The Kisselgraph

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c/o Hartford Heritage Inc.
147 North Rural Street
Hartford, WI 53027

Telephone: (414) 673-7999

ANNUAL MEETING

The Annual Meeting of the Kissel Kar Klub for 1993 was held August 14th at the Hartford Auto Museum. It was attended by club members from Wisconsin and Illinois, primarily. Our guest speaker was Mr. Matt Joseph who has held several positions on the board, including president, of the Society of Automotive Historians, both the National and the State organizations. Mr. Joseph spoke for approximately one half hour discussing the affect that the automobile has had throughout the hustory of the United States and the world as a whole. It was an extremely interesting perspective to be thought about. As you know, the Annual Meeting coincided with our 'Car Sale' which also was quite successful considering that it was the first time we had ever attempted this type of activity. There are so many car shows that we felt the 'Car Sale' would be an appropriate change. This seems to be a correct conclusion. I hope that next year more of you will be able to attend the annual gathering. It is scheduled for August 13, 1994.

OLDER KISSELS

A very big 'Thank You' goes out to Bob Leu and Earl Young. Bob will be bringing his 1918 Kissel back to the museum for display. Earl has just brought his 1914 Kissel Touring car back. This is a response from my plea in the last newsletter indicating that the museum was looking for a few more older Kissels. The museum still has room for more Kissels and I would appreciate seeing more.

LEVER ENGINE

As some of you may or may not be aware, A. C. Powell Company of Illinois had done some experimenting with a Lever engine. Reprinted with this newsletter is an article written on that subject matter. At the present time, the only known existing Lever engine is at Kissel Kar Klub member, Gene Husting's home in Long Island. He would like to see the engine placed here at Hartford and we are making attempts now to move

it to our location. In addition, Art Spanjar purchased a Kissel that the Powell Company had modified to accept their Lever engine. Now, this was done in the early 1930's. The party that had it prior to Spanjar was in the process of restoring it back to a Kissel White Eagle.

M U S E U M N E W S

NASH ROOM

Well, it took some doing but the Nash Room was finally opened on September 25, 1993. At the present time there are 11 Nashes on display along with much memorabilia. As you may recall, the Nash Club has paid for and has provided the labor to remodel their room. This will be a long term display and should do well for us.

WISCONSIN CAR PROJECT

The Wisconsin Car Project is sponsored by the Society of Automotive Historians, the Wisconsin Division. The idea is to publish a book which will cover all the vehicles that were ever produced in Wisconsin. We are pleased to have Dr. Val Quandt as a member of the committee that will be writing this publication. This will take several years of collection and writing. The side effect of the whole operation will be that the museum will become the depository for all of the Wisconsin automobile manufacturers' information.

DONATIONS

Donations of appreciated property are now a part of the permanent (if there is such a thing) tax laws. So, the donation of appreciated property can be made to organizations such as the Hartford Auto Museum and will be deductible for most donors. I would like to take this opportunity to suggest that before the year is over, that you consider making a donation of cash or artifacts to the Hartford Museum. Your donation will ensure that the museum remains operational and that, more importantly, it remains as an independent public museum. As you know the Kissel Kar Klub expenses are borne by the museum. A donation made to either one will help offset operational costs.

Best of the Holiday Season to You!

Dale M Anderson

Failed Dreams

The Powell Leverage Principle

By Karl S. Zahm

The Greek physicist, mathematician, and inventor Archimedes discovered the principle of the lever in 200 B.C. Nearly 2000 years later, a southern minister and sometime tinkerer by the name of Alvah L. Powell used Archimedes' discovery as the basis for what he believed to be a revolutionary concept in the design of an internal combustion engine. Rev. Powell theorized far greater power could be attained at lower engine speeds if the usual connecting rod was attached to the free end of a short horizontal lever. Its opposite end pivoted on a shaft running lengthwise within the upper crankcase. Power would be transmitted from the lever to the crankshaft by a second but somewhat shorter rod attached midway between the pivot and the piston connection. The thrust or power stroke of the piston would not only be greatly extended but the output doubled throughout the entire RPM range. For every pound of pressure placed upon the piston two pounds would be exerted upon the crankshaft, or so "Powell's Leverage Principle" claimed. This was to become an idea upon which Alvah Powell and a small handful of converts would spend many frustrating years and nearly $3 million seeking to convince a skeptical industry of its validity.

The early years of the auto industry were rife with various schemes for improving upon the horseless carriage's simple mechanisms. Viewed from today's perspectives, most such concepts appear strange and often complex propositions of no real value. Only a few were recognized as being worthy enough to warrant adoption and improvement over time.

In the hopes of eliminating vibration (a common problem in the auto's infancy) the makers of the 1903 Shelby devised a one-cylinder engine with two pistons in the same cylinder, each moving in opposite directions and activated at the same precise moment by a single spark between them. Much the same goal prompted the 1904 Intrepid's single-cylinder engine, the piston of which had two connecting rods attaching it to two separate crankshafts. Among the more bizarre was the engine of the 1907 Adams-Farwell. It featured five widely separated horizontal cylinders bolted together in a circular arrangement around an upright crankshaft. In operation, the entire engine revolved; the crankshaft remained stationary. These curiosities and countless others were found wanting in the final analysis and were soon forgotten.

In 1919, Rev. Powell moved to Washington, D.C. where he not only sought patents for his "lever engine" but also hoped to secure financial backing for its development. It was by sheer chance that he and the Rainey brothers—C.F. and R.P.—happened to meet. The Raineys, wealthy Montana landowners and ranchers with interests in several other profitable ventures, were soon persuaded that Powell's engine was the wave of the future. More importantly, it appeared to offer great commercial possibilities despite the fact that not a single prototype had yet been built or tested. Powell's fervent enthusiasm apparently was sufficient to prompt the brothers' investment in the project. The elder brother, C.F., though lacking an engineering background, was nevertheless so convinced of the eventual success of the idea that he sent his son Rexton to college to study in that field.

The newly incorporated A. L. Powell Power Co. began late in 1920 in an unlikely location—Miles City, Montana. It was there that the first of several patents filed earlier by Rev. Powell were assigned. The small company soon relocated to the Chicago suburb of Oak Park where an office and laboratory was established at 246 Lake Street. The workforce hired to bring Powell's engine into being was augmented by V. J. Swanson, who joined the concern as chief engineer in 1922. Swanson was largely responsible for overseeing construction and testing of several four-cylinder prototypes. As a result of their interposed lever assemblies, these engines were not only "taller" than conventional types but had nearly double the stroke length. All displaced 226.20 cubic inches and had a 3" bore and an 8" stroke.

Early tests seemed to confirm Powell's claim for the Lever engine. Its chief advantage—high power and torque output at low crankshaft speeds—was obvious and it made the engine ideal for certain heavy-duty industrial applications. To that end, the company established a small manufacturing plant in Quapaw, Oklahoma in 1923 where improved versions of the initial design and some six-cylinder types were produced still later for oilfield pumping stations. Nearly 30 Lever engines were sold in that area and all were said to have performed admirably for many years with only minimal maintenance and at very low operating costs.

Executives at the company's home office were heartened when results of tests on a Lever engine (performed under the auspices of the SAE) were published in the trade press late in 1924. A reviewer writing in *Automotive Manufacturer* expansively declared the Lever engine "An epoch-making idea." *Motor Transport* reported that the engine was observed to develop greater power and at lower RPM than any conventional engine of the same displacement. *American Automotive Digest* called the results "remarkable." Notwithstanding these glowing reports, the early four-cylinder engines ran roughly at higher RPM. The root cause was soon traced to the inherent imbalance of the rod and lever assemblies. For most industrial uses where low speeds were desirable, high RPM vibration was not a problem. Since the company intended its engines for passenger cars, high-speed launches, and even aircraft, considerable improvements and newer designs were a necessity. The problem was solved in large measure with the development of a new six-cylinder engine. A great deal of costly and time consuming work was undertaken on valve sizes and openings, combustion chamber design, manifolding, bearing loads, and rod stresses. It wasn't until 1927 that the A. L. Powell Power Co. had more or less standardized two L-head six-cylinder engines of 236 and 340 cubic inch displacement. A third, also an in-line six of nearly 550 cubic inches, was under development for aircraft use.

Upon Rex Rainey's graduation from college in 1928, he joined the company at its Oak Park laboratories as a draftsman and soon after was elevated to a project engineer. By that time, the two six-cylinder engines, having undergone extensive bench tests, were being readied for road testing. A Studebaker Big Six was chosen primarily because of its high optional rear end ratio of about 3:1. Various other ratios were also tried to achieve an optimum balance between performance and economy. The typical auto engine turned over about 40 million times in 14,000 miles, the Lever engine less than 20 million in the same distance, with a substantial reduction in internal wear. It was as if an overdrive existed within the engine itself. For those motorists who dreaded the necessity of constant gear change, the Lever engine was a Godsend. Its torque plane showed

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less than a 5% variance between idle and its maximum crankshaft speed of 2,000 RPM. As a result, an automobile so equipped, could easily be driven off from rest in high gear without the usual jerking or stalling.

Road tests in the Studebaker chassis were still underway in the summer of 1928 when Rex drove to the Travel Air plant in Wichita, Kansas to assist in the installation of the Lever engine and to monitor its performance in one of that company's biplanes. Flight tests began, and all went well, at least initially. Disaster struck when one of the engine's connecting rod and lever assemblies failed. The engine cracked and the plane was forced to make an abrupt dead-stick landing. Regardless of uniformly successful previous flights, the program was terminated. Powell and his associates very likely felt they couldn't afford the adverse publicity that a second failure might bring just at the time when its automotive program showed such promise.

Several different illustrated pamphlets were published to promote what the A. L. Powell Power Co. hailed as "The Power of Destiny." In them, the Lever engine was said to offer no less than 26 advantages over all conventional auto engines then in use. In addition to its high power output at low speeds, these brochures listed longer engine life, better internal lubrication, faster flame propagation, greater component accessibility, quieter operation, lighter weight, greater pressure continuity, and improved fuel economy among its chief virtues.

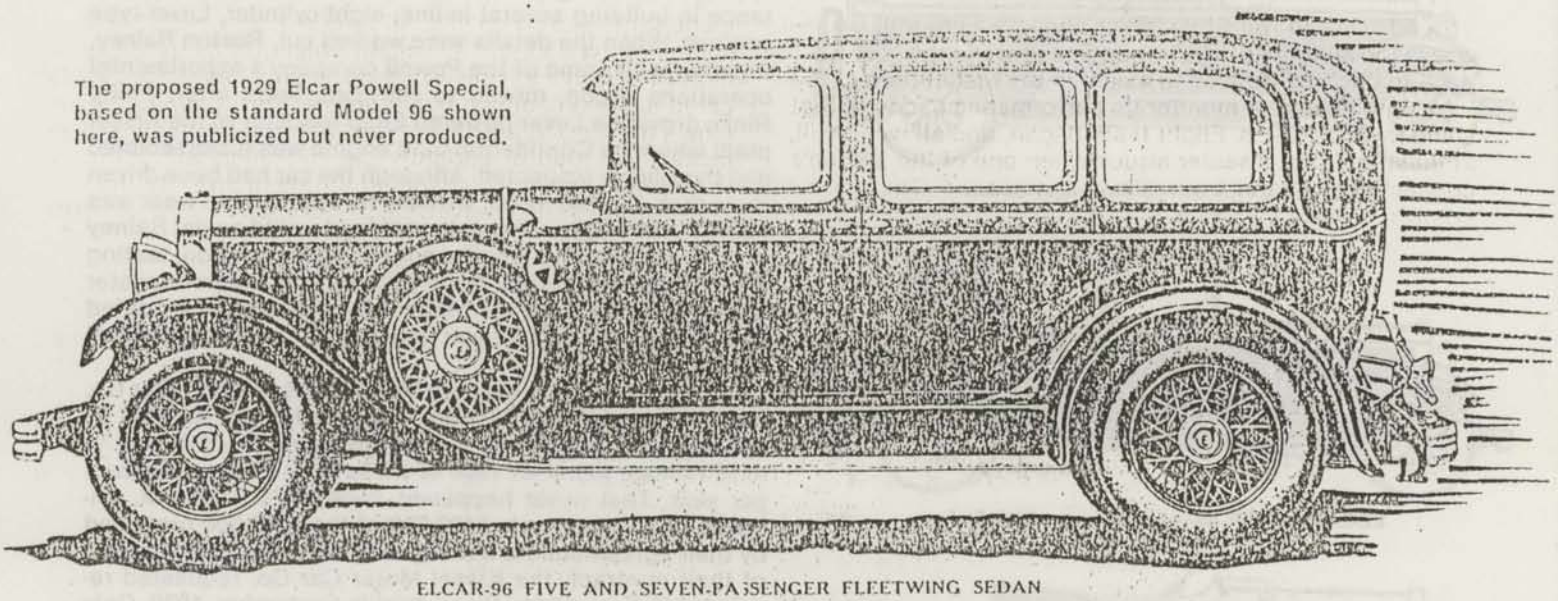
Company officials trekked from one major auto and truck manufacturer to another in what was to be a vain attempt to solicit their interest and possible commitment. They needn't have bothered. Despite the many claims made for the Lever engine, all turned a deaf ear. Their reasons were varied, but the main objection came down to money. Powell's engine was seen as unnecessarily complicated and too costly to manufacture. Furthermore, the engine's acknowledged slow speed nature was perceived as lacking the kind of sprightly get-up-and-go which the industry was just then beginning to emphasize. By the late twenties, technology had advanced even the most mundane auto engine far beyond its earlier capabilities; to gamble upon something as novel as the Lever engine was regarded as sheer folly. Given short shrift by the volume producers, Powell looked instead to the smaller independents. In the latter part of 1928, the still hopeful engine maker managed to align his company with the struggling Elcar Motor Co. of Elkhart, Indiana.

An outgrowth of the former Elkhart Carriage & Harness Manufacturing Co. (Est. 1873), the first cars to bear the Elcar name showed up in 1915. Although always an "assembled" car, the Elcar evolved into a distinctively different and rather attractive automobile by the middle twenties; undoubtedly the main reason for its continued survival. For 1928, the company had launched an ambitious program consisting of five different Lycoming-powered models—three straight eights and two six-cylinder cars—on four wheelbases, most offered in both standard and deluxe editions. Despite virtually blanketing the market between $1,295 and $2,500, sales fell to a new low for the year. Clearly headed for trouble, Elcar was ready to seize upon any hope, however tenuous, in an attempt to stave off the inevitable. Linking up with the A. L. Powell Power Co. was only the first of such efforts.

The two concerns didn't actually merge at that point; they co-existed. The Lever group's manufacturing plant remained in Oklahoma and its home office in Oak Park. The entire testing and development program, however, was transferred to the Elcar plant which abandoned its Studebakers in favor of various Elcar automobiles. In anticipation of an expected demand for a straight eight, an L-head engine of this type was designed around the Lever principle. Three were built under contract by Continental Motors, one of which was installed in a Model 120 Elcar convertible coupe. The Powell company's test drivers—C. A. Shaffer and later Philip Rinke—were instructed to take the car and wear it out. Over the next 3½ years, this car (later rebodied as a roadster) was driven more than 300,000 miles.

Meanwhile, the situation at the Elcar Motor Co. turned from bad to worse. The company had reduced its lineup to four models for 1929, two of which shared the same eight-cylinder engine. Despite a fresh restyling and a host of new features introduced earlier that season, sales continued to decline. Something was clearly needed to spark a sales resurgence. That "something," management soon concluded, was the Lever engine. A crash program was begun with the intent of offering their Model 96 with the option of a six-cylinder Lever engine in lieu of its usual Lycoming eight. The alternative, to be known as the "Elcar Powell Special" would (apart from its engine and rear-end drive) share all of the other specifications common to its sibling. The effort proved too little and far too late. By the time the groundwork was laid, 1929 was practically history and so was the Powell Special. Forgotten on a dusty shelf was a batch of hastily-doctored sales folders which briefly described the Model 96's "Elcar Special Powell Lever Slow Speed Motor." All was not doom and gloom, as both concerns were preparing two new Lever-powered Elcars for 1930.

In its February issue *MoToR* reported, "Elcar sprung an innovation at the New York Show by announcing two chasses equipped with the Powell Lever Motor." Of the two—Models 83 and 85—only an 85 sedan was displayed with Elcar's other offerings for 1930. The latter was equipped with the Lever 340 cubic inch, seven main bearing six rated at 65 horsepower at 1700 RPM. Its maximum torque (235 ft.



The proposed 1929 Elcar Powell Special, based on the standard Model 96 shown here, was publicized but never produced.

ELCAR-96 FIVE AND SEVEN-PASSENGER FLEETWING SEDAN

lbs.) was developed at just 600 RPM. The rear-end gearing had a ratio of 2.1:1. Six body types—three open and three closed—were available on Elcar's "shockless" 123" wheelbase chassis. The Model 83, to be a slightly smaller companion car, would offer a 236 cubic inch Lever engine, a differential ratio of 2.4:1, and a 117" wheelbase. Both models would be equipped with a four-speed transmission. Although prices weren't available for either model at that time, the company claimed they would be announced at a later date. Interestingly, *MoToR* also stated that it had "been unable to discover why the Powell Lever Motor offers any notable advantages over conventional engines of the same piston displacement." *MoToR's* editors apparently hadn't read the sales folder handed out during the show.

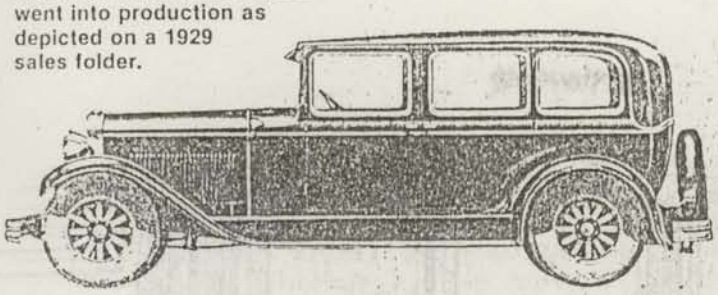
Had they done so, they would've been informed of the engine's advantages. Those who sought more technical data were urged to ask for a copy of the Lever pamphlet which explained the engine's operation in detail.

Some confusion exists as to the Lever company's exact corporate name at that time. The sales brochure issued for the Model 85 spoke of combining Elcar's interests with the "Lever Motors Corp." The technical pamphlet, issued nearly two years earlier, was relabeled "Elcar-Lever Motors, Elkhart, Indiana" even though the company's main office was still in Oak Park and its plant in Quapaw. In mid-July, a news release appeared in *Automotive Industries* which revealed that a merger of the Elcar Motor Co. and the Lever Motor Corp. of Delaware had taken place. The new concern was known as "Lever Motors Corp. of Indiana." The reason for this combination was strictly financial as it enabled both companies to pool their limited funds and made more money available for their joint effort. The two parent firms would continue to operate as independent divisions of the new umbrella company for an unspecified period. Lever's Quapaw facility was to be closed and its operations moved to Elkhart.

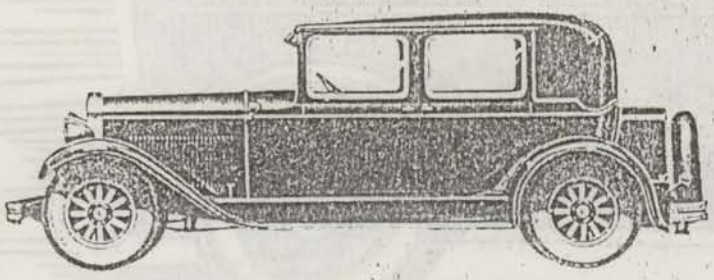
After the brief initial flurry of interest in the Lever-powered Elcar faded following its debut in January, nothing more was heard about these Elcar-Lever automobiles. Marketing any new car has always been an expensive proposition. For any as unconventional as these hybrids, the expense was clearly far greater than the two companies' combined resources could handle. Apart from the prototype, only two additional Model 85s were built and none reached buyers. Its intended companion (Model 83) was abruptly cancelled; not one was ever produced. The Elcar division had its own problems—sales of its 1930 standard models were less than 900 units by mid-August, far less than necessary to assure its continued solvency. Frustrated by what it saw as Elcar's seemingly imminent collapse and the total failure of their shared venture, the Lever group pulled up stakes by year's end and moved to a new location in Wheaton, Illinois. There, again billed as the A. L. Powell Power Co., several new engine designs were in progress. Alvah L. Powell's sudden and untimely death early in 1931 only added to the company's woes. Despite the company's inability to bring the Lever engine into popular use during their involvement with Elcar, the Raineys and other stockholders remained convinced of its value. Determined to turn matters around, a new generation straight eight Lever engine design was on the drawing boards.

In September, 1932, the Hartford, Wisconsin-based Kissel Motor Car Co. was reorganized as Kissel Industries. The company traced its start as an automaker back to 1906. It entered receivership in the fall of 1930 and was declared bankrupt several months later. The remnants of the defunct company existed in a state of limbo for nearly two years before members of the founding Kissel family regained control

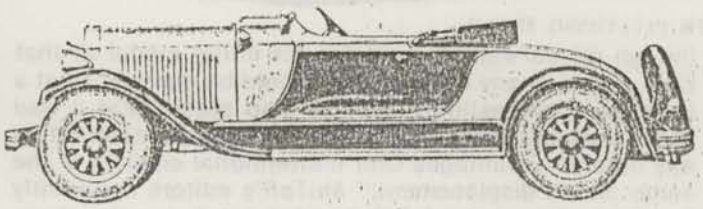
More Lever-Elcars that never went into production as depicted on a 1929 sales folder.



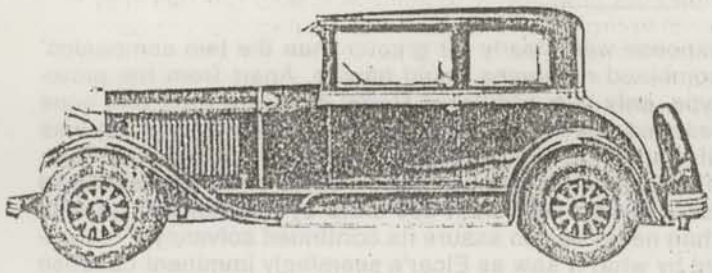
ELCAR-LEVER 85—5 Passenger Sedan



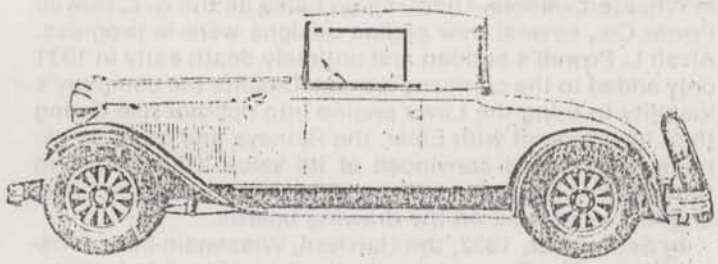
ELCAR-LEVER 85—5 Passenger Club Sedan



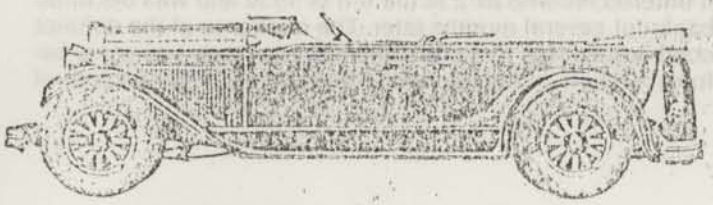
ELCAR-LEVER 85—4 Passenger Roadster



ELCAR-LEVER 85—4 Passenger Coupe



ELCAR-LEVER 85—4 Passenger Convertible Landau



ELCAR-LEVER 85—5 Passenger Touring

of its remaining physical assets. To survive and prosper, Kissel Industries leased portions of its idled factory and actively sought sub-contract work for its greatly-reduced labor force of skilled machinists and other craftsmen.

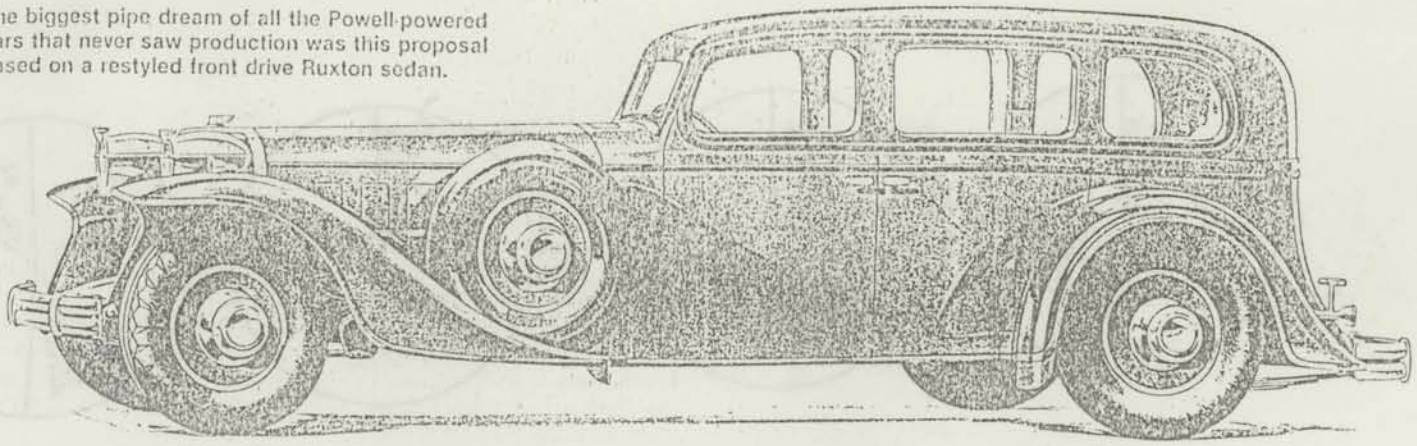
During the latter part of 1932, the A. L. Powell Power Co. approached George A. Kissel to seek his company's assistance in building several in-line, eight-cylinder, Lever-type engines. When the details were worked out, Rexton Rainey, together with some of the Powell company's experimental operations group, moved to Hartford. Soon after, Philip Rinke drove the Lever-powered Elcar roadster to the Kissel plant where its Continental-built engine was disassembled and thoroughly inspected. Although the car had been driven more than 325,000 miles, virtually no appreciable wear was noted in the engine. The data obtained would assist Rainey and his team during the new engine's construction, testing and adjustment period. A 1929 Kissel 8-95 coupe-roadster found languishing in the plant was updated and modified to serve as a rolling test bed for these engines under actual road conditions.

It may be recalled that the former Kissel Motor Car Co. had been under contract to New Era Motors in 1930 to manufacture final drives for the Ruxton automobile and to assemble as many as 1500 of these front-wheel-drive cars per year. That never happened. New Era's Archie M. Andrews paid Kissel only $100,000 of the $250,000 promised by their agreement. As a result and unable to fulfill its part of their contract, the Kissel Motor Car Co. requested receivership from a friendly creditor in September, 1930. Only 26 Ruxtons were completed at Hartford before Kissel called it quits. Left behind were several partially finished sedans. The discovery of these cars by the Powell group led to a decision to equip one or more of them with the soon-to-be-completed Lever engines. It was hoped that the resultant combination of the Ruxton's low-slung coachwork together with the flexible and long-lived Lever engine would serve to finally convince a highly doubtful industry of the engine's superiority.

With the two engines nearing completion, the Powell team turned their attention to the Lever-Ruxton project. Herman Palmer, former chief engineer with the Kissel Motor Car Co., agreed to revise the car's outward appearance. Its earlier boxiness would be replaced by a sleek new look featuring a slightly raked windshield and a flared rear deck, skirted fenders, a double-bead beltline, door-type hood louvers and metal covers for the sidemounted spare wheels. The Ruxton's distinctive V-shaped radiator, winged mascot, cat-eye Woodlites and disc wheel covers with large protruding hubcaps were to be retained. A brochure was printed which depicted Palmer's restyled sedan together with a full description of the new eight-cylinder Lever engine. The latter, said to be "a marvelous power unit," was touted as "The Most Highly Developed Achievement in Automotive Engineering." By dynamotor test, the engine developed 110 horsepower @ 2400 RPM. It had a 3" bore, 6" stroke and displaced 340 cubic inches. According to the brochure, the engine was reportedly capable of "phenomenal operating economy."

The hyperbole notwithstanding, the Powell company's best laid plans again went awry. No difficulties were encountered in the installation of the engine, but Rainey and his crew were thwarted by the car's high-speed final drive ratio of 4.25:1. The slow-speed Lever engine required a ratio of 2.1:1. The expense involved to produce either a ring gear small enough or a pinion large enough and yet still fit within the Ruxton's somewhat complex differential housing was well beyond the Powell company's means. What funds were available were barely sufficient to pay Kissel Industries for the finished engines. The Ruxton hybrid never got beyond this impasse, and the project was abandoned early in 1934.

The biggest pipe dream of all the Powell-powered cars that never saw production was this proposal based on a restyled front drive Ruxton sedan.



The value of these two Kissel-built engines was negligible, neither producing so much as a thin dime's worth of profit to the beleaguered Powell company. Still, some evidence exists that the Ethyl Corp. had at least a peripheral interest in the Lever engine at that time. Whether the reason may have stemmed from the slow-burning properties of that company's leaded fuel and/or the increased "push" made possible in combination with the Lever's long-stroke engine is unknown. Noted historian Keith Marvin elicited this response in 1955 to an inquiry from an Ethyl spokesman, "The A. L. Powell Power Co., (were) holders of some mechanically worthless patents on the Lever engine. This was an ordinary L-head straight eight to which a trick change had been made . . . essentially a bit of "bootstrap" engineering to boost performance by mechanical leverage as reflected by the claimed 110 horsepower at only 2400 RPM." Whether Ethyl's interest was solely academic or perhaps more involved, it's obvious from their response that it later sought to distance itself from the entire affair. Frustrated by its on-going inability to gain even limited acceptance by the auto industry, the Powell company returned to the industrial and stationary engine field.

After that, little more was heard from the Powell concern. Rexton Rainey, already having devoted far too much time to what was clearly a hopeless cause, left the company for more rewarding and lucrative employment elsewhere. His successor, C. C. Chronic, together with the few supporters remaining, labored to develop a marketable two-cycle supercharged engine for the trade. Although the initial design showed some promise, the effort finally tailed off in the late forties. There was no longer any reason to continue, and the elder Rainey brother ruefully folded the company in 1950. For a brief moment near the end, it appeared that the Borg-Warner Corp. was interested in the concept. Their only intent, however, was to purchase the company's dynamotor and Lever engine prime mover. The remaining machinery and equipment was hauled to Newton, Illinois by long-term employee C. A. Shaffer where it was put into storage and eventually scrapped several years later.

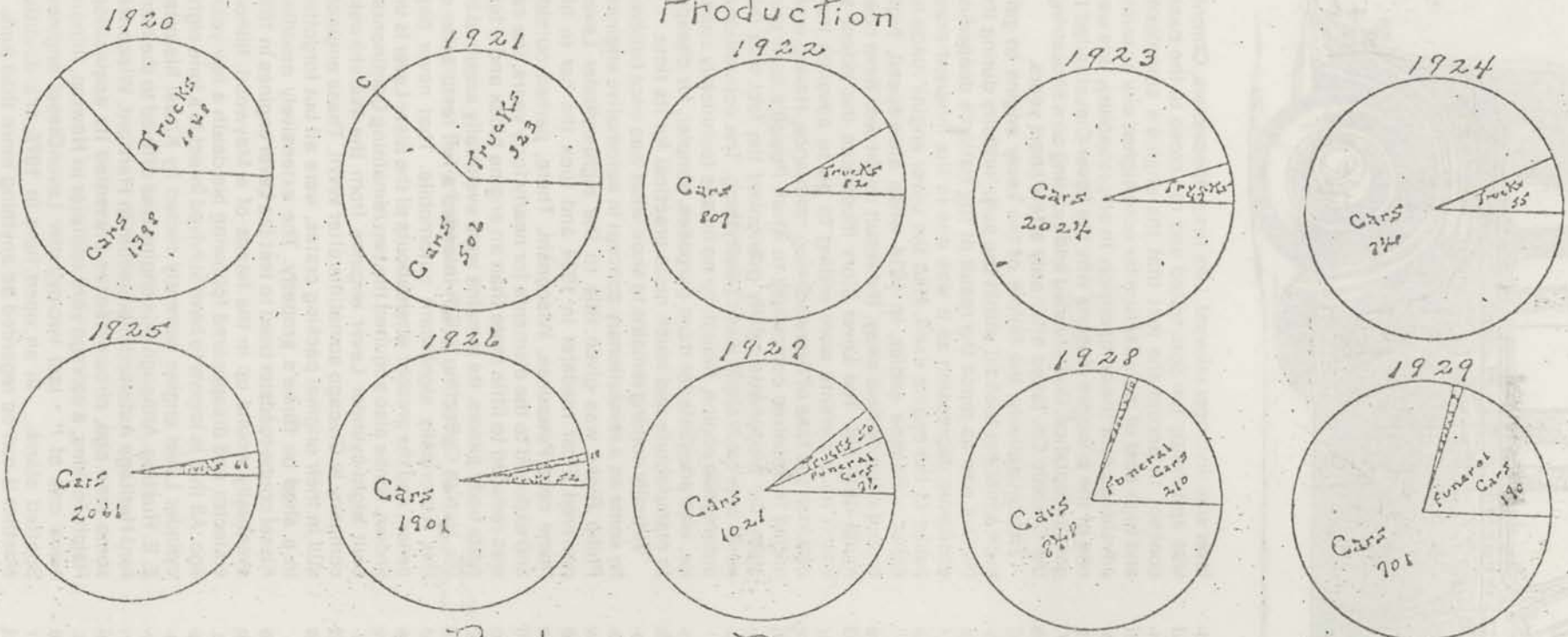
The Lever engine story would likely have ended there were it not for the tenacity of C. C. Chronic, who vowed to continue the cause despite the Powell company's closure. Aided by Shaffer, Chronic established his namesake company in Addison, Illinois late in 1950 to convert the last industrial engine design to diesel form. Two or three supercharged two-cylinder diesels were built, each with overhead inlet valves, reduced angularity of the piston rods, improved engine scavenging and equalized bearing pressures. By altering the position of the fulcrum and shortening the lever substantially, Alvah Powell's original two-to-one power ratio was reduced. As a result, the reason for the interposed lever was no longer relevant. Like his predecessors, Chronic was apparently too committed and too close to the basic concept to accept the fact that the engine's complexity and high cost of manufacture far outweighed any possible advantage over the competition. In all probability, this was one of the principle reasons why the Lever-Diesel failed to gain acceptance. Underfunded and existing on a shoestring, the Chronic Co. failed after only a few short years.

Retrospectively, the failure of the Lever engine to gain even a modest toehold within the auto industry during the thirties was as much the result of the nation's deepening economic depression as it was due to the inherent drawbacks of the engine itself. Had the Lever engine made its debut a decade earlier, in 1914 when slow-speed, high-torque engines held sway, the result might well have been much different. The Lever story illustrates the extent to which its adherents were willing to go to advance their dream in the face of overwhelming resistance. Having committed themselves completely to Alvah Powell's lever principle, the proponents totally overlooked the fact that this novel approach alone wasn't everything. The conventional automobile engine, though by no means technically superior, was adequate for most purposes, simpler, far cheaper to manufacture and much more practical for its time.

Virtually nothing remains to show what was once believed by some as a revolutionary concept in automotive engines. Philip Rinke was given title to the eight-cylinder Lever-powered Elcar roadster in 1934 and took the car to his home near Pewaukee, Wisconsin. There, parked outside and exposed to the elements for nearly forty years, the car was reduced to little more than an engine block and a few rusty body panels. Its remains were eventually acquired by the Harrah Collection which intended a full restoration of this historically significant automobile. That never happened, and the present whereabouts of the Elcar-Lever is unknown. Rinke also acquired the two remaining Continental-built eight-cylinder Lever engines from the Warshawsky company in Chicago sometime after WWII. These engines, still in their original packing crates, were all but forgotten in a shed on Rinke's property. The extensively modified Kissel coupe-roadster used to test the Lever engines in 1933 eventually wound up in the hands of a Maywood, Illinois collector and disappeared following his death a few years ago. All that is known to have survived intact is a lone eight-cylinder Lever engine currently owned by Kissel historian E. E. Husting. Although this engine was offered to the Hartford-Heritage Automobile Museum in Hartford, Wisconsin some time ago, circumstances prevented its acquisition. Ralph Jenkins, a salvage yard operator in Newton, Illinois, owns one of the last two-cylinder Lever-Diesel engines. Spotted standing in an open field in 1975, it's doubtful whether it can be regarded as anything more than junk.

KISSEL

Production



Production - Passenger Cars