THE SARGENT *Winch*

By John Wolbarst

When the differential gears of our Model A winch gave up the ghost in the middle of a tow one Fall day in 1939, the Hudson Valley Glider Club decided to build a new launching winch. Most opinion favored a modified M.I.T. type, using a wide drum driven by friction through contact with both rear wheel tires of a car.

It was intended that the winch should be designed with a minimum of machine work and to use as many standard automobile parts as possible. How we were to do it was the problem, finally solved when the late Herbert Sargent, Jr. presented a radical design. Bolstered by an opinion from Ernest Schweizer that the scheme would work, Herb decided to build the winch and it was only due to his untiring efforts that it was pushed through to completion. Les Barton's generosity made available to the Club a storeroom for a workshop and full machine shop facilities, and he was of great assistance in fabricating the parts. Frank Hurtt, Don Lawrence and Bill Price helped with advice and labor.

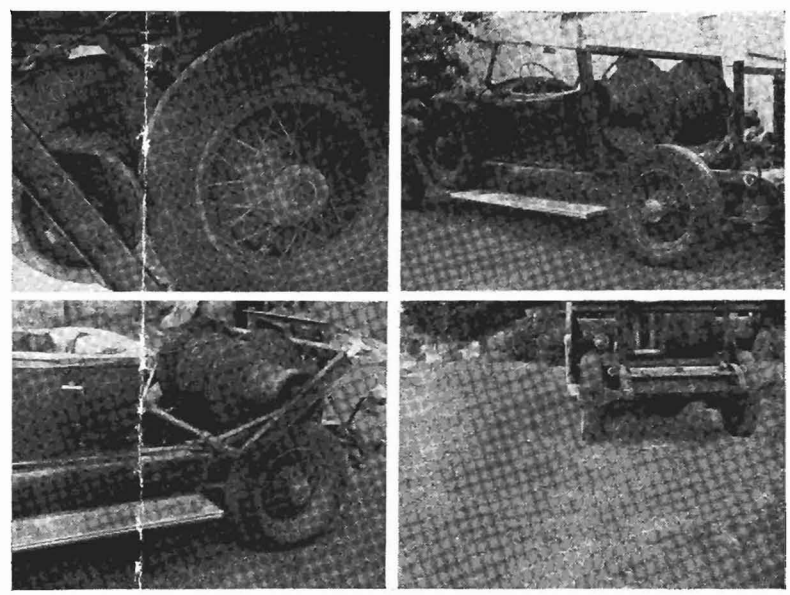
Motive power is a 1928 Lincoln, formerly the writer's, with the touring car body cut off behind the front seat. The radical feature of the winch is its drum, a section of steel tube foundation piling, 12 inches in diameter and of ½ inch thickness. This tube is 5 feet long, the full width of the Lincoln's rear axle in length and the ends rest directly on the two rear wheels. The friction of the bare steel against the Lincoln's fat tires turns the drum. For bearings the complete front wheel bearing assembly and brake drum of an old Graham Paige were inserted into the hollow ends of the tube. This called for a wrestling match with the 300-pound tube to get it into a lathe so that the ends could be machined true to receive the brake drums, a task accomplished by Herb and Les only after great effort. The brake drums were then trimmed down in order to make a driver fit inside the ends of the tube. Before installing them the front wheel bearings were assembled and packed with fibre grease and the brake drums attached to the stub axles just as on the original car. The only difference is that on a car the front wheel stub axles point out, while on the winch they point into the big steel tube, and the entire assembly is concealed within it except for the kingpin fittings of the axles. To fasten each brake drum securely four studs were tapped through them into the tube. The heads are easily accessible inside the brake drum and the ends of the studs were filed off smooth with the exterior of the big tube.

The winch drum is supported in its place on the rear wheels by heavy steel channel beams and a piece of 2½ inch steel pipe strongly braced to form a rigid rectangular frame. The steel pipe is a cross-piece secured to the Lincoln chassis by forged steel straps which allow the pipe to turn so the winch drum may be lifted off the car wheels. Bolts screwed into the pipe prevent sideways movement in the straps. Rearward from the crosspiece run two beams with simple fittings designed to bolt onto the ends of the Graham stub axles which protrude from inside the winch drum. Another crosspiece joins the two beams behind the drum.

Eight-inch steel flanges were welded into the winch tube between the Lincoln's chassis members leaving a space of 32 inches for the tow rope to wind up. These flanges are of ¼ inch stock. They were cut out in one piece by the steelyard and slipped on over the drum before the bearings were installed. Turnbuckles keep the drum tight against the tires and steel chains are bolted around the rear springs and chassis to keep the springs pulled up close to the chassis for even tension.

Due to the small diameter of the drum to be turned by the large size Lincoln wheels we expected high drum speeds, 1500 rpm at a wheel speed of 60 mph. As the drum is the same diameter for its full width the rope is hauled in at almost exactly the speed of the car wheels, making possible a speedometer reading of the true towing speed. The first test showed the drum to be unbalanced. When the writer speeded up the motor to 50 mph the car tried to jump off the blocks while the entire warehouse shook. Spot welding small weights to the flanges completely damped the vibration.

A manually-operated level winder, also designed and built by Herb, is mounted over the car's gas tank in an iron frame with flanged wheels running on an angle iron track. The three rollers are of steel 2 inches in diameter, fitted with ball bearings and are vibrationless. Despite predictions to the contrary, the level winder is easy to operate even under side loads caused by drift of the glider during the tow. It is intended to add an automatic guillotine to the winch. (*Continued on page* 13)



Four Views Showing Details of the Winch