TO MARK PROGRESS

LADISH

Controlled Quality

FITTINGS

CATALOG NO. 55

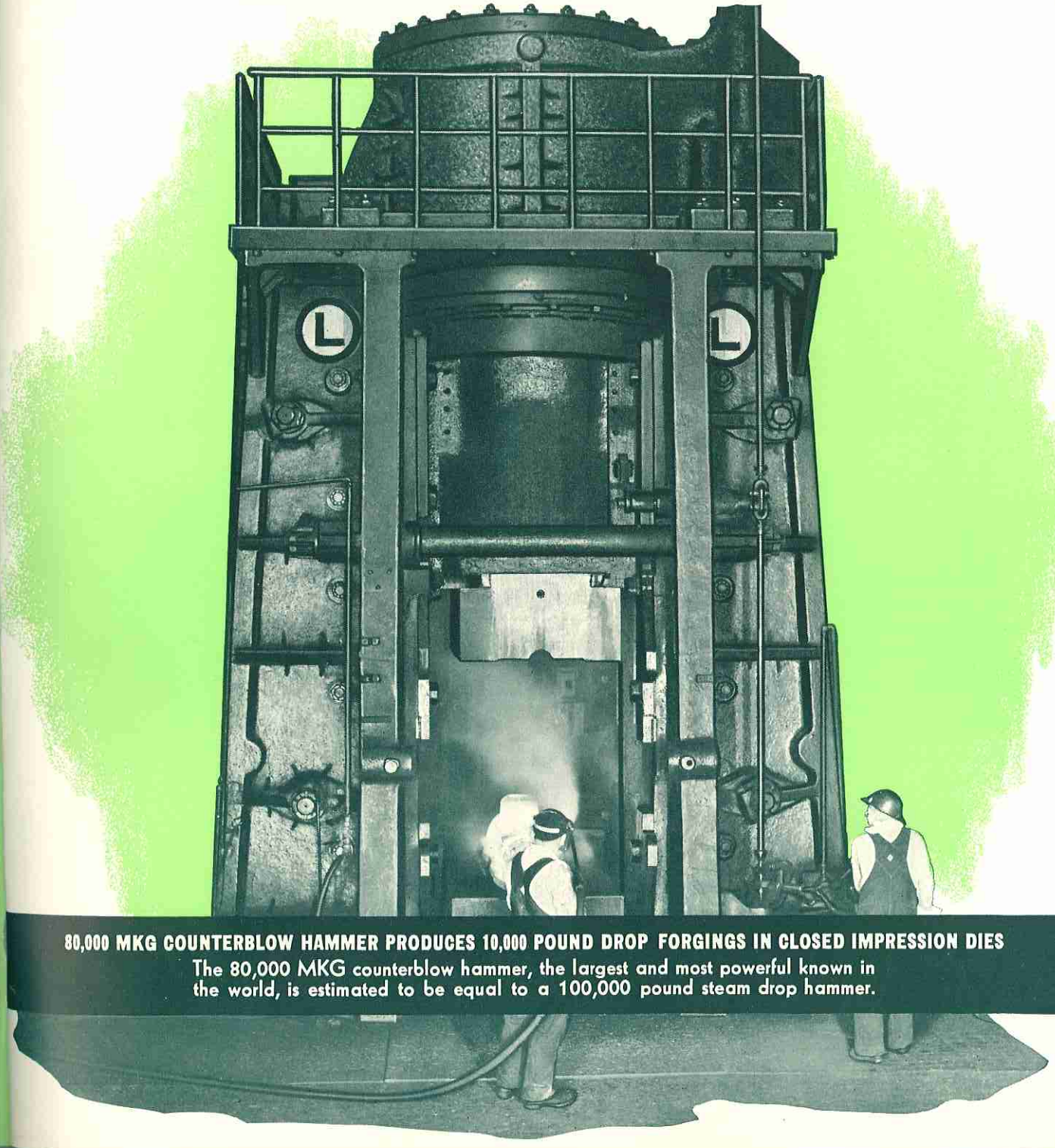
SEAMLESS WELDING FITTINGS	FORGED STEEL FLANGES	LARGE DIAMETER FLANGES	LONG WELDING NECKS	FORGED STEEL FITTINGS

LADISH

Controlled Quality

DROP FORGINGS UP TO 10,000 POUNDS

WELDLESS ROLLED RINGS, ALL CONTOURS AND SIZES



80,000 MKG COUNTERBLOW HAMMER PRODUCES 10,000 POUND DROP FORGINGS IN CLOSED IMPRESSION DIES

The 80,000 MKG counterblow hammer, the largest and most powerful known in the world, is estimated to be equal to a 100,000 pound steam drop hammer.

LANDING GEAR COLUMN

An outstanding example of Ladish heavy drop forgings is the 132 inch long, 8500 pound B-36 landing gear column shown at the left. *Forged* of Chrome-Nickel-Molybdenum Steel *in closed impression dies,* it provides the maximum strength and toughness necessary to withstand the tremendous impact shocks of this plane's 278,000 pound weight at high landing speeds.

Controlled Quality

HEAVY DROP FORGINGS

PRODUCED UP TO 10,000 LBS. IN CLOSED IMPRESSION DIES

New Ladish forging techniques and extensive manufacturing facilities have opened new realms of possibilities in the designing of large complicated parts to take full advantage of the higher physical properties inherent in drop forgings.

Maximum dynamic strength and toughness . . . more homogeneous metal structure . . . proper grain flow . . . reduction of dead weight . . . improved machinability . . . greater margins of safety—these are important design advantages which have now been extended by Ladish to drop forgings weighing as much as 10,000 pounds.

In addition to maximum metal properties, substantial economies can be realized by combining two or more small parts into one large forging.

In every field of industry . . . Farm Equipment, Aircraft, Diesel Engine, Construction, Automotive . . . wherever forging standards are highest, Ladish Controlled Quality is known for dependability and exact compliance with specifications.

TRANSONIC AND SUPERSONIC WIND TUNNEL BLADE

Forged stainless steel, weight—2550 pounds, length—70 inches.

Ladish research and progress in new drop forging techniques are keeping pace with American aircraft development. Forgings of high density heat resistant alloys provide the strength and toughness required to stand up under the grueling conditions of temperature and rotative stresses which characterize this service. Ladish's ability to produce large, complicated drop forgings to rigid aircraft metallurgical specifications has contributed in large measure to the increased speed, size and range of modern American military and commercial aircraft.

LANDING GEAR STRUT
Extruded to save valuable metal and machining time. Overall length—44 inches, outside diameter—12 inches, extruded hole length—36 inches, wall thickness—1½ inches.

FORGED TITANIUM PROPELLER BLADE
Length: 100 inches.

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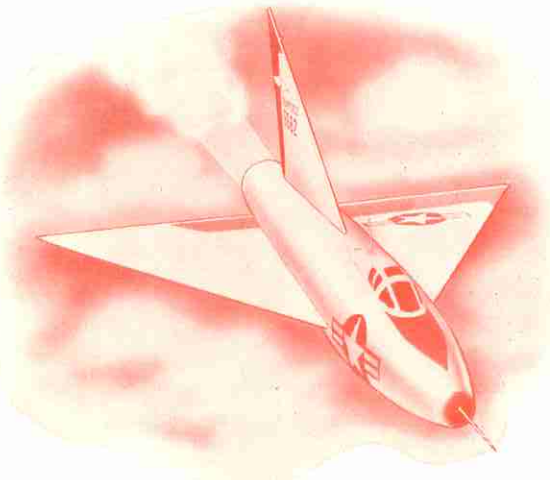
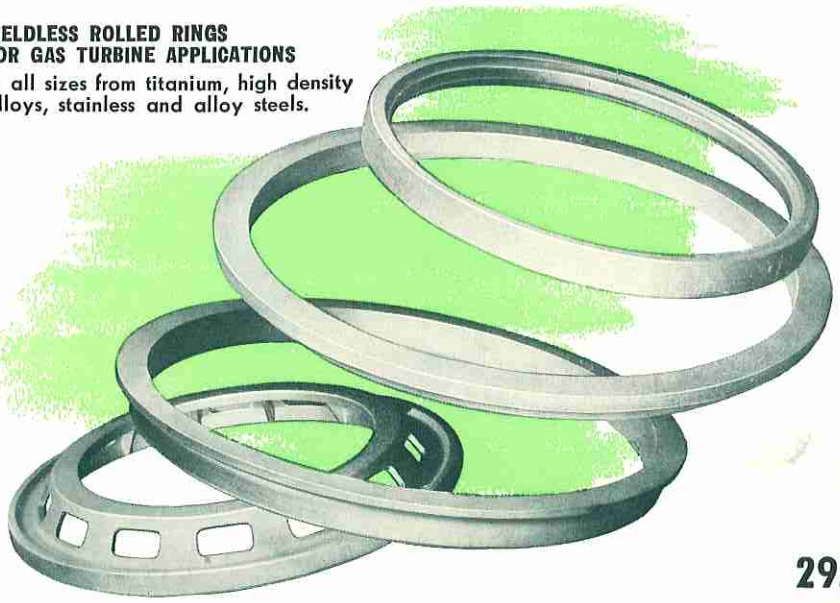
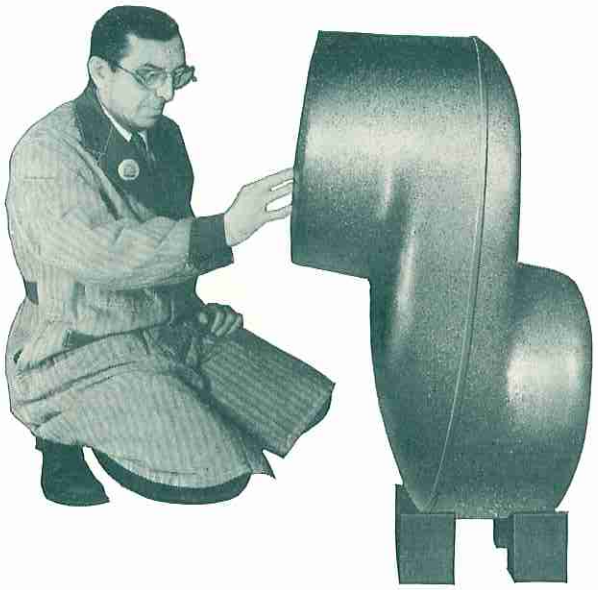
AIRCRAFT FORGINGS

COMPRESSOR WHEEL
Titanium alloy.
Forged weight: 281 pounds.



WELDLESS ROLLED RINGS FOR GAS TURBINE APPLICATIONS
In all sizes from titanium, high density alloys, stainless and alloy steels.





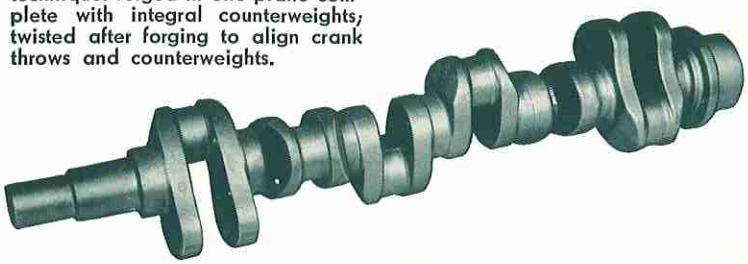
CRANKSHAFT CHEEK AND BEARING SECTIONS
Forged weight: 1584 pounds; size: 31¾ inches high, 19⅛ inches between bearing faces.

Ladish Controlled Quality drop forgings contribute much to the reliability and high performance standards of modern diesel engines.

The forging at the left, the cheek of one of the largest welded section crankshafts ever produced, was forged at Ladish in closed impression dies with grain flow controlled to withstand the torque of a 6000 horsepower diesel engine.

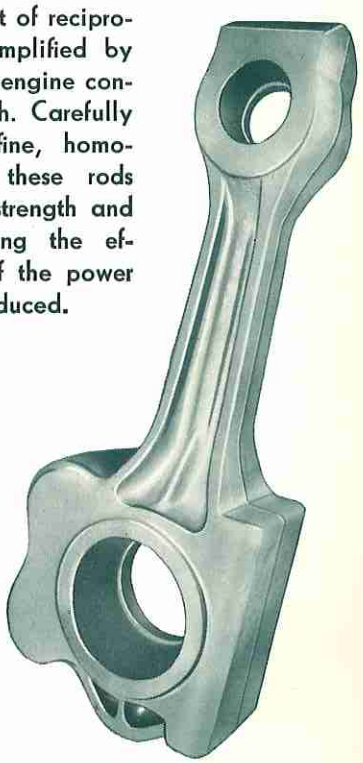
The crankshaft below . . . designed for a high speed diesel engine . . . represents an important development in forging techniques to provide a shaft with proper grain flow and maximum physical properties to resist dynamic bending and torsion loads.

CRANKSHAFT
Drop forged weight: 219 pounds; size: 46¾ inches in length; forging technique: forged in one plane complete with integral counterweights; twisted after forging to align crank throws and counterweights.



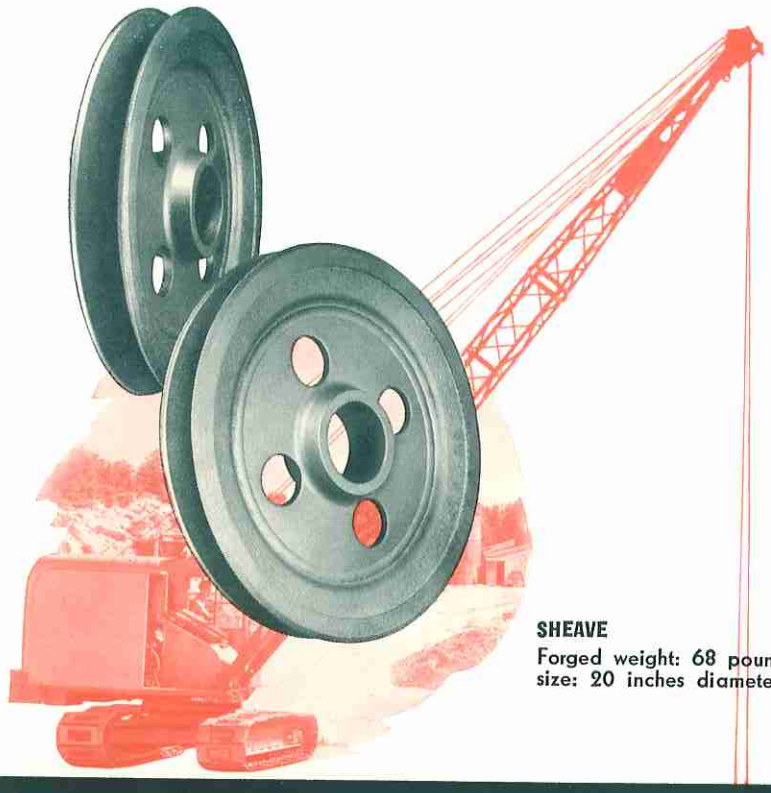
Controlled Quality ENGINE FORGINGS

The greater latitude provided designers for increasing speeds and power output without adding to the dead weight of reciprocating parts is strikingly exemplified by these two giant diesel and gas engine connecting rods forged by Ladish. Carefully controlled grain flow and fine, homogeneous metal structure in these rods materially increase dynamic strength and toughness . . . thereby increasing the efficiency and dependability of the power plants for which they were produced.



MASTER ROD
Forged weight: 785 pounds; size: 50 inches long.

CONNECTING ROD
Forged weight: 1165 pounds; size: 72 inches long.

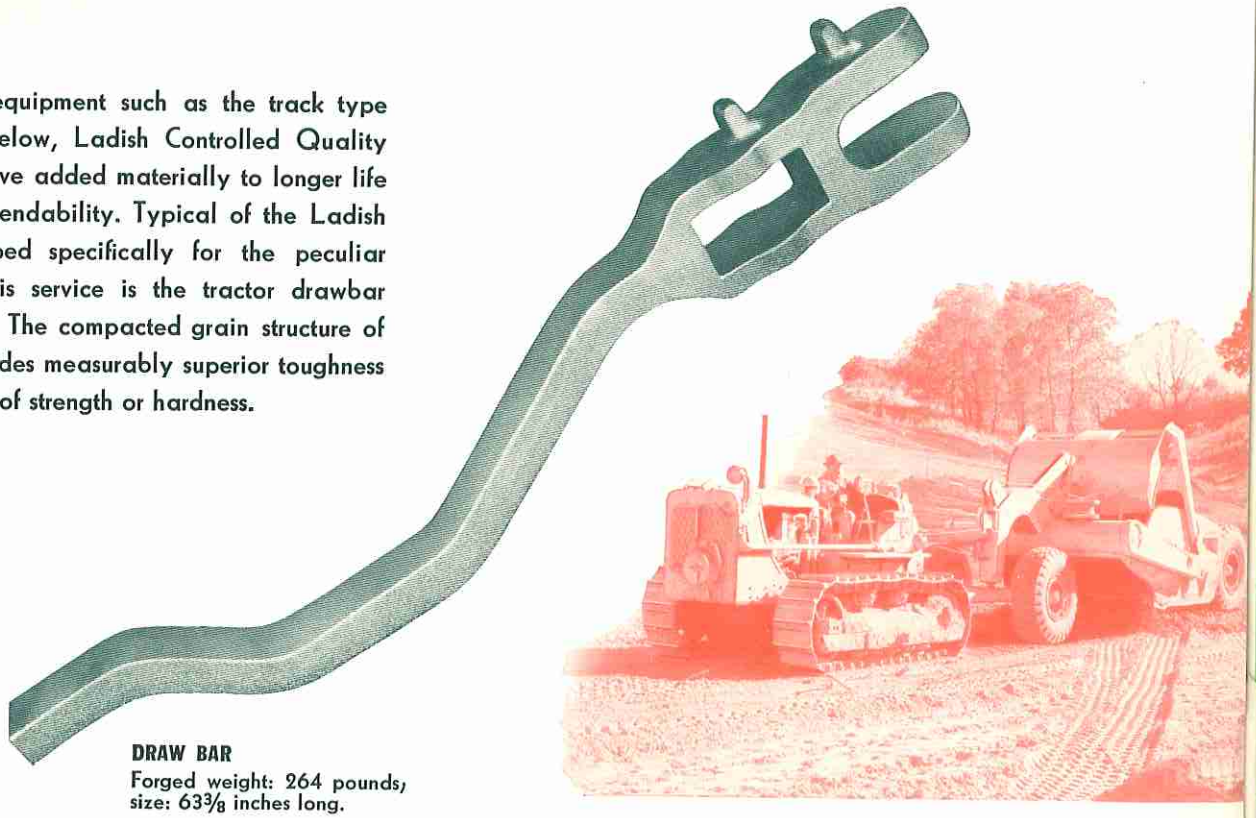


SHEAVE
Forged weight: 68 pounds;
size: 20 inches diameter.

This drop forged sheave is another example of Ladish forging ability. The higher physical properties inherent in drop forgings have been utilized to provide . . . without machining . . . a smooth, accurate groove surface with the strength and toughness to afford increased resistance to wear . . . assuring longer cable life and reducing replacement costs.

. . . . . HEAVY DUTY FORGINGS

In heavy-duty equipment such as the track type tractor shown below, Ladish Controlled Quality drop forgings have added materially to longer life and greater dependability. Typical of the Ladish forgings developed specifically for the peculiar conditions of this service is the tractor drawbar illustrated here. The compacted grain structure of this forging provides measurably superior toughness with no sacrifice of strength or hardness.



DRAW BAR
Forged weight: 264 pounds;
size: 63⅜ inches long.

Ladish Forged Weldless Rolled Rings offer designers a practical and cost-cutting means for improving product reliability . . . and doing it with three important advantages.

First, they provide the superior strength, toughness and metal soundness obtainable only in forgings. *Second,* because they are weldless, their strength is uniform and unimpaired in every section throughout their entire circumferences. *Third,* Ladish Weldless Rolled Rings are forged to contours dimensionally close to finished shapes . . . saving metal and machining costs.

Controlled Quality

WELDLESS ROLLED RINGS UP TO 60,000 LBS.

FORGED WELDLESS ROLLED RINGS
Available in any diameter up to 240 inches . . . weights up to 60,000 pounds . . . in a variety of section contours . . . from any forgeable metal or alloy.

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