FOUNDRY

ONE STEPPED PATTERN

(SINGLE PIECE PATTERN)

EXPERIMENT No: **DATE:**

Aim: - To prepare a sand mould cavity using One Stepped Shaft (single piece pattern).

Tools required: -

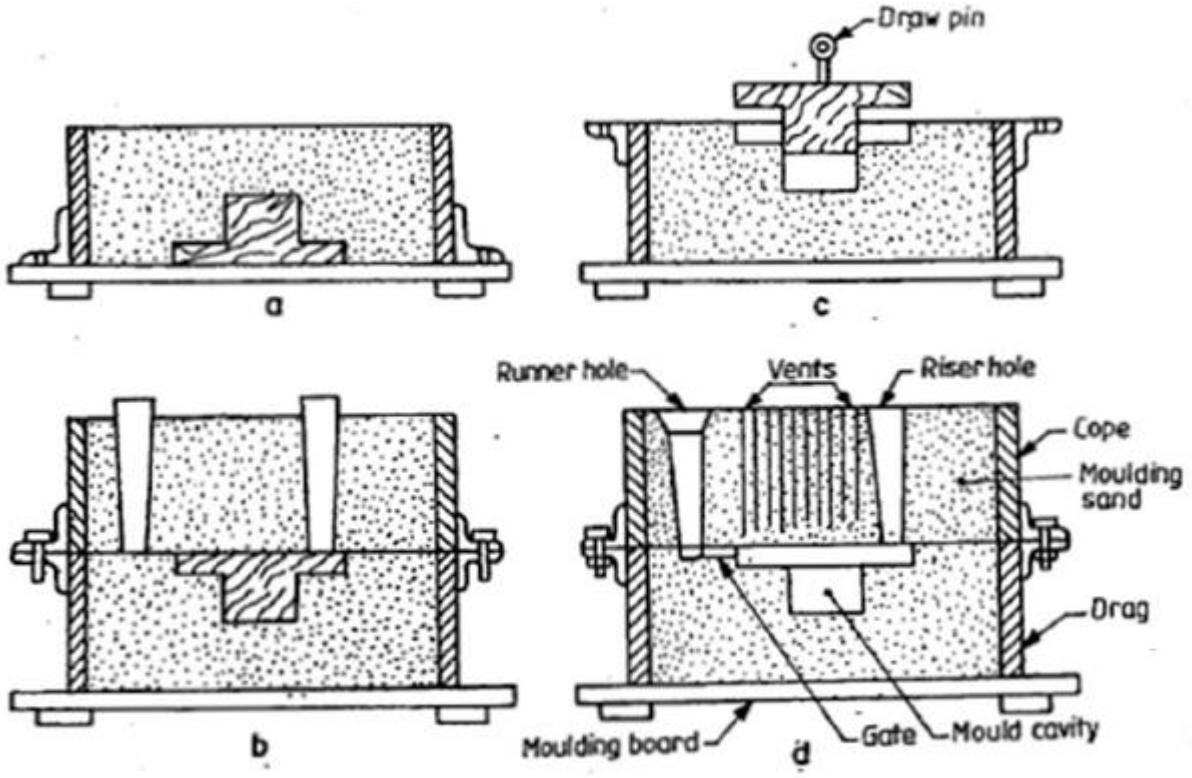
1. Molding board
2. Molding flask
3. Shovel
4. Riddle
5. Rammer
6. Strike-off bar or Strike Edge
7. Sprue pin
8. Riser pin
9. Trowel
10. Spike or Draw pin
11. Slick
12. Lifters
13. Gate cutter
14. Bellows
15. Vent rod

Material required: -

1. Molding sand
2. Parting sand
3. Dum-Bell

Sequence of operation: -

1. Sand preparation
2. Sandmixing
3. Pouring
4. Finishing



Mold for a solid flange

Procedure: -

1. Place the pattern on the molding board, with its flat side on the board.
2. Place the drag over the board, after giving a clay wash inside.
3. Sprinkle the pattern and molding board, with parting sand.
4. Allow loose sand, preferably through a riddle over the pattern, unit it is covered to a depth of 2 to 3 cm.
5. Pack the molding sand around the pattern and into the corners of the flask, with fingers.
6. Place some more sand in the flask and pack the pattern with a rammer, using first the peen end and then butt end.
7. Strike-off the excess sand from the top surface of the drag with the strike-off bar.
8. Turn the drag upside down.
9. Blow-off the loose sand particles with the bellows and smoothen the upper surface.
10. Place the cope on to the drag in position. Locate riser pin on the highest point of the pattern.
11. Place the sprue pin at about 5 to 6 cm from the pattern on the other side of the riser pin.
12. Sprinkle the upper surface with parting sand.
13. Repeat steps 3 to 7, approximately.
14. Make holes with the vent rod to about 1 cm from the pattern.
15. Remove the sprue and riser pins by carefully drawing them out. Funnel shaped hole is made at the top of the sprue hole, called the pouring cup.
16. Lift the cope and place it aside on its edge.
17. Insert the draw pin into the pattern. Wet the edges around the pattern. Loosen the pattern by rapping. Then draw the pattern straight up.
18. Adjust and repair the mold by adding bits of sand, if necessary.
19. Cut gate in the drag from the sprue to the mold. Blow off any loose sand particles in the mold.
20. Close the mold by replacing the cope and placing weights on it.

Precautions:-

1. Do not get the sand too wet. Water is an enemy of molten metals.
2. Provide adequate ventilation to remove smoke and fumes.
3. Never stand near or look over the mold during the pouring because of the molten metal might be too hot.
4. Do not shake out a casting too hastily, which may result in second and third degree burns.

Result: - A sand mold cavity is prepared by using one–Stepped Shaft.

FOUNDRY

DUM-BELL

(SPLIT PIECE PATTERN)

EXPERIMENT No: **DATE:**

Aim: - To prepare a sand mould cavity using Dum-Bell (split piece pattern).

Tools required: -

1. Molding board
2. Molding flask
3. Shovel
4. Riddle
5. Rammer
6. Strike-off bar or Strike Edge
7. Sprue pin
8. Riser pin
9. Trowel
10. Spike or Draw pin
11. Slick
12. Lifters
13. Gate cutter
14. Bellows
15. Vent rod

Material required: -

1. Molding sand
2. Parting sand
3. Dum-Bell

Sequence of operation: -

1. Sand preparation
2. Sand mixing
3. Pouring
4. Finishing

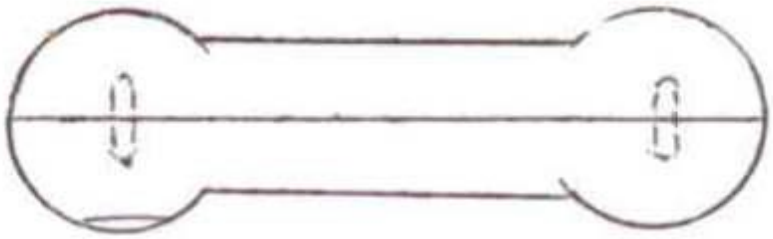


Fig: 1 Dum – Bell pattern

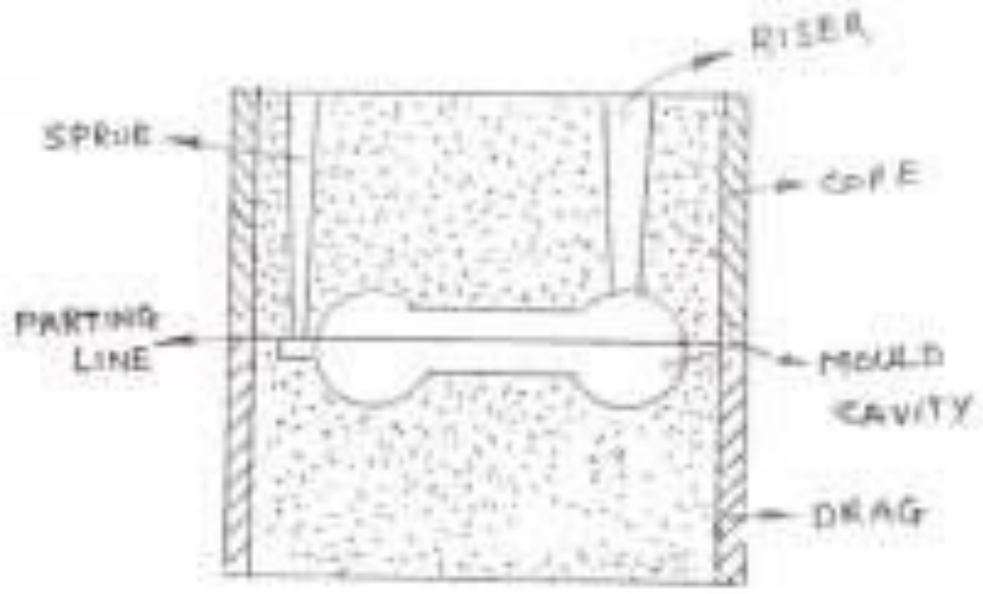


Fig: 2 mould of two piece pattern

Procedure: -

1. Place the pattern on the molding board, with its flat side on the board.
2. Place the drag over the board, after giving a clay wash inside.
3. Sprinkle the pattern and molding board, with parting sand.
4. Allow loose sand, preferably through a riddle over the pattern, unit it is covered to a depth of 2 to 3 cm.
5. Pack the molding sand around the pattern and into the corners of the flask, with fingers.
6. Place some more sand in the flask and pack the pattern with a rammer, using first the peen end and then butt end.
7. Strike-off the excess sand from the top surface of the drag with the strike-off bar.
8. Turn the drag upside down.
9. Blow-off the loose sand particles with the bellows and smoothen the upper surface.
10. Place the cope on to the drag in position. Locate riser pin on the highest point of the pattern.
11. Place the sprue pin at about 5 to 6 cm from the pattern on the other side of the riser pin.
12. Sprinkle the upper surface with parting sand.
13. Repeat steps 3 to 7, approximately.
14. Make holes with the vent rod to about 1 cm from the pattern.
15. Remove the sprue and riser pins by carefully drawing them out. Funnel shaped hole is made at the top of the sprue hole, called the pouring cup.
16. Lift the cope and place it aside on its edge.
17. Insert the draw pin into the pattern. Wet the edges around the pattern. Loosen the pattern by rapping. Then draw the pattern straight up.
18. Adjust and repair the mold by adding bits of sand, if necessary.
19. Cut gate in the drag from the sprue to the mold. Blow off any loose sand particles in the mold.
20. Close the mold by replacing the cope and placing weights on it.

Precautions:-

1. Do not get the sand too wet. Water is an enemy of molten metals.
2. Provide adequate ventilation to remove smoke and fumes.
3. Never stand near or look over the mold during the pouring because of the molten metal might be too hot.
4. Do not shake out a casting too hastily, which may result in second and third degree burns.

Result: - A sand mold cavity is prepared by using Dum-Bell.