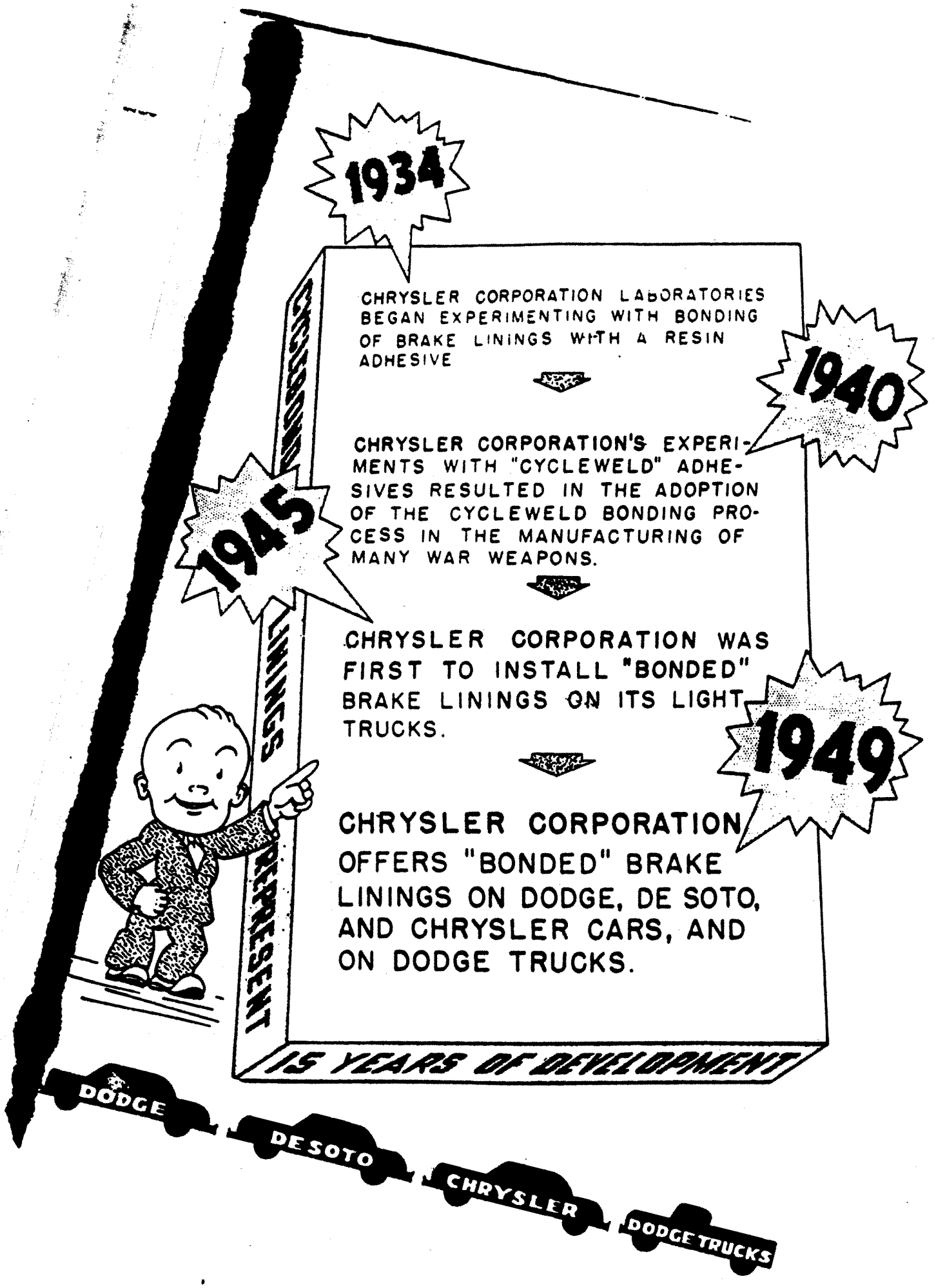
PLAINTIFF'S
EXHIBIT
CHR-262



CHRYSLER CORPORATION'S

LEADERSHIP IN

BRAKE DEVELOPMENTS

Good brakes are essential to safe driving. A child darting into the street, the suddenly opened door of a parked car ahead, an approaching car making an improper turn--all are situations in which dependable brakes may save a life or avert property damage.

Since its inception, Chrysler Corporation has recognized the importance of good brakes and has led the automotive industry in brake development. In 1924, Chrysler Corporation pioneered the introduction of the hydraulic brake system in American production-built cars. This was a tremendous engineering achievement which, at first, met with extreme criticism and was ridiculed as the "hypodermic" brake system. In a short time, however, hydraulic brakes became established as the most dependable and safest of automotive braking systems and are now used in some form by most automotive manufacturers the world over.

Down through the years Chrysler Corporation continued to maintain its leadership through steady advances in brake performance. One of the more interesting of these important automotive brake developments was the two-cylinder wheel brake, first introduced by

Chrysler Corporation in 1940. Requiring less pedal effort, having greater "fade" resistance or recovery power, and providing more symmetrical lining wear than the one-cylinder type, the two-cylinder brake was a major contribution to safer and more efficient brakes.

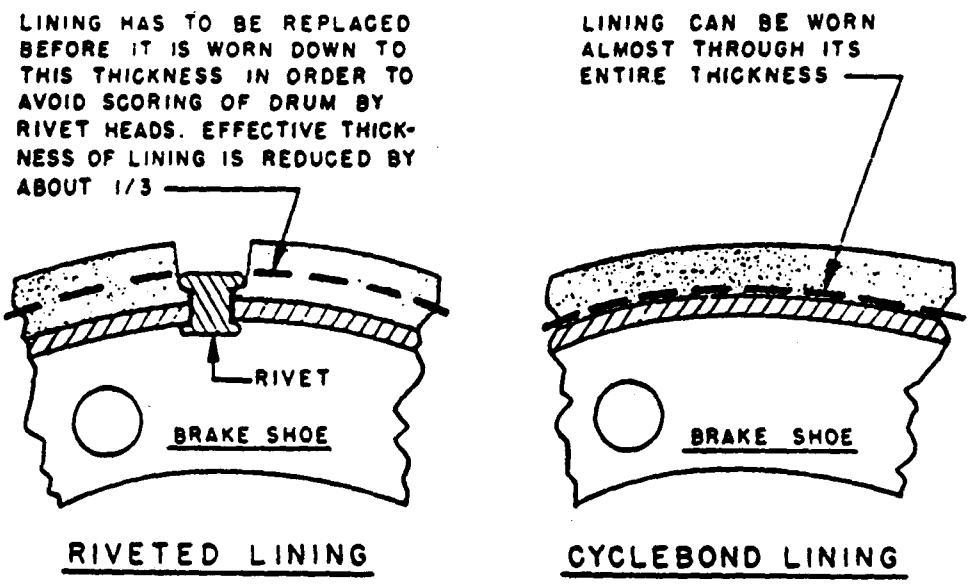
> Today, Chrysler Corporation again leads the field with the development of Cyclebond Brake Linings. This new method of securing linings to brake shoes practically eliminates scoring of brake drums and gives longer brake lining life due to increased contact area and greater effective lining thickness.

Through the Cyclebonding process, brake effectiveness and reliability are improved; brake linings will have to be replaced less frequently; and brake drums will have to be serviced less often. Because of the lower service costs resulting from these advantages, Cyclebond Brake Linings are of special interest to owners to new Dodge, DeSoto, and Chrysler cars, and of new Dodge trucks.

- LONGER LINING LIFE
- REDUCED DRUM SCORING
- IMPROVED BRAKES
- REDUCED SERVICE COST

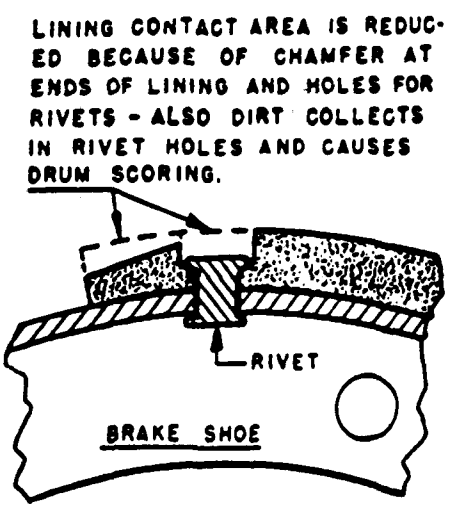
● LONGER LINING LIFE...is the greatest advantage resulting from Cyclebonding the lining onto the shoe. The life expectancy of a Cyclebond lining is increased at least fifty percent as compared with the life of the riveted lining...some reports have indicated increases in lining life of one-hundred percent or more. Longer lining life is attributed to two major factors:

1 - Since rivets are no longer needed to hold the lining onto the shoe, almost half again as much lining thickness is available for wear. With riveted linings, rivets are countersunk two-

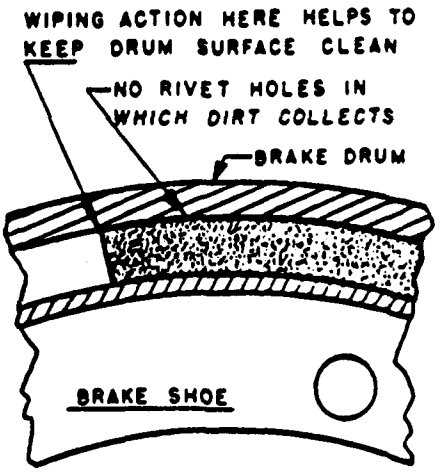


thirds of the lining thickness, thus reducing the "effective" thickness of the lining, as shown in the above illustration.

2 - Cyclebonding eliminates the need for chamfers at the ends of the linings. Since, on riveted linings, rivets cannot be placed at the extreme ends of the lining, it is necessary to chamfer the linings to keep them from "rolling up" when the brakes



RIVETED LINING



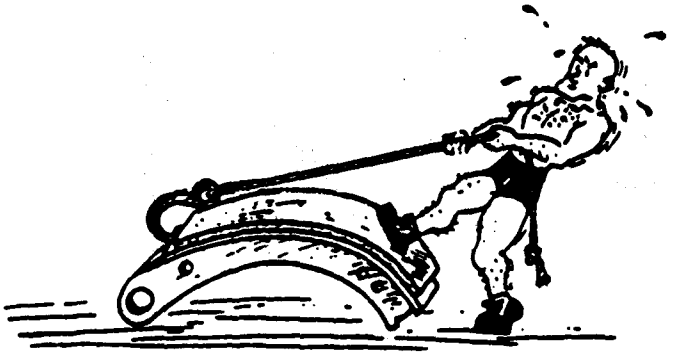
CYCLEBOND LINING

are applied. On Cyclebond Brake Linings, the inner surfaces of the linings are bonded to the shoes for their entire length, thus eliminating the need for chamfers. With the chamfers and rivet holes eliminated, the contact area is increased from ten to fifteen percent over the riveted linings.

● REDUCED SCORING OF BRAKE DRUMS.... Cyclebond Brake Linings materially reduce scoring of the brake drums. This scoring is caused by (1) dirt collecting in rivet holes and (2) rivet heads contacting the drum after lining is worn down.

With Cyclebond Brake Linings the dirt-collecting rivet holes are eliminated. Also, the square ends of the linings tend to wipe the drum surfaces clean, which is not possible with the chamfered riveted linings. The absence of dirt-collecting holes, the wiping action of the square ends, and the elimination of rivet heads all contribute to a greatly reduced possibility of scoring the brake drums.

- IMPROVED BRAKES....result from the increase in lining contact area...because, as pointed out earlier, chamfering the ends of the lining and drilling holes for rivets--which removes some of the lining--is no longer necessary. Furthermore, extensive tests have proven that, in correctly Cyclebonded Brake Shoe assemblies, the bond is stronger than the lining. After some extremely severe laboratory tests, pieces of the lining were found to have been actually torn out, but the lining was still bonded to the brake shoe.



- REDUCED SERVICE COST....comes from Cyclebond's extending the life of the brake linings and appreciably reducing brake drum scoring. Brake service cost is reduced proportionally, an advantage that the individual buyer--as well as fleet owners--cannot afford to overlook.

Cyclebond Brake Lining...is a typical "more-for-your money" product....an exclusive Chrysler Corporation development.

WHAT IS CYCLEBOND?

CYCLEBOND...is the name given to the various processes of bonding two materials together by means of a Cycleweld(*) adhesive and a heat and pressure curing cycle. One of these processes is now being used to bond brake linings to brake shoes. This process is an innovation developed by Chrysler Corporation through many years of intensive research. As long ago as 1934, Chrysler Corporation engineers began experimenting with the process of bonding brake linings to brake shoes through the use of a resin.

During the war, the Cycleweld Division of Chrysler Corporation developed various adhesives which were used in bonding a variety of materials together in the production of P-40 wing flaps, invasion glider ski pedestals, B-36 aircraft truss tubes, mine detector searcheads, Curtiss-Wright propeller oil throw rings, and many other war materials. In many instances, rivets were either partially or completely eliminated by Cyclebonding parts together. Some Cyclebonding processes were developed to withstand the variation in temperatures and the extreme stresses which occur during combat flying. An adhesive was also developed for proposed use in bonding brake linings to aircraft brake shoes.

*Cycleweld is the trade-mark of various adhesives developed and distributed by the Cycleweld Division of Chrysler Corporation and used in such diverse bonding processes as metal-to-metal, metal-to-rubber, metal-to-wood and many others.

Immediately after the war, Chrysler Corporation engineers resumed their activities in the development of bonded brake linings for automotive brakes. The problem was to obtain a bond that would not only withstand extreme stresses, but would also be able to resist the extreme heat generated whenever the brakes were applied. There was also the necessity for meeting the requirements involving aging, flexibility, corrosion resistance, and low or high humidity resistance.

With these specifications, and the war-time adhesives as a starting point, the Cycleweld Division continued its research. In co-operation with the Engineering Division, many types of adhesives were investigated and the result was the development of the bonding agent now in use.

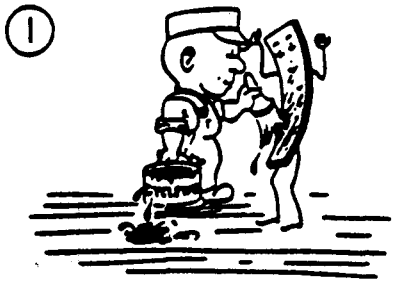
Successful adhesion is dependent not only on the adhesive used, but also upon curing the adhesive under controlled heat and pressure to provide a satisfactory bond. Accordingly, it was essential to find the right combination of adhesive and curing cycle that would meet established specifications and yet be applicable to production and service fabrication methods.

Extensive research and testing were conducted by the Cycleweld Division and the Engineering Division, and various production as well as service methods were thoroughly investigated. Ultimately, the Cyclebonding process met all of the exacting requirements and, in October 1945, Cyclebond Brake Linings were

first adopted for production on the half-ton Dodge trucks. Later on, Cyclebond Linings were installed on the one-ton (front brakes only) and on the three-quarter ton Dodge trucks. In January 1948, Cyclebond Brake Linings were released as service (*) replacement parts for all Chrysler Corporation cars. Beginning with the change-over to the new models in January 1949, Cyclebond Brake Linings were installed on Dodge, DeSoto, and Chrysler cars, and on all Dodge trucks.

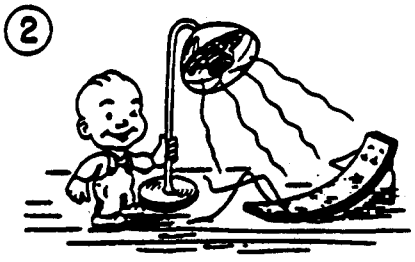
*Servicing a Cyclebond Brake Lining is accomplished by grinding the small remaining portion of the lining and the adhesive off the brake shoe to provide clean metal for bonding. A precoated brake lining is then assembled with the shoe in a simple clamping fixture and placed in an oven where the adhesive is cured.

CYCLEBOND BRAKE LINING PROCESS

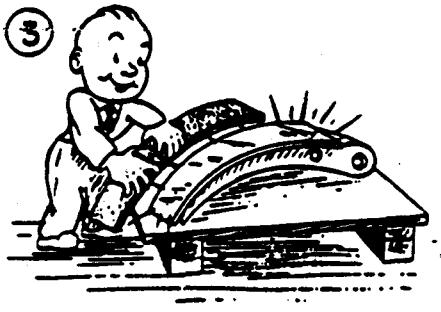


1 - INNER SURFACE OF BRAKE SHOE LINING IS COATED WITH A CYCLEWELD ADHESIVE.

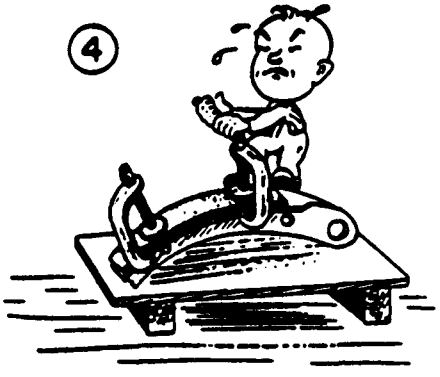
2 - ADHESIVE IS DRIED IN AN OVEN.



3 - WHEN ADHESIVE IS DRY, LINING IS ASSEMBLED WITH A BRAKE SHOE WHICH HAS BEEN CLEANED AND TREATED TO RESIST CORROSION.



4 - BRAKE SHOE AND LINING ASSEMBLY IS PLACED IN A CLAMPING FIXTURE WHICH PROVIDES THE NECESSARY PRESSURE FOR CYCLEBONDING.



5 - FINALLY, BRAKE SHOE AND LINING -- STILL IN THE CLAMPING FIXTURE -- ARE PLACED IN A CURING OVEN WHERE BRAKE SHOE AND LINING ARE SECURELY BONDED TOGETHER.

