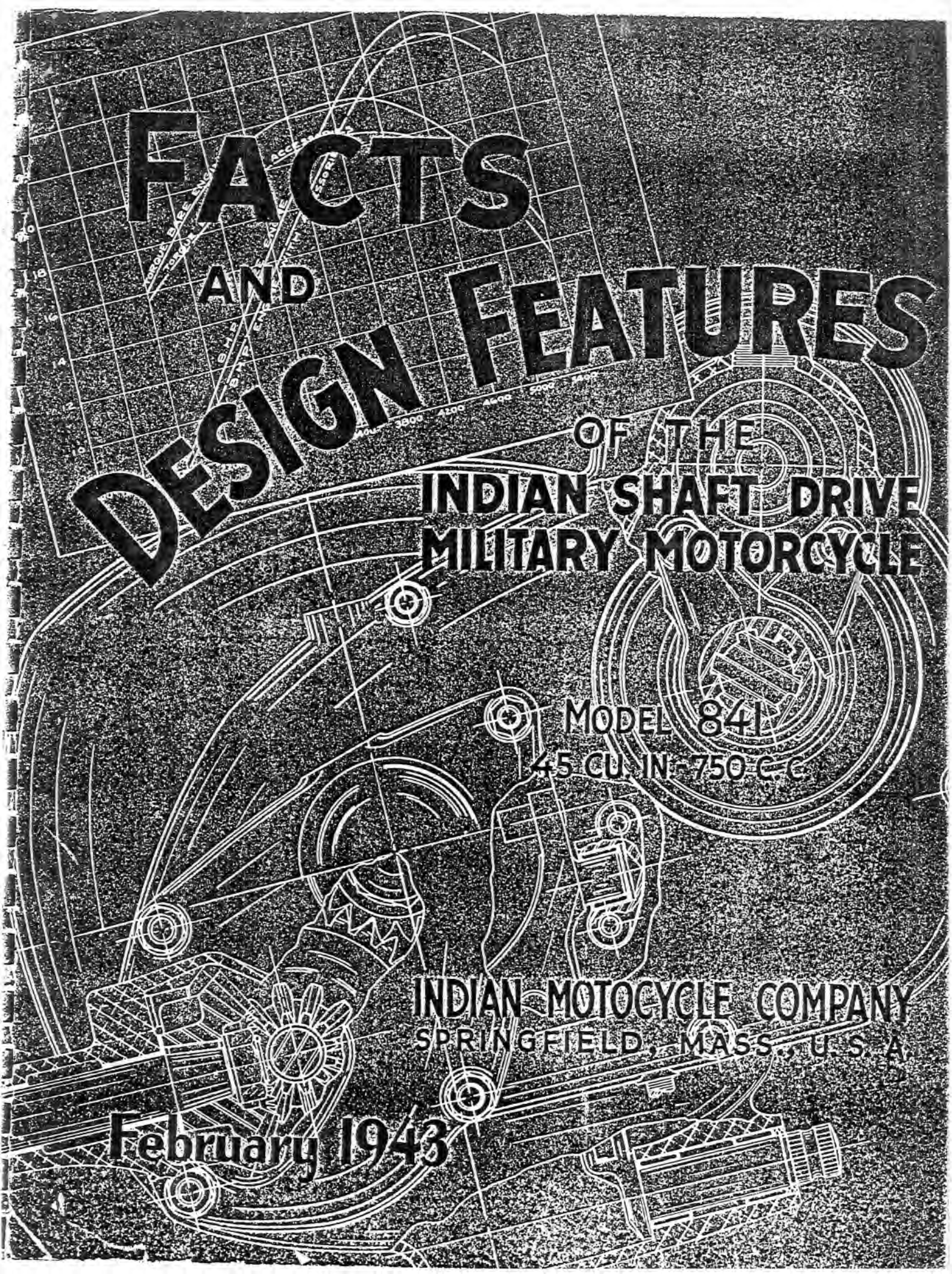
FACTS AND DESIGN FEATURES

OF THE INDIAN SHAFT DRIVE MILITARY MOTORCYCLE

MODEL 841

45 CU. IN. - 750 C. C.



INDIAN MOTOCYCLE COMPANY
SPRINGFIELD, MASS., U. S. A.

February 1943

THE NEW INDIAN MILITARY MOTORCYCLE

Designed for extraordinary Serviceability

Adaptability - Simplicity - Dependability

(1) ✓ This shaft drive Indian Military Motorcycle has been designed by the Indian Motocycle Company with the cooperation of the War Department of the United States of America.

(2) ✓ It is designed to provide a motorcycle that will meet and withstand the rigorous demands of modern warfare and to be easily adaptable to every geographical terrain or climate wherein the use of the military motorcycle would be of advantage.

(3) ✓ From observation in the field . . . . . experience gained through military maneuvers . . . . knowledge gained from previous motorcycle design . . . . it is designed to meet all military requirements and overcome the objectionable design characteristics of other motorcycles.

(4) ✓ Basically, this new "INDIAN" is outstanding in its simplicity, rugged construction, serviceability and adaptability.

(5) ✓ It is designed to accept as many as possible of the standard repair materials in use by our Armed Forces . . . . . to reduce the necessity of maintaining large additional stores of service materials.

(6) ✓ It is designed so that it can be maintained with a minimum of special tool equipment.

(7) ✓ How successful Indian Motocycle and War Department engineers have been in producing a military motorcycle to meet these qualifications is shown in our field reports where production models have already established its merits. Reports have been generally enthusiastic with only a minimum of minor criticism.

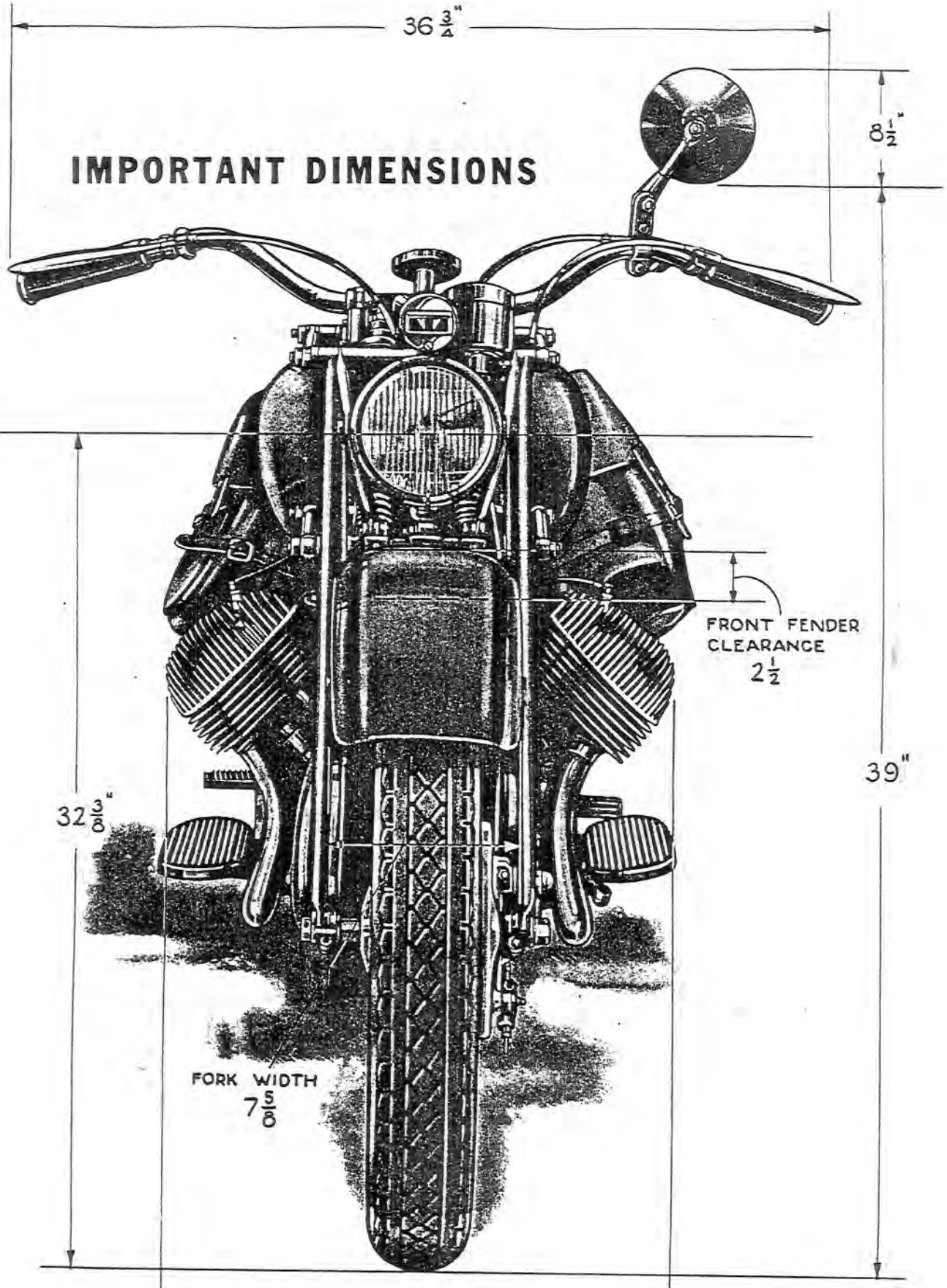
(8) ✓ From field reports and constant vigilance in manufacturing processes, Indian is constantly endeavoring to improve this newly designed motorcycle to make it even more desirable as a mechanized vehicle of War.

The Indian Motocycle Company acknowledges and appreciates the aid of all those of the War Department of the United States of America who have assisted in the development of this motorcycle.

INDIAN MOTOCYCLE COMPANY
Springfield, Mass. U. S. A.

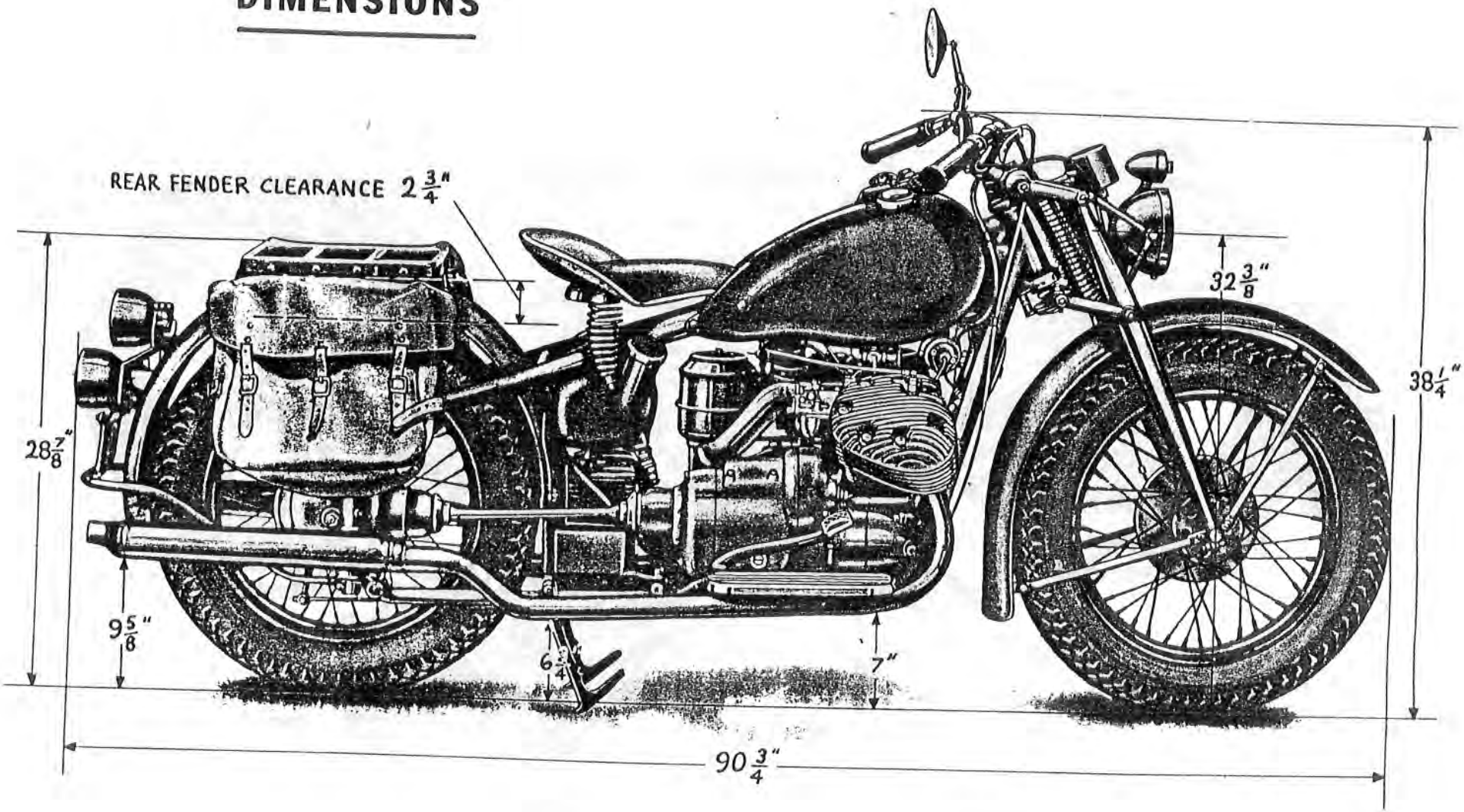
Printed in U. S. A.
February, 1943, M677

IMPORTANT DIMENSIONS



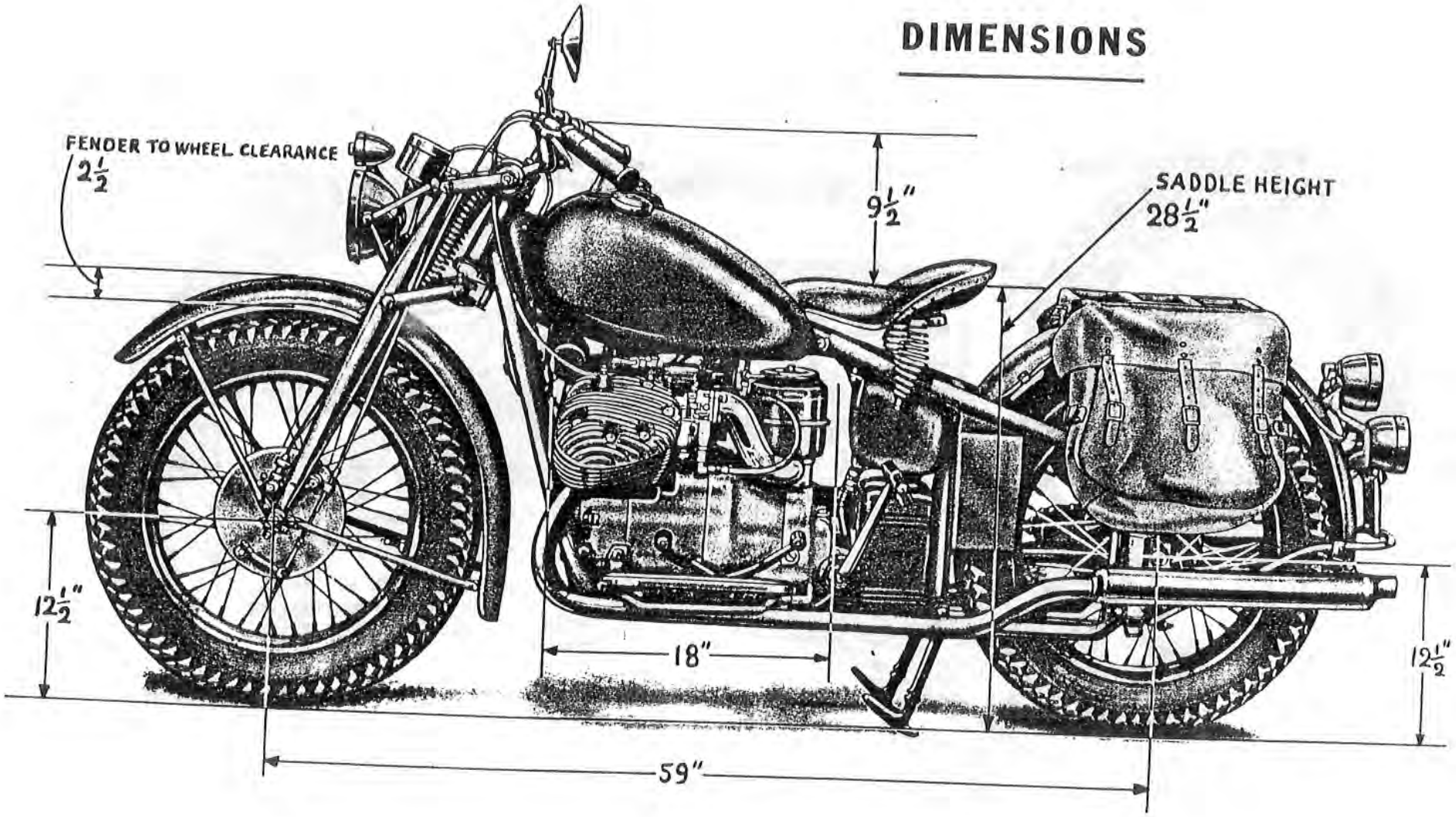
MODEL 841 — FULL FRONT HEAD ON VIEW

DIMENSIONS



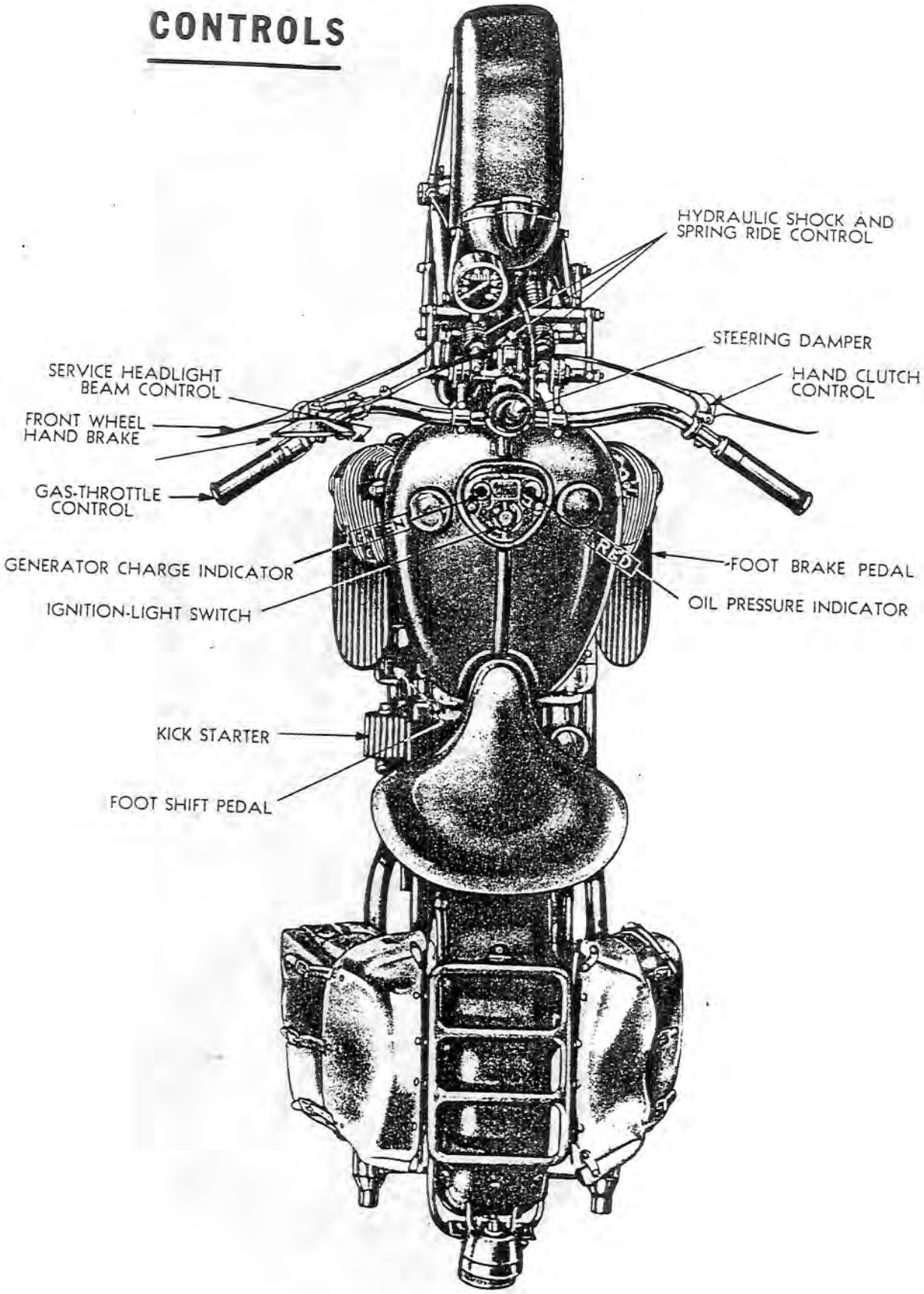
MODEL 841 — FULL RIGHT SIDE VIEW

DIMENSIONS

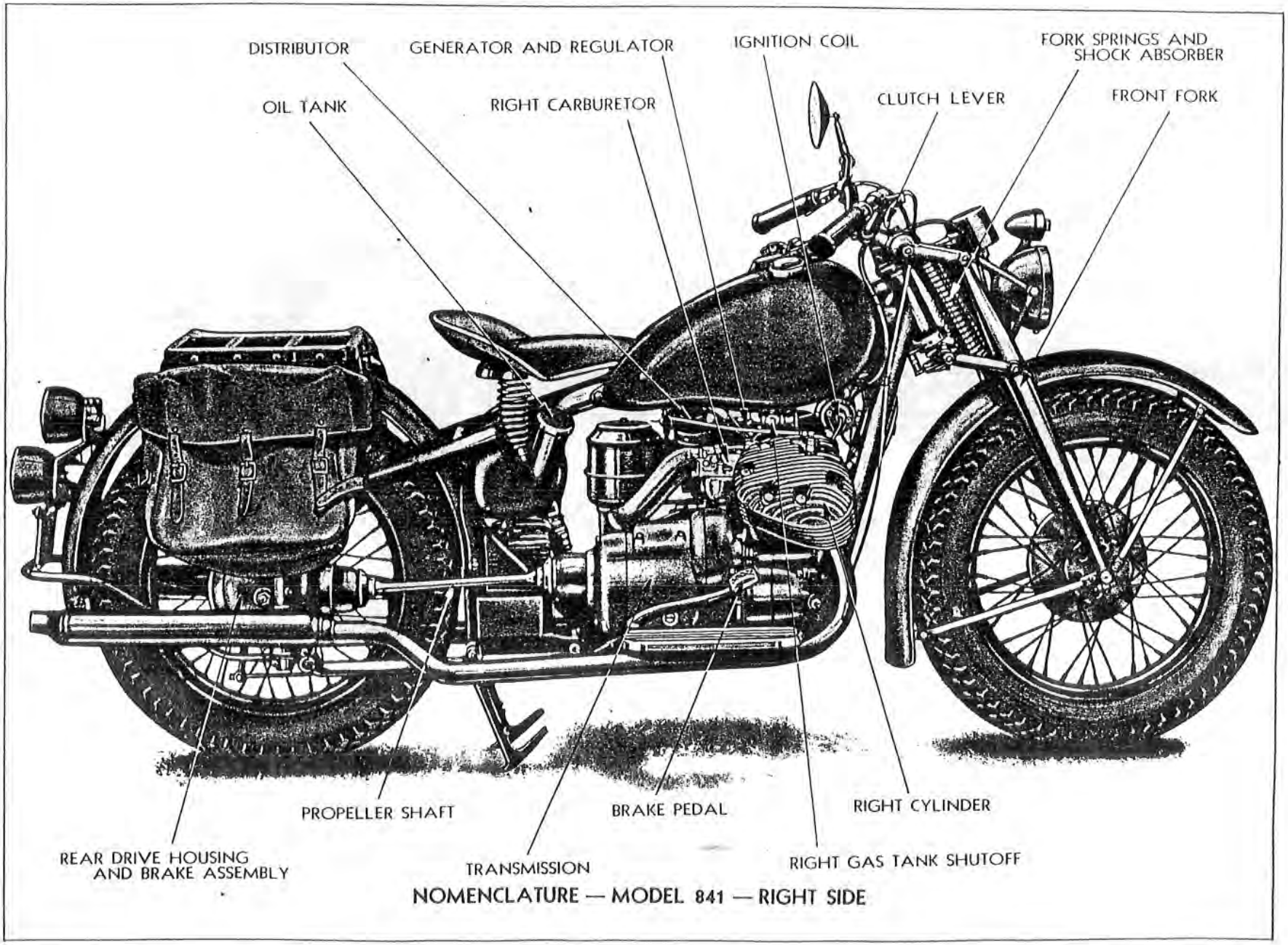


MODEL 841 — FULL LEFT SIDE VIEW

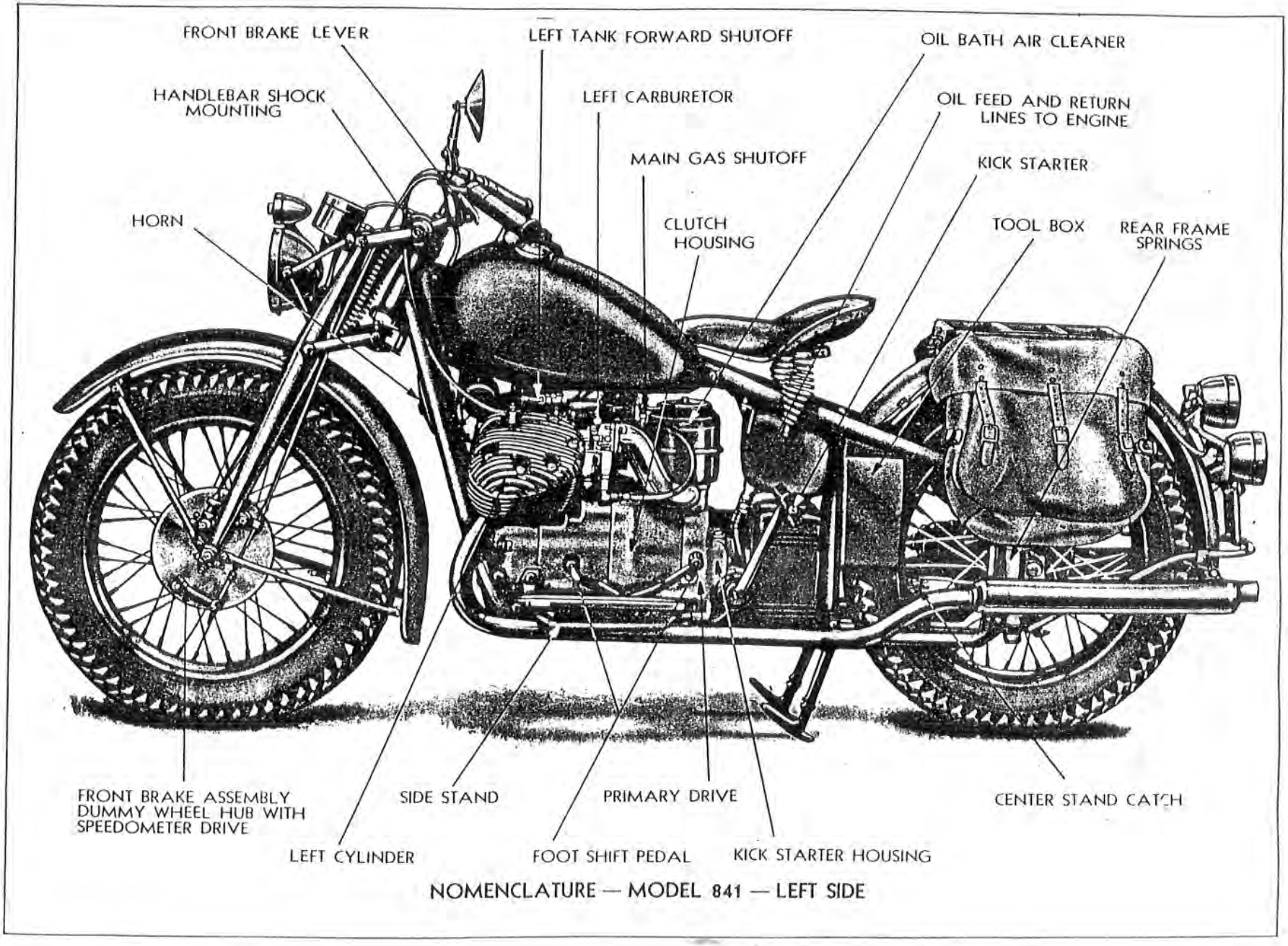
CONTROLS



MODEL 841 — FULL OVERHEAD VIEW



NOMENCLATURE — MODEL 841 — RIGHT SIDE



NOMENCLATURE — MODEL 841 — LEFT SIDE

Important Design Features of this New Indian Military Motorcycle

Wheel hubs positioned to accept "Desert" rims and tires . . .

Interchangeable wheels, front and rear . . .

Finned "air-cooled" brake drums

Watershielding brakes

Oversized "ground" brakes

Quick adjustable brakes

Rider "positioned" brake pedal

Easily serviceable rear drive (no special guages required)

Minimum propeller shaft strain

Enclosed, protected universal joints

Coordinated front fork and rear spring frame travel . . .

Smooth acting, sturdy front fork

Hydraulic fork shock absorber

Front wheel drive speedometer

Shock mounted handlebars

Handlebars adjustable for position . . .

5.6 gallon gasoline tank capacity (U. S. gallons)

Low center of gravity

90° engine (45 cu. in. — 750 c.c.)

Dry sump engine lubrication

Separate oil tank

Enclosed oil lines

Oil Bath Air cleaner

Single plate, dry disc clutch

4 speed transmission

Progressive heel-toe foot shift

Hand clutch control

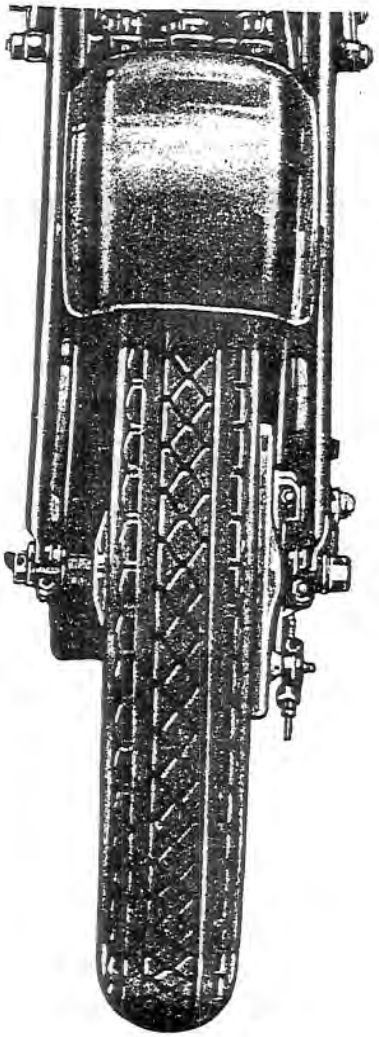
Left hand "throttle" control

Automatic spark control

Shielded ignition system

45 ampere hour heavy duty battery with outside filler caps

Parallel kick-starter

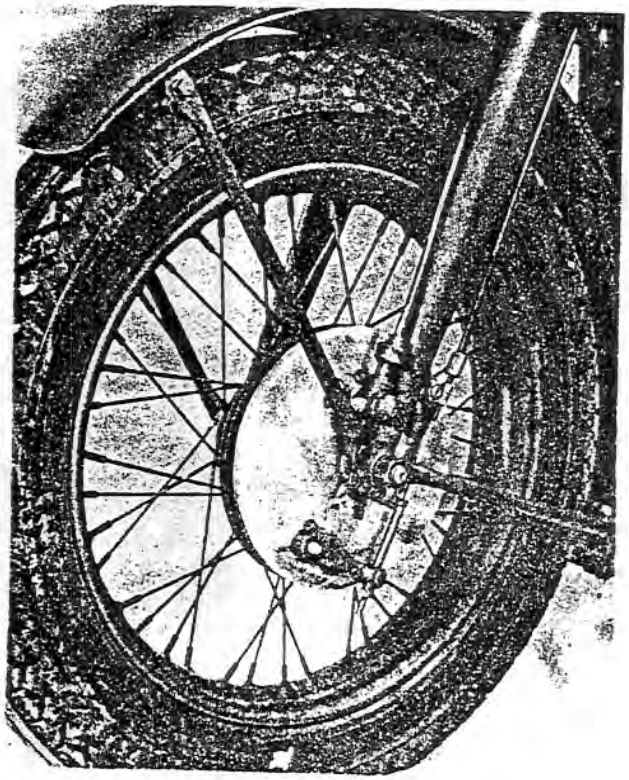


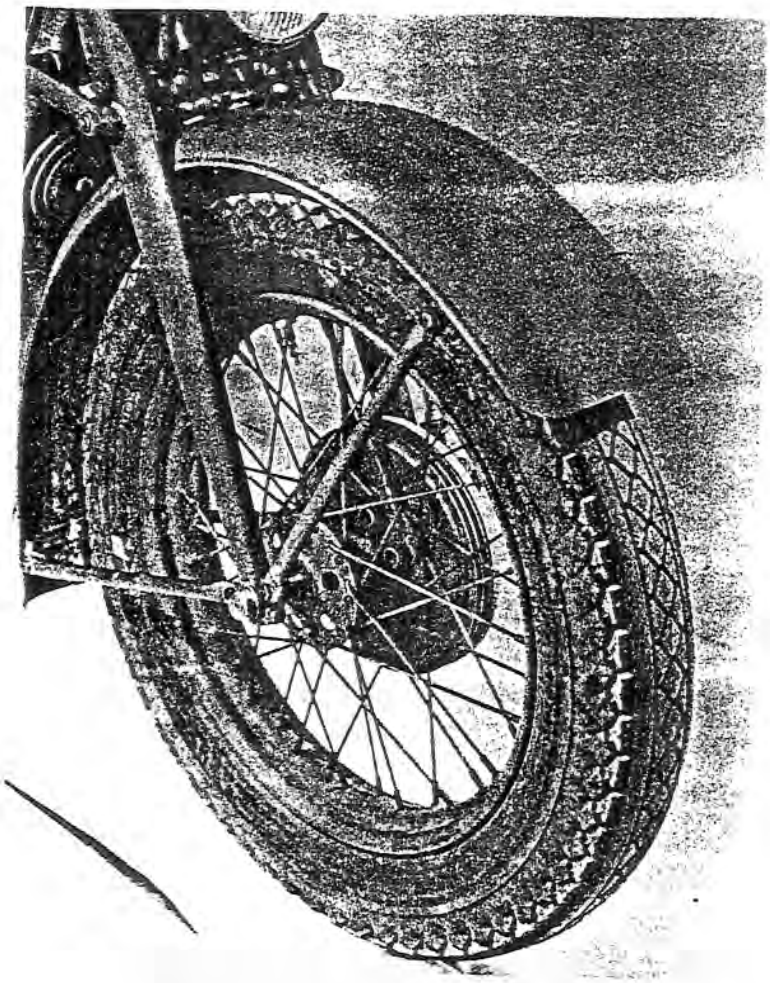
4.00 STANDARD OR 6.00 "DESERT" TIRES

Front and rear fork design allows ample clearance for use of either the 18 x 4.00 standard "traction" tire or the special 15 x 6.00 "Desert" tires without changing the position of frame members, brake assemblies or propeller shaft.

FENDER TO TIRE CLEARANCE . . .

Indian fenders provide more than enough clearance for travel in heavy mud without being cumbersome. With standard 4.00 tires the clearance at the front wheel is 2½"; rear wheel 2¾". With "desert" 6.00 tires; front wheel 2"; rear wheel 2¼"



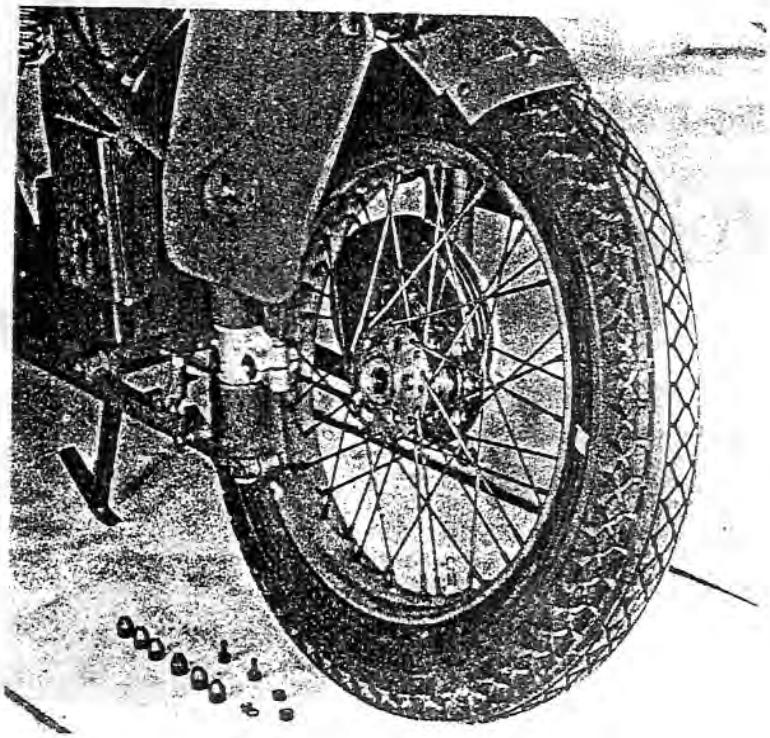


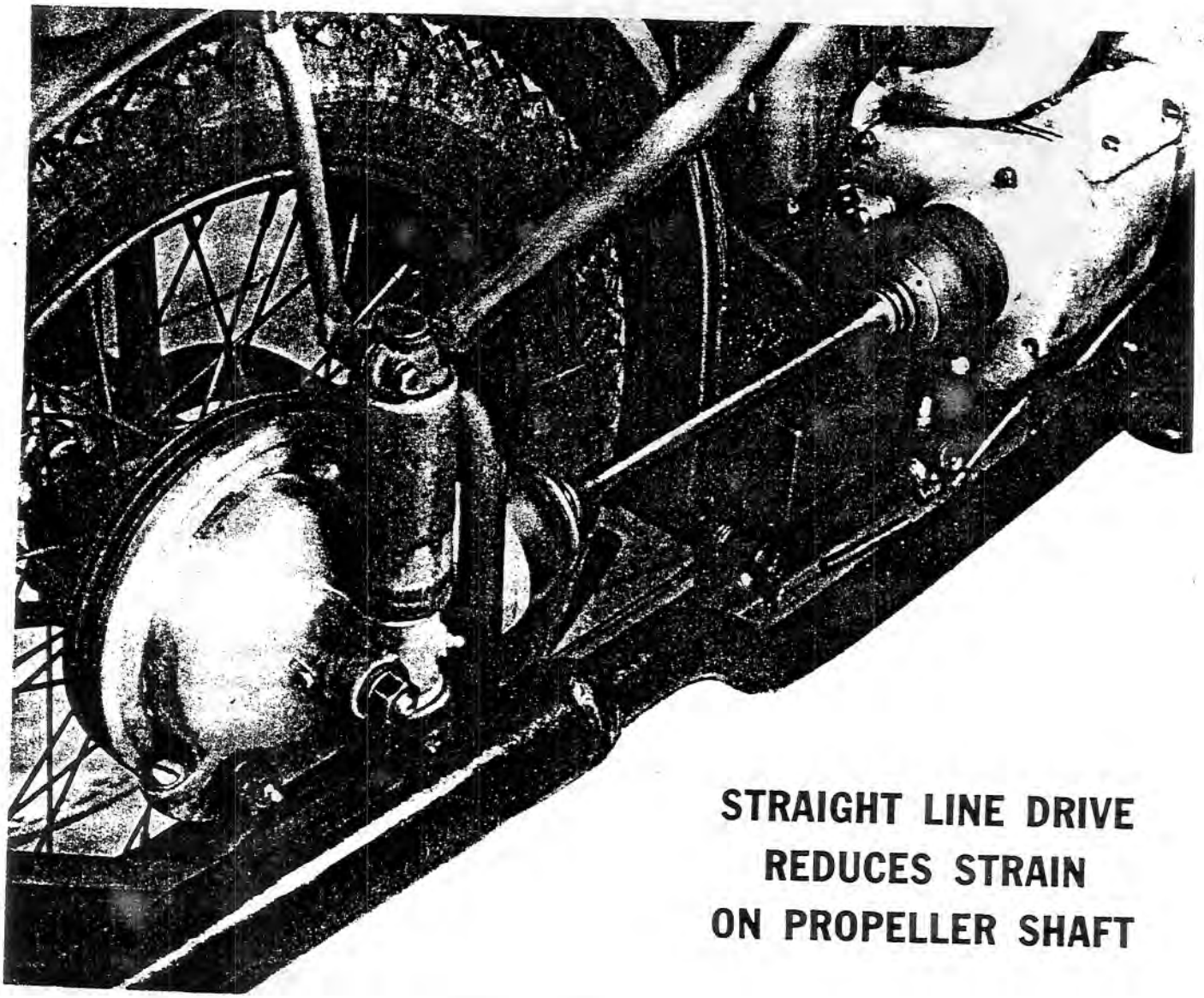
INTERCHANGEABLE WHEELS

Both front and rear wheels are the same and interchangeable. This allows for standardization of parts, and wheel rotation . . . necessitates carrying less service parts for maintenance.

QUICKLY DEMOUNTABLE

Wheels are easily taken off by removing the center axle and six wheel studs. Wheel removal can be accomplished easily with machine upright and without disturbing brake mounting or adjustment. Wheel (rear) is driven by six wheel mounting studs; provides sturdy, dependable drive.

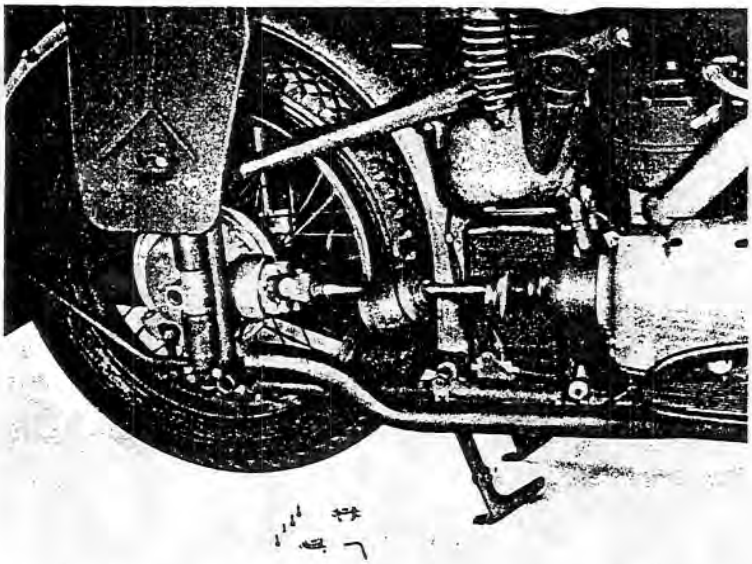




STRAIGHT LINE DRIVE REDUCES STRAIN ON PROPELLER SHAFT

The position of the propeller shaft from the transmission to the rear drive housing is designed to have minimum angularity in operation to insure maximum universal joint life, smooth operation . . . with less strain and stress on the propeller shaft.

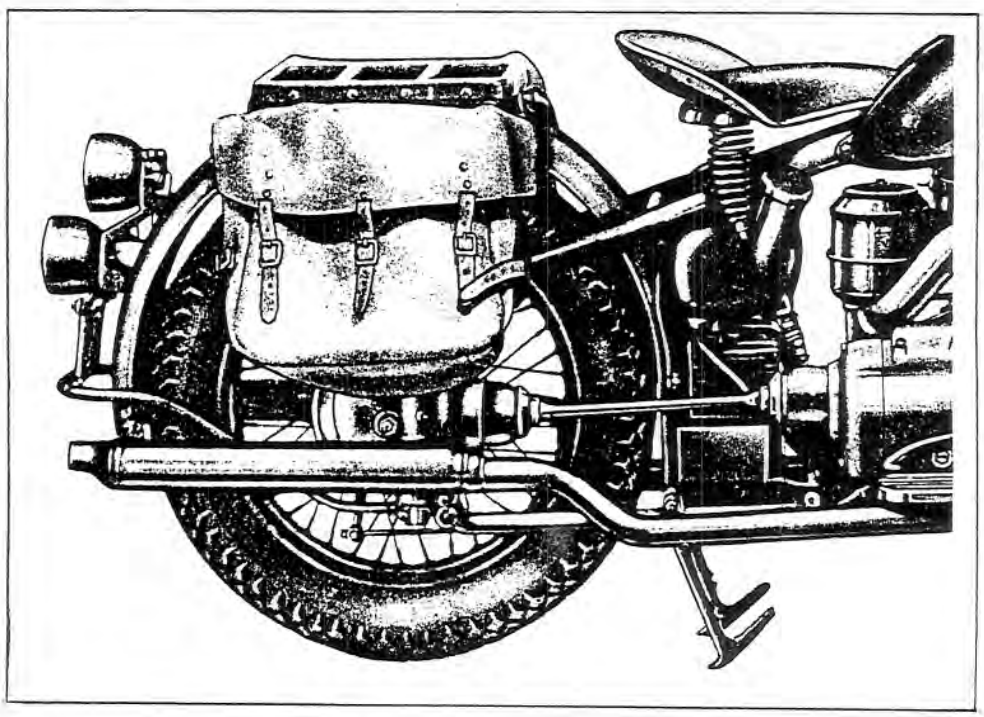
This design and construction reduces the possibility of breakage and wear. Nothing short of actual collision can affect this highly efficient drive.



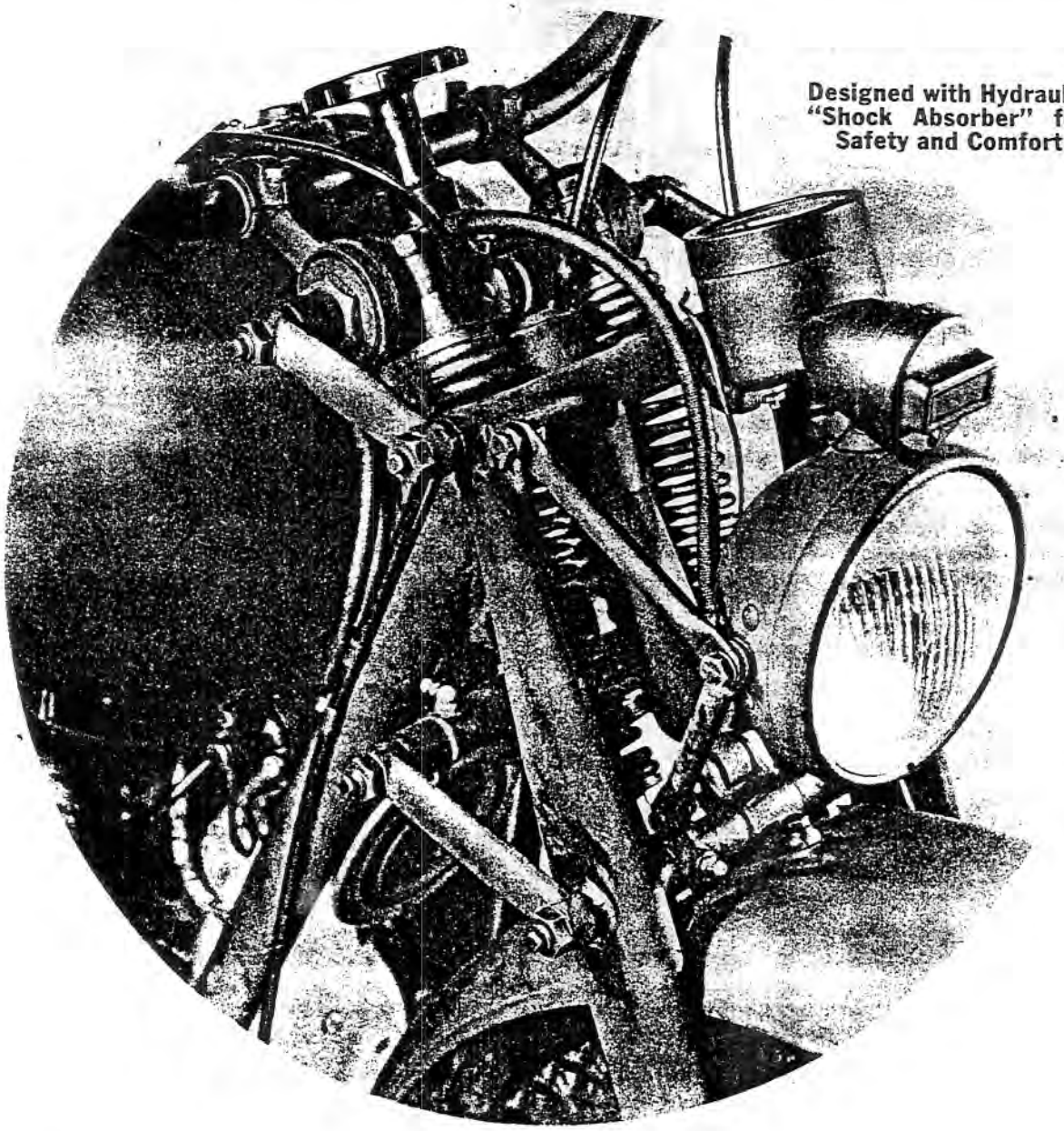
ENCLOSED — PROTECTED UNIVERSAL JOINTS

Universal joints both at the transmission and rear drive housing are protected from dirt, sand, dust and grit by dust covers that screw into the housings. Dust cover lock nuts and felt seals prevent dust covers from coming loose in operation.

Straight side view of the "shaft drive" . . . showing the angle of the shaft from the transmission to the rear drive housing. Proper angle reduces strain on both shaft and universals as rear wheel housing takes up shock through rear frame springs. Roller bearings are used at both rear housing and transmission universals.



ROAD HOLDING INDIAN FRONT FORK



Designed with Hydraulic "Shock Absorber" for Safety and Comfort

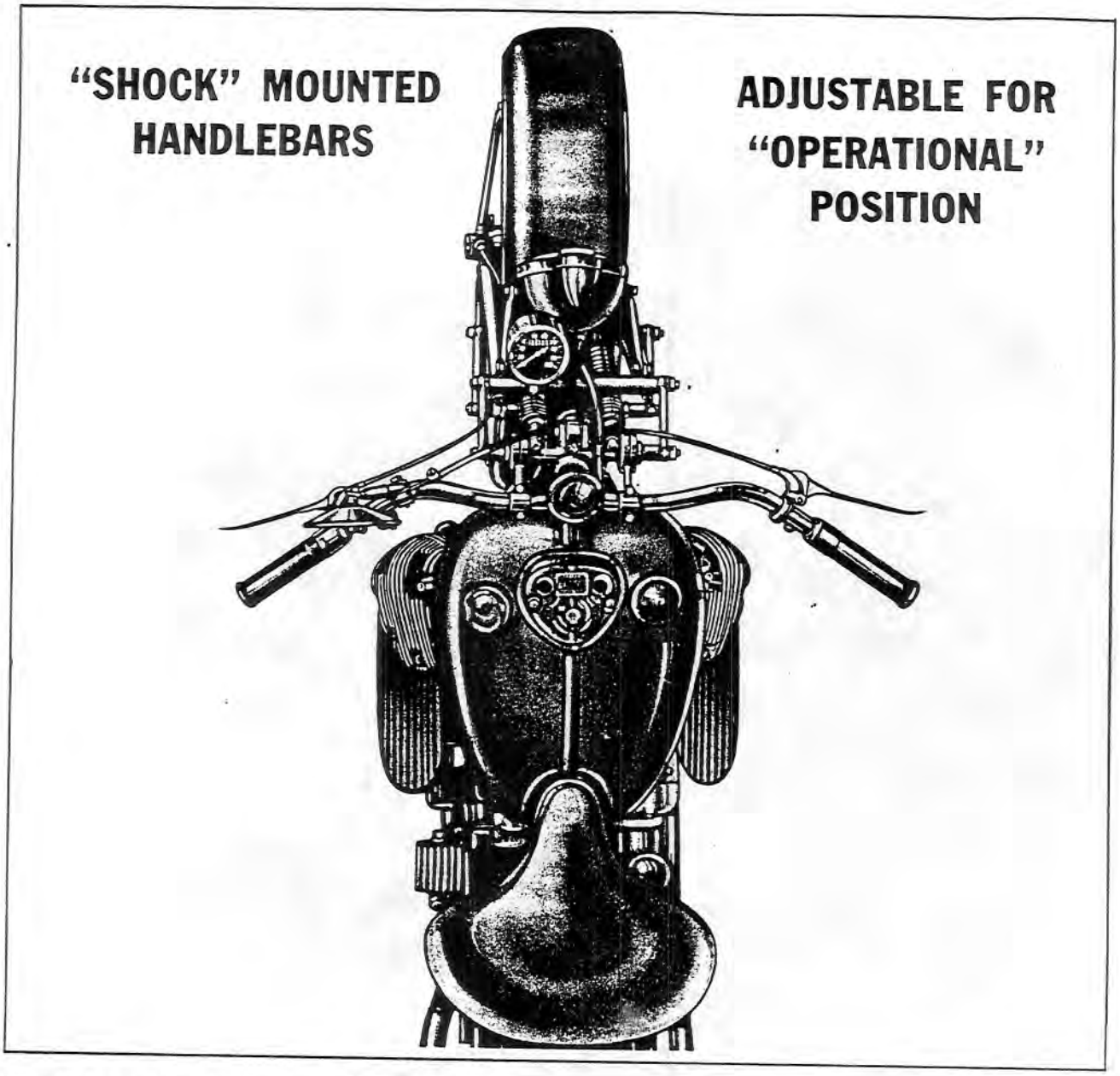
The design and construction of this Indian front fork is responsible for the excellent handling qualities and road holding ability of this motorcycle.

Through much experimentation with fork angles, this adopted design results in maximum coordination of the fork action with the sprung rear wheel which gives unusual stability and comfort.

Airplane steel tubing is used throughout for lightness and strength.

Dual springs are used with a standard automotive type hydraulic shock absorber to smooth the natural rebound action of the fork. In the most severe tests, there has not been a fork spring failure.

Its simplicity and cleanliness of design increases its serviceability. Cross shafts are polished and tapered for quick adjustment with a minimum of effort. Lubrication is provided by hydraulic pressure fittings.

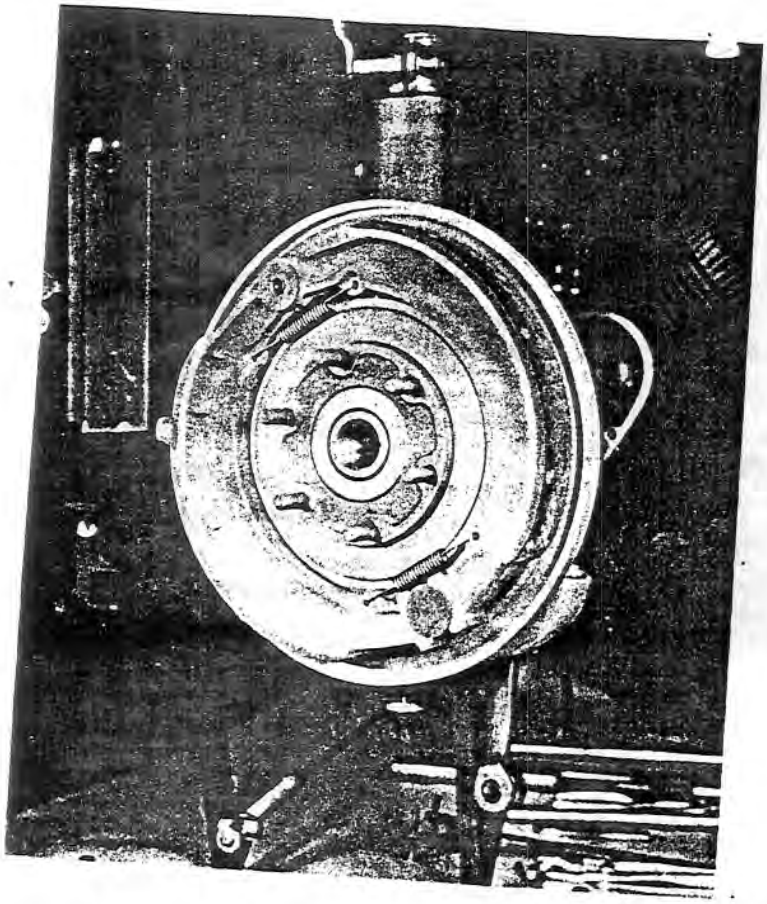


To eliminate the transmission of road shock, handlebars are "shock" mounted and flexible. This design feature insures maximum comfort and minimum rider fatigue in addition to improving the handling qualities and comfort of the motorcycle.

Adjustability of the handlebar and grip angle make it possible to adjust the handlebars for ideal riding and control position for whatever particular duty the motorcycle may be designated. This is important when considering that a change in angle and position is desirable in different types of service for better control and safety.

This handlebar design permits a straighter throttle control outlet for smoother, more positive operation of the throttle with minimum strain on throttle operation wire.

Note: — The speedometer, mounted to the front fork is an additional safety feature . . . allows the rider to observe his speed and mileage without taking his eyes off the road for any appreciable length of time. Front wheel drive insures speedometer accuracy because front wheel is not subject to slippage.

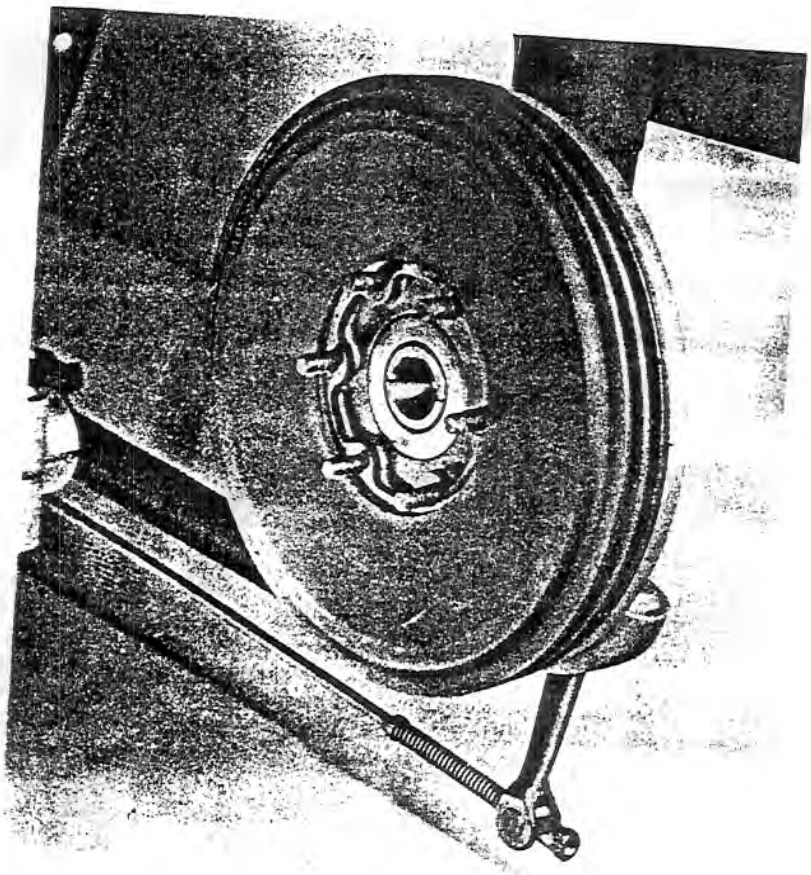


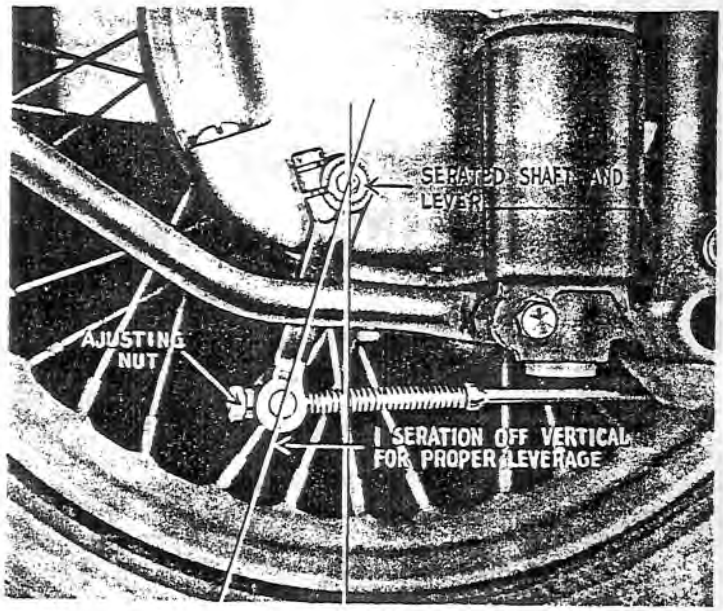
OVERSIZE BRAKES 8 INCH DIAMETER

Brake linings are "ground" to fit for accurate and close clearance between the lining and drum to give maximum life with smooth operation. Burning in is eliminated. 8" diameter gives extra braking torque with **minimum** pedal pressure.

AIR-COOLED . . . WATER SHIELDED BRAKE DRUMS

Brake drums, front and rear, are heavily finned for cooling; fitted close and shielded for waterproof operation. Note close up view of wheel driving studs.



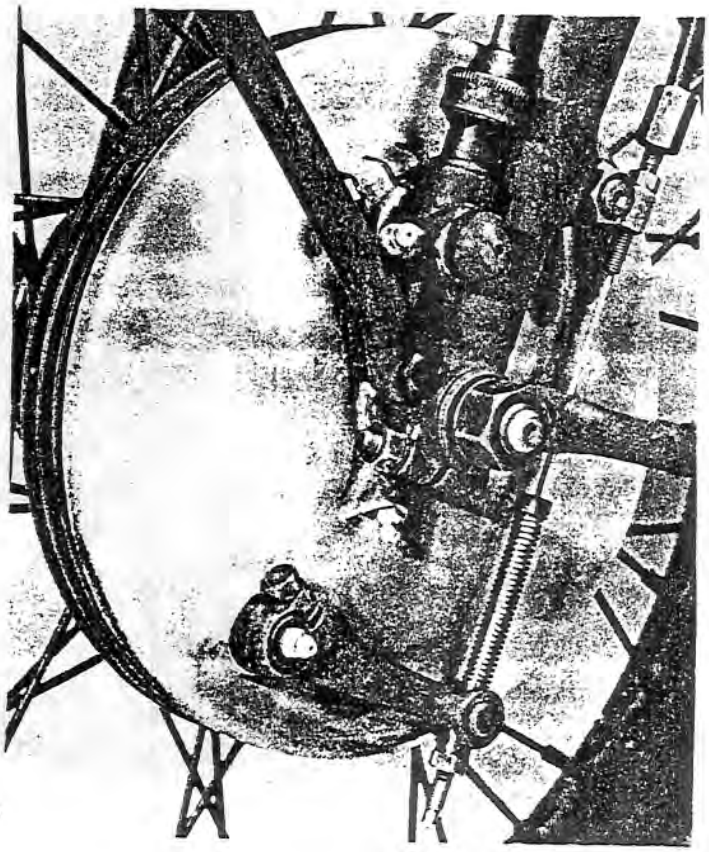


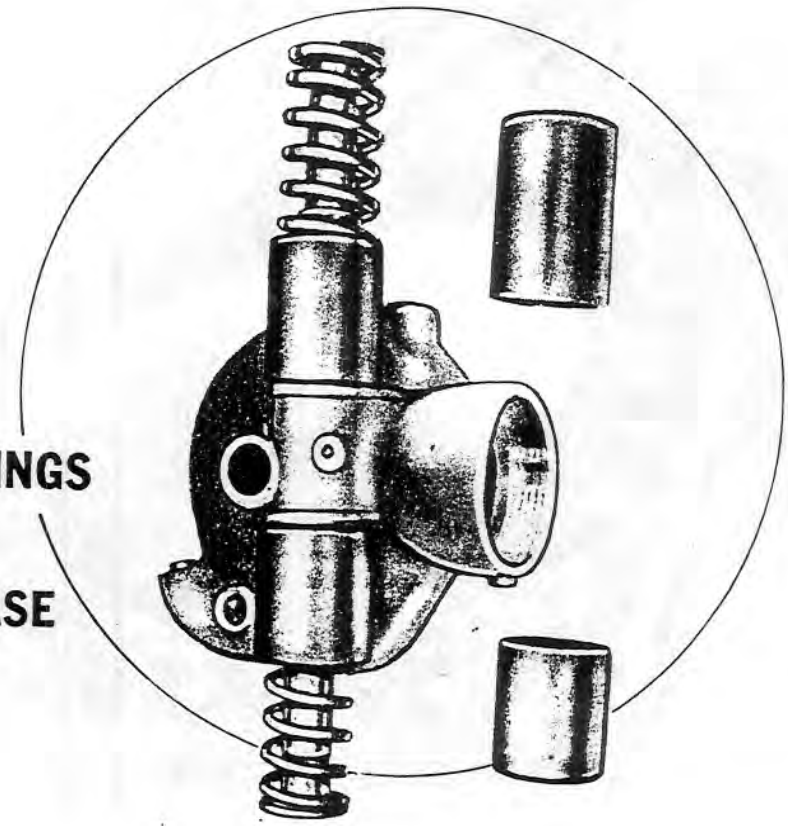
BRAKES ARE QUICKLY ADJUSTABLE

Both front and rear brakes are fitted with quick "take-up" devices to simplify brake adjustment. Brake arms are "serated" for additional take-up when linings become worn. Simplicity and cleanliness of design add to serviceability.

BRAKE PLATES ANCHORED TO THE FRAME — FORKS

In removal of the wheels, the brake plates and drums remain anchored to the frame and forks. . . . thus maintaining brake adjustment and simplifying servicing. For this reason it is not necessary to disturb the brakes or their adjustment when removing or installing wheels.



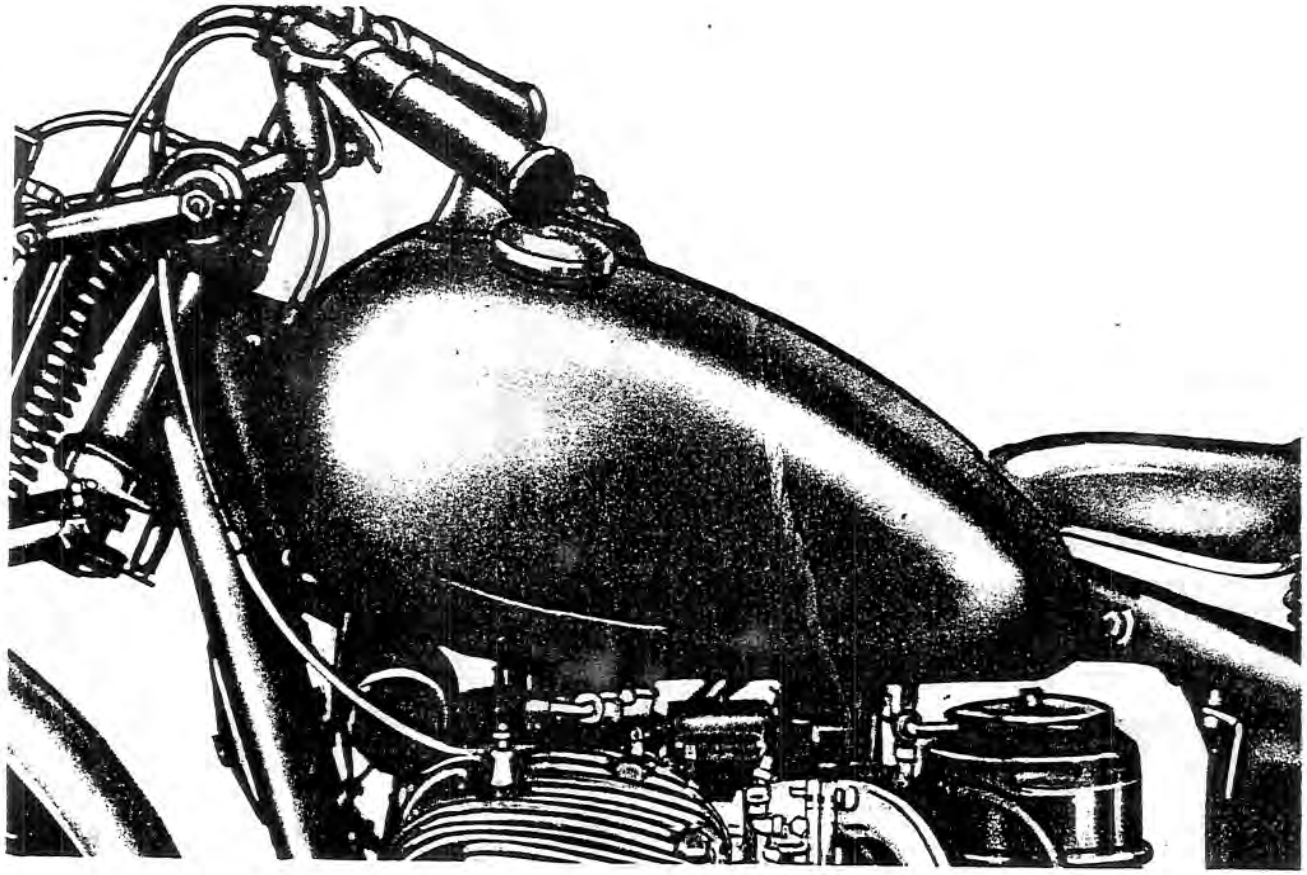


REAR WHEEL SPRINGS REDUCE "ROAD SHOCK" — INCREASE COMFORT

The rear wheel and drive housing is mounted to the frame on coil springs to reduce the "road shock", increase rider comfort and reduce strain at the rear housing and propeller shaft universals.

The coil springs are protected from road grit and dirt by metal shields and take up the bound and rebound action of the rear wheel.

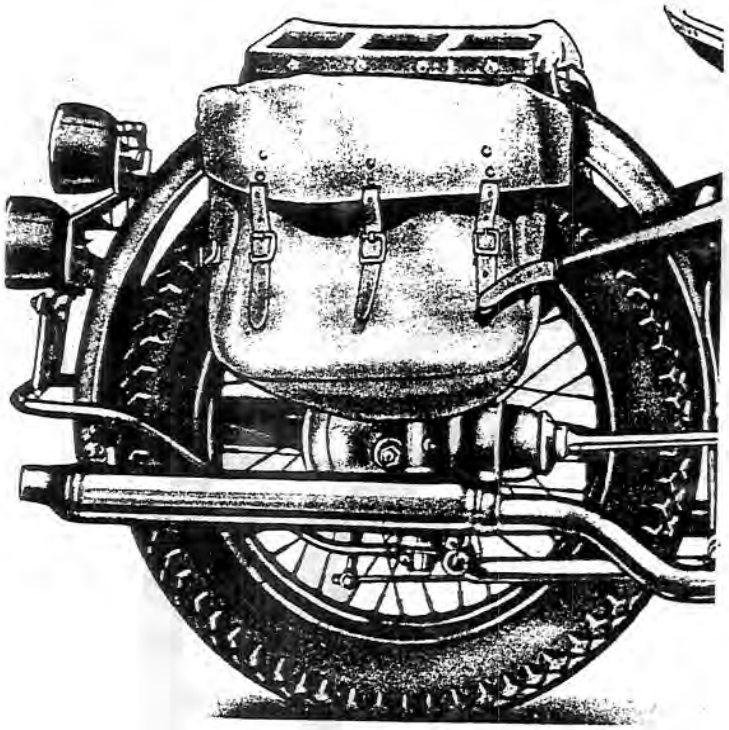
Simplicity in design insures serviceability, yet affords the fullest protection for long life and smooth operation.



LARGE CAPACITY GASOLINE TANKS FOR EXTENDED TRAVEL

The gasoline tanks are designed to obtain the greatest possible capacity (5.6 U. S. Gallons) without interfering with the motorcycle's center of gravity or the rider's comfort. This extra gasoline capacity increases the travelling range beyond that of the standard motorcycle.

The tanks are shaped to afford the rider a "knee grip" for increased safety and handling of the machine over rough country.

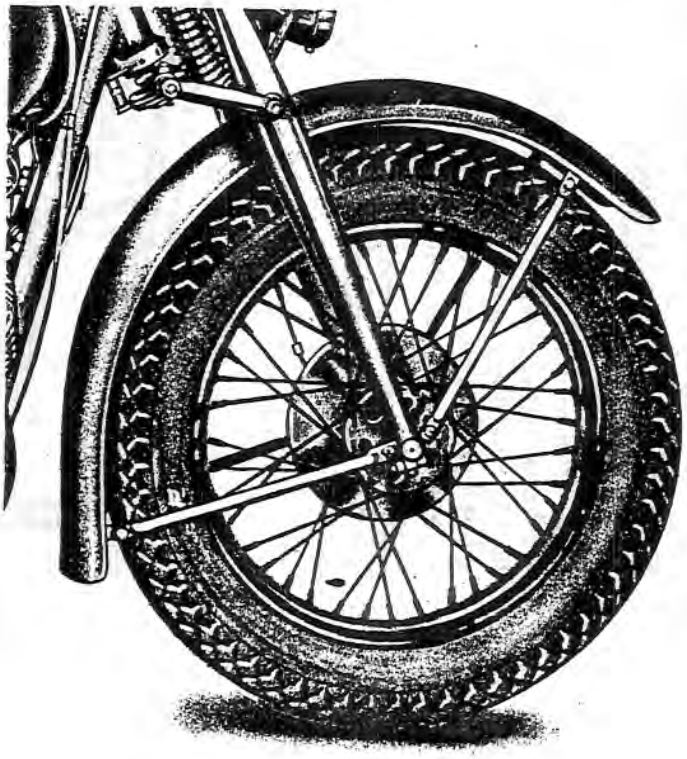


SADDLE BAGS PROTECTED BY METAL SHIELDS

To protect the saddlebags from chafing against the rear drive housing and frame members, the machine is equipped with full size metal shields between the saddlebags, fender and frame. Saddlebags are quickly demountable and snap into place, being held down with tie straps.

RUGGED TUBULAR FENDER BRACES

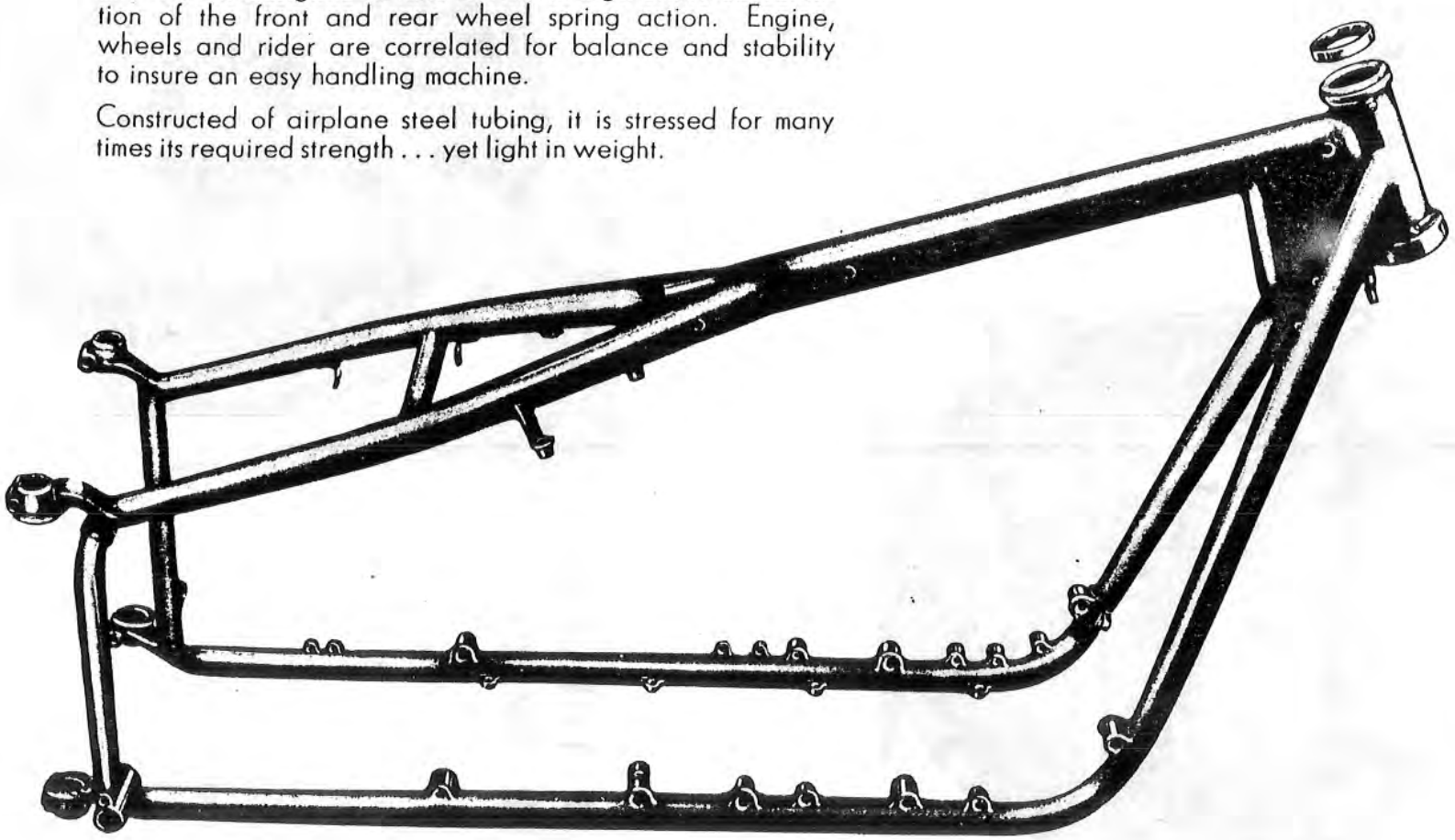
Fender braces, front and rear, are made of tubular steel and bolted in position thus simplifying brace replacement due to collision. Fender clearance at both wheels has been tested in all types of mud and gumbo and is ample.

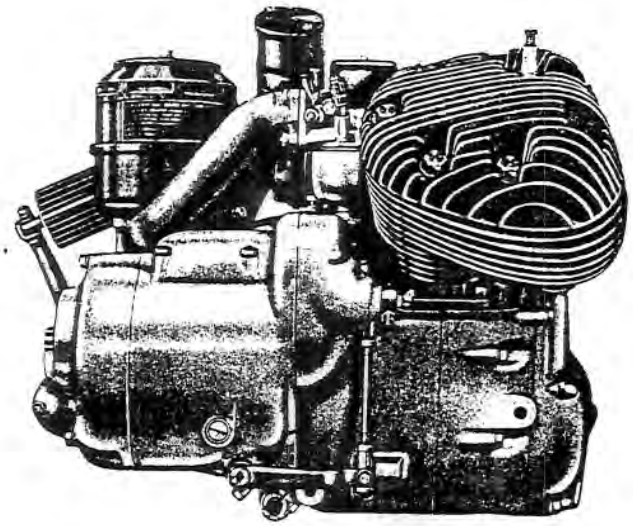


LIGHT WEIGHT AIRPLANE TUBE FRAME WITH EXTRAORDINARY STRENGTH

With relation to the front fork head and rear fork angles, the frame is designed to take full advantage of the coordination of the front and rear wheel spring action. Engine, wheels and rider are correlated for balance and stability to insure an easy handling machine.

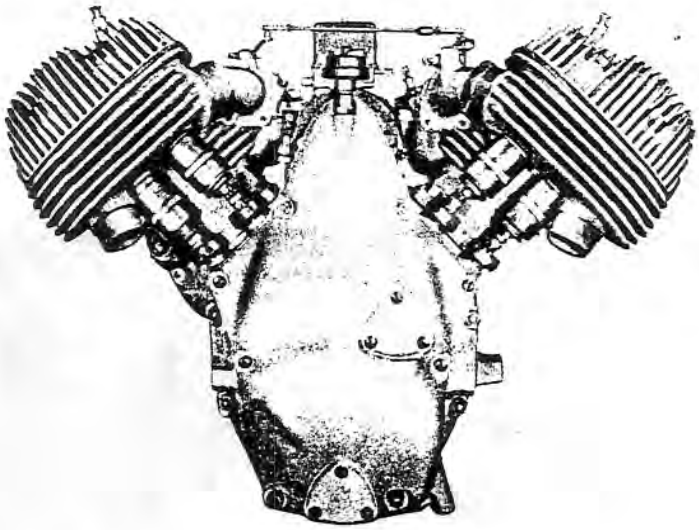
Constructed of airplane steel tubing, it is stressed for many times its required strength . . . yet light in weight.





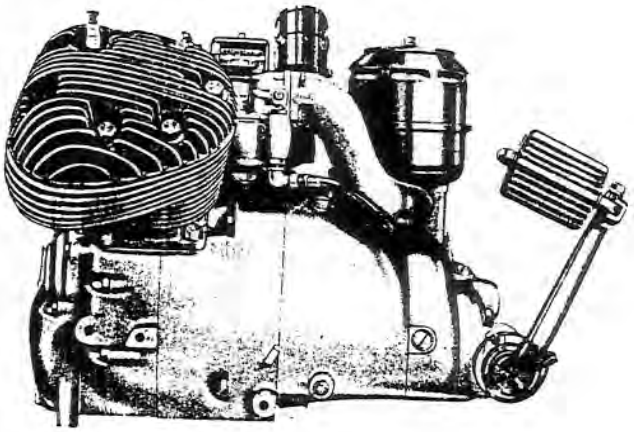
COMPACT — BALANCED ENGINE DESIGN . . . .

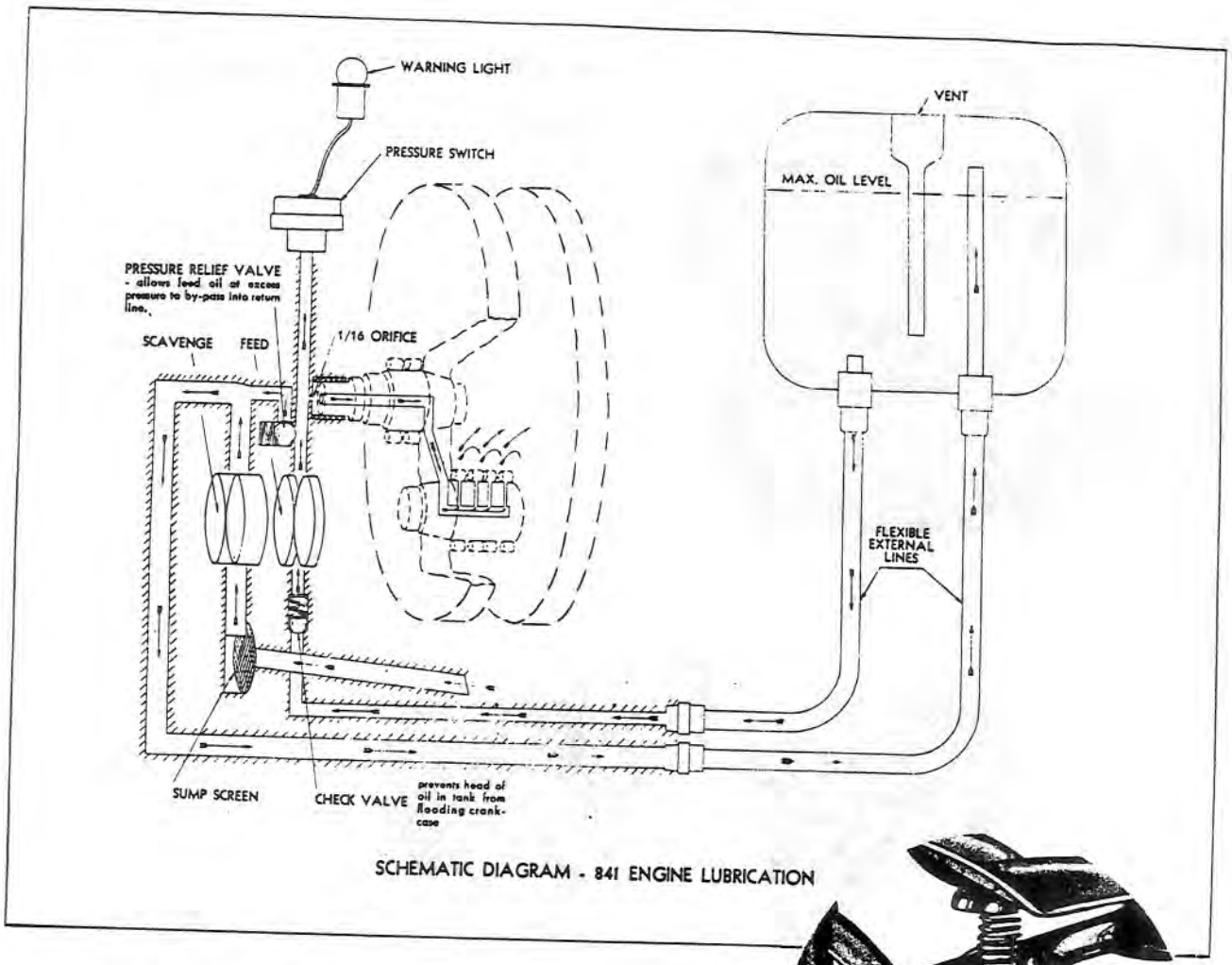
Cylinders are heavily finned for maximum cooling efficiency even under extreme heat conditions. Efficient cooling at the valve mechanism lessens the possibility of premature valve failure. The overall design is such that preventative maintenance can be carried out simply and quickly. Oil sump screen and breather valve are equipped with inspection plates for cleaning and servicing. The dual carburetors are linked by solid adjustable connecting shafts for rigid synchronization and quick adjustability. A minimum of special tools are required for maintenance and overhaul.



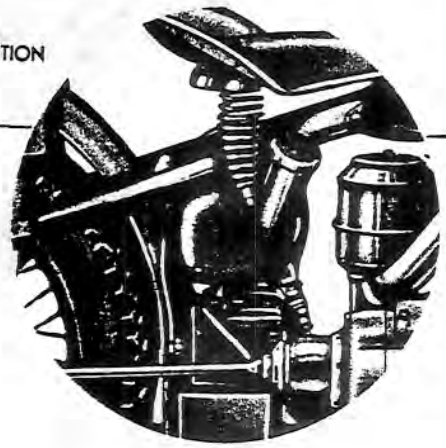
90° TWIN CYLINDER
45 cu. in. (750 c.c.)

The cylinders are placed at a 90° angle to provide an engine that is compact, easy to keep clean and accessible to service. This construction and design allows for the proper engine weight distribution so that when mounted in the frame, the balance and handling qualities of the motorcycle are not affected. In addition, this construction places the cylinders in a position that does not interfere with the rider and his operation of the machine.





SCHEMATIC DIAGRAM - 841 ENGINE LUBRICATION



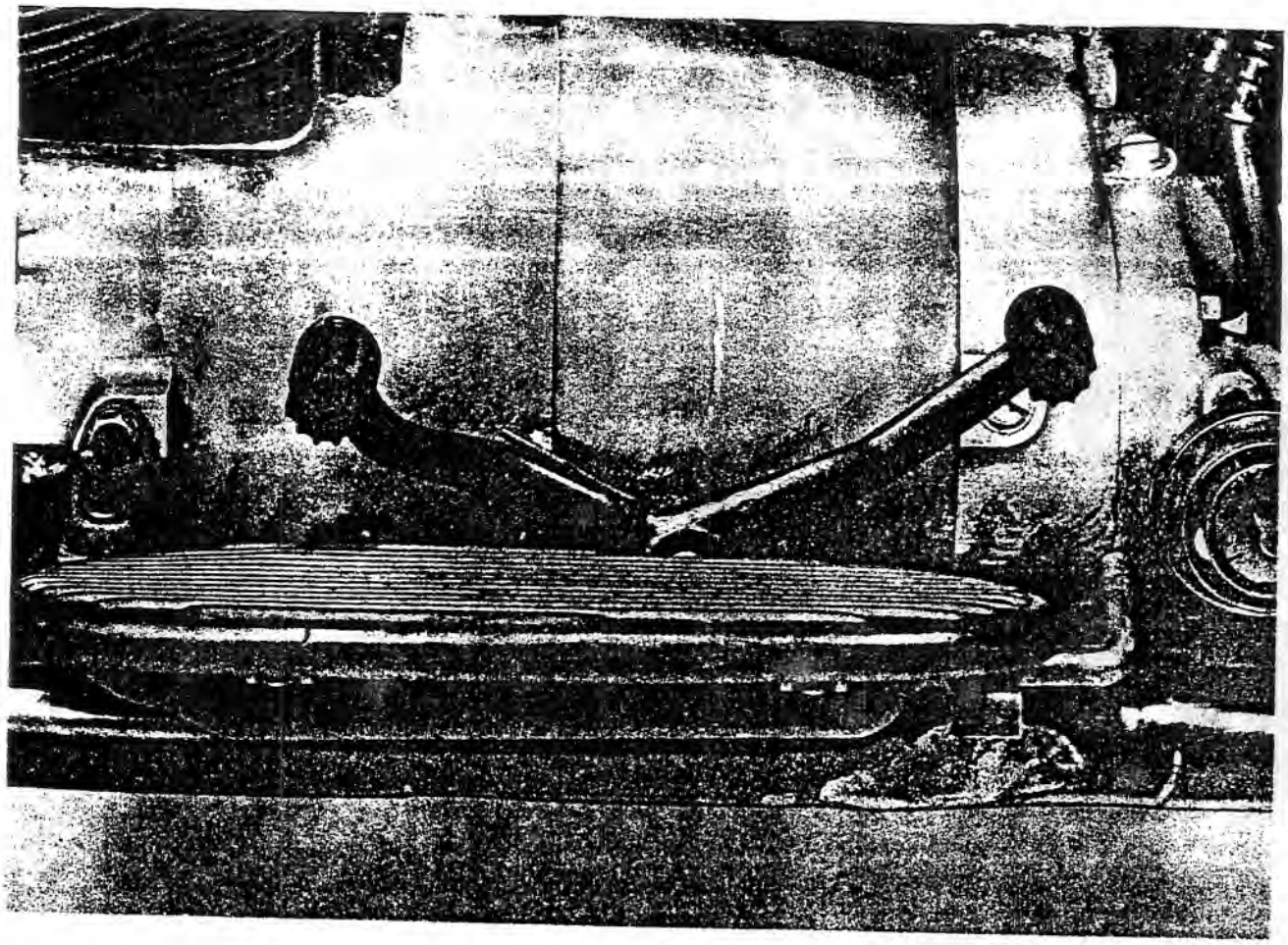
INDIAN DRY SUMP LUBRICATION SYSTEM

Noted for its efficient lubrication ability, the Indian Dry Sump lubricating system is used in this engine. This is the same type system as is used in modern aircraft engine design. Indian developed this design for motorcycle engines in 1934 and has continued to improve it to its present high state of efficiency.

The main supply of oil is held in a separate tank under the saddle. Oil is fed by pump to the main shaft bearings. After lubricating the engine, the oil is pumped back into the main supply tank thru a cooling line. This allows the oil supply to partially cool before re-use . . . resulting in less engine wear thru the oil being cooler. No oil supply is maintained in the engine, thus relieving the possibility of sludge.

The oil tank is provided with a drain for periodic flushing and cleaning.

Supply and return lines are protected to eliminate the possibility of their becoming damaged.



PROGRESSIVE "HEEL-TOE" SHIFT PEDAL . . . . .

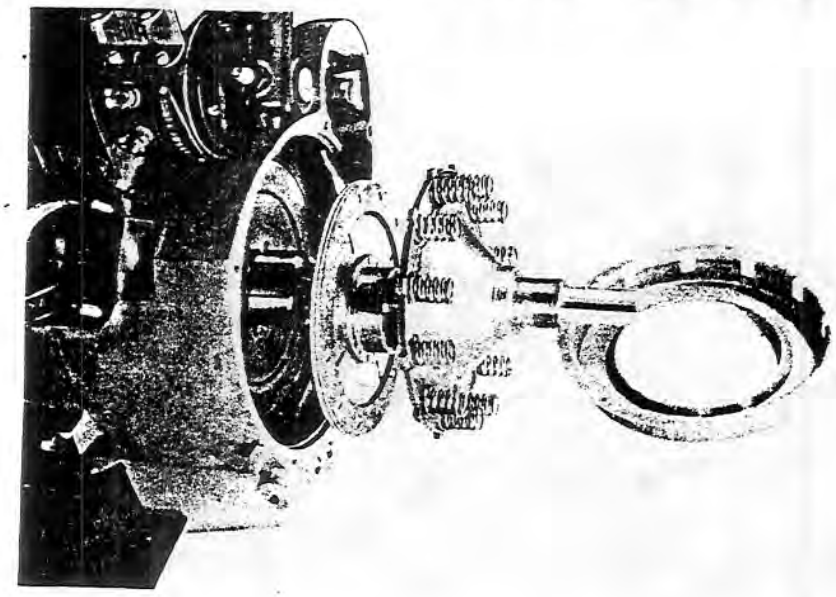
Designed for speed in shifting from one gear to another, this type control simplifies shifting so that a rider does not have to take his eyes off the road or hands off the handlebars to tell what gear the machine is in.

Neutral is positioned **at the end of the scale.** Shifting "up" from neutral to 1st, 2nd, 3rd and 4th is accomplished by pressing the heel peddle downward once for each shift.

The pedal automatically returns to position for shifting to the next higher gear when pressure is removed from the pedal.

Shifting "down" from 4th, to 3rd, 2nd, 1st and Neutral is accomplished by pressing on the toe pedal. The shift is positive in action and operates on a ratchet pickup principle with rotating cylinder gear selector.

DRY SINGLE PLATE CLUTCH OPERATES WITH MINIMUM HAND LEVER PRESSURE



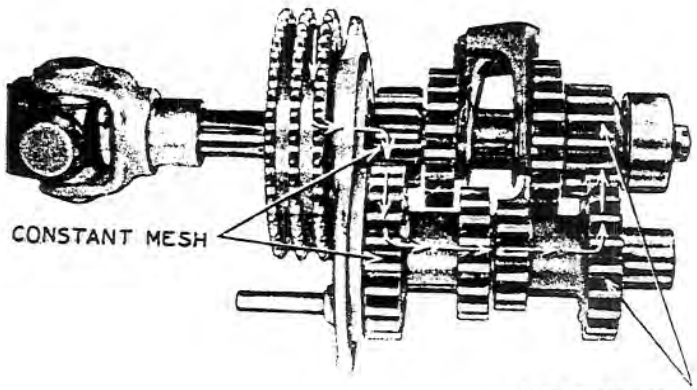
Operated by a hand lever at the right handlebar, operating pressure is held to a minimum in this new Indian clutch for smooth and easy operation. It is of the single plate dry type and designed to efficiently transmit the engine power with a minimum of wear.

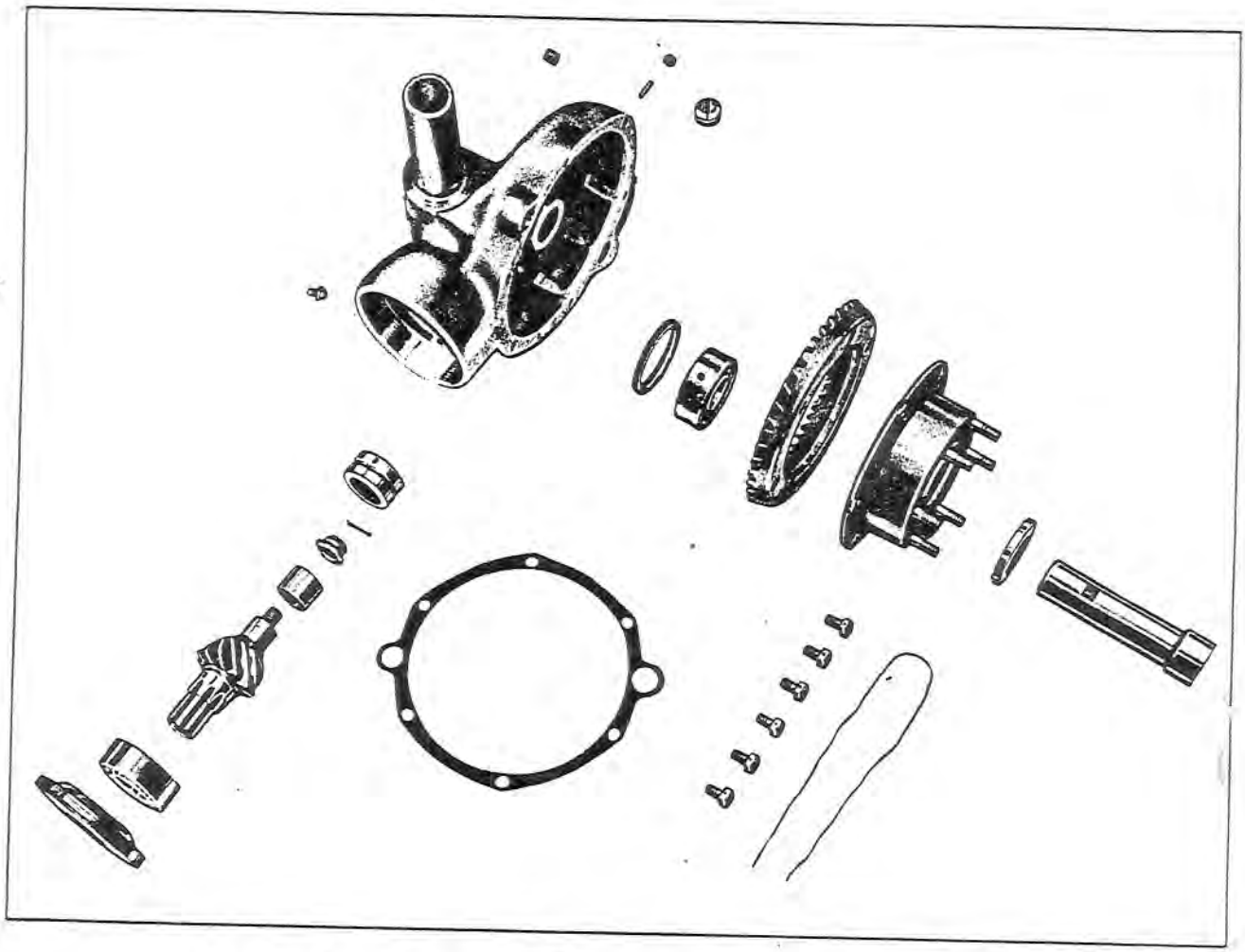
Above illustration shows clutch construction. Clutch pressure plate (with springs) holds moulded clutch disc against engine driven plate. Clutch disc operates on a splined quill shaft for smooth operation and full contact. Quill shaft operates on ball bearings. Oil seals are used thruout to prevent oil leakage to the clutch.

SELECTIVE AND SPEED TRANSMISSION

This four speed transmission allows for the full use of variable gear ratios to obtain the greatest advantage of the power output without excessive strain or wear on the engine.

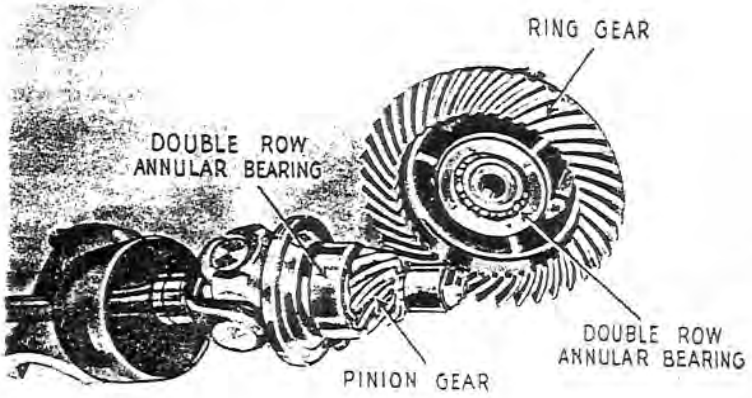
It also provides an extra low gear ratio of 14.20 to 1 for heavy pulling with intermediate selective ratios and a final direct drive of 5.10 to 1. Both 3rd and 4th speed gears are in constant mesh.

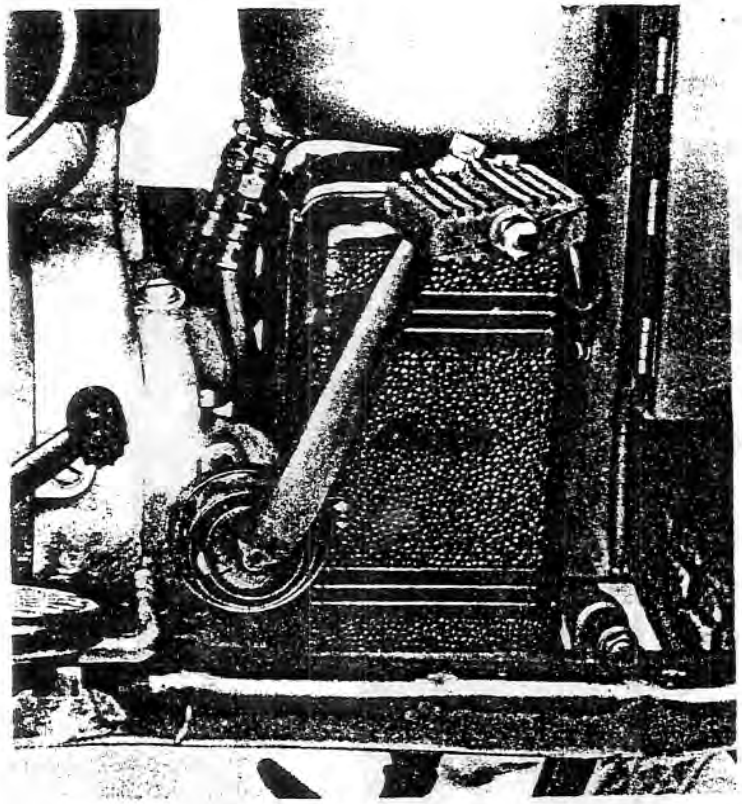




Simplicity in Rear Drive Housing Design and Serviceability

The Indian rear drive is built for several times its normal load. Roller and ball bearings are used on the pinion . . . ball bearings used at the ring gear hub. Both pinion and ring gear are "lapped" as a set for serviceability in replacement. It does not require the use of special gauges, shims, etc., for servicing and adjustment when making repairs. The entire unit may be disassembled for service with only one spanner wrench in addition to standard tools.





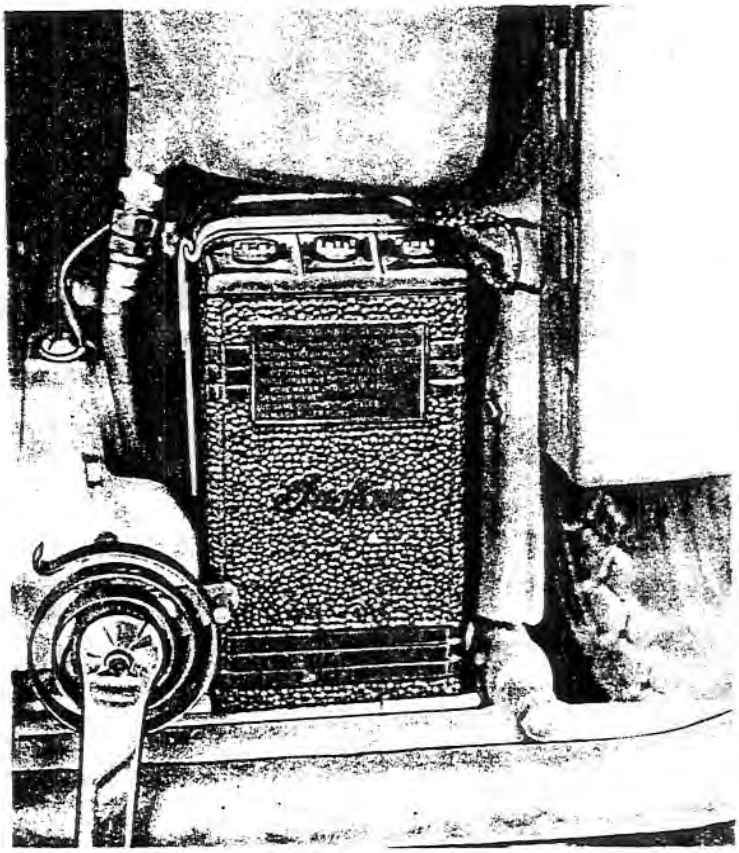
KICKSTARTER PARALLEL TO MOTORCYCLE

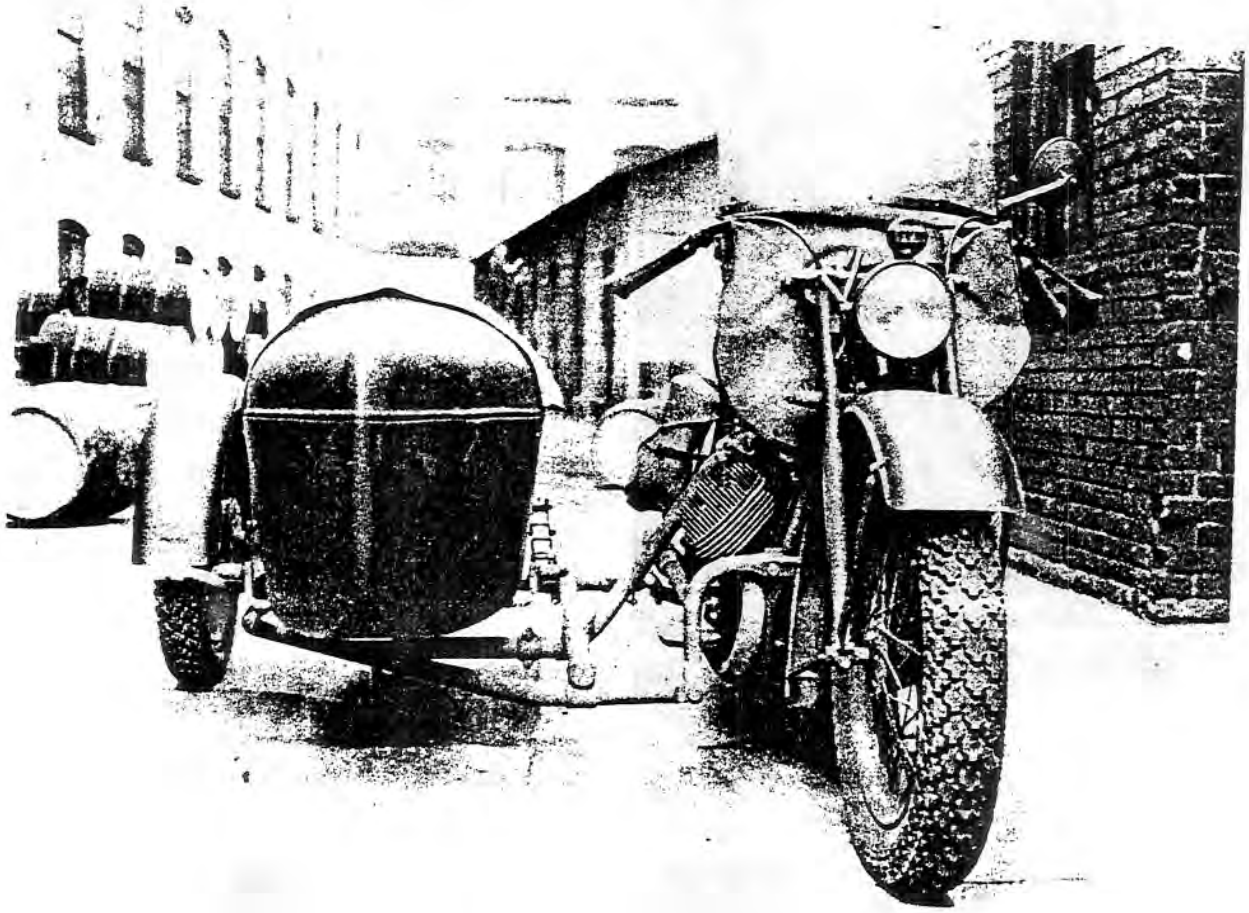
The kickstarter allows the rider to start the engine from a saddle position without getting off the motorcycle. Its gear ratio is designed so that no effort or heavy kick is required to start the engine. The possibility of "kickback" to the rider is eliminated thru the use of automatic spark control.

"OUTSIDE FILL TYPE" HEAVY DUTY BATTERY

This motorcycle is equipped with the very newest heavy duty type of motorcycle battery of 45 ampere hour rating to withstand hard use and accept additional electrical equipment that may be required in the future.

A preventative maintenance feature, the battery is constructed with outside fill caps and "fill-rite" cell buttons so that it can be tested or refilled to its correct level without removing it.



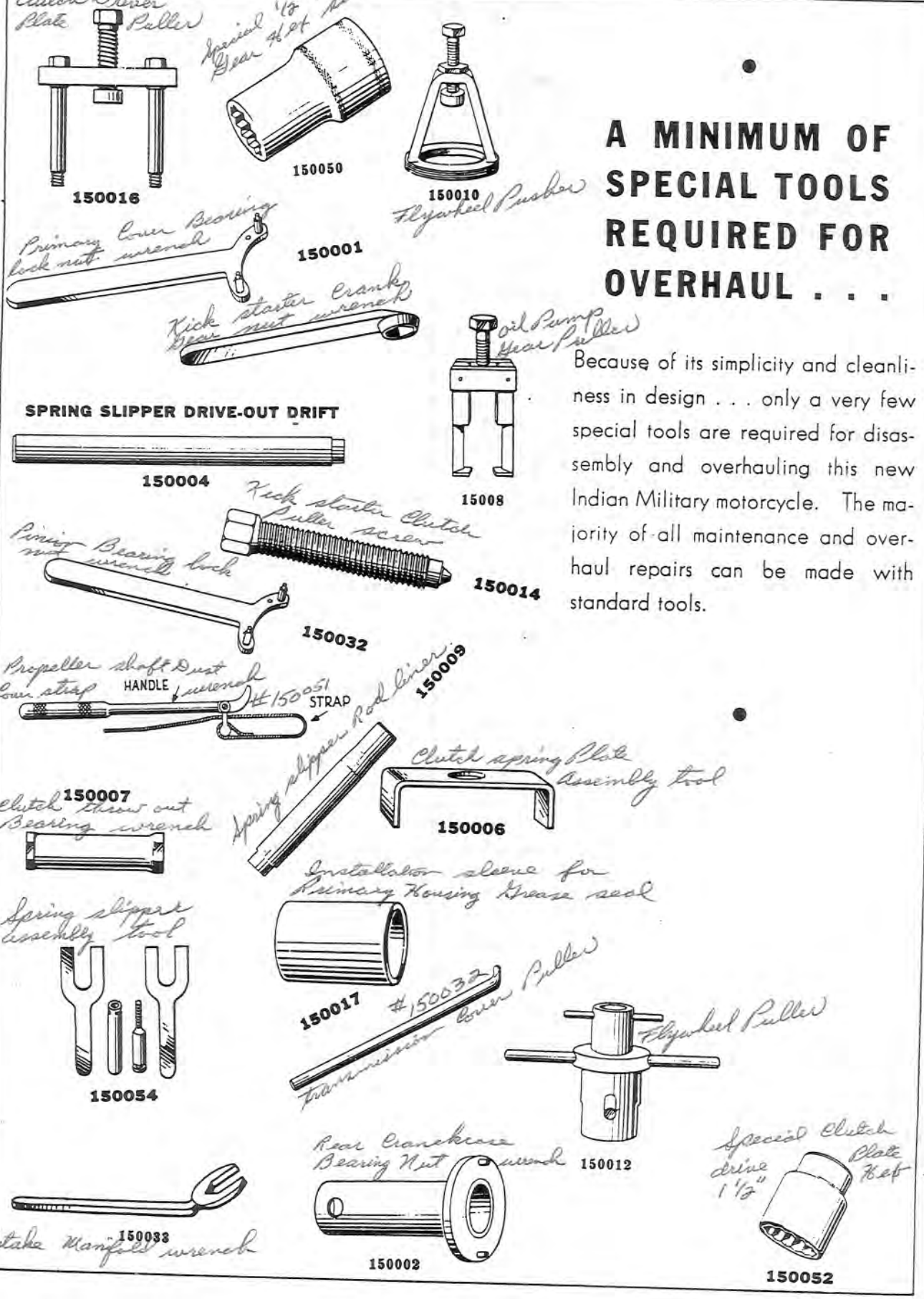


ADAPTABLE TO SIDE CAR USE AS WELL AS "SOLO"

Designed to meet every requirement . . . this model 841 Indian Military Motorcycle is built so that it can be used with a sidecar should conditions necessitate its addition for courier service or the transportation of additional personnel and equipment.

A MINIMUM OF SPECIAL TOOLS REQUIRED FOR OVERHAUL . . .

Because of its simplicity and cleanliness in design . . . only a very few special tools are required for disassembly and overhauling this new Indian Military motorcycle. The majority of all maintenance and overhaul repairs can be made with standard tools.



SPECIFICATIONS

MODEL	841
DRIVE	Shaft driven
Rear Drive	Fully enclosed; lubricated : — Ratio — 3.73 to 1
ENGINE	Two (2) cylinder, air cooled 90° "V" type; mounted transverse in frame
Bore	2⅞"
Stroke	3½"
Displacement	45:44 cu. in.
Compression Ratio	5:10 to 1
Spark Plugs	Indian Edison, 14 mm, No. RS-45
BATTERY	Indian Heavy duty, 45 ampere hr. outside fill type
BRAKES	Internal expanding, front and rear (water shielded)
Front	Diameter, 8"; width, 1", Total area, 16.81 sq. in.
Rear	Diameter, 8"; width, 1⅛"; Total area, 18:92 sq. in.
Total Area	35:73 square inches
CONTROLS	Twist grip throttle control, at left handle bar . . . automatic spark control
CLUTCH	Single plate, dry disc, hand lever mounted at right handlebar
EQUIPMENT	Saddle bags, rear carrier, safety bars, front and rear; tool kit; rear view mirror; signal horn; windshield and legshields
FRAME	Chrome Molly (Airplane type) steel tubing
IGNITION	Auto-lite distributor with automatic spark control, auto-lite voltage controlled generator
INSTRUMENTS	Ammeter light signal; oil pressure light signal; Key-locking B.O. ignition switch (Standard H-700 key used) with black-out and service headlight control; Hi-lo headlight beam control switch at left handlebar
LIGHTING SYSTEM	Full blackout head and tail lamp equipment according to Government regulations, with service headlight, tail light and stop light
LUBRICATION FITTINGS	Hydraulic pressure fittings throughout chassis
TANKS	Separate gasoline and oil tanks
Gasoline	Two tanks (right and left) capacity each tank, 2.8 U.S. gallons. Total capacity both tanks, 5.6 U.S. gallons
Oil	Single tank, capacity, 3 U.S. quarts
TRANSMISSION	Four (4) speeds forward

Gear Ratio — motor to rear wheel	**First**	**Second**	**Third**	**Fourth**
	14.20	10.09	6.45	5.10 (Direct)

TIRES	18 x 4.00 — 2 ply
WHEELS	18" drop center wire wheels, spring front and rear
WHEELBASE	59"
WEIGHT	539 pounds, with full equipment, ready to ride
Length	90¾" overall
Width	36¾" overall
Height	39" overall
Road clearance	6⅞" under skid plate