

**FORM 2**  
THE PATENTS ACT, 1970  
(39 OF 1970)  
&  
THE PATENTS RULES, 2003  
COMPLETE SPECIFICATION  
(See section 10; rule 13)

1. 'MESH HANDLING APPARATUS AND RELATED METHODS'
  
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The following specification (particularly) describes the nature of the invention (and the manner in which it is to be performed):

WE CLAIM:

1. An apparatus for applying mesh from a roll to a face of a mine passage, comprising:
  - a spindle adapted for supporting the roll of mesh;
  - an arm supporting the spindle, said arm extending in a generally vertical direction and adapted for rotation about an axis aligned with a direction of elongation of the mine passage such that the spindle traverses a path for applying the mesh from the roll to the face; and
  - a mast for carrying a drill for forming a borehole in the face of the mine passage,

wherein the arm is mounted for rotation independent of the mast.
2. The apparatus of claim 1, further including a rotary actuator for rotating the arm about the path.
3. The apparatus of claim 1, further including a boom for supporting the arm.
4. The apparatus of claim 3, wherein the spindle provides an axis of rotation for the roll of mesh, and the axis of rotation of the roll of mesh is generally aligned with the axis of rotation of the arm.
5. The apparatus of claim 4, wherein the boom includes a longitudinal axis in general alignment with the axis of rotation of the arm and the axis of rotation of the roll about the spindle.
6. The apparatus of claim 1, wherein the boom supports the mast, the mast being connected to the boom in a manner that permits the arm to move independently of the mast.

7. The apparatus of claim 1, further including an automated temporary support extendable in the vertical direction for contacting a roof of the mine passage.

8. The apparatus of claim 1, wherein the spindle includes a first end connected to the support and a second, free end for receiving the roll of mesh.

9. An apparatus for providing support for a face of a mine passage by placing mesh from a roll along the face, comprising:

    a boom including a mast supporting a drill for drilling into the face of the mine passage; and

    a support for supporting the roll of mesh, said support mounted to the boom for rotation independent of the mast to allow the support to traverse a path within the mine passage for applying the mesh from the roll to the face.

10. The apparatus of claim 9, wherein the support comprises an extendable arm.

11. The apparatus of claim 9, wherein the support comprises a spindle for supporting the mesh roll, the spindle mounted in a cantilevered fashion and including a free end for receiving the roll of mesh.

12. The apparatus of claim 9, wherein the mast is extendable toward and away from the face.

13. The apparatus of claim 9, further including a first actuator for rotating the support, and a second rotary actuator for rotating the mast, the first and second actuators being supported by the boom.

14. An apparatus for providing support for a face of a mine passage including a longitudinal direction by placing mesh from a roll along the face and anchoring the mesh to the face, comprising:

- an arm supporting the roll of mesh;
- a mast for use in anchoring the mesh to the face; and
- means for rotating the arm relative to the mast about an axis aligned with the longitudinal direction while applying the mesh to the face.

15. The apparatus of claim 14, further including means for lengthening the arm while applying the mesh to the face.

16. A method of applying mesh carried by a rotatable arm for anchoring using a mast to a face of a mine passage having a longitudinal direction, a vertical direction, and a transverse direction, comprising:

- rotating the arm relative to the mast about an axis aligned with the longitudinal direction while applying the mesh to the face.

17. The method of claim 16, further including the step of increasing or decreasing a length of the arm in a radial direction during the rotating step.

18. The method of claim 16, wherein the mast is connected to a boom for supporting the arm, and the method further comprises:

- using the boom to position the arm at a location for dispensing mesh from the roll onto the face;

- during the rotating step, extending or retracting a first portion of the arm relative to a second portion of the arm to maintain the roll adjacent to the face; and

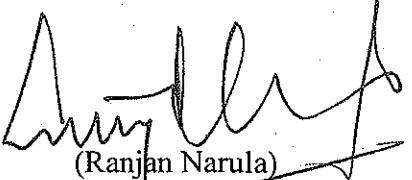
- anchoring the dispensed mesh to the face using the mast connected to the boom.

19. The method of claim 18, further including the step of actuating the mast independent of the arm.

20. The method of claim 19, wherein the rotating step comprises moving a point on the arm through an arcuate path.

21. The method of claim 19, wherein the rotating step comprises moving a point on the arm from a lower position to a higher position.

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