

J. E. FRIEND, PRES.

BRUNO V. NORDBERG,  
VICE PRES. AND CHIEF OF ENGINEERING DEPT.

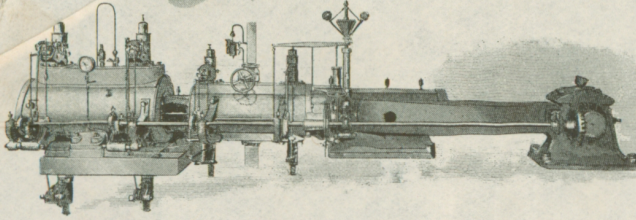
F. A. WILDE, SECY. AND TREAS.

CABLE ADDRESS.  
"NORDBERG MILWAUKEE."

CODES USED  
LIEBER'S, MILWAUKEE  
REPOSITORY.

# NORDBERG MANUFACTURING CO.

ENGINEERS  
AND MACHINISTS.



Milwaukee, Wis. Aug. 29, 1902.

Adams Township, MI

F. W. O'Neil, Esq.

Engineer Champion Copper Co.,

Painesdale via Houghton, Mich.

Dear Sir:-

Answering your favor of the 27th inst. would say that the piston rods have to be taken out in front, i. e. the crossheads have to be removed before the rods can come out. The pistons, however, can be taken out through the back ends of cylinders. The air pistons in the space between steam and air cylinders and the steam pistons back of the steam cylinders. For inspection or removal of packing rings the rods need not to come out. If, however, the junk rings would have to be taken off or the pistons taken off the rods, said rods must be pulled through the front stuffing boxes far enough to allow the air pistons to pass the back end of the piston rod. There will be room enough in the space inside of the flywheels, even if these were reduced to 12 feet diameter, to do this. If, however, the piston rods would have to be taken out of the engine, much more room would be needed. I do not think, however, that it would pay to enlarge the room on that account. Windows placed in line with the rods or even suitable openings 12" to 18" dia. would do as well. We will send you a sketch showing the room needed for this purpose. There will be three feet passage way around the wheels and 30" clear of H.P. cylinder sole plate if room is 45 feet wide.

Yours respectfully,

Nordberg Mfg Co

By

*Bruno V. Nordberg*  
Vice Pres't.

N/F

*Enclure*