity of the grinding paste evenly around the seat of the valve and replace the valve on its seat. Insert a screwdriver blade on slot in top of valve head and rotate back and forth a quarter turn, using light pressure. Raise the valve frequently and remove it, cleaning off the paste with gasoline and noting the progress of the work. The seat must be bright all around and the valve face also must be smooth and bright, to ensure tight compression.

After grinding the valve wash it and the seat thoroughly with gasoline to remove all traces of the grinding paste. Be sure to remove the rag or waste from the cylinder passage before replacing the valve.

REMOVING THE CYLINDERS

Cylinders should be removed from the motor at least once every 2,000 miles to inspect for carbon deposit.

Dirt taken in through the carburetor, as well as too much oil, causes carbon to form on pistons and in combustion chambers; this carbon deposit causes overheating and "knocking" and reduces the efficiency of the motor. Unless the rider has had experience in removing carbon, it is advisable to let the dealer do it.

DISMOUNTING CYLINDERS, CHIEF—Detach the spark plug cables and controls and take out the spark plugs. Remove the exhaust tubes. **Great care must be taken in removing the exhaust pipe nuts, as the heat of the exhaust has a tendency to bake them on the cylinder nipple.** Squirt a small quantity of kerosene around each nut and let it remain a short time to loosen the nuts. If the nuts do not loosen readily, then, from the cylinder nipple, run the motor to warm nuts and nipples. Then tap the nuts lightly and use great caution in putting strain on the nuts with the wrench. On the Chief, disconnect the oil pipe from the front cylinder.

Next disconnect the valve lifter rod. Slack the intake manifold nuts and remove the carburetor and manifold. Remove tool box from frame. Unscrew lower dust cover sleeves and remove cylinder cap nuts. Bring piston to the bottom of stroke and lift cylinder forward (front

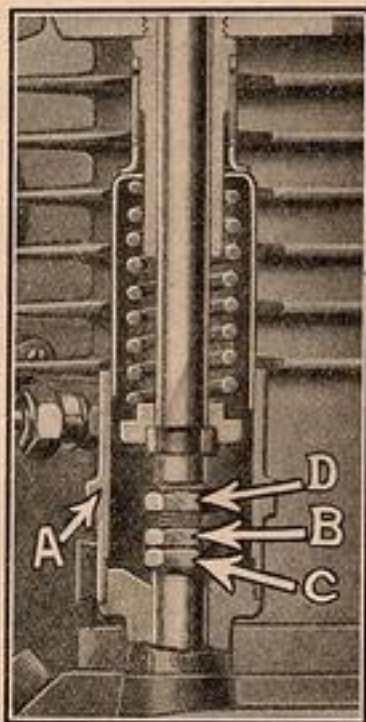


Fig. 6

Adjusting Tappet Clearance. After raising dust cover sleeve A, loosen lock nut B with special wrench in tool kit. Hold nut D with wrench and turn C to right or left until proper clearance is obtained.

cylinder) or toward the rear (rear cylinder) as the case may be. Withdraw toward you.

The gear shift lever should be put in low gear position when removing the rear cylinder.

DISMOUNTING CYLINDERS, SCOUT—Detach the spark plug cables and remove the plugs. Remove the exhaust tubes, taking great care with the exhaust pipe nuts. (See above.) If these precautions are not taken the cylinder head may be broken by too vigorous use of the wrench, especially if the wrench is jerked suddenly.

Next disconnect and remove the exhaust valve relief plunger and the carburetor; then unscrew dust cover sleeves and remove cylinder cap nuts. Bring piston to bottom of stroke and lift cylinder straight upward, then toward you.

REMOVING CARBON

Carbon deposit should be removed with special scrapers which can be bought from the dealer or from an auto supply house. A long screwdriver or wood chisel will do in place of a scraper.

Having removed the cylinders, bring one piston to its uppermost position and put a clean rag under the piston to keep dirt, etc., out of the motor base. Scrape the carbon from the top of the piston and from the ring grooves if any is there. Look at the under side of the piston in each case and remove any carbon which has accumulated. After removing the carbon, wash the piston with gasoline or kerosene. Take out the rags and flush the motor base through the cylinder ports, removing the screw drain plug in the motor base left half while flushing. When the old oil and gasoline is drained from the motor base, replace the drain plug making sure that the leather washer on the plug is intact.

To remove carbon from the cylinders, take out the hexagon cap over each valve and work with scrapers through the openings thus exposed, as well as from below. The carbon will be found in the combustion chamber and valve pockets. It is well to take out the priming cups and clean them at the same time.

Carbon should be removed at least once a season. If the rider has not had experience in removing carbon, this operation should be left to the dealer, who has the necessary equipment for making a first class job of this.

When replacing a cylinder, see that the seat gasket is in good condition. Replace it if it is not; otherwise there will be an oil leak at this point. Be sure that all the surface and the gasket are perfectly clean.

Draw down on the cap nuts evenly, a little at a time. Do not tighten one all the way, then the next and so on. The cylinder may not seat properly if the nuts are not set up evenly. After a day or two try the cap nuts again to see that the cylinders set properly on the motor base.

Reverse the procedure for taking off cylinders when putting them back. Pistons must be at the bottom of the stroke when putting the cylinders on. Enter the pistons carefully in the cylinders so as not to injure the rings.

CARE OF THE CLUTCH

The clutch on both Indian Chief and Scout models consists of a series of discs, alternately of hardened steel and friction fabric. It will operate satisfactorily, provided **proper lubricant** is used and the rider follows the instructions given below.

LUBRICANTS—In cold weather, use a lighter grade of oil than that used in the motor, as Mobil "Arctic" or its equal for the Primary Drive and three-speed gear when Indian medium oil is used in the motor. In warm weather, Mobil A or its equal for the

Primary Drive when Indian heavy oil is used in the motor. Under no circumstances should grease, graphite or a non-fluid lubricant be used.

In very cold weather, the oil lubricating the clutch may have a tendency to thicken when the motor has been cold for some time. This tends to make the clutch "drag" when gears are shifted. However, as soon as the motor warms up, the oil will thin down to its usual consistency and the clutch will act normally.

The clutch itself requires no adjustment. The clutch linkage may require adjusting, from time to time, to give the maximum amount of engagement and release. The outside clutch release worm operating lever A Figure 7, is carried on an eight-sided end of the clutch worm shaft. This worm shaft is also threaded to take a hexagon lock nut and is provided with a slot. The operating arm is connected by a rod to the clutch rocker pedal.

When the clutch is fully engaged, the operating lever A should be in the position shown in the upper part of Figure 7. When the clutch is fully disengaged, the operating lever A should be in the position shown in the lower part of Figure 7. With reference to the hour hand of a clock, in the engaged position lever A should be at "two o'clock," while in the disengaged position, it should be at "ten o'clock."

It should be noted that when in the engaged position (top of Figure 7), the clevis B strikes against lever A, so the lever can go backward no further. In this position,

the clutch release worm should be exerting no outward pull against the front plate of the clutch. If such is not the case, the clutch worm is "riding" and damage to the clutch will result.

The clutch worm should be set so that it does not begin to release the clutch until the operating lever A has travelled to the position of "one-thirty o'clock." This means that there should be a small amount of play before the worm begins to pull against the clutch release plate. If the adjustment is such that the heel pad of the rocker pedal can be raised from $\frac{3}{4}$ " to $\frac{1}{2}$ " above the foot board without beginning to actually release the clutch, there is sufficient allowance for this play. This feature is very important, for by allowing this free movement any wear on the clutch plates is automatically taken up.

The inside of the clutch release worm operating lever is made with eight surfaces to correspond with the eight on the end of the worm shaft. This allows of 16 different positions of the clutch worm in

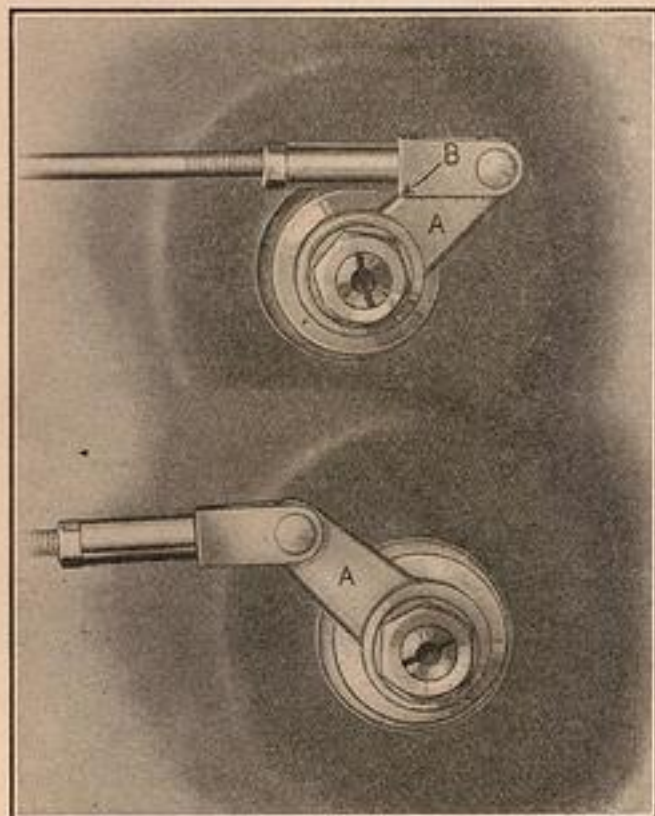


Fig. 7

Position of Clutch Operating Lever. If the clevis rides at B without clutch being fully engaged the clutch release mechanism cannot properly free itself. See detailed instructions for method of correcting this.

relation to the operating lever, but in all cases **the operating lever must remain in the "two o'clock" position.** If the lever is removed and turned around so that its back comes against the hexagon nut, an adjustment of one half of the distance between the flats can be had. To readjust for any wear on the disc surfaces, remove the operating arm A and turn the worm by using a screw driver in the slotted end. It is best to adjust the clutch worm position so that the worm is not "riding," and so that the complete engagement of the clutch plates is permitted thereby. The heel pedal should be fully depressed at this time. Do not change the position of the operating lever (two o'clock).

When the rocker pedal is depressed fully with the heel, the operating arm should be at "two o'clock." The position of the rocker pedal may be changed independently by lengthening or shortening the rod by means of adjustable clevises at either end.

The tension on the clutch pedal can be regulated by means of the castle nut on the end of the shaft. Removing the cotter pin and turning the castle nut to the right slackens the tension of the pedal; turning it to the left increases the tension. The cotter pin should be replaced in the hole in the end of the clutch pedal shaft when the desired tension is obtained. It is well to make this adjustment by one slot in the castle nut at a time.

The machine should be tried on the road after the clutch control adjustment is made to determine if engagement and disengagement is correct.

ADJUSTING THE INDIAN-SCHEBLER CARBURETOR

The Indian-Schebler carburetor is of the lift-needle type, the supply of gasoline to the mixture being controlled by a cam and needle adjustment giving the correct amount of gasoline at all speeds. The primary air for vaporizing the gasoline is taken into the carburetor from below.

The carburetor is properly attached and adjusted to the motorcycle before leaving the factory. It is important, therefore, that the rider study the following instructions carefully to get the best result from the motor. It may be that the factory adjustment might not be the best for abnormal climatic conditions.

If when attempting to start the motor for the first time it does not run perfectly, see first that the ignition is correct. If the difficulty appears to lie in the carburetor, proceed as follows:

INTERMEDIATE ADJUSTMENT—See that the leather air valve "A" seats lightly, then open throttle until lift lever roller rests at "II"; next open knurl button "I" about three turns; turn knurl button "I" to right until mixture becomes so lean that the motor back-fires or misses; then turn "I" to the left until motor runs smoothly.

LOW SPEED ADJUSTMENT—Close throttle and open low speed air adjusting screw "L" about three turns, then turn low speed cam adjusting screw "S-6" to the left until mixture becomes so lean motor backfires or misses. Turn "S-6" slowly to right until motor runs smoothly. If, with this low speed adjustment motor runs too fast, turn "L" to the right or in.

HIGH SPEED ADJUSTMENT—The carburetor is now ready for the high speed adjustment and the throttle and spark should be advanced. The adjustment is now made by the pointer "Z," which, as it moves from "II" toward "3," increases the supply of gasoline; moving the indicator from "3" toward "1," cuts down the flow of gasoline. When the indicator reaches the right point, the engine will run without missing or back-firing. If, when lever "Z" is turned to figure "3," mixture is still too lean, causing motor to backfire, increase tension of air valve spring by turning air valve adjusting screw "12" to the left. The high speed air valve on the side of the carburetor is to be used only for extreme high speed. This valve should be kept closed when adjusting the carburetor.

STARTING—The air valve can be locked in a closed position, which materially helps easy starting. It operates as follows: Pull out knurled button "12," give one-quarter turn. When motor is started, turn button "12" back. This releases air valve "A" and allows it to operate in the customary manner. The locking feature of the air valve does not in any way alter the instructions for adjustment of the air valve.

When first starting the motor if it backfires, on account of the motor being cold, do not readjust the carburetor, but wait until the motor warms up.

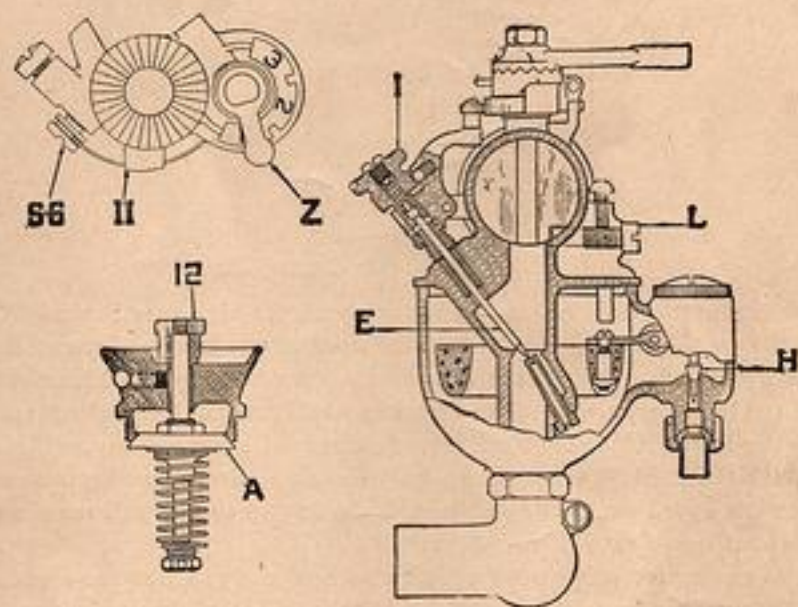


Fig. 8

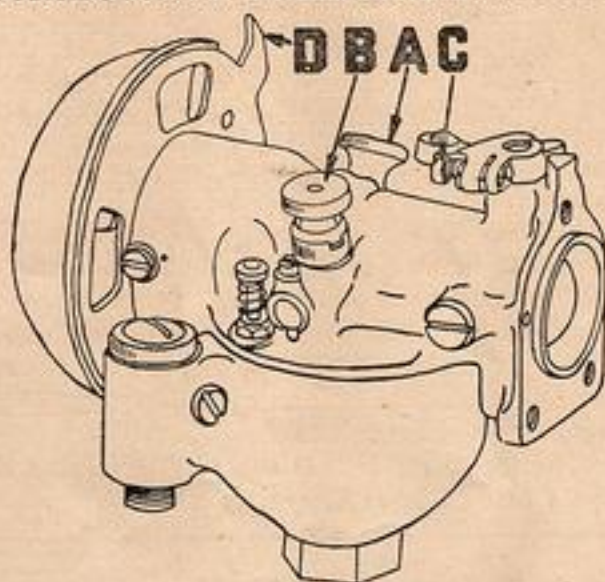
Indian Schebler Carburetor, Showing Construction.
Auxiliary air valve section at lower left; high speed adjustment at upper left. See detailed instructions.

REMEDY FOR FLOODING—Great care should be taken to see that there are no particles of dirt or foreign substance in the tank or line, as any foreign matter impedes the regular flow of gasoline, and causes the carburetor to miss, or backfire. Oftentimes particles of dirt or sediment from the gasoline will lodge under the float valve "H," preventing same from seating properly, and cause flooding.

In order to clean the float valve seat: remove the bowl cap and raise float valve, allowing the carburetor to be flushed thoroughly. To clean out the bowl of the carburetor: remove the bowl by disconnecting the gasoline line and removing the bowl lock nut at the bottom.

The top of the cork float should be level and measure 19-32 inch from the top of the bowl when float valve is seated.

INSTRUCTIONS FOR ADJUSTING INDIAN SCHEBLER DELUXE CARBURETOR



Indian Schebler De Luxe Carburetor

After the carburetor has been installed turn both the high-speed knurl (A) and the low-speed knurl (B) to the right (clockwise) until each of the needles is seated, being careful not to use force after the needle touches its seat. Turn the high-speed knurl (A) to the left one turn and the low-speed knurl (B) one and one-half turns. Close the throttle and adjust the throttle stop screw (C) so that the throttle does not close entirely.

TO START THE MOTOR—Completely close the air choker (by means of lever, D). Lift up on the low-speed knurl (B) and turn it slightly so that it will remain raised. Open the throttle about one-eighth of the way.

As soon as the motor starts open the air choker slightly, about one-eighth way. When the motor is warmed up open the choke completely and turn the low-speed knurl so it will drop back into the small slots.

LOW SPEED ADJUSTMENT—Retard the spark and adjust the throttle stop screw (C) to get the desired idling speed. Adjust the low-speed knurl (B) until the motor runs evenly. In making this adjustment be careful not to raise up on the low-speed knurl. When this adjustment is finished tighten the throttle stop lock screw.

HIGH SPEED ADJUSTMENT—Advance the spark partially. Open the throttle about one-fourth way and adjust for high speed by means of high-speed knurl (A).

NOTE—It is usually advisable to make a final adjustment for maximum high speed on the road under actual road conditions.

When starting the motor after all adjustments have been made do not open the throttle very wide. If at any time the motor does not start after four or five kicks, open the air choker part way.

REMEDY FOR FLOODING—Great care should be taken to see that there are no particles of dirt or foreign substance in the tank or line, as any foreign matter impedes the regular flow of gasoline, and causes the carburetor to miss, or backfire. Oftentimes particles of dirt or sediment from the gasoline will lodge under the float valve prevent it from seating properly, and cause flooding.

In order to clean the float valve seat; remove the bowl cap and raise float valve, allowing the carburetor to be flushed thoroughly. To clean out the bowl of the carburetor: remove the bowl by disconnecting the gasoline line and removing the bowl lock nut at the bottom.

HIGH SPEED ADJUSTMENT—This is made by the knurled knob nearest the airhorn. Advance the spark slightly and open the throttle quickly. The mixture should be rich enough to avoid a back-fire into the carburetor. If not, turn the knob in or out until the adjustment is satisfactory. Turning the knob in thins the mixture; turning it out makes the mixture richer.

When the carburetor is properly adjusted, leave it alone. The proper setting gives maximum power and speed without readjustment.

GASOLINE STRAINER—This is situated in the elbow connecting the fuel pipe to the carburetor. It should be cleaned regularly. Take out the small cap-screw on top of the strainer casting and lift off strainer cap. Then remove strainer gauze and wash the gauze and cap carefully with gasoline. Re-assemble the strainer and parts, making sure that the gasket is in place at both top and bottom of strainer cap.

PET-COCK—The pet-cock at the bottom of the float chamber should be opened at frequent intervals to drain off water or dirt.

FLOAT-LEVEL—The top of the float should be 9-16 inch on Scout and $\frac{1}{4}$ -inch on Chief from the face of the casting, when float valve is seated.

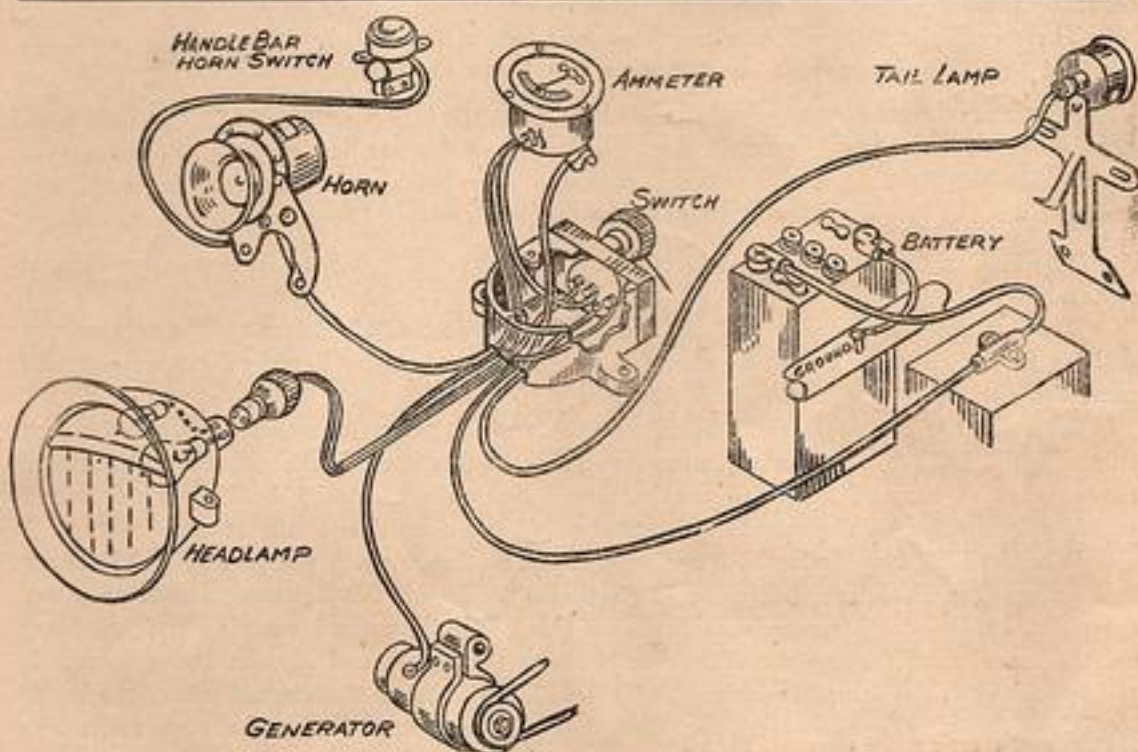


Fig. 10

Wiring Diagram. The method of wiring shown is used on the Chief. The Scout battery is grounded on the generator clamp at the rear of the seat post. The Chief battery is grounded on one of the screws holding the transmission case cover. This screw is slightly longer than the others and is located nearest the battery.

CARE OF ELECTRIC GENERATOR

The Splitdorf DU-5 generator supplies the current for the battery and lights. An instruction book for this generator is found in the tool box. Write the Splitdorf Electrical Company for additional information.

CARE OF ELECTRIC WIRING

All ignition wiring is heavily insulated and thoroughly waterproof. The cable from the front of the magneto leads to the rear spark plug, while that from the rear leads to the front cylinder spark plug. Keep all connections tight and inspect cables occasionally for chafing. If chafing occurs, tape worn places and fasten cable to prevent recurrence of trouble.

The wiring for the lighting system is heavily insulated, also. Keep the connections tight. Watch the ammeter and lights as a check on the condition of these cables.

OPERATION OF LAMP AND HORN

The headlight and tail light on the Chief are controlled by a "light-control switch" contained in a casing also carrying the ammeter. See Fig. 10. This switch has a black knob at the rear; turning this knob to the right lights the 2 candlepower pilot bulb (in the headlight) and the tail light. Turning the knob to the left lights the main headlight bulb (21 candlepower) and the tail light. All lights are extinguished when the knob is in the central position.

The headlight and taillight on the Scout are controlled by independent switches situated at the connections of each light.

The electric horn is of the motor type and is operated by a press switch on the handlebar. Pressing the switch sounds the horn.

WHAT THE AMMETER INDICATES

The Indian ammeter serves as an indicator of what is going on in the entire electric system.

The ammeter shows a range of 10 amperes charge and discharge. The zero of the scale is at the center; all marks to the right indicate that the battery is charging. All marks to the left of the zero indicate discharge.

When motor is stopped and lights not being used, the pointer should cover the zero on the scale. When the motor is running and the lights are off, the pointer will indicate the amount of current sent into the battery. Normally this will be between 2 and 3 amperes, according to the speed of the motor and the condition of the storage battery.

When tail light and pilot bulb are on and the motor stopped, the pointer will indicate half an ampere discharge. With main headlight bulb and tail light on, motor stopped, the pointer will show 2 amperes on discharge side. When motor is running and lights are on, the ammeter will show the difference between the amount of current the generator is giving and what the lamps are taking. This will be shown on the charge side of the scale.

Horn blowing is shown on the discharge side of the scale, as the horn takes 2—2½ amperes.

AS TROUBLE DETECTOR—With motor stopped and lights off, if the pointer shows a discharge, there is a short circuit in the system. Hunt for it. With motor running, if the ammeter pointer jumps quickly or moves continually from side to side, there is a loose connection. If the pointer moves to the charge (right) side, the loose connection is between generator and battery. If it moves to the discharge (left) side, the trouble is between the battery and lamps or horn.

If there is an open circuit between battery and generator (very rare), the ammeter will indicate normal discharge for the lamps which are lighted, whether the motor is running or not. Trace the broken wire and repair immediately. If the open circuit is between the battery and lamps or horn, the ammeter will show excessive discharge when

the lamps are on. If this is not corrected, the lamps may burn out. With motor stopped and lamps switched on, if the pointer shows zero and the lamps do not burn, there is a break between battery and lamps.

A break or open circuit between the main wire and any lamp will be indicated by that lamp not burning, and the ammeter will indicate the discharge for the remaining lamps only.

If when the motor is running and no lights on, the ammeter pointer stays at zero, the driving belt may be found to be loose or broken. The chief generator is gear driven so this is impossible.

MAINTENANCE AND CARE OF BATTERY

If the following points are adhered to in regard to the battery, it will give practically no trouble:

- 1—Add distilled water regularly each week.
- 2—Keep the battery and battery box clean.

AS SOON AS BATTERY IS RECEIVED—Remove the filler plugs (three plugs, one for each cell) and see that the electrolyte covers the plates inside the battery when the battery is standing upright. **The plates must be kept covered.** The battery has filler plugs in the top. The correct level of electrolyte is obtained when the plates are just covered with solution. The battery must not be filled to overflowing.

To restore the level of the electrolyte, add distilled water. It is rarely necessary to add acid and it is far better to have this done by an experienced battery man. Add the distilled water regularly once a week. Don't use tap water, as this contains minerals injurious to the battery. Melted artificial ice will do in place of distilled water, if kept clean.

The water in the battery solution (electrolyte) evaporates when the battery is in use and must be renewed or the plates will be affected. By adding this water regularly each week, the solution will be kept of the proper strength and the battery will always be in first class condition.

Dirt and overflowing acid will ruin a battery, the acid eating through the terminals and injuring the casing. Therefore, keep the battery and box clean.

See that all connections are tight and clean or corrosion will set in and the battery need repairing.

The battery used is the WICO and is designed to be used with an electric generator which supplies the charging current. It may sometimes happen that more current is used in burning the lights and sounding the horn than is put into the battery by the generator. This will gradually exhaust the store of current in the battery until the lights are dim, showing that the voltage of the cells is less than normal. If running the motorcycle and thereby charging the battery when in this condition does not bring the battery back to a serviceable condition of charge, take it to a charging station. Your motorcycle agent may have facilities for charging; if he has not, he can probably direct you to a man equipped for this work.

If a battery has been turned upside down in shipment and the electrolyte spilled, it is best, wherever possible, to take it to a battery man for refilling. The batteries are so constructed that they do not leak when turned on their sides, but they cannot be left in an upside-down position indefinitely, as sometimes happens in shipment, without loss of the electrolyte.

All the connections on the top of the battery are of lead alloy and, therefore, not affected by contact with the electrolyte. If a terminal wire should become broken and it is impossible to take the battery to a battery repair man, who has a lead-burner outfit, a small brass machine screw (size 8-32) can be used in the following manner: Drill a hole in the exact center of the terminal post, using the round part as your circle, with a drill (size No. 28). It is not necessary to tap a thread in it, as the brass screw will cut its own thread. The wire can be twisted around under the head of the screw and then the screw tightened down gently on it.

It is well to have a piece of rubber, completely covering the top of the battery, but not pressing down on the vent plugs so as to prevent the escape of gas. This will prevent any possibility of a short circuit from the metal terminals on the top of the battery to the top of the metal case in which it is placed on the machine.

Do not allow your batteries to stand in a discharged condition. If your machine is not to be in use, for instance during the winter, keep the batteries charged—once every two months is sufficient—and the electrolyte at the proper level by adding distilled water, **not acid**, as above described. There is very little danger from freezing unless the batteries are permitted to stand in a discharged condition—even in temperatures as low as 5 degrees below zero.

If for any reason the battery is removed from the machine or disconnected during the time that the machine is in operation the generator must be grounded to prevent possible injury. This may be done by connecting a piece of wire between the terminal on the generator and any clean unpainted part of the motor or frame.

CARE OF THE THREE-SPEED GEAR

The three-speed gear or transmission is of the progressive, sliding gear type, with direct drive on third gear. Shifting of the gears is made by a long lever at the right side of the machine. The rearmost position gives low gear. The next forward position gives neutral, when no gears are in mesh. Just ahead of the neutral position is that for intermediate or second gear, and the foremost position is high gear.

The oil for the three-speed gear is furnished from the Primary Drive casing (see Page 12). The correct level is determined by the oil-level plug near the rear of the Primary Drive casing. A drain plug is fitted at the bottom of the three-speed gear casing, for draining out the old oil.

Watch oil supply carefully to prevent gears and bearings running dry. Use light cylinder oil only.

FLUSHING THE MOTOR

The motor should be flushed with kerosene every 1,000 miles to loosen the carbon and keep the piston rings free, as well as to cut the old oil.

Have the motor hot when flushing. Disconnect the spark plug cables to prevent accidental firing of the kerosene vapors. Open the priming devices and inject three full syringes of kerosene into each cylinder. This loosens the carbon.

Disconnect the oil pipe from its nipple at the left side of the motor base. Inject at least 10 syringes of kerosene. Reconnect the oil pipe and crank the motor briskly about a dozen times to circulate the kerosene in the motor base. Take out the drain plug in the motor base, crank the motor again a few times while the old oil and kerosene are draining out. Rock the motorcycle a few times from side to side to assist the draining. When you are sure that all kerosene has left the motor base, replace the drain plug.

Send two full pumps of oil into the motor base with the hand pump and crank the motor a few times to distribute the new oil before running the motor. This is important.

CARE OF WHEELS

Keep wheels perfectly trued. A wheel out of true causes rapid tire wear and requires more power to drive the machine. Replace broken spokes as soon as possible. Riding a tire soft causes spokes to loosen and weakens the wheel. Go over all spokes at least once a week and tighten when necessary. In replacing a spoke, be sure that it does not project inside the rim sufficiently to injure the tire.

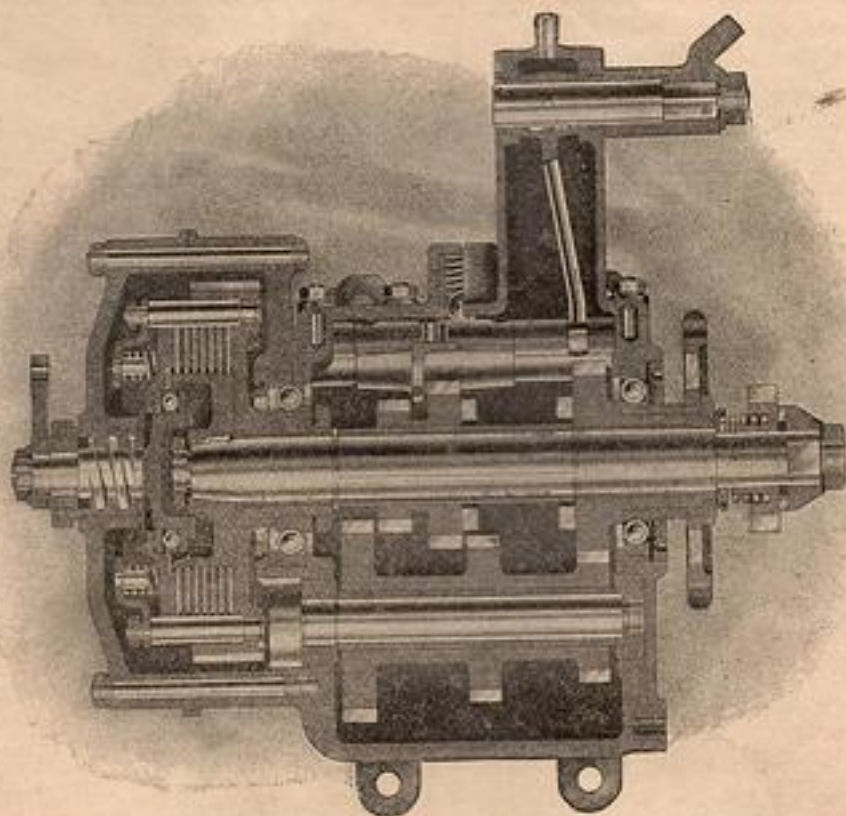


Fig. 11

Cross Section of Three Speed and Clutch showing
assembly of component parts

TO TAKE OUT THE FRONT WHEEL, SCOUT AND CHIEF—Remove the cotter pin from the axle nut on the left side and unscrew the nut. Lift the front forks clear of the ground and pull or drift out the centre axle. The wheel will then be free of the bell cranks. To replace: have the forks clear of the ground, line up the hub centre with the holes in the bell cranks and put the axle in from right to left. Secure with nut and cotter pin. See that wheel runs centrally with respect to the forks.

TO TAKE OUT THE REAR WHEEL, SCOUT—Disconnect the chain and remove it from the rear wheel sprocket. Unscrew the screws on the clip holding the brake on to the lower frame of the motorcycle. Disconnect the brake rod from the rear operating lever by removing the spring pin. Remove the right nut and distance plate from the centre axle and pull out the axle.

In replacing, see that the spool-shaped piece is on the left end of the hub and that it fits properly in the recessed opening. Reverse the operation of taking the wheel out when replacing it.

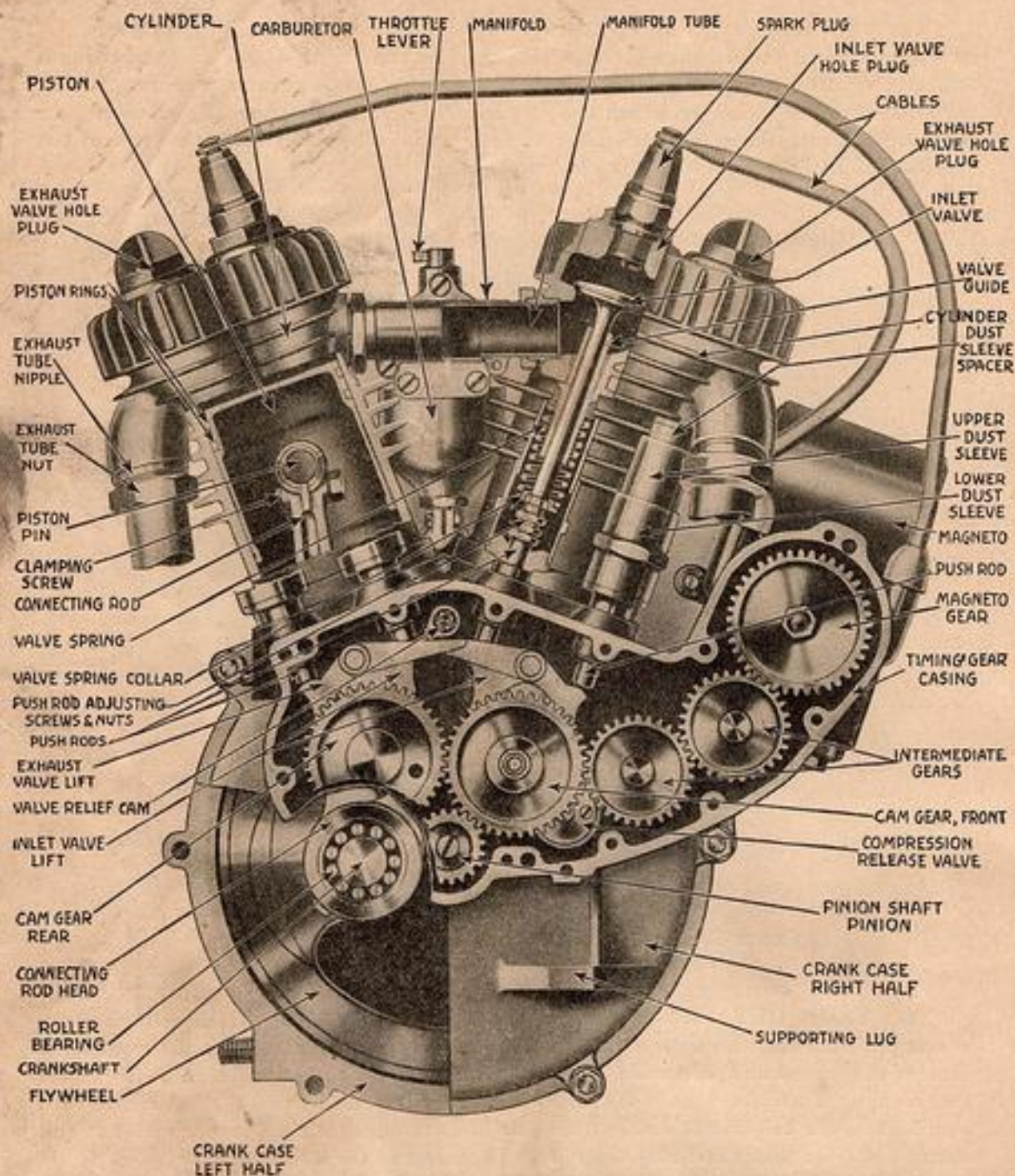


Fig. 12

Sectional view of Scout Motor. The Chief motor is of similar construction. The timing gears of both motors are marked to indicate the point at which each gear meshes with its neighbor when correctly timed. If for any reason these gears are removed they must be replaced as indicated by the marks. The magneto cables for the new Splittorf magneto are fitted same as those shown above, from front of magneto to rear cylinder and vice versa.

TO TAKE OUT THE REAR WHEEL, CHIEF—Disconnect the clevis E, Fig. 2, from the external brake bell-crank and remove the nut F, holding the wire mechanism to the long brake arm. Free the wire mechanism from the brake arm. Disconnect the clevis on the internal brake rod and unfasten the anchor clip from the frame. Take off the nut holding the rear mudguard stay to the slider fork.

On the right side, take off the nut holding the rear mudguard stay to the slider fork, and swing up the rear part of the mudguard. Disconnect the chain. Take off the right axle nut and distance plate and pull out the centre axle. The wheel is now free.

To put in the wheel, reverse the procedure for taking it out.

The adjusting cone on rear wheel bearing of Chief models is a left hand thread.

CARE AND ADJUSTMENT OF THE CHAIN

Keep the chain at the proper tension at all times. This can be determined by lifting the bottom of the chain at its center. It should only lift about one inch if properly adjusted. A loose chain may jump the sprockets and damage spokes and chain guard. Tight chains cause extra wear on the bearings and result in chain breakages.

About every 500 miles, disconnect and remove the chain. Clean it with kerosene thoroughly, then wipe it dry and dip in a mixture of light cylinder oil and graphite. After an hour in the mixture, hang the chain up to drip. When all dripping ceases, wipe off excess mixture and oil and put the chain on its sprockets. Be sure that the clip of the detachable link snaps into proper position.

TO ADJUST THE CHAIN—Loosen the right hand nut on the rear axle and draw the wheel backward until the chain has the proper tension. Revolve the wheel and note that the chain runs true on its sprockets. Adjust the position of the wheel along the axle (if needed) by means of the axle nuts and see that the wheel runs squarely in the frame. Turn the rear wheel (headless) adjusting screws snug against the forked distance plates. Tighten the axle nuts before putting the rear wheel on the ground.

CARE OF TIRES

Keep the tires inflated fairly hard. For the 26 x 3 inch tires on the Scout 30 to 35 pounds pressure is sufficient. For the 28 x 3 inch tires on the Chief 40 pounds is sufficient. These pressures will increase the life of the motorcycle as well as afford greater comfort to the rider.

Riding a tire flat for any distance will ruin both tube and casing.

Look after every cut in the casing. A cut allows water and sand to enter and rot the tire. Clean the cut and vulcanize it immediately. Inspect each tire every few days for cuts, etc.

Be sure to carry a generous supply of tire patches and cement and have them packed against damage from tools in the tool box.

Keep the nut on the valve stem tight against the rim to prevent creeping of the tube. Keep the cap of the tire valve screwed on tightly. If the pump becomes dry or leaks, inject a few drops of light oil in the barrel.

Note: It is not necessary to remove the rear wheel of the Scout to repair or replace an inner tube. Pull the centre axle to the right until the spool-shaped piece on the left end of the hub is free; this leaves a gap through which the inner tube can be withdrawn

and replaced. Be sure the spool-shaped piece is in place when finished fixing the tire.

CARE OF MAGNETO

The Splitdorf S-2 high tension magneto is fitted to Scout and Chief models. It should be oiled with magneto oil every 1,000 miles. The contact-breaker points should be examined at least once a month and cleaned and dressed if necessary. Use 00-grade sandpaper for dressing the points. Never use emery cloth; it leaves particles of emery on the points which cause trouble.

Full instructions for the adjustment and care of the magneto are found in a special book in the tool box of the motorcycle.

CARE OF SPRING FORK

The springs in the spring fork are packed with grease when assembled to ensure smooth and noiseless action and to prevent rusting. Squeaking of the springs indicates that the lubricant needs renewing. To grease the springs, jack up the frame with a box to take the weight off the front wheel and pry the leaves apart with a sharp screwdriver. Insert grease between the leaves with a thin knife. This should not be necessary oftener than twice a season.

Turn down the T-handles on the lubricators fitted to the bell-cranks of the front fork at frequent intervals. When these lubricators are empty they should be unscrewed and refilled with cup grease.

GENERAL MAINTENANCE OF THE MOTOCYCLE

Keep the machine clean. Give it this attention regularly, as it will keep the mechanism at its best working condition. The appearance of the machine also reflects on the rider.

Use kerosene oil on all enameled parts, not gasoline. Gasoline is used to remove grease and dirt from the motor base, motor, etc. Enameled surfaces which are washed with gasoline lose their lustre and are more susceptible to tarnish. **Do not use gasoline or kerosene in the presence of an open flame or a fire may result.**

The use of a good nickel polish will prevent rusting of plated parts. Kerosene can be used on such parts if polish is not available. A clean motorcycle adds to the pleasure of operating it and also makes it worth more when offered for sale.

Try all nuts and bolts at least once a week. Any loose parts will be detected by regular inspection of this kind and will prevent trouble on the road.

WHAT SPARES TO CARRY

For average riding, in addition to the usual tire and tool kits, take some spare chain links and connectors, a spark plug, an extra valve, a roll of tire tape, copper wire and sandpaper.

For long trips, in addition to the above, carry a spare inner tube well wrapped and NOT placed in the toolbox, a few cotter pins, miscellaneous nuts and washers, a tire valve

inside or plunger and an inside blowout patch. It is not necessary to load the machine with parts enough to rebuild it. Genuine Indian parts can be obtained from Indian dealers in every important city and town.

GEAR RATIOS

SCOUT

SPROCKETS			RATIOS		USES
Front	Rear	High	Intermediate	Low	
17	40	6.04	9.48	14.92	Sidecar, heavy service
19	40	5.40	8.48	13.34	SIDECAR STANDARD
20	40	5.13	8.05	12.67	Solo, heavy service
21	40	4.88	7.66	12.05	Sidecar, light service
22	40	4.66	7.32	11.51	SOLO STANDARD
					Solo, light service

CHIEF and BIG CHIEF 74

17	40	5.99	9.40	14.79	Sidecar, heavy service
17	36	5.39	8.46	13.31	
19	40	5.36	8.42	13.24	SIDECAR STANDARD
20	40	5.09	7.99	12.57	Solo, heavy service
21	40	4.85	7.61	11.98	Sidecar, light service
19	36	4.82	7.57	11.91	SOLO STANDARD
22	40	4.63	7.27	11.44	Solo, light service
20	36	4.58	7.19	11.31	Solo, for speed
21	36	4.36	6.85	10.77	
22	36	4.16	6.53	10.28	Solo, for speed on level road only.

The figures under "ratios" give the number of revolutions made by the motor for one by the rear wheel. While the standard gearings of Scout and Chief are approximately the same it must be remembered that the 26 inch wheels of the Scout travel less distance per revolution than the 28 inch wheels of the Chief. The Scout is therefore geared lower in relation to distance traveled per revolution of the motor than is the Chief.

The gearings given as standard are intended for average service and are equipped on all machines shipped from the factory. It is a common fallacy to suppose that high gear ratios are productive of maximum speed. This is only true to a certain point. Too high a gear will reduce rather than increase the speed of the machine and will also cause the motor to labor and overheat. A comparatively low gear is always more economical and efficient.

The same standard gearings are equipped at the factory on both 61 cu. in. and 74 cu. in. Chief models but the Big Chief 74 can be equipped with a somewhat higher gear than the 61 for service as indicated in the above table.

TROUBLE SAVING TIPS

Don't race the motor on the stand. This abuse has ruined more motors than thousands of miles of road use.

Don't use inferior oils; use the oil recommended. It keeps the motor in good shape.

Don't neglect to oil all parts needed.

Don't forget that the motorcycle will serve you in proportion to the way you operate it and care for it.

Don't forget that a clean motorcycle means one that runs better and doesn't need adjusting on the road.

Don't use counterfeit Indian parts. They are cheap material, wear out quickly and void the guarantee. Genuine Indian parts are better and cheaper in the long run. They are obtainable from authorized Indian dealers only.

Don't fail to keep tires properly inflated at all times.

Don't spin the rear wheel when starting. Let the clutch in easily. Each time the wheel spins, rubber is torn from the tire, making it easier to puncture and reducing its mileage.

Don't open and close the throttle suddenly. It injures the motor and creates ill feeling against motocyclists.

WHERE TO OIL AND WHEN

Lubricators on Front Bell Cranks—give one or two turns of the T-handle, at frequent intervals. Repack with cup grease when empty.

Chain—Apply a paste mixture of graphite and oil once a week.

Springs—Grease leaves when they squeak. Inject oil through hole in upper part of connecting link once a week.

Spring Seat Post—Two or three drops of oil on post weekly.

Hubs—Pack with grease twice a season.

Joints of all Controls—A few drops of oil once a week.

Transmission—Refill frequently as required.

Wire Controls—Lubricate with vaseline twice a season.

Magneto—See directions in magneto book. A few drops of light oil every two weeks.

THE PRINCESS SIDECAR

(Note: This Indian sidecar cannot be fitted to Scout models.)

The Indian Princess Sidecar should be lined up with the motorcycle so that the motorcycle has a barely perceptible lean AWAY from the sidecar. This lean should be so slight as to be unnoticeable except under careful observation. The purpose of it is to counteract the slight tendency of the machine to steer to the right. The alignment should be done on a perfectly level floor.

ATTACHING AND LINING UP—Have the motorcycle perpendicular. Insert the studs carrying the sockets in the frame lugs (in front of magneto and at rear end of frame) and set in tight. **Grease the sockets liberally**, using cup grease. Place the ball-members in the sidecar frame, rear ball-member in the elongated slot in the left rear part of frame. Attach the long connection bar to the clevis behind the seat post cluster. Put the long connection clamp on the rear cross tube of the sidecar chassis, but do not tighten it.

Bring the sidecar to the machine and connect the ball-and-socket joints, keeping the sidecar wheel perpendicular. Set the ball-and-socket joint nuts up tight. Attach the long connection bar to the clamp on the rear frame member of the sidecar chassis and after verifying the alignment, tighten all nuts.

It is important that the ball-and-socket joints be lubricated. There is a minute play between the sidecar and the motorcycle and this is taken care of by the flexibility of the long connection bar and by the movement of the balls in the sockets. If the ball-and-socket joints are dry they may rust or freeze and the connections become weakened or broken.

The ball-and-socket joints should be examined at regular intervals to see that the lubricant has not dried up.

DRIVING POINTERS—In taking a right hand turn with a sidecar combination, approach the turn at reduced speed, and with the clutch disengaged. At the turn, move the bars to the left and let in the clutch. The outfit will pivot on the sidecar wheel and will go off smoothly in the new direction when the throttle is opened.

To make a left turn, approach at reduced speed with the clutch disengaged. Keeping the clutch disengaged, move the bars to the right and when the turn has been completed, engage the clutch and proceed. If these directions are not complied with the sidecar will tend to rise off the ground when making a right hand turn and will tend to skid to the right in making a left hand turn. Neither of these are good for tires or frame.

Don't do monkey stunts with a sidecar, such as riding with the car in the air. The sidecar is meant to ride with the wheel on the road. Lifting it puts an enormous strain on the tires and on the frame for which they were never intended.

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