Stanley

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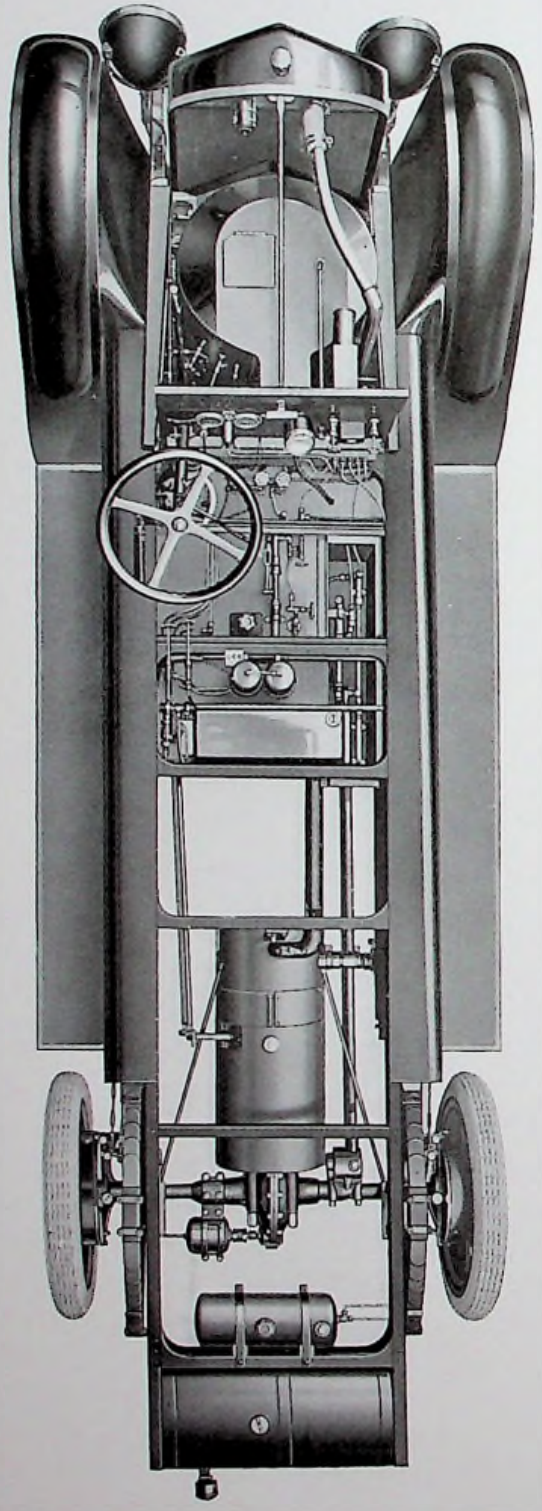
STANLEY STEAM CARS

Announcement for
the Season of
1917

TWENTIETH YEAR

STANLEY MOTOR CARRIAGE COMPANY
NEWTON, MASSACHUSETTS



STANLEY MOTOR CARRIAGE CO.

THE SAFEST CAR IN THE WORLD

MESSRS. F. E. and F. O. Stanley, twin brothers, who were the inventors and manufacturers of the Stanley Dry Plate, began in the fall of 1896 to make a steam horseless carriage for their own use. Before this was completed many offered to buy it. Shortly after its completion they sold it and proceeded at once to build two more. These two cars were sold before completion in the spring of 1897. During that year and 1898 they built and sold probably a dozen or twenty horseless carriages. In the fall of 1898 they made plans to build 200 cars all alike. These 200 cars were actually built and sold by July, 1899, thus establishing the Messrs. Stanley as the first men in the world to manufacture automobiles in commercial quantities. Meantime the business had been sold out to the Locomobile Company of America in the spring of 1899.

In the spring of 1901 the present Stanley Motor Carriage Company was formed, and we have been manufacturing automobiles continuously ever since. We have been called a conservative and independent concern—whether this is so or not we are hardly in a position to judge. We do know, however, that during all these years we have quietly stood on the side-lines, as it were, and have viewed with a calm and peaceful mind the frantic endeavors of those engaged in our line of business as they collided with each other in their efforts to adapt the internal-explosive engine, which is essentially a constant speed motor, to automobile service, which is about the most inappropriate use to which it could possibly be put.

Steam has been the prime motive power for over a hundred years. It is a simple problem to adapt and arrange it for automobile use. We believe that we have demonstrated our ability to do this pretty thoroughly during the last twenty years. Our present car is composed of but thirty-two moving parts, which number includes front and rear wheels, steering gear, and everything moving on the car, as well as the power plant. This is about the number of parts contained in a first-class self-starter. We use no clutches, nor gear-shifts, nor fly wheels, nor carbureters, nor magnetos, nor spark plugs, nor timers, nor distributers, nor self-starters, nor any of the marvelously ingenious complications which inventors have added in order to overcome the difficulties inherent in the internal-explosive engine and adapt it to a use for which it is not normally fitted.

To put this into conventional "gas car" language: there is no gear-shift lever and no clutch-pedal. A slight range of movement, not exceeding four inches, of the throttle lever sub-imposed on the steering wheel, controls the admission of steam to the cylinders. The volume of steam thus admitted is the sole governing factor in the speed and power of the car. A light touch, and the car starts silently and gently "like a yacht leaving its moorings." This minimum speed may be maintained all day if desired, with no shaking or rattling, no overheating or stalling, and above all without the slightest mental anxiety or attention. Or it may be increased to maximum, by nothing more than another light touch of the throttle.

This is what makes the Stanley the safest car in the world. In crowded city traffic, in treacherous defiles, or in unknown country travel, the driver needs every bit of his mentality to master the road conditions. With the Stanley car he can concentrate solely in this, for he knows that the car will do precisely what he wants, precisely when he wants it. A slight movement of the throttle and he can

"jump" the traffic, or he can pick his way slowly or fast on the dangerous hill. No checking or choking can possibly "stall the motor." Such a thing is as impossible to a Stanley car as to a sailboat. He cannot do it accidentally, and he cannot even do it if he tries. There is never an opportunity to regret that he did not "change speeds" a second earlier or a second later; there is never the slightest danger of being caught in a sudden predicament when only the utmost alertness of mind and dexterity of hand can extricate the driver and his family from trouble.

Thus it is, perhaps, that ninety per cent of Stanley car owners drive their cars without the assistance and without even the presence of trained chauffeurs. And thus it is, also, that there is an astonishing number of old men amongst our customers. This last feature has by some mysterious process been twisted into a detraction by our competitors, and they apply to the Stanley the phrase "an old man's car" as a term of contempt; while we confess that we have always boasted of it. Surely that simple control and safety which are called flexibility appeal even more strongly to young men; for they are the first to demand from manufacturers four cylinders and six cylinders and double-fours and twin-sixes and four speeds forward and selective transmissions and electric gear shifts and self starters and electric final drive and two-speed rear axles and such devices to reduce, even if they cannot eliminate, the difficulty of operating an automobile.

The entire control of the Stanley is between two fingers of one hand; and this, without the addition or interposition of any clutch, or gear shift, or mechanical device or complication, produces an infinite number of speeds from the lowest up to the very highest. In fact, the Stanley car with its steam engine is the only automobile which is naturally adapted to variable speeds and variable loads.

The present confusing market which confronts the purchaser of a motor car is so absurd and contradictory that it must be an exasperating experiment to try to determine which car to buy. In a recent trade paper an advertisement of a standard automobile appeared which should command attention. The advertisers state that they believe a four-cylinder motor to be the standard and ultimate type, and they consider it unwise to depart from this reasonable and well tried practice, and point to the trend of European practice to back them up. Their argument seems sensible and is undoubtedly correct. There are other concerns of international reputation who are, and have been for some years, building six-cylinder cars, who frankly and candidly admit that the six-cylinder is and should be the ultimate type. Your attention is called just as forcibly to the eight-cylinder car; and the excuse given for adding the two extra cylinders and the necessary attending complications is the elimination of part (but not all) of the vibration and part (but not all) of the gear-changing. Within the past few months several twelve-cylinder cars have appeared. Their claims of flexibility and steady power are so descriptive of our own goods that we could, with perfect truth and much modesty, have applied their statements to our car nearly twenty years ago. Twelve cylinders, even when offered by a leading manufacturer, must indeed seem excessive to the average motor-car buyer, particularly when he is told and shown by even more successful manufacturers that four cylinders are all that are required properly to propel an automobile. When will the public be offered "twin eights," or "triple sixes," or "double twelves," and so on, without end?

The public is now offered another new departure—a more radical departure than the mere multiplication of cylinders, since it

is a sort of confession or claim that the control and the final drive through a clutch and a gear-shift set, as in the conventional automobile, are utterly unsuited for a variable speed-variable load road device. It consists of an internal-explosive prime mover of a goodly number of cylinders, combined by astonishing ingenuity to an electric final drive. So far as this arrangement goes, it does well; for it has eliminated a part of the complications which have become so distasteful to the automobilist. But in our opinion ninety per cent of the remaining complications would be eliminated if a steam plant were used as prime mover; but if this were done, then the ingenious and expensive electric appliance would, of course, become entirely superfluous. For after all, the chief claim of its exponents is that this car is controlled by one lever, and is "almost as flexible as steam."

We asked the manager of one of the standard cars now using six cylinders if they intended to bring out an eight or twelve cylinder car in the near future. His answer was instructive. He said they did not expect to make any change whatsoever, *unless the public demanded it.* In other words, the judgment of his company as motor-car makers was that their present car was thoroughly practical; but if the public, knowing but little of automobile mechanics, were going to insist upon eight or twelve cylinder cars, the company would furnish them against its better judgment.

But there is a deeper significance to the phrase "unless the public demanded it." As a matter of fact, the public is not demanding twelve cylinders or eight cylinders or six cylinders or four cylinders. What the public is demanding is a car with a greater feeling of security, with less vibration, less noise, less physical effort in manipulating gear-shift levers, and above all, less mental anxiety in anticipating the necessity and danger in doing it. Although automobile manufacturers have said from the beginning, even in the days of single cylinders, that shifting gears was not dangerous and was no disadvantage, just as they said for years that cranking a car was not dangerous and was no hardship, yet we find now that they are driven to such extremes as eight and even twelve cylinders and electric final drives with almost innumerable moving parts, because their cars have proved dangerous, clumsy, exhausting, and entirely unworthy in the public's hands. Ever since we have been engaged in manufacturing automobiles we have made a car that possessed the qualities now so loudly called from the housetops. Nearly twenty years ago we began manufacturing an automobile that proceeded with a soft, smooth, gliding motion, without any noise or vibration, without any mysterious technicalities, without any clutches or gears. Those features, in other words, which have recently become so fearsome to the conventional automobile manufacturer, were never a part of our car and could never possibly be a part of our car.

STANLEY MOTOR CARRIAGE CO.

We have always sold the finest ride obtainable at any price; and that which is the principal thing for which automobiles were intended, is the pleasure and comfort of riding in one. The ease of operation and control is so simple that any member of the family may drive if desired.

Our customers have been made up almost entirely of quiet, self-reasoning men and women who possess enough intellect to decide questions for themselves—who have the courage to buy the house they want, or the overcoat they want, or the automobile they want, even though their neighbors advise them not to. There are enough people like this, it seems. That explains why we are able to sell each year our whole output without any advertising.

Our present cars are, of course, the result of gradual refinement and improvement. We have never had to guess at the perplexing problem as to how many cylinders were necessary properly to propel an automobile. This problem was solved for us nearly one hundred years ago, when the first simple, two-cylinder, double-acting engine was applied to a road vehicle. Our development has been along the line of refinement, not of experiment. One of the interesting improvements for us to solve was that of increasing the water mileage. Formerly our cars would run from forty to fifty miles on the water supply, which would then have to be renewed. Taking water was rarely a hardship, but it had to be done. Furthermore, there was a show of exhaust steam from these cars. Both these features have been done away with by the addition of a condensing system. With the radiator in front, it is difficult, except for its superior behavior on the road, to tell the difference between the Stanley and a conventional automobile.

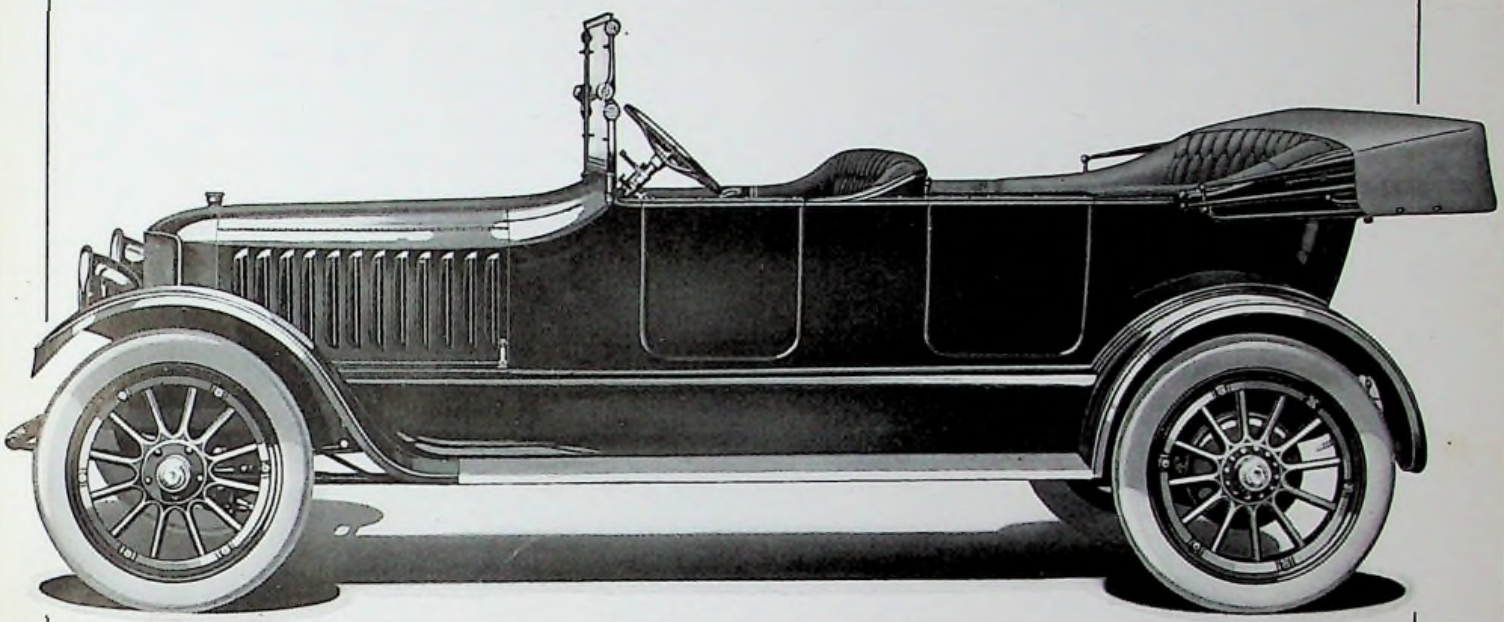
This radiator has less work to do than on other cars; that is, it has fewer heat units to take care of. When the car is in motion the radiator contains no water, since that passes back into the water tank immediately it is condensed from the steam. When the car is standing, the radiator is empty, and may be said to be "steam dried." So there is no thin sheet of water in it to freeze in cold weather. Incidentally, in adopting this condensing system, we adopted a graphite cylinder lubricant, which costs less, goes further, and is far better than the former cylinder oil.

For several years Stanley owners have enjoyed a unique privilege among automobilists—that of using kerosene for fuel. The problem of exploding kerosene instead of gasoline in an internal-combustion automobile is as old as the automobile. But it has been so impossible that it has never had serious consideration by first-class engineers, and now has been utterly abandoned by all except a few cranks. And this even in the face of the constantly increasing price of gasoline. The Stanley burner, however, burns kerosene, which usually sells for about one-third to one-half the price of gasoline. At twelve miles to the gallon, therefore, the fuel expense would be equal to twenty-four to thirty-six miles per gallon. Kerosene fuel helps to make the Stanley the safest car in the world.

The time necessary to get up steam used to amount to about ten minutes. Now, with a separate fuel system to feed it, the pilot light will hold for three or four days without refilling. This keeps up steam over night, and will keep the water hot for three or four days, so that the car is always ready on a moment's notice; and pumping fuel into the main burner pressure tanks, which used to be occasionally irksome, has been entirely eliminated.

In the following pages will be found pictures and descriptions of our various models. If there is any further information desired, we or any of our dealers would be glad to supply it.

STANLEY MOTOR CARRIAGE CO.



STANLEY TOURING CAR
Five Passenger Twenty Horse Power
MODEL 725
Price, $ 2200 f.o.b. Newton, Mass.

SPECIFICATIONS — *Body:* Aluminum; stream-line, flush-side; concealed hinges; door opening, front 19 inches, rear 20 inches. Front seat 44 inches wide, 18 inches front to back, and cushions 8 inches deep. Rear seat 48 inches wide, 20 inches front to back, and cushion 10 inches deep. Tonneau space 30 inches from back of front seat to front of back seat.

Upholstery: Soft, bright finish, straight grain leather. Cushions upholstered with genuine horsehair. Seat sides and backs of same quality material and workmanship as cushions. Front seat not partitioned, but with divided cushion. Cushions in both front and back seats tilted for comfort, and with air outlets to get full benefit of spring.

Top: Improved one-man top, fastened to windshield. Close fitting bows with Bair bow-holders.

Windshield: Special Troy clear-vision, rain-vision ventilating windshield engaging with top; black enameled arms with nickel mountings; built into the body design.

Color: Body and wheel spokes Valentine's dark, rich blue, called Russian Body Blue, with fine gray striping. Running gear, except the wheel spokes, black without striping. Mudguards black enameled, without striping. Hood and radiator. header, Russian Body Blue.

Lighting System: Electric lights, Apple dynamo, geared direct to differential. Willard L. B. A. 6-80 storage battery; large

electric headlights in black and nickel with large and small bulbs; electric dash and tail lights; no side lights.

Horn: Klaxon electric under-hood type, button under driver's left foot.

Steering Gear: Warner steering gear of worm and gear type, with 18-inch wheel; on left side of car.

Wheel Base: 130 inches, with unusually small turning radius. Standard 56-inch tread.

Wheels: 34 x 4½, with Stanweld No. 60 Demountable rims with quick detachable clincher type rings. Wire wheels can be supplied at an extra cost of $90 for a complete set of five.

Tires: 34 x 4½ Goodrich Silvertown cord grooved. Provision for extra tire at rear of car.

Springs: Semi-elliptical front, full elliptical rear. All spring bolts lubricated by nickel-plated grease cups.

Mudguards: Heavy pressed steel crowned mudguards, with concealed rivets; mudguards and aprons electrically welded. Running boards clear and covered with gray linoleum and bound with angle aluminum.

Chassis-Frame: Carefully tested channel section pressed steel, narrowed in front to give short turning radius.

Front Axle: Complete Timken front axle installation, incorporating tilted steering spindles which from the beginning have been a feature of Stanley cars.

Rear Axle: Stanley rear axle with the simple Stanley differential gear and with complete Timken bearing equipment.

Brakes: Service brake contracting on brake drum, operating from foot pedal. Emergency brake expanding internally on brake drum and operating from hand lever. Brake drums 14 inches in diameter, 2 inches wide.

Pumps: Driven from rear axle at one quarter engine speed with long stroke. All four pumps, the cylinder oil pump, the fuel pump, the service and emergency water pumps are driven direct and all four are actuated by but three moving parts.

Water Tank: Under the frame at the driver's seat; capacity twenty-four gallons, with gauge dial on dashboard.

Condenser Radiator: Mayo V-shaped, cellular type; giving a water-tank capacity of 150 to 250 miles.

Fuel Tank: Main fuel (kerosene) tank (fitted with quantity gauge) under frame at rear, behind axle. Pilot tank (fitted with quantity and pressure gauge) and cylinder oil tank under front seat. Baggage space under rear seat.

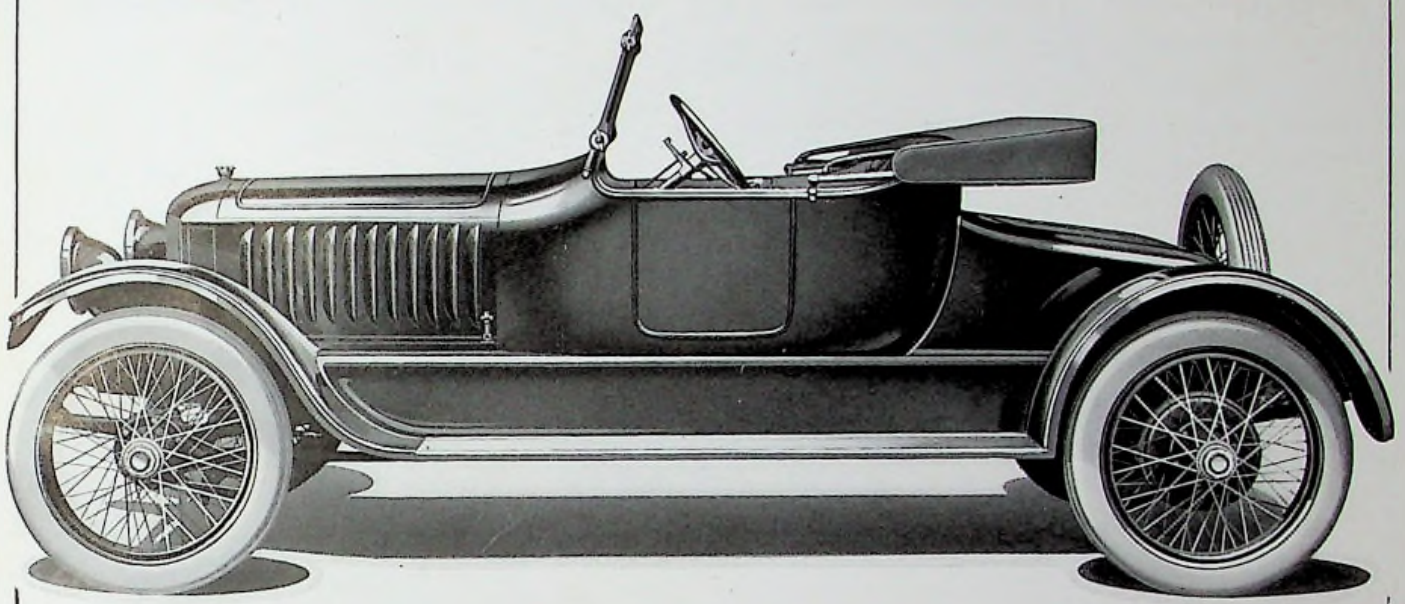
Boiler: Of regular Stanley type, lower head and shell pressed out of one piece of steel, top head welded in by oxyacetylene process. Three superheaters, heavily nickel-plated steel tubing. Extension water feed delivering the water to the boiler below the water level.

Burner: Improved drilled type. Our new combination burner takes equally well gasoline or kerosene, or any mixture of the two in the main burner. The pilot light takes gasoline and is fed from a separate tank under low pressure, the four-gallon tank supplying the pilot for about one hundred consecutive hours.

Engine: Engine equipped with oil-tight dust-proof case. Bolted rigidly to the rear axle and braced from the front of the engine back to the rear axle, thus making a unit of the engine, differential and rear axle, which run in an oil bath.

Chassis Price: The 725 chassis only, which includes everything but body and body-fittings, is offered at $1825 f. o. b. Newton, Mass.

STANLEY MOTOR CARRIAGE CO.



STANLEY ROADSTER
Three Passenger Twenty Horse Power
MODEL 726
Price $ 2200 f.o.b. Newton, Mass.
Wire Wheels (5) $ 90 Extra

The Roadster has the same power-plant and virtually the same chassis as the Model 725 Touring Car. The wheel base is 130 inches, the tires are 34 x 4½, Goodrich Silvertown cord. The seat is wide enough for three, with the driver's seat advanced a little in front of the others. The wire wheels shown above are not regular equipment, but will be supplied when ordered, instead of wooden wheels, at $90 extra, the necessary fifth wheel being included in this price.

The car is extremely smart in appearance, as the illustration above will show, and it is extremely smart in action also. In a roadster car, which the owner himself almost invariably drives, the freedom from physical effort and from anxiety, which Stanley cars provide, is particularly desirable. And in this one we have the smart, graceful lines, the large, roomy, comfortable, easy riding body, the high power always at the driver's instantaneous command, and the extreme ease of control all combined, at a very moderate price, to give the owner that which he wants when he buys an automobile; namely, a comfortable, peaceful, speedy ride. A commodious baggage compartment, 35 x 23 x 11 inches, is located at the rear.

The specifications for the Model 725 apply generally to the Model 726.

HOW THE STANLEY SOLVES THE DELIVERY PROBLEM

Stopping two hundred times a day means starting two hundred times a day. Starting two hundred times a day means letting the engine run, or cranking, or using a self-starter two hundred times a day.

Self-starters, it seems, won't do the work at that rate. Not only will the self-starter fail soon to respond under such excessive use, but also the battery will fail to be properly charged. And when the operator of a commercial car, stopping two or three hundred times a day, finds that his self-starter fails once in three or four times, he will soon learn that it is easier to crank the car by hand in the first place than it is to get into the car, find the starter not working and then get out again and crank it.

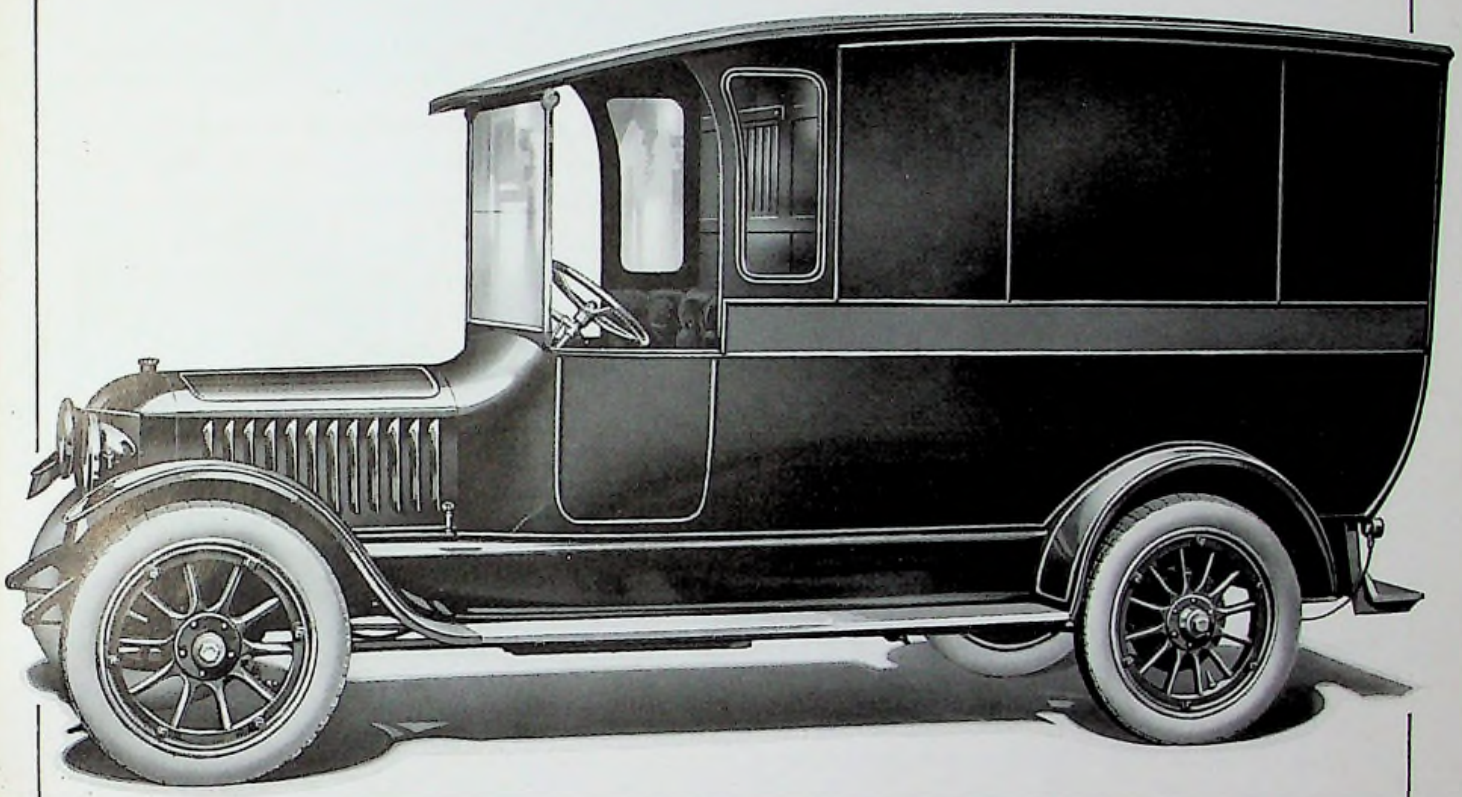
Letting the engine run is not good practice. Tradesmen find that it is objectionable to their customers, as well as being against the law in most cities. But it is bad practice anyway. If each stop consumed only one minute, two hundred stops would mean three hours and twenty minutes a day. Who would let his engine run idle three hours a day every day, and expect to have a good engine?

But however it may be done, starting the car two hundred times a day also means pedaling the clutch and going through all the speeds two hundred times a day. People do these things, of course. Thousands of commercial car drivers stop and start their cars even three hundred times a day, and they get used to it just as men can get used to any hardship. But they do it at a cost to their physical and nervous systems which is appalling, and which seriously limits their value to their employers. Most owners of delivery wagons want men for route work who are in a measure salesmen. Laundry drivers, for instance, are supposed to get new customers and hold the old ones. But when the physical and mental strain of driving an automobile cuts into their efficiency as salesmen, the proprietor is not gaining all that he should. While the automobile laundry route is more than double the horse wagon route, it is limited not only by the efficiency of the car, but also by that of the driver. Some laundries have found it profitable to put two men on each wagon—one a laundry man, the other a chauffeur.

All this is, of course, leading up to the point that the simple control and flexibility of the Stanley, valuable as they are to the private owner in his pleasure car, are infinitely more valuable in the commercial vehicle. When the Stanley driver comes to a customer's house and brings his car to a stop, he simply sets his emergency brake and gets out. The car stands still. There is no puffing engine, no noisy vibration. When the driver is ready to go again, he doesn't try his self-starter, or crank the car, or pedal his clutch, or go through various gears. He simply opens the throttle with two fingers and the car moves away with a smooth gliding motion, and without a sound, and without offense to any neighborhood at any hour of the day or night, and without any physical or mental effort for the driver. In long, or even in short stops, in cold weather, when the internal-explosive motor is sure to get chilled and balk, the ease with which the Stanley gets away is particularly gratifying.

Our delivery wagons are not expensive in first cost, and they are handsome and dignified in appearance, and fitted to business of the highest type, in the equipment of which the proprietors take some pride. The chassis costs $1775. A panel body in keeping with this chassis would cost say $500 or more. But in low cost of upkeep these cars can

STANLEY MOTOR CARRIAGE CO.



STANLEY DELIVERY WAGON
Capacity 1500 Pounds Twenty Horse Power
MODEL 727
Price, Chassis Only, $1775 f.o.b Newton, Mass.

hardly be equalled. The two principal items of upkeep are tires and fuel. Our cars burn kerosene, which usually sells at about one-third the price of gasoline; and the tire mileage is even greater in the commercial cars than in our pleasure cars, as compared with ordinary cars, since the jerky starting is entirely absent. Furthermore, replacements of parts are far less, since so much less is taken out of our car in this commercial service.

If you want a car that will start gently and silently, proceed smoothly and noiselessly at any speed, take nothing out of the efficiency of your salesman, and lend dignity and prestige to your business, then the car you want is a Stanley.

The Model 727 twenty horse power delivery wagon chassis has the same power plant as the Model 725 touring car. The specifications are generally the same. The exceptions are that the wheel base is 134 inches; the tires are Goodrich fabric instead of Goodrich Silvertown; and the engine is geared 32 to 66.

THE SUCCESS OF THE STANLEY MOUNTAIN WAGON

Our Mountain Wagon derives its name from the fact that it is built for work on hard, rough roads and steep mountain grades. No other car has ever been developed which will do the work which these Stanley Mountain Wagons will do.

These are big cars—long and bulky and sturdy. They have to be, to carry twelve passengers over rough, steep mountain roads. In perhaps a majority of cases where they are in service, other cars have failed utterly to do the work, or have not even been put to the test. In other cases, where the service is less strenuous, and other cars have been able in a measure to render some sort of service, the Stanleys have proven that they can do the work at a cost which insures a better profit, and with such reliability and comfort to the patrons that they have soon learned to give the Stanleys the preference.

One of the chief advantages of the Stanley is the ease of operation. There is no risky rushing at hills and water bars, no dangerous taking of curves at high speed, and no noisy racing of the motor. The abundance of reserve power always at the command of the operator enables him to pick his way up the rough, stony hill, and to slow down almost to a stop over water bars and around blind curves. There is no clutch to work constantly at every turn. There is no change speed lever, the effort to work which is multiplied so greatly on bad roads and changing grades. And above all there is no keeping the mind constantly on the alert to anticipate these conditions which the operator knows may come up at the most unexpected and critical moments. The physical effort to meet these conditions, with the internal-explosive car, is great enough, but it is exceeded by the nervous effort of constantly looking forward for them.

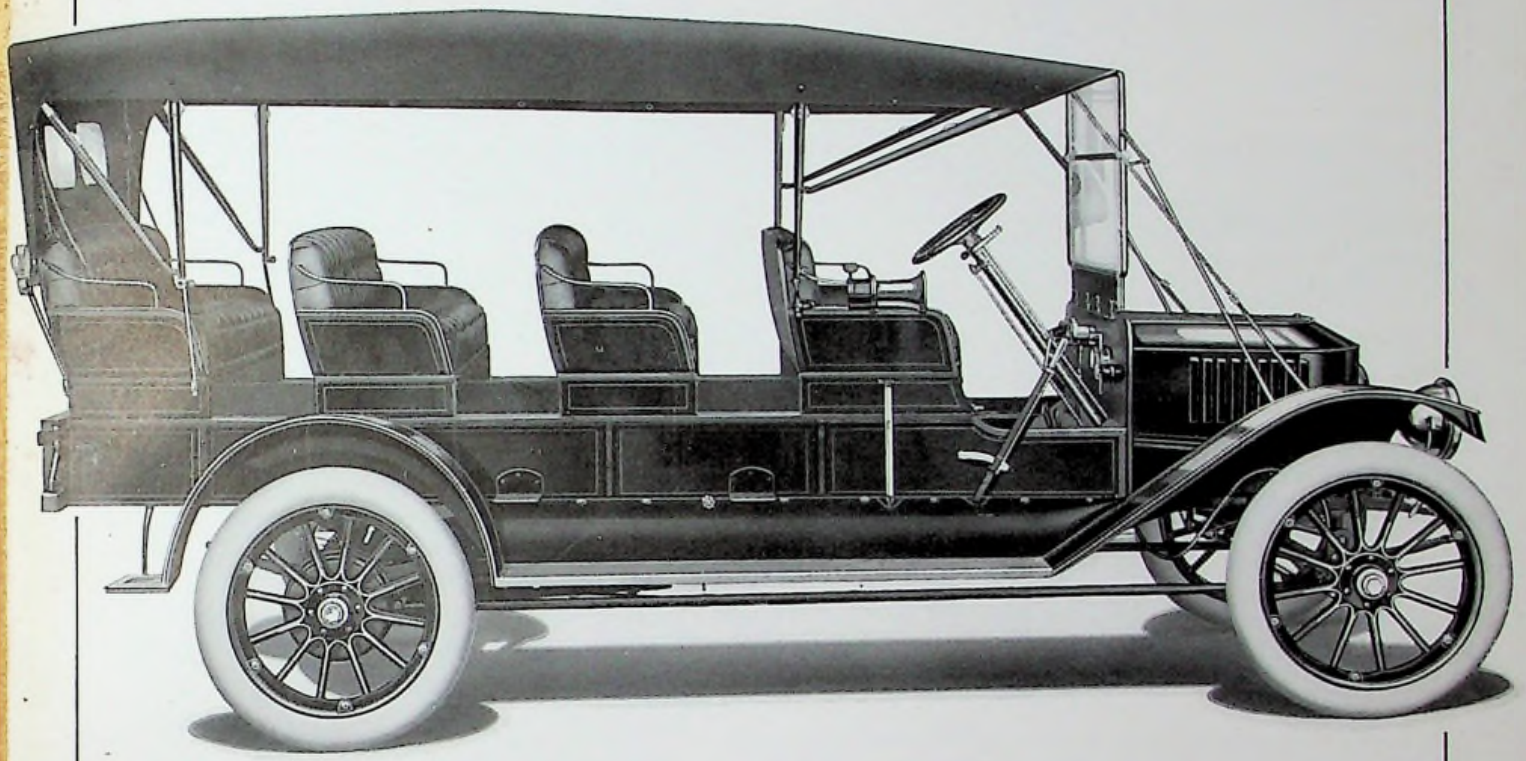
The entire control is in the brakes and a single little throttle lever on the steering wheel, which is moved backward and forward only a few inches from one extreme of speed and power to the other. The speed and power are determined solely by the amount of steam admitted by this simple throttle to the engine, without the interposition of such complications and devices as the clutch, change speed gears, etc.

Therefore the Stanley Mountain Wagon can, in fact, be driven with less physical effort and far less mental anxiety than any other make of car. And this means, furthermore, that the driver on resort or route service, where it is so necessary to have one who knows the route and the patrons, can do his work over a longer route and more constantly day after day without fatigue and laying off than he can on any other kind of car.

As the motor is silent (an unusual feature especially in cars of this size) it makes this car especially desirable for resort hotel work. One of the most fashionable eastern resorts does not permit internal-explosive automobiles, even pleasure cars, to come up to its principal carriage entrance because the noise they make disturbs the guests on the piazzas; but a separate entrance is provided for them at some distance. The Stanley Mountain Wagons which this hotel owns, however, make regular stops at the carriage entrance and disturb no one.

We supply the Model 825 Chassis only, at $2200 f. o. b. Newton, Mass.

STANLEY MOTOR CARRIAGE CO.



STANLEY MOUNTAIN WAGON
Twelve Passenger Thirty Horse Power
MODEL 825
Price, $ 2600 f.o.b. Newton, Mass.

SPECIFICATIONS — *Body:* The body is of fine seasoned ash and is entirely demountable from the chassis. The seats are all removable so that part of or all the car may be used for express or baggage. There are seats for twelve, including the driver; they are arranged for extreme comfort over hard roads; the leather, springs and hair are of the same high quality used in our touring car. A wide windshield is fitted and the top is supplied with quick-acting curtains entirely protecting the occupants in inclement weather.

Color: A rich handsome red is used, called Valentine's Uzatona Red, for both body and running gear. The upholstery is black.

Wheel Base: 136 inches; standard 56-inch tread.

Tires: 36 x 5 Goodrich safety tread, clincher side quick detachable tires; Stanweld No. 60 demountable rims; extra rim supplied.

Springs: Full elliptical front and rear.

Brakes: 16 inches in diameter, 2¾ inches wide.

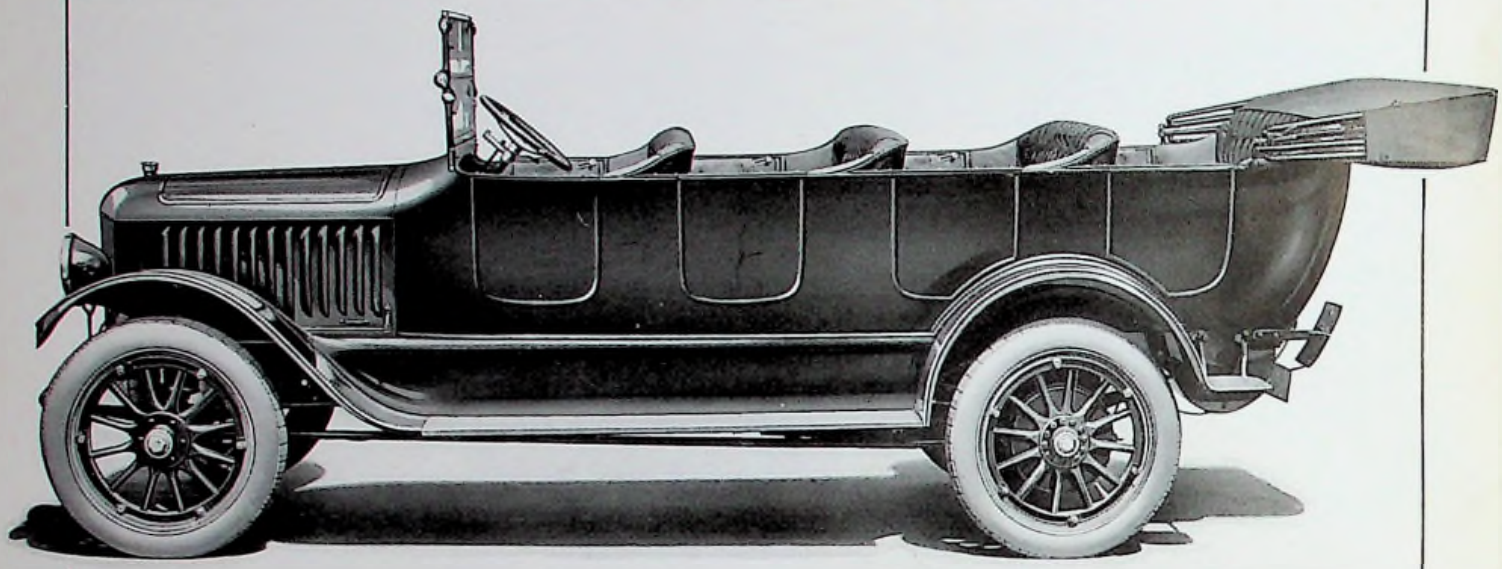
Water Tank: Contains 50 gallons; capacity 40 to 50 miles.

Boiler and Burner: 26 inches in diameter.

Engine: 30 horse-power, 4½ x 6½ inches.

Other Specifications: For amplification of above and for other specifications, see specifications of Model 725.

STANLEY MOTOR CARRIAGE CO.

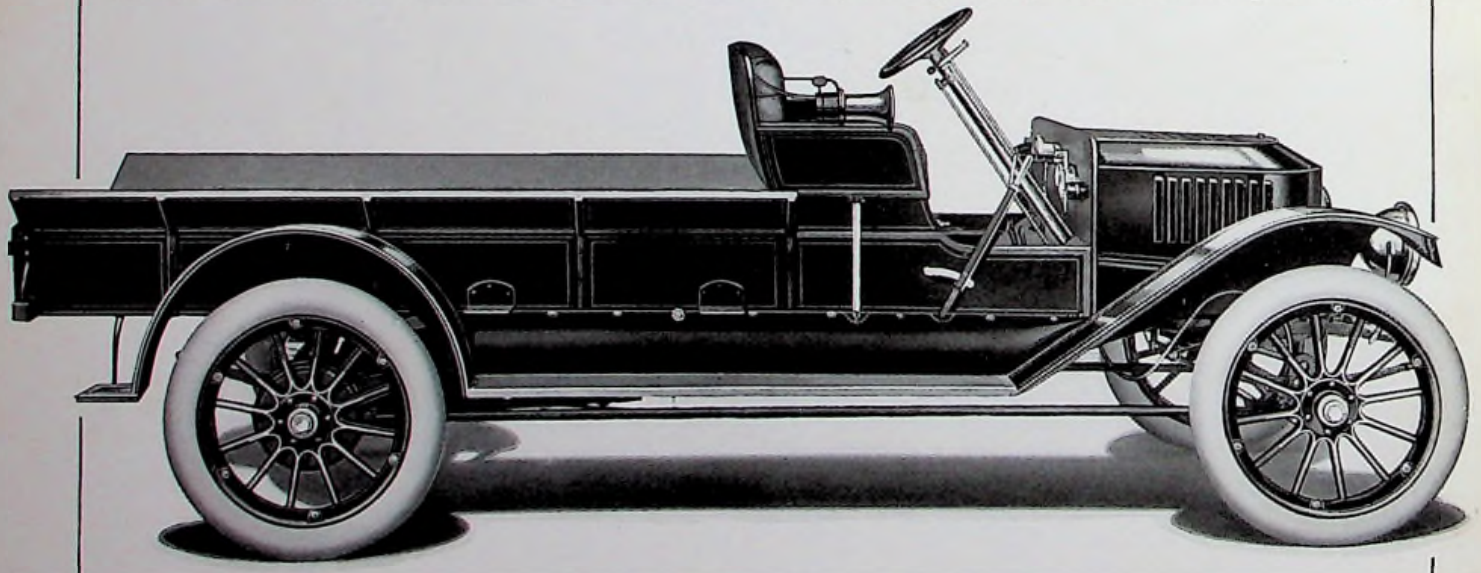


STANLEY MOUNTAIN WAGON

With flush-side body on Model 825 Chassis

Price, $ 3100 f.o.b. Newton, Mass.

We can supply the regular Model 825 chassis fitted with the above handsome, rich and luxurious 12-passenger body, of streamline, flush-side aluminum construction. It makes a very fashionable and impressive appearance, and is in demand at high-class resorts.



STANLEY EXPRESS WAGON

Capacity 2500 pounds on Model 825 Chassis

Price, $ 2400 f.o.b. Newton, Mass.

In express or delivery wagon style the Model 825 has all the advantages as in the mountain wagon style. The ease of control and absence of clutch and gear-shift make it very desirable for routes with frequent stops ; and the absence of engine vibration makes the car adaptable to carrying garden produce to market and transporting other kinds of perishable goods.

A DESCRIPTION OF SOME OF THE MORE IMPORTANT PARTS OF THE STANLEY

STANLEY BOILER: The Stanley boiler is of the fire tube type. The lower head is part of the pressed steel shell. The shell is wound with piano wire. The tubes are 33/64 inch diameter. The tubes are expanded into the heads by means of a taper expander. In the 23-inch boilers there are 751 tubes, each 14 inches long, with 104 square feet of heating surface. In the 26-inch boiler there are 999 tubes, each 16 inches long, with 158 square feet of heating surface.

Stanley boiler. The shell and the lower head are of one piece of pressed steel. The upper head, the shell, and the ring are welded together by the oxyacetylene process. The tubes are reenforced at each end with steel bushings. The bands indicated in the cut are of thin brass, to hold in place the half-inch sheet asbestos insulation

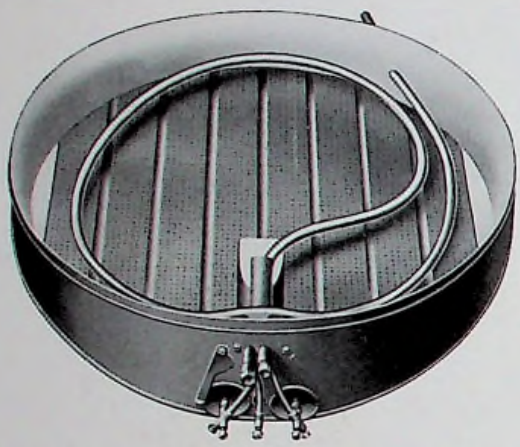
STANLEY BURNER (Patented): The Stanley burner consists of a corrugated casting, with an infinite number of holes drilled through the flat surface on either side of each corrugation; the vaporizer; and the mixing tubes. The fuel becomes thoroughly vaporized in passing through the tubes of the vaporizer, which are exposed to the flame of the burner. It issues at high velocity from the nozzles and passes into the mixing tubes, drawing in with it the amount of air necessary for perfect combustion. It then enters the chamber below the casting and passes up through the drill holes, where it burns as in a bunsen burner, with a clear blue flame. The pilot light acts similarly, but it has a very small independent casting. The pilot light, burning directly under the vaporizer, keeps it hot while the main burner is not burning, and will relight the main burner after it has been shut off by either the automatic or the hand valve.

The burner is so constructed that it secures perfect combustion and intense heat, and is entirely encased, there being no air inlet except the mixing tube; consequently it is not affected by air currents.

The pilot light is not shut off by the automatic, but burns continuously after being lighted until shut off by the hand valve, and is just strong enough to hold the steam pressure. The car can be left standing over night with the main burner turned off and still have steam enough to run. In fact, it is common practice to leave the pilot burning several days.

The pressure on the fuel in the main burner pressure tank is maintained automatically when the car is running. The pilot light, which burns gasoline only, is fed from a separate pressure tank, holding about four gallons under about forty pounds pressure, and will burn continuously for three to five days. When the car is left standing with the pilot

burning, the pressure on the main burner pressure tank is not affected.



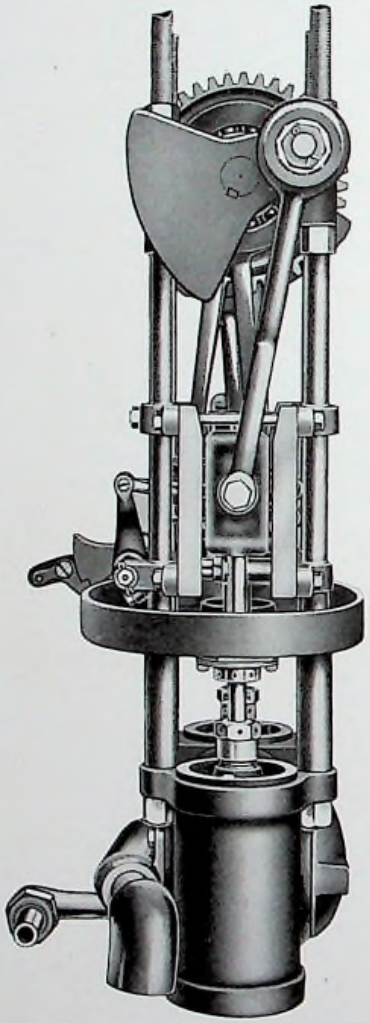
Stanley burner, showing vaporizer and mixing tubes. A drilled cast-iron plate completely encased. In effect a huge bunsen burner, giving perfect combustion

STANLEY ENGINE—(*Patented*): The engine used in the Stanley Steam Car is of our own design and manufacture and is patented. It is two cylinder, double acting, of the locomotive type, with plain slide valves and link motion reverse.

This engine is more completely a roller-bearing engine than any other engine in use in an automobile.

The engine is placed horizontally in such a position that the steel gear on the crank shaft of the engine engages the main gear of the differential, thus forming a direct power transmission. The front end of the engine is suspended from the body of the car, and partakes of its up and down motion. The rear end of the engine is bolted rigidly to the rear axle, thus keeping the gears always perfectly adjusted. The engine is braced from its front back to the rear axle, thus making a unit of engine, differential and axle.

The Stanley engine consists of only thirteen moving parts exclusive of rollers. Being of the double-acting type, each piston gets an impulse at each end of the cylinder. Thus this two-cylinder engine, with only thirteen moving parts, gets as many impulses per revolution as the conventional eight-cylinder, internal-explosive engine. As



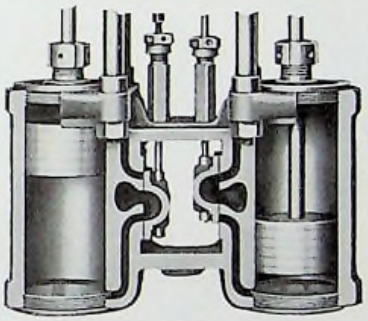
Side view of Stanley engine, showing connecting-rod and bearing, with counterbalance, steam chest cover, and exhaust outlet. The Stanley engine is more completely a roller-bearing engine than any other engine used in an automobile

a result of this condition, the Stanley engine makes fewer revolutions per mile, and therefore fewer per minute at a given speed. For instance, a Model 725 car, with 34-inch rear wheels and geared 40 to 60, makes 596 revolutions per mile as to its rear wheels and 894 revolutions per mile as to its engine.

Thus, at 30 miles an hour the engine will make only 447 revolutions per minute.

The engine, driving gear, and differential are enclosed in an oil-tight and dust-proof case and run in an oil bath.

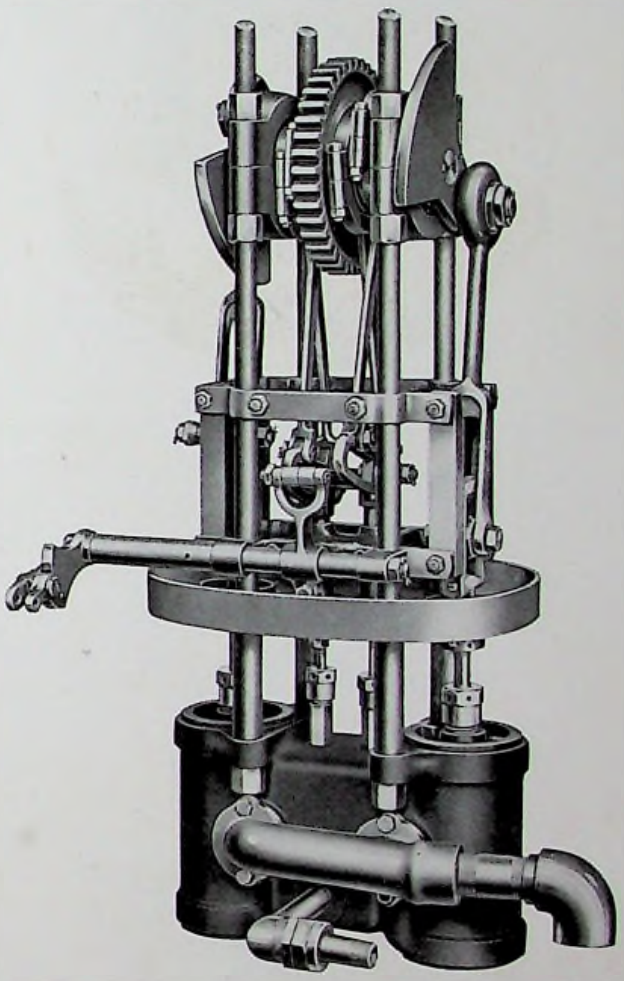
CYLINDER LUBRICATION — All our cars are equipped with a mechanical cylinder oiler which delivers a definite quantity of oil to the steam chest each mile the vehicle is run. Just as much oil goes in the last mile of the run as the first. This mechanism is very simple and reliable. A sight-feed device on the dashboard shows whether or not the pump is pumping oil.



View of part of Stanley engine with cylinders cut away, to show piston and valve motion. The Stanley engine is a simple engine, double acting (four impulses to the revolution), with slide valves and link motion reverse

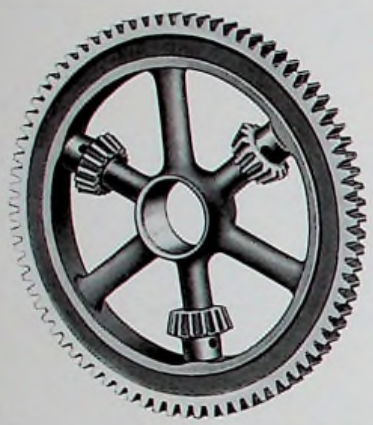
SUPERHEATED STEAM — (*Patented*): The use of superheated steam is desirable in two ways. First, it saves water. While water practically costs nothing, it has to be carried, and this adds to the total load. Second, it saves fuel. This costs money. By our patent system of superheating we completely avoid overheating and consequent burning of the cylinder oil. Our system, while securing a high degree of superheat, renders it impossible to overheat.

STANLEY DIFFERENTIAL — The Stanley differential consists of a spur gear and three bevel pinions, thus making only four moving parts. The spur gear meshes directly with the main gears of the engine; and the pinions mesh with the bevel gear affixed to the inner ends of the driving shafts



View of Stanley engine, obliquely from above. Showing main bearing, eccentrics, link motion, baffle-plate, "hooking-up" device. There are but thirteen moving parts in the Stanley engine

of the rear axle, on the outer ends of which are a round taper and a square section on to which are forced the rear wheels. This is in fact a bevel gear differential, and is what has always been used on Stanley cars. It constitutes the most direct delivery of power from engine to rear wheels of any automobile in the world; and this differential is all the "transmission" there is in a Stanley car.



Stanley driving gear, which meshes into the main gear on the main bearing of the engine, while the bevel pinions mesh into the bevel gears on the driving shafts. The only "transmission" in the Stanley car. Only four moving parts

STEERING WHEEL AND "CONTROL"—Aside from brake and reverse pedals, the entire Stanley control is in the throttle, subimposed on steering wheel and operated by the right hand. The illustration shows how easily the driver may manipulate the throttle by the index and middle fingers, while still retaining his grip on the wheel. There are no other throttles, and no change-speed levers. The speed of the car is governed entirely by the amount of steam admitted into the engine, and this amount is determined by the position of one throttle. The entire range of the throttle lever is only a few inches, and in an ordinary day's run a play of a couple of inches between extremes is all that is required. Stanley control shows up to its best advantage in the two extremes of automobiling—hard mountainous roads and crowded city streets. No unexpected hill or quagmire can "stall" the motor—and no sudden stop or sudden start in city traffic forces the operator to "change speeds." The whole range of conditions is covered by this one simple throttle.

Steering wheel with hands, showing how the throttle lever is lightly gripped in the fingers without removing the hand from the wheel

Steering wheel, showing the single throttle in the Stanley system of control locked by its locking screw

The reverse pedal is in position under the left foot. The controlling brake pedal is in position under right foot. Ordinarily these act as foot rests for the operator. The reverse gear may also be used as a brake. All these features make the Stanley control the simplest and the Stanley car the safest on the road.

PUMPS—The pumping system includes two water pumps, one fuel pump, and one cylinder oil pump, which are so aligned that the four plungers form one (built-up) part. This plunger part is actuated from

Stanley pumps, showing how the four plungers form one moving part. The two large pumps are for water, one or both of which may be by-passed by the automatic by-pass

the rear axle by two other parts, so that in the whole pumping system there are but three moving parts, exclusive of rollers. The pumps move constantly while the engine moves and not independently of the engine. There are also a hand fuel pump and a hand water pump.

SPECIFIC INFORMATION CONCERNING CERTAIN PARTS

General: The boiler and burner are in front under the hood, with no moving parts. The pumps, two for water, one for gasoline and one for cylinder oil, are all actuated by three moving parts. The engine has thirteen moving parts, the differential has four, and the driving shafts of the rear axle constitute two more. There are also four automatic valves, one controlling the gasoline by-pass, the other controlling the burner, each with one moving part. Thus there are but twenty-six moving parts, exclusive of rolls and balls, in the whole Stanley power plant.

Engine: In the twenty-horse-power cars, 4 x 5. In the thirties, 4½ x 6½. Roller bearing throughout. Hooking up device as on all recent cars. Stuffing boxes accessible without removing main center case. The engine is equipped with an oil-tight, dust-proof case, the rear members of which are of aluminum. The engine, differential and axle thus run in an oil bath.

Engine Gear Ratio: In the Models 725 and 726 the ratio is 40 to 60. In the Model 727 the ratio is 32 to 66. In the Model 825 the ratio is 40 to 80

Boiler: In the twenty-horse-power cars, 23 inches in diameter. In the thirties, 26 inches in diameter. Of regular Stanley type, lower head and shell pressed out of one piece of steel, top head welded in by oxyacetylene process. Superheaters heavy gauge steel tubing, heavily nickel-plated. Extension water feed, feeding the water to the boiler below the water level.

Burner: Our new combination drilled burner takes equally well gasoline or kerosene, or any mixture of the two in the main burner. It gives, under normal conditions, about 10 to 12 miles per gallon, on the Model 725; and since kerosene now sells for about one-third the price of gasoline the fuel consumption when using kerosene is equivalent, dollar for dollar, to 30 or 36 miles to the gallon. The pilot light takes gasoline and is fed from a separate tank under low pressure. This tank holds about four gallons of gasoline, which is enough to supply the pilot without replenishing for about one hundred consecutive hours. It is supplied with a quantity gauge, as well as a pressure gauge.

Feed Water Heater: A feed water heater suspended from the sill is heated by the exhaust steam and adds appreciably to the efficiency of the power plant.

Pumps: All four pumps are driven direct from a gear on the rear axle without links or ratchets, and all four are actuated by but three moving parts. They run at one-quarter the engine speed, with a long stroke.

Low Water Automatic: All our cars are equipped with a low water automatic fuel shut-off, which automatically shuts off the main burner when the water in the boiler gets as low as a point about four inches above

the bottom, thus warning the driver that his water is getting low. This consists of a brass valve stem enclosed in a tube which is connected to the boiler, so that when the steam is admitted to the tube it expands the brass valve stem which thereupon seats in the valve seat and cuts off the fuel. When the water level has been raised, the water enters the tube and contracts the valve stem, which thereupon leaves the seat and allows the fuel to pass again.

Automatic By-Pass: All our cars are equipped with an automatic by-pass, which automatically keeps the water in the boiler at a given level, the range of which is about two inches. The hand by-pass is also retained. In construction this automatic by-pass is similar to the low water automatic, but it acts on the water line instead of on the fuel line.

Automatic Fuel Control: The automatic fuel control valve, or "steam automatic" controls the flow of gasoline to the main burner. It consists of (1) a diaphragm so connected that it is exposed at the bottom to the boiler pressure; and having a valve stem in contact with its upper side; and (2) a spring in contact with the lower end of the valve stem, which spring holds the valve stem off its seat and in contact with the diaphragm until the boiler pressure forces the spring to yield, whereupon the valve stem seats itself. The automatic is provided with an adjusting screw by means of which the tension on the spring can be varied, so as to make it operate at any desired boiler pressure.

Gasoline Automatic: The gasoline automatic relief valve allows the surplus gasoline (which is automatically pumped while running, in order to insure constant pressure on the fuel) to return to the supply tank. The valve stem is attached to the lower side of the diaphragm, and the spring in this case holds the valve stem on its seat until the pressure on the fuel overcomes the tension on the spring and opens the valve. This automatic is also provided with an adjusting screw.

Differential: Simple bevel gear type, with six pitch spur driving gear.

IMPORTANCE OF CYLINDER OILS — *For Non-Condensing Cars:* It is costly practice to experiment with cylinder oils. The damage is done within the engine before making itself known to the operator. The question of lubrication is one of vital importance to the economical operation of any car, and it is to the mutual interest of Stanley owners and ourselves that the oil best adapted to meet the requirements existing in Stanley cars should be used at all times. After giving this matter much care and attention, we adopted and have used exclusively for some years, the Harris Superheat Steam Cylinder Oil, furnished by the A. W. Harris Oil Company, Providence, R. I., and the Oilzum High Pressure Superheated Steam Cylinder Oil manufactured by the White and Bagley Company, Worcester, Mass., and would urge each Stanley owner to have one of these oils on hand at all times, and always to run his car with it, feeling confident that thus the best results will be obtained.

For Condensing Cars: For cars with condensers a different type of cylinder oil must be used, and for this purpose the A. W. Harris Oil Company of Providence provide an oil called the Harris Condensing Steam Cylinder Oil. It is absolutely essential that this oil be used in order to prevent injury to the engine.

SOUTHGATE PRESS, BOSTON