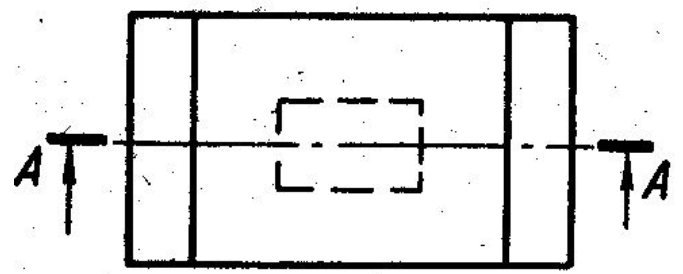
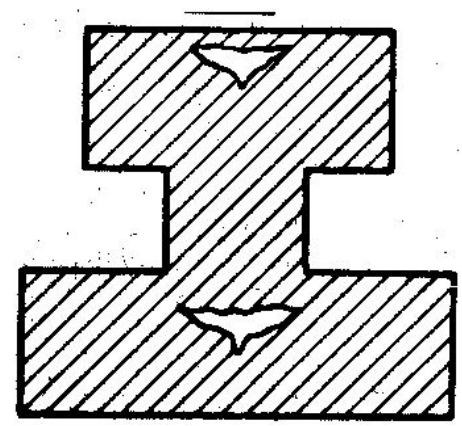
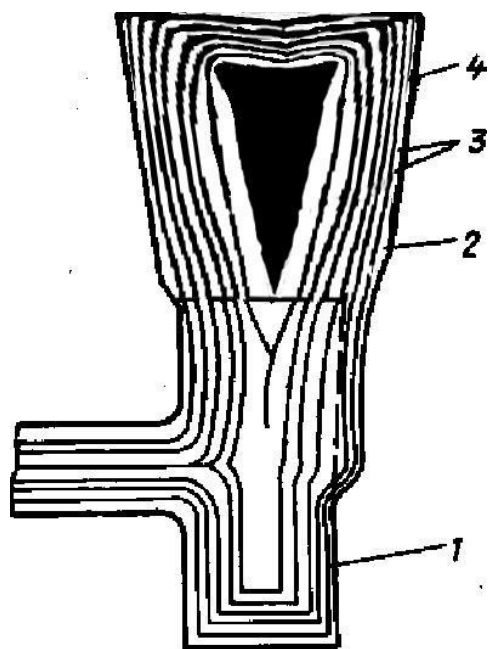
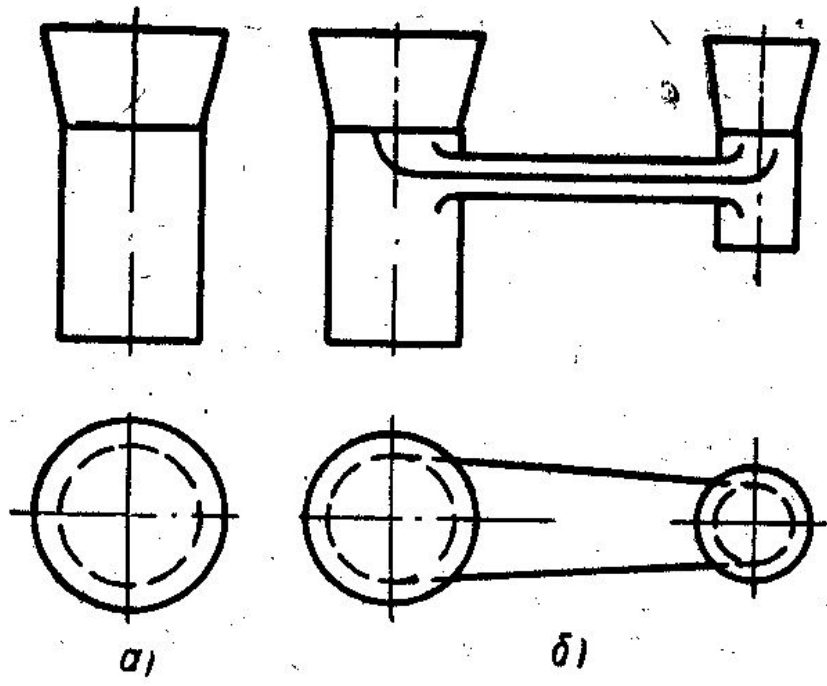


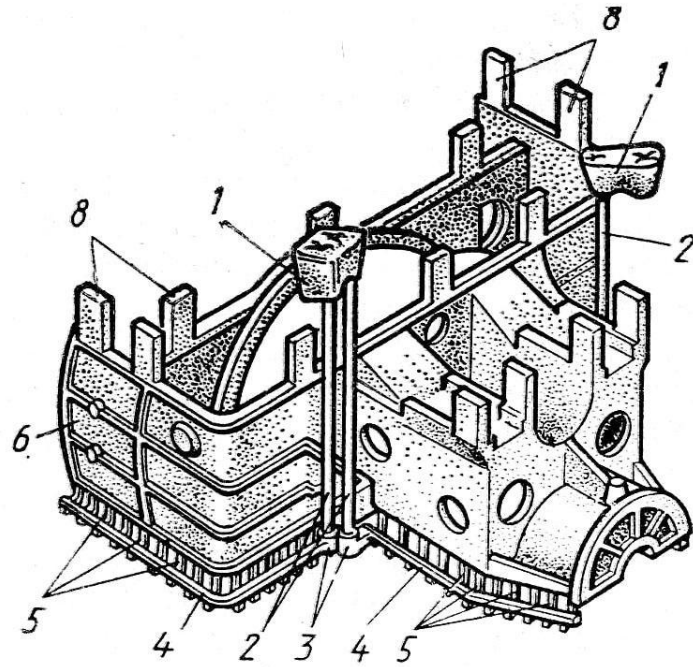
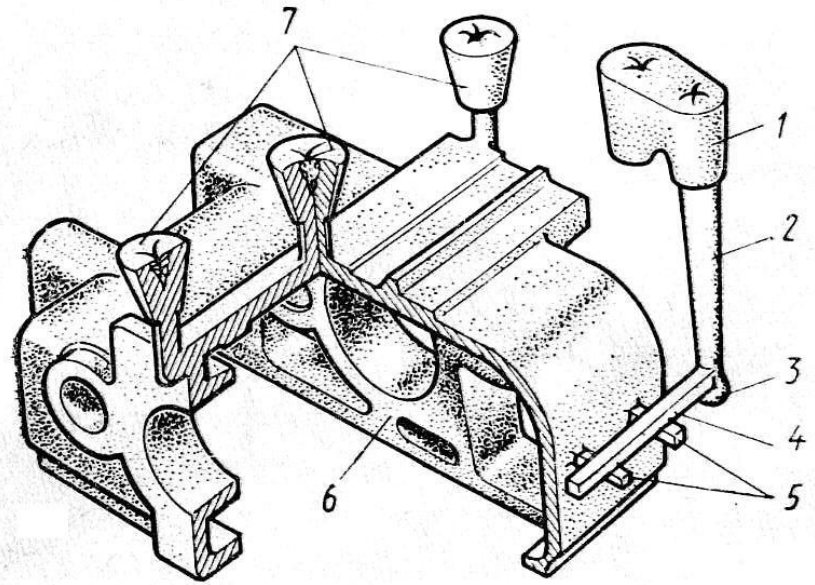
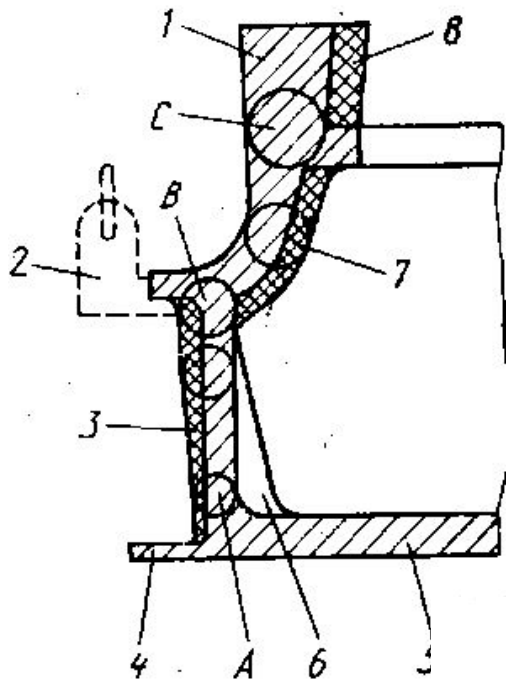
**Прибыли и  
ХОЛОДИЛЬНИКИ  
ОТЛИВОК**

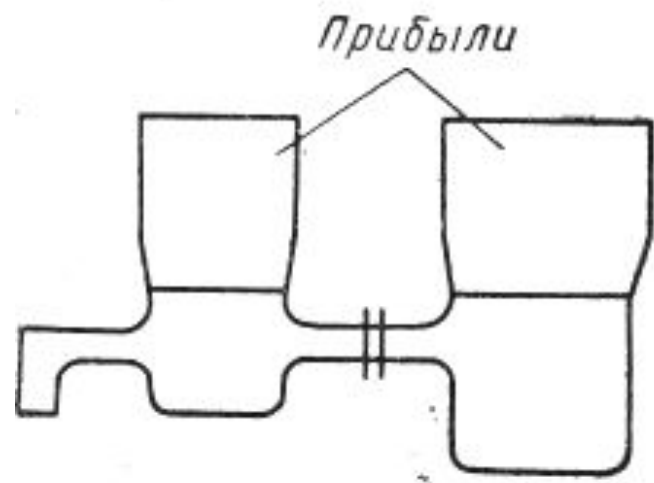
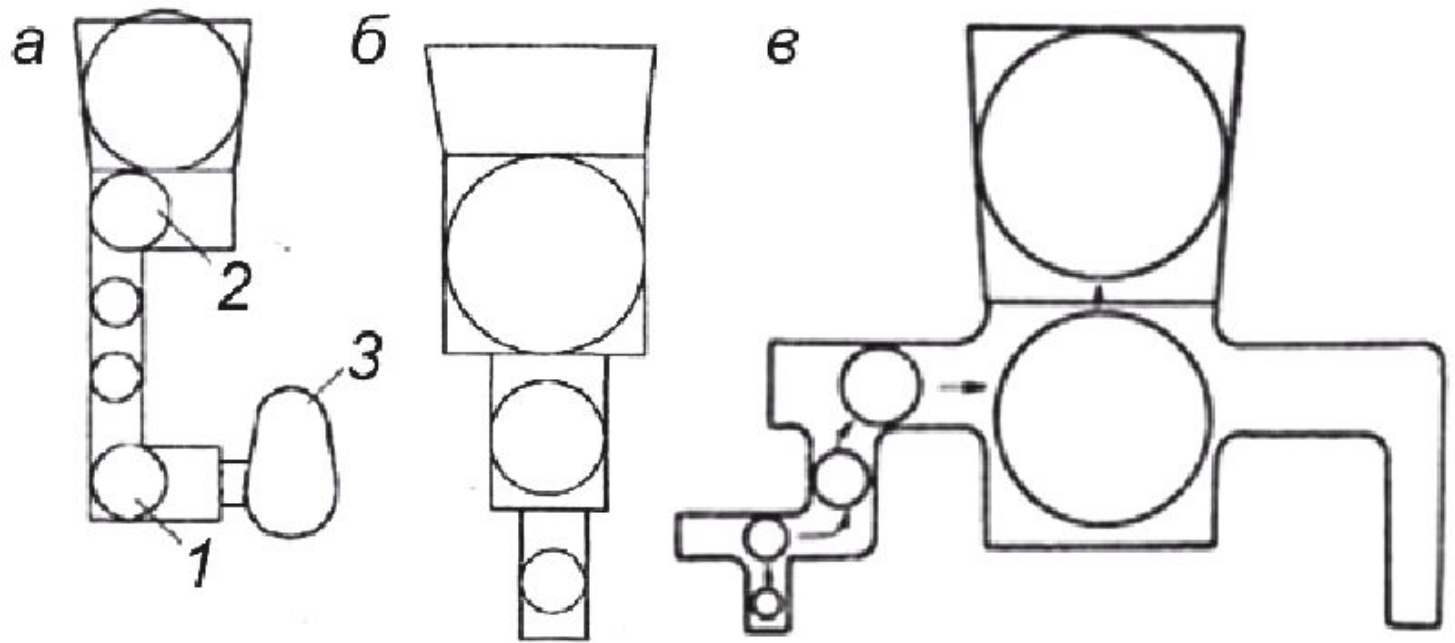


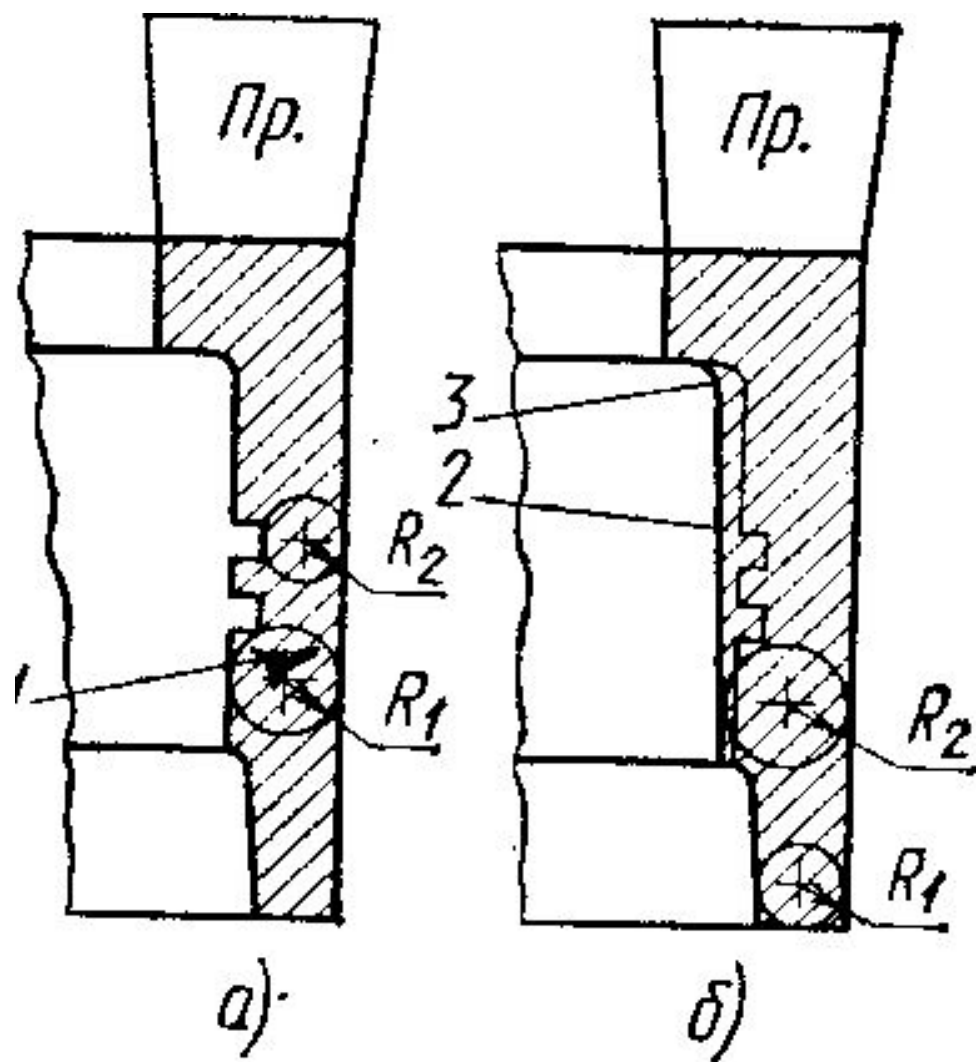


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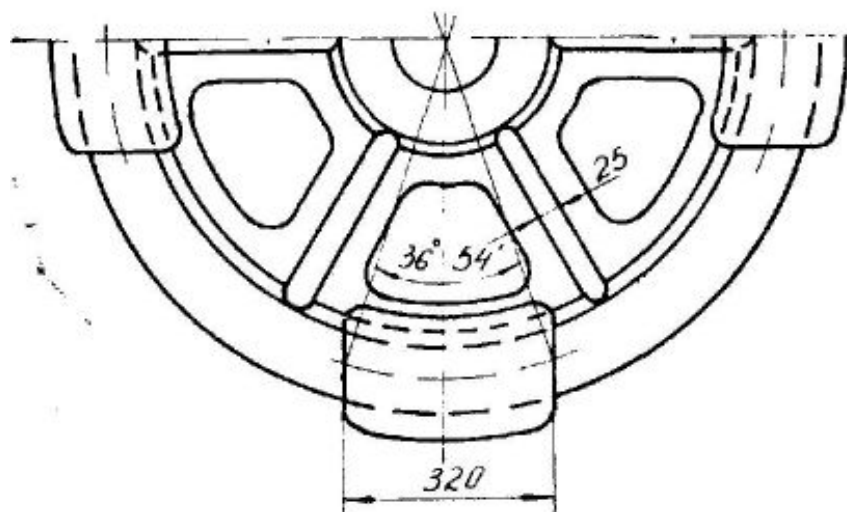
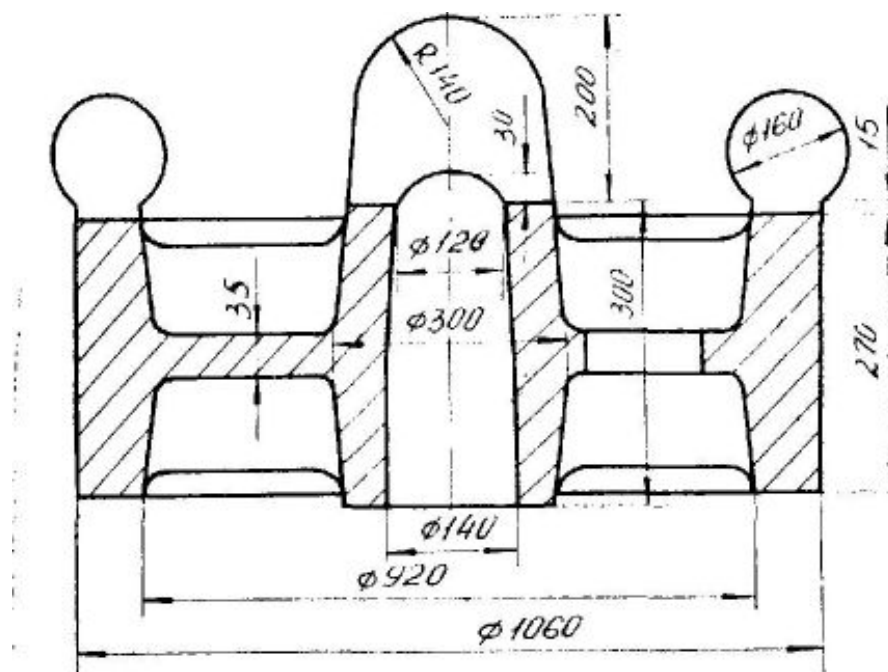
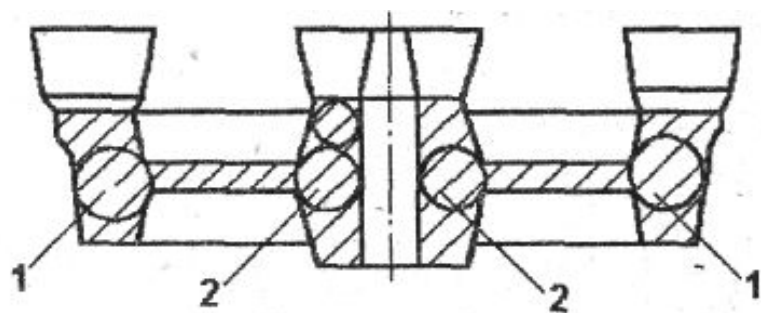
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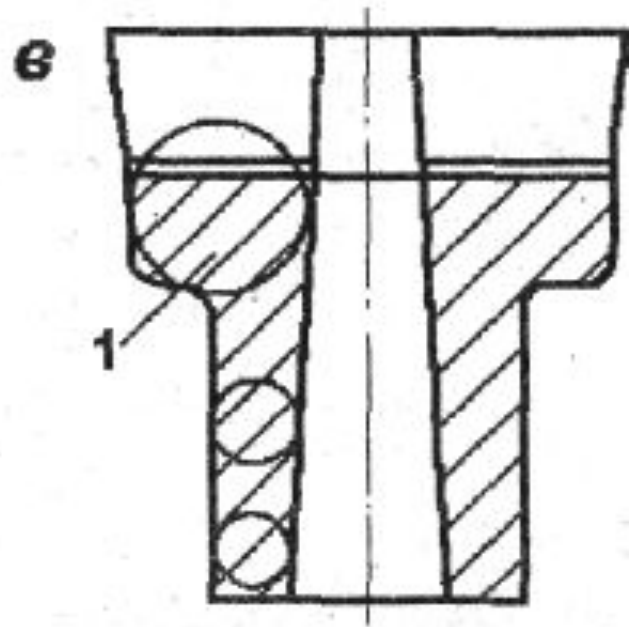
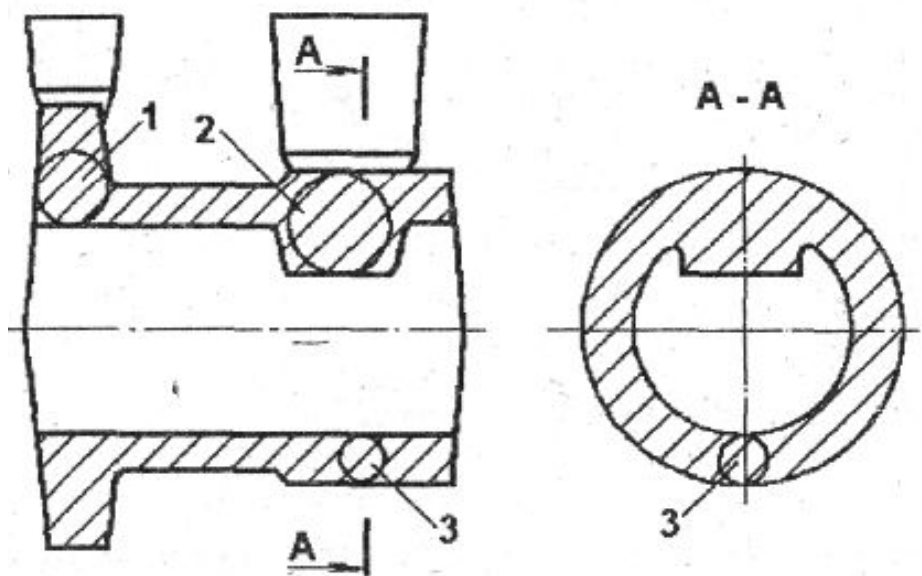




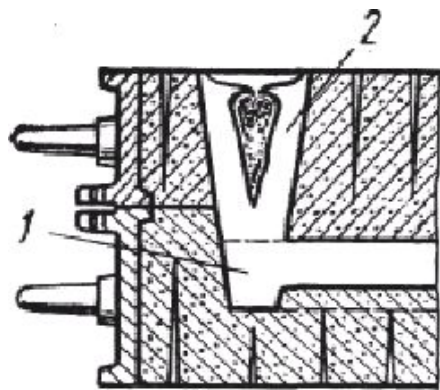


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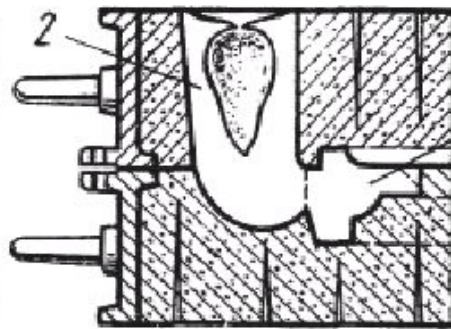




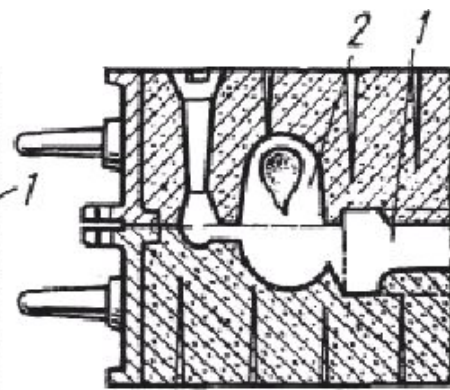




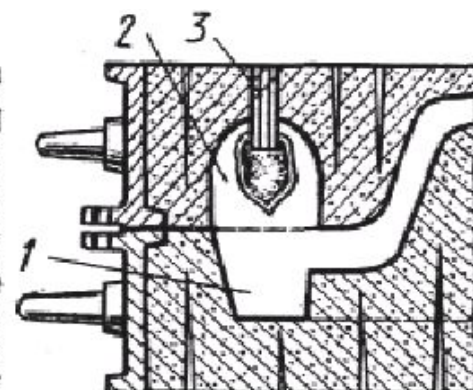
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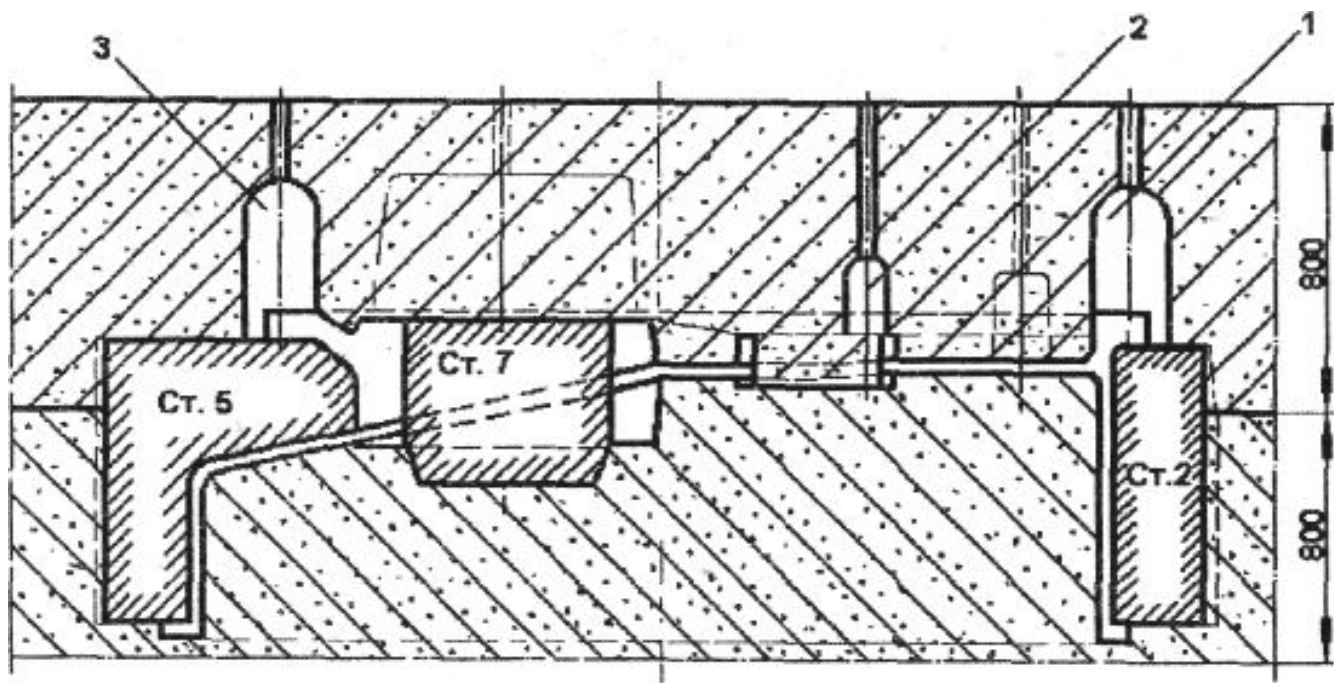
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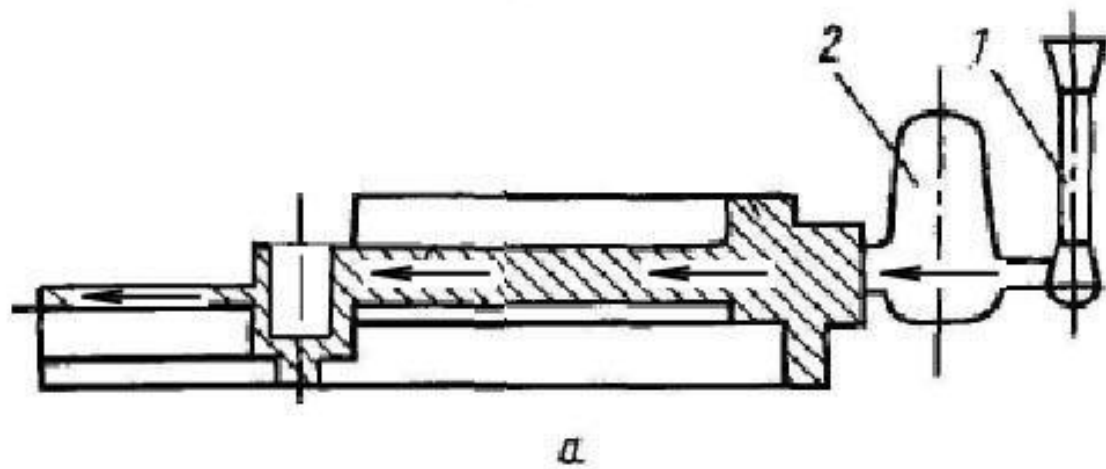
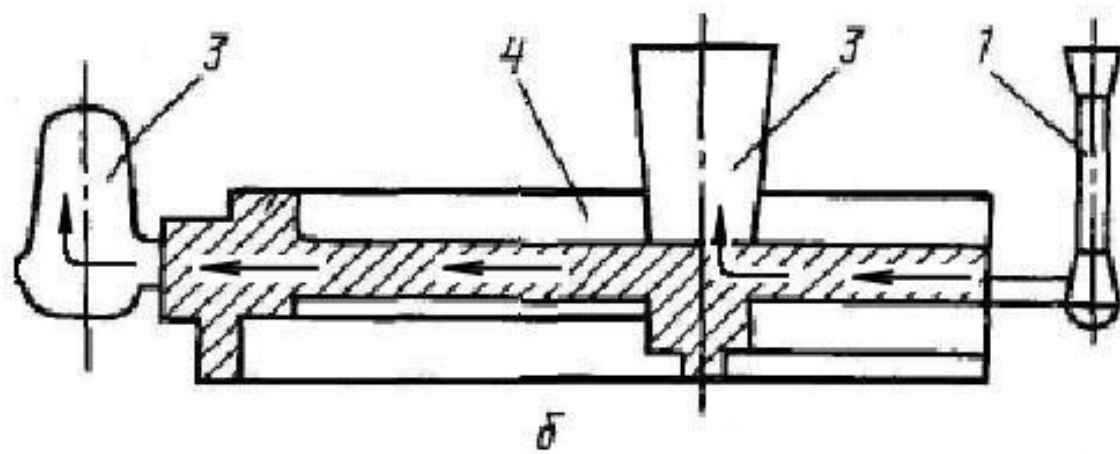


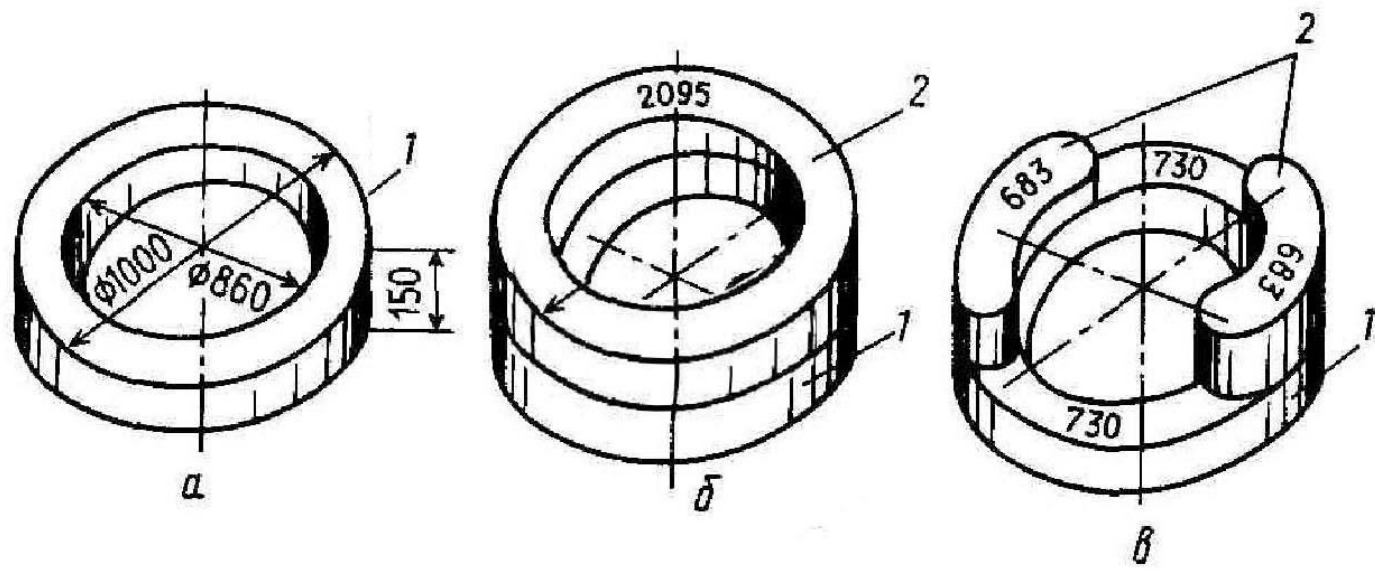
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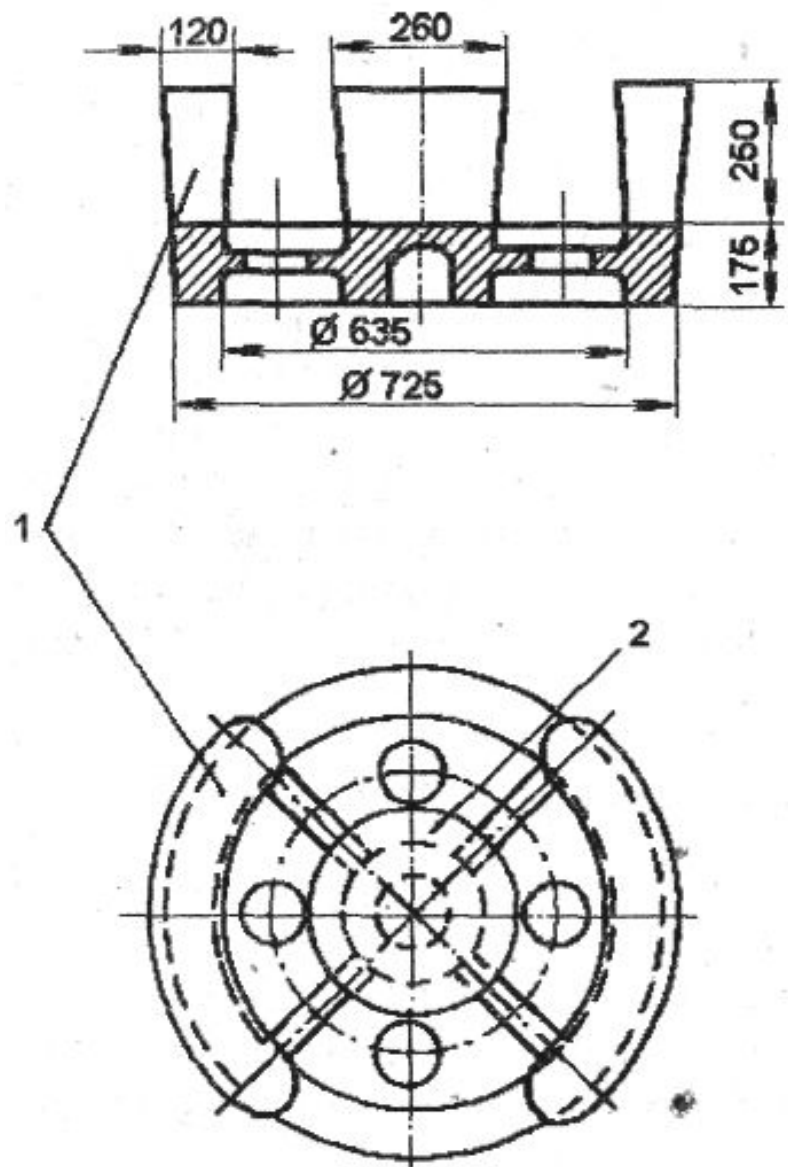


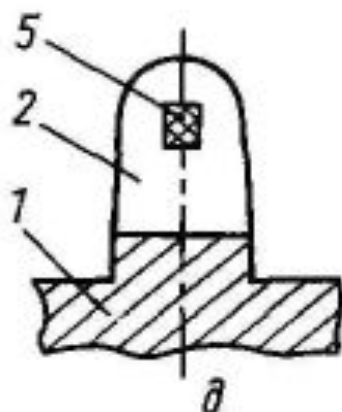
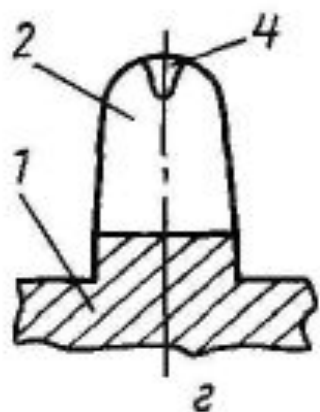
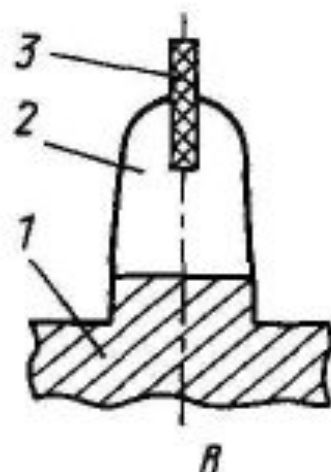
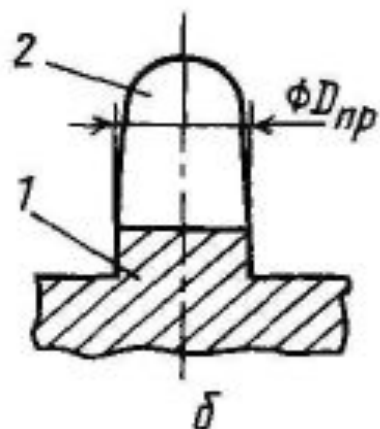
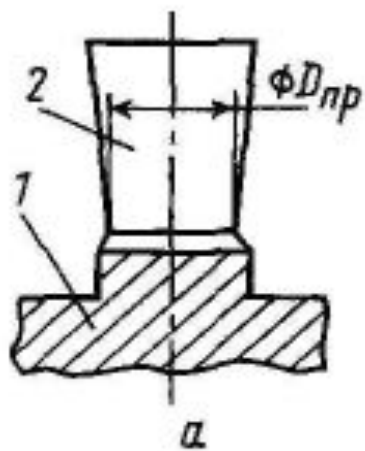
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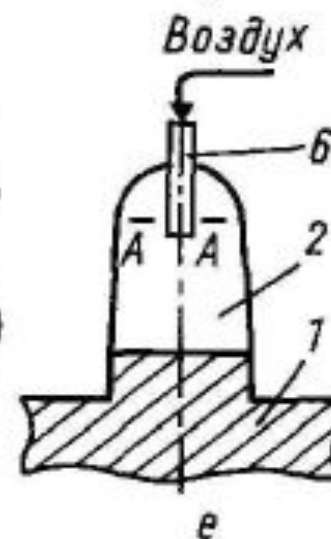


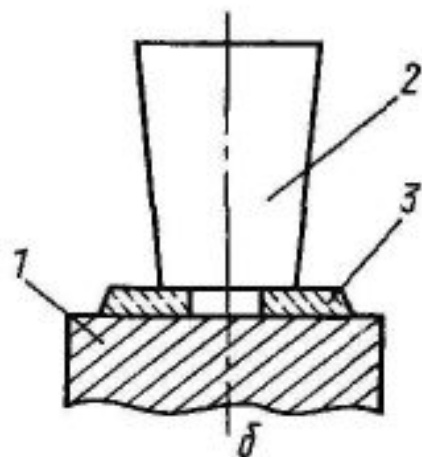
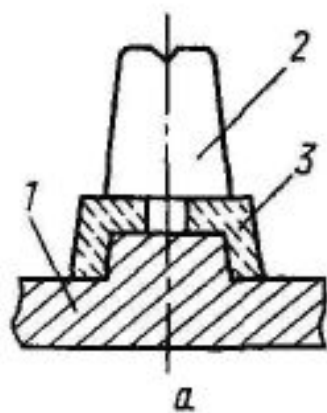
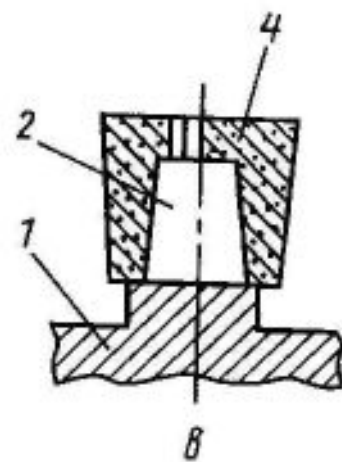
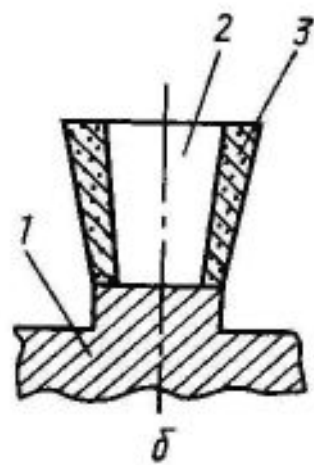
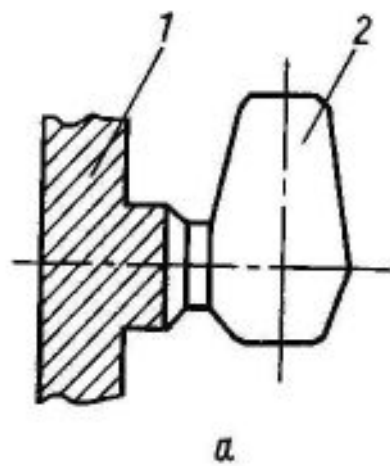


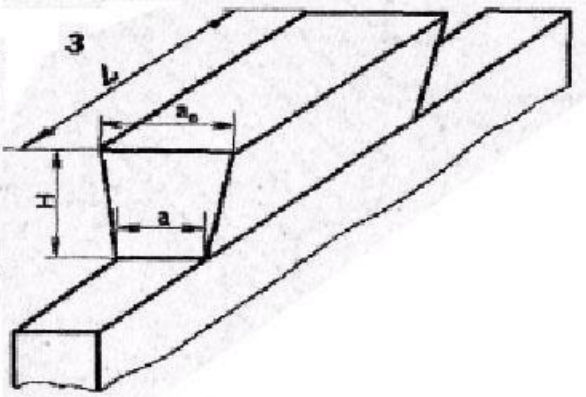
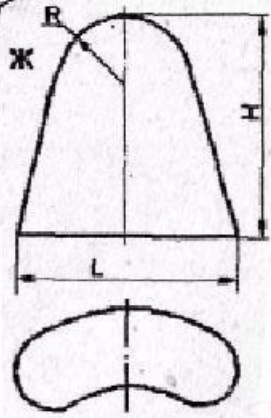
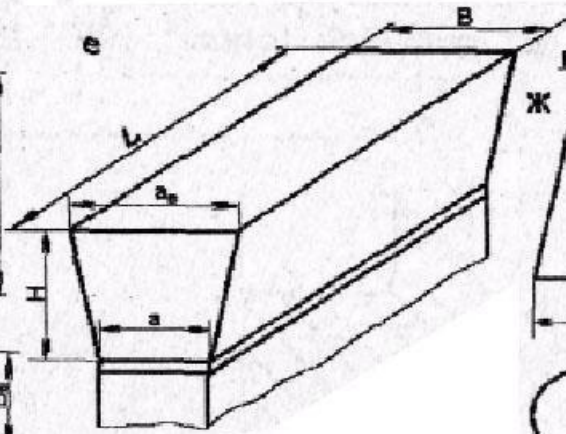
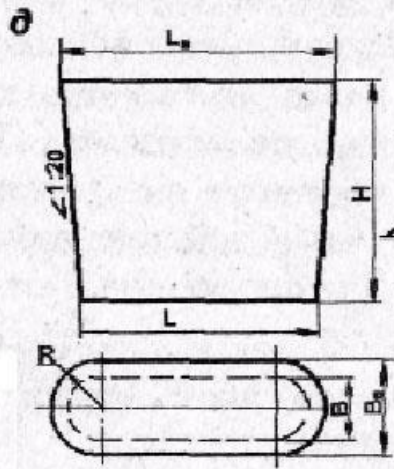
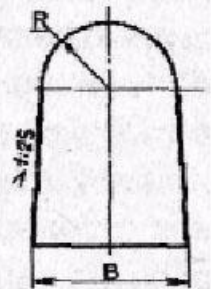
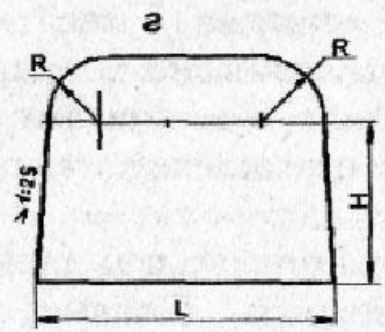
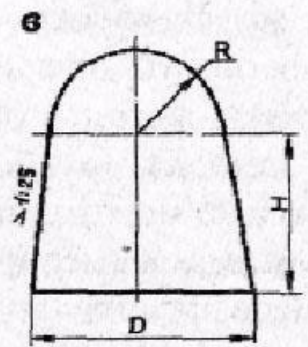
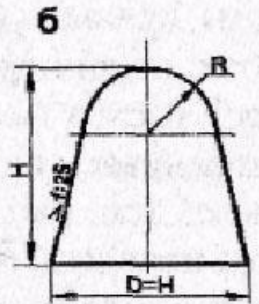
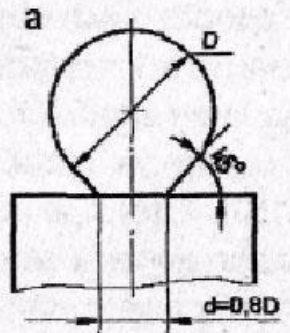




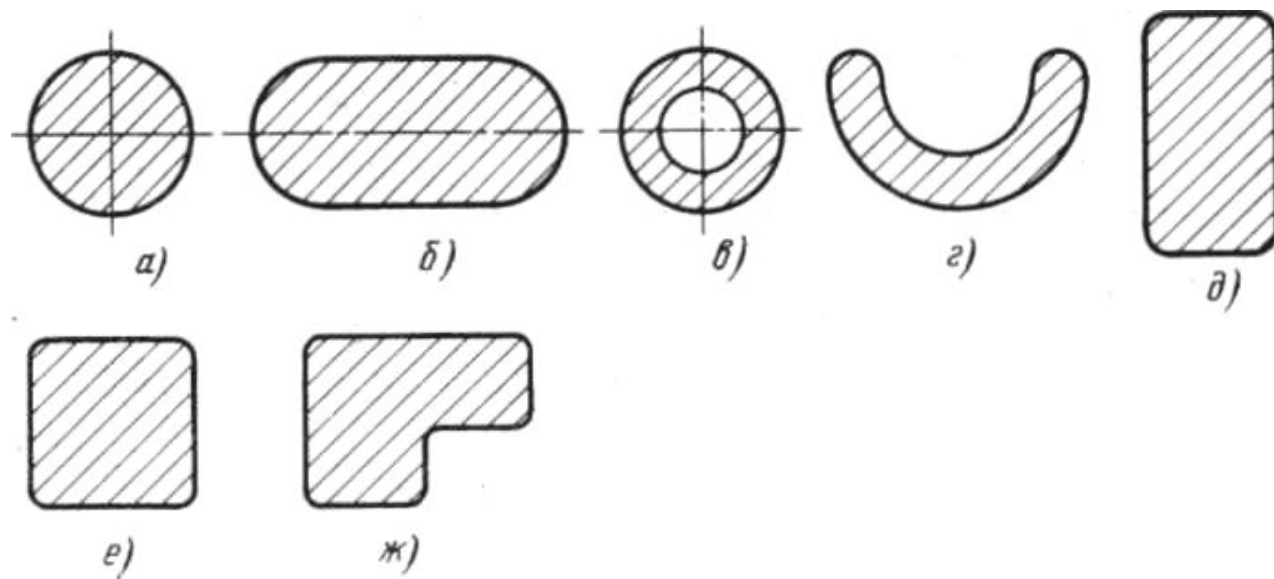
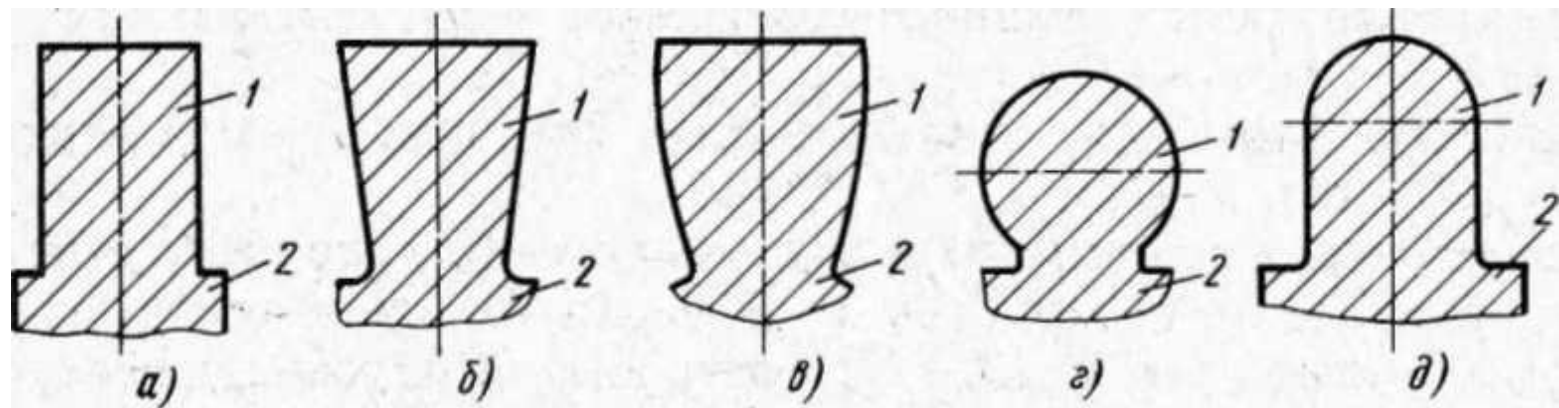
A-A

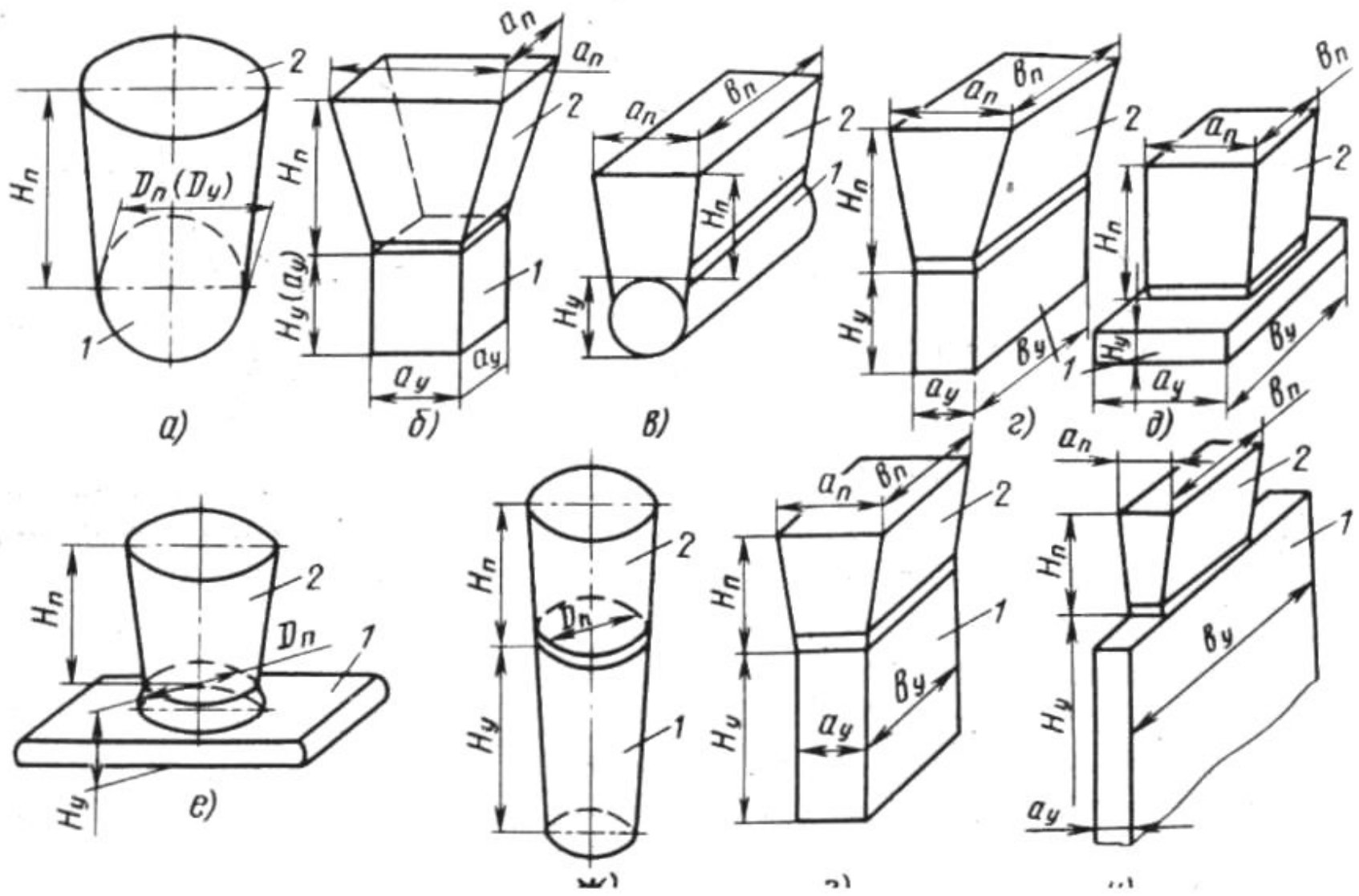




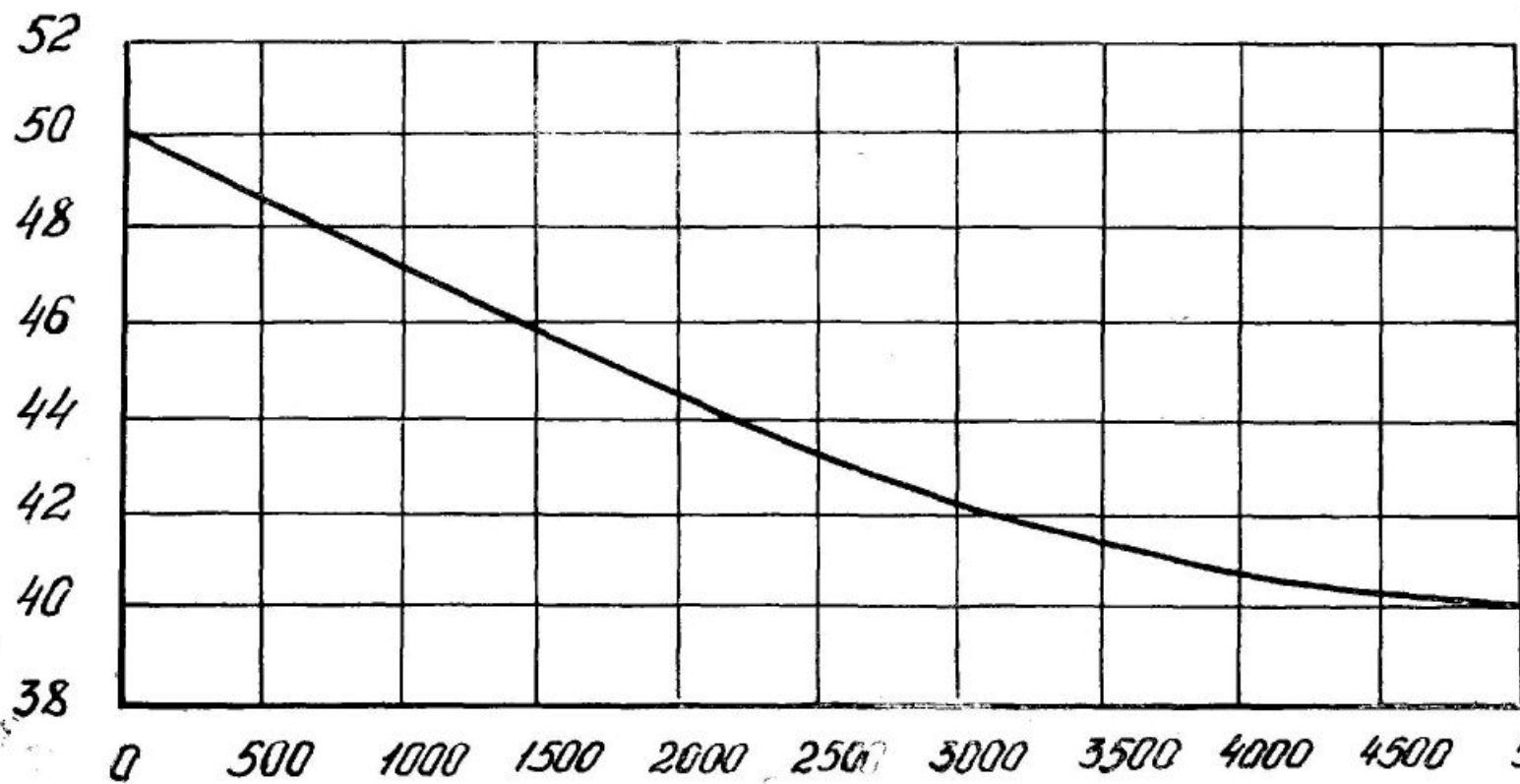




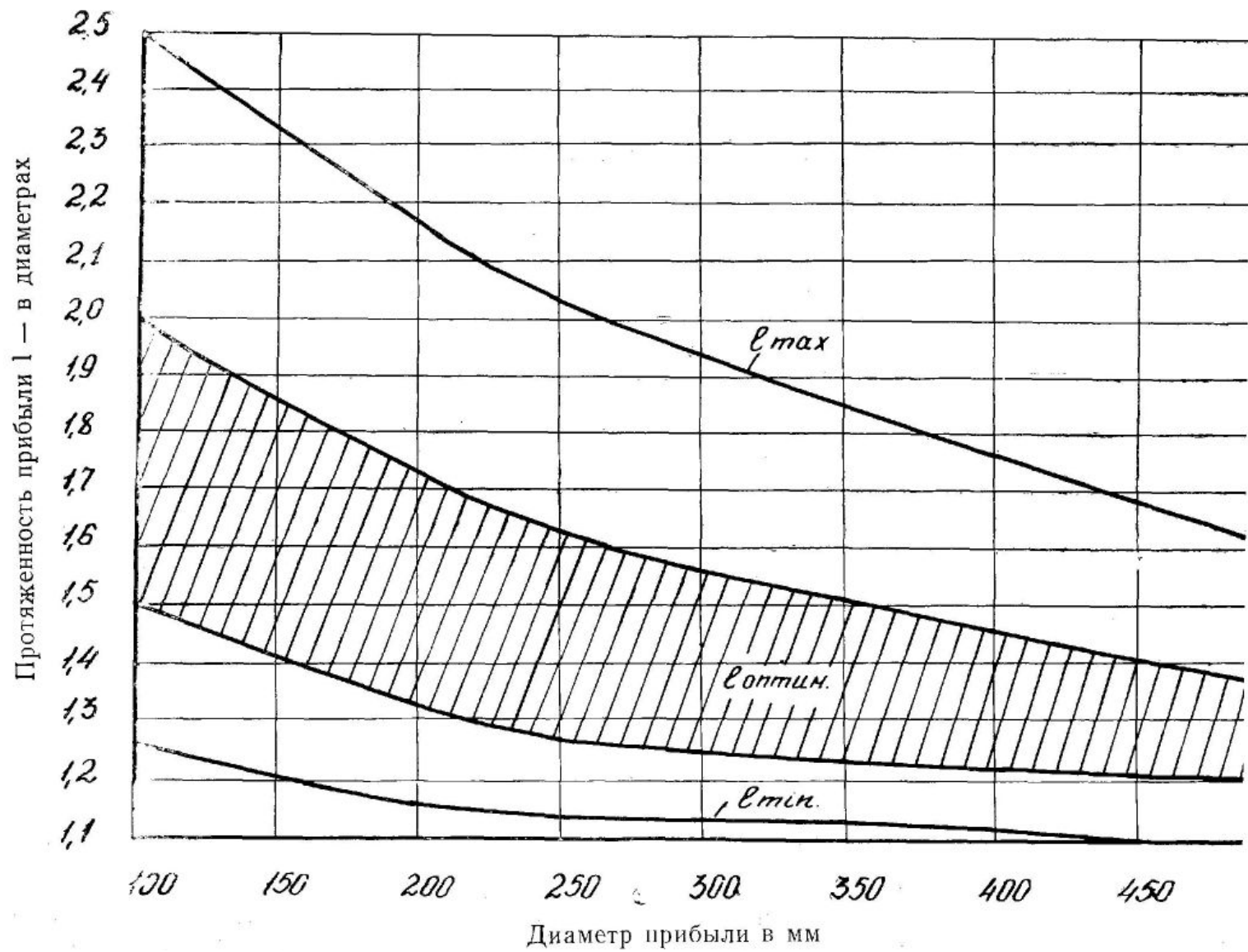


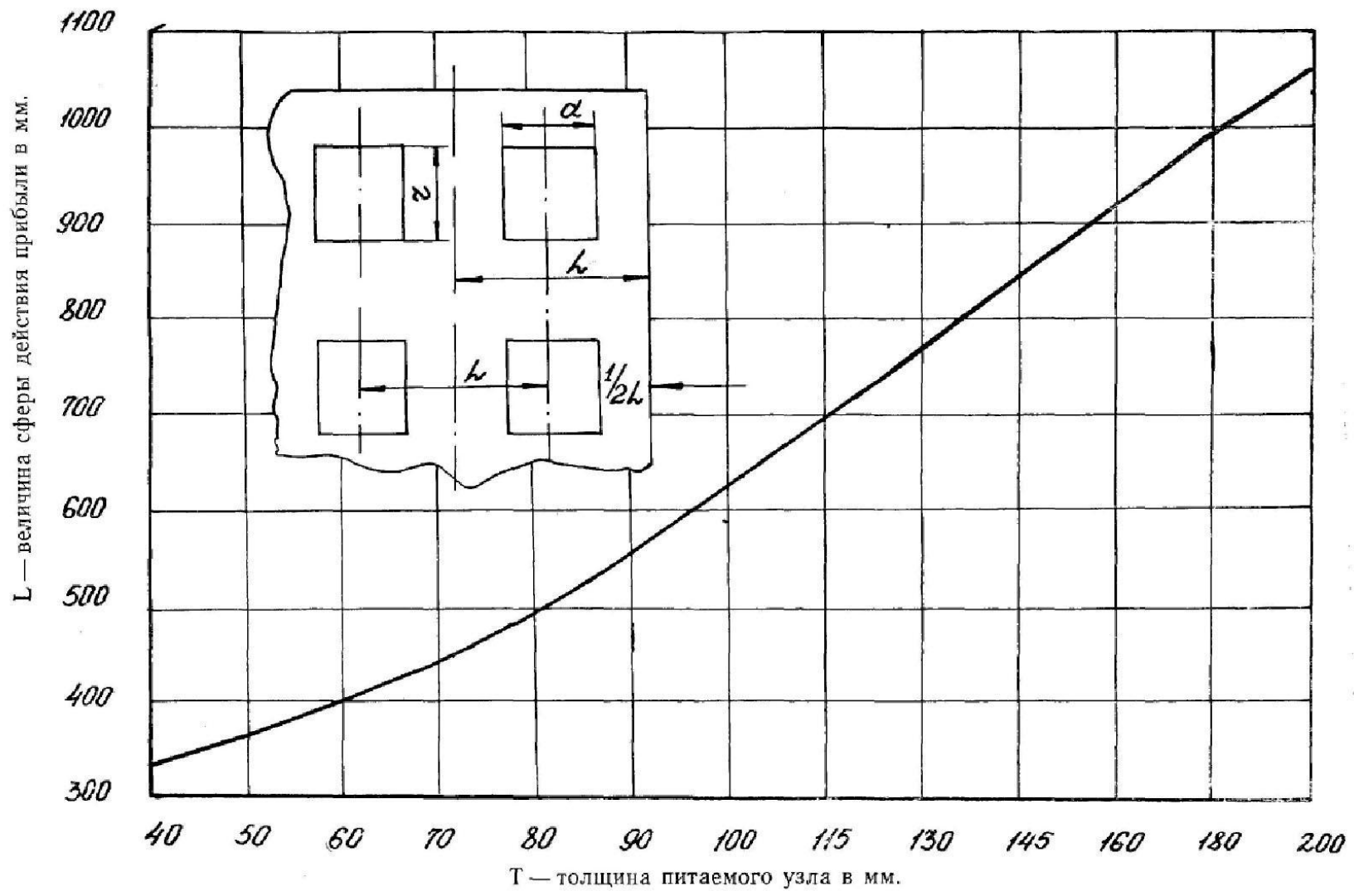


Протяженность прибылей в процентах от длины питаемого узла



Длина питаемого узла в мм.





Все существующие методы расчета  
прибылей  
можно подразделить на три основные  
группы:

1. расчеты с помощью таблиц и графиков,  
построенных на основе практических  
данных;
2. расчеты на основе эмпирических и  
полуэмпирических формул;
3. теоретически обоснованные расчеты.

$$H_{\Pi} = 0,6H_0 + 0,35\delta_0.$$

$$\beta \cdot V_{np} = \varepsilon_{v_{\Sigma}} (V_{n.y} + V_{np})$$

$$\beta = \frac{V_{yc.p}}{V_{np}}$$

$$V_{\Pi} = (\alpha/\psi - \alpha) V_o$$

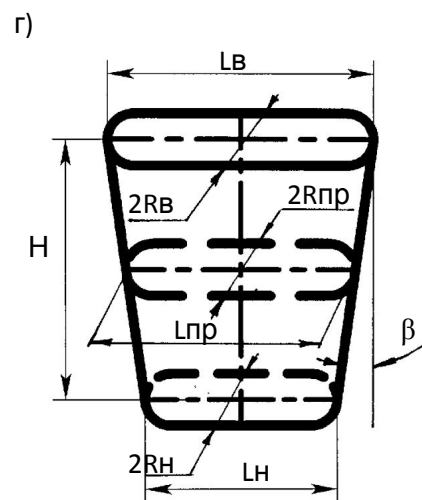
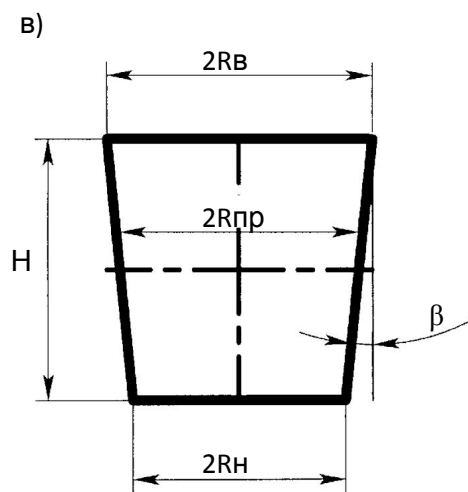
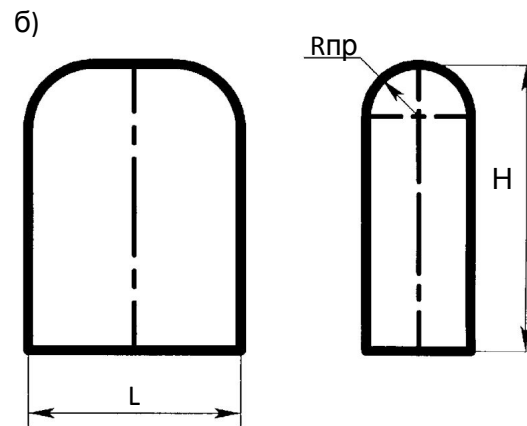
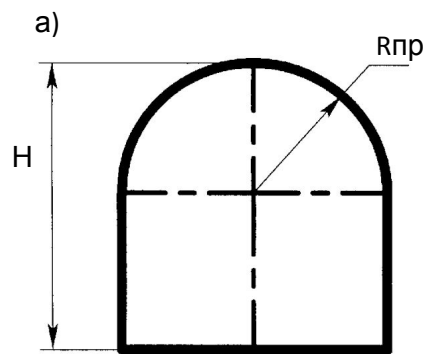
$$V_{np} = \frac{V_{n.y.} \cdot \varepsilon_{V_{\Sigma}}}{\beta - \varepsilon_{V_{\Sigma}}}$$

$$V_{np} = \frac{2}{3} \pi \cdot R_{np}^3 + \pi \cdot R_{np}^2 \cdot H_{np}$$

$$V_{np} = \frac{\pi D_{np}^2}{4} \cdot H_{np}$$

$$H_{np} = \frac{V_{np} - \frac{2}{3} \cdot \pi \cdot R_{отл}^3 (1,15 \div 1,2)^3}{\pi \cdot R_{отл}^2 (1,15 \div 1,2)^2}$$

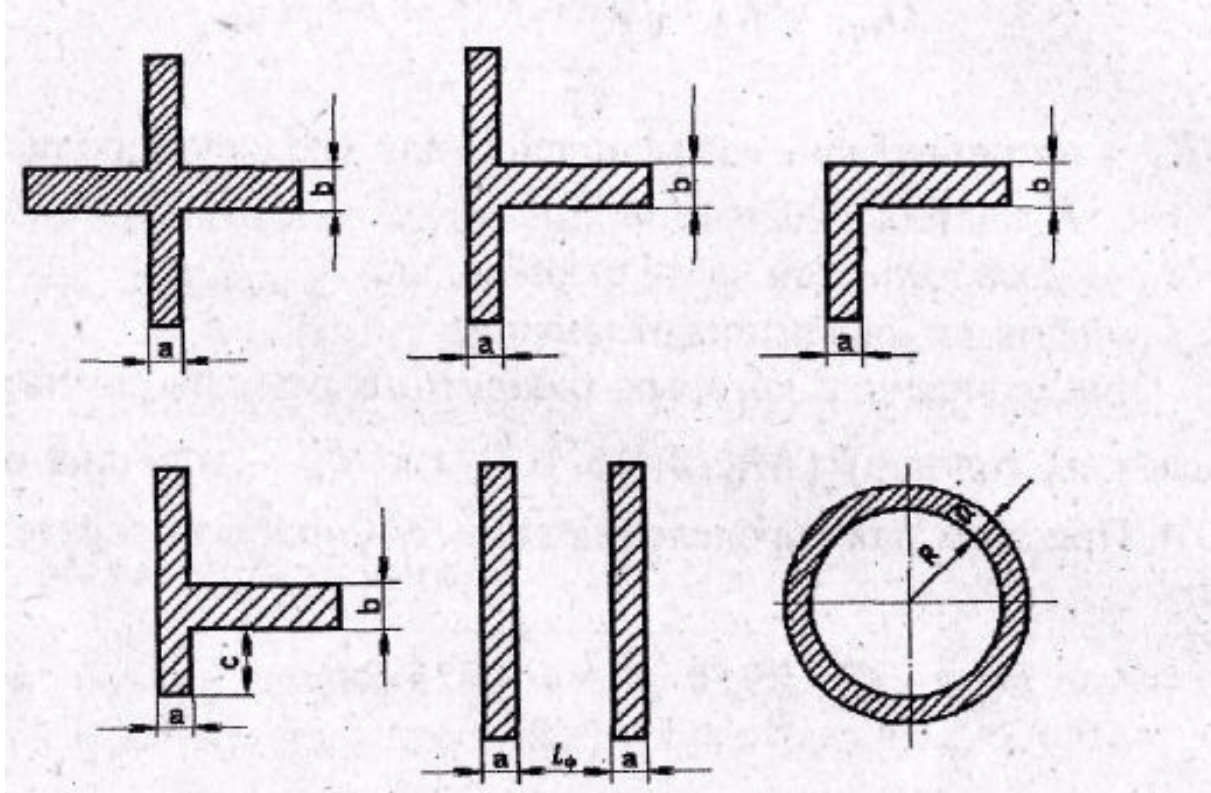


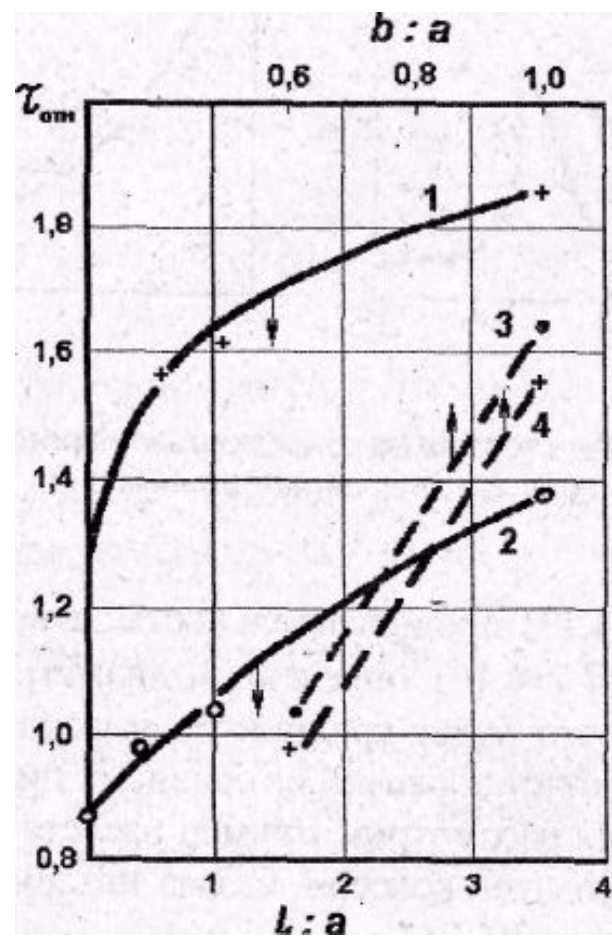
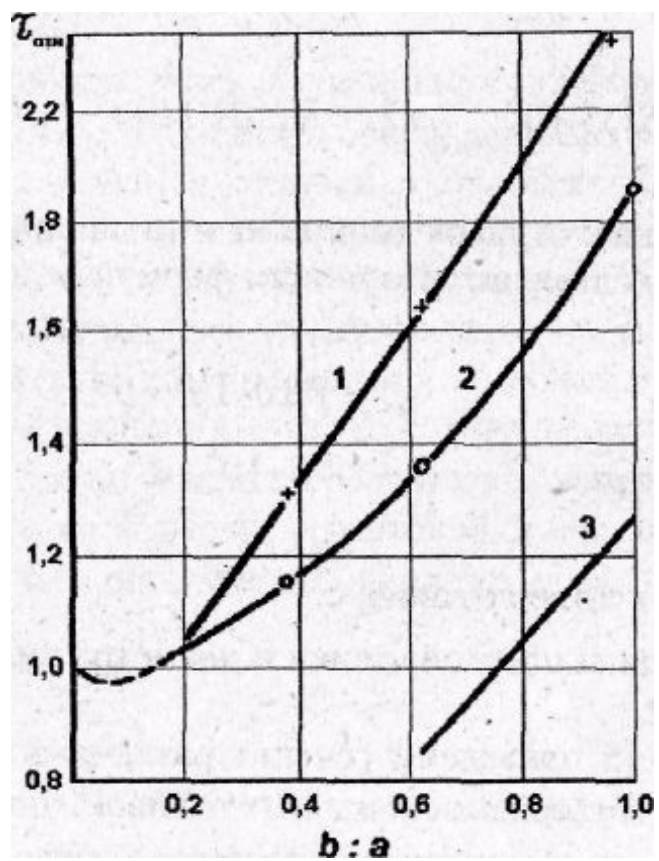


$$V_{np} = V + \frac{\varepsilon_{V_{\Sigma}}}{m} \cdot (V + V_{n.y})$$

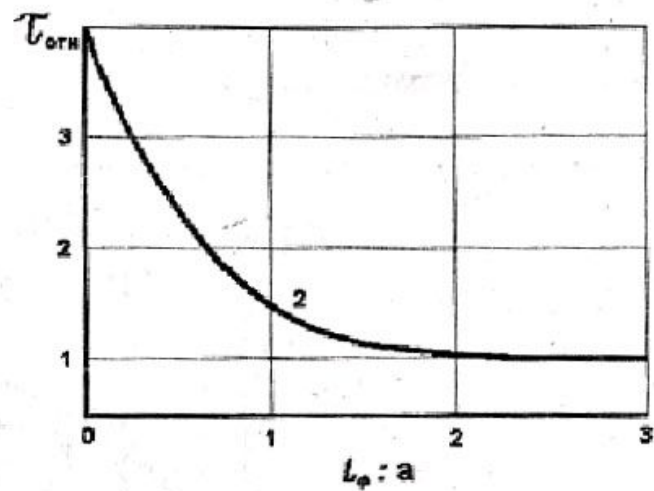
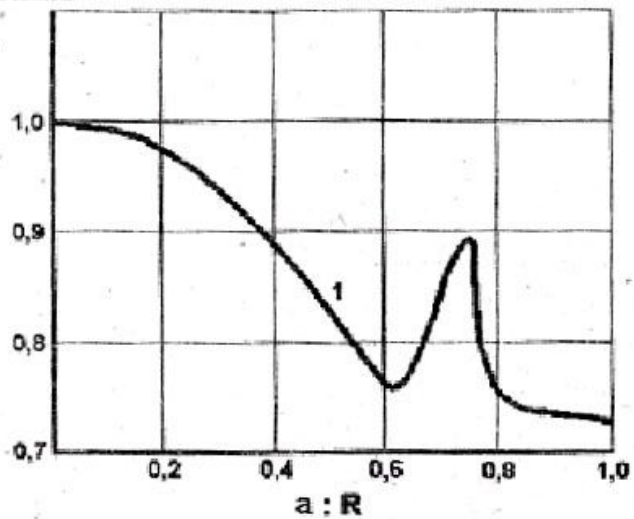
$$V_{np} = \frac{\pi \cdot D_{np}^3}{12} + \frac{\pi D_{np}^2}{4} \cdot \frac{D_{np}}{2} = \frac{5\pi \cdot D_{np}^3}{24} = 0,655 \cdot D_{np}^3$$

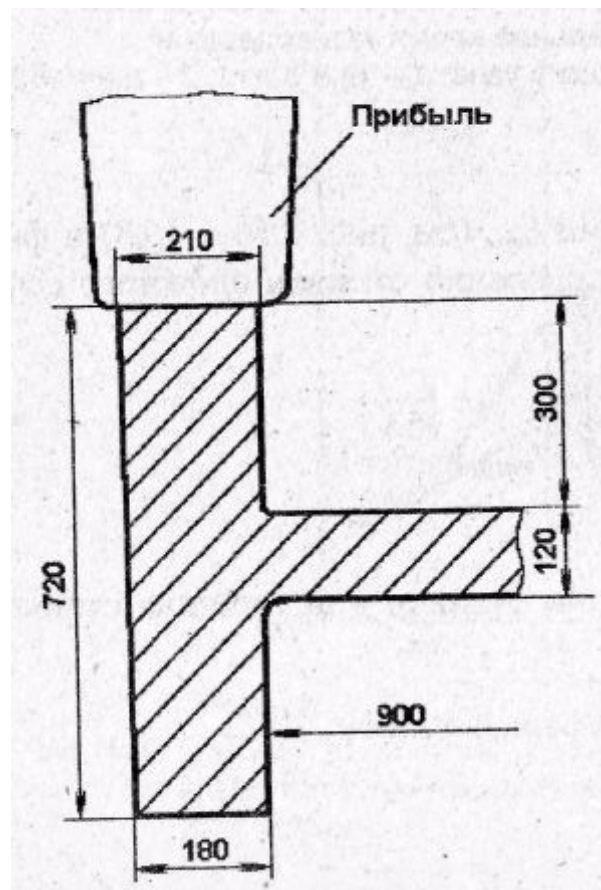
$$D_{np} = K_1 \cdot \sqrt{915 \cdot \tau^{3/2} + M_o}$$





$$\frac{\tau_{\text{опт. шп}}}{\tau_{\text{опт.л}}}$$





$$V_{\text{пр}} = m \xi R_{\text{э.т.у}}^3 (1 + \beta)^3 YZ + 3\beta V_{\text{пит}}$$

|                              |     |      |      |       |       |       |
|------------------------------|-----|------|------|-------|-------|-------|
| $L_{\text{пр-пит}}/\delta_0$ | <2  | 2-5  | 5-10 | 10-20 | 20-30 | 30-40 |
| m                            | 1,0 | 1,03 | 1,05 | 1,10  | 1,15  | 1,20  |

$$\xi = \frac{F_{\text{пр.эф}}^3}{V_{\text{пр}}^2}$$

$$\xi = \frac{\left( \pi D_{\text{пр}} \cdot 1,25 D_{\text{пр}} + \frac{\pi D_{\text{пр}}^2}{4} \right)^3}{\left( \frac{\pi D_{\text{пр}}^2}{4} \cdot 1,25 D_{\text{пр}} \right)^2} = 108$$

$$R_{\text{э.т.у}} = \frac{V_{\text{т.у}}}{F_{\text{э.т.у}}}$$

$$\xi = \frac{\left( \pi D_{\text{пр}} \cdot 2,0 D_{\text{пр}} + K_{\text{и}} \frac{\pi D_{\text{пр}}^2}{4} \right)^3}{\left( \frac{\pi D_{\text{пр}}^2}{4} \cdot 2,0 D_{\text{пр}} \right)^2} = 260$$



| Конфигурация отливки | $\tau_{\text{отн}}$ | Конфигурация отливки                  | $\tau_{\text{отн}}$ |
|----------------------|---------------------|---------------------------------------|---------------------|
| Плита бесконечная    | 1,54                | Цилиндр                               | 1,00                |
| Брус прямоугольный   | 1,42                | Шар                                   | 1,00                |
| Брус квадратный      | 1,27                | Прибыль<br>цилиндрическая<br>закрытая | 0,95                |

$$Y = \frac{\tau_{\text{отн л.у}}}{\tau_{\text{отн пр.}}}$$

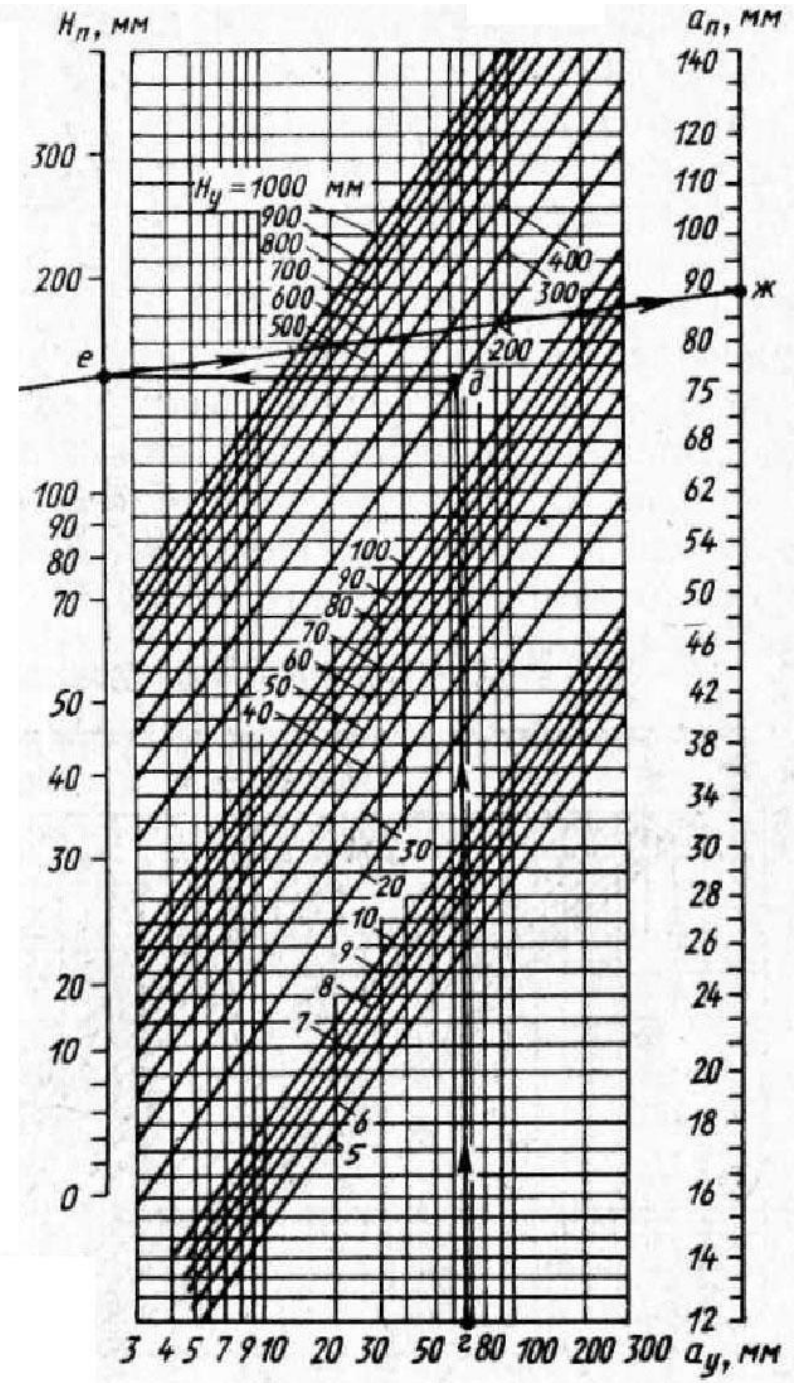
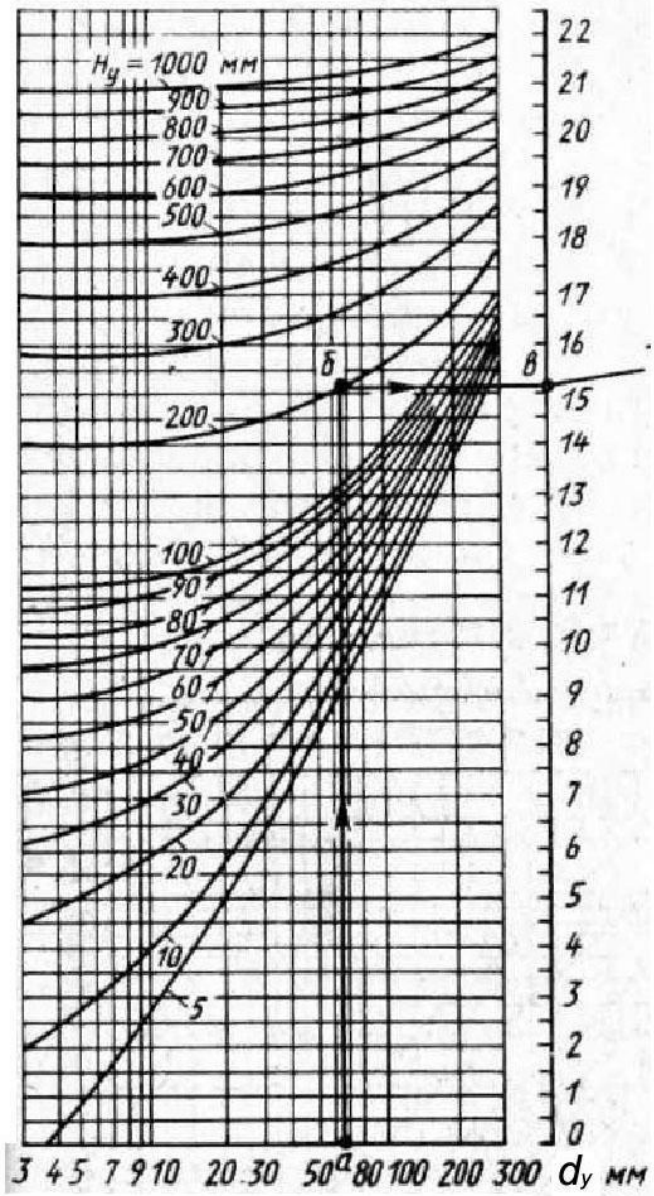
$$Z = \frac{\frac{X_{\text{кр},0}}{\lambda_{\text{кр},0}} + \frac{X_{\text{к},0}}{\lambda_{\text{к},0}}}{\frac{X_{\text{кр},\text{пр}}}{\lambda_{\text{кр},\text{пр}}} + \frac{X_{\text{к},\text{пр}}}{\lambda_{\text{к},\text{пр}}}}$$

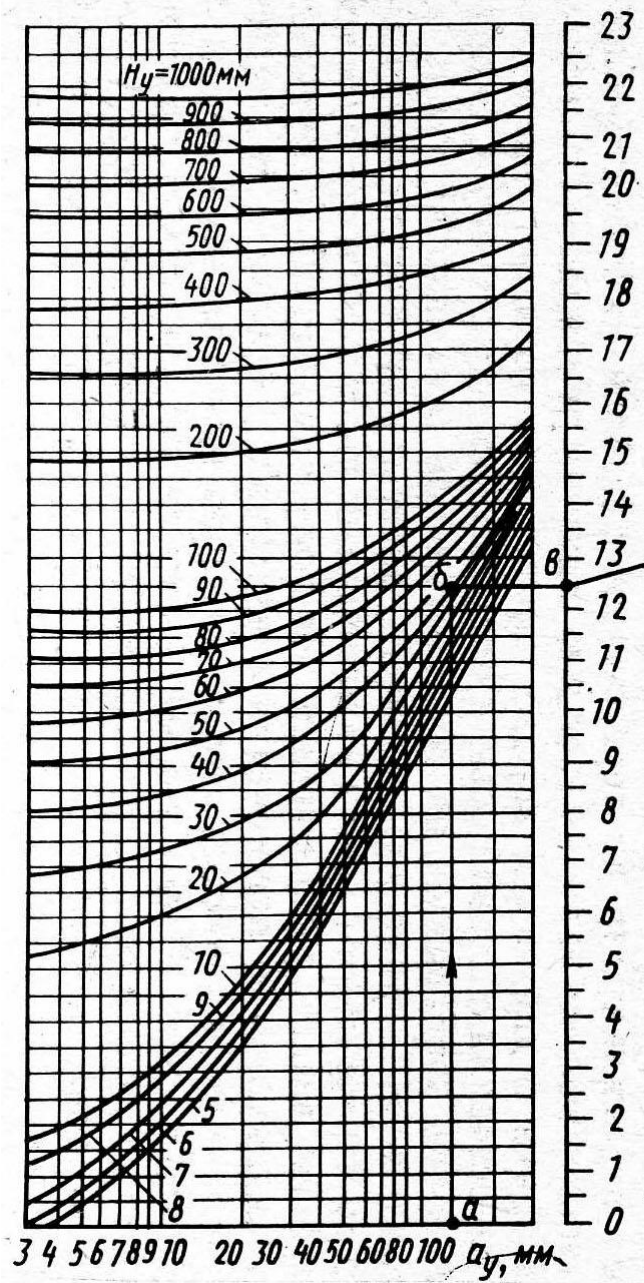
$$V_{\text{пит}} = \frac{M_{\text{п.ч.о}}}{\rho_{\text{ж}}} = \frac{V_{\text{п.ч.о}} \cdot \rho_{\text{т}}}{\rho_{\text{ж}}} \approx V_{\text{п.ч.о}} (1 + 3\varepsilon_{\text{л}})$$

$$V_{\text{пр}} = \frac{\pi D_{\text{пр}}^2}{4} H_{\text{пр}} = \frac{3,14 D_{\text{пр}}^2}{4} 1,25 D_{\text{пр}} = 0,98 D_{\text{пр}}^3$$

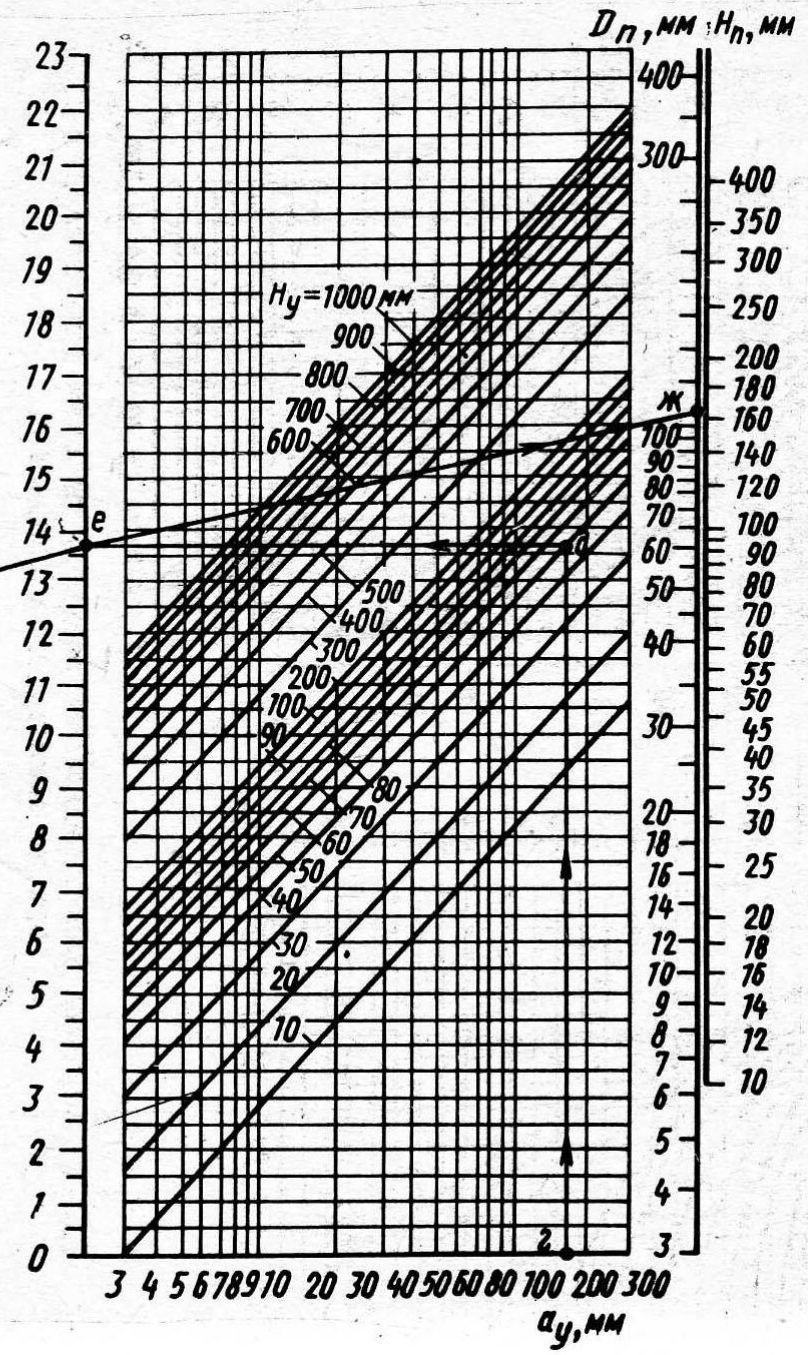
$$V_{\text{пр}} = \frac{\pi D_{\text{пр}}^2}{4} H_{\text{пр}} = \frac{3,14 D_{\text{пр}}^2}{4} 2,0 D_{\text{пр}} = 1,57 D_{\text{пр}}^3$$

$$V_{\text{пр}} = \frac{\pi D_{\text{пр}}^2}{4} H_{\text{пр}} = \frac{3,14 D_{\text{пр}}^2}{4} 1,5 D_{\text{пр}} = 1,18 D_{\text{пр}}^3$$



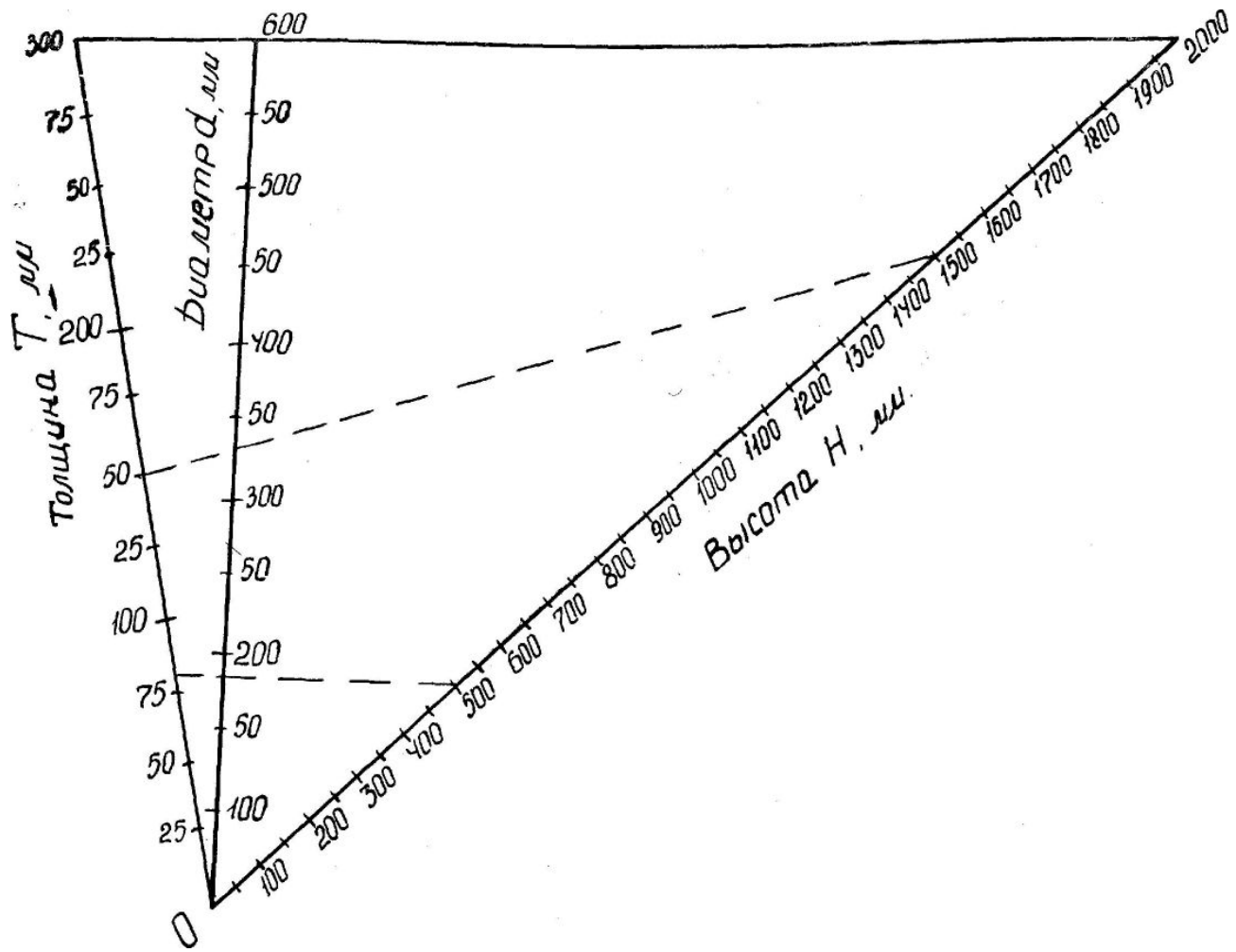


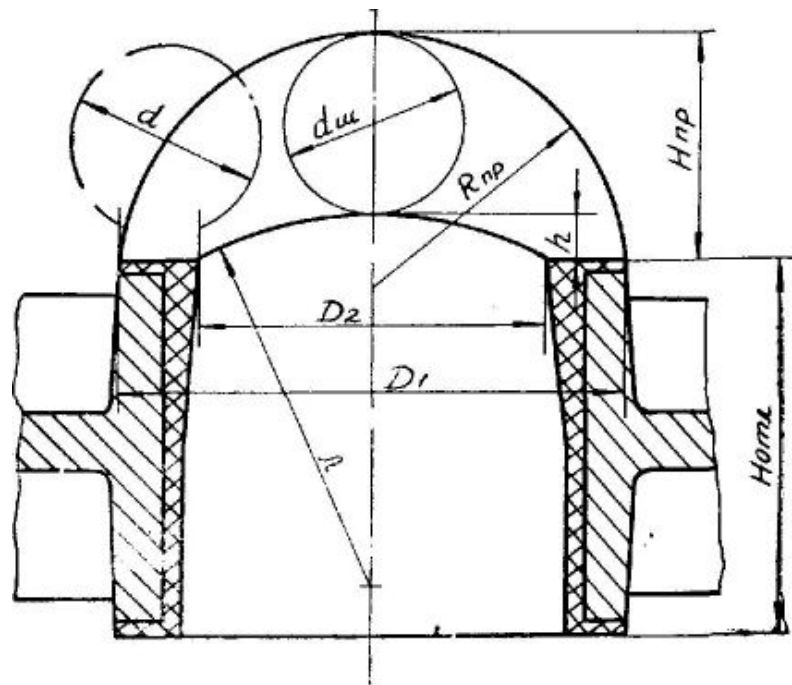
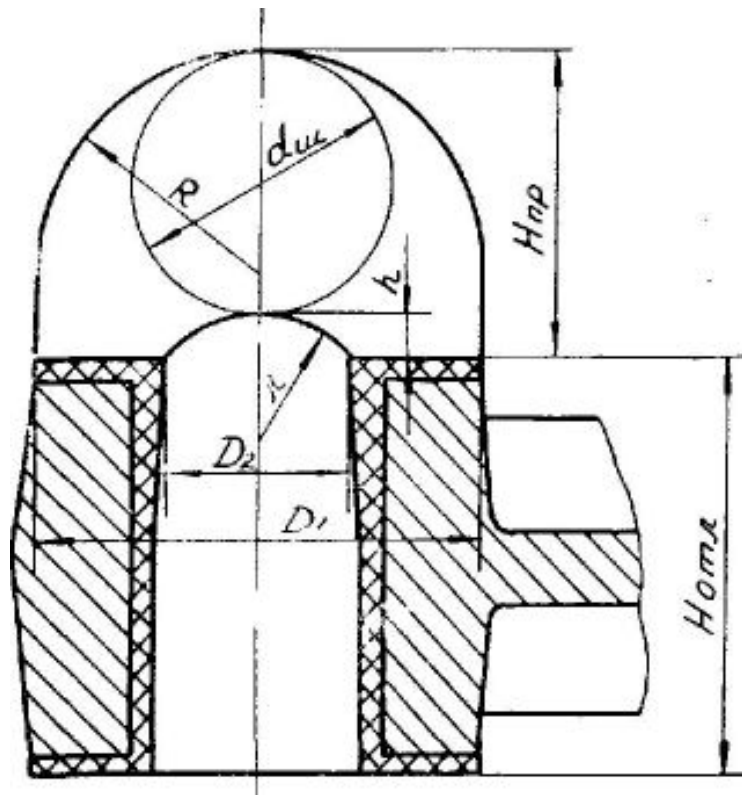
3 4 5 6 7 8 9 10 20 30 40 50 60 80 100  $a_y, \text{MM}$

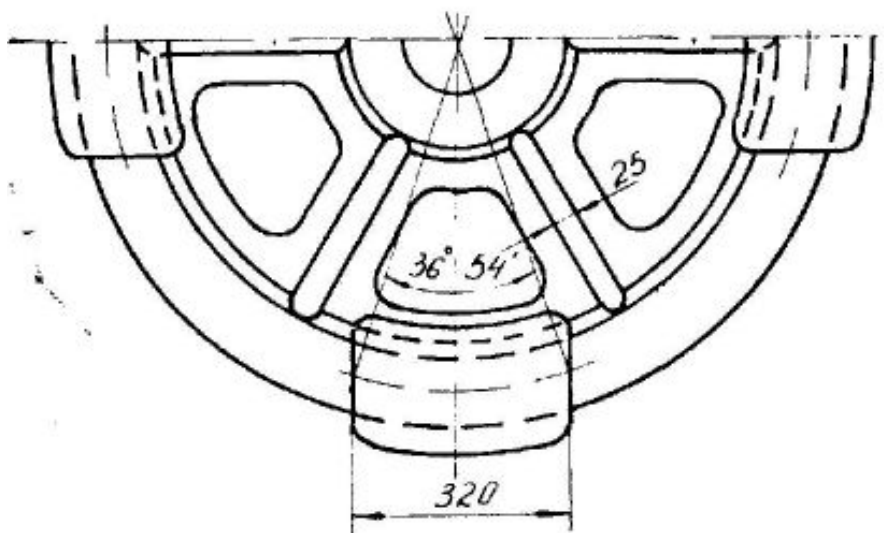
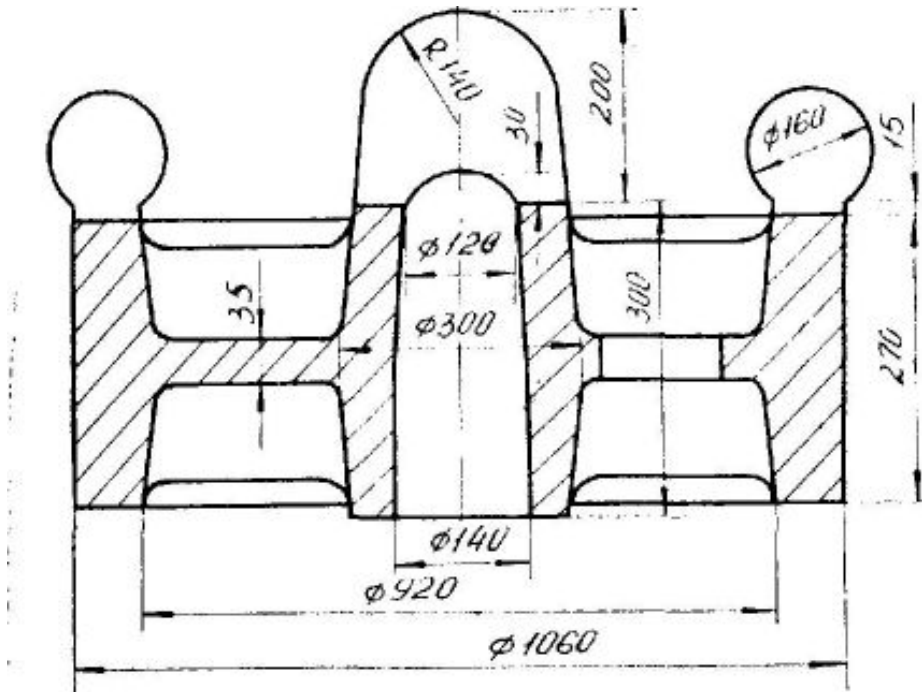


3 4 5 6 7 8 9 10 20 30 40 50 60 80 100 200 300  $a_y, \text{MM}$

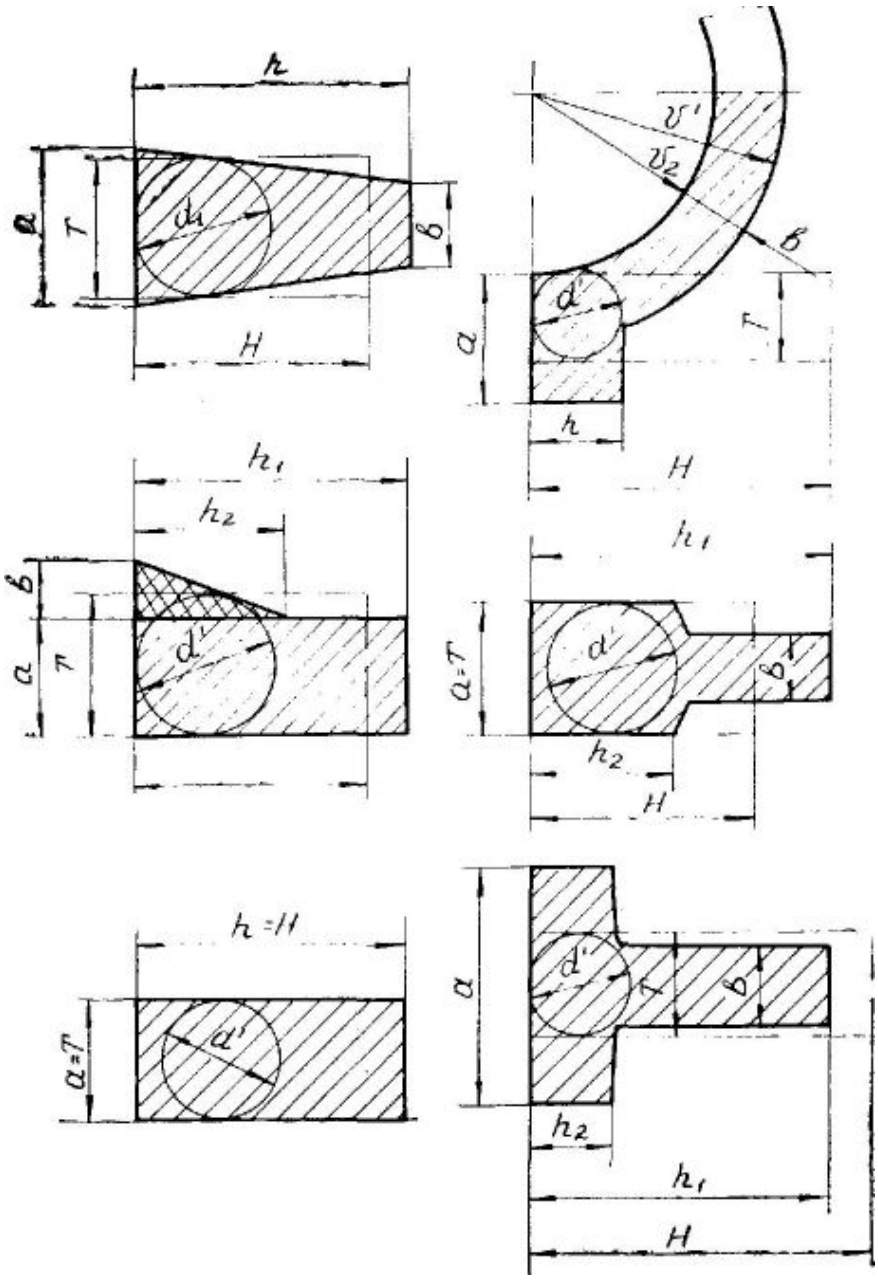
$D_n, \text{MM} : H_n, \text{MM}$

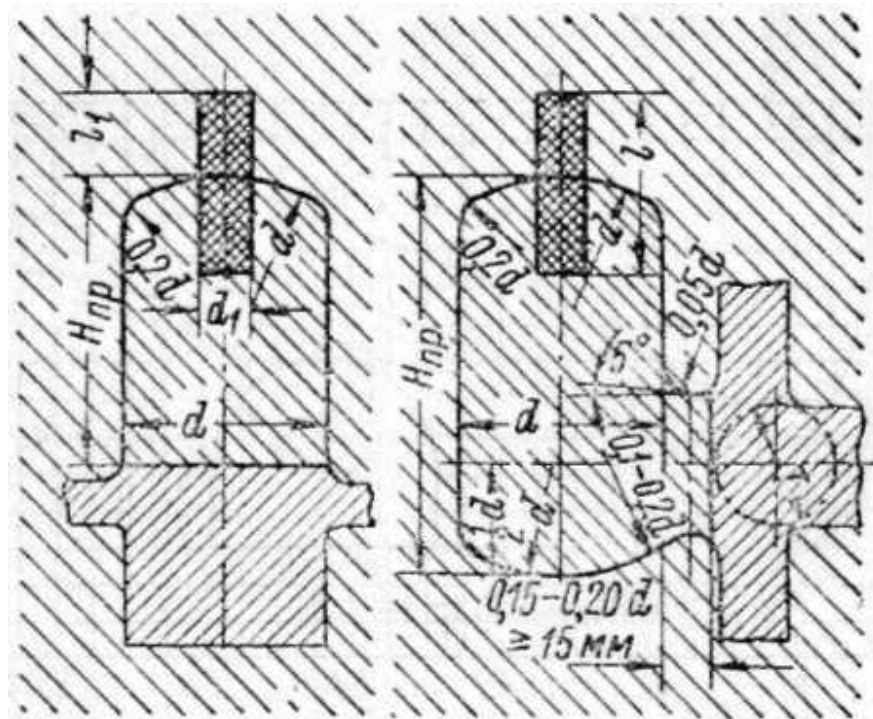




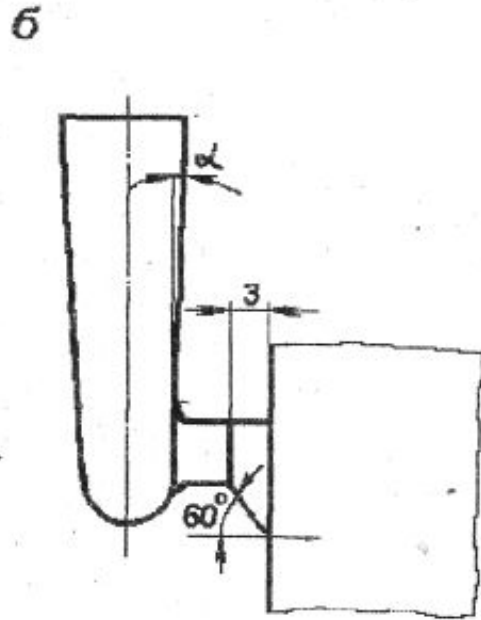
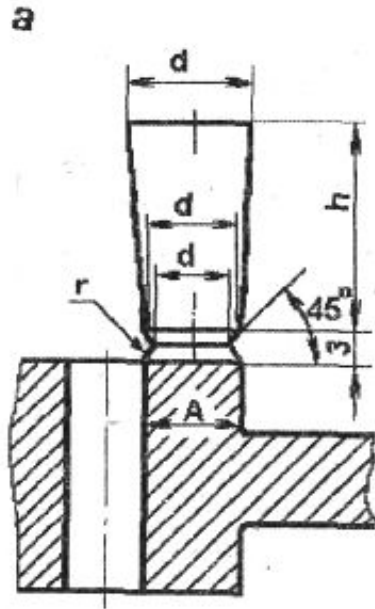


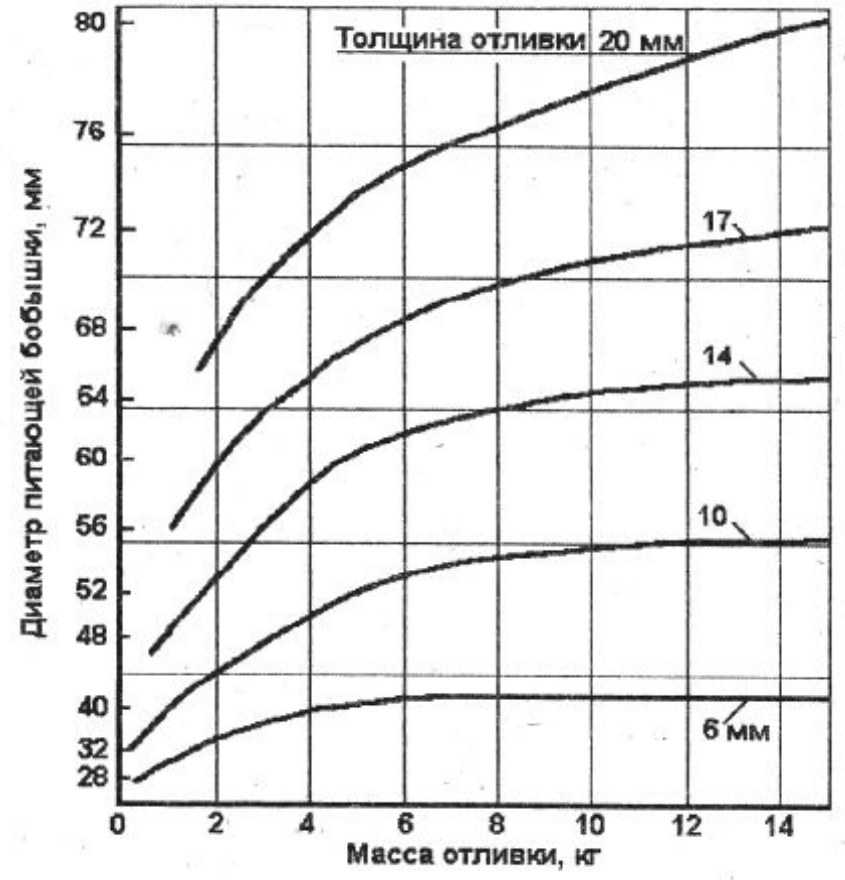
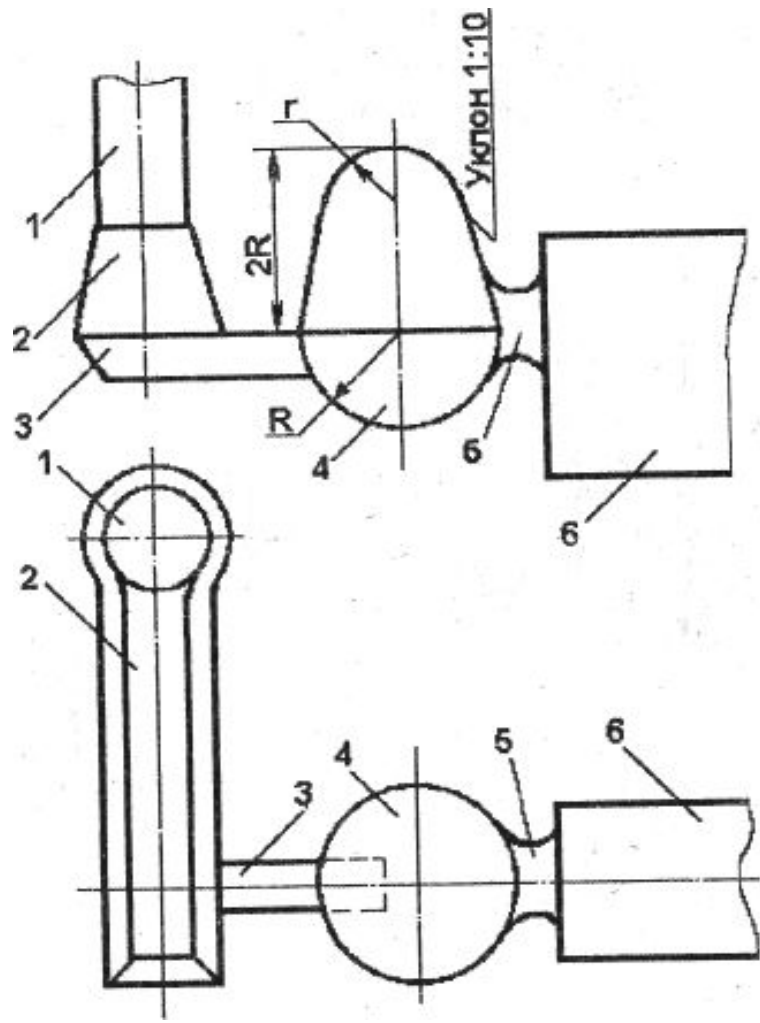


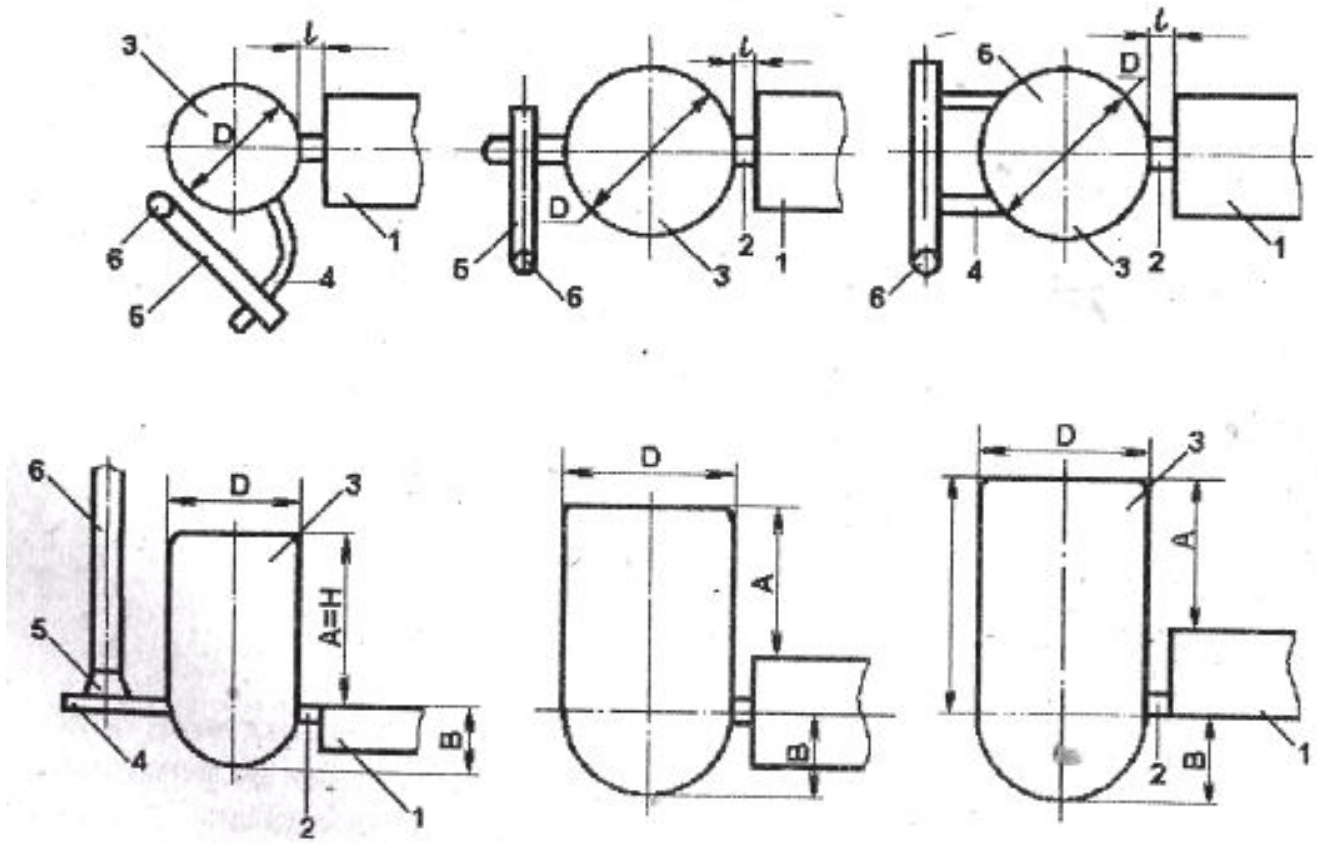




| Диаметр в мм |                  | Длина стерженька в мм |             |
|--------------|------------------|-----------------------|-------------|
| прибыли $d$  | стерженька $d_1$ | общая $l$             | знака $l_1$ |
| 70—120       | 12 — 15          | 90                    | 45          |
| 121 — 200    | 15               | 120                   | 50          |
| 201 — 300    | 15 — 25          | 140                   | 60 — 70     |
| Более 300    | 25 — 50          | 180 — 250             | 88—150      |

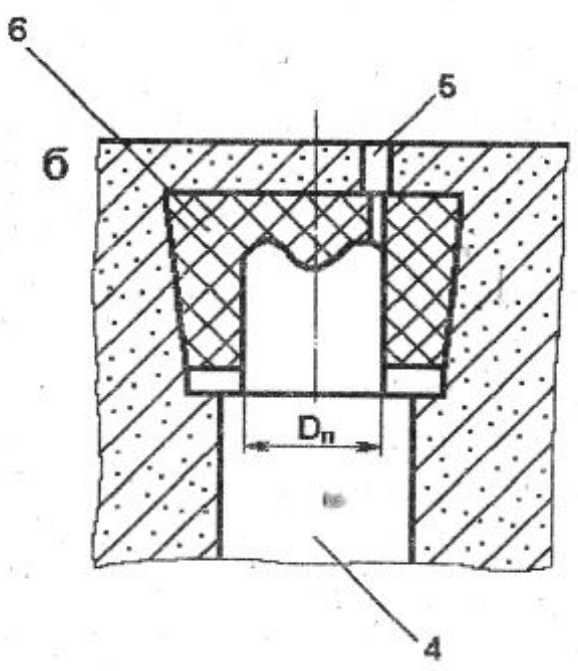
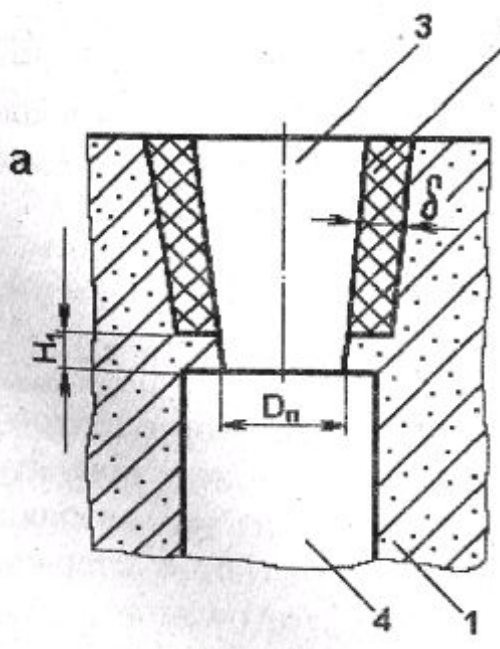


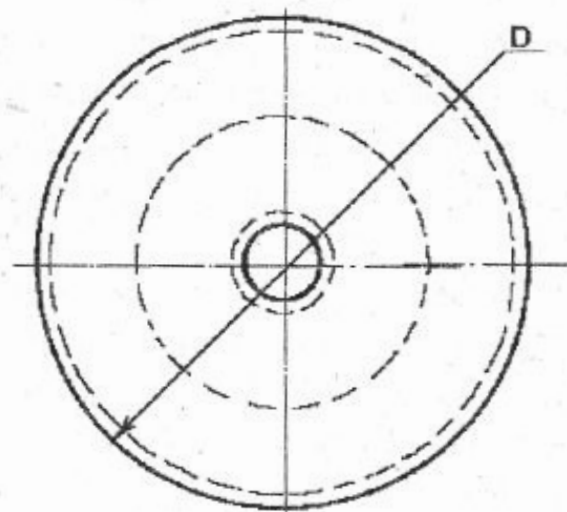
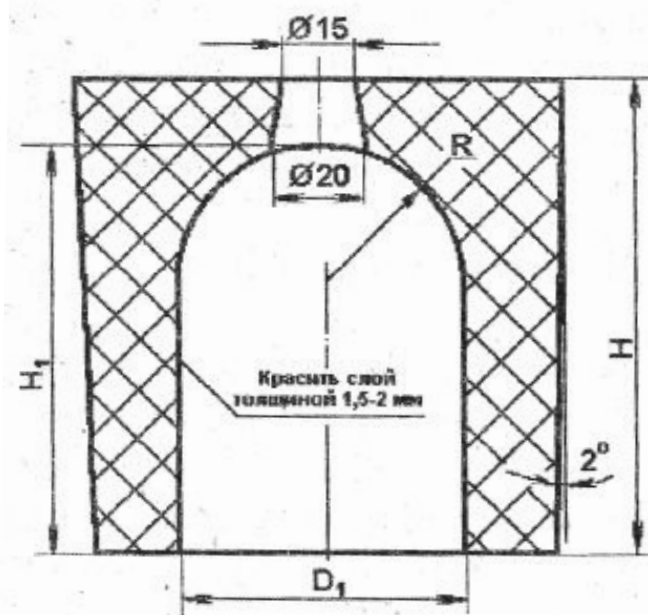


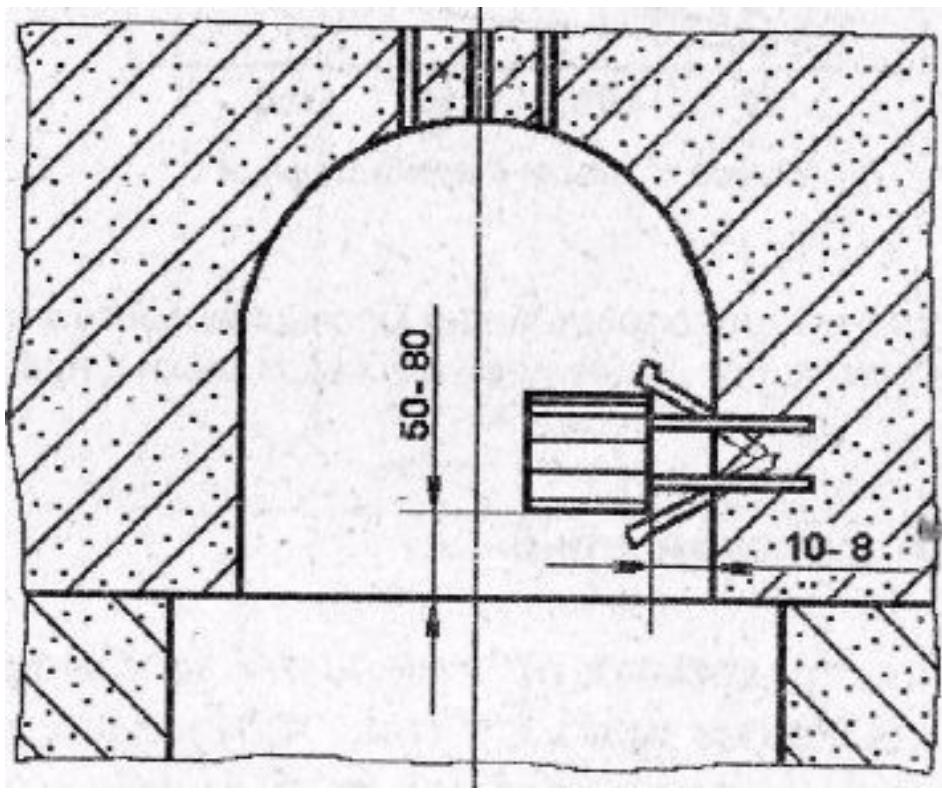


$$D_{np} = \sqrt{\frac{4}{\pi K} (0,03 \cdot T_{зал} - 20,2) \cdot M_{отл} + 1,2}$$

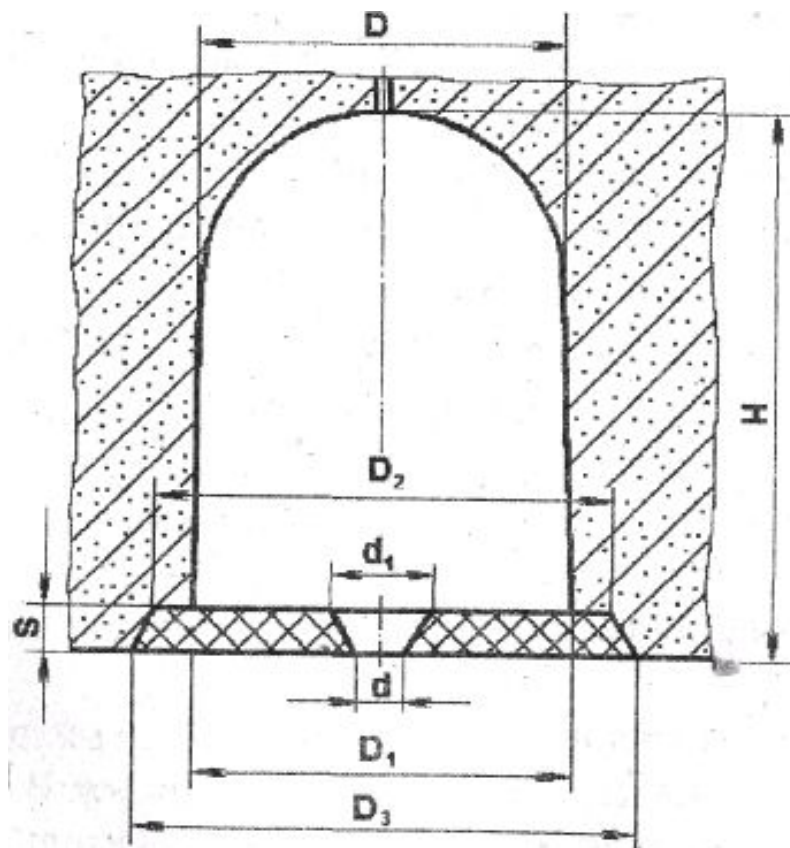
$$H_{np} = K \cdot D_{np}$$





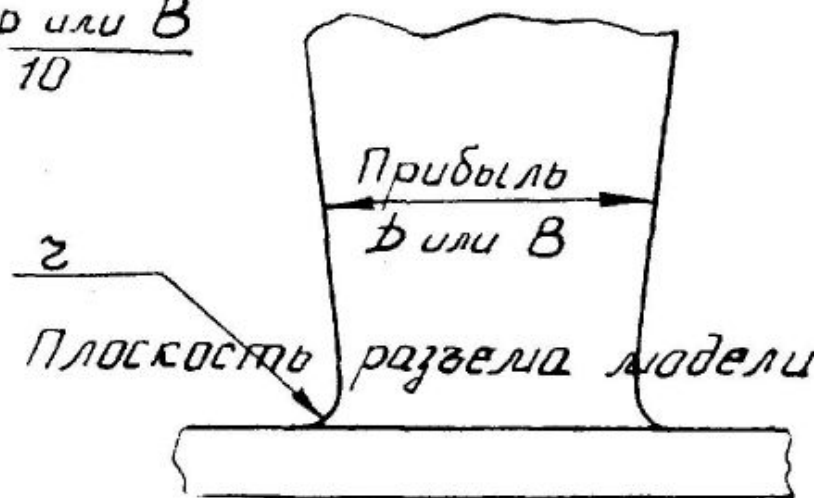


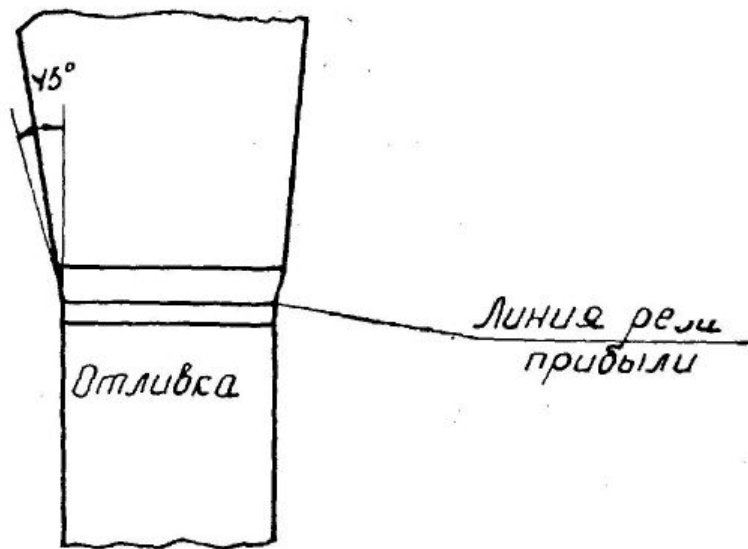
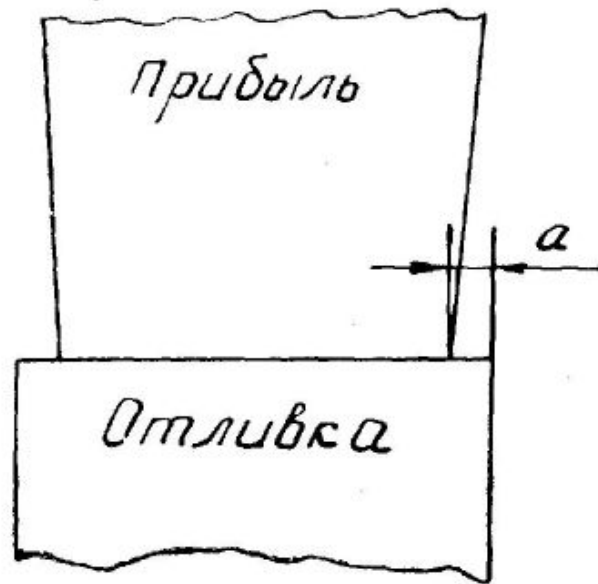
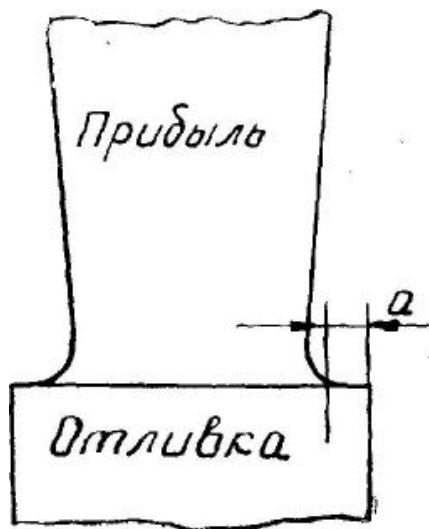


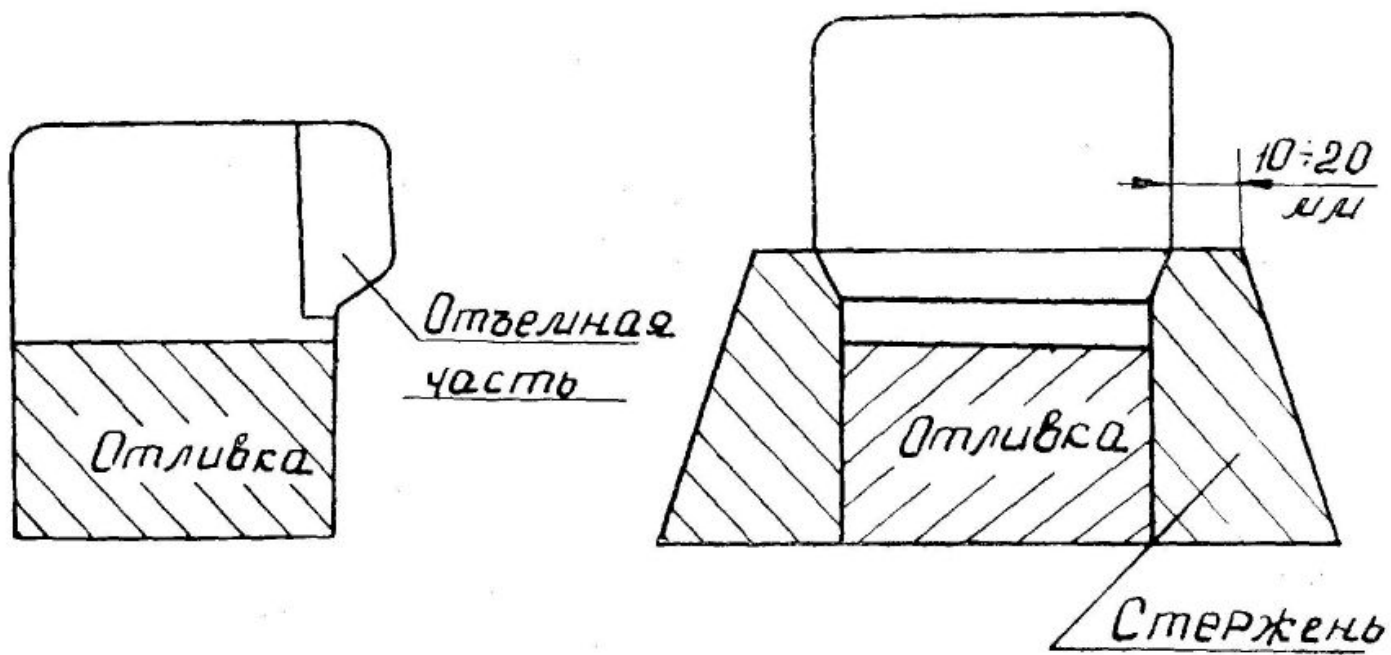


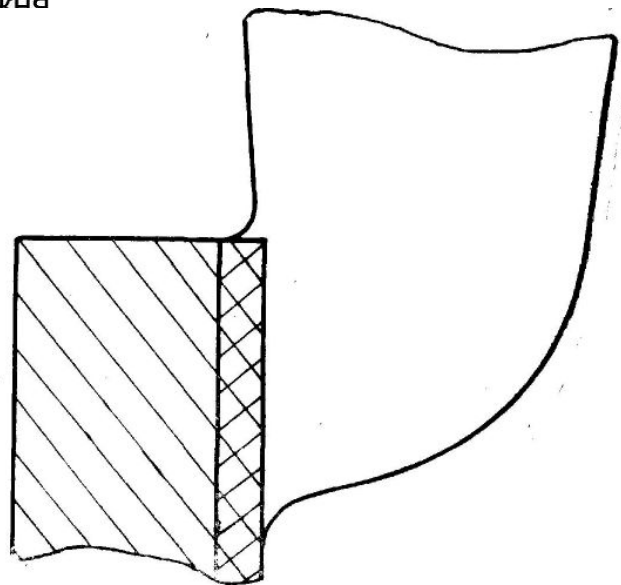
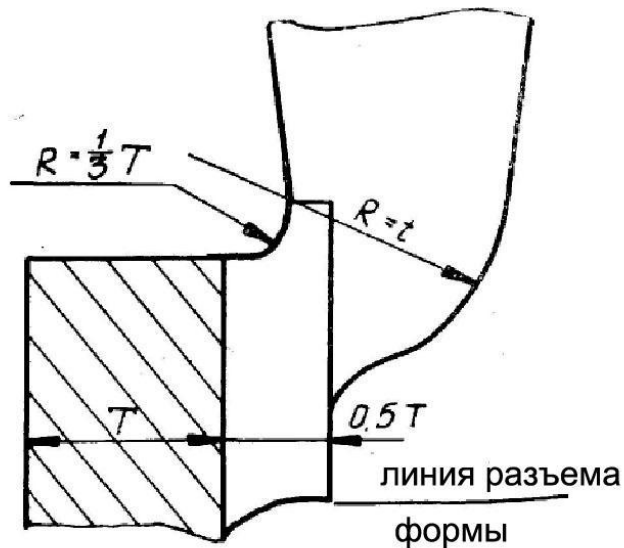
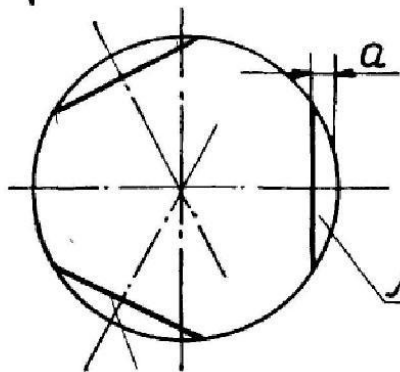
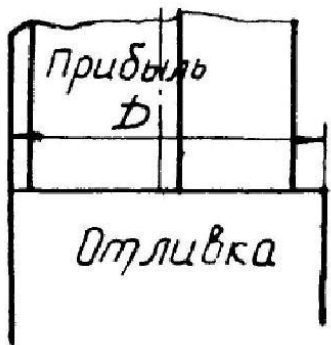


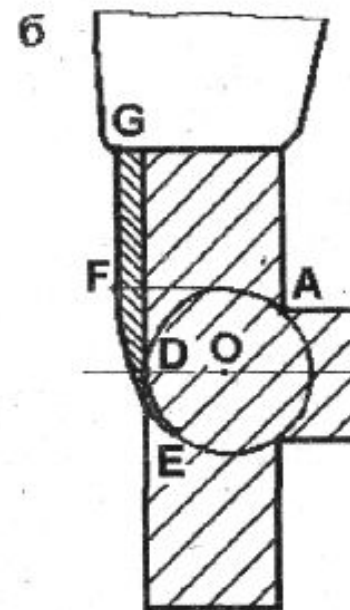
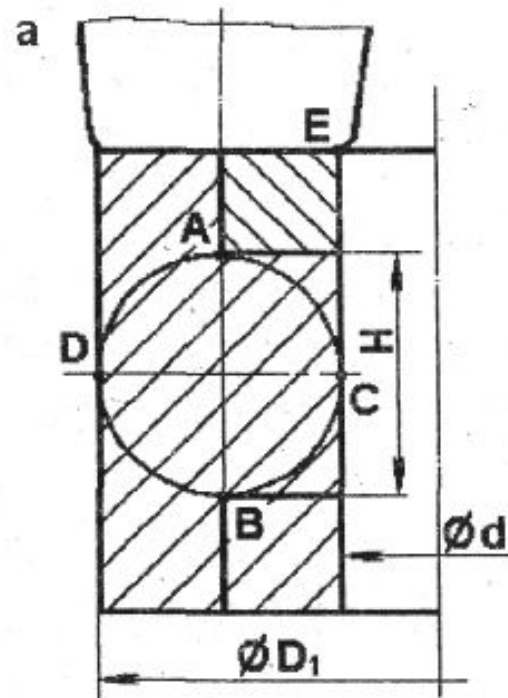
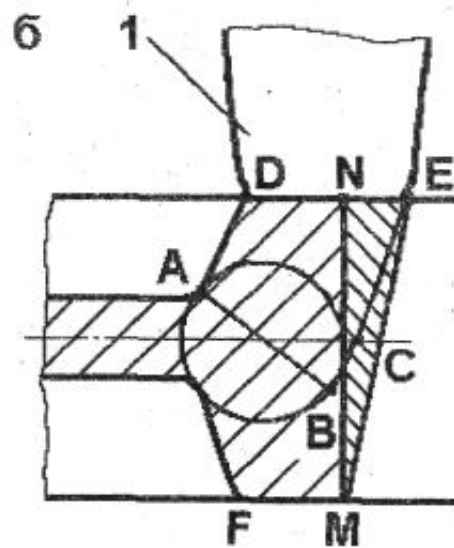
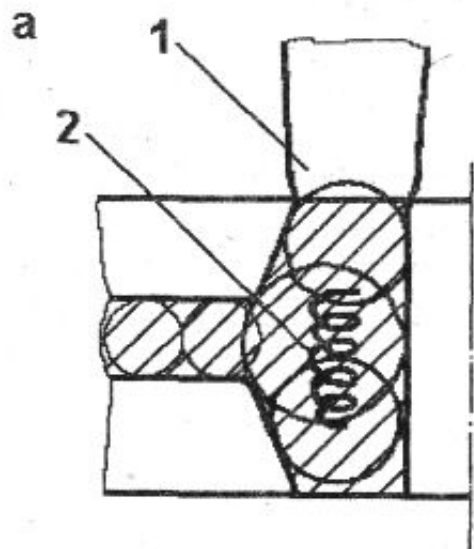
$$\frac{D_{\text{пр или } B}}{10}$$

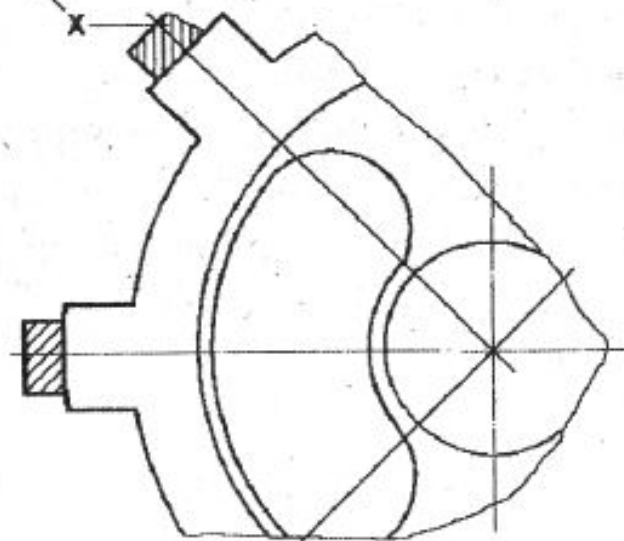
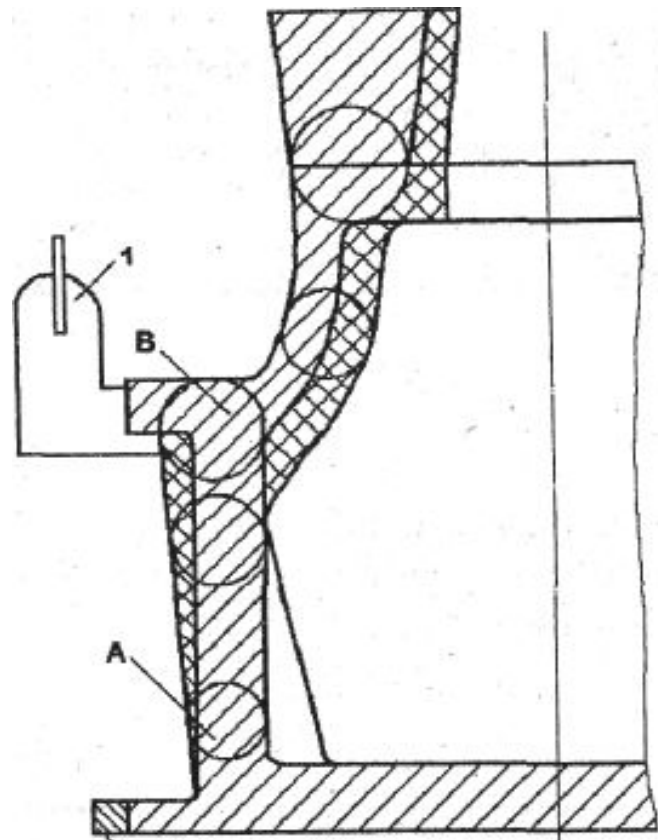


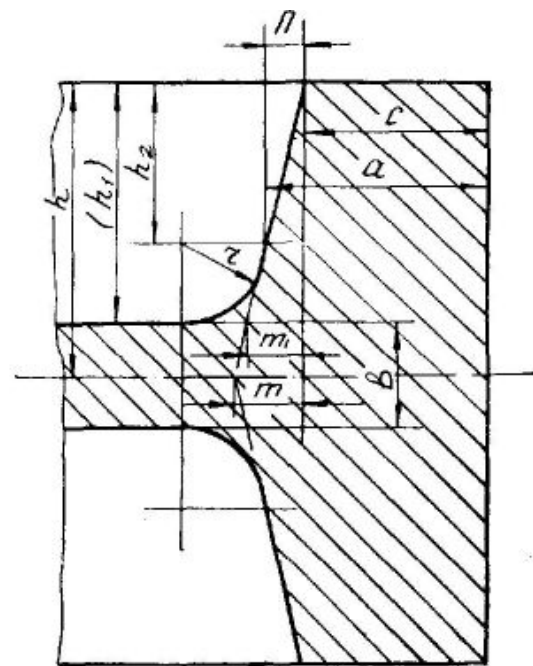
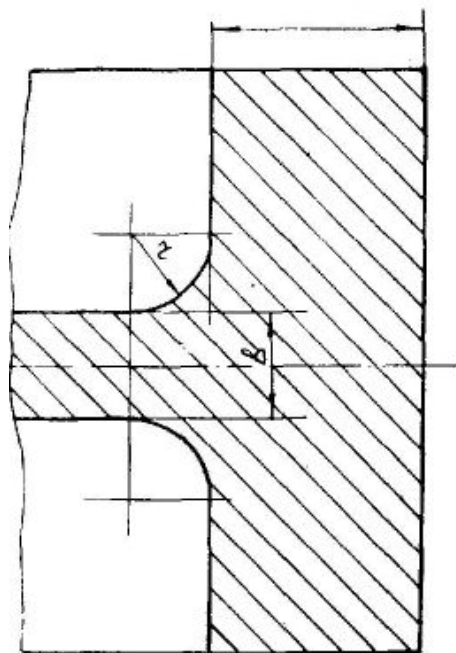
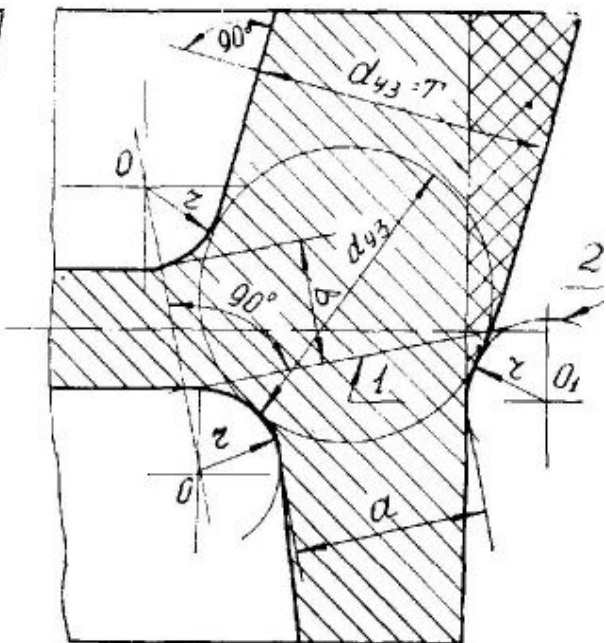
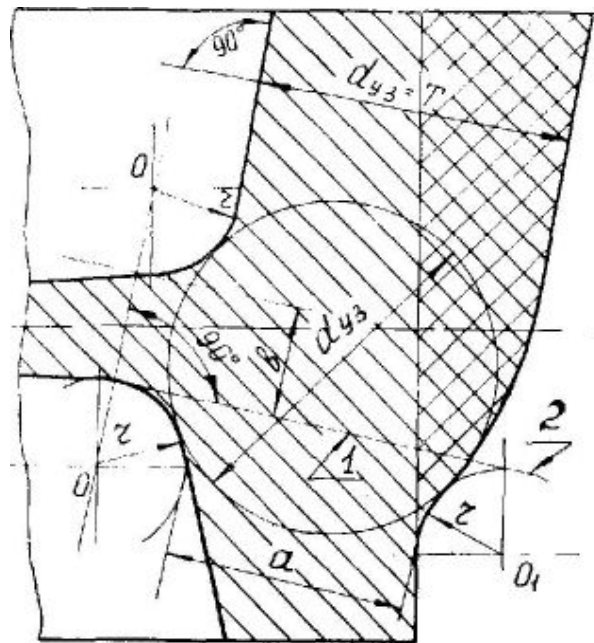




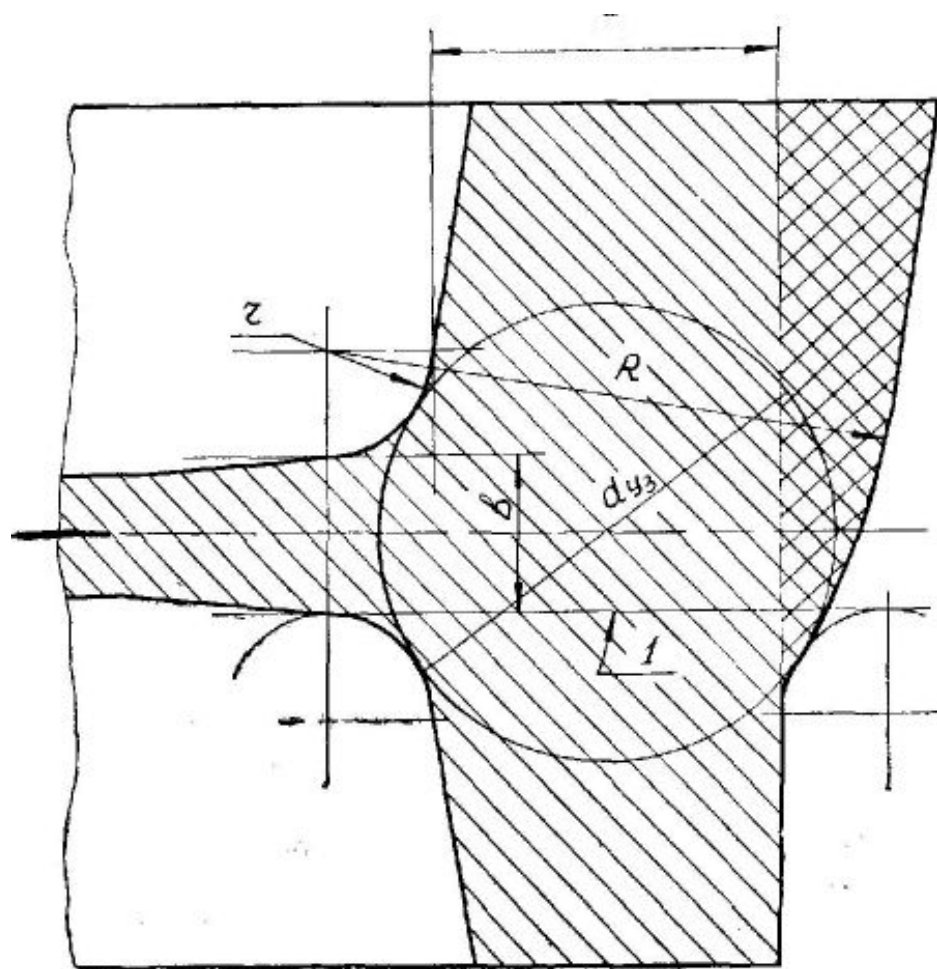
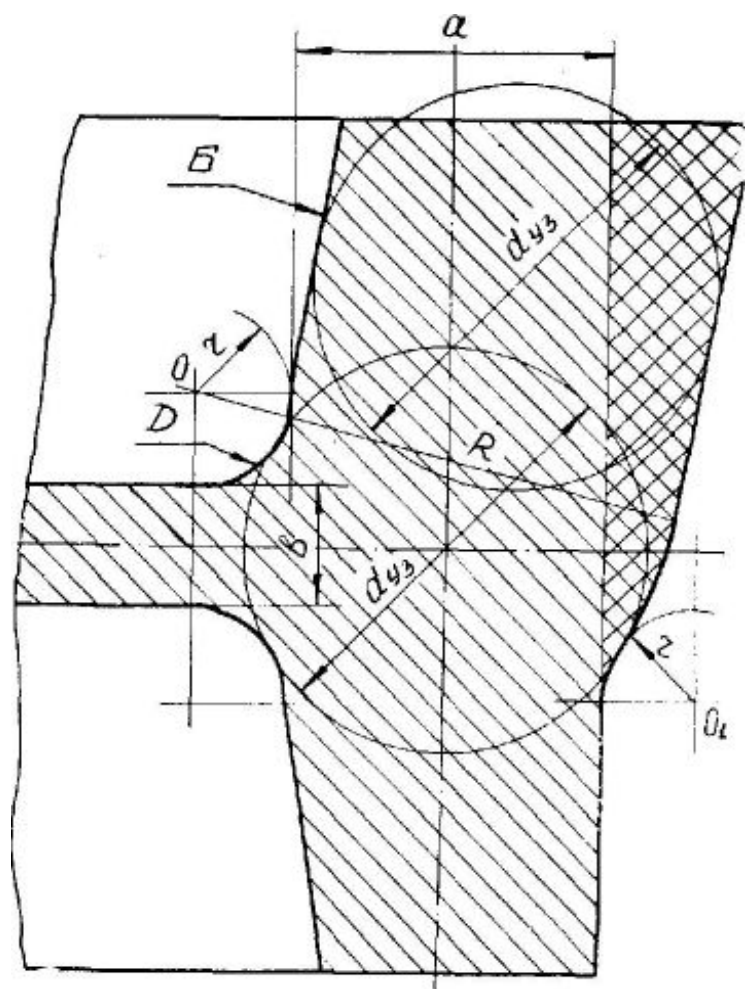


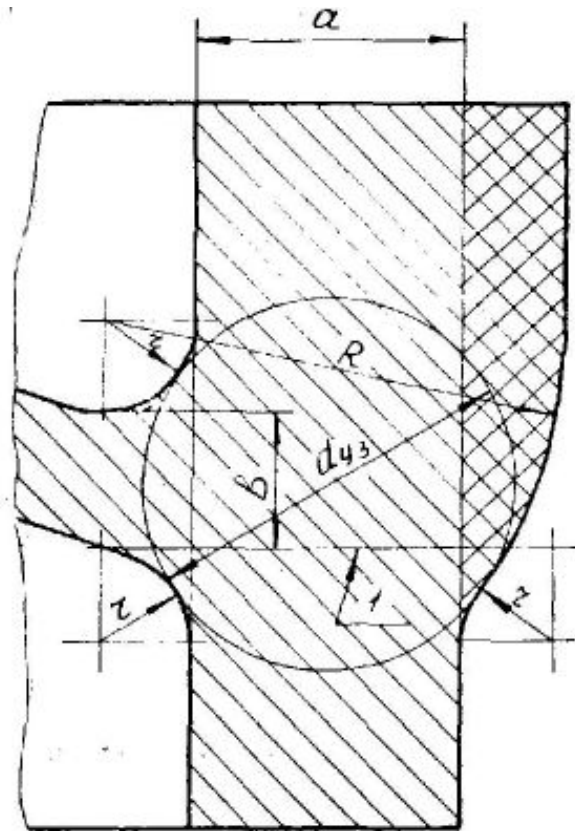
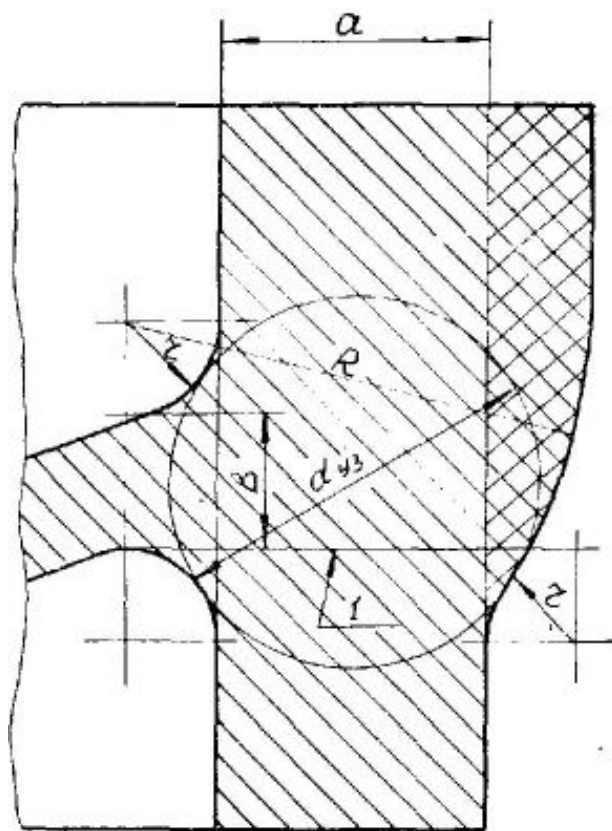


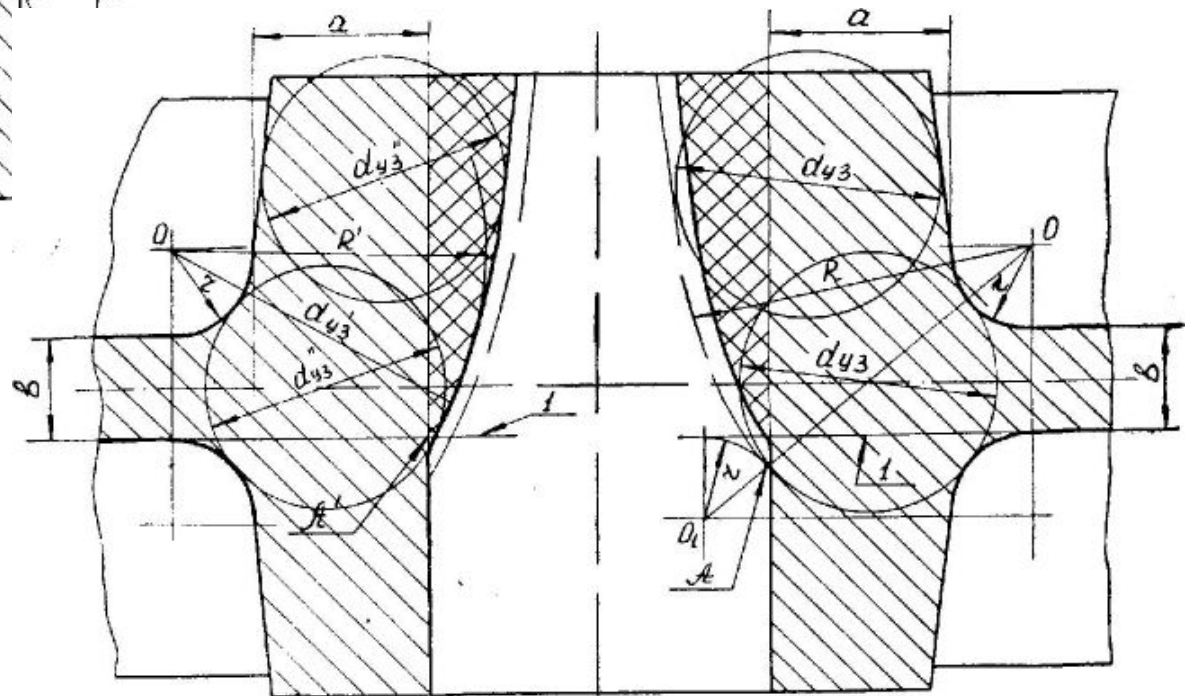
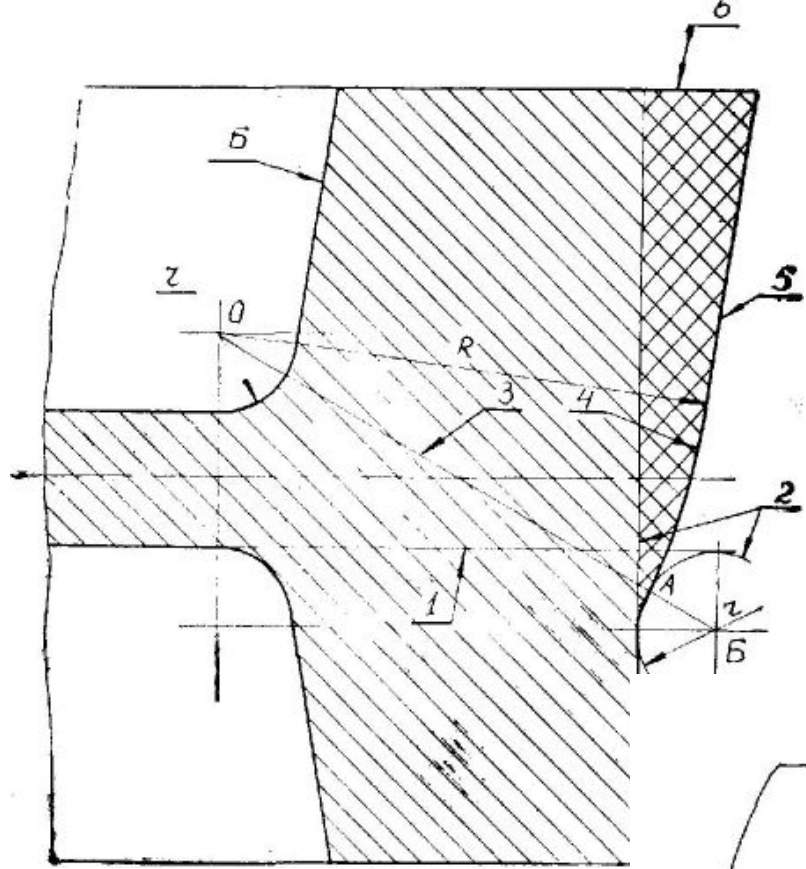




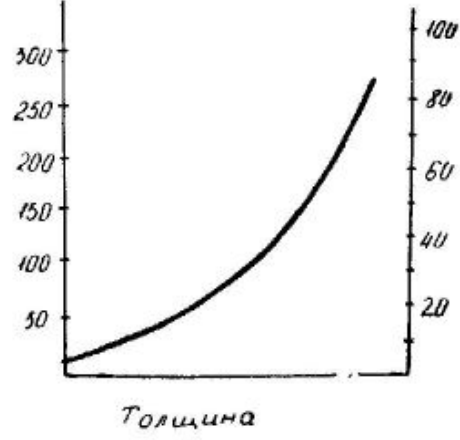




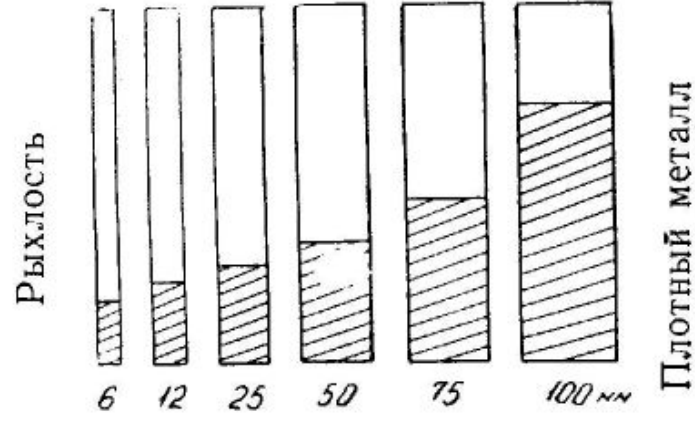


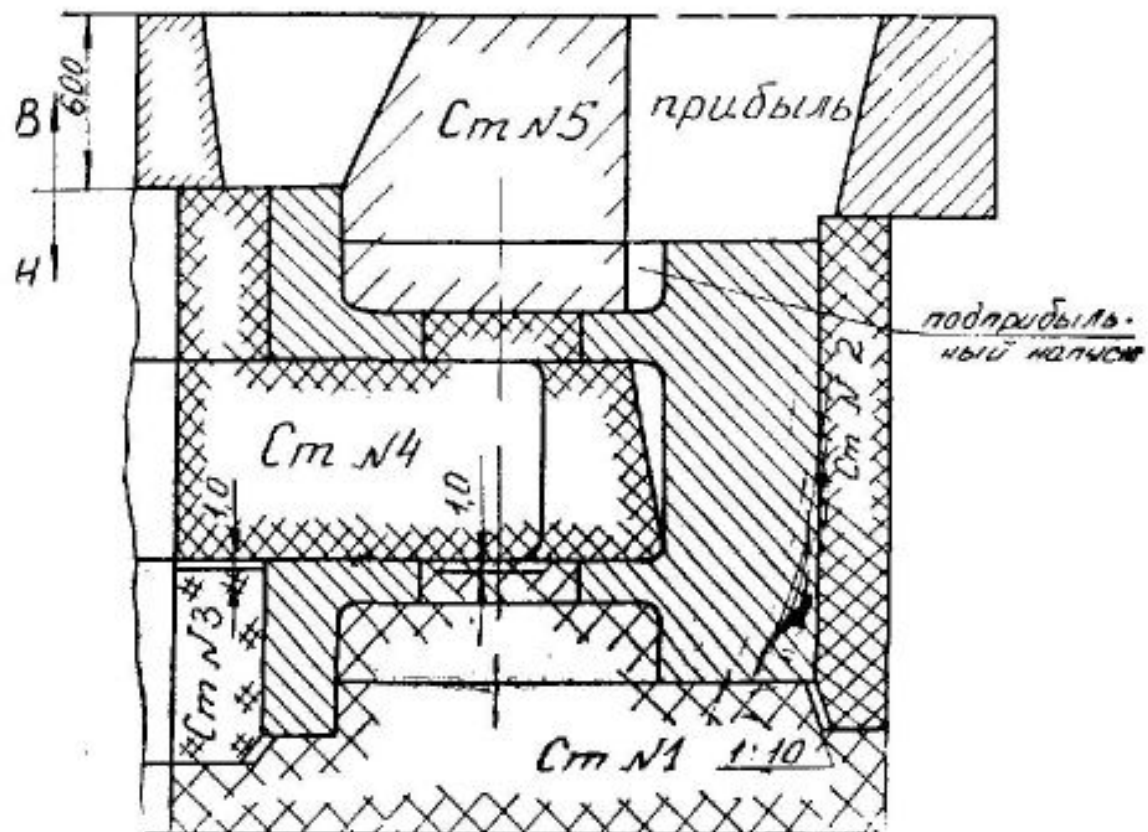


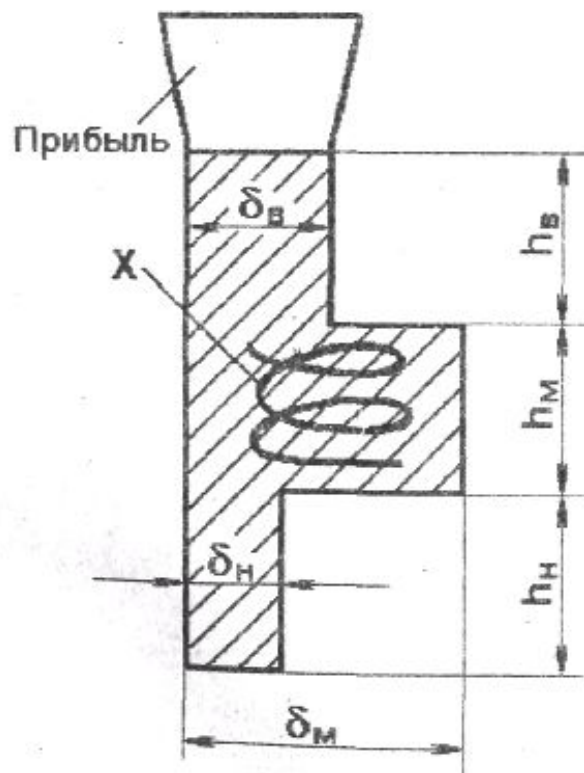
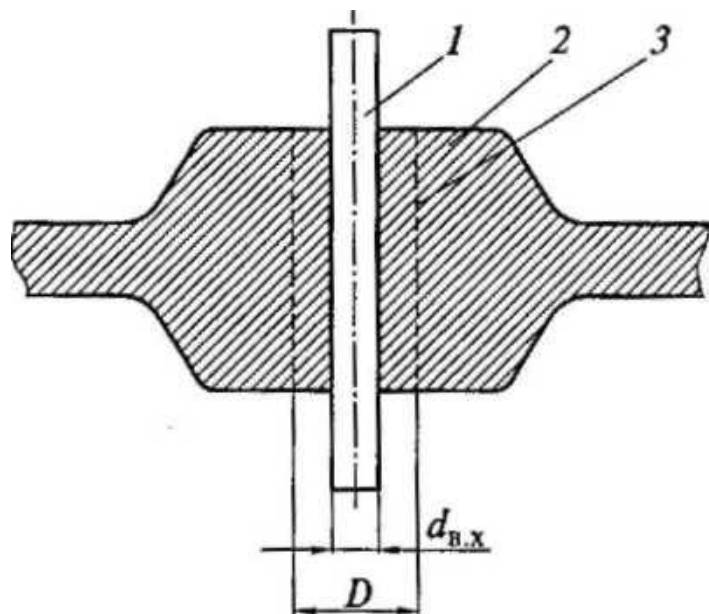
Высота слоя плотного  
металла в мм



Отношение слоя плотного  
металла к общей высоте  
образца, в %







$$Q_{\text{охл}} + C_x \cdot m_x (T_k - T_0) = C(M - m_x)(T_{\text{зал}} - T_l) + L(M - m_x)$$

$$\sqrt{t_M} = \sqrt{\pi} \cdot M \frac{C(T_{\text{зал}} - T_l) + L - [C_x(T_c - T_0) + C(T_{\text{зал}} - T_l) + L]}{2b_\phi(T_l - T_c) \cdot S}$$

$$Q_{\text{охл}} = 2b_\phi(T_l - T_0) \cdot S \cdot \sqrt{t_M / \pi},$$

$$\tau_H < \tau_M < \tau_B, \text{ ИЛИ } \sqrt{\tau_H} < \sqrt{\tau_M} < \sqrt{\tau_B},$$

$$A < \frac{m_x}{M} < B,$$

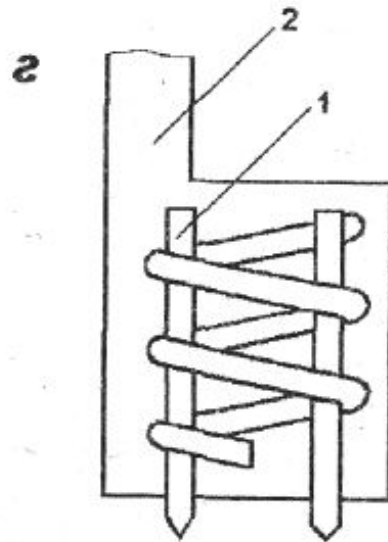
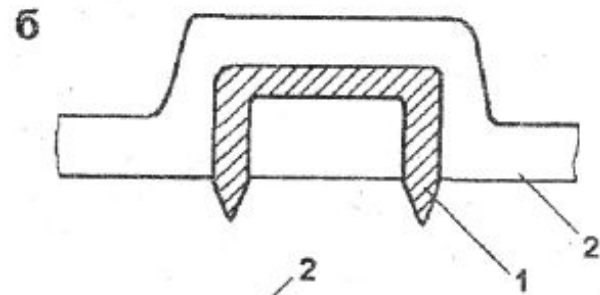
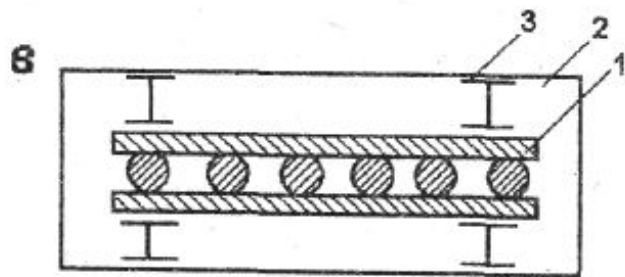
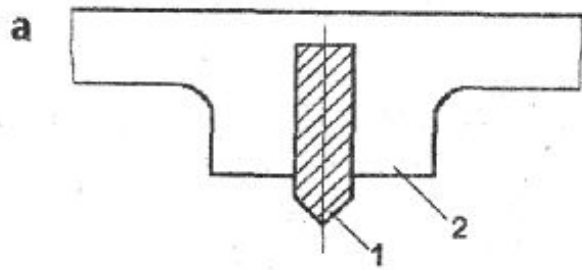
$$A = \frac{1 - R_{\sigma} / R_M}{\frac{C_x (T_c - T_l)}{C(T_{\text{зал}} - T_l) + L} + 1}, \quad B = \frac{1 - R_H / R_M}{\frac{C_x (T_c - T_0)}{C(T_{\text{зал}} - T_l) + L} + 1},$$

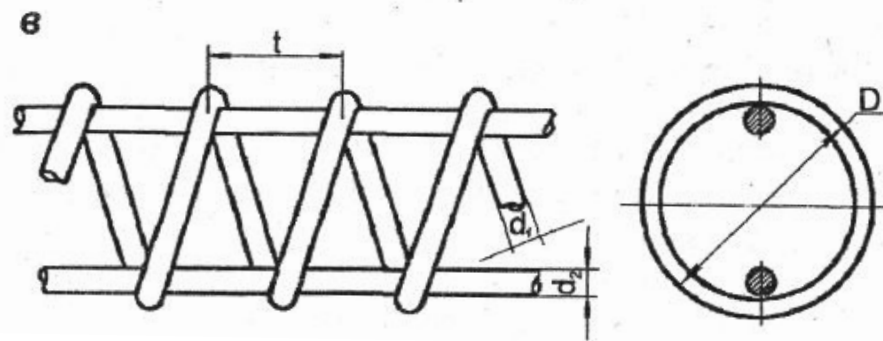
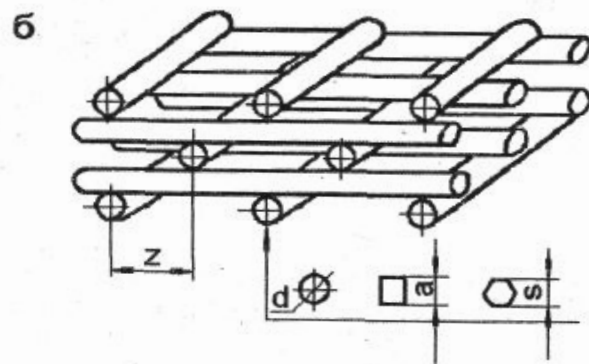
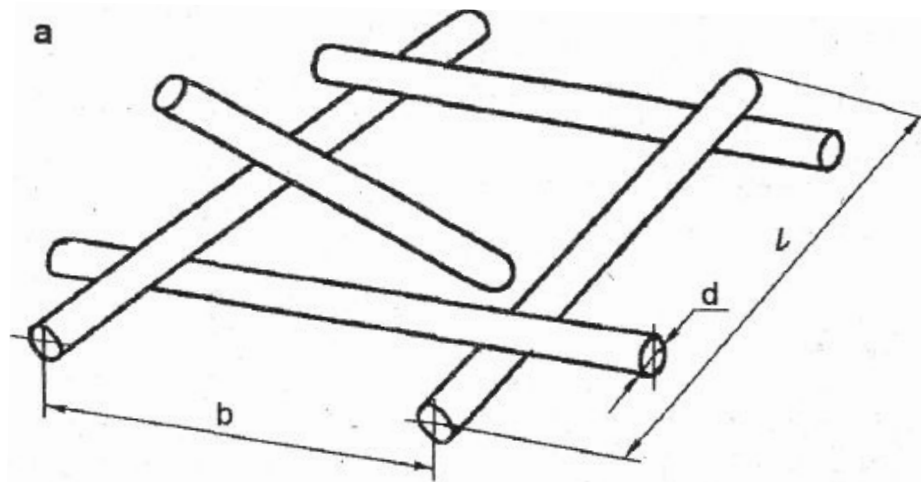
$$t_M = (R_M / K_3)^2; \quad t_{\sigma} = (R_{\sigma} / K_3)^2 \quad \text{и} \quad t_H = (R_H / K_3)^2,$$

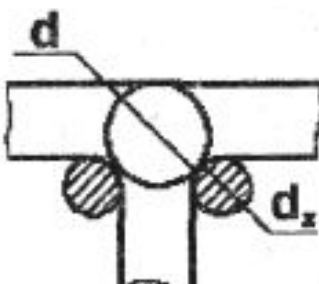
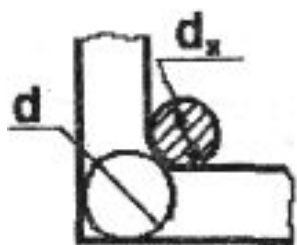
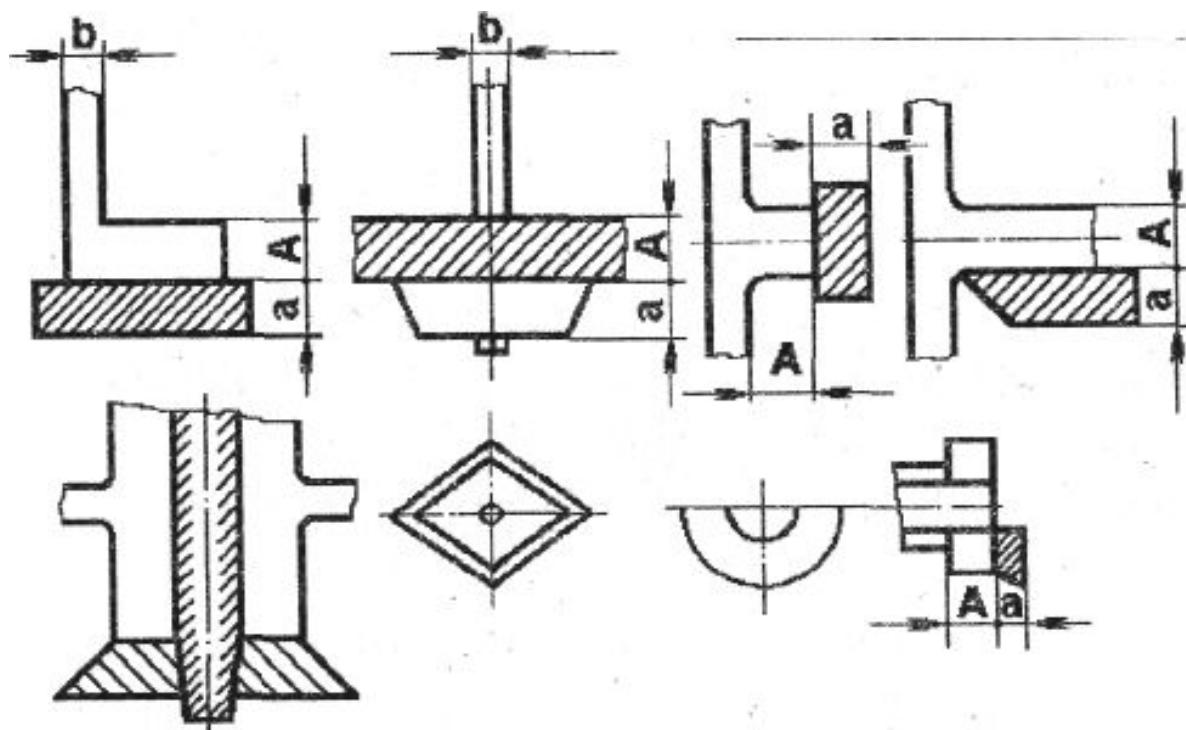
где  $K_3$  – константа затвердевания,

$$K_3 = 2 \frac{b_{\phi} (T_l - T_0)}{\sqrt{\pi} \cdot ((T_{\text{зал}} - T_l) \cdot C + L) \cdot \rho};$$

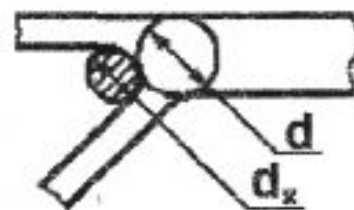








Круглые холодильники



Фасонные холодильники

