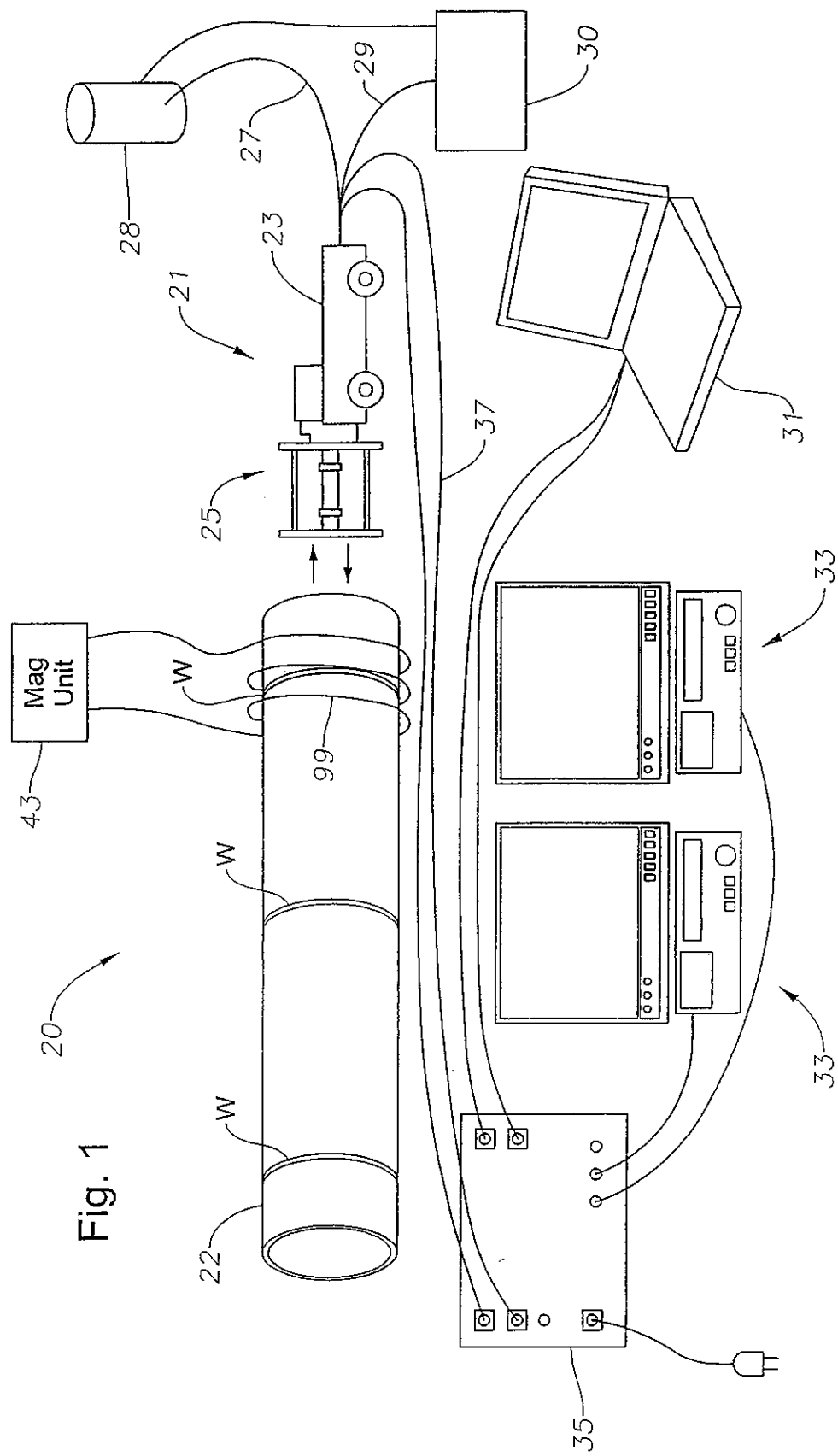
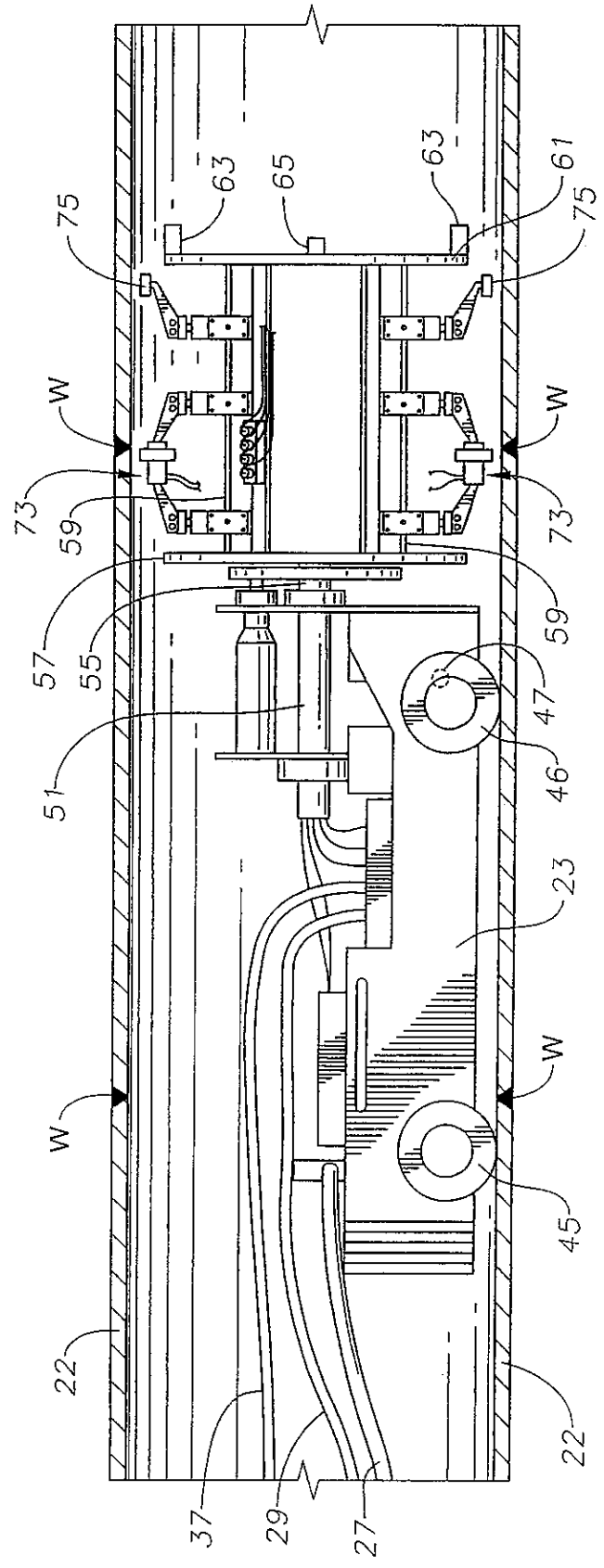




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Fig. 2



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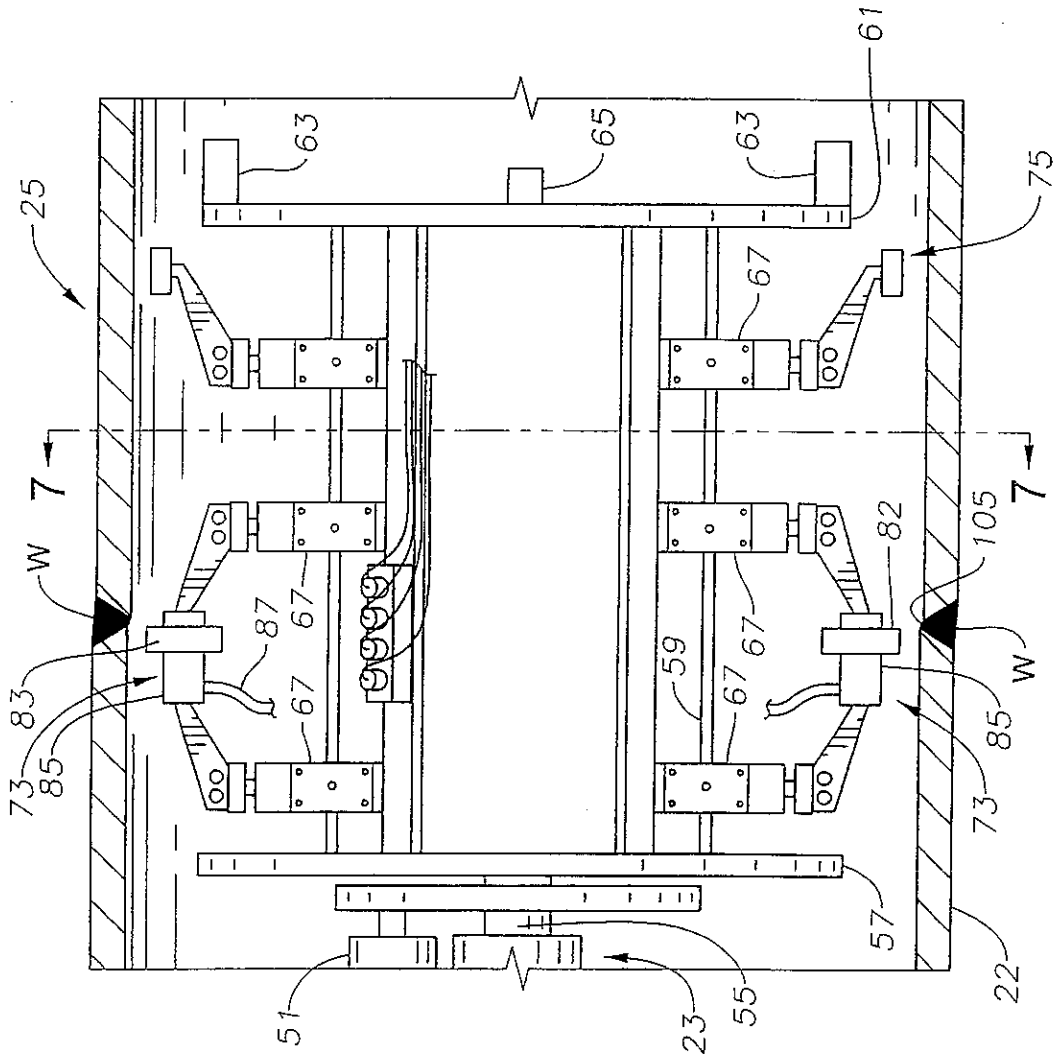


Fig. 3

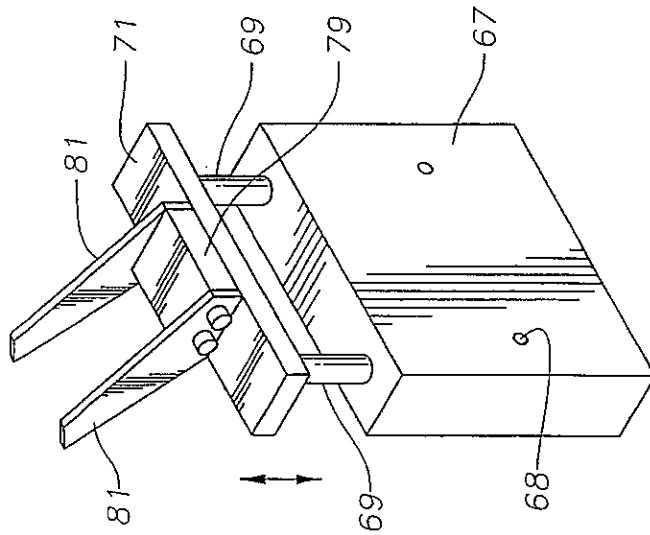


Fig. 4

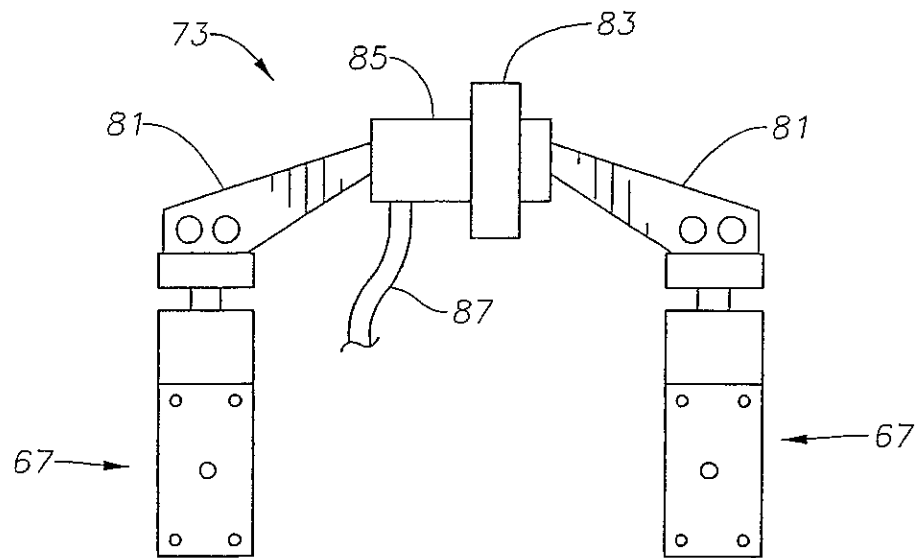


Fig. 5

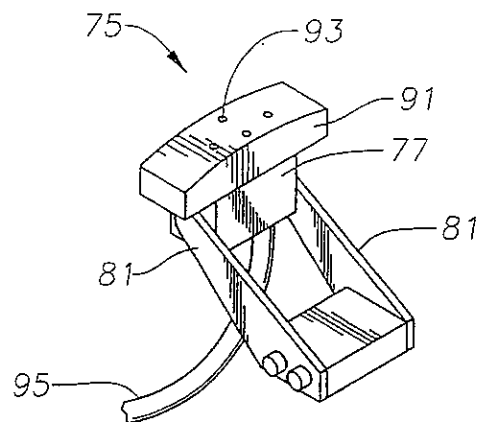


Fig. 6

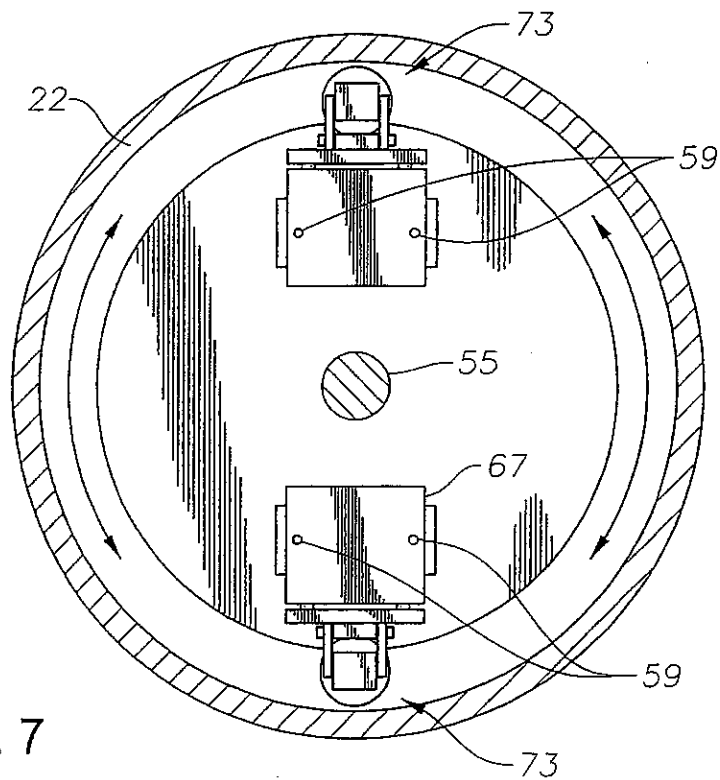


Fig. 7

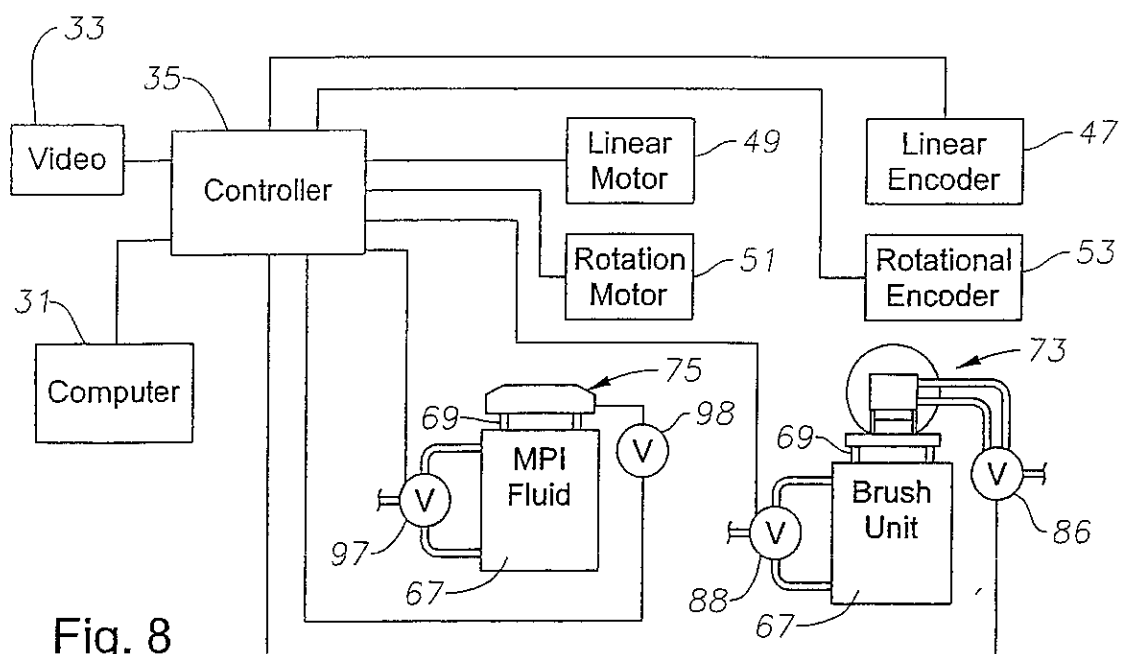


Fig. 8

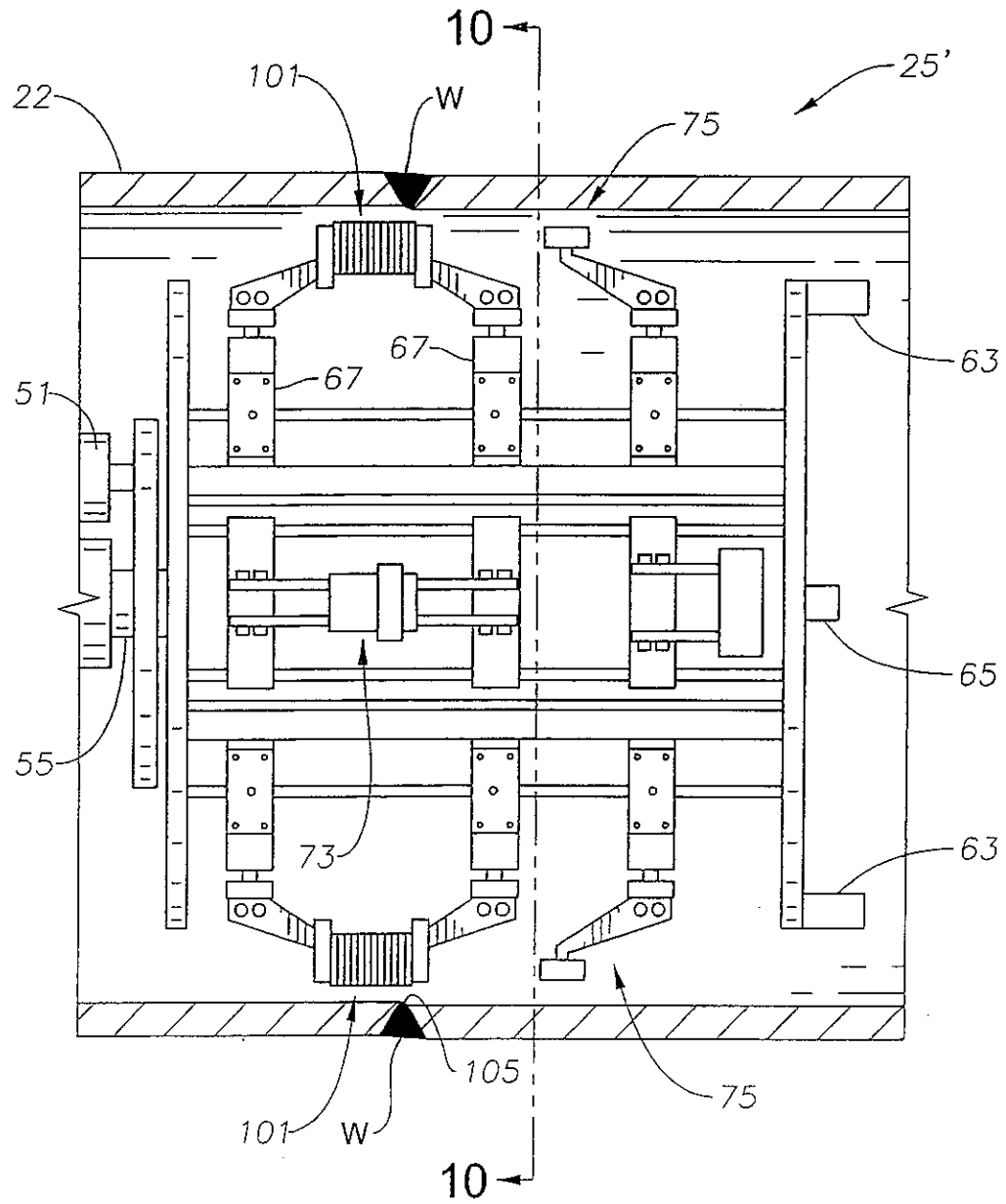


Fig. 9

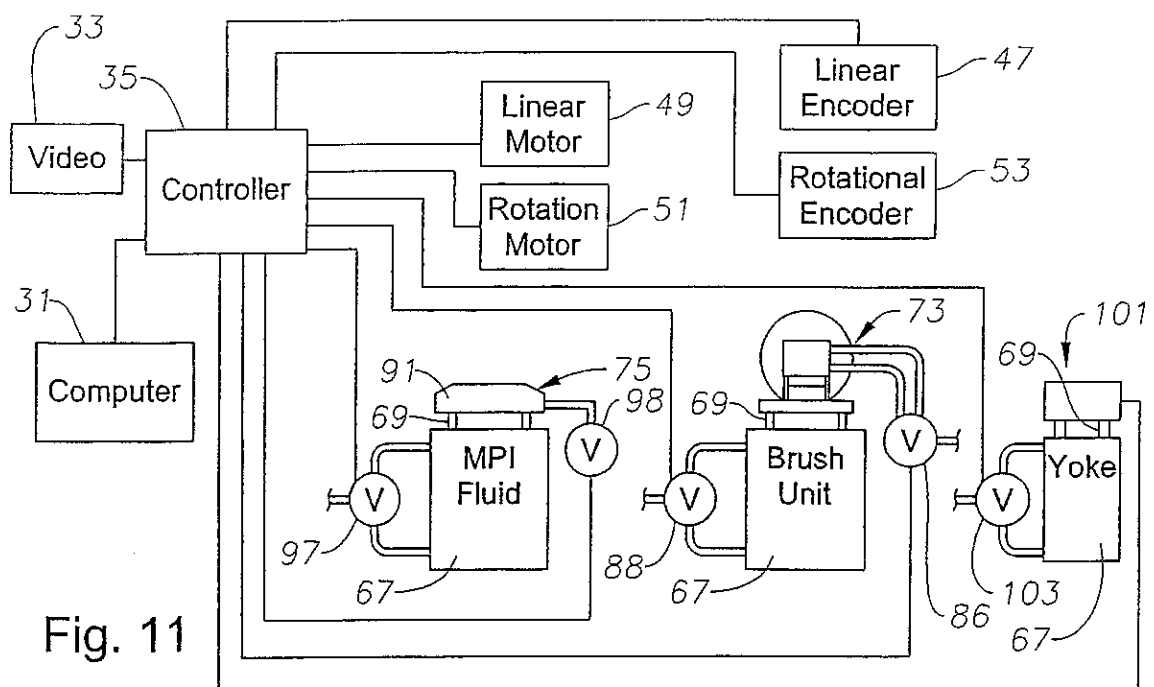
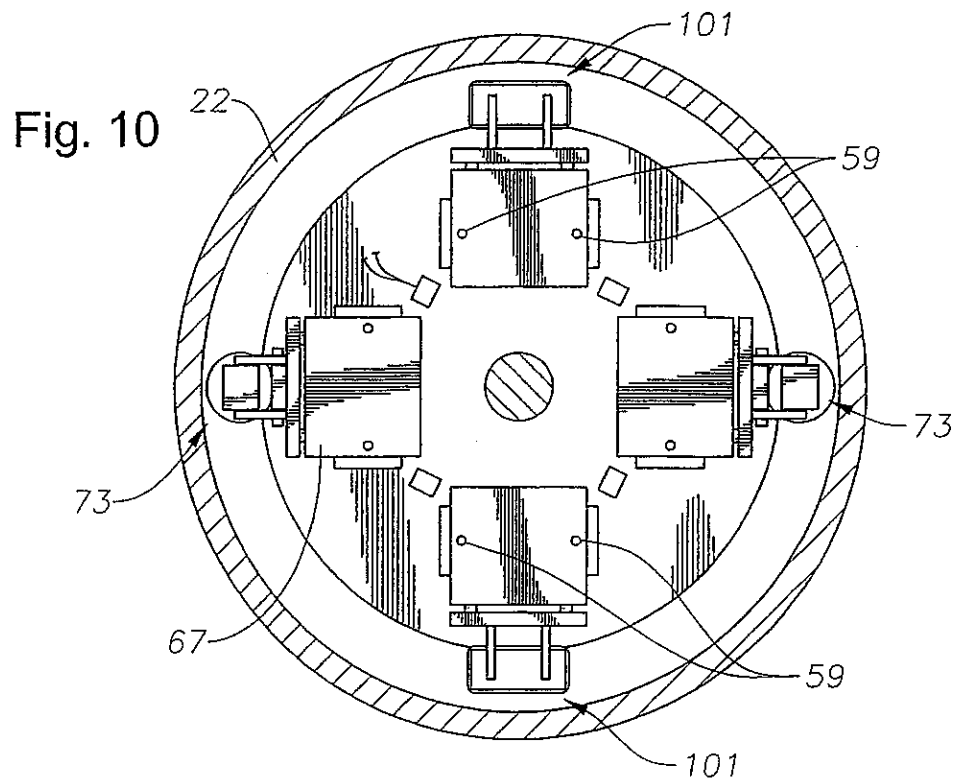


Fig. 12

Abbreviated External Magnetic Field Procedure

- Step 1: Prepare inspection apparatus
- Step 2: Load the inspection apparatus and set linear encoder
- Step 3: Advance inspection apparatus down inner diameter of the pipe and locate center of weld with onboard video device
- Step 4: Position wire wheel brushes over the weld
- Step 5: Actuate cylinder rods to position wire wheel brush in contact with the weld
- Step 6: Actuate pneumatic motors to rotate wire wheel brushes
- Step 7: Rotate head unit back and forth until weld area is clean
- Step 8: Position MPI medium dispensers adjacent the weld and apply MPI medium through an MPI supply system
- Step 9: Position video cameras adjacent the weld
- Step 10: Activate MPI magnetic unit to establish magnetic field and magnetize inspection area
- Step 11: Activate artificial light source
- Step 12: Rotate head unit to position video cameras along the inner diameter of the weld area
- Step 13: View, record, and store the video output of the reach of the video cameras
- Step 14: Calculate weld offset
- Step 15: Repeat steps 3 to 14 on next weld until pipe inspection complete
- Step 16: Actuate the linear motor to retrieve the inspection apparatus

Fig. 13

Abbreviated Internal Magnetic Field Procedure

- Step 1: Prepare inspection apparatus
- Step 2: Load the inspection apparatus and set linear encoder
- Step 3: Advance inspection apparatus down inner diameter of the pipe and locate center of weld with onboard video device
- Step 4: Position wire wheel brushes over the weld
- Step 5: Actuate cylinder rods to position wire wheel brush in contact with the weld
- Step 6: Actuate pneumatic motors to rotate wire wheel brushes
- Step 7: Rotate head unit back and forth until weld area is clean
- Step 8: Position magnetic yoke adjacent the weld
- Step 9: Actuate cylinder rods to position magnetic yoke radially and activate
- Step 10: Position MPI medium dispensers as necessary and apply MPI medium through an MPI supply system
- Step 11: Activate artificial light source, as necessary
- Step 12: View, record, and store the video output of the each of the video cameras
- Step 13: Rotate head unit and repeat steps 8 to 11 until weld inspection complete
- Step 14: Repeat steps 3 to 12 on next weld until pipe inspection complete
- Step 15: Actuate the linear motor to retrieve the inspection apparatus