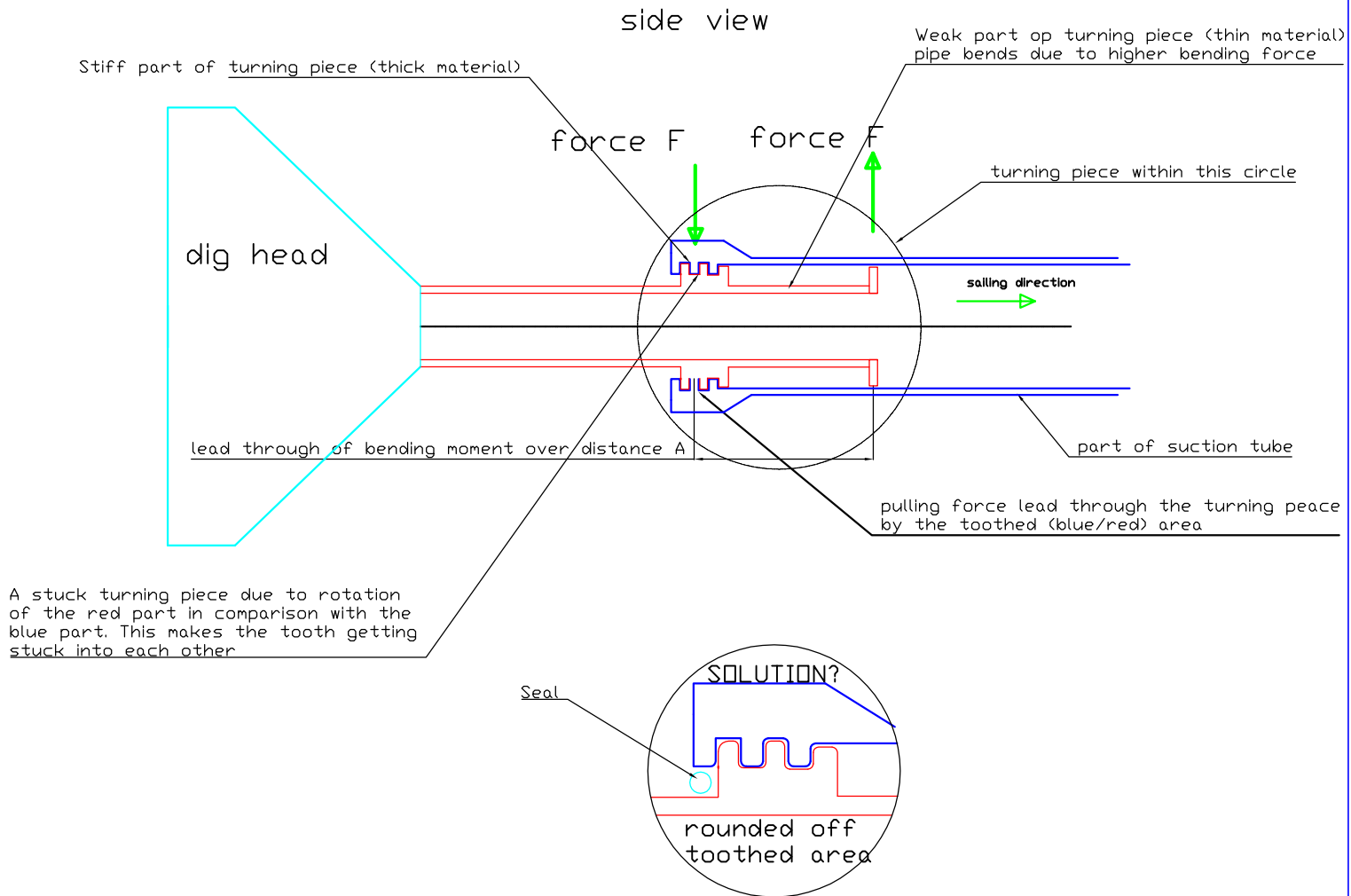


Simplified drawing of turning piece as part of a suction tube



The turning piece is developed for giving the dig head the possibility of following the profile of the soil. The dredger gets payed for the amount of soil sucked in his ship. In the dig head rotating knives and waterjets are used to detach the soil so the suction pump can suck up this soil. Knives are needed to cut through clay and rocks. Through this, tension and bending forces are present in the turning piece drawn above in a simplified manner. The toothed part of the turning piece will transfer (from red to blue part) the pulling force. The bending moment is transferred from red to blue part of the suction tube by the forces F. To keep the forces F low some distance between the forces F is needed. That is why a pipe in a pipe construction is used. If this pipe in pipe construction is not stiff enough the toothed part of the turning pieces (red and blue lines) can rotate in oposite direction from each other. Due to the 90 degree angles of the toothed area this part got stuck. The error in this design was that user of suction tube got above design limits of the suction tube. due to the fact that customer has big problem when turning piece gets stuck a redesign would be appriciated by the customers. A possibility is to round off all sharp corners.