# THE ORIGIN AND DEVELOPMENT OF THE COTTON PICKER

By

John Rust

Cotton is a basic commodity which was known and used and survived through countless centuries predating the historic age. Our first literary record of cotton is in vague phrases of a dead language.

Herodotus, the "Father of History" wrote of cotton in the fifth century B. C. From other writings it is certain that cotton was used in India three thousand years ago and in Egypt for at least two thousand years.[1]

Archeologists found cotton fabrics dating from the second to the fifth centuries of the Christian Era in the ruined city of Turfan in the Gobi Desert. This ghost city was once a busy market place on the old caravan route between China and the Near East.[2] This is proof that cotton fabrics were articles of trade between India and China in remote times.

1 Nelson's Encyclopedia.
2 The Heritage of Cotton: The Fibre of Two Worlds and Many Ages by M. D. C. Crawford, Fairchild Publishing Co.

All evidence points conclusively to Southern India as the original source of cotton for Europe, Asia, and Africa. But the most ancient cotton fabrics that have been discovered were among the ruins of the pre-Incas in Peru. Here in the dry coastal area is found not only fabrics showing subtlety in design and complex and varied techniques of a high order, but also each implement, tool and process used in the art. The products of this civilization that matured and vanished in the New World while Europe was still a barbarous wilderness are mute testimony that the beginnings of cotton tenique and art retreat beyond the veil of history.[3]

It is believed by many that cotton in the New World originated in Central America and perhaps the art of spinning and weaving as well as the loom spread with the plant both north and south into North and South America. Similar, although distinct patterns of weaving and dyeing are found throughout the region.

The cotton map of the New World in pre-historic times extended southwest from the middle of Utah through our southwest desert, Mexico, Central and South America. It did not include any of our Central Mississippi Valley or Atlantic Seaboard cotton states of today. However, the southwestern fringe of Texas possibly was included.[4]

3 Ibid.
4 Ibid.

Columbus was well informed about the commerce of the known world when he set sail to find a shorter route to India. In the Bahama Islands, he found the natives wearing cotton garments. To him this meant that he had reached India. To his mind, any land producing cotton must be the golden Orient. He landed on October 12, 1492, in the midst of the cotton harvest season. As evidence to the skeptical that he had reached India, he brought back to Ferdinand and Isabella the first cotton transported from the New World to the Old.[5]

In spite of the practical use humanity was making of cotton since prehistoric times, it was not until late in the eighteenth century that enough progress was made in cotton machinery to begin producing cotton materials in substantial quantities. Within a period of thirty years, five of the most revolutionary inventions in the cotton industry came into being. These inventions brought cotton out of the ancient handcraft stage and provided the basis for one of the biggest industries in the world today.

Beginning with Hargreaves spinning-jenny in 1764, at four to five year intervals, the world saw the invention of Arkwright's spinning frame, Crompton's spinning mule, and Cartwright's power loom. Then just ten years later, Whitney

5 Ibid.

invented the cotton gin which was the most valuable economic event in the history of the South, with tremendous world wide influence on both cotton growing and textile production.

James Hargreaves was a hand-loom weaver of Lancashire, England. He could neither read nor write, but he was a shrewd and able man. He worked in a cotton mill where he was assigned the task of improving a machine for carding cotton in order to abolish the old system of cleaning and straightening the fibres by hand. He worked at home too. The cotton trade at that time depended largely on work done in cottages and on little farms.

One day Hargreaves accidentally turned over the simple little spinning wheel at which his sister was spinning, and to that clumsy action we may trace the valuable contribution he made to civilization. He saw that the spindle continued to rotate in the vertical position and that by employing several upright spindles he could apply power to them from the same wheel, thus utilizing more efficiently the power that was applied to the wheel.

Hargreaves made his first spinning-jenny in secret in order to earn more money to provide food and clothing for his family. He never dreamed that he was to found a new industry. However, the Hargreaves household, using the machine in secret,

turned out eight times as much material as before, thereby helping the prosperity of everyone concerned in the mill, for yarn was the thing they all needed.

But the narrow jealousy of the people of the neighborhood was aroused and it was soon whispered abroad that Jim Hargreaves was using machinery. Machinery — why it would rob honest men of their living! The news spread like wild fire and the weavers of surrounding towns assembled with the local men and marched to the cottage where Hargreaves lived. They forced their way into the house, smashed his machine, demolished his furniture; and then marched down to the mill where he was at work and made a wreck of it.

Hargreaves went to Nottingham and joined hands with a man named Thomas James, who had a little capital and great faith. Together they began the manufacture of spinning-jennies. Lancashire, where he was hounded out of home and occupation, now was using his machines wholesale without paying him a farthing royalty. Hargreaves did not die in poverty, but neither did wealth come to this man who placed at the disposal of his country a device for building up unparalleled prosperity.

Just four years after Hargreaves invention, another Englishman, Richard Arkwright, a Lancashire barber and inventor, set up his first spinning frame for carrying on all the operations of spinning at one time. His first mill was powered by

horses, but he later installed a steam engine in his Nottingham plant. His invention also met with intense opposition, one of his factories being destroyed by a mob. Nevertheless, he amassed a sizeable fortune during his lifetime and he was made a knight in recognition of his contribution to his country.

In 1779, Samuel Crompton of Bolton, England, invented his spinning-mule. He was from a desperately poor family, but received as good an education as the local schools afforded.

Samuel was a musical genius, but had no money to buy instruments, so made his own violin. He learned to play it well enough to earn eighteen pence a night playing in a Bolton Orchestra. He used his earnings to buy books and materials for making his famous spinning-mule. This was a machine of great ingenuity which produced a better yarn than had ever been made by machine before.

Crompton worked with the rest of the family spinning cotton by day. In the evening, he played in the orchestra and then, when all the rest of the family had gone to bed, he sat working far into the night, year after year, on his invention. The machine smashing frenzy was still running through the land, and poor Samuel used to take his machine apart and hide it piece by piece in a secret chamber he made by cutting a hole in the ceiling.

At last his machine was perfected and he could turn out wonderful yarn with it, secretly made, of course, so the workmen would not rush in and smash his machine. However, the fame of his yarn spread and men were sent to spy on him. He saw that he was in danger; that he could no longer keep his secret; yet he was too poor to obtain a patent. He said, "I was reduced to the cruel necessity of either destroying my machine, or of giving it to the public. To destroy it, I could not think of; to give up that for which I had labored so long was almost unbearable".

In addition to combining the principles of Arkwright's and Hargreave's machines, Crompton had a unique spindle carriage which produced yarn fit for the manufacture of fine muslins. Thus he practically created the British muslin trade.

A Bolton manufacturer promised Crompton that eighty manufacturers of the town would each give him a guinea if he would make his invention public. They all took the invention, but only sixty paid. Throughout the cotton manufacturing districts of Britain and Scotland, manufacturers made fortunes from its use, but no one outside Bolton ever gave a penny to the creator of this splendid labor saving device.

Crompton appealed to the government showing that there were over four million Crompton mules in use. The man who had

made huge fortunes for the cotton industry possible was at last awarded four thousand pounds by the British government. Finally, in his poverty-striken old age, the manufacturers of Bolton who had profited so handsomely from his invention subscribed a fund which brought him a beggarly $315.00 a year.[6]

Just five years after Crompton's invention, Edmund Cartwright, rector of a church in Britain who had visited Arkwright's mills, invented the power loom. No reference has been found concerning mistreatment of Cartwright. Perhaps it was out of respect for his clerical robes. On the other hand, the people might just have been so busy operating machines made by his predecessors that they had little time to take note of what Cartwright had contributed.

In America slavery had been dying out because there was not enough work that the slaves could do that would be profitable to their owners. But since the mills had begun to use the spinning and weaving machinery of that period, there was a great increase in cotton planting.

In efforts to meet the demand of the mills equipped with these new machines, Britain as well as the rest of the old world

6 Book of Knowledge.

turned to colonies in America as a source for cotton. The slave trade, spurred by the shortage of labor for producing cotton, took an upward trend. But the hand method of removing the fibre from the seed was a slow and tedius process which served as a bottle neck of the industry.

To relieve this bottle neck, Eli Whitney invented the cotton gin in 1793. This was the most valuable economic event in the history of the South. It opened up vast possibilities which resulted in the growing of cotton on a large scale. Since that time, cotton has dominated the economy of the South and the lives of Southern people. Cotton production in America grew from 3,000 bales before the introduction of the gin to 100,000 bales eight years after it had been in use.

After his graduation from Yale University, Eli Whitney who was a resident of Connecticut, was employed by Mrs. Nathanael Greene, widow of the Revolutionary War General, to manage her estates. Whitney had the best engineering education available at that period as well as practical experience in an arms factory where he originated the practice of making parts interchangeable and thus contributed to the world the basis for our present industrial era.

The farmers explained to Whitney their problem of getting the lint off the seed. With their full cooperation, he developed

the saw tooth gin which today gins over ninety percent of the cotton produced in America.

It has been said that Whitney got his idea for removing the lint with circular saws projecting between narrow slots which hold back the seed by watching a cat in Mrs. Green's back yard trying to reach a chicken in a coop. Occasionally the cat would make an almost successful grab through the bars of the coop and bring a few feathers out with his claws.

During the next few years after the invention of the saw-tooth gin, exports of cotton to Britain increased three to four hundred percent each year over the export for the preceding year. By 1800, England was receiving nearly 18,000,000 pounds of cotton from America. The consumption of the mills was not determined by the need, but by the amount of cotton available.[7]

One of the chief reasons why the production of cotton in America got off to such a slow start was that the colonists imported seed of the perennial tree type of cotton from India, the Levant, Siam and the West Indies. At first they planted cotton above the frost line and, of course, the frost killed the plants, so they had to plant again each year. Cross ~~pollen-~~ pollination ization of the different varieties also changed the characteristics of the plant and fibre. The seed was covered with fuzz

7 The Heritage of Cotton: The Fibre of Two Worlds and Many Ages by M. D. C. Crawford, Fairchild Publishing Co.

and the fibre was held so tenaciously on the seed that it could not be removed with the smooth roller type gins as used in India and the West Indies, but had to be separated by hand. Even with slaves, the labor supply was scarce and, considering that a person could separate only about a pound of lint in a day, it was too expensive to compete on the world market.[8]

In 1941, thirteen and a half million people in the United States derived their living directly from cotton. There are more cotton farms in America than any other type; that is farms receiving forty percent or more of their income from cotton. Cotton is the most important fibre in the world today. Not only does it have a wider variety of uses than other fibres, but it makes up 56% of the total fibres of the world. Sixty percent of the fibre is used for clothing and the remaining forty percent is used in industry. The textile industry in the South employs more people than any other branch or division of manufacturing.[9]

Cotton supplies the world with many commodities essential to daily living. From the lint we make our clothing; we make tents for our soldiers and beds to sleep on. From linters comes fine paper to write upon; gun cotton necessary for our protection, and the film upon which our entertainment is recorded.

8 Ibid.

9 'Round the World With Cotton by Paul W. Chapman and I. W. Duggan, published, United States Government Printing Office, Washington, 1941

An uncountable number of products come from cotton seed; salad oil, shortening, vegetable butter for our bread, smokeless powder, paint for our houses, varnish, cattle feed, fertilizer, washing powder, cosmetics, hats, phonograph records, oilcloth and linoleum.[10] A few years ago some of the leading bakeries in Memphis produced delicious cakes from cotton seed flour.[11]

Clothing was a big problem among the colonists and undoubtedly the early permanent settlers who migrated to Tennessee brought with them cotton seed from Virginia and North Carolina in 1769 to produce their own clothing. At any rate there were 33 cotton mills in Tennessee before the Civil War. Cotton processing has continued to grow through the years and cotton mills are still among the leading industries of the state.

Since the landing of our forefathers on the Eastern shores of this continent, we have seen cotton grow from its infancy to the vast industry it is today. Our peak production was nearly 19,000,000 bales in 1937.[12] It is remarkable that all of this was achieved without any improvement until recent years in the method of harvesting. And even yet, the bulk of

10 Ibid.
11 The author purchased such a cake from Vieh's Bakery at Memphis during the Cotton Carnival and National Cotton Show about 1935.
12 American Cotton Handbook - a text and reference book for the entire Cotton Industry compiled by Merrill and Macormac (2nd ed.), Published by Textile Book Publishers, New York.

the crop is still harvested by hand just as it was done by Egyptians and Aztecs centuries ago.[13]

From the United States Patent Office records, we learn that attempts to build a cotton harvesting machine were made before the Civil War, a United States patent being granted to two Memphis men in 1850.[14] Since that time millions of dollars and countless hours of heartbreaking toil have gone into efforts to construct a satisfactory cotton harvester.

Twenty years ago the Patent Office had issued over 800 patents on various devices proposed in the cotton harvester division. The vast majority of these represent attempts which

13 Where sources for specific data in the foregoing history of cotton are not given, the data was obtained from: Encyclopedia Americana; Britannica; Nelson's Encyclopedia; The Heritage of Cotton: the Fibre of Two Worlds and Many Ages by M. D. C. Crawford, Fairchild Publishing Co.; 'Round the World With Cotton by I. W. Duggan and Paul W. Chapman, U. S. Government Printing Office, Washington, 1941; The Story of King Cotton by Harris Dickson, Funk & Wagnalls Co.; Bulletin No. 290 by Delta Experiment Station, Stoneville, Miss.; and American Cotton Handbook - a text and reference book for the entire Cotton Industry compiled by Merrill and Macormac (2nd. Ed.), published by Textile Book Publishers, New York. The author has drawn heavily upon these sources.

14 U. S. Patent No. 763 entitled Cotton Harvester, issued to Samuel S. Rembert and Jedediah Prescott, residents of Memphis, Shelby County, Tennessee, September 10, 1850.

have met with complete failure. The designers of most of them have not understood the problems and have had no clear conception of the essential characteristics of a machine that will be satisfactory to a cotton farmer. Many of them were hand operated and hand directed devices which would save little, if any, labor.

To meet the requirements of the farmer, a machine must be simple, durable, inexpensive, efficient and easy to operate and maintain. It must also have sufficient capacity for economical operation. It must not injure the fibre or the cotton plant, or materially lower the grade of the cotton.

Many inventors who attempted to build spindle type machines worked on the theory that it was necessary to have serrated or barbed spindles. My early efforts to design a cotton picker spindle were also in that direction, but finally I concluded that such spindles were impractical. First of all, they were heavy and expensive, and moreover, removing the cotton from them proved to be a difficult job.

My first drawings were for a two row machine combining two picking units with the Avery tricycle tractor to provide a self-propelled two row machine. The picking units for this proposed machine were supposed to have barbed spindles, but preliminary tests showed that, while the cotton could be

wrapped onto such spindles, I could find no positive way of removing it.

When, in the spring of 1927, I discovered that cotton could be picked with a smooth wire spindle, I became convinced that this was a sound and economical principle around which to build a low priced cotton picking machine. This discovery was made in Kansas City. The thought came to me one night after I had gone to bed. I remembered how cotton used to stick to my fingers when I was a boy picking in the early morning dew. I jumped out of bed, found some absorbent cotton and a nail for testing. I licked the nail and twirled it in the cotton and found that it would work. Later I built a hand operated device for testing the efficiency and proper spacing of the plain wire spindles. This was first tested in stalks of cotton in Oklahoma.

With little besides a set of new drawings incorporating the plain wire spindle idea, the hand operated testing device, and confidence in my ability to build a machine that would pick cotton, I returned to my native state, Texas. The first machine was constructed in my sister's garage at Weatherford, Texas.[15] Ten bolls of cotton were wired on each of ten artificial stalks set up in an artificial row for an out of season test. When the

15 Mrs. L. A. (Virginia Elizabeth) Gallaway.

machine was passed over this row, it picked all but three locks of cotton from the 100 bolls. This, of course, was encouraging in spite of obvious defects in the machine.

Like Cartwright, I met a few men with little money and great faith in my undertaking. The first to extend financial assistance was an oil field worker of Texas who borrowed $500.00 from his brother in 1927 to enable me to get started building my first machine. A part of the money advanced by him was used to file my first patent early in 1928.[16] Neither he nor I could forsee the many obstacles that would be encountered before the cotton picker could become a commercial success. It is a source of satisfaction to me that in spite of all financial difficulties, I was able to pay this man, Charlie Witherspoon, four times the amount of his investment when he was most in need of it a few years before his death.[17]

Among others with little money but great faith in me were three of my sisters. One, Mrs. Virginia Elizabeth (Jennie) Gallaway, opened her home to me and made her garage available for my workshop. Mrs. Addie Williamson, now of Marshall, Texas,

16 Application Ser. No. 249,943, January 27, 1928, patent No. 1,910,307 issued to John Daniel Rust, May 23, 1933. This patent was surrendered and application for reissue, Ser. No. 729,452 was filed June 7, 1934 on which patent No. Re. 19,411 was issued January 1, 1935.

17 Original contract between J. D. Rust and C. R. Witherspoon in 1927 was replaced by written contract of June 21, 1928. Paid Witherspoon $2,000.00 sight draft on Union Planters National Bank & Trust Co., Memphis, Tenn., Aug. 5, 1944, for purchase of his contract by John D. Rust, Agent.

advanced $1,000.00 to help me develop the cotton picker. The third sister, Mrs. Mary Butler, now of Sweetwater, Texas, always gave moral support, although, because of ill health, she and her husband were unable to contribute financially to the project. Unfortunately, my sister Jennie who was so interested in my work, did not live to see the machine on the market.[18]

From other Texas friends, I was able to raise on special contracts an additional $4,000.00 which carried the project through to 1930.

For the most part the people of Weatherford gave me encouragement. A group of business men there offered me financial backing before my first machine was completed, but the terms were not acceptable, so I had to decline their offer. Typical of the few who were skeptical was the hardware clerk who wanted to know what I was going to do with the parts I was buying. When I told him I was building a cotton picker, he said, "Good Heavens, Rust, you can't do that! Some of the biggest implement companies in the world have been working on

18 On Jan. 10, 1928, a written contract was entered into between J. D. Rust and Virginia Elizabeth Gallaway to supplant their original oral agreement. The Williamson contract was dated January 4, 1929.

that for years and they haven't got anywhere yet. If they can't build a cotton picker, what makes you think you can?"

I replied that I thought the big companies were working on the wrong principle; that in any case I had to go ahead with my invention.

Then he said, "Of course, I'll sell you whatever you want, but I still think you are wasting your time and money."

My brother Mack came with me late in 1928, bringing with him an automobile, typewriter, and a few hundred dollars he received for a piece of property he sold. Together we moved to Louisiana early in 1930 where we had the support of a cooperative community.[19] After a year there, we met Wallace A. Clemmons, owner and operator of the Gulf Radio School at New Orleans, Louisiana, who advanced funds to repay the cooperative community and we moved two miles away to the town of Leesville, Louisiana, where Mr. Clemmons continued to take care of our modest needs. The machine rebuilt there was the first, so far as I know, ever to harvest a bale of cotton in a day. This was in 1931.[20]

Early in 1932 we moved to New Orleans, Louisiana, where, with Mr. Clemmons, we formed a corporation, the Southern Harvester Company.

19 Contract between J. D. Rust and Geo. T. Pickett, Trustee, Newllano, La., April 24, 1930. Also cancellation of that contract and receipt for repayment issued to John D. Rust by Geo. T. Pickett, Trustee, May 6, 1931.

20 Near Waco, Texas.

Soon after arriving in Louisiana, I met Miss Thelma Ford who was to become my wife about four years later. From the beginning she took an intelligent and sympathetic interest in my work. She came with the corporation as soon as it was chartered and has devoted full time to the project ever since, except for a short period during World War II.[21]

In the fall of 1932 the machine was operated principally near Lake Providence, Louisiana. Financing a new corporation whose principal asset was a license on a new invention admittedly in the experimental stage, was most difficult during the depression of the thirties. So, when some of the leading planters of the community became interested and offered not only some financial backing, but a lease on a new metal building, we moved to Lake Providence. The building originally was erected for a cotton seed house, but was remodeled inside to house not only the cotton picker shop, but the office and living quarters as well.

The machine rebuilt at Lake Providence made history in 1933. At the Delta Experiment Station, Stoneville, Mississippi, it was the first machine in the world to pick five bales of cotton in a day. From that day until his death, Mr. W. E. Ayres,

21 J. D. Rust and Thelma Ford were married in the Methodist parsonage at Lake Providence, La., Dec. 1, 1933.

Assistant Director in charge of Delta Experiment Station, gave staunch moral support to the Rust Cotton Picker.

Upon Mr. Ayres' invitation, we attended the Southern Engineer's Convention, January 31 to February 2, 1934, at Hotel Peabody in Memphis where we showed motion pictures of the cotton picker. Considerable interest was created and we were encouraged by the promise of financial support to move to Memphis which became the home of the cotton picker for a period of fifteen years. A number of improvements were made in the machine at Memphis. Here we built the first pull model machines which harvested considerable cotton, although it usually was necessary to go over the row twice with them to harvest a satisfactory percentage of the open cotton, and they gave too much trouble to stay sold.[22]

The first articles published about the cotton picker were in the two newspapers at Weatherford, Texas, where the first cotton picking machine was built. On July 19, 1928, THE DAILY HERALD headlined its three column front page article with a three column cut, "WET SPINDLE COTTON PICKER BEING BUILT BY WEATHERFORD MAN". The following morning, using the same picture, THE WEATHERFORD DEMOCRAT headed an article, similar in content and space, "WEATHERFORD INVENTOR CLAIMS TO HAVE BUILT A REAL COTTON PICKER".

22 Patent No. 2,085,046 issued to J. D. Rust Et Al, June 29, 1937 on application originally filed June 13, 1935.

During the next few years, articles of local interest about the Rust Cotton Picker were published in newspapers where the development work and field tests were being conducted, but only a few were published away from home. Notable among these are an article in the Sunday edition of the New Orleans ITEM-TRIBUNE on June 15, 1930 and in THE NATION of May 31, 1933.

The first article published in Memphis was a four column spread with photographs in THE COMMERCIAL APPEAL on April 18, 1934, announcing the selection of Memphis as location of the Southern Harvester Company headquarters. THE PRESS-SCIMITAR and THE COMMERCIAL APPEAL both from that day forward gave full coverage to newsworthy events about the cotton picker, and that year a few reports went out over the wire services.

The ARIZONA PRODUCER, on December 15, 1934, carried the first full page cover of the Rust Cotton Picker with a story about the invention on an inside page. But the article that really brought national attention to the invention was in the February, 1935 issue of THE AMERICAN MERCURY. Oliver Carlson, writing "THE REVOLUTION IN COTTON", not only described the cotton picker, but reviewed the sociological problems of cotton planters during the depression and the possible effects of the invention on the entire farming area of the South. This article was reprinted in condensed form in THE READER'S DIGEST the following month. With the wide combined circulation of these two publica-

tions, the information was spread all over the country. This article focused the attention of the world, not only on the cotton picker, but upon the Southern planter and his problems and the problems of farm laborers, sharecroppers and tenant farmers. The amount written about the Rust Cotton Picker and its possible implications as viewed in the depression years was phenomenal. Most of it was favorable to us, but not all of it. During the worst period of unemployment in the history of America, many writers viewed with alarm possible displacement of more labor. One editorial went so far as to suggest that the cotton picker should be dumped in the Mississippi River; and a public proposal was made that legislation be passed to prohibit its use.

But that attitude was in direct contrast with that of some of the leading cotton planters of the Mid-South region. Notably among them was John T. Fargason, Jr., formerly of Memphis, who was among the earliest and most consistent supporters of the cotton picker in this area. Not only did he become financially interested, but he made us welcome to use his beautiful Clover Hill Plantation near Clarksdale, Mississippi, for testing and demonstrating the machine from 1935 on. He was the first man ever to buy a self-propelled Rust Cotton Picker and now owns machines built by both of my licensees.[23]

23 Allis-Chalmers Manufacturing Co. and Ben Pearson, Inc. both produce and sell machines under U. S. Patents issued to John D. Rust and under the ownership of John D. Rust in patents issued to him and Mack D. Rust jointly.

In February, 1936, a Tennessee charter was obtained for the Rust Cotton Picker Company with headquarters at Memphis. This new organization became the successor of the Southern Harvester Company of Louisiana, receiving all of its assets and assuming all of its liabilities.

It was in Memphis, too, in 1937 that I built the original tandem Rust Cotton Picker which was designed to overcome the necessity for going over the row twice to do a thorough job of picking. It was designed so that it could also be converted into a two-row machine.[24] This experimental model was powered with a V-8 Ford truck motor. That year, near Gilliam, Louisiana, this machine broke all previous records by picking thirteen bales of cotton in a single day.

Today I have forty seven United States patents, issued or pending, on cotton picker inventions.[25] Nine of them were issued to my brother and me jointly. Our last joint patent was filed in 1936, a few years before my brother moved his operations to Arizona.[26]

In heavy yield cotton the tandem cotton picker gathered cotton so rapidly that two men could not dump the two hundred

24 U. S. Patent No. 2,175,216 issued to J. D. Rust Oct. 10, 1939 on Self-Propelled Tandem Cotton Picking Machine

25 See attached list for issued patents. John D. Rust also has 12 applications for patents on improvements in cotton picking machines pending in the U. S. Patent Office.

26 U. S. Patent No. 2,143,901 was issued to J. D. Rust Et Al, Jan. 17, 1939, on Application Ser. No. 98,944, Sept. 1, 1936.

fifty pound bags as fast as the machine could fill them. So, in 1938, a two wheeled trailer with capacity for a bale of seed cotton was designed to be pulled behind the machine. When filled, it was detached and another trailer hitched on while that one was moved to the gin. Three or four trailers were used with one machine, depending upon the distance from the gin.

While the cotton picker gained much fame, both nationally and internationally, financing was never an easy problem. When World War II cam on, the Rust Cotton Picker Company still had only a development shop with no facilities for producing machines in quantities.[27] Also the Company was caught in a precarious financial position.

For the first time since I started work on the first model of the cotton picker, and for the first time since Mack came with me late in 1928, we were from necessity forced to look for employment elsewhere. Both of us went to work for the Rust Engineering Company, Mack in Pittsburgh, and I as expeditor on an Ordinance project at Canton, Ohio.[28]

Both the Rust Engineering Company, and its Vice President, E. Marshall Rust, were stockholders in The Rust Cotton Picker Company and we had their assurance that we would not be frozen

27 Office and shop were in garage building, 2369 Florida St., Memphis, Tenn.
28 Spring until fall, 1941.

on the job, but could be released for the cotton picking season, or for any other work that would further the cotton picker enterprise. E. Marshall Rust was another of those persons of great faith and considerable fortune. Aside from his interest in the cotton picker, he wanted to see us succeed as a matter of family pride. In his genealogy, RUST OF VIRGINIA, he reprinted a part of "THE COTTON PICKER" from HARPER'S MAGAZINE of September, 1936, by Robert Kenneth Straus, and a full page photograph of my self-propelled tandem cotton picking machine.

During this war period, my wife obtained employment with a shipping company in Memphis from noon until evening so she could still devote a half day to the company without pay. Later, she went to work at the Army Supply Depot where she became assistant to the Principal Clerk in the Subsistence Division. Mack's wife also obtained employment at the Army Supply Depot in the Personnel Division.

We were unable to obtain further financing. Even those stockholders who had in the past helped the company over rough spots by increasing the amount of their investments could not be induced to put further funds into the project. The company sold its lathe, sheet metal brake, and other critical shop equipment to some of the government schools in order to help liquidate some of its most pressing obligations. Even with the funds from that source, together with what we could spare from

our own earnings, we were not able to pay everything the company owed. Finally, the company's charter was revoked by the state of Tennessee because of its inability to pay its franchise taxes.[29] My brother became convinced that he would never amount to anything unless he got out on his own. So he moved his operations to Arizona.[30]

In spite of the impressive record of the Rust Cotton Picker before the war, time proved that certain parts of the picker unit did not have sufficient life for a commercial product. I finally came to the conclusion that it was not just a matter of tougher materials, but that most of the trouble was in the design of those parts of the picking units. So, I put the old machine under a shed and decided never to use it again. I saw that, after all, these pre-war machines were not the solution to the cotton harvesting problem.

Even considering the hardships of the depression, this was the lowest ebb of the cotton picker's history. I felt like a complete failure. My wife was alarmed at my dejection. I had told her what the most serious defects of the machine were, but that I could not put my heart into designing a new one when our company and shop were gone and there seemed no prospects of getting the money, facilities, or priorities for materials

29 Revoked under Section 5, Chapter 100, Public Acts of 1937 on March 19, 1942.
30 During the year 1942.

necessary for building a new model. She said she knew I had the ability to overcome the obstacles and that she would never be discouraged so long as I didn't give up. She urged me to go ahead and put my ideas on paper, pointing out that at least I still had my home and a drafting board. So we both decided that it was best for me to go ahead and design the new model and take a fresh start on the financial and other problems when the drawings were completed.

Then, in 1943 I set out to design the machine all over again. Beginning with a new self-locking snap-on spindle slat with a bearing on each side of the spindle drive roller[31], I completely re-designed the machine. In doing so, I was obliged to discard many features that were thought to be indispensable during the thirties. However, I did retain the basic principles of my original invention.

While I was in Washington with my new drawings early in 1944 to file patents on the new improvements, I was approached by Allis-Chalmers Manufacturing Company for a license to manufacture and sell the Rust Cotton Picker. The license was granted that spring and they built two machines that year and four machines the following year according to my new design and under my supervision.[32] These machines went to the non-profit educational foundation which I had established to receive my patents

31 U. S. Patent No. 2,440,450 issued to J. D. Rust, Apr. 27, 1948.

32 License dated April 19, 1944.

and the income therefrom.[33] My wife and I were able to live on my professional fee as consulting engineer with Allis-Chalmers, so with the earnings from the machines I was able to continue development of my new cotton picker.

During 1948 I designed and built a new semi-tractor mounted single unit cotton picking machine to form a self-propelled cotton picker when combined with almost any make of row crop tractor.[34] This pilot model, powered by a Ford-Ferguson Tractor, picked around 200 bales of cotton in Mississippi that season with earnings of around $6,000.00 after payment of all expense except depreciation and interest on investment. This it did with a minimum of attention or repairs. For the most part it was operated by men who had never seen a Rust Cotton Picker before.

As a result of the good work this machine did, some of the leading planters of Jefferson County, Arkansas, obtained permission to move it to their community for demonstrations to farmers of their county.[35] These demonstrations led to another license contract early in 1949 and now both Allis-Chalmers and

33 The World Foundation, a trust, John D. Rust, Trustee, established by declaration under laws of Tennessee, Dec. 27, 1944.

34 U. S. Patent No. 2,613,492 issued to J. D. Rust, Oct. 14, 1952.

35 Frank Fletcher of Tamo, Arkansas, and G. D. Long of Moscow, Arkansas.

Ben Pearson, Inc. are producing cotton pickers with non-exclusive licenses under my patents.[36]

During the summer of 1949 I moved to Pine Bluff, and in 1951 obtained an Arkansas charter for The John Rust Foundation, successor of The World Foundation, and for The John Rust Company whose outstanding stocks are held by the Foundation. The Company maintains a development shop at Pine Bluff where I continue my efforts to improve the machine. I have succeeded in simplifying and streamlining the cotton picker and have made practically all wearing parts automatically self adjusting so the machine is easy to service, and requires few adjustments by the operator.

For many years it has been apparent that the percentage of cotton that spindle type machines could harvest varied greatly with the condition of the cotton. The first attempts to improve the percentage of cotton picked with the Rust machine were, on the whole, fairly successful. A roughening device was introduced in the picking unit to maintain a slightly roughened surface on the spindles.[37] Later I discovered that the percentage picked could be increased considerably by use of detergents in the water for moistening the spindles.[38] These methods, used alternately and

36 A license was granted to Ben Pearson, Inc. by The World Foundation, a trust, John D. Rust, Trustee, April 1, 1949.

37 U. S. Patents Nos. 2,085,046, Jan. 29, 1937, and 2,143,901, Jan. 17, 1939, issued to J. D. Rust Et Al; and Nos. 2,162,750, June 20, 1939, and 2,485,845, Oct. 25, 1949, issued to J. D. Rust.

38 U. S. Patent No. 2,567,301 issued to J. D. Rust Sept. 11, 1951, and No. 2,637,156 issued to J. D. Rust, May 5, 1953.

together, were quite effective, but never completely eliminated the necessity for covering the row twice with a single picking unit for thorough picking. However, the problem was considered fairly well solved until still worse picking conditions were encountered in the 1949 season. Due to heavy boll weevil infestation and other causes, the condition of the cotton was such that year that the machines failed to give satisfaction in some areas even with both the roughener and detergent in use.[39] It was, therefore, more apparent than ever before that the lowered picking efficiency was due to knotty bolls of cotton with closely packed fibre.

So, in the fall of 1949, I concluded that the cotton itself must be conditioned for picking. That season I designed and tested stationary fluffing devices to rough up the bolls and loosen the fibres so they would be wrapped up by the moistened wire spindle.[40] These devices worked fairly well, but treated the stalks pretty rough and lowered the grade of cotton.

After continued efforts to solve this troublesome problem, I finally came up with a whirling fluffer device which proved to be a revolutionary invention. This device effectively conditions the fibre for picking with little or no damage to the plants or green bolls.

39 The cotton in the Pine Bluff area of Arkansas was decidedly adversely affected in 1949.

40 U. S. Patent No. 2,607,178 issued to J. D. Rust, Aug. 19, 1952. Patents pending on rotary type fluffer.

With the fluffer attachment, a single unit machine can be made to pick more efficiently than the tandem machine, or any other cotton picker on the market. This it does without lowering the grade of cotton appreciably. The result is that the Rust Cotton Picker can now be made the most selective or the most aggressive cotton picking machine in the world, depending upon whether or not the fluffer attachment is brought into use. In the first picking where it is desired to save the seed for planting, the fluffer attachment may be disconnected, and the machine will gather only the cream of the crop. Later, for harvesting all the cotton, the fluffer may be brought into use.

The year, 1952, has seen the culmination of many of my hopes and dreams. Not only have I produced the kind of cotton picking machine I set out to build, but I have been able to fulfill all the financial commitments made to those who supplied the funds necessary for a quarter of a century of mechanical developments. This includes two dollars for each dollar of stocks purchased in the now non-existent Rust Cotton Picker Company.[41] The only remaining problem is getting machines to the farmers at a low price so that eventually the cost of producing cotton can be lowered so as to enable cotton to hold its own against competing

41 Payments were handled by the National Bank of Commerce of Pine Bluff, Arkansas, under a trust agreement between The World Foundation and the Bank dated December 22, 1951.

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fibres. One of the licensees under Rust patents, Allis-Chalmers Manufacturing Company, recently placed a small single unit machine on the market priced under $2,500.00, f.o.b. factory, which is a big step in the right direction.

(The following is a list of the U.S. Patents referred to in Note 25).