

Figure 1
Prior Art

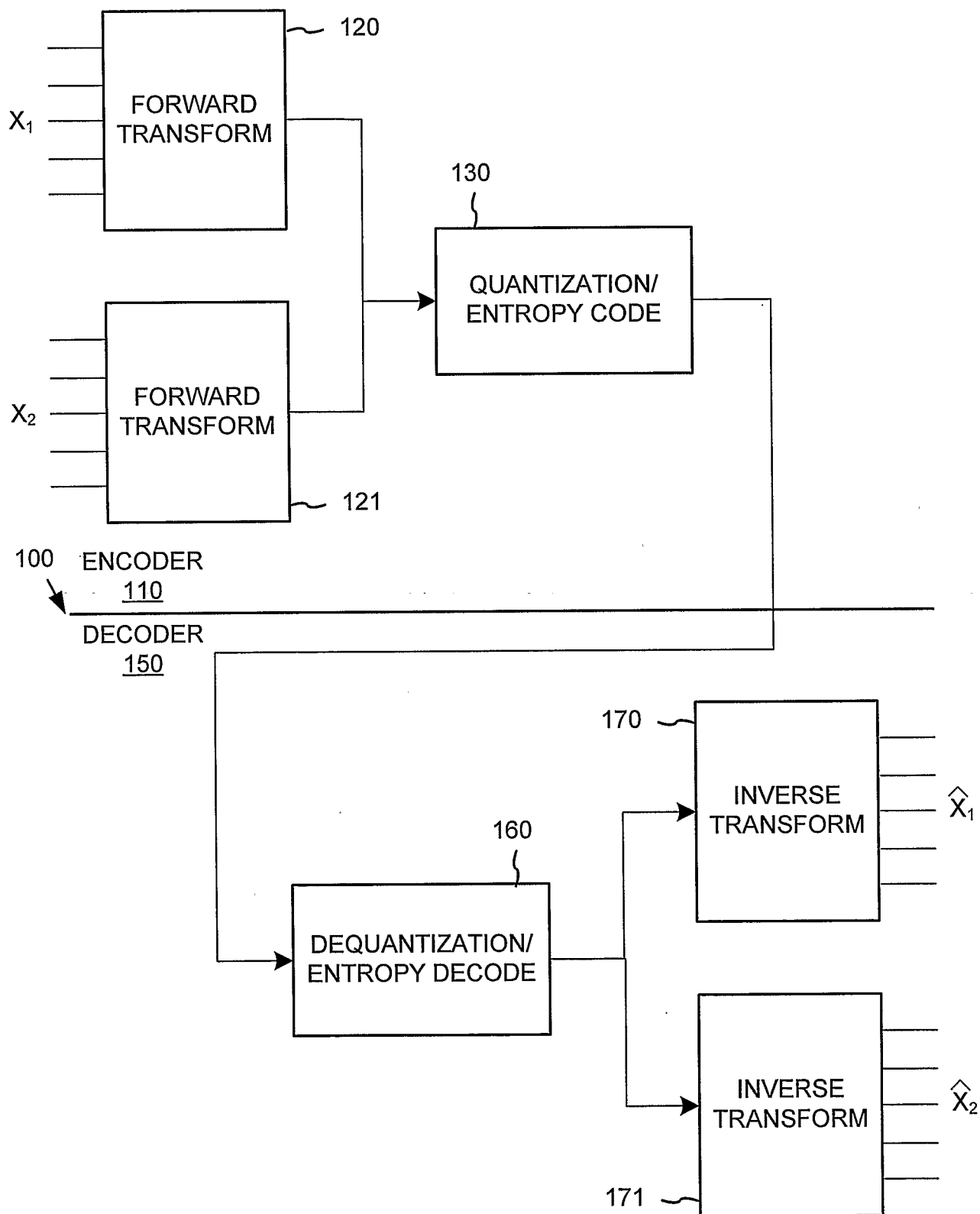


Figure 2

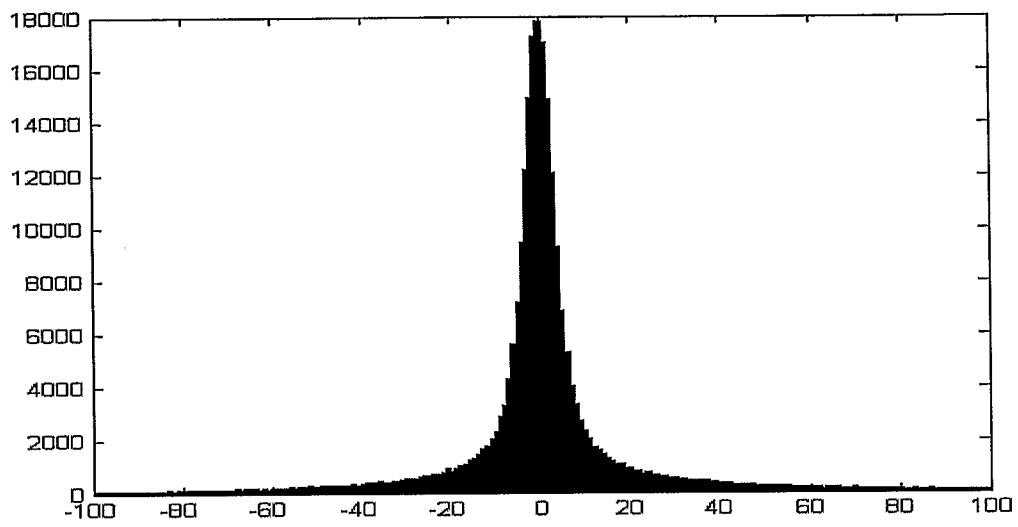


Figure 3

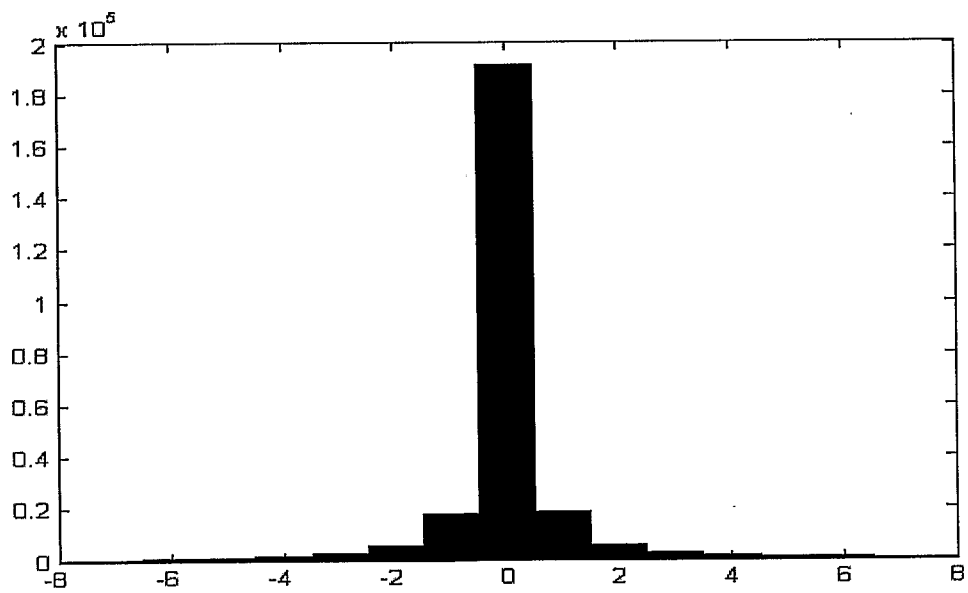


Figure 4

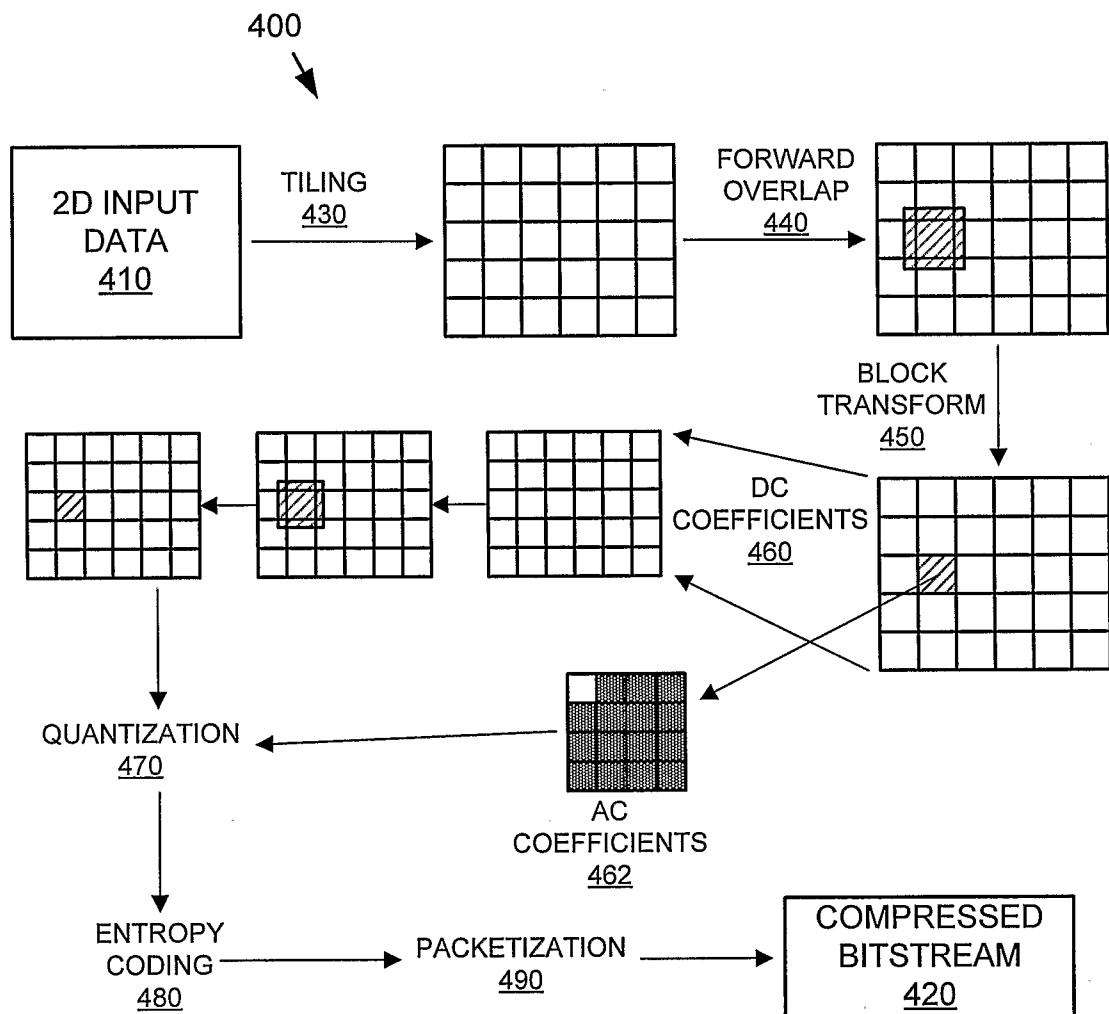


Figure 5

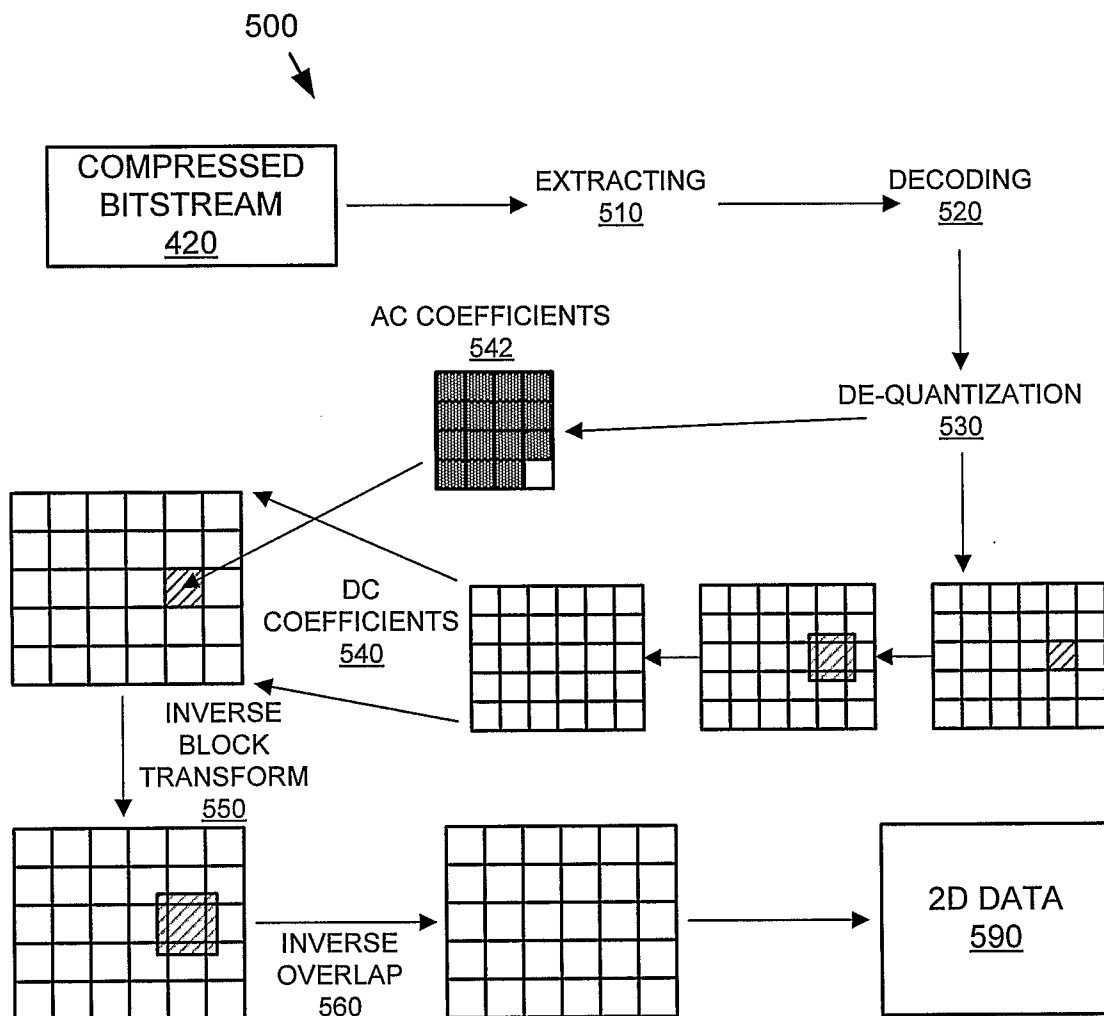


Figure 6

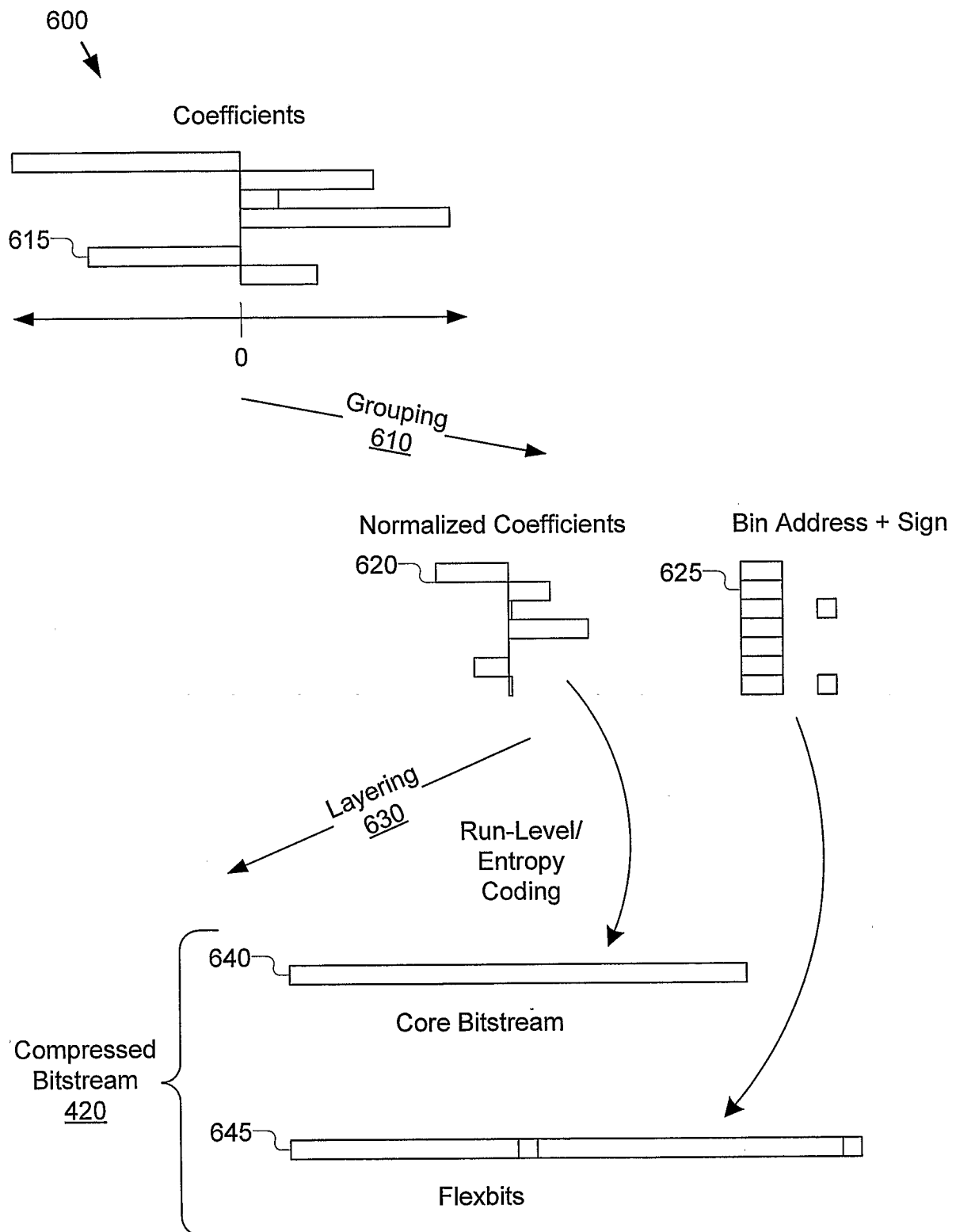


Figure 7

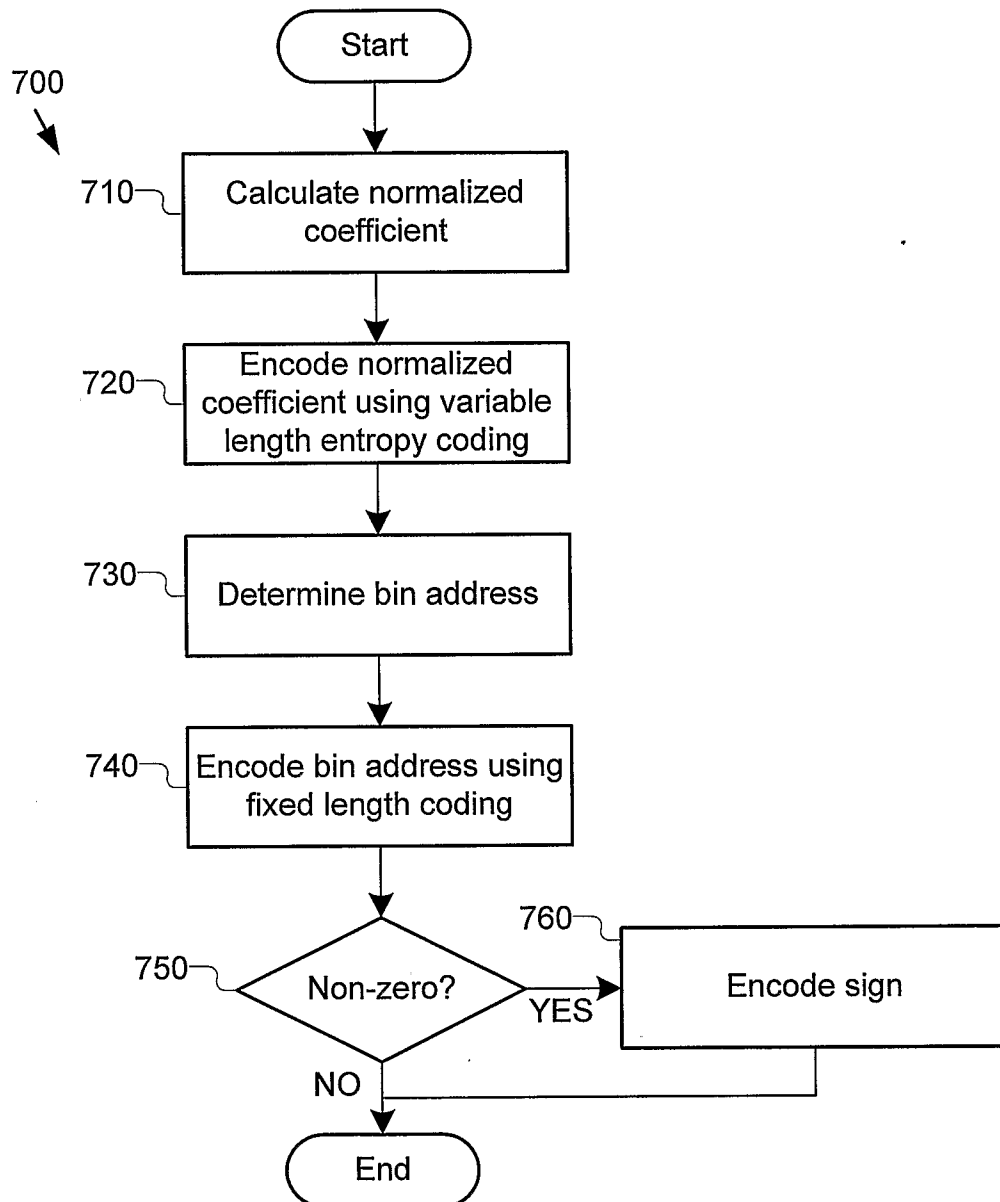


Figure 8

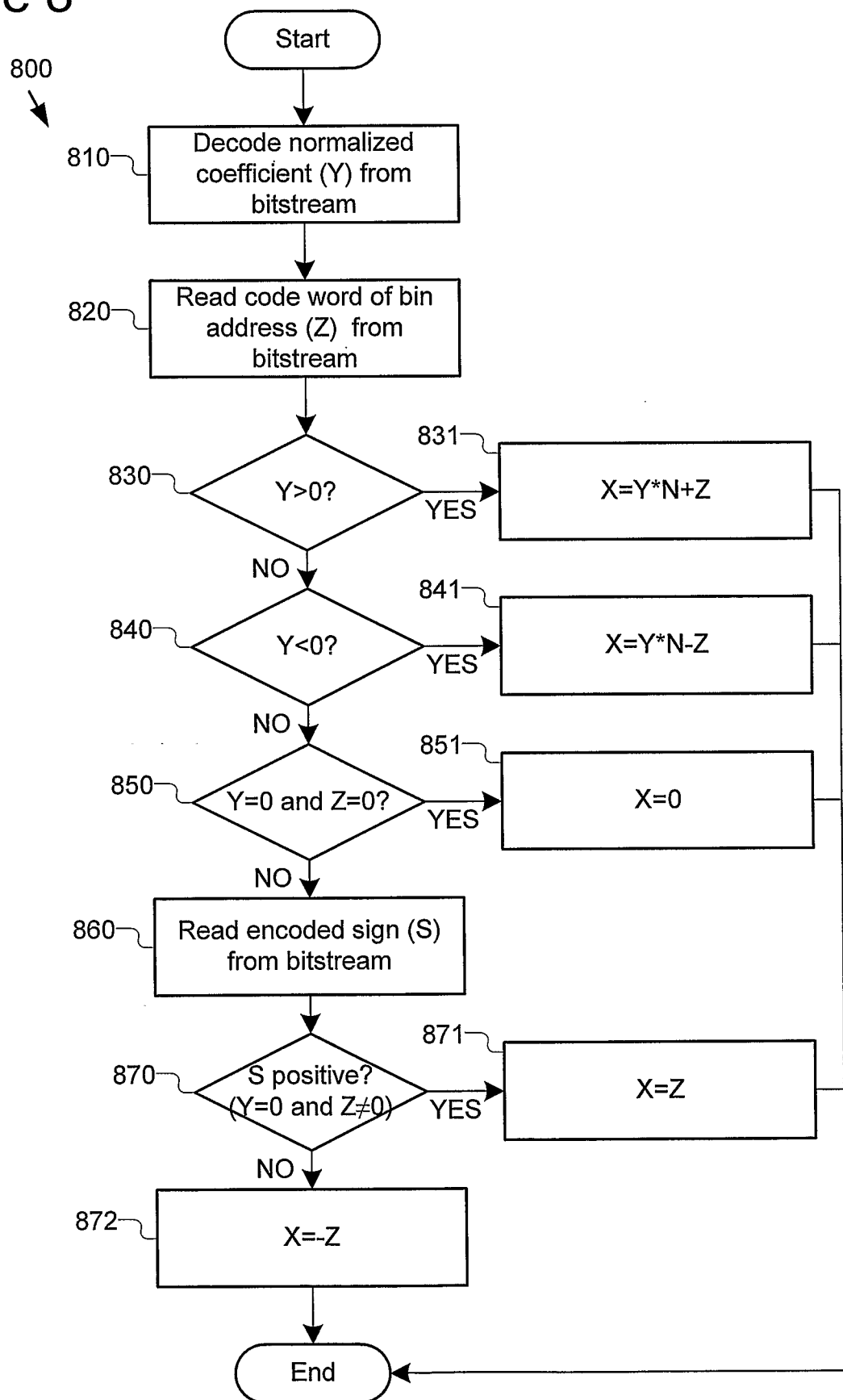


Figure 9

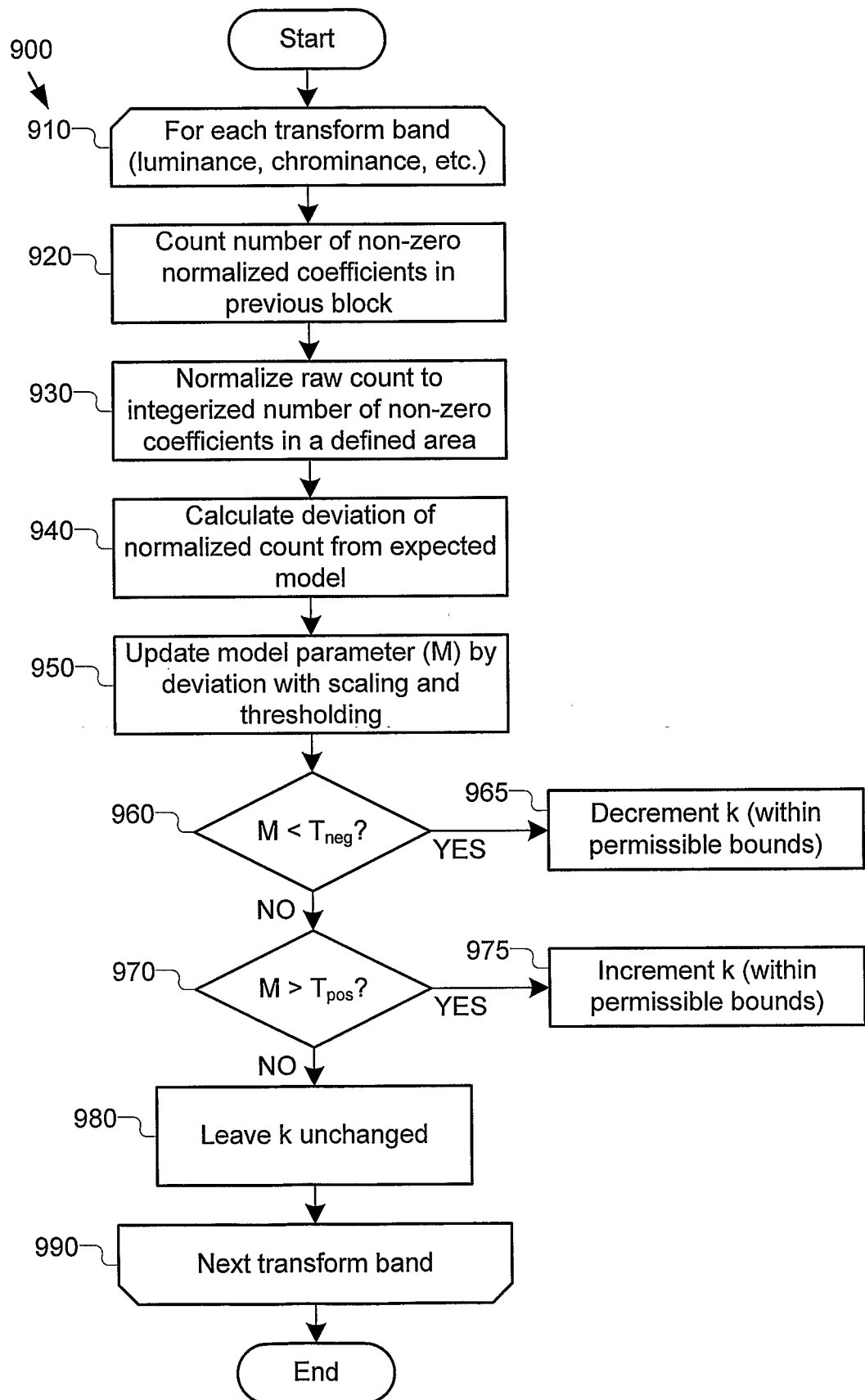


Figure 10

1000

Constants:

```

MODELWEIGHT = 70
Weight0[3] = { 240/*DC*/, 12/*LP*/, 1/*HP*/ }
Weight1[3][16] = { /* upto 16 channels permitted */
    { 0,240,120,80, 60,48,40,34, 30,27,24,22, 20,18,17,16 },
    { 0,12,6,4, 3,2,2,2, 2,1,1,1, 1,1,1,1 },
    { 0,16,8,5, 4,3,3,2, 2,2,2,1, 1,1,1,1 }
}
Weight2[6] = { 120,37,2/*YUV 420*/,
               120,18,1/*YUV 422*/ }

```

Model data structure:

```

CAdaptiveModel {
    FLCState /* internal state running from -8 to 7*/
              /* FLCState is initialized to zero */
    FLCBits /* k */
            /* FLCBits is initialized to 0 for highpass,
*/
            /* 4 for lowpass and 8 for DC */
}

```

Function UpdateModelMB {

```

    Int Band, /* band 0/1/2 => DC/LP/HP */
    COLORFORMAT cf, /* image color format */
    Int Channels, /* number of chroma channels <= 16 */
    Int Count[], /* number of coefficients in luma & chroma
bands */
    CAdaptiveModel Model)
{

```

/* Normalization */

```

    iLaplacianMean[0] *= Weight0[Band]
    if (cf == YUV_420) {
        iLaplacianMean[1] *= Weight2[Band]
    }
    else if (cf == YUV_422) {
        iLaplacianMean[1] *= aWeight2[3 + Band]
    }
    else {
        iLaplacianMean[1] *= Weight1[Band][iChannels - 1]
        if (Band == HP)
            iLaplacianMean[1] >>= 4
    }
}

```

...

Figure 11

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(cont.)
↓

```

...

/* Loop over luma & chroma */
for (j = 0; j < 2; j++) {
    iLM = Count[j]
    iMS = Model.FLCState[j]

/* Calculate deviation from baseline */
    iDelta = (iLM - MODELWEIGHT) >> 2

/* Too few coefficients in the previous MB ? */
    if (iDelta < -8) {
        iDelta += 4 /* hysteresis */
        if (iDelta < -16)
            iDelta = -16
        iMS += iDelta
        if (iMS < -8) {
            if (Model.FLCBits [j] == 0)
                iMS = -8
            else {
                iMS = 0
                Model.FLCBits[j]-- /* bump k down */
            }
        }
    }

/* Too many coefficients in the previous MB ? */
    else if (iDelta > 8) {
        iDelta -= 4 /* hysteresis */
        if (iDelta > 15)
            iDelta = 15
        iMS += iDelta
        if (iMS > 8) {
            iMS = 0
            Model.FLCBits [j]++ /* bump k up */
            if (Model.FLCBits [j] > 16)
                Model.FLCBits [j] = 16
        }
    }

    Model.FLCState[j] = iMS
}
}

```

Figure 12

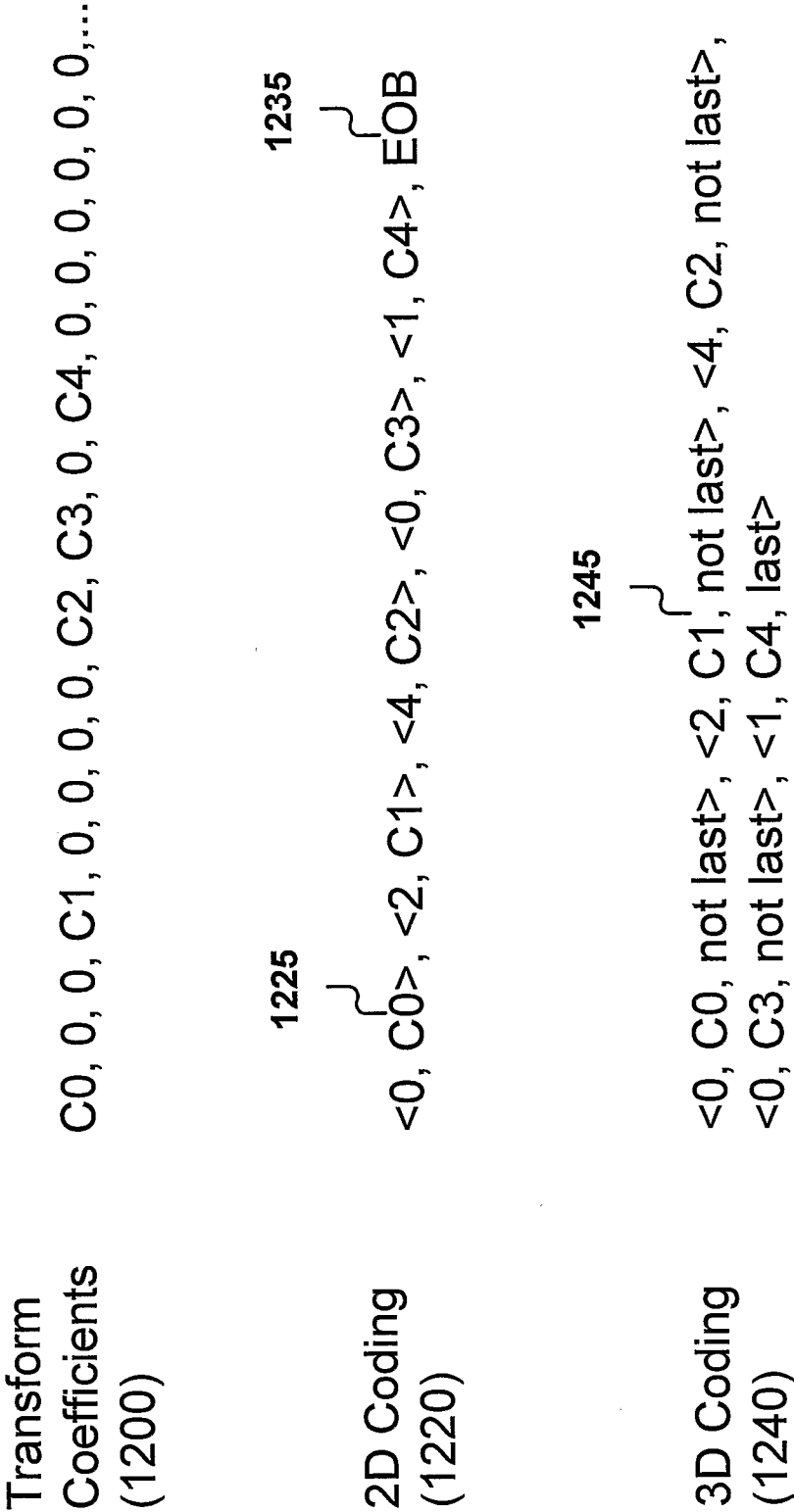


Figure 13

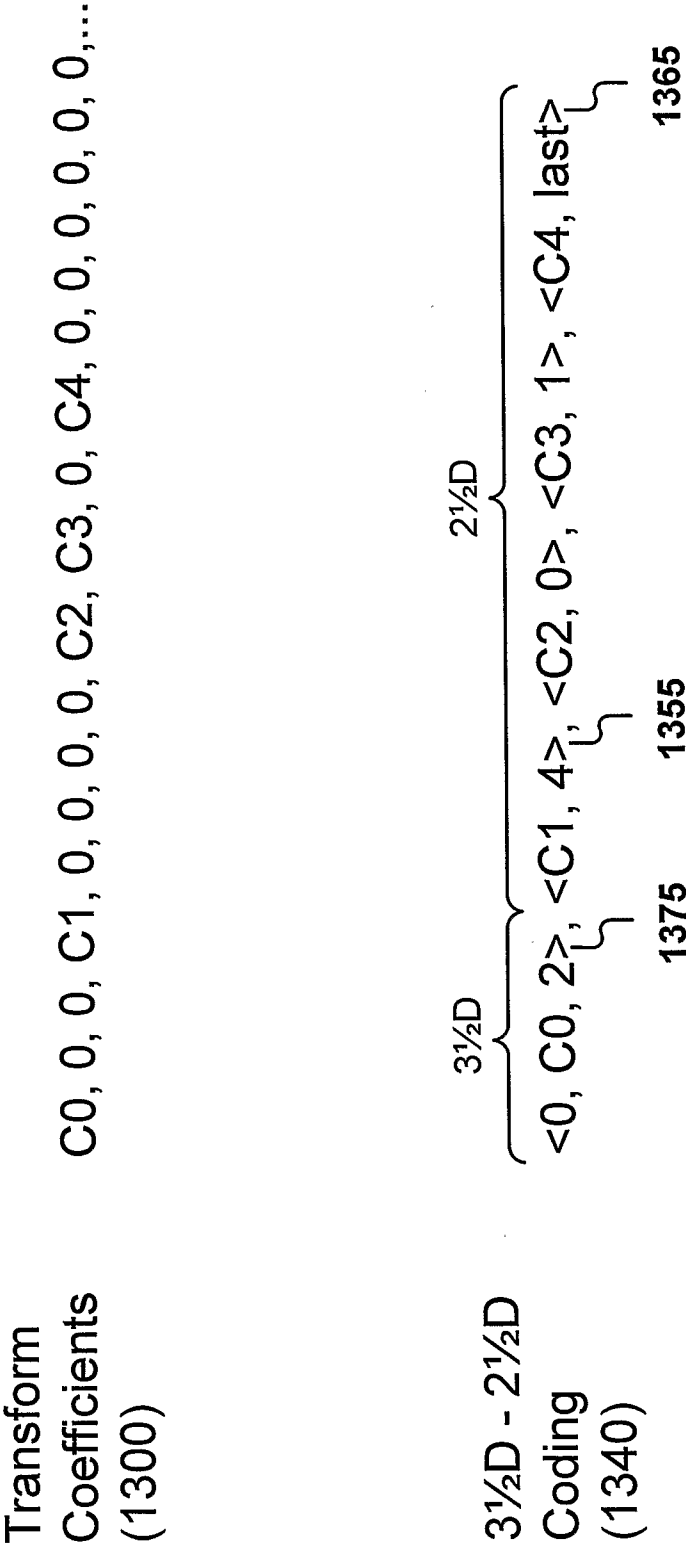


Figure 14

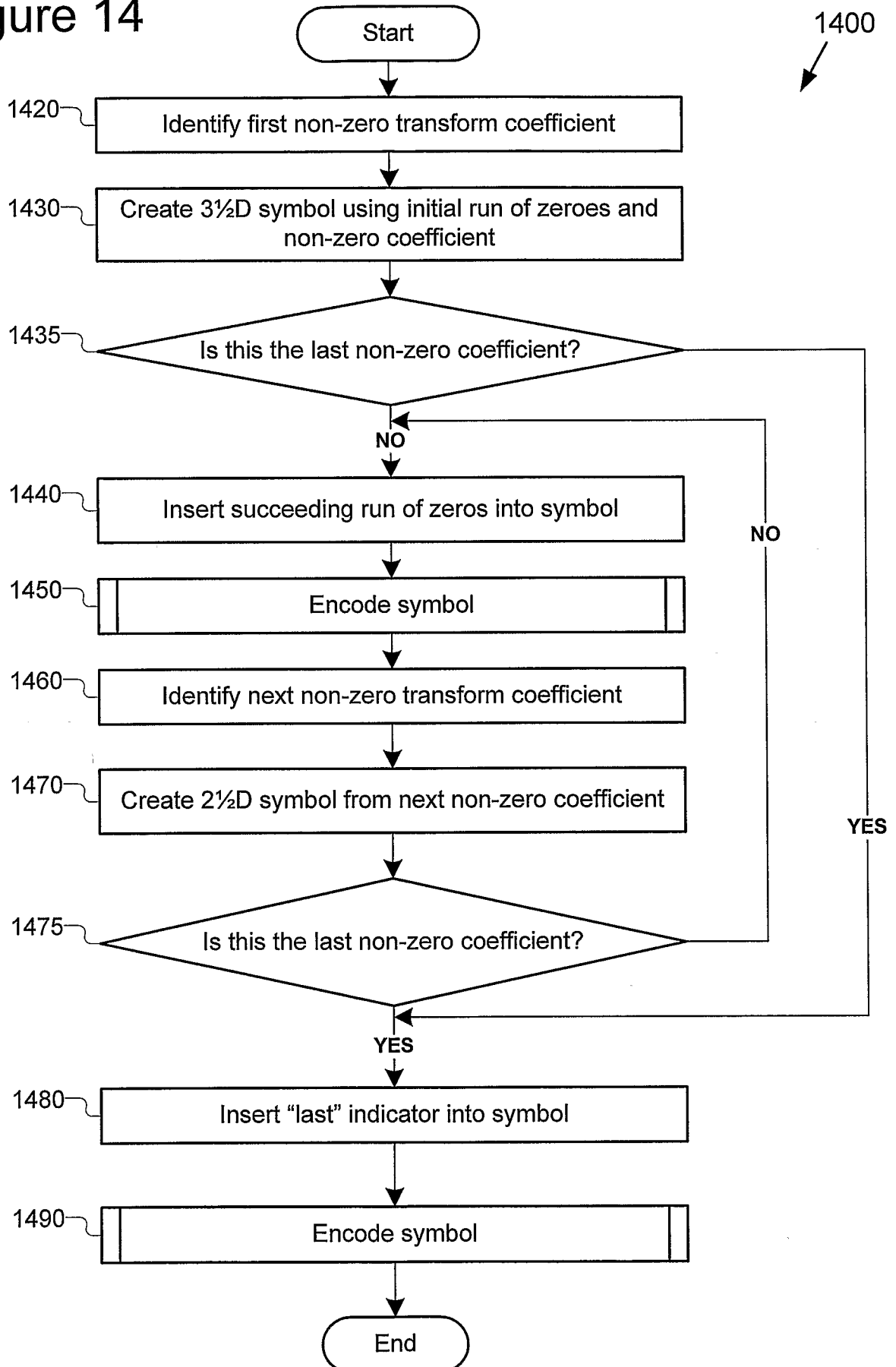


Figure 15

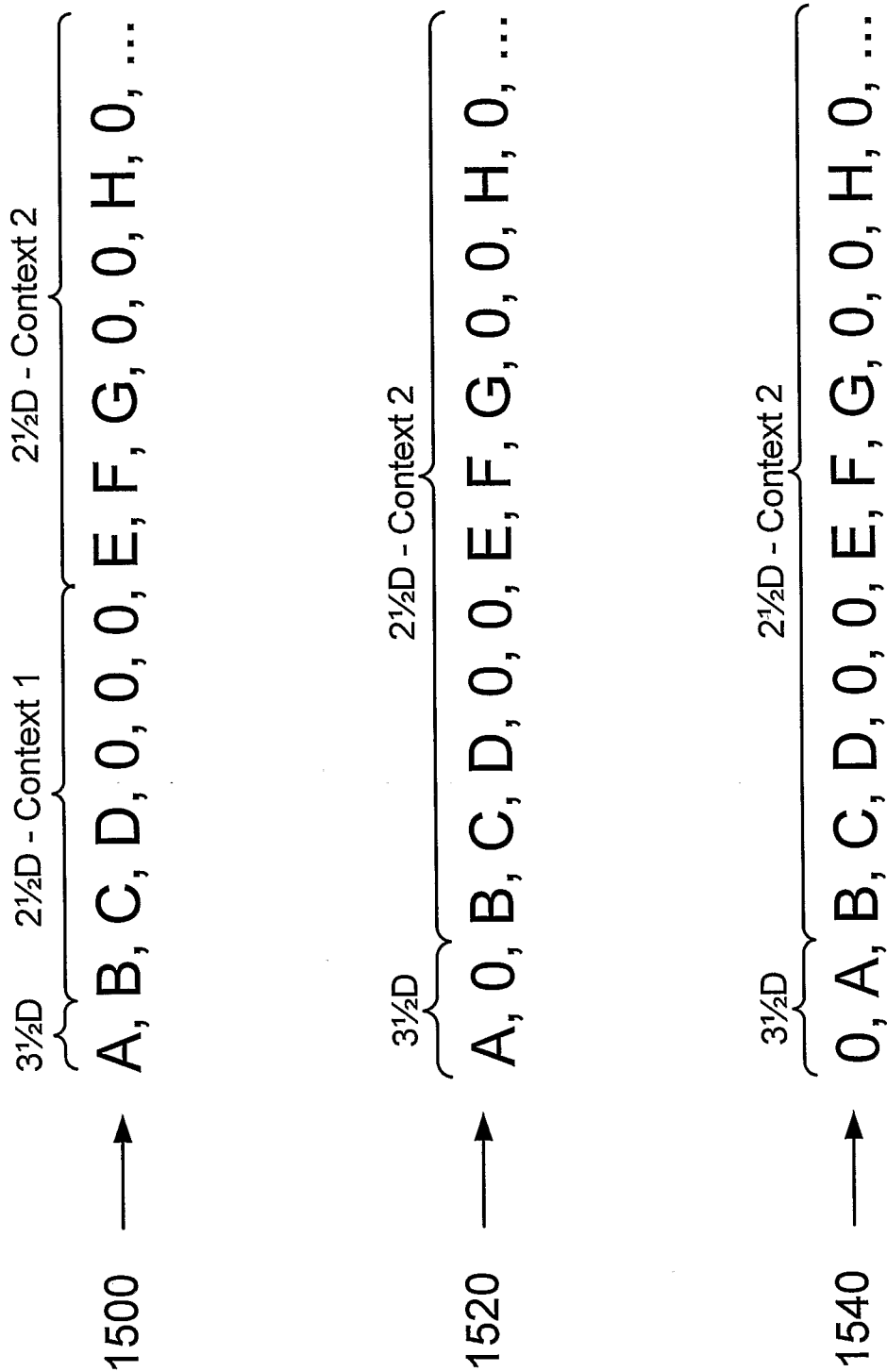


Figure 16

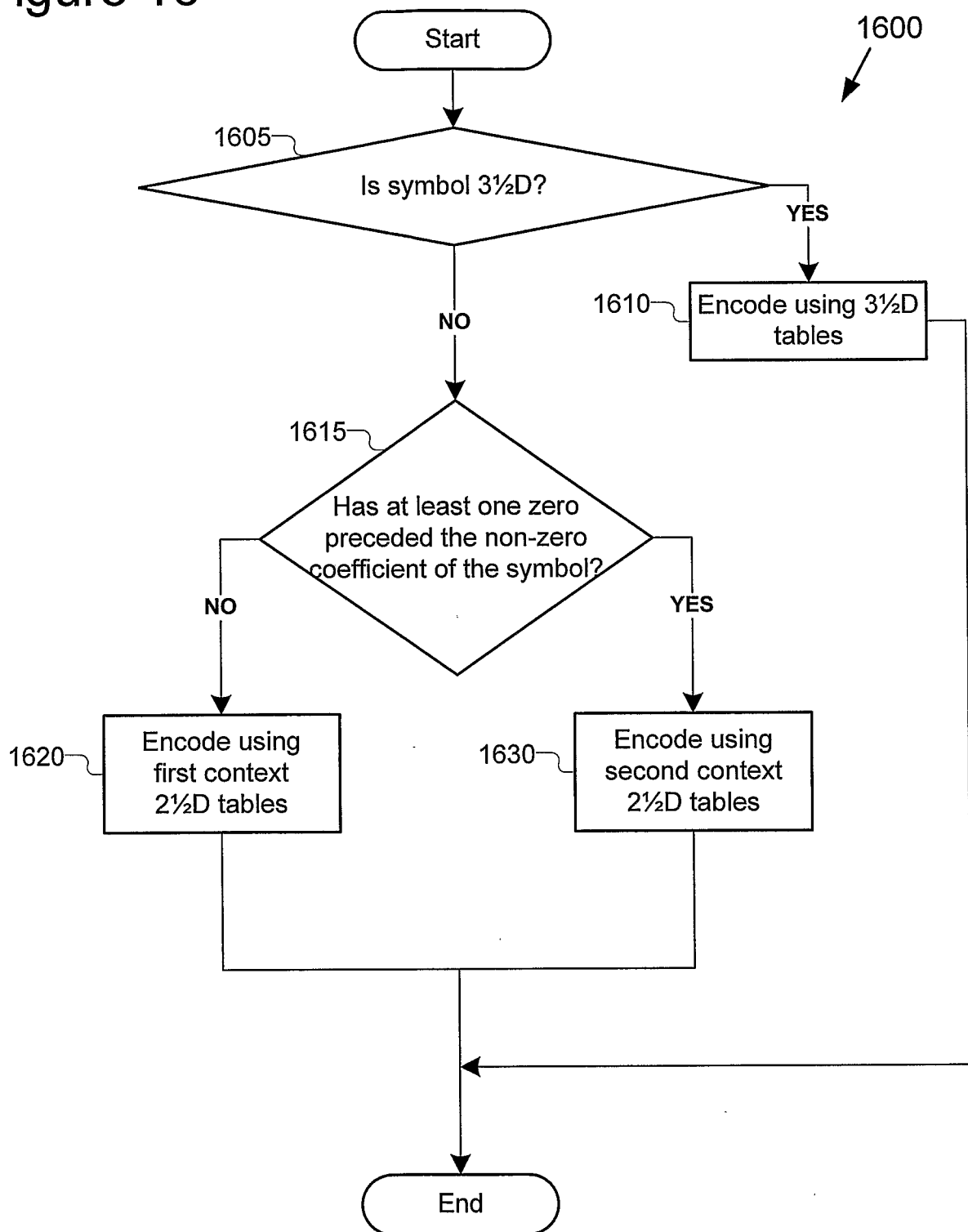


Figure 17

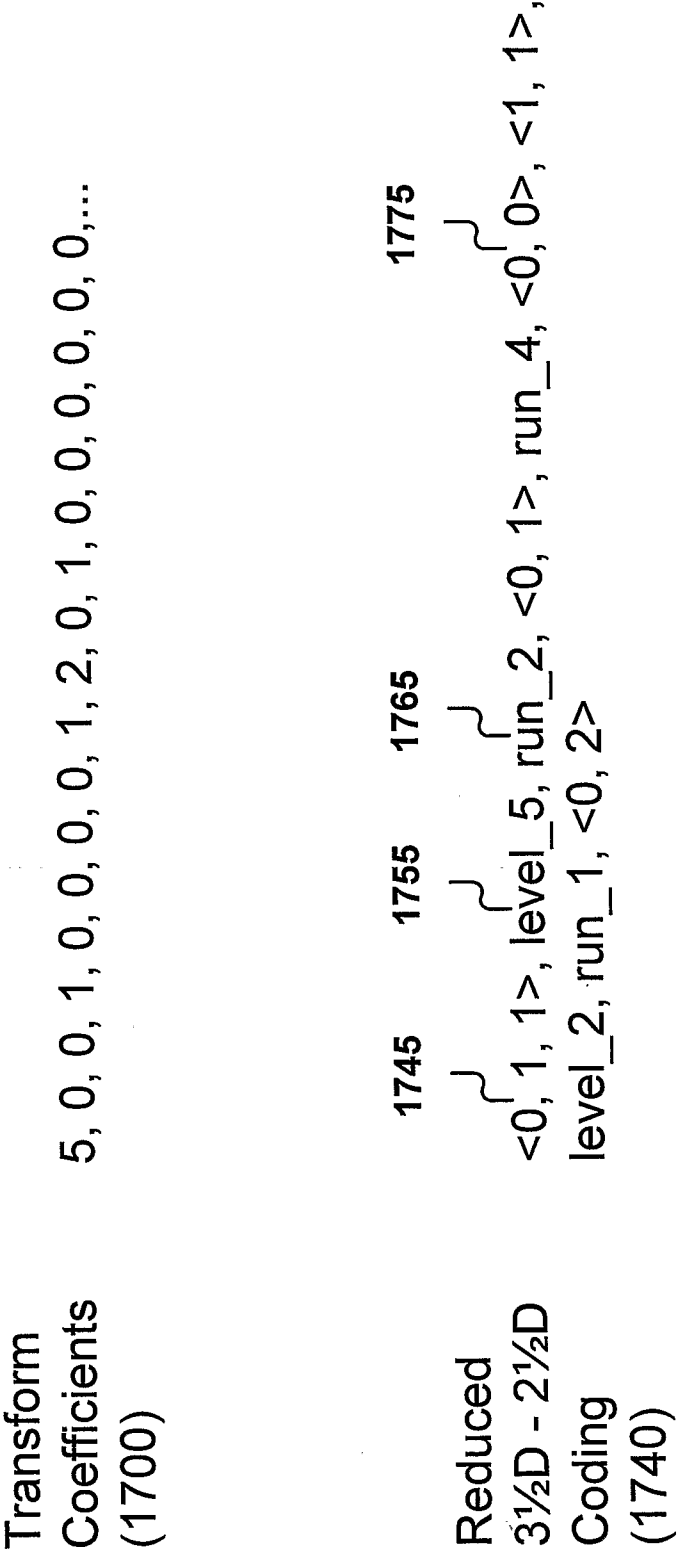


Figure 18

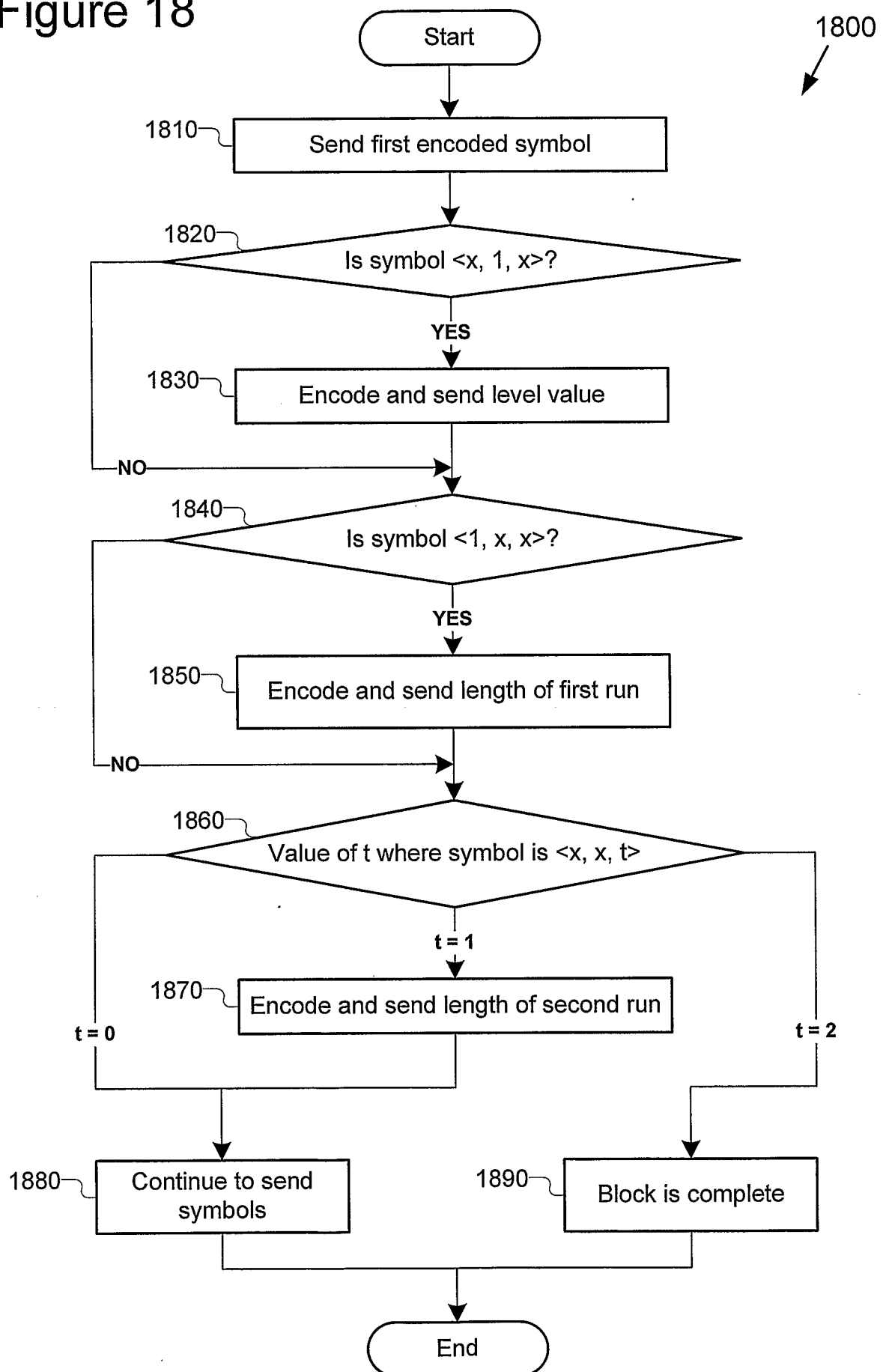


Figure 19

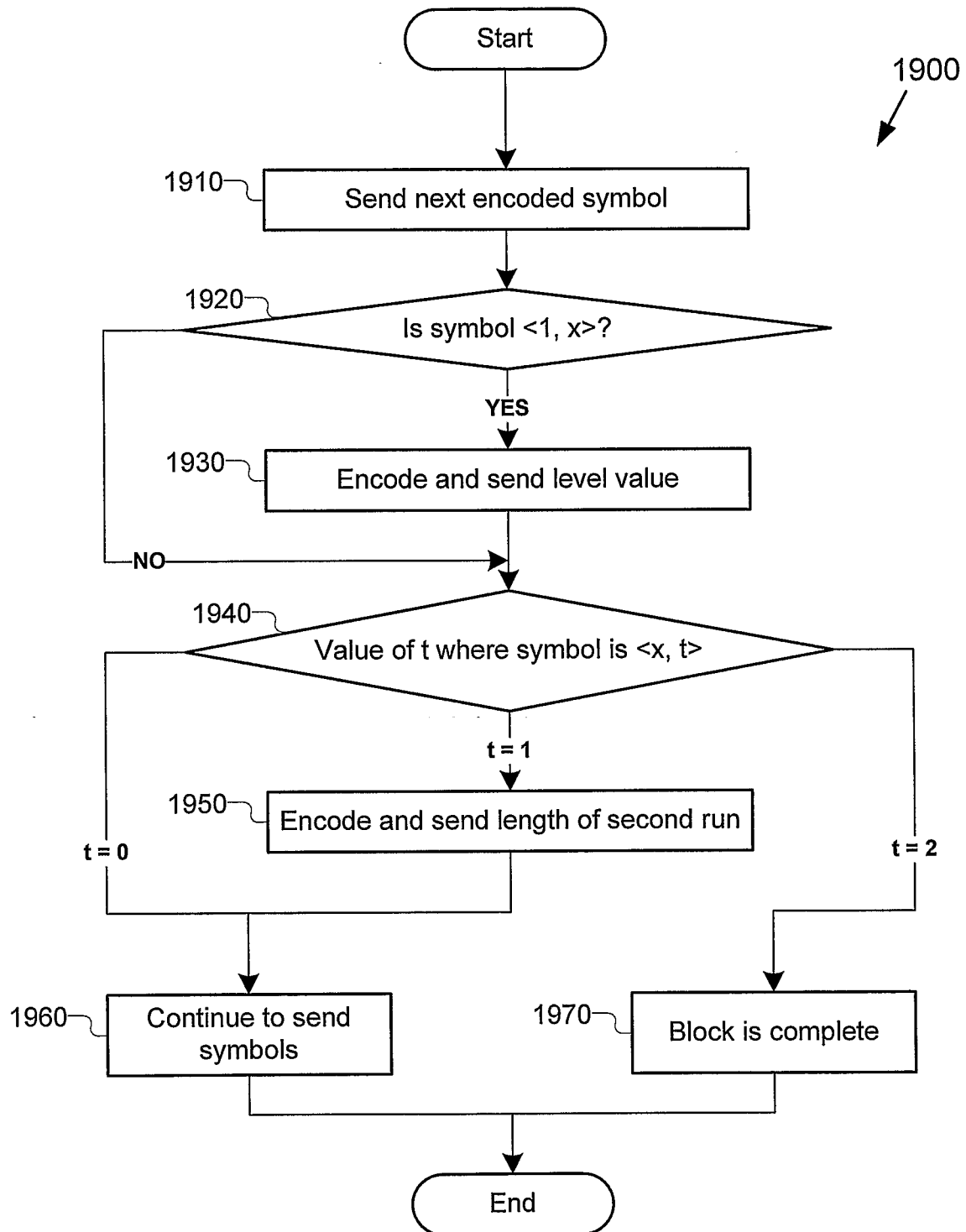


Figure 20

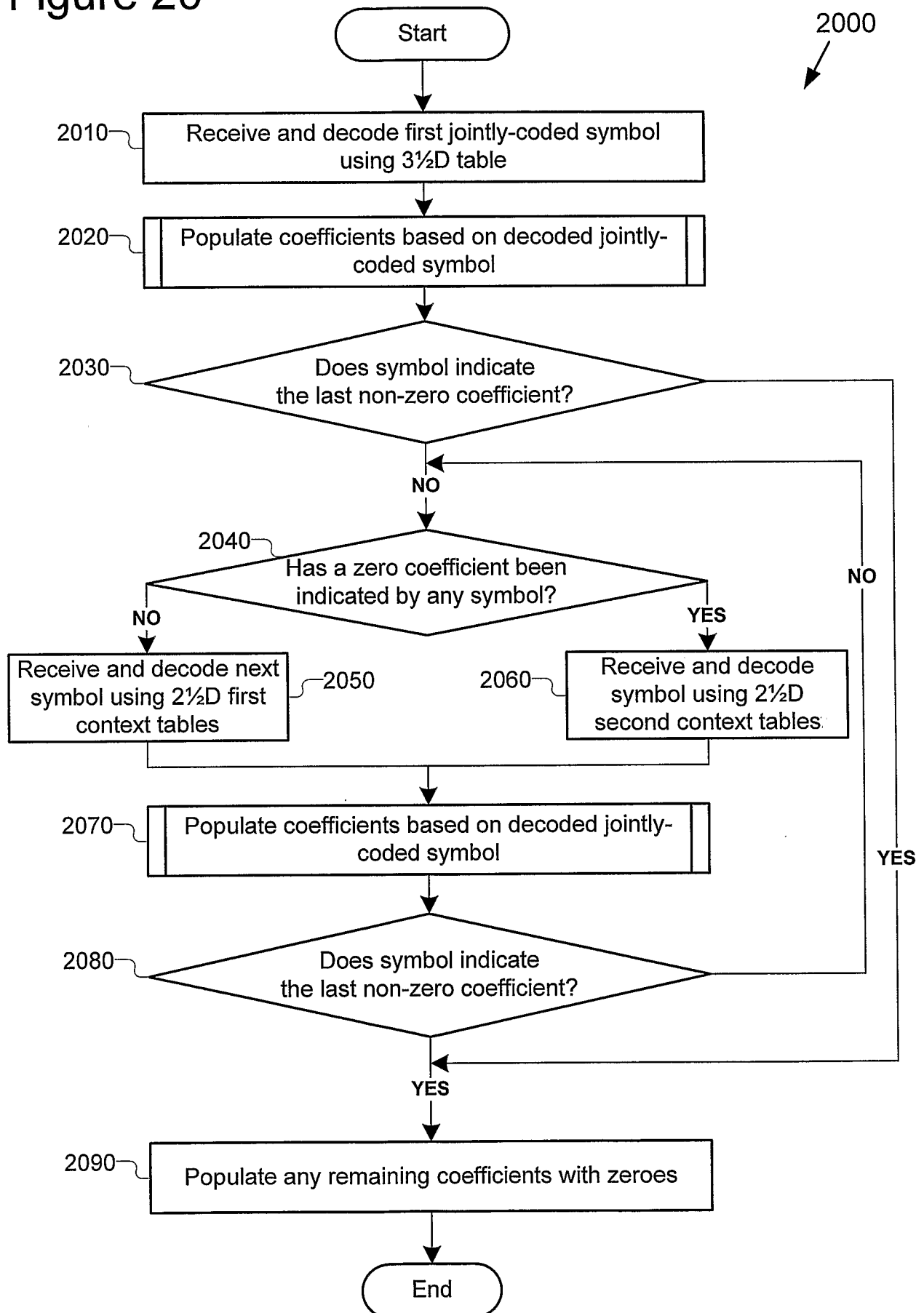


Figure 21

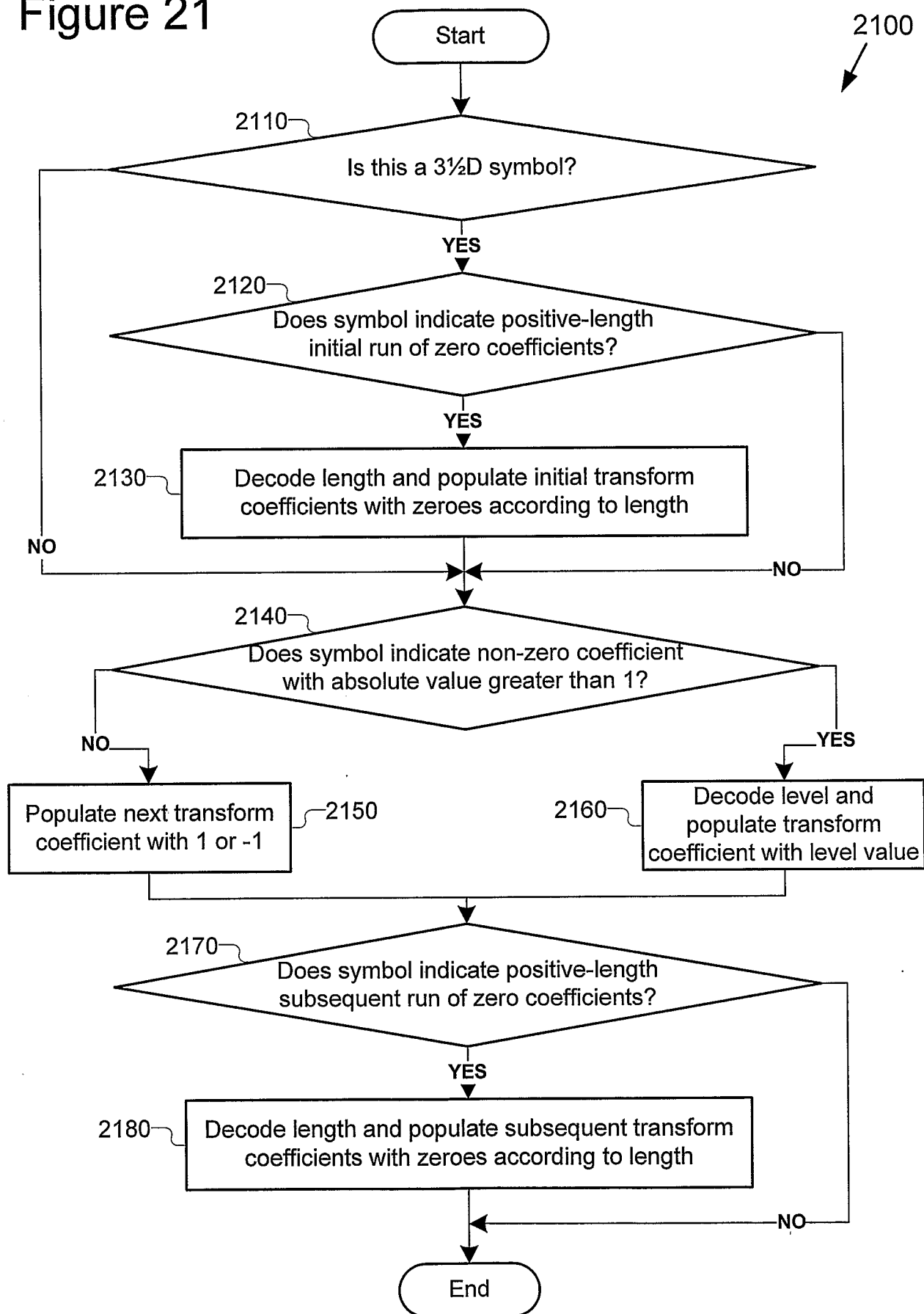


Figure 22

