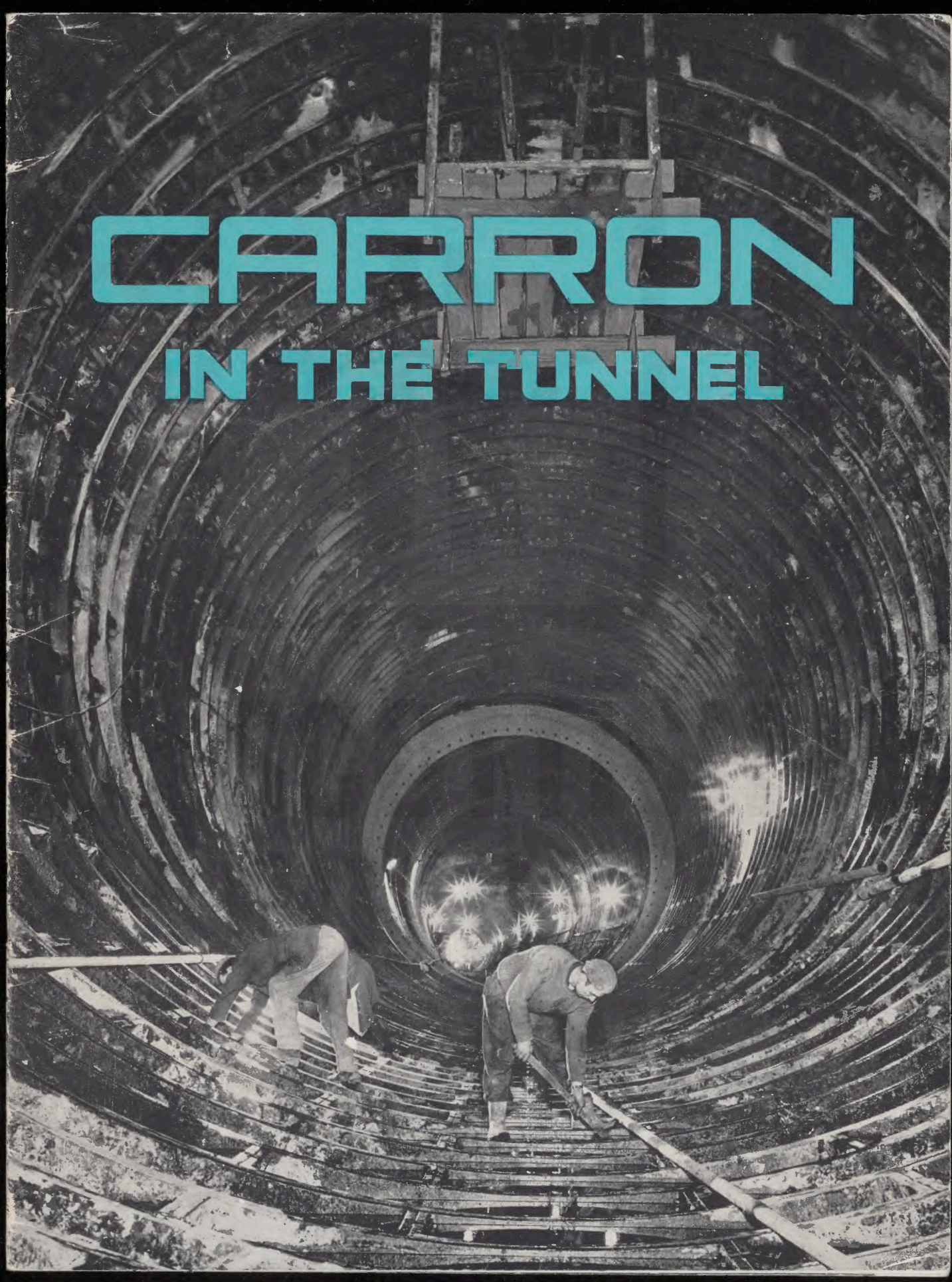


# CARRON

## IN THE TUNNEL





## CARRON UNDER THE CLYDE

CARRON COMPANY has helped to make the iron linings for the new Clyde tunnel at Whiteinch, Glasgow. These linings are built up of rings each weighing about 11 tons and measuring more than 29 feet (inside diameter). The rings themselves are made up of sixteen separate segments which, when bolted together, advance the lining of the tunnel by eighteen inches.

Tunnel ring segments must be both skilfully cast and accurately machined if the faces of the completed rings are to mate precisely.

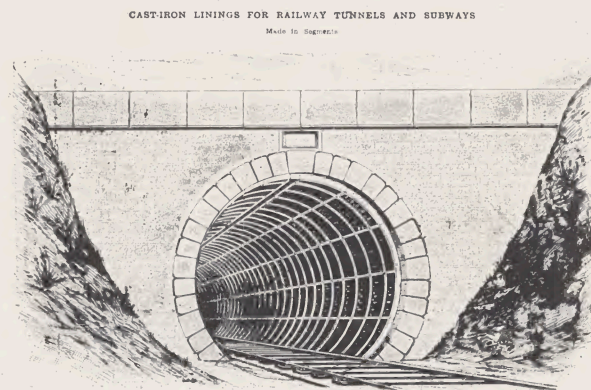
Tunnel segment work for the Clyde tunnel is now completed, but production is in full swing on a £2m. order for the Jarrow-Howdon Tunnel under the river Tyne.

This order is believed to be the largest ever obtained by any Scottish Ironmaster. The contract was placed in September 1961; work started on it within a week, and the first delivery to Tyneside was made from Carron within a month.

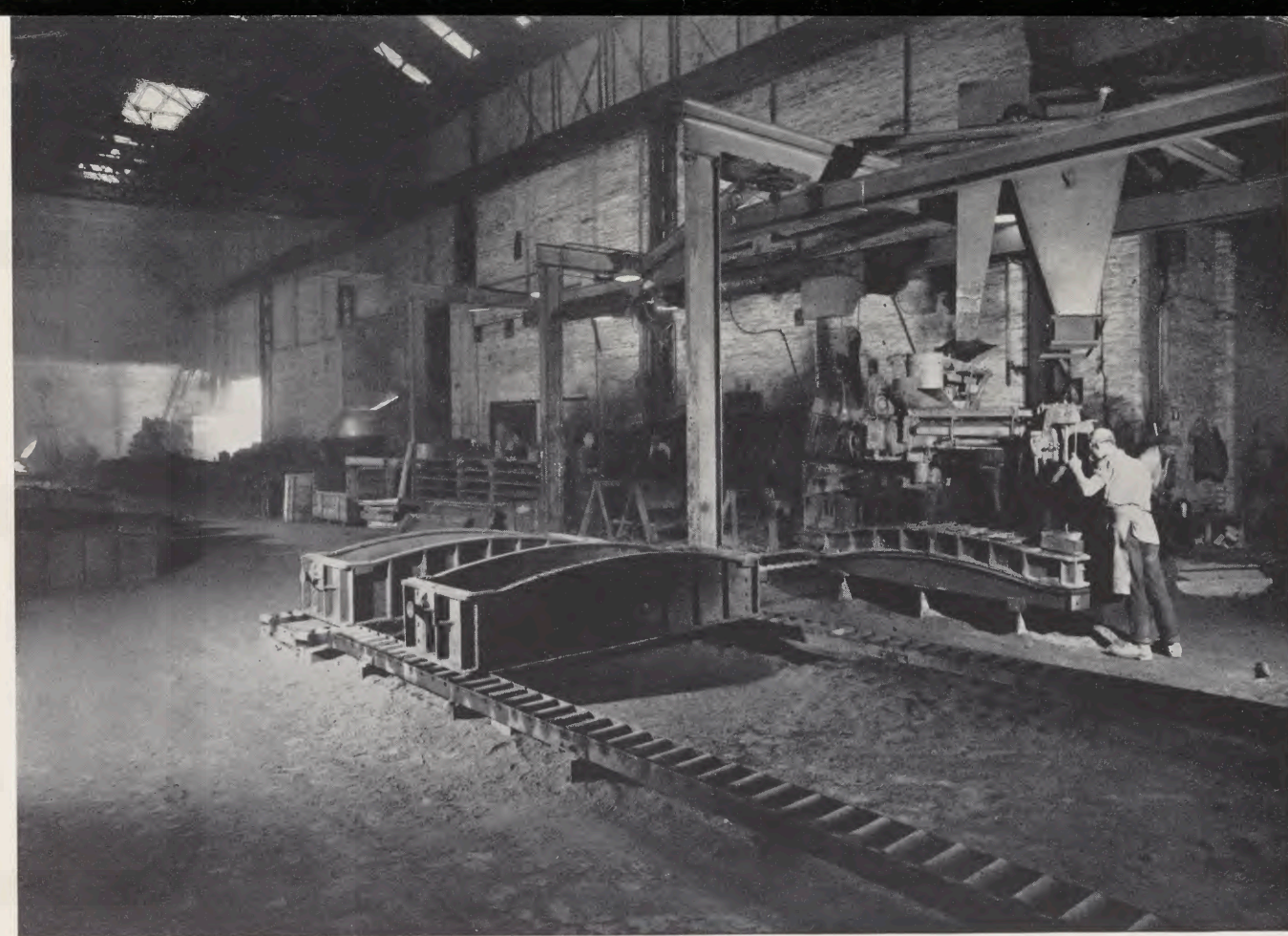
The importance of tunnel segment production at Carron Company is indicated by the big reconstruction and reorganisation project carried out to provide a highly mechanised factory for this product, in machine shops covering a floor area of more than 20,000 square feet.

This expansion is based on an assessment of the need for new road tunnels in Britain and, indeed, it seems clear that with the tremendous increase in surface transport a great deal more has to be done in this field if road congestion is to be overcome.

Carron Company feel that if the Channel Tunnel ever happens they will be in a highly competitive position to win a major share of the work in lining it. This project is still too vague to enter into any planning. But however ambitious the Civil Engineers may become, Carron are confident that they can deliver the goods and this confidence is based on a 'know how' generations old. There is documentary evidence of activity in this sphere in a Carron Company catalogue dated 1870, but no one can say how much earlier they were at it.

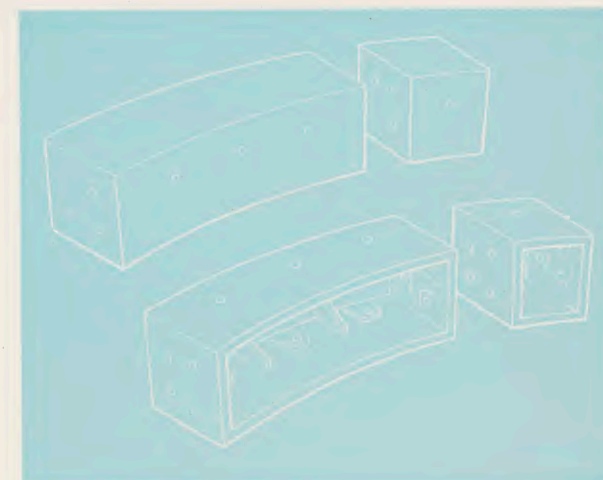


The drawing featured in an old catalogue



Making a top half mould at the mechanised moulding station. The cupola is seen in the background.

In these pages Carron Company portray their extensive facilities for the moulding, casting and machining of segment castings for lining tunnels. Further information regarding their extensive facilities is obtainable from any of the undernoted addresses:—



### CARRON COMPANY · CARRON · FALKIRK · SCOTLAND

Telephone: Falkirk 35

LONDON OFFICE: P.O. Box 110, Wellesley Road, Croydon, Surrey

LIVERPOOL, 22-26 Redcross Street, I.

GLASGOW, 125 Buchanan Street, C.I.

NEWCASTLE UPON TYNE, 33 Bath Lane, I.

LONDON (Export): P.O. Box 110, Wellesley Road, Croydon, Surrey

Telegrams: "Carronade, Falkirk"

Tel. Municipal 2741

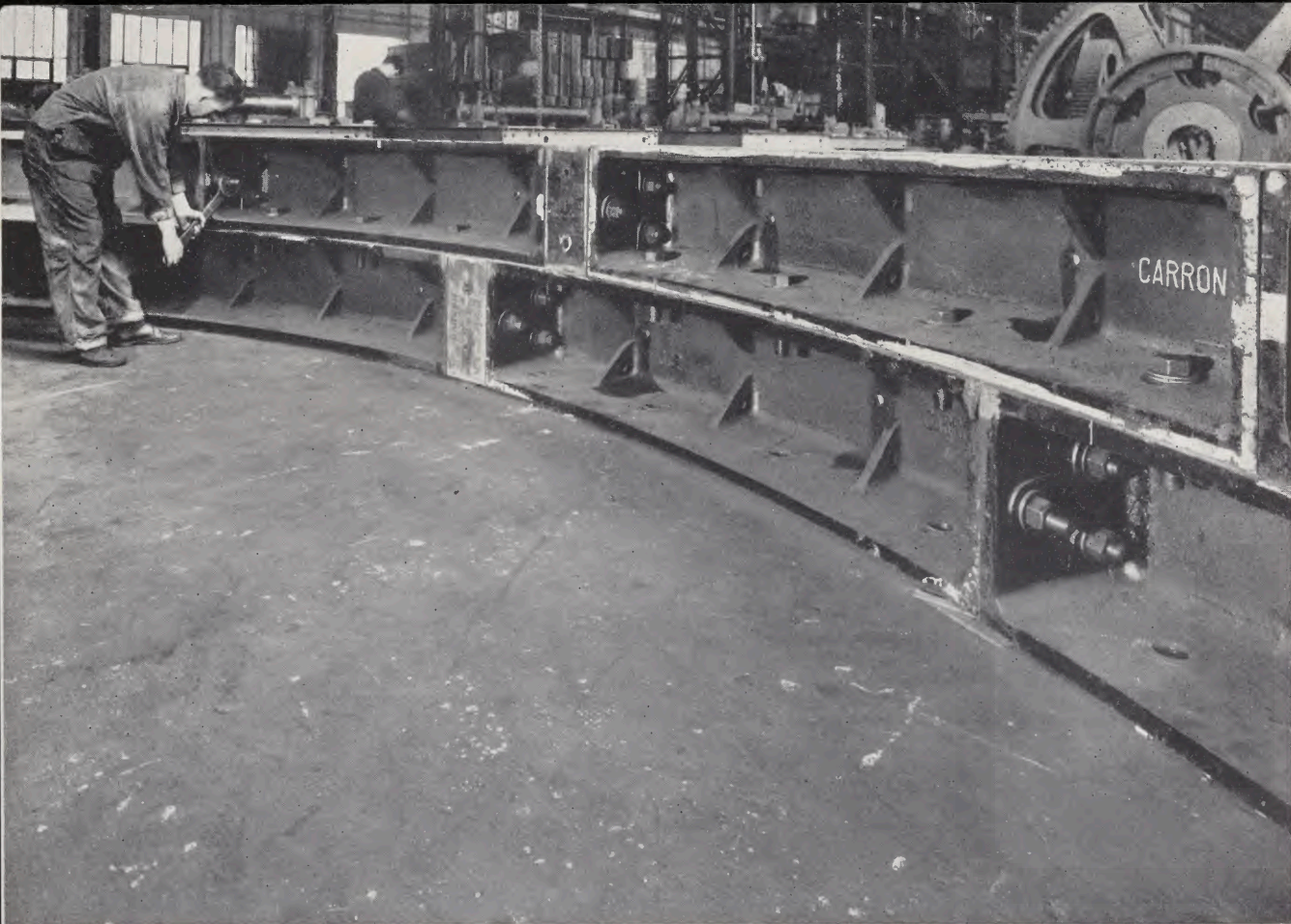
Tel.: Central 1945-6

Tel.: Central 8226

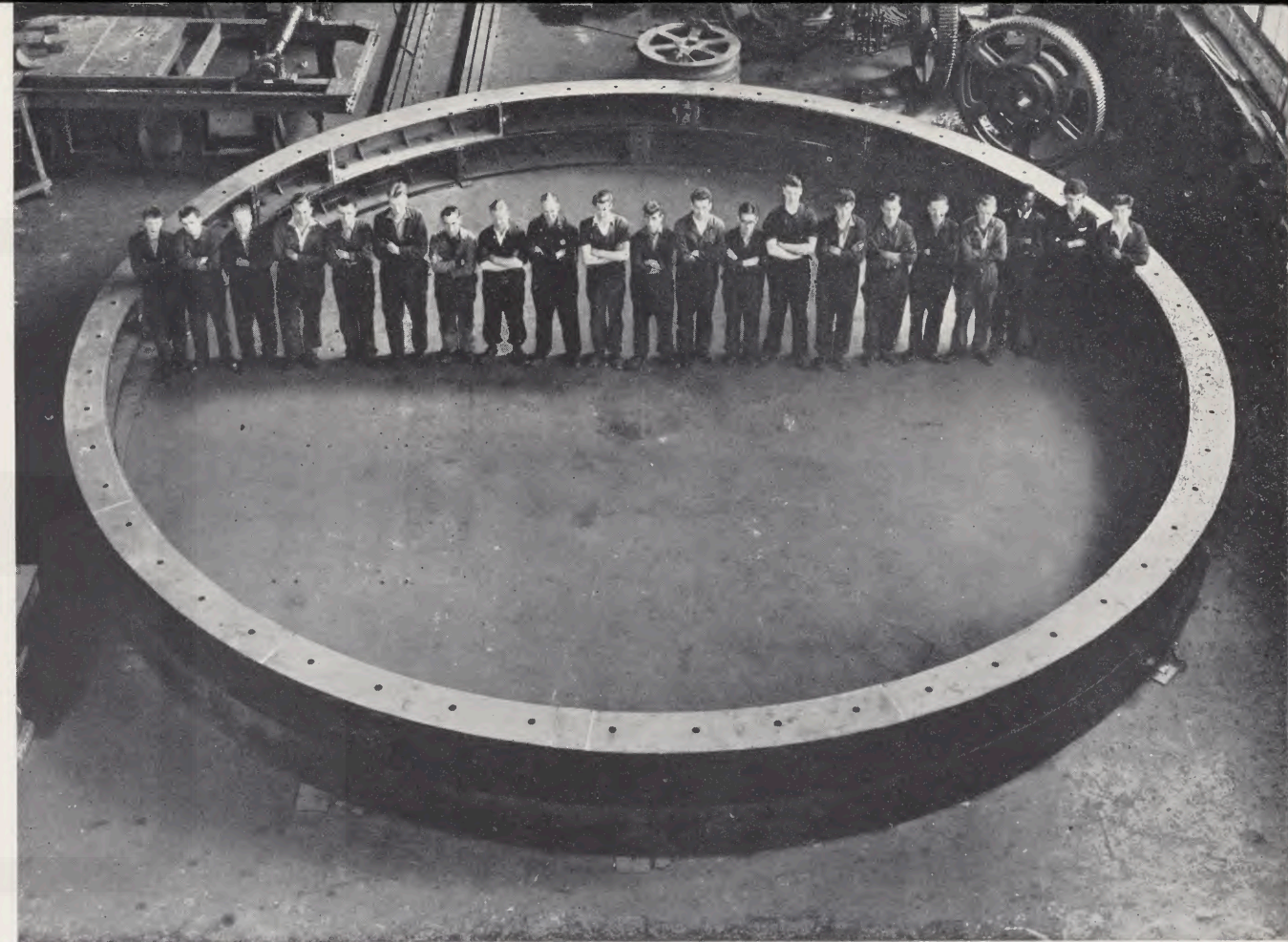
Tel.: Newcastle upon Tyne 26940

Tel.: Municipal 2741





1



4



2



3

1 Assembling a production ring on top of approved master ring.

2 Pouring molten iron into a segment mould.

3 A cast segment is removed from the mould at the shakeout station.



5



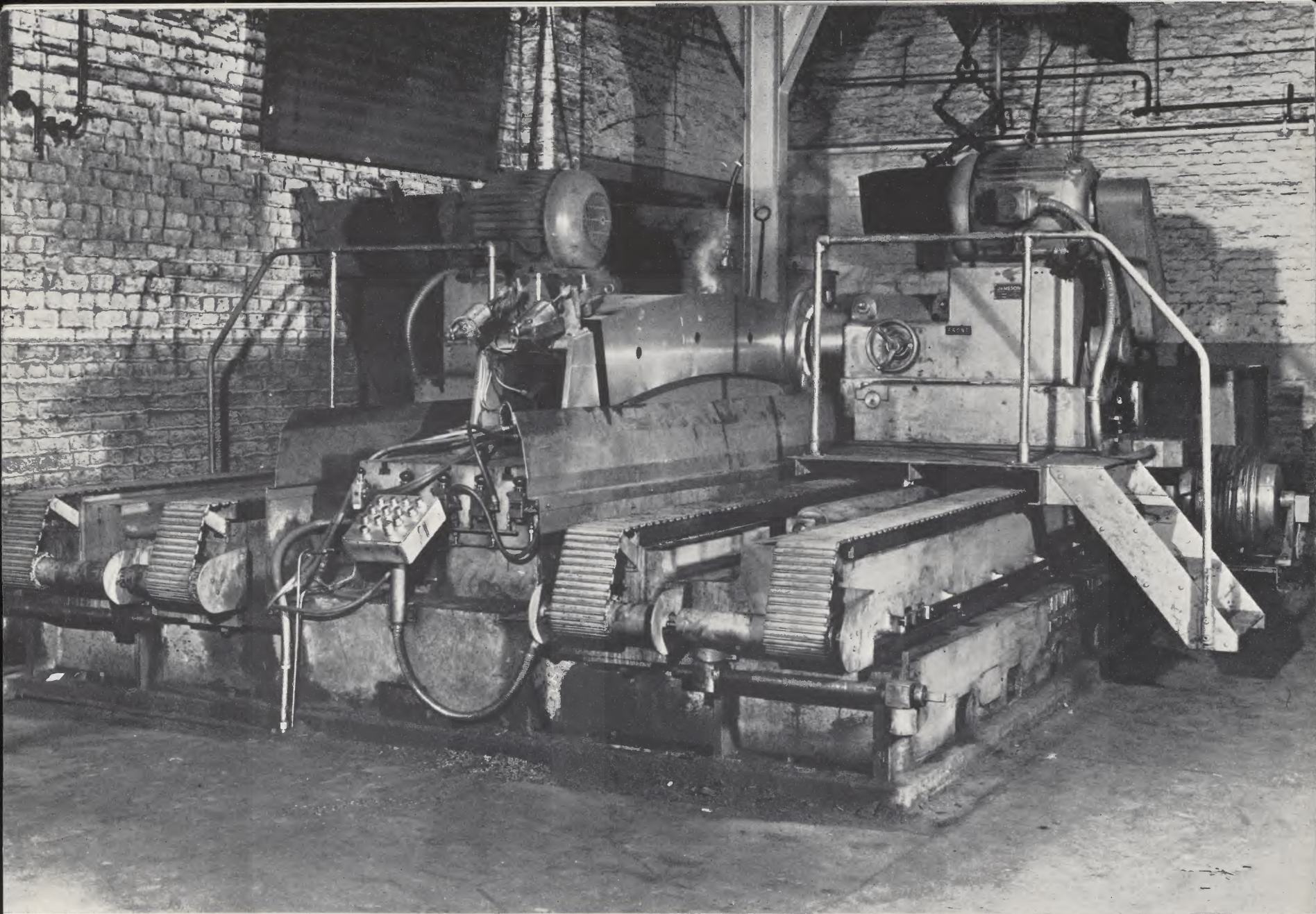
6

4 A band of Carron fitters in a band of Carron iron. Many rings like this line a tunnel.

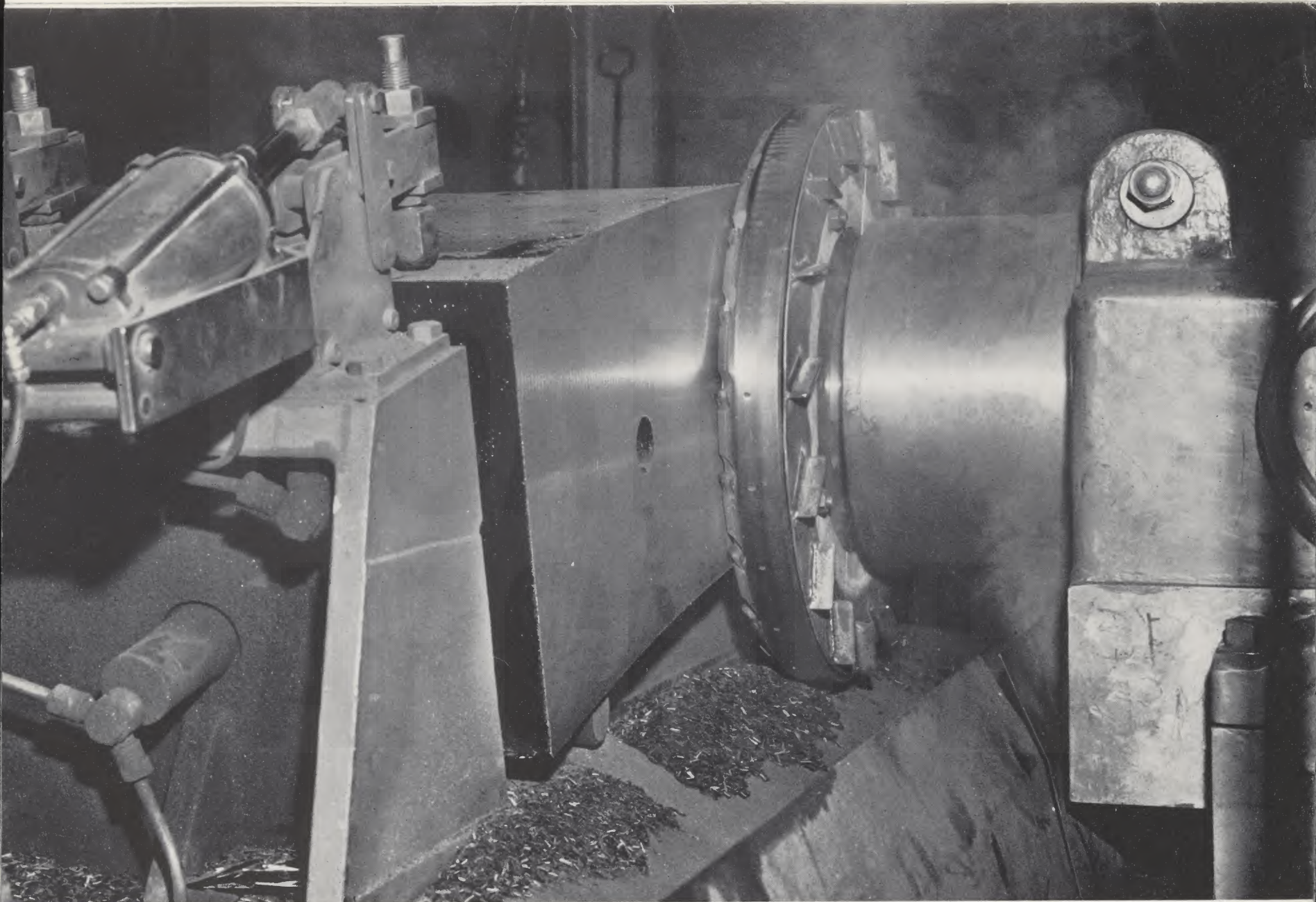
5 Lowering a segment on to the standard ring.

6 Down in the tunnel.



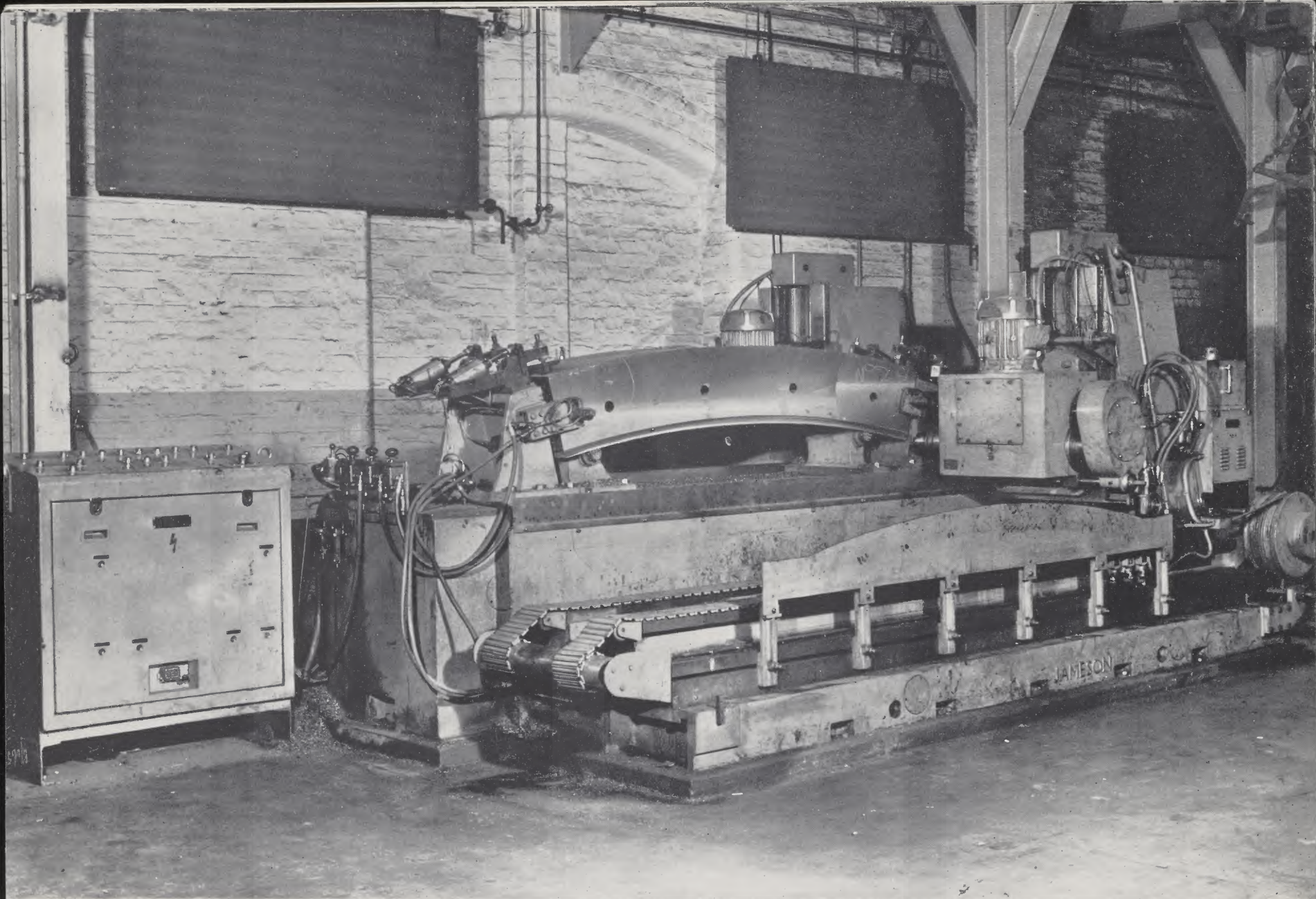


*Face milling both sides at the same time.*

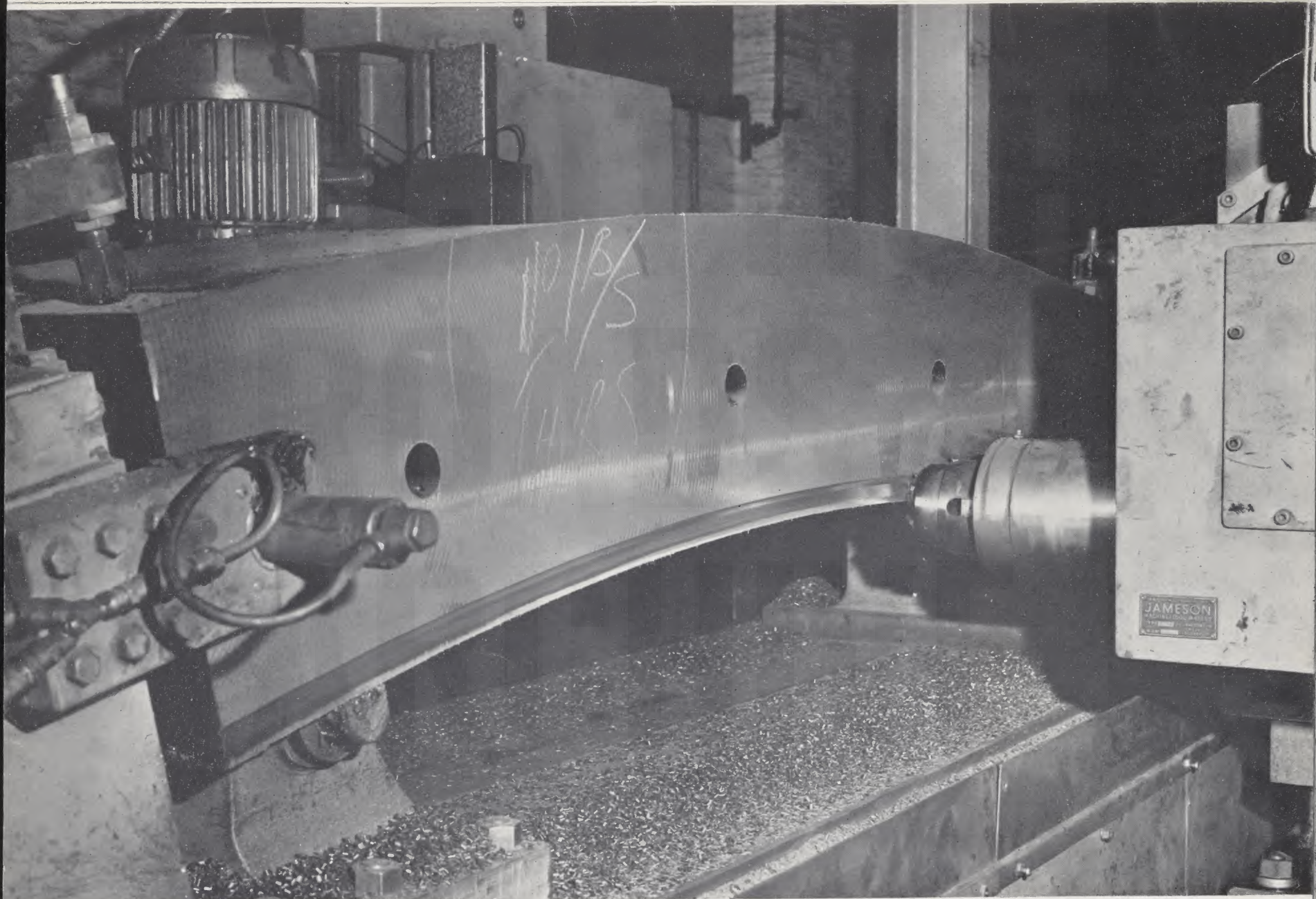


*Close-up of a cutter in action on side milling.*





*Milling caulking grooves on each side at the same time.*

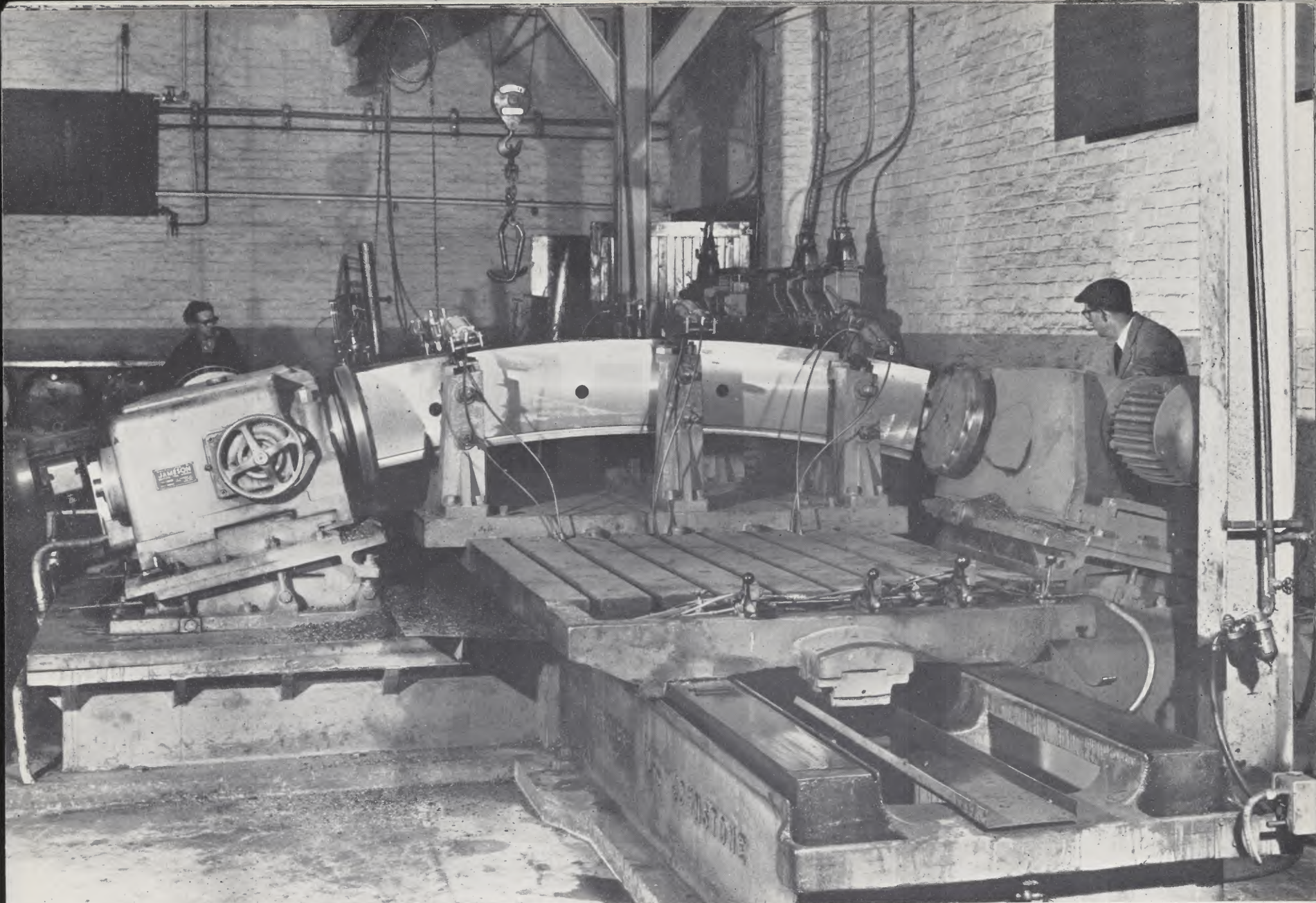


*Close-up of a caulking groove cutter in operation.*

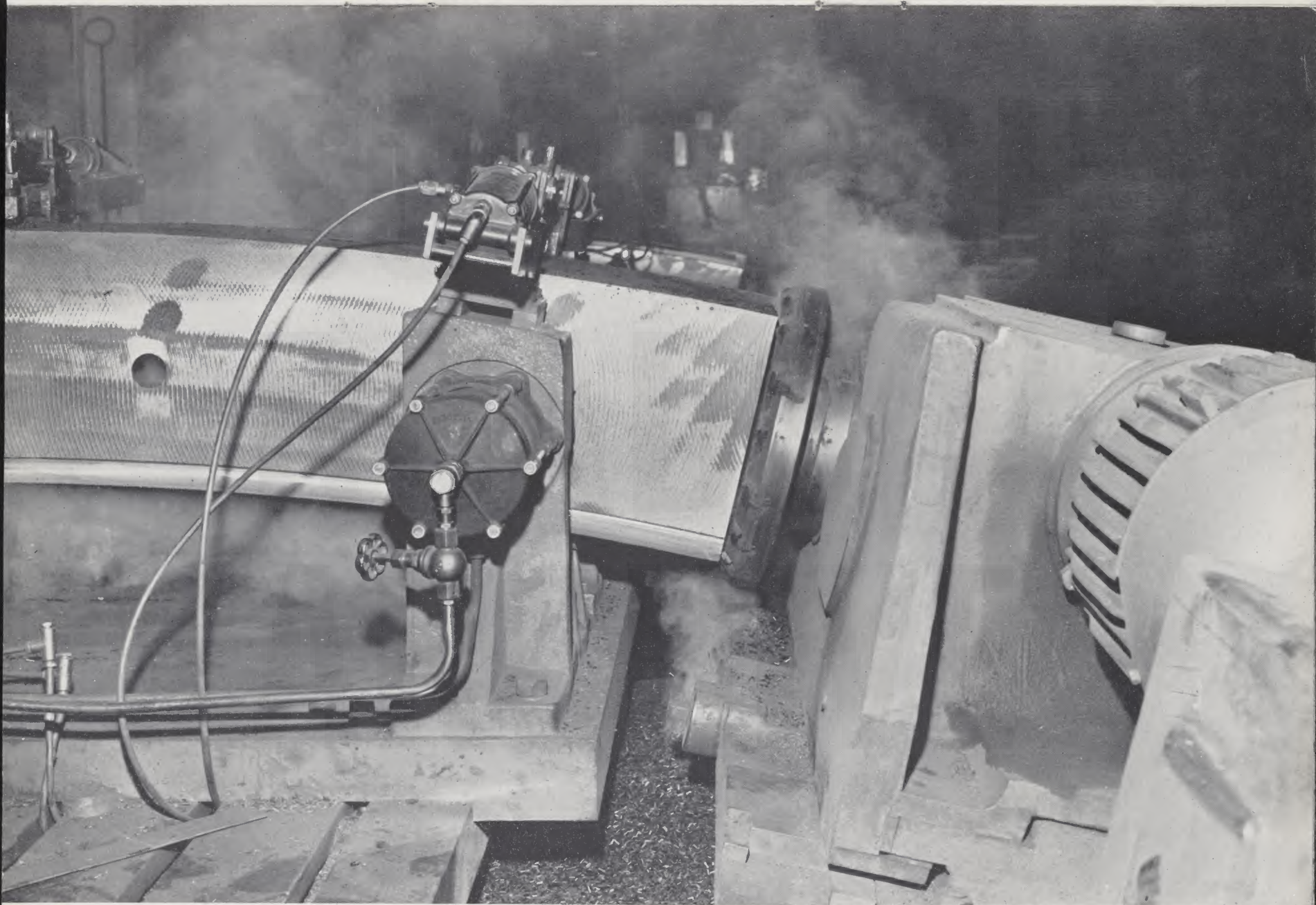






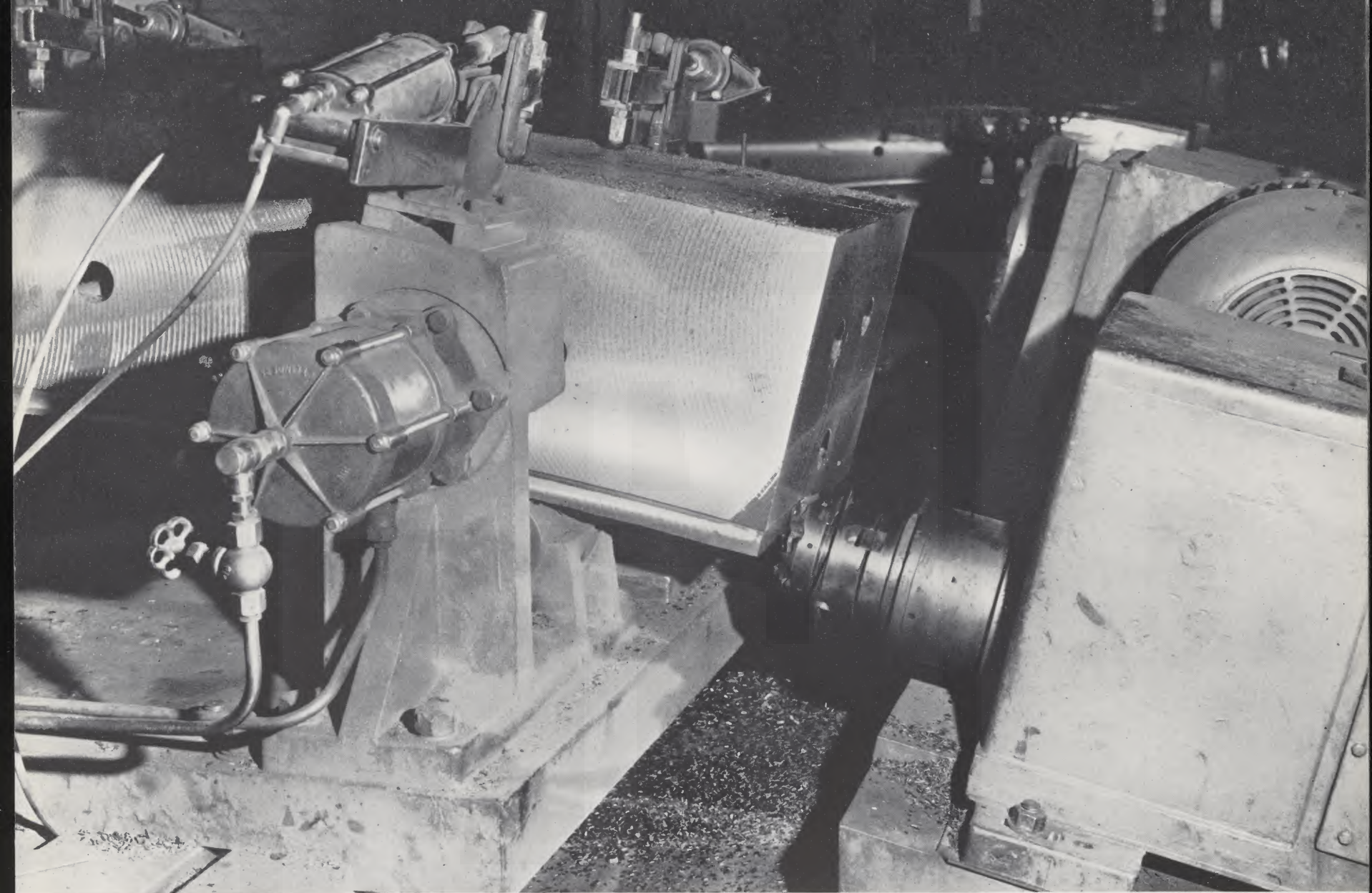


*Machining of two radial joint faces and caulking grooves at the same time.*

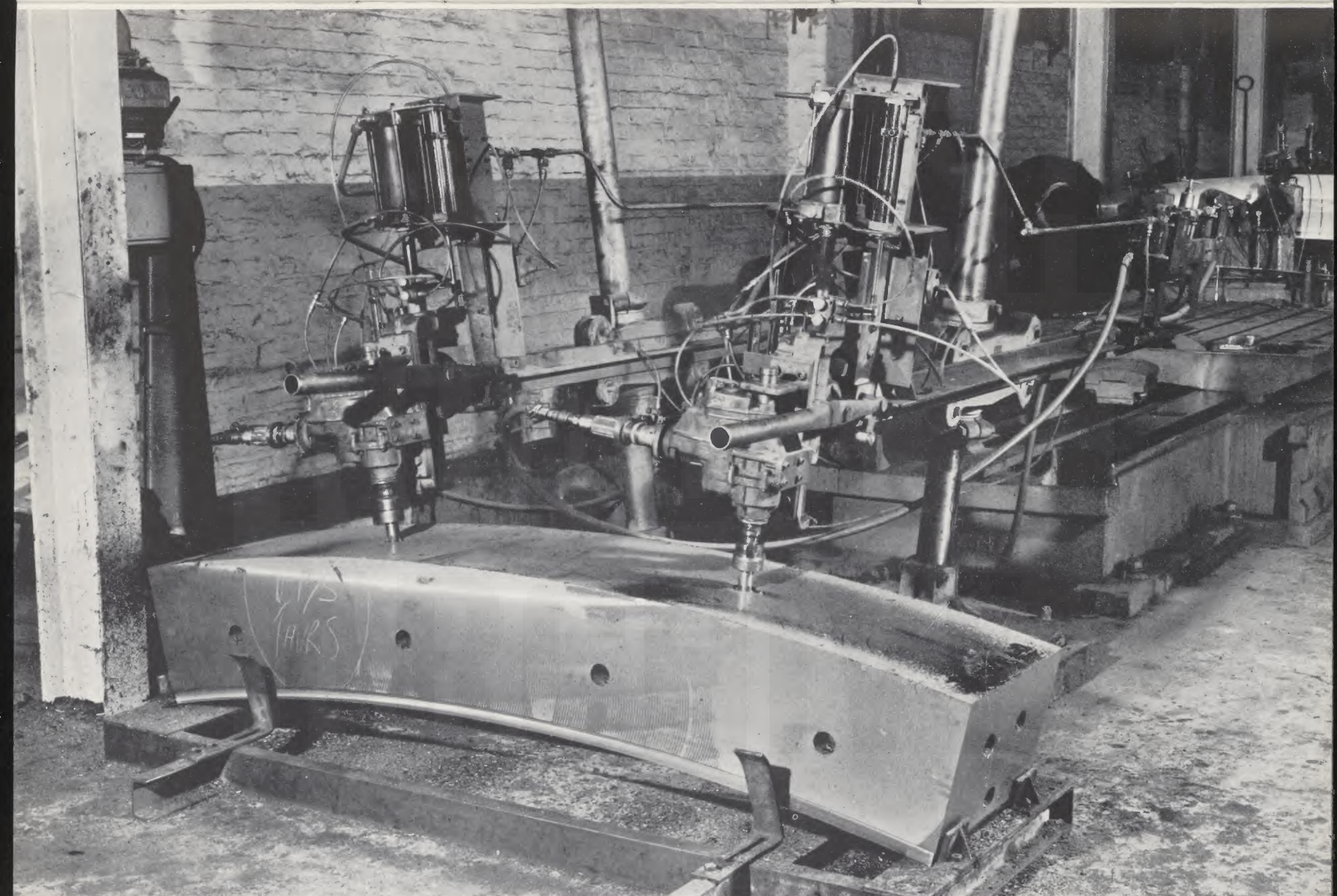


*Close-up of one cutter milling a radial joint face.*



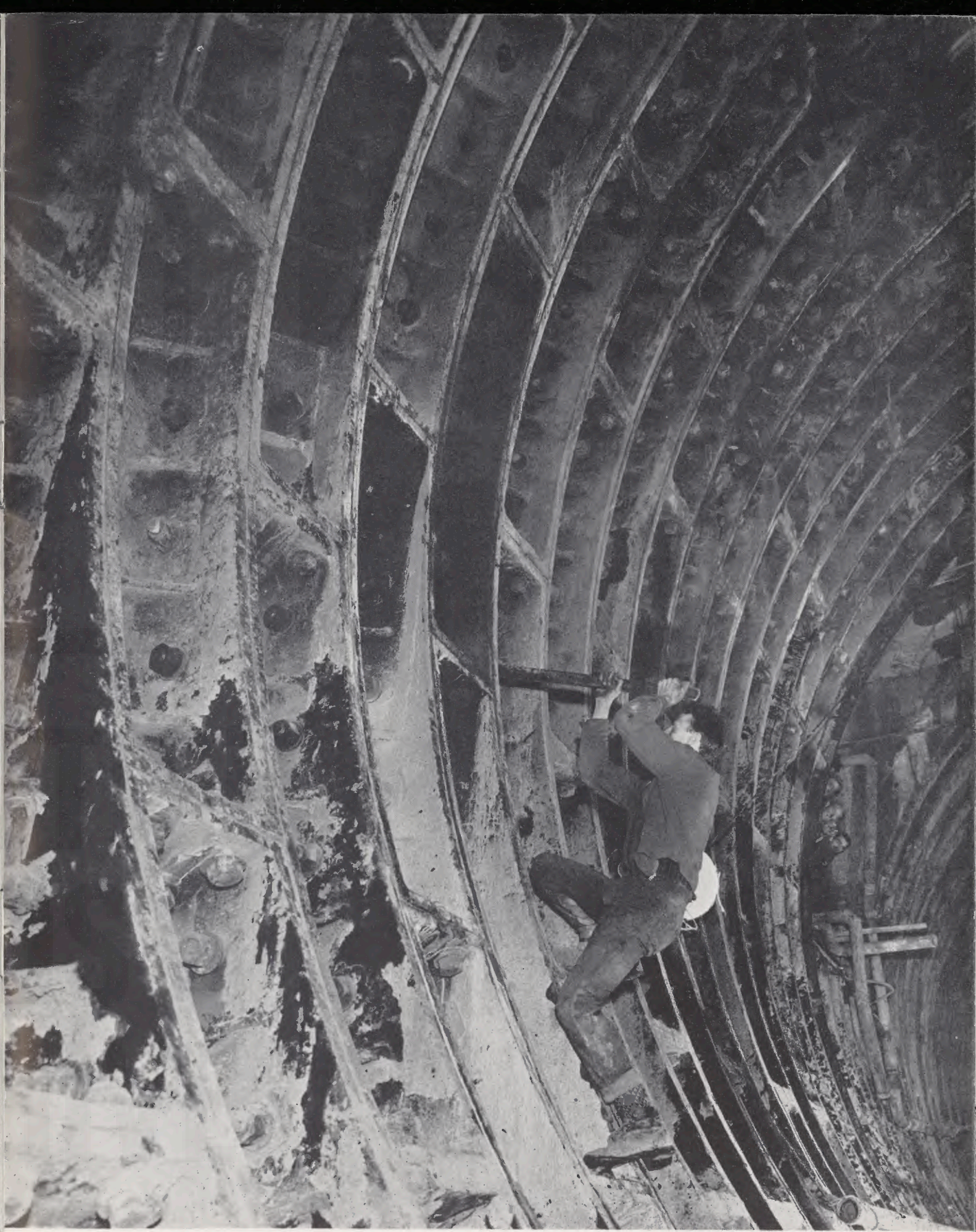
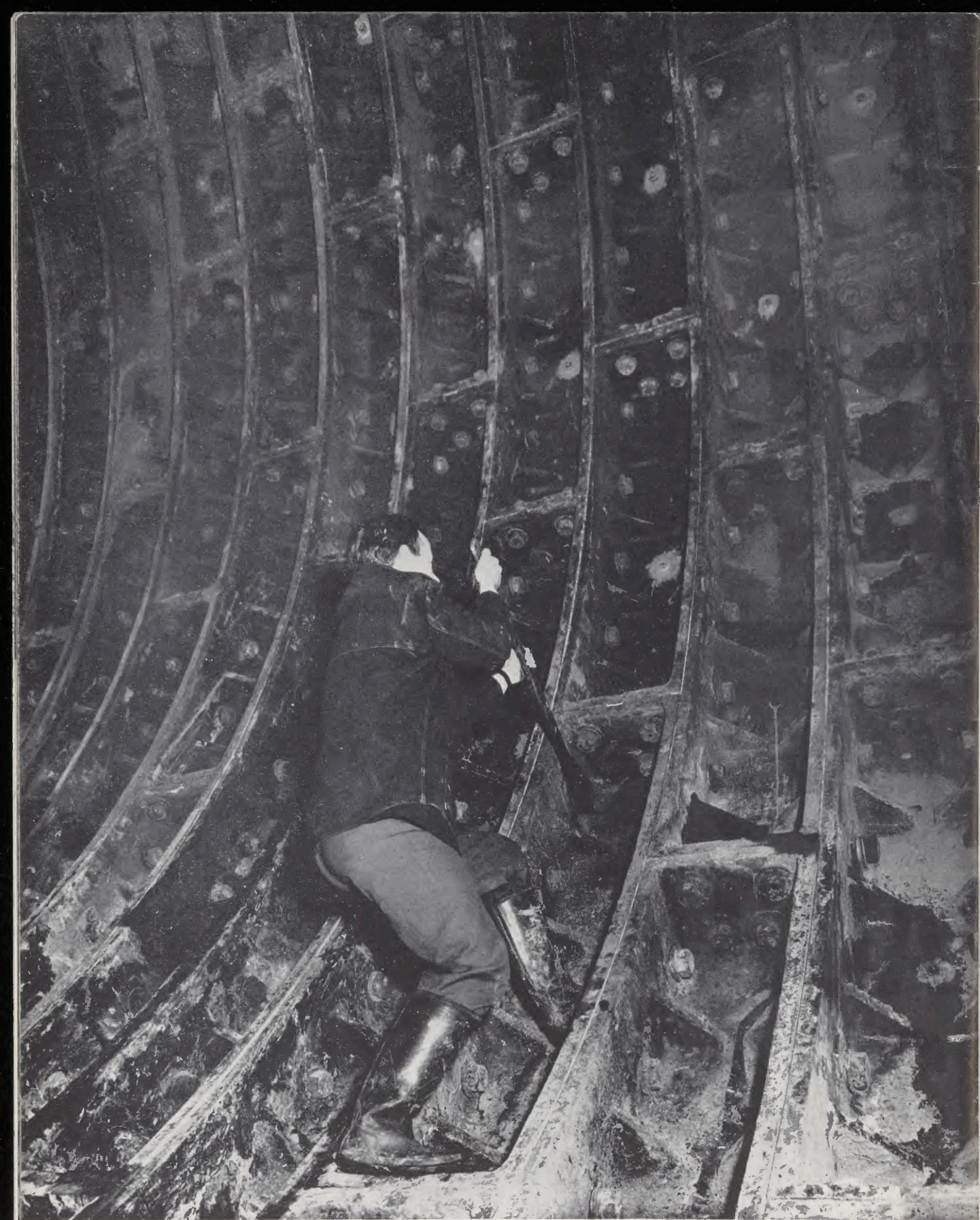


*Close-up of a cutter milling a radial joint caulking groove.*



*Drilling and tapping two grout holes at the same time.*





*Tightening rings together.*





*Tightening radial joints of segments.*



*The last view of Tunnel Segment Castings in the Clyde tunnel before they are clad.*

## Congratulations for Carron Company

Bailie David Wardley, convener of the Highways Committee of Glasgow Corporation visited Carron Company to congratulate the Company on the completion of the work done for the Clyde tunnel at Whiteinch and to express his thanks for having made every delivery on time.

Bailie Wardley, who was accompanied by Glasgow's depute master of works and city engineer, Mr. I. A. Greig, said that he wished he was able to congratulate contractors on punctual delivery more often.

"We placed the contract for tunnel lining rings with Carron," he said, "and I am glad to say that Carron has more than satisfied us.

"We like to think that that decision of ours was instrumental in helping Carron Company to win the £2m. order for tunnel rings for the Jarrow-Howdon tunnel under the river Tyne on which you are now working."



