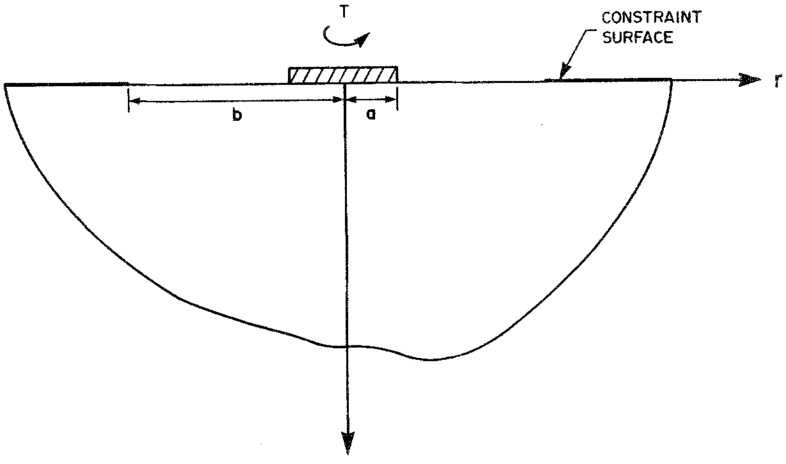

[redacted]

equilibrium equation is satisfied, provided that the function $u_\phi(r, z)$ is a solution of the partial differential equation

[redacted]

The boundary conditions can be written in the form

$$u_\phi(r, 0) = \alpha r, \quad 0 \leqq r < a, \tag{3}$$

$$\sigma_{\phi z}(r, 0) = 0, \quad a < r < b, \tag{4}$$

[redacted]

where

$$F_1(w) = \int_w^a \frac{f_1(t)\,dt}{(t^2 - w^2)^{1/2}}, \quad 0 < w < a, \tag{21}$$

$$F_2(w) = \int_b^w \frac{t^2 f_2(t)\,dt}{(w^2 - t^2)^{1/2}}, \quad b < w < \infty. \tag{22}$$

Regarding the right hand side of this equation as a known function of r, equation (20) is of an Abel type form. Hence, its solution can be written as

[illegible]

In obtaining equation (23), we have made use of the following integrals:

[illegible]

References

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[redacted]

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[redacted]