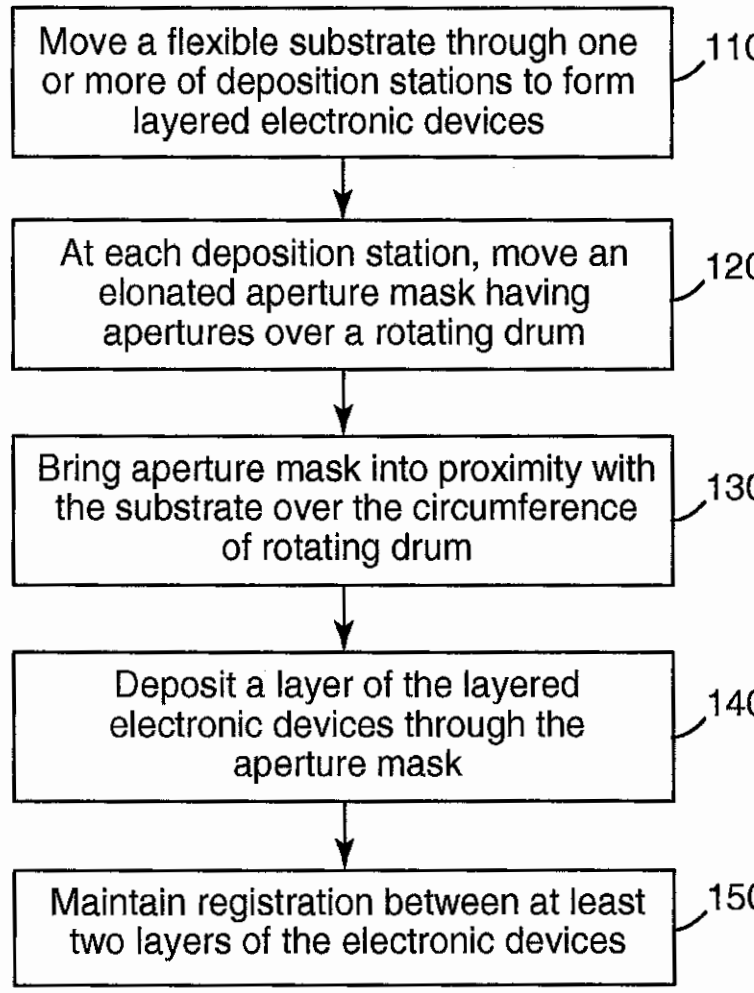

Move a flexible substrate through one or more of deposition stations to form layered electronic devices
110
At each deposition station, move an elonated aperture mask having apertures over a rotating drum
120
Bring aperture mask into proximity with the substrate over the circumference of rotating drum
130
Deposit a layer of the layered electronic devices through the aperture mask
140
Maintain registration between at least two layers of the electronic devices
150

Figure 1

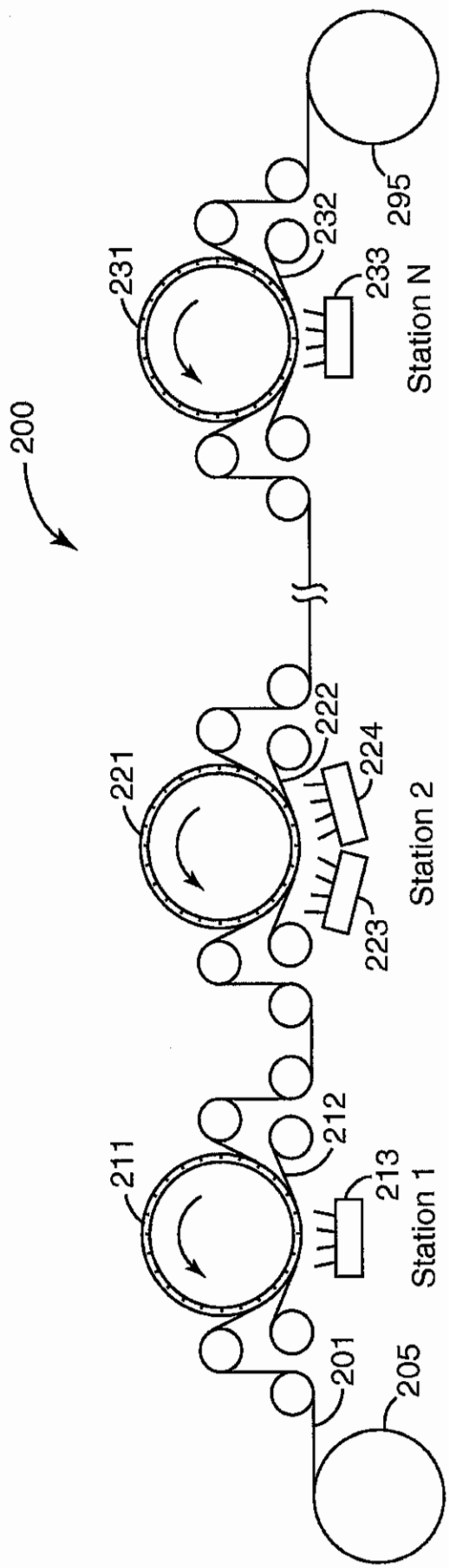

200
201
205
211
212
213
Station 1
221
222
223
224
Station 2
231
232
233
Station N
295

Figure 2

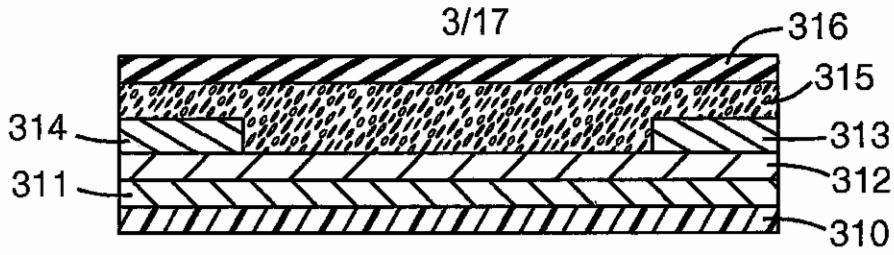


Figure 3A

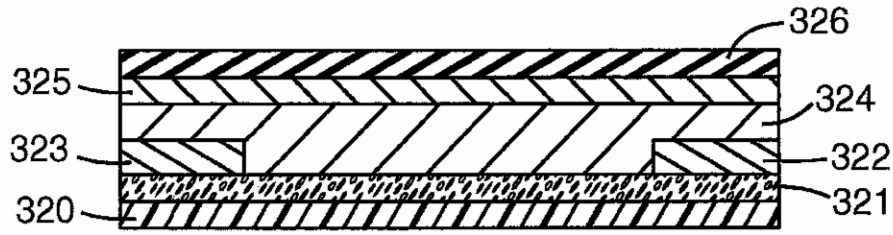


Figure 3B

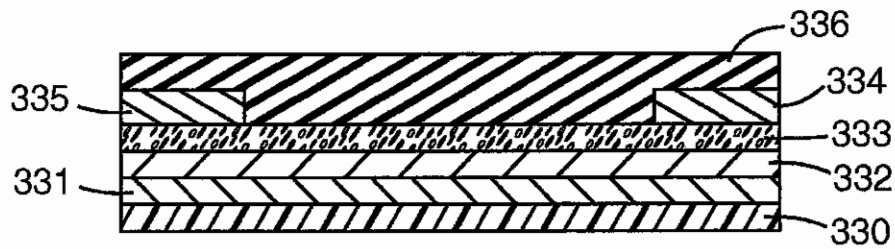


Figure 3C

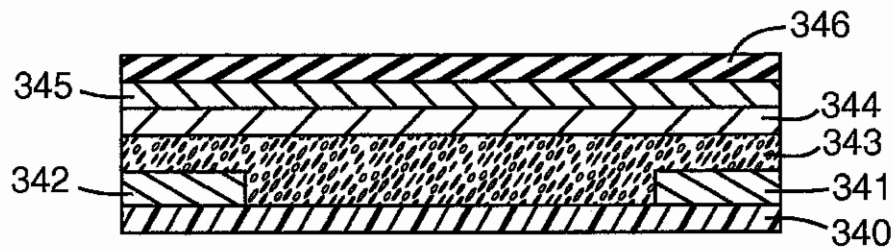


Figure 3D

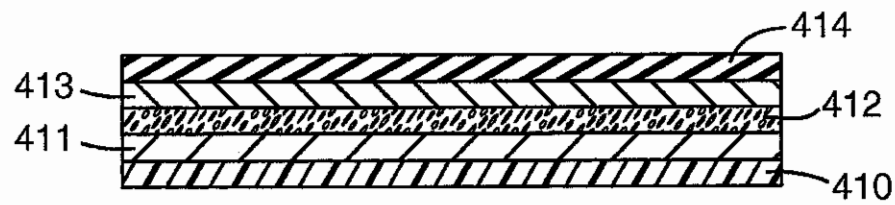


Figure 4

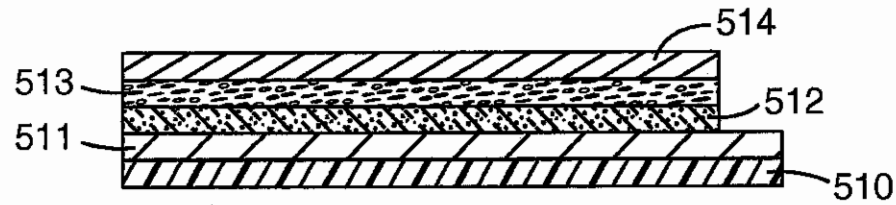


Figure 5

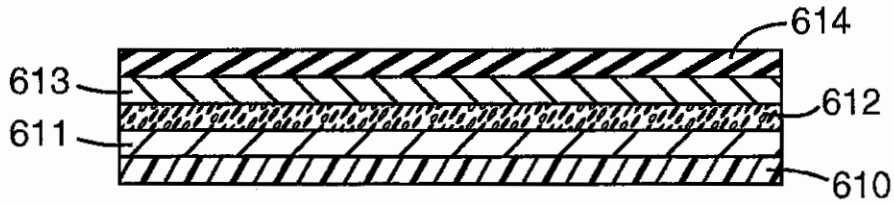


Figure 6A

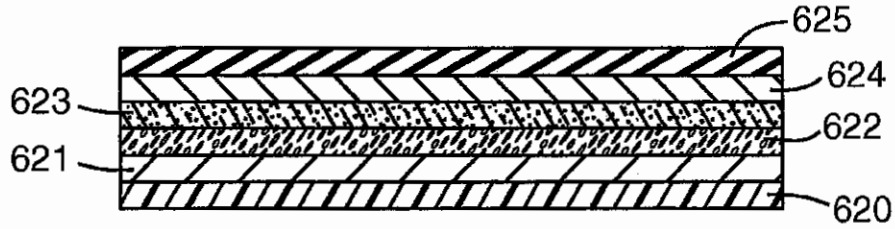


Figure 6B

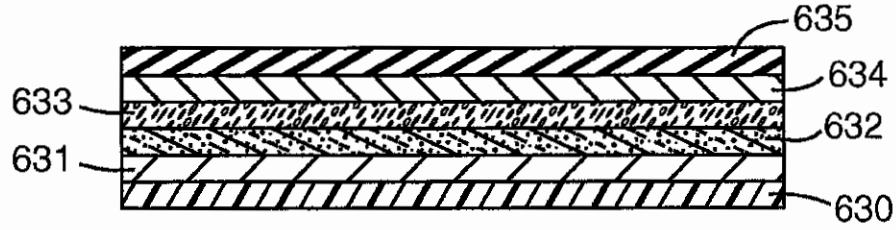


Figure 6C

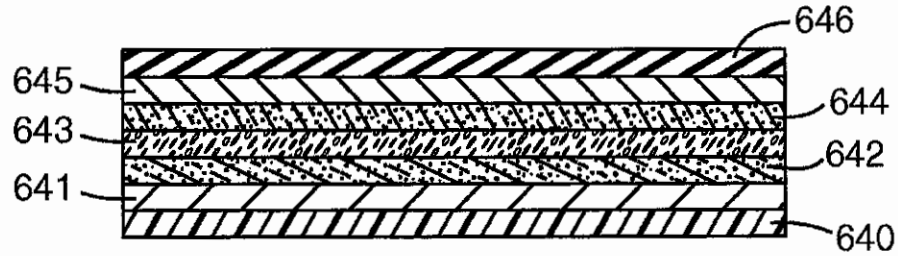


Figure 6D

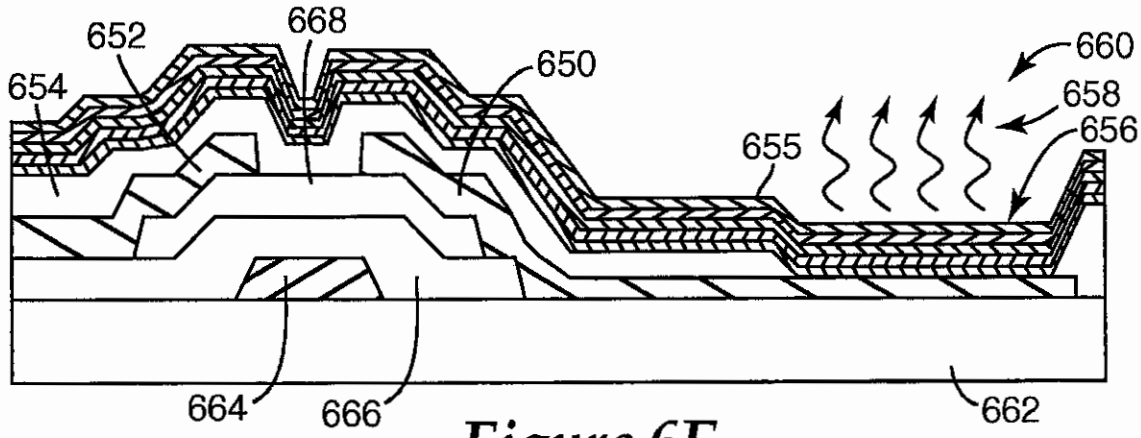


Figure 6E

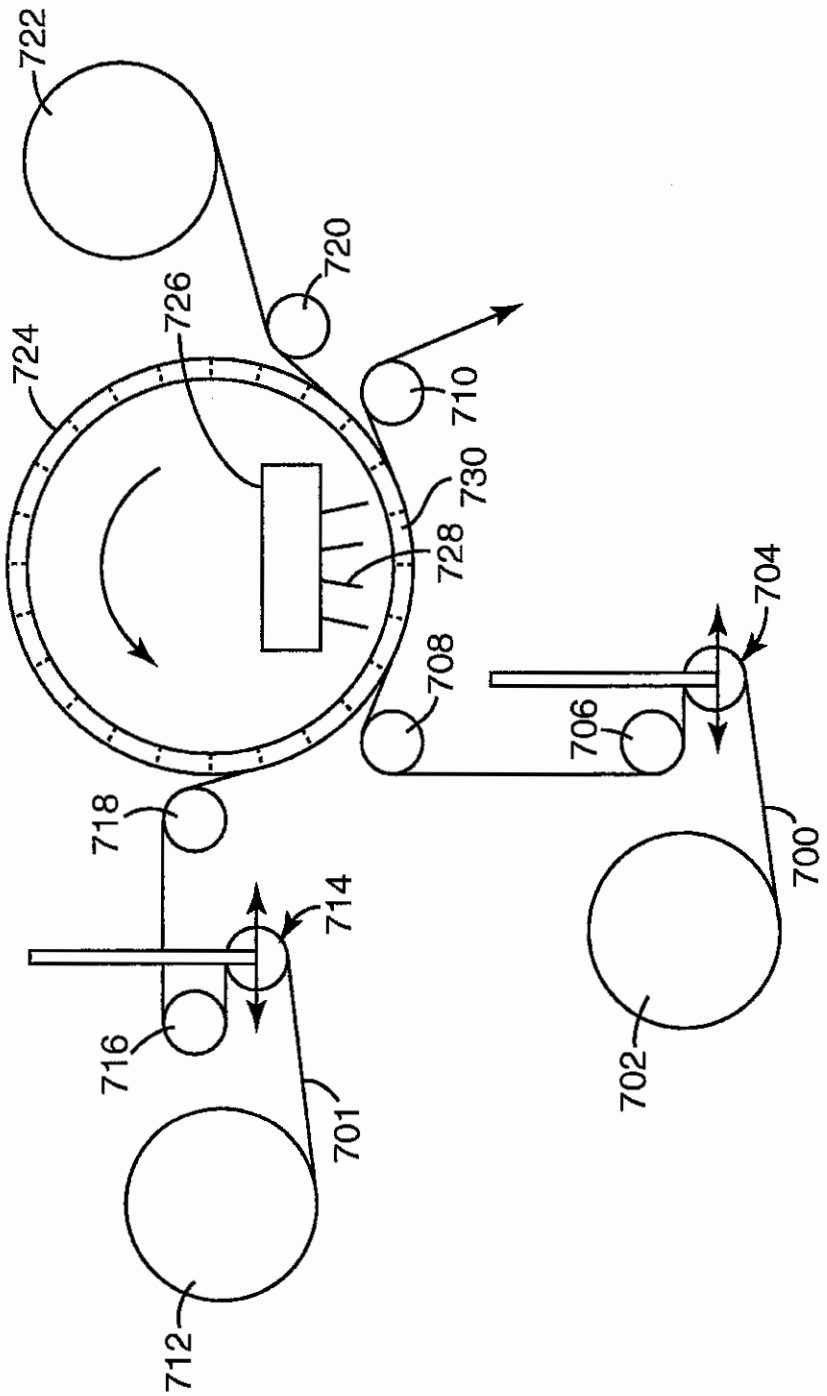

722
720
726
724
710
730
728
704
708
706
718
714
700
716
701
702
712

Figure 7

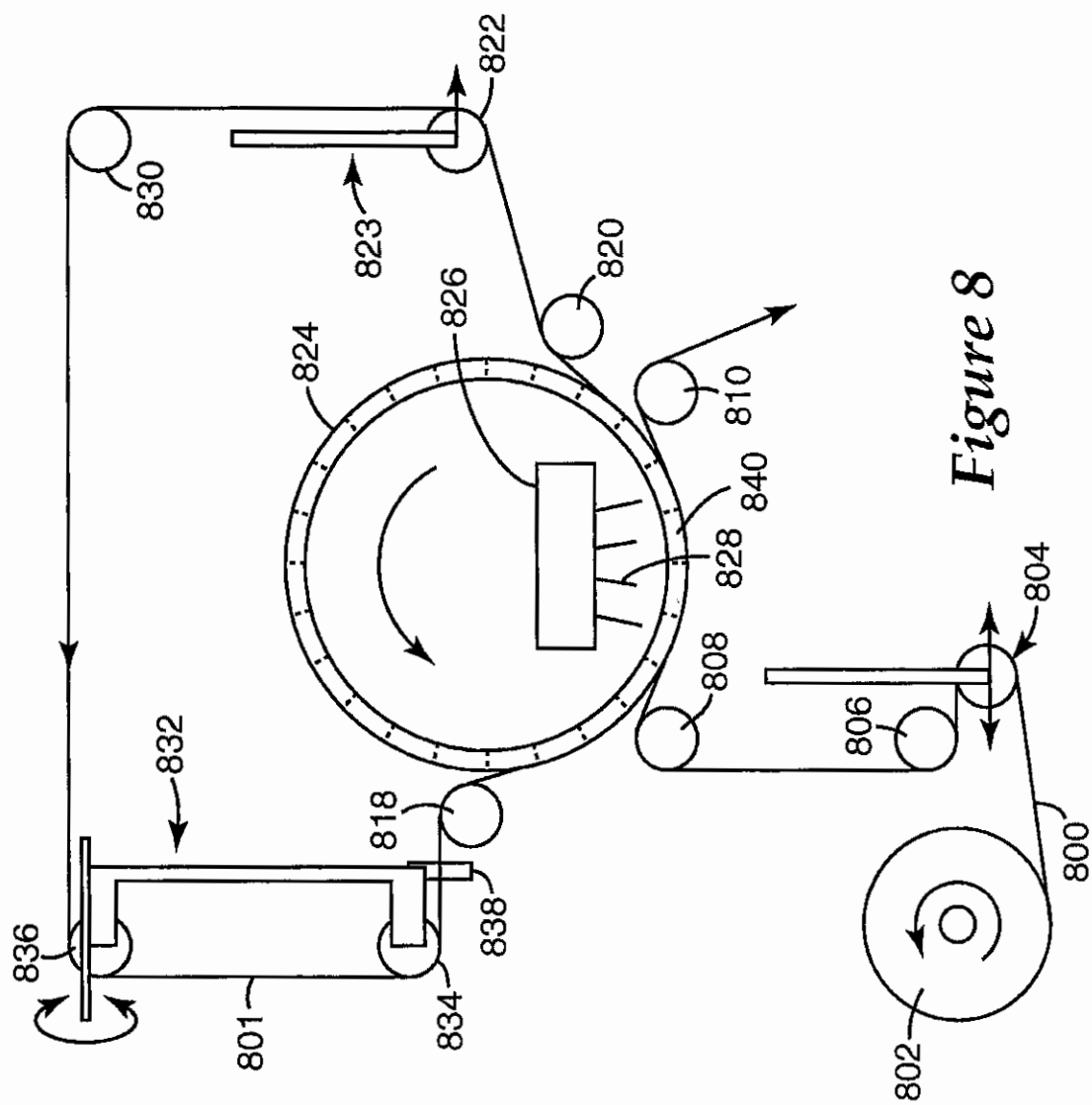

822
830
823
820
826
824
810
840
828
804
808
806
832
818
800
836
838
801
834
802

Figure 8

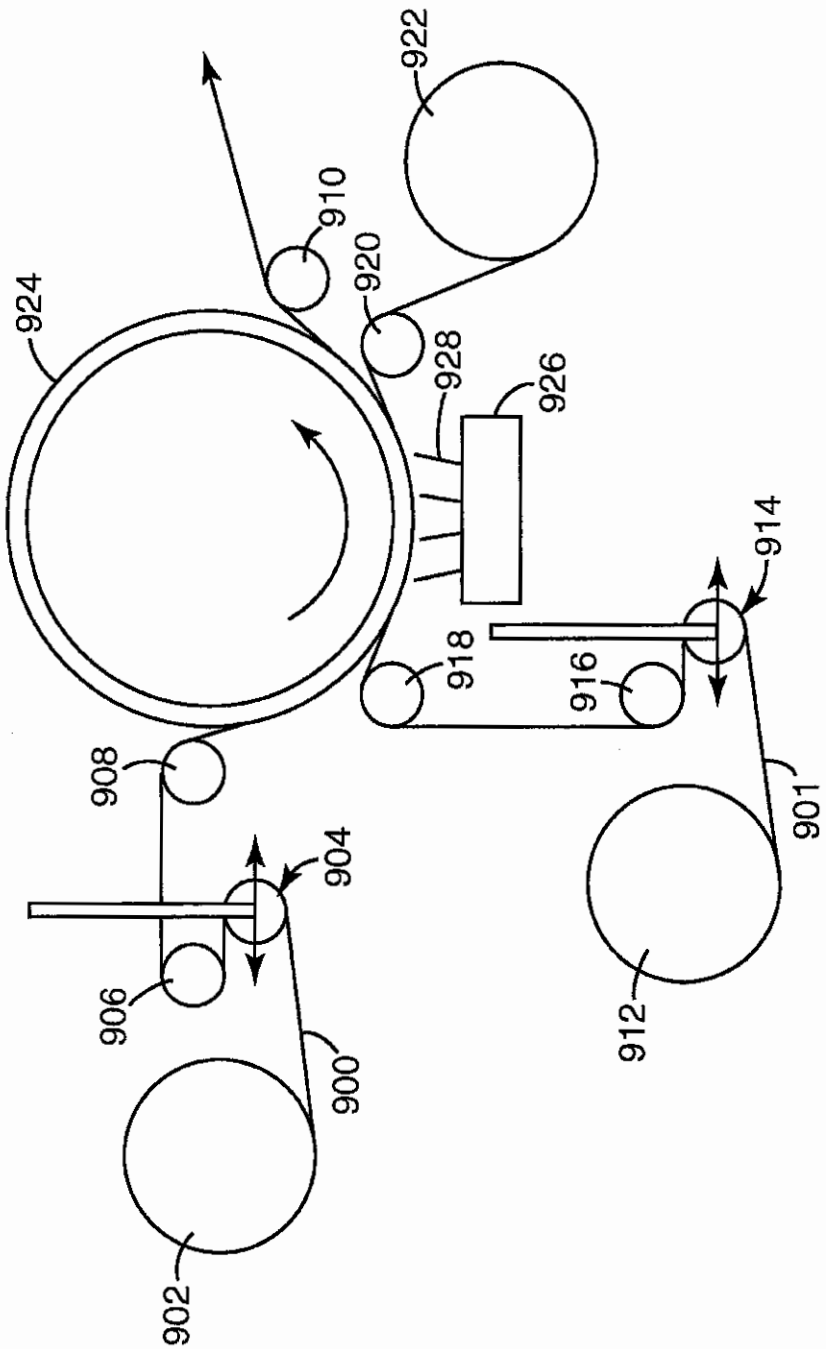


Figure 9

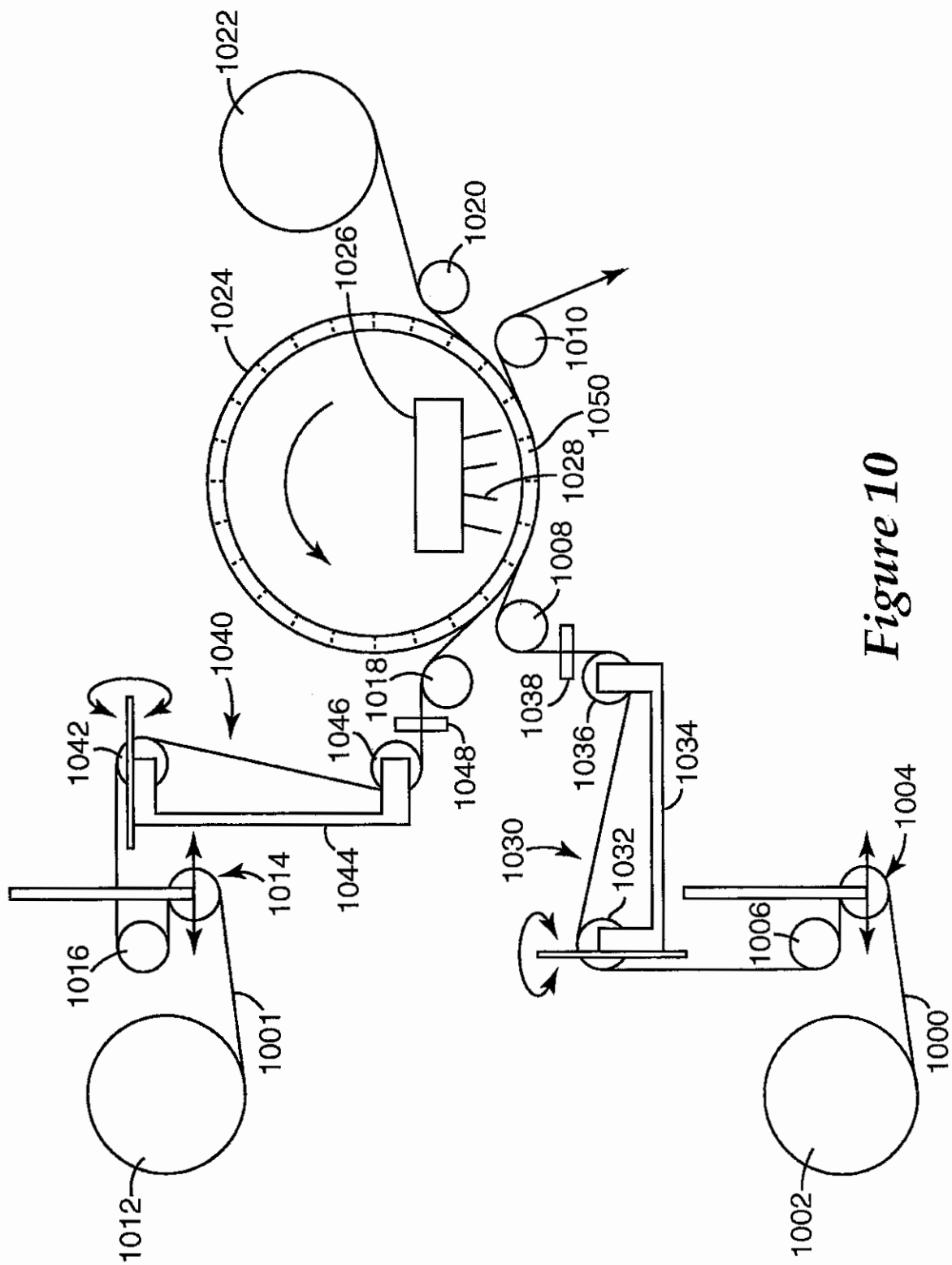

1022
1020
1026
1024
1010
1050
1028
1008
1040
1018
1038
1042
1046
1048
1036
1034
1030
1032
1004
1014
1044
1006
1016
1001
1000
1012
1002

Figure 10

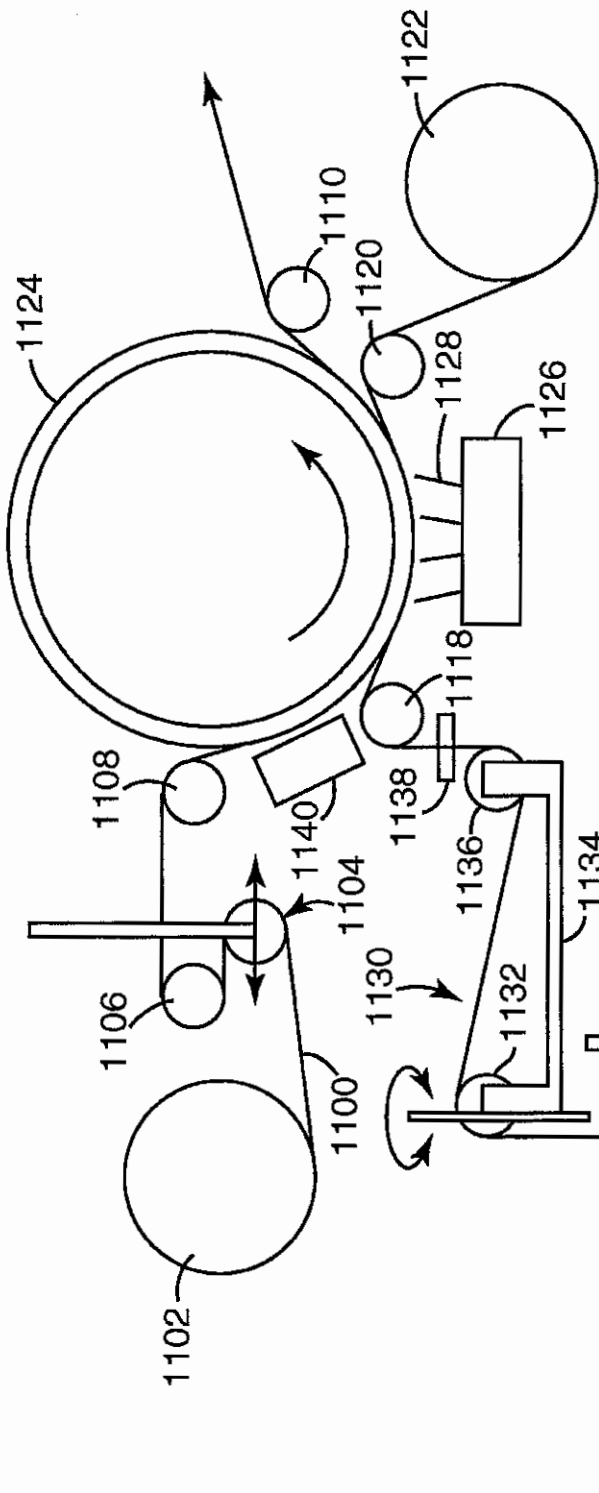

1122
1110
1120
1124
1128
1126
1118
1108
1138
1140
1136
1134
1104
1130
1132
1114
1106
1116
1100
1101
1102
1112

Figure 11

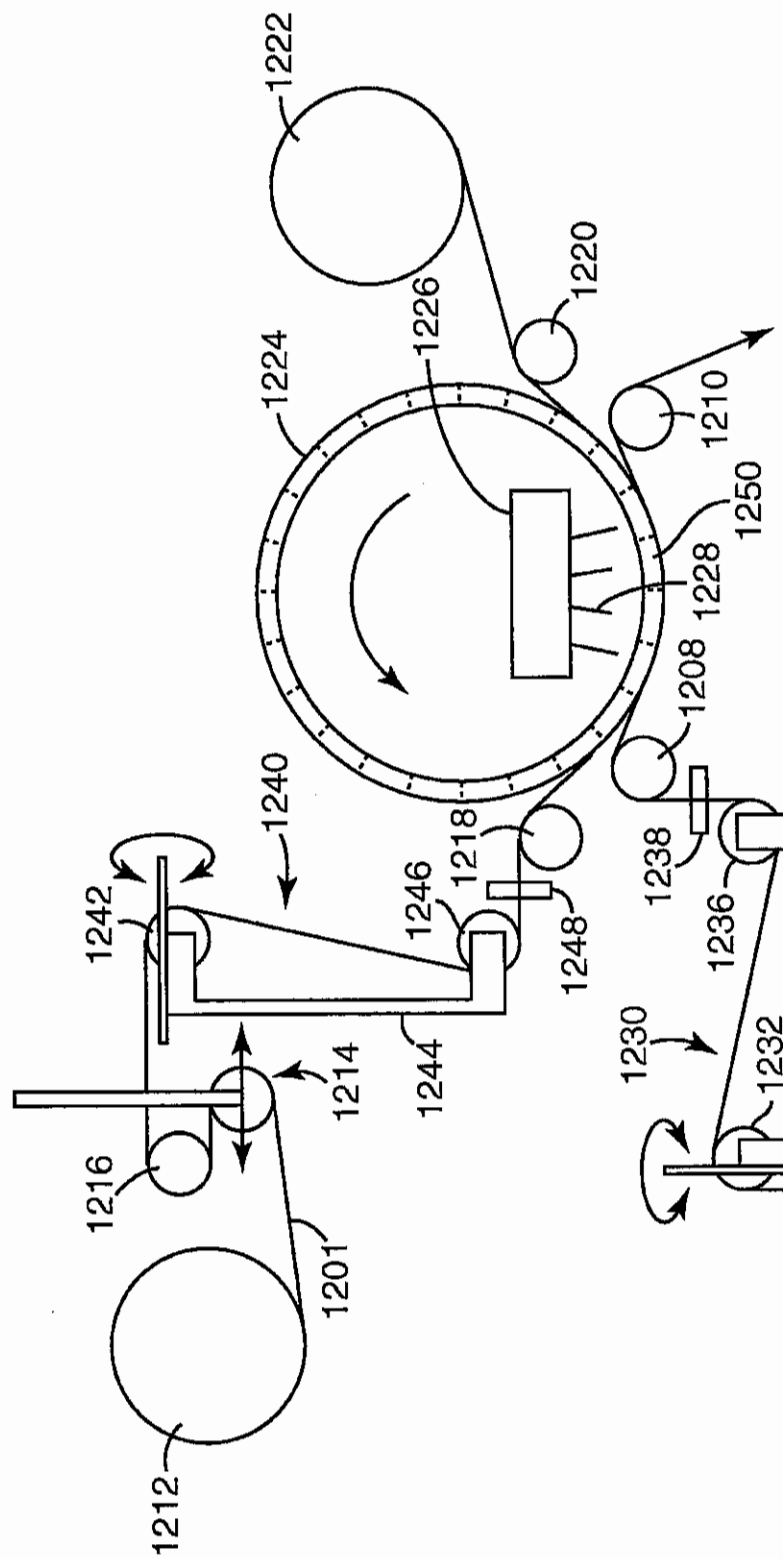

1222
1220
1226
1224
1210
1250
1228
1208
1240
1218
1238
1246
1242
1248
1236
1234
1230
1214
1244
1232
1200
1216
1202
1201
1212

Figure 12

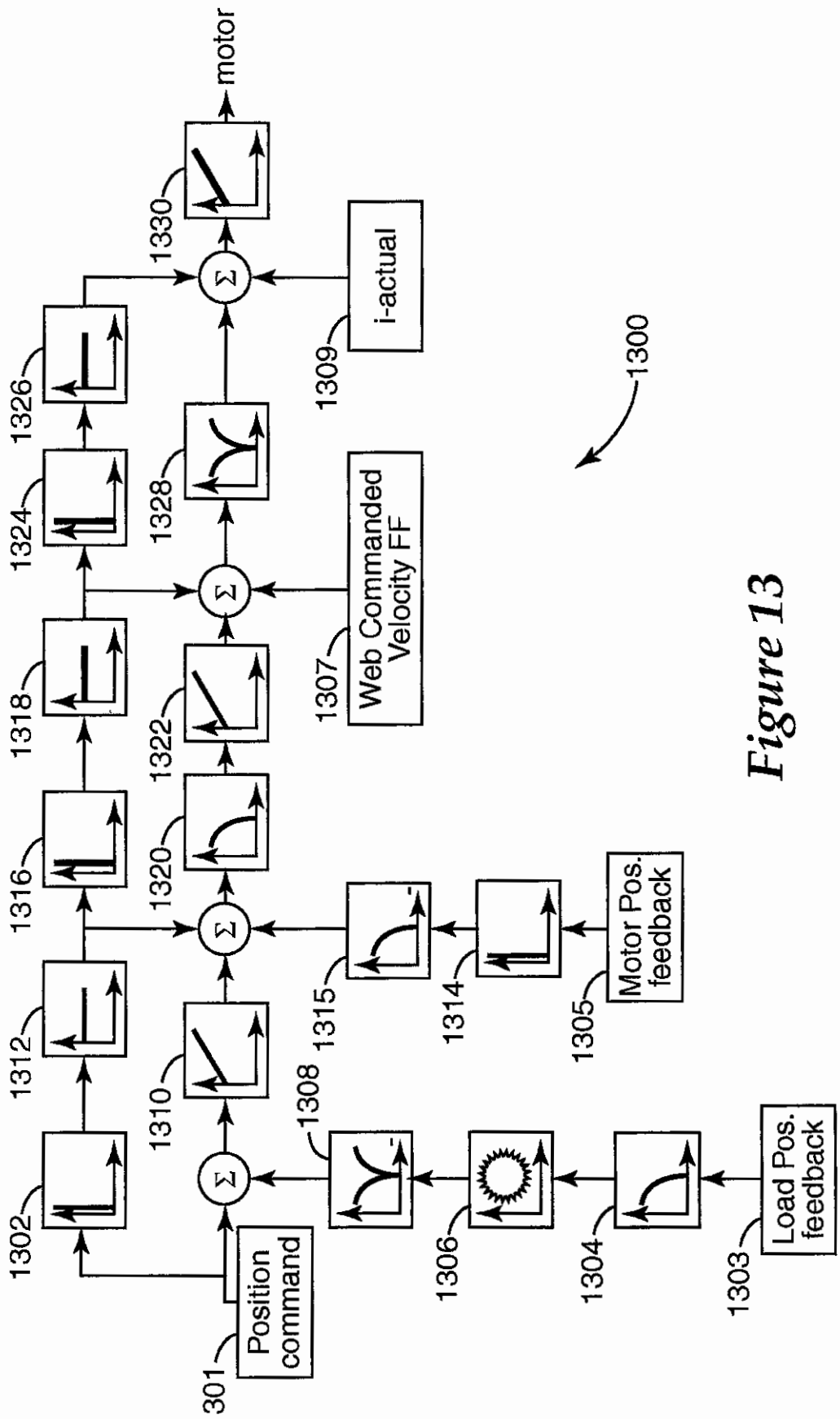

1300
1301
Position command
1302
1303
Load Pos. feedback
1304
1305
Motor Pos. feedback
1306
1307
Web Commanded Velocity FF
1308
1309
i-actual
1310
1312
1314
1315
1316
1318
1320
1322
1324
1326
1328
1330
motor
Σ

Figure 13

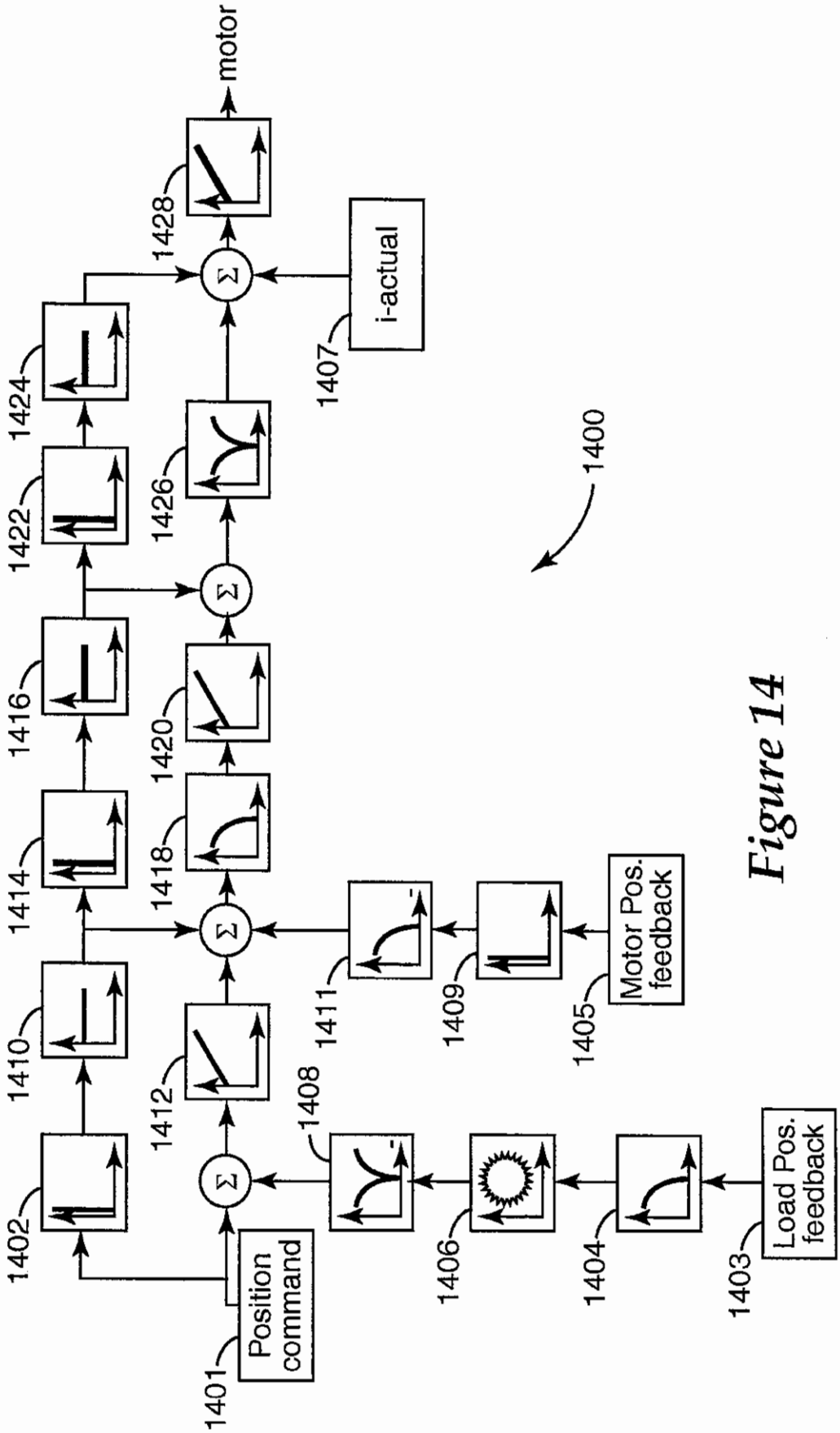

1400
1401
Position command
1402
1403
Load Pos. feedback
1404
1405
Motor Pos. feedback
1406
1407
i-actual
1408
1409
1410
1411
1412
1414
1416
1418
1420
1422
1424
1426
1428
motor
Σ

Figure 14

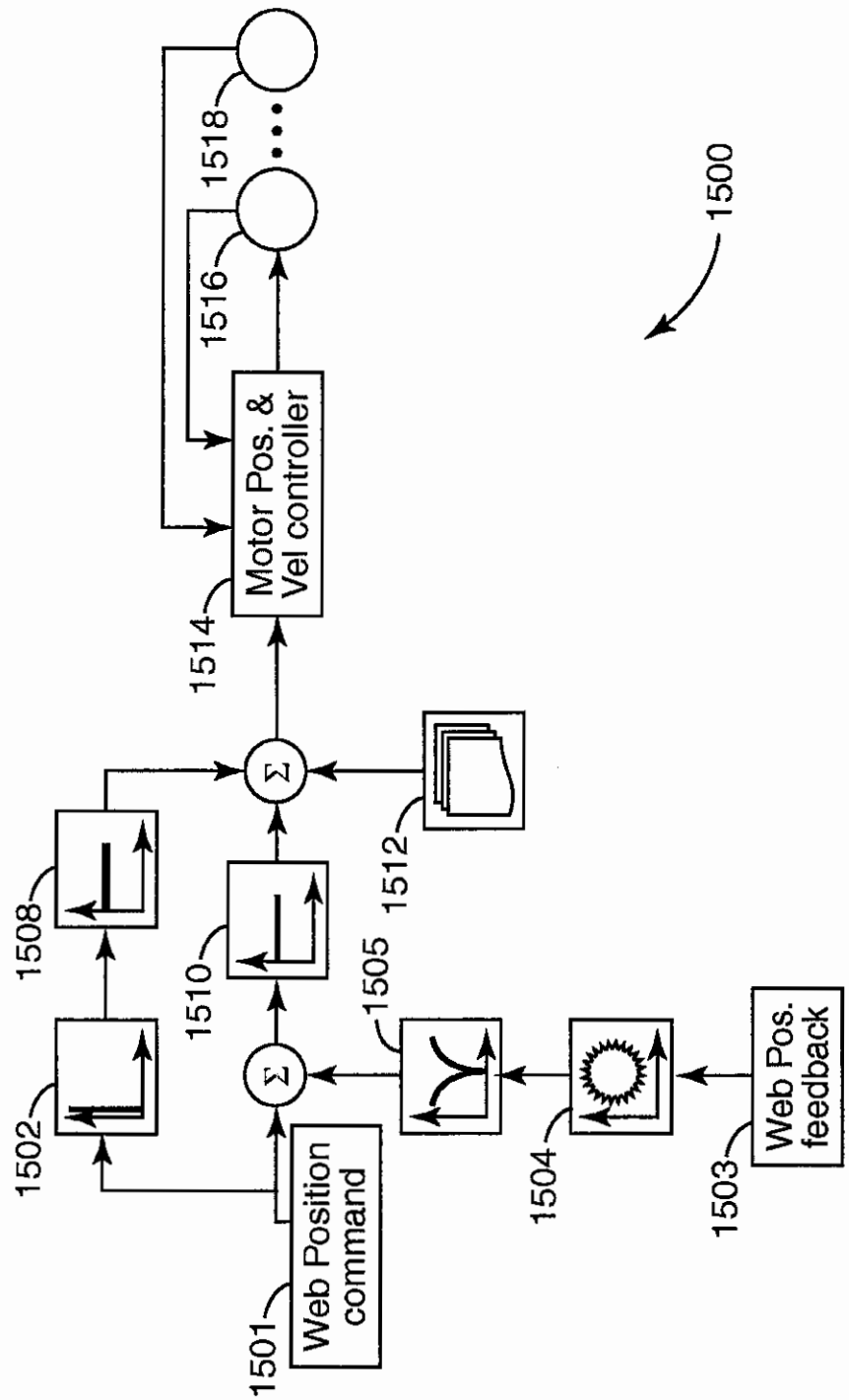

1500
1501
Web Position command
1502
1503
Web Pos. feedback
1504
1505
1508
1510
1512
1514
Motor Pos. & Vel controller
1516
1518
Σ
Σ

Figure 15

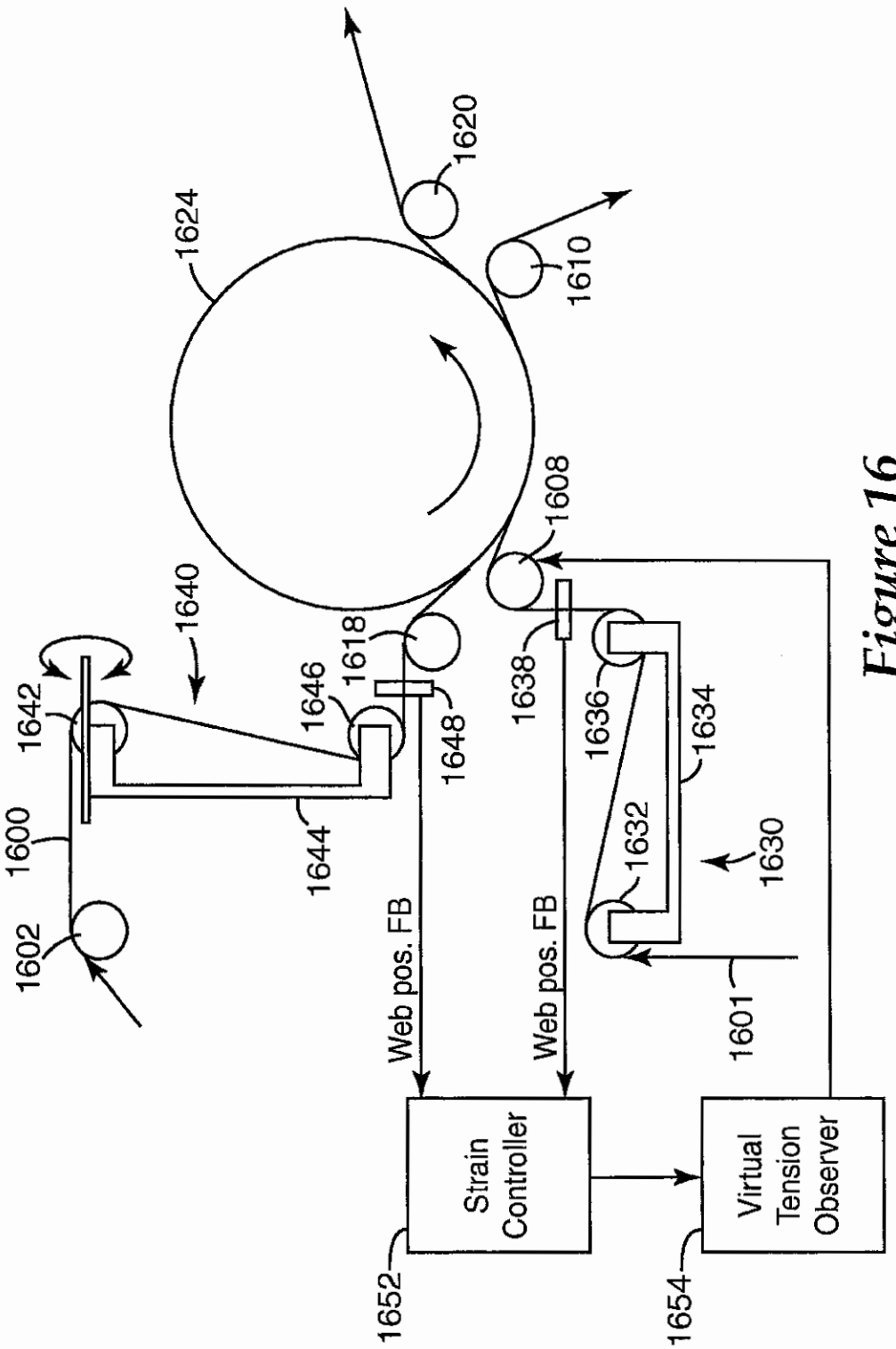

1620
1624
1610
1608
1640
1618
1638
1636
1634
1642
1646
1648
1632
1630
1600
1644
1602
Web pos. FB
Web pos. FB
1601
Strain Controller
Virtual Tension Observer
1652
1654

Figure 16

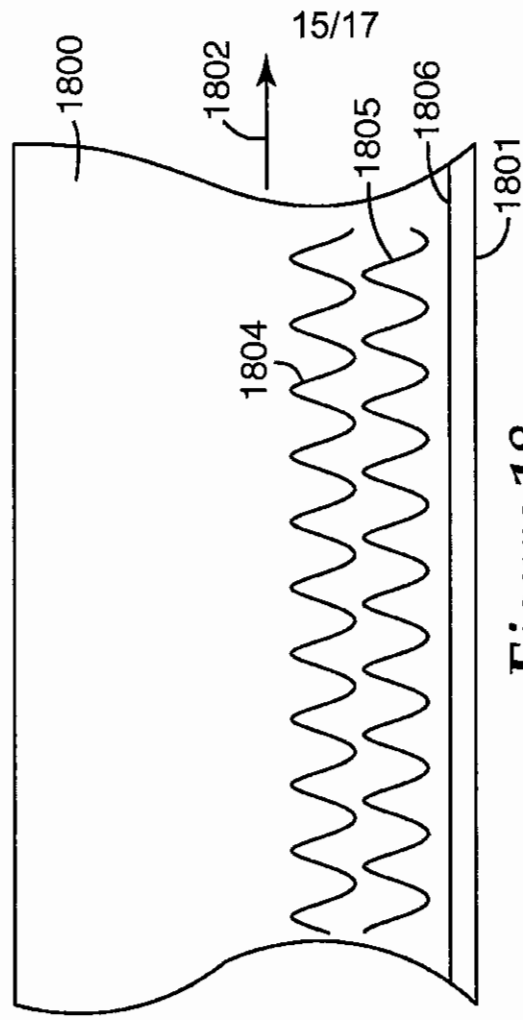


Figure 18

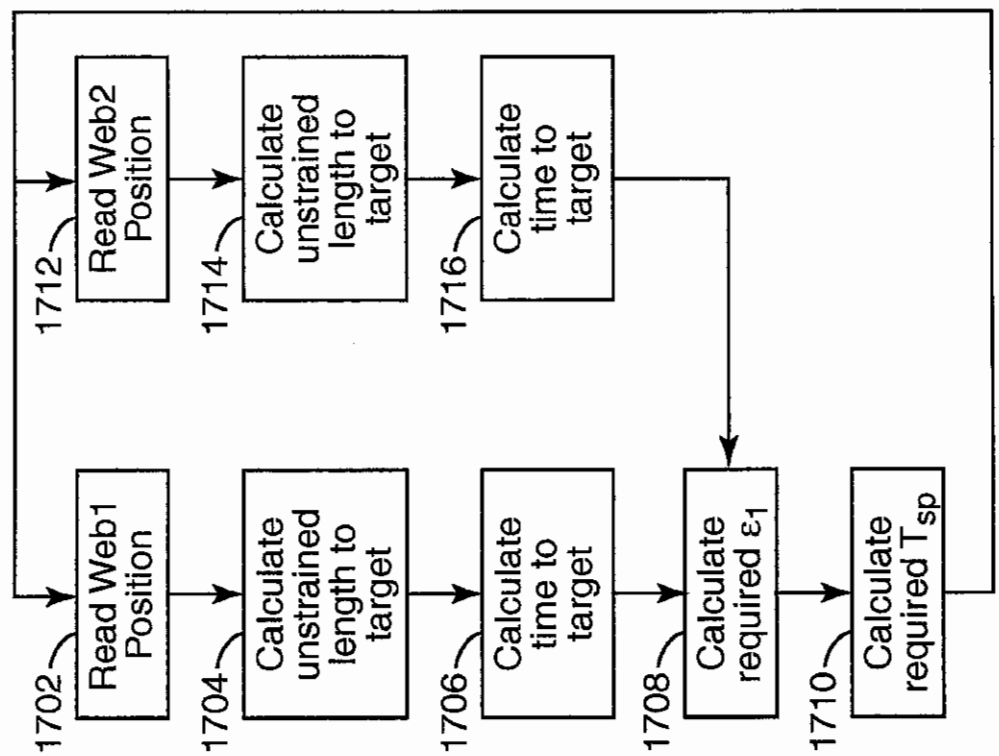


Figure 17

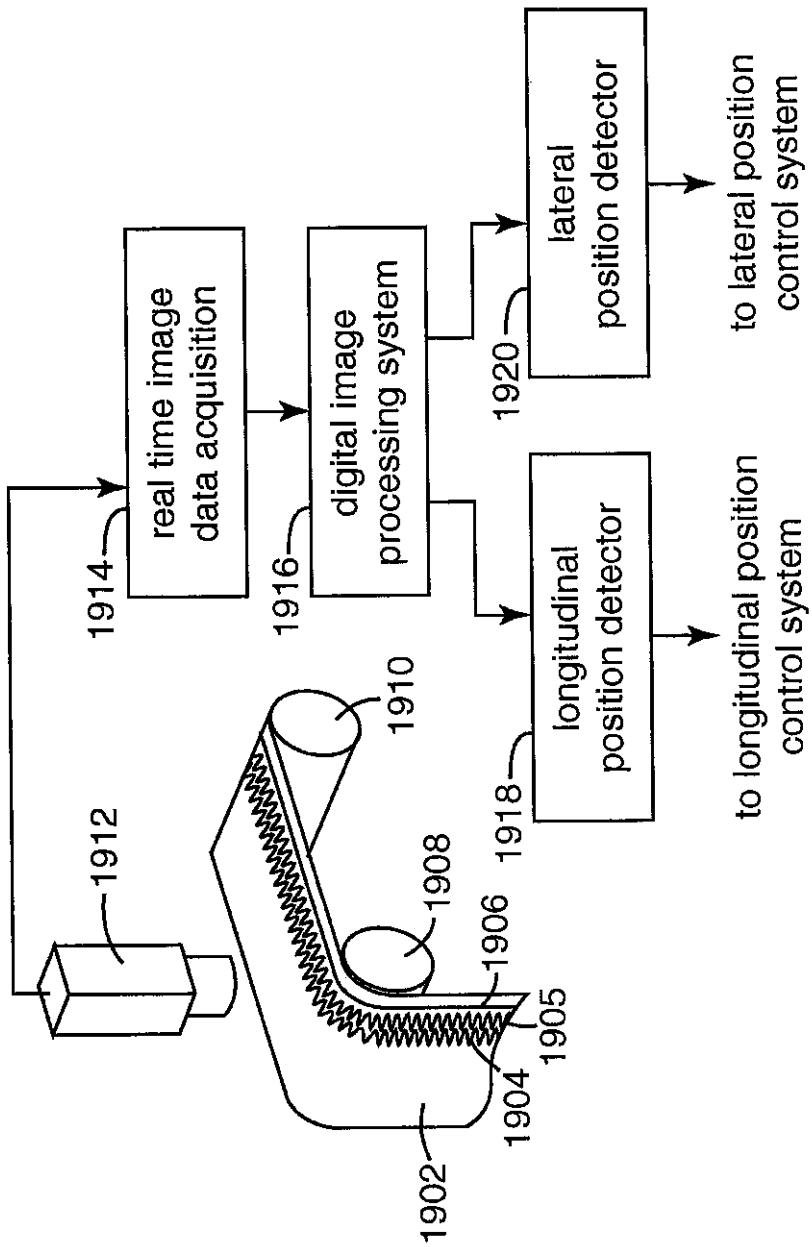

real time image data acquisition
digital image processing system
lateral position detector
longitudinal position detector
to lateral position control system
to longitudinal position control system
1902
1904
1905
1906
1908
1910
1912
1914
1916
1918
1920

Figure 19A

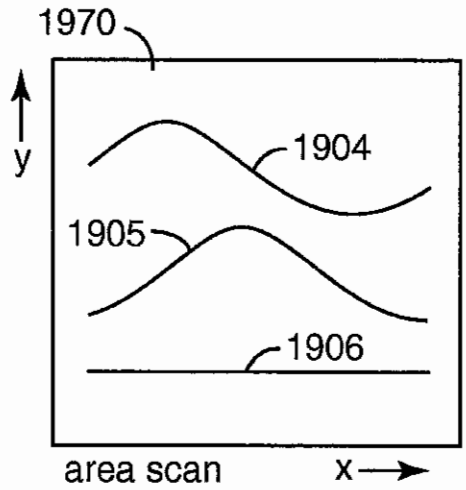


Figure 19B

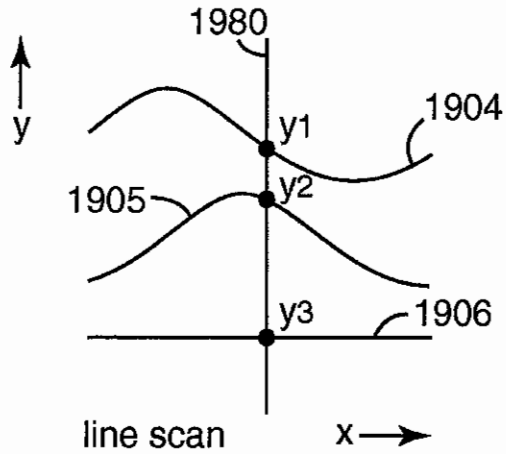


Figure 19C

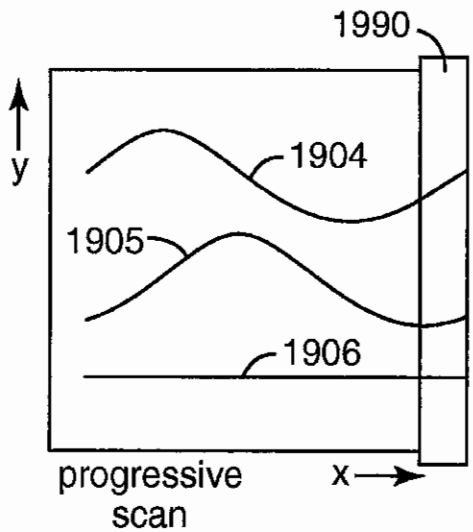


Figure 19D