

THINGS DON'T JUST HAPPEN

By NOEL J. BROWN
D. W. Dorrance Company

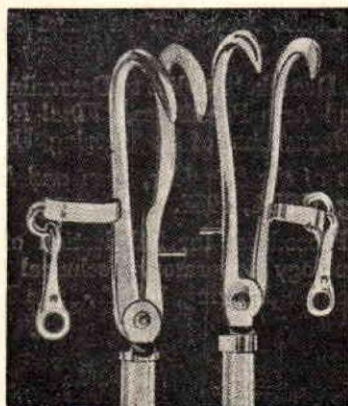
Often we look at a manufactured device and think that it "sprang full grown" to its present perfection. We are prone to forget the many steps in the evolution of any complex product. Some ideas prove efficient and practical, and are perfected. Others die "aborning."

Think of how little our present automobile resembles the cars of yesteryear. Many types and makes have disappeared. Remember the Marmon, the Stephens Salient Six, the Kissel Kar, the Briscoe, Dort (not Dart), Saxon, Columbia, Moon, Diana, Durant, Apperson, Velie, and Franklin. There was even a car with 12 cylinders for power on the hills, and 6 cylinders for economy on the flat. All of these played their part in the evolution of today's automobile, and disappeared from the scene.

Prosthetic devices have also had a trial and error factor in their development. I should like to give you a few details on the development of the Dorrance terminal device from the early invention by Mr. Dorrance of the first split hook to the present wide selection of fifteen models.

In 1909 Mr. D. W. Dorrance was a 54 year old sawmill operator in Oregon. He could tell vivid stories of the tremendous stands of virgin Douglas Fir. Great ox teams were used to haul the logs to the mills. Steam engines puffed and big saws sang as the logs moved through. Safety regulations were not developed as yet, and many accidents occurred. In one of these Mr. Dorrance lost his right hand. I have heard that he was back at work the next day. He was a strong, virile man and it seems that nothing could stop him.

In those days, a leather socket with an improvised single hook or a hand with little function was all that could be obtained. He was not satisfied and his inventive mind was soon at work. About 1912 he invented the first split hook, and it looked like a hay hook sawed down the middle. The two halves were hinged together, a thumb added and rubber bands applied for closure. Crude though it was, it worked. His great contribution to present day prosthetics was the fact that he was a born salesman. Most people would have used it themselves, but never developed it into a business for the benefit of others.



PICTURES FROM EARLY CIRCULAR showing D. W. Dorrance and the first Dorrance hooks, about 1912.

He had a very hard time popularizing his invention. Limb shops did not want to bother with it. Legs were their main business. He traveled from city to city actually peddling his devices. He often "rode the rods" he was so poor. A lesser man would have failed, but he was a man with a mission.

My first acquaintance with Mr. Dorrance was in 1931. I was a freshman in college and was working my way through as an engineering student. It was my privilege to work for him. At that time the No. 5 carbon steel hook was about the only model. A lock finger hook (quite different from the present lock hook), and a hand had been developed and discarded.

Soon after I started to work, the carbon steel was replaced with stainless steel and the problems of plating were eliminated. The hinge joint had been a plain box bearing. Mr. Dorrance suggested a ball bearing joint. After some experimentation, a double ball bearing joint was developed and has proven very satisfactory.

Next the special needs of farmers were considered. The Model 3 with a large opening for shovels and tabs for holding nails was a partial answer to this need. However, a suggestion from the field for a chisel holder led to the development of the Model 7 hook. It has become one of our most popular devices and serves men in many manual occupations.

The question of how to make a hook lock was under consideration for several years, and about 1936 the present type of lock hook was designed. The Model 1 came first, but the Model 6 with the shape of the Model 7, has proved to be so much more popular that the Model 1 is now obsolete.

Mr. Dorrance loved to meet people, and demonstrate his hook. He attended many of the A.L.M.A. conventions before the time of O.A.L.M.A. or A.O.P.A. His last trip to a convention was in 1937 in the East. He was the oldest man there (80), and the only man who had flown to the meeting. It was his first and only flight and he enjoyed it immensely. In the early part of 1943 he passed away.

The Second World War years kept us busy with production problems. When the smoke cleared away, new developments started again. The light weight high strength aluminum alloys were considered for terminal devices. New techniques and tooling were required before the first aluminum hook could be produced. The hook, the now obsolete Model 55, had rubber sleeves on the jaws. This led to the bonding of neoprene on the jaws in the Model 555. Many amputees asked for an aluminum hook shaped like the Model 5, and so the Model 5XA was developed. Its light weight (3 oz.) and useful shape made it immediately popular. Others needed the extra strength and longer wearing qualities of stainless steel, and soon we were producing the Model 5X stainless steel hook with rubber lining.

The need for smaller hooks had been filled in the past with the Models 8, 9 and 10 stainless steel Dorrance hooks. We therefore were urged to make smaller devices in aluminum alloy for children. Thus, the 88X, 99X and 10X were designed in quick succession. We thought this was the ultimate in size reduction, but the end was not yet. Requests came for a tiny device for children 1 year and up. The result was the new Model 12P covered with plastisol. Plastisol has also been applied to the other small hooks, namely, the 10P and 10AW.

Like the old cars mentioned in the beginning of this article, several models have disappeared. We no longer make Model 1, 2, 4, 9, 10 and many others. We occasionally have calls for some of these, and will make them on request. However, they did pave the way for our present line of 15 models to fit all ages and many occupations, and I feel the end is not yet. New developments must continue and improvements should go on.