

H. P. Smith and the Texas State Cotton Harvester

Mechanization and electrification were still very much a work in progress. One of the most challenging problems during and following World War II was “picking cotton.” Mechanization substantially reduced the need for manual farm labor but there were areas where mechanization was failing to meet the expanding requirements of mechanized agriculture. While farmers in the 1940s and 1950s could plant and cultivate increasingly larger crops of wheat, corn, cotton and other crops, the mechanized harvesting of cotton in particular had not met the needs of improved and expanded crops. During World War II, and for a time in the 1940s, Texas and southern cotton farmers were forced to supplement dwindling domestic labor with imported field hands from Mexico for harvests.

In 1920, International Harvester Company experimented with a suction-type harvester..... which had great difficulty in separating the fiber from the hull, leaves, and miscellaneous stems. A stripper-type machine was successfully marketed for a while in areas where cotton ripened evenly, and plants were relatively small. West Texas dry-land farming fit that description, while Louisiana, Mississippi, and Georgia cotton in particular matured on heavy stalks that were not infrequently as tall as the individual walking the rows. Cotton picking mechanisms were, and remain, a work in progress.

Agricultural engineering faculty, their students and graduate students, tended to be “cotton oriented.” Many graduate students and their master’s theses through the 1930s through the 1960s concentrated on aspects of cotton production, harvesting, and ginning. For example, Monroe A. Hartman’s thesis of 1931 comprised “*A Study of Cleaners of Stripped, Snapped, and Sledged Cotton.*” His introduction noted that the:

...use of mechanical methods for harvesting cotton had increased greatly—especially the use of the cotton sled in western Texas. This method is comparatively new; the first attempt to harvest cotton with the sled was in 1914. The stripped or sledged cotton is the same; stripping is the method of harvesting and a sled is the machine with which the cotton is harvested. Stripped and sledged cotton resemble snapped cotton, snapped cotton being harvested by hand. Stripped, sledged, and snapped cotton are commonly spoken of as bolly cotton, which consists of

*a mixture of line and seed with burs, shale, small branches, leaves, and other foreign material.
... . A special cleaner must be used on bolly cotton before it is ginned.*

Hartman's thesis examined such recently developed cleaners as the Gwaltney, Hardewick Etter, Woodridge, and Lokey, Evans, and Young Bur Extractors, as well as a dozen or more then manufactured "Trash Eliminators." Those cleaners were effective and superior to snapped or hand-picked cotton, but by no means resolved the underlying problem of ginning cotton that produced a dependably quality lint for the manufacture of cloth.

Approximately ten years later, in June 1940, Harris Pearson Smith completed his thesis on "*The Development of a Mechanical Cotton Harvester, a Bur Extractor, and a Cleaner.*" Smith reviewed briefly much of the story covered by Hartman and then focused for the most part on the development of the Texas State Cotton Harvester developed by the Agricultural Experiment Station with input and counsel from the Department of Agricultural Engineering. It incorporated rubber and metal stripping rolls and a burr extractor, and was attached to the tractor. After Hartman's examination of commercially available burr extractors failed to obtain satisfactory results, Smith and others designed an extractor based upon design principles learned from earlier studies. It proved to be more efficient and produced cleaner cotton for the gin. This work provided a step along the way to a perfected and marketable harvest machine. These theses and others provide good insight into the history and development of mechanical harvesting machinery, a development made increasingly urgent by virtue of increased acreages and improved yields of cotton, and rapidly growing consumer markets within the U.S. and abroad.

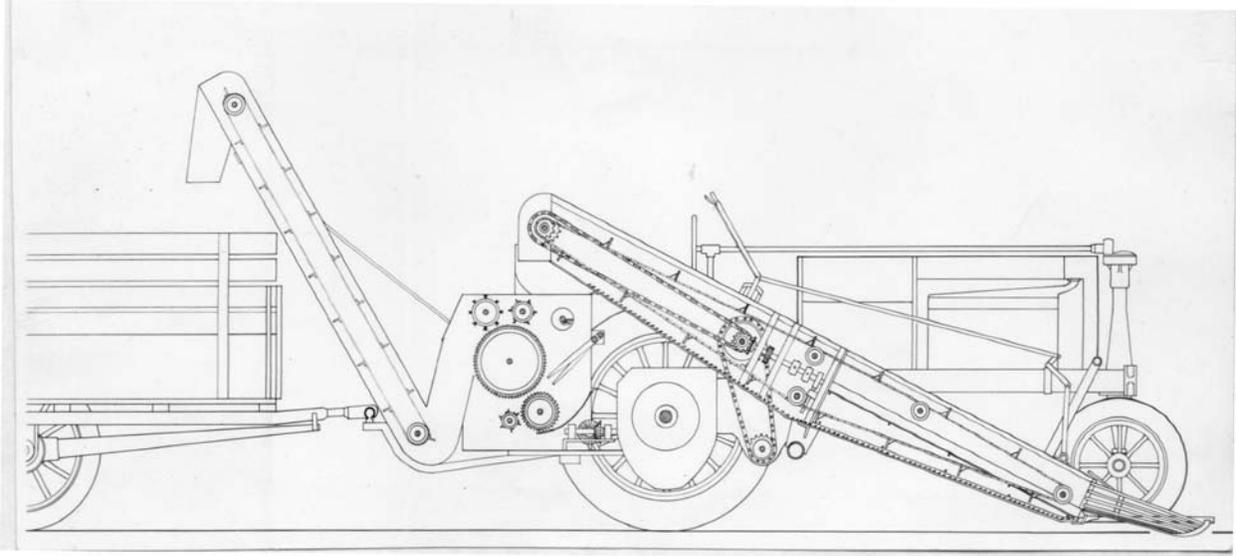


Fig. 5.4, The Texas State Cotton Harvester schematic showing the stripping rolls, conveying and burr extraction mechanism for the 1938 design.



Fig. 5.5, The Texas State Cotton Harvester being tested near College Station, 1939.