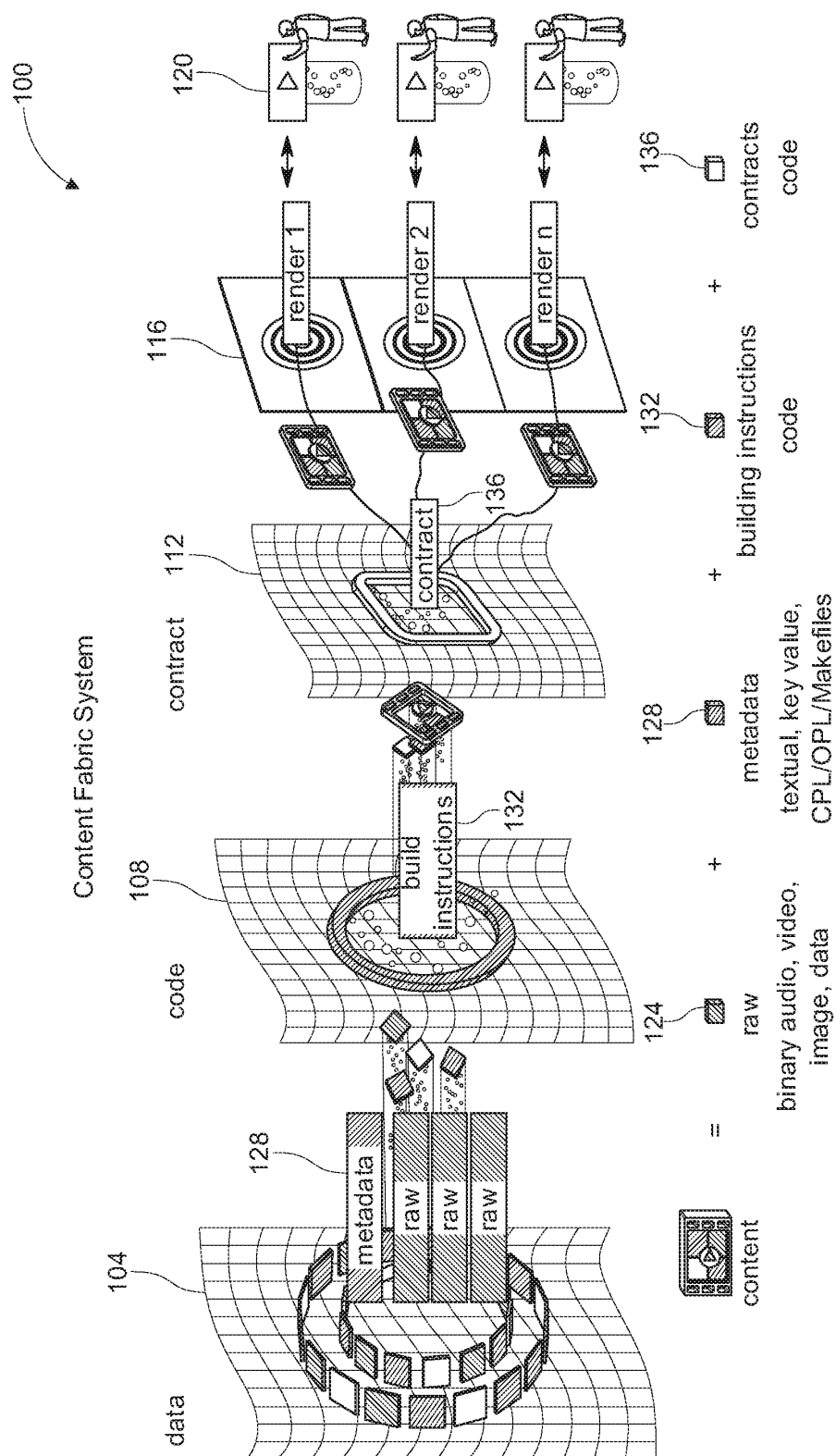




7
8
9
10
11

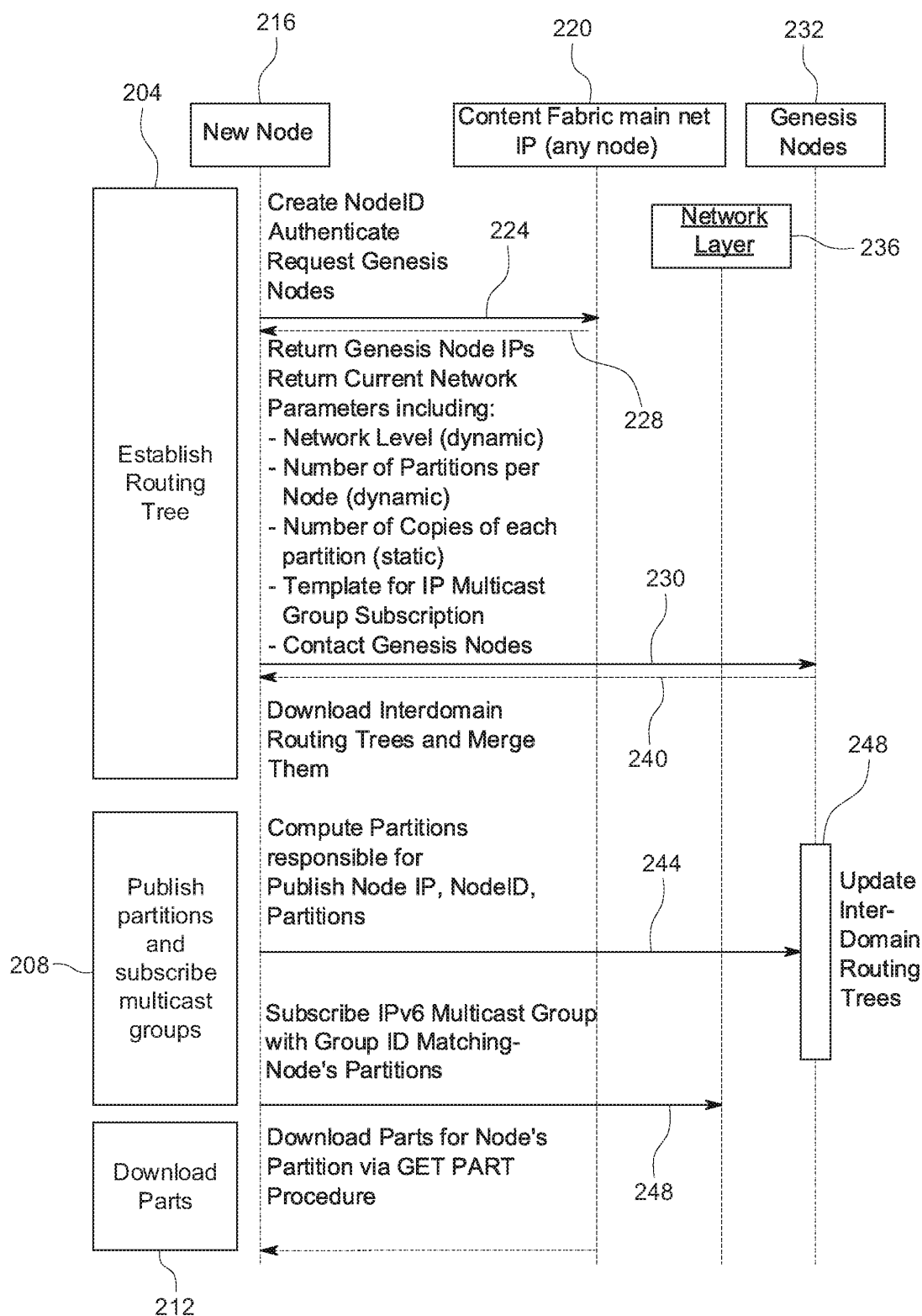


FIG. 2

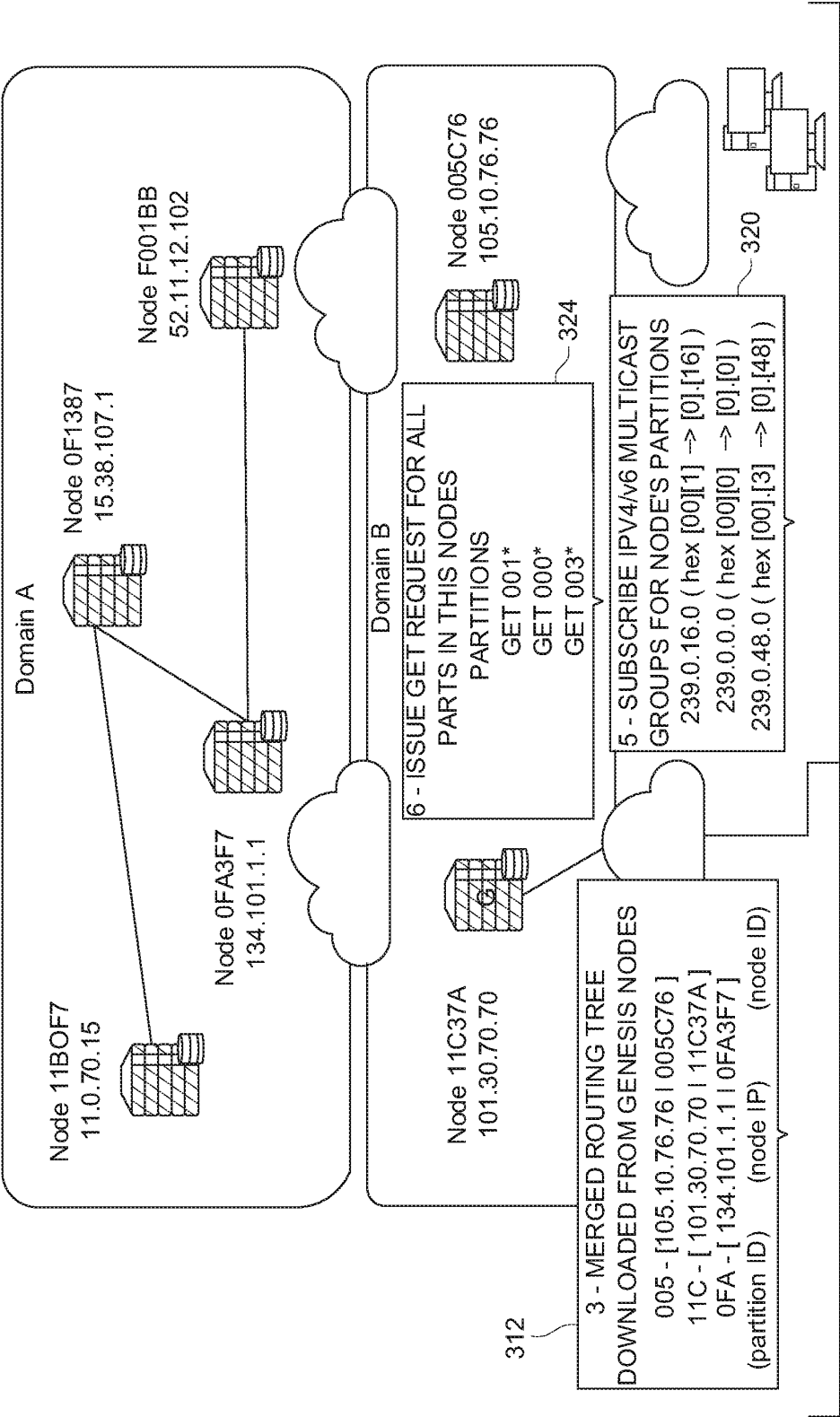


FIG. 3

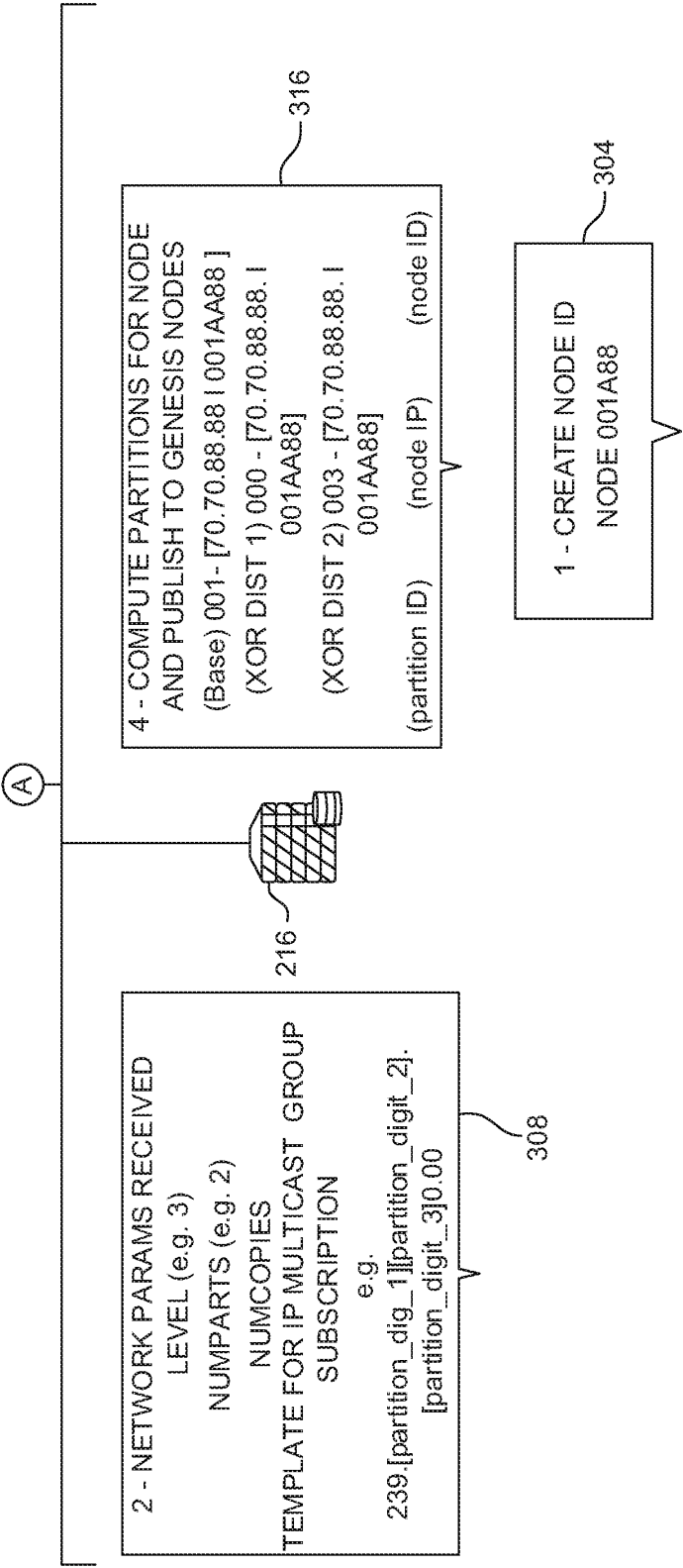


FIG. 3(Continued)

Assigning Partitions to Nodes

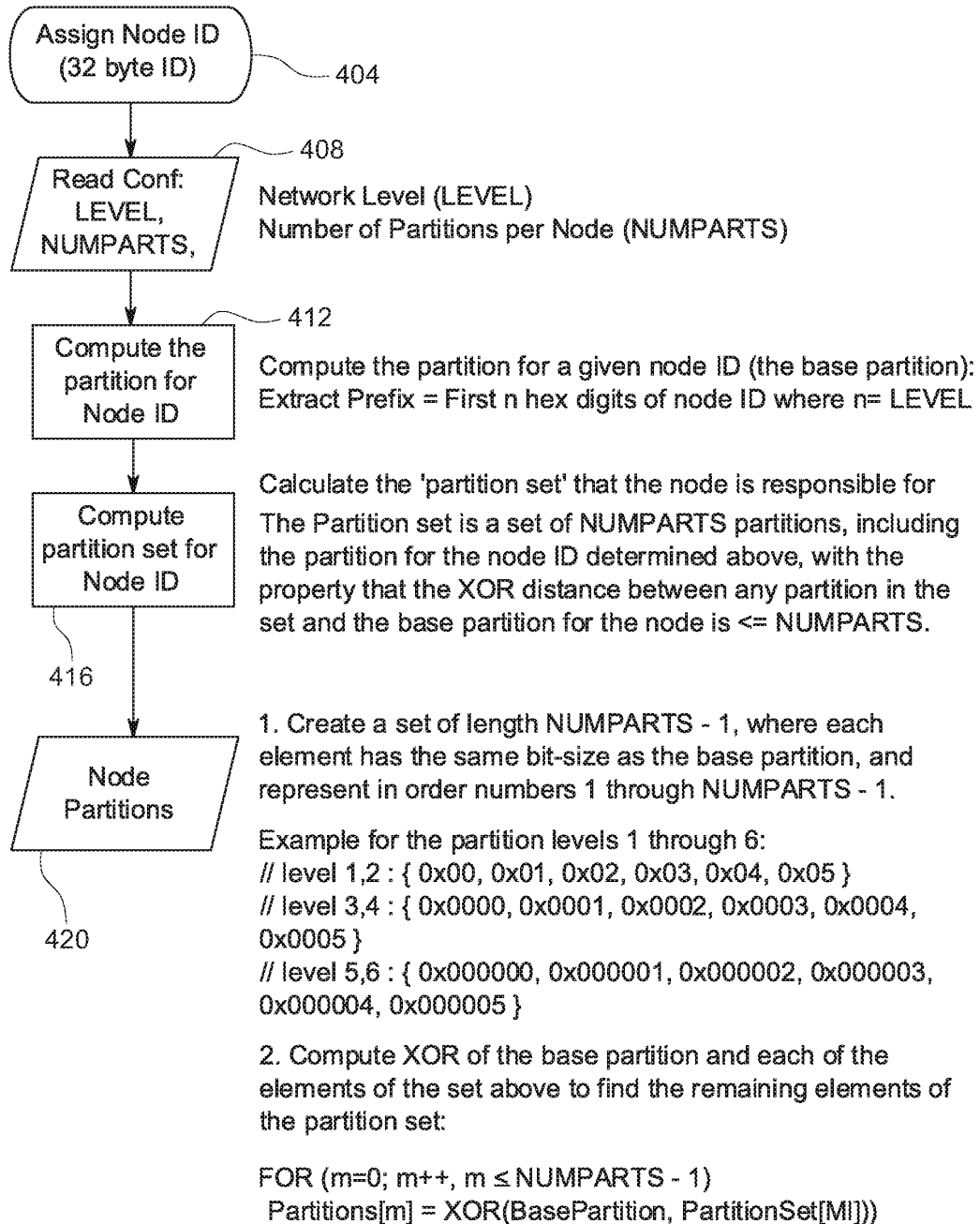


FIG. 4

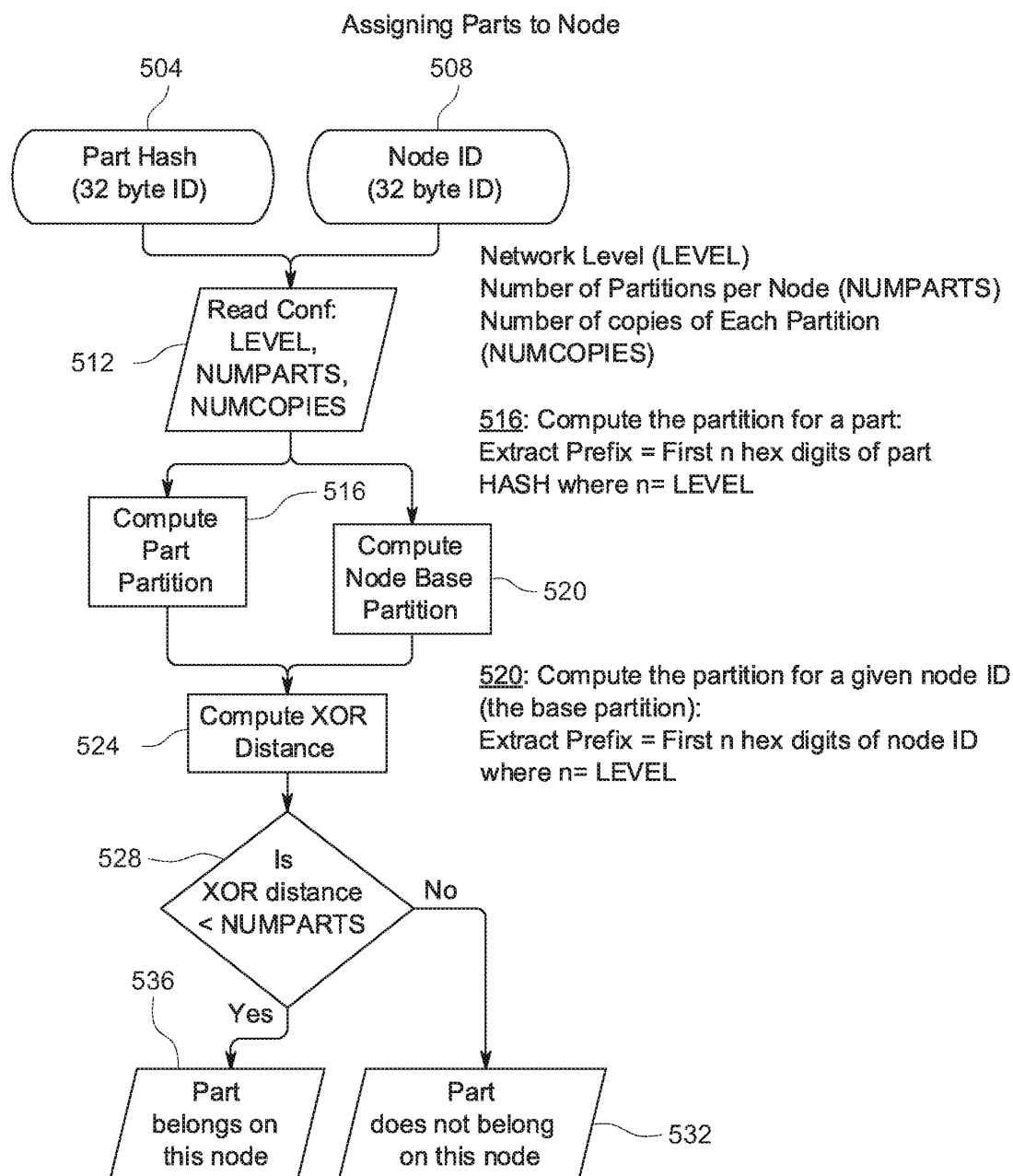


FIG. 5

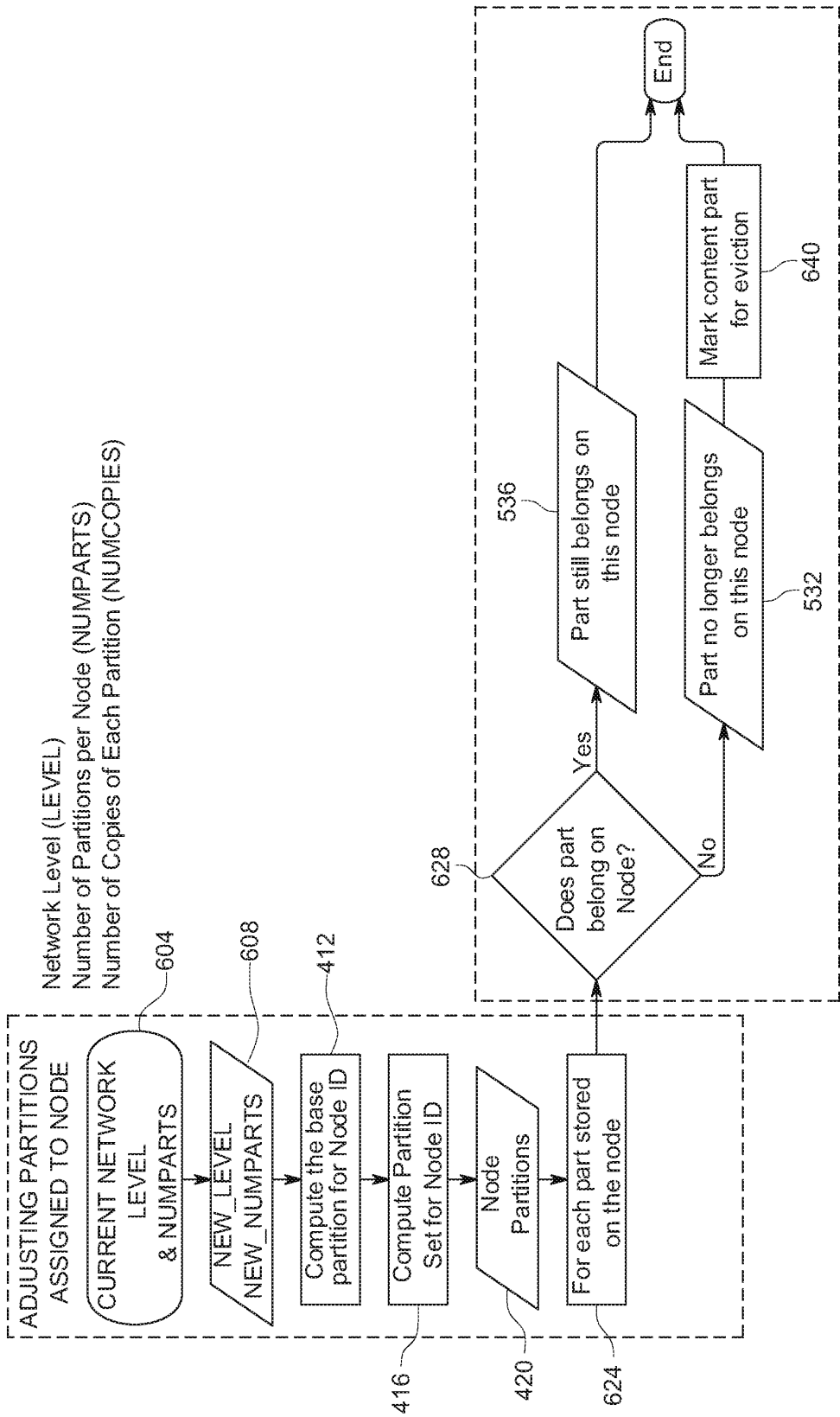


FIG. 6

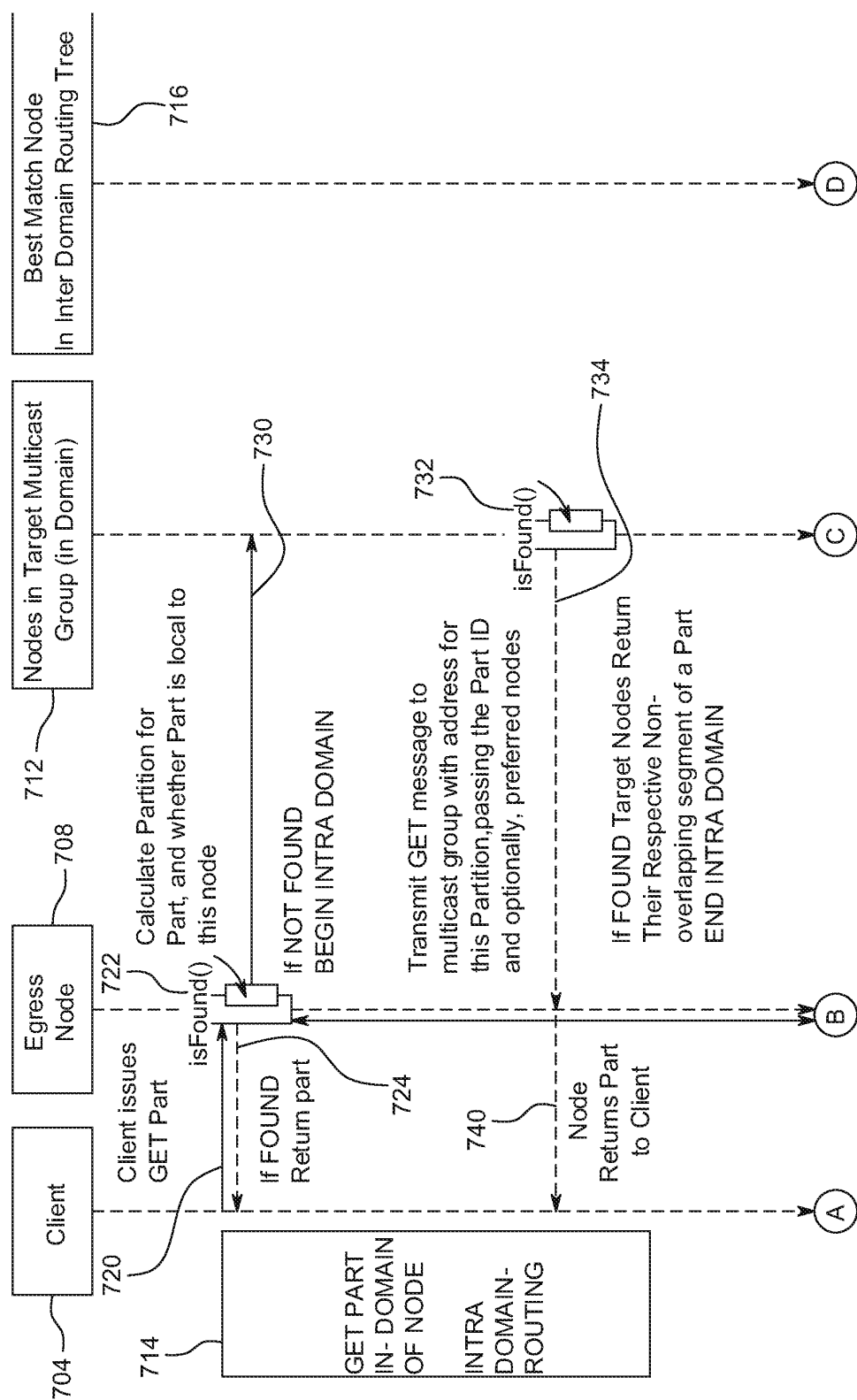


Fig. 7

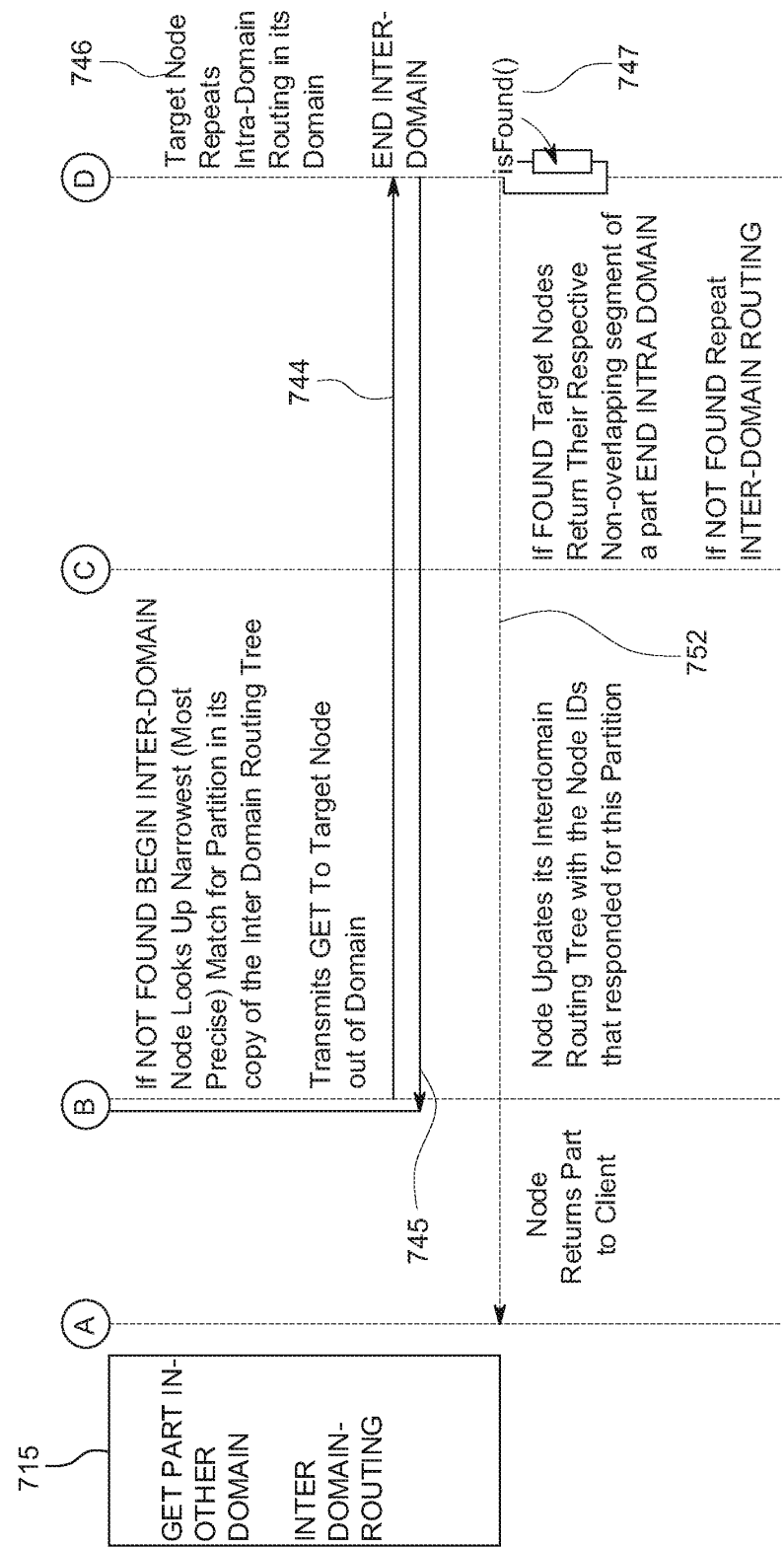
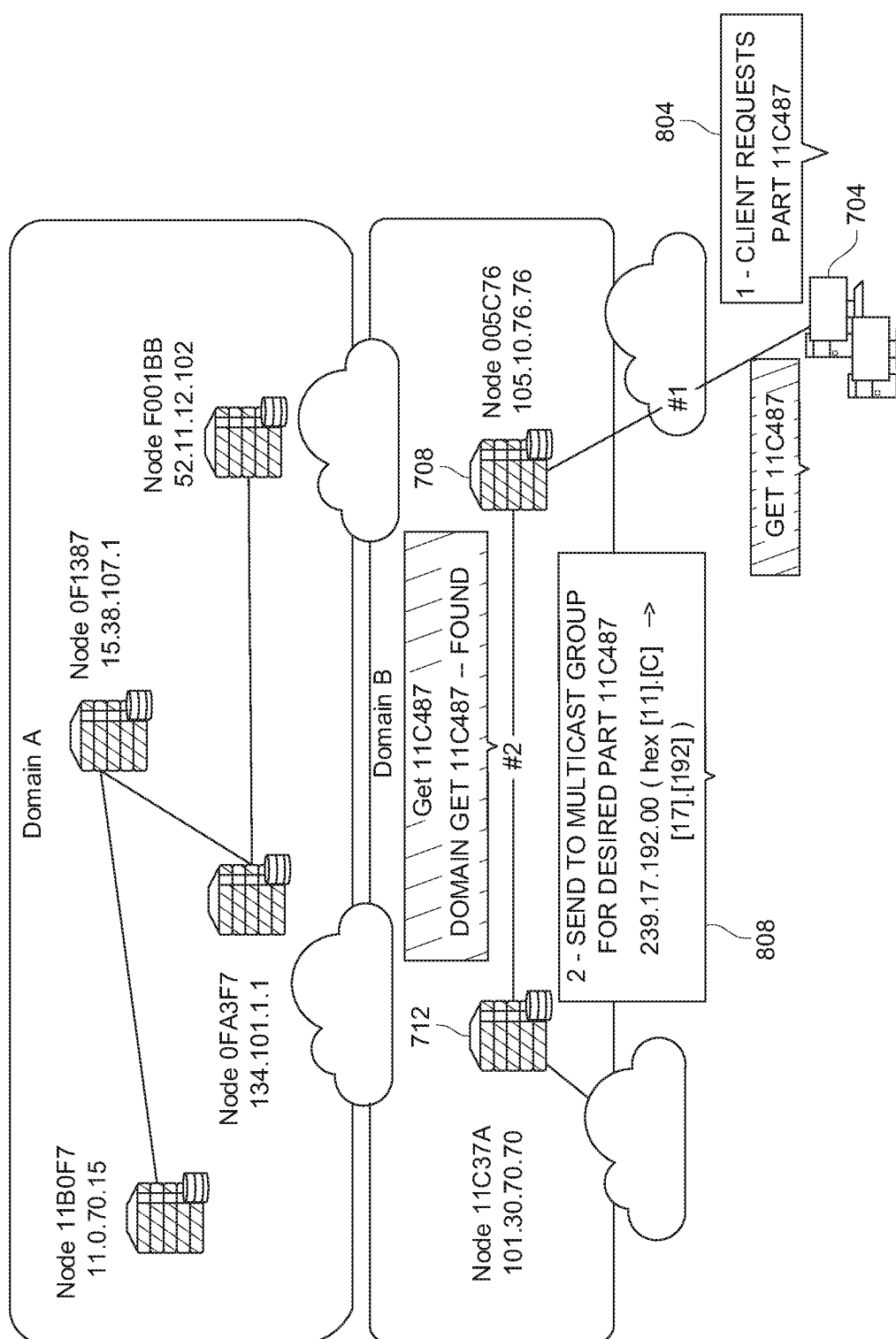


FIG. 7(Continued)



8
G
L

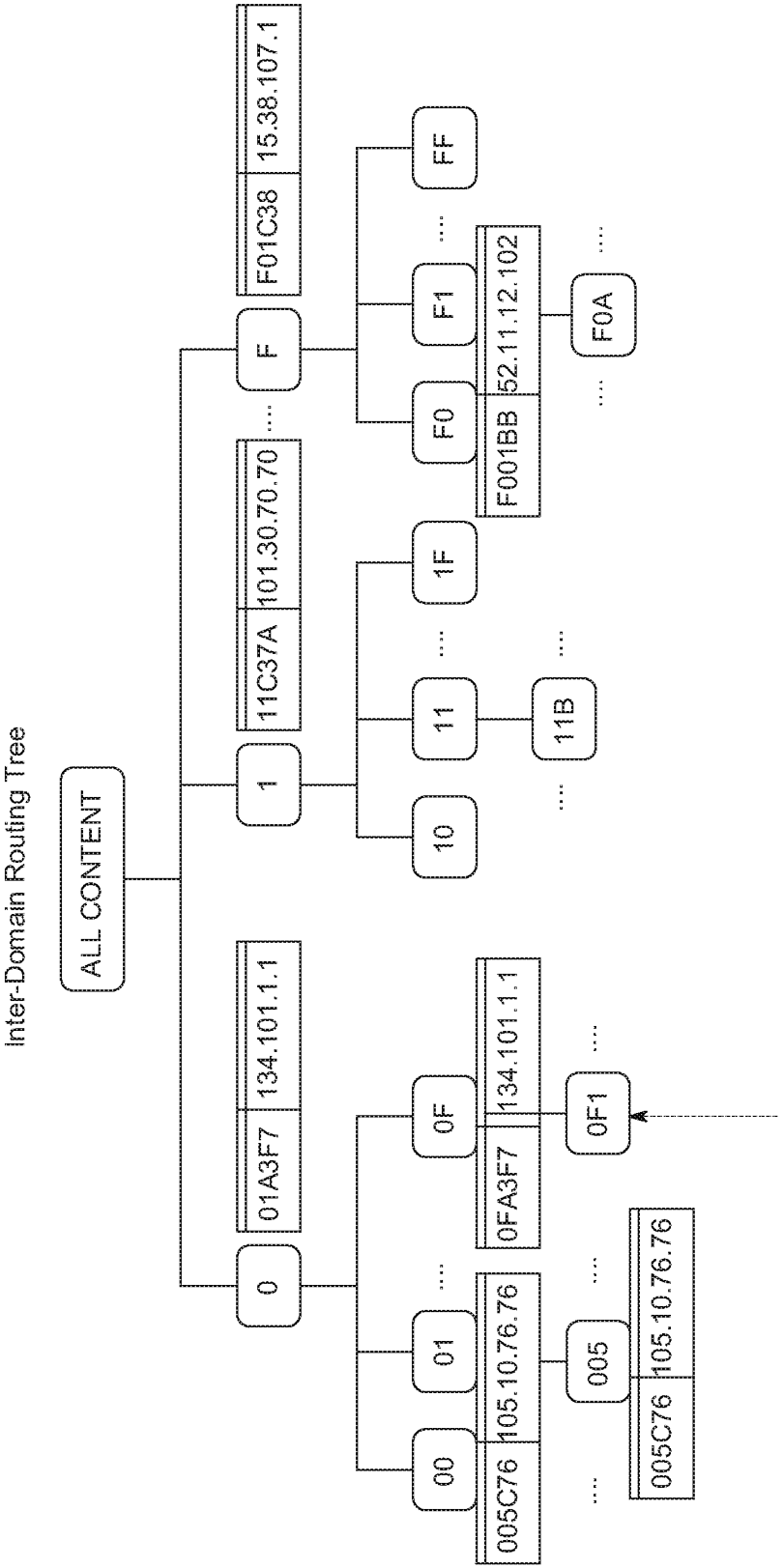
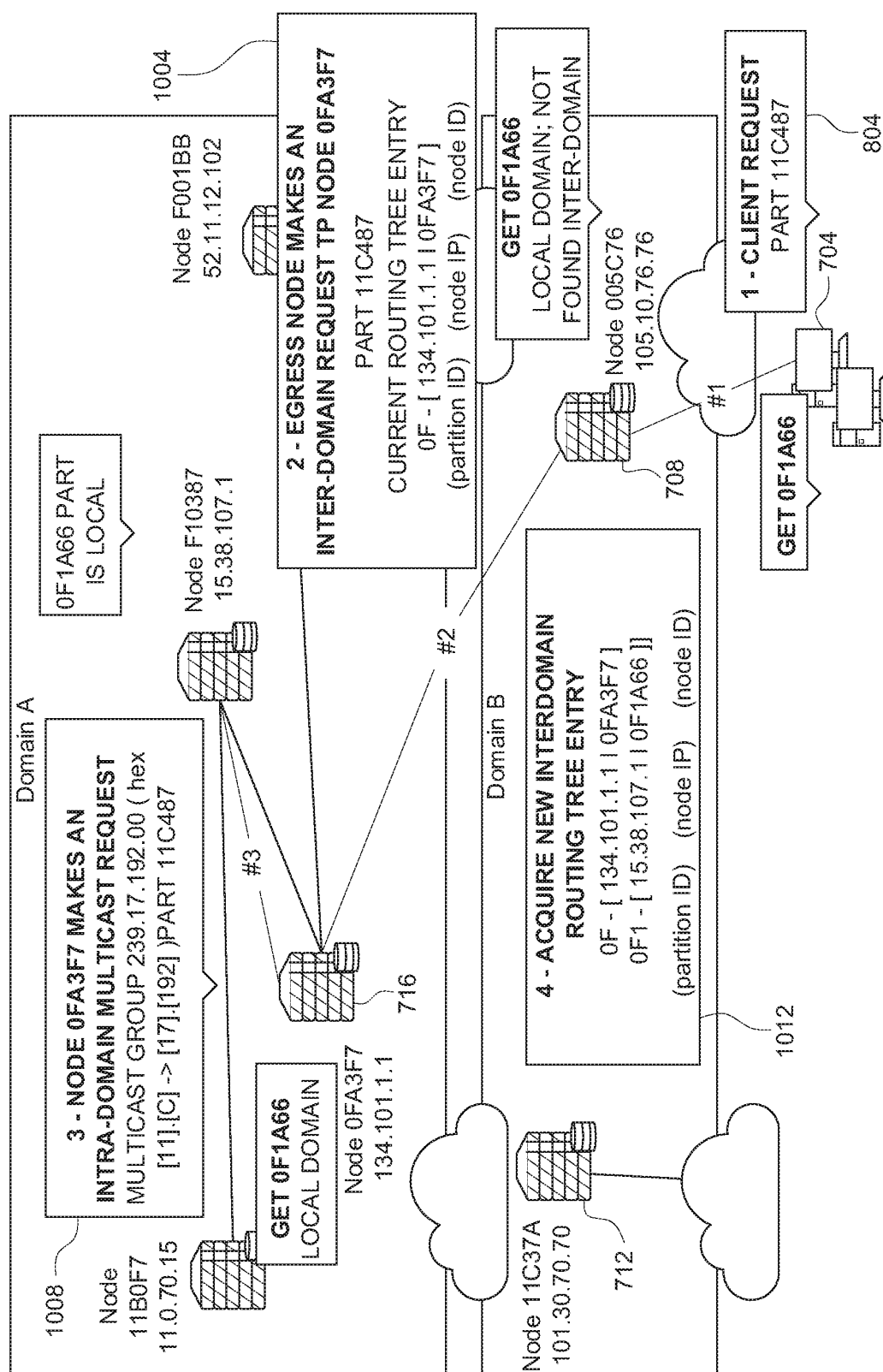


FIG. 9



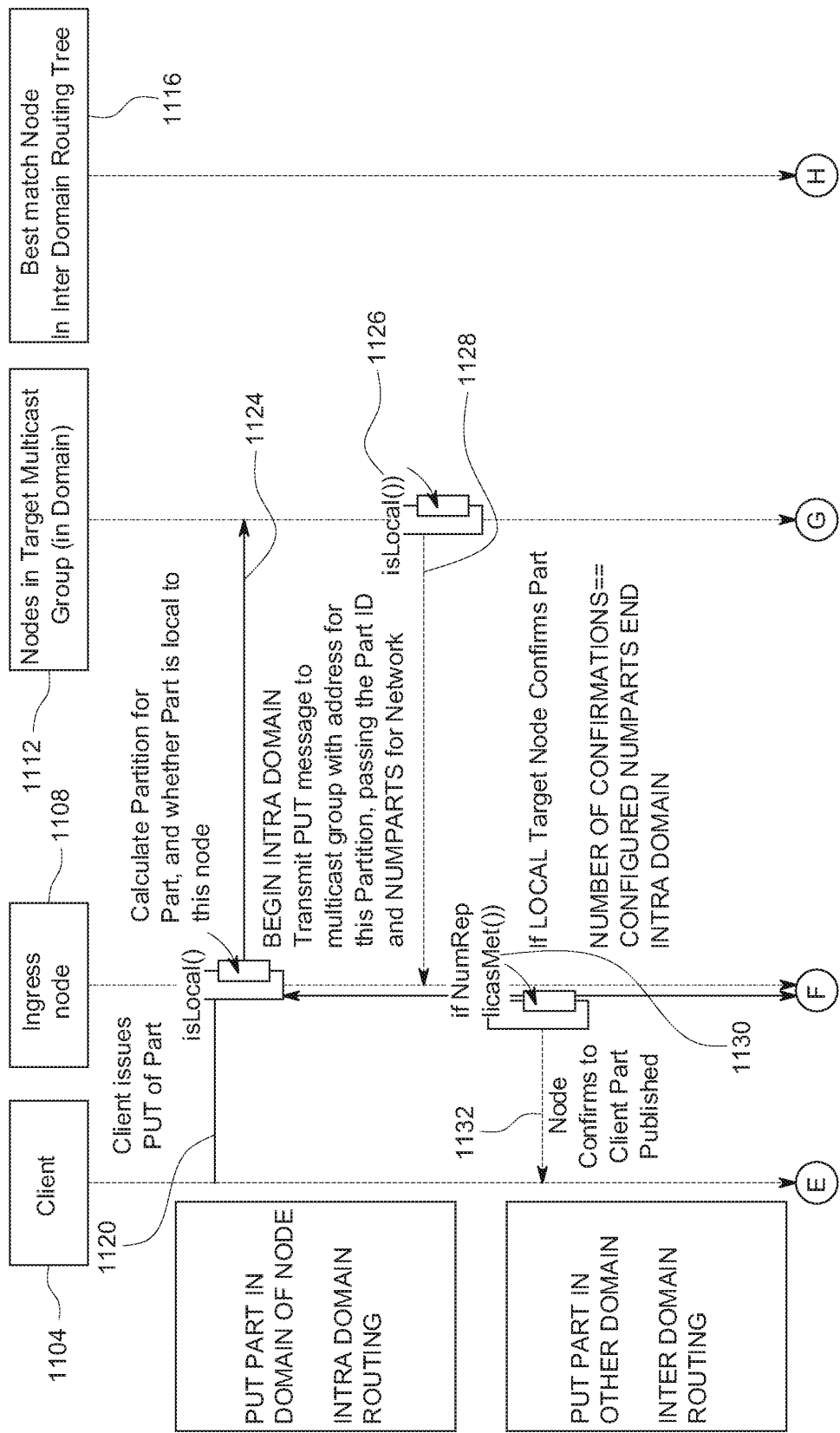


FIG. 11

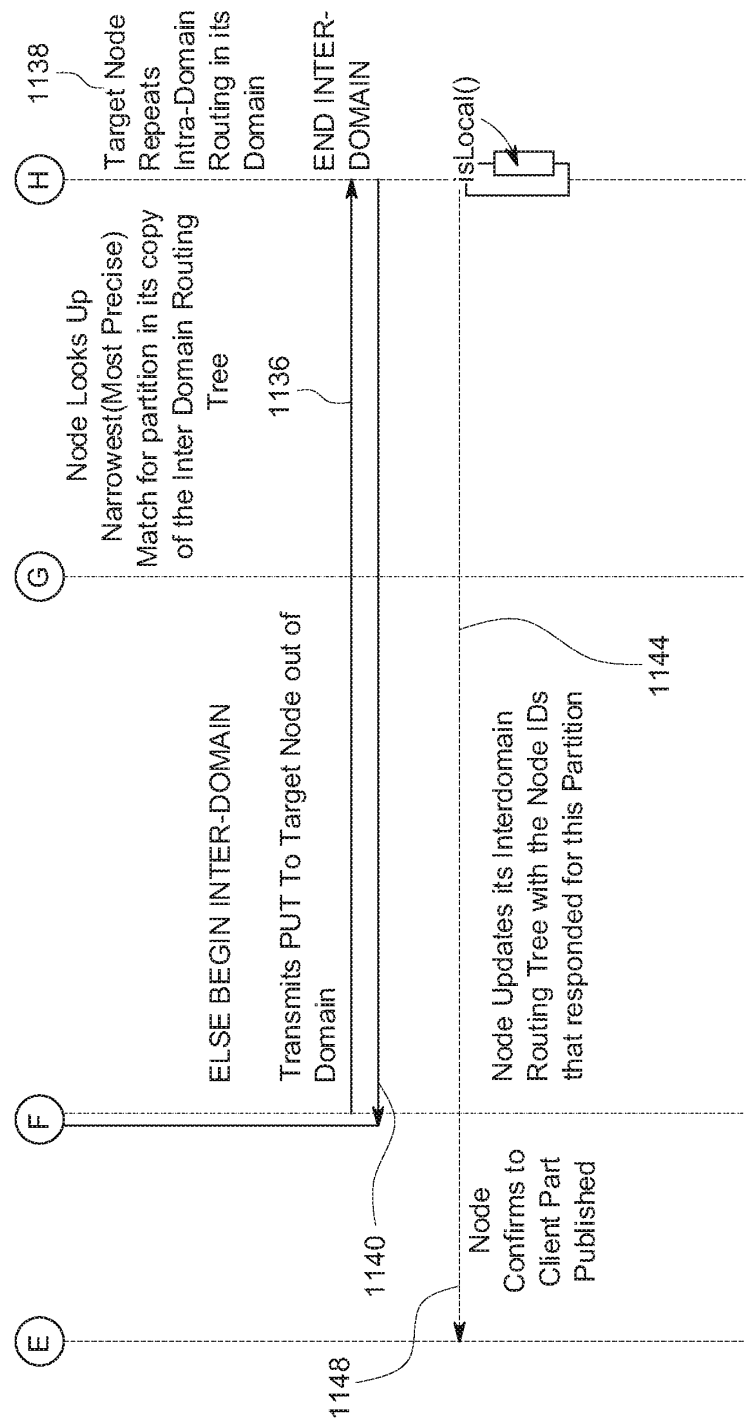


FIG. 11(Continued)

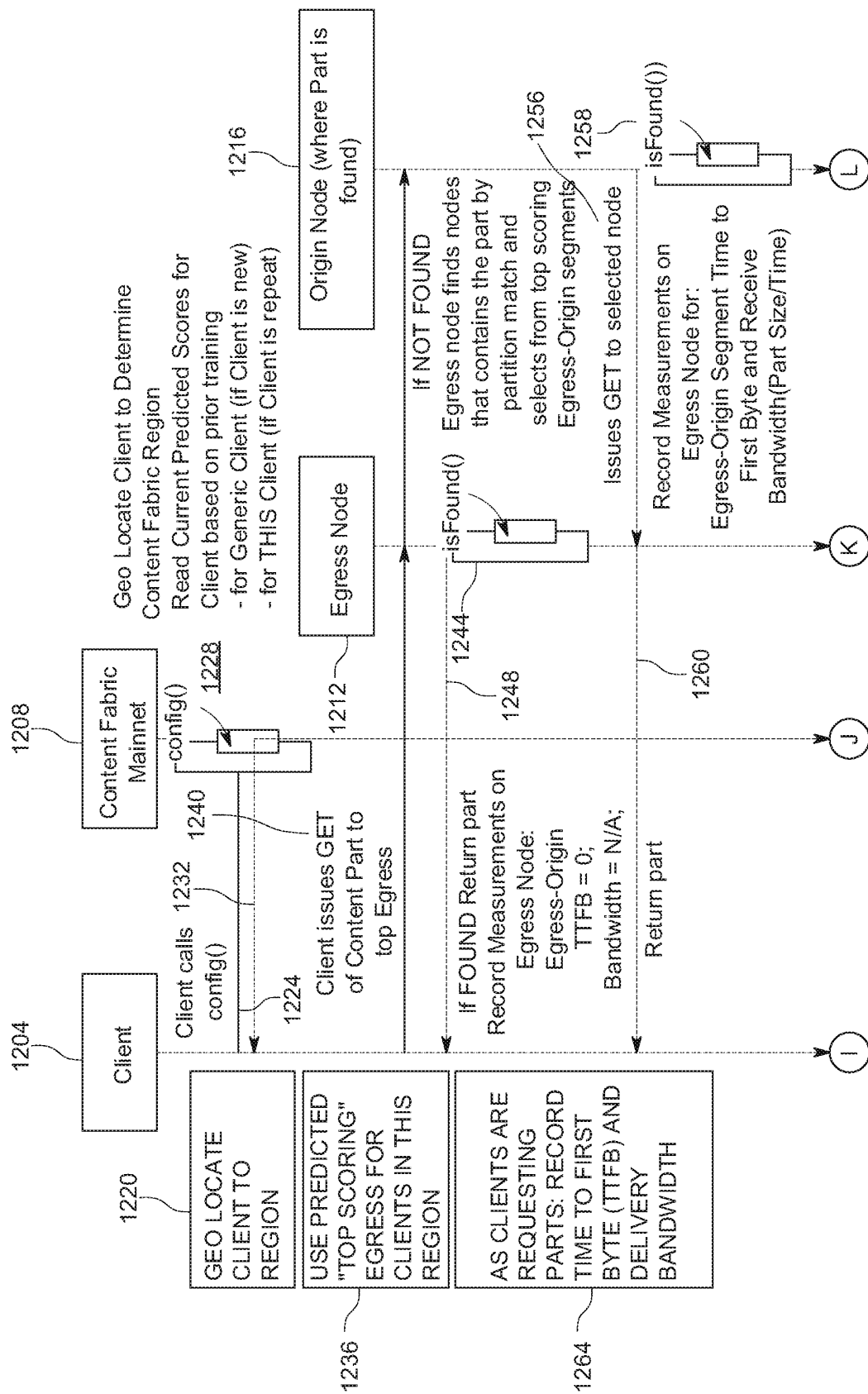


FIG. 12

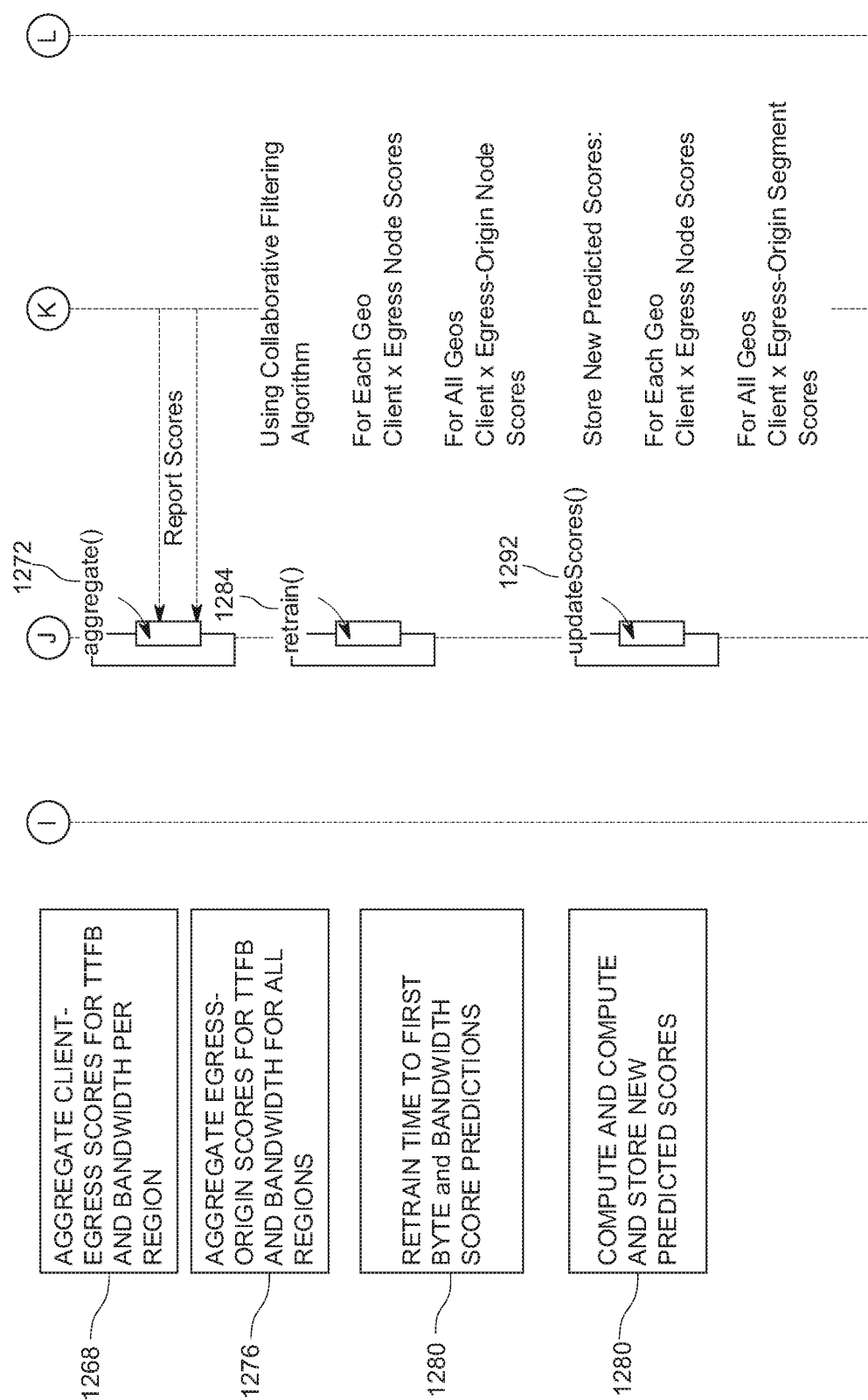


FIG. 12(Continued)

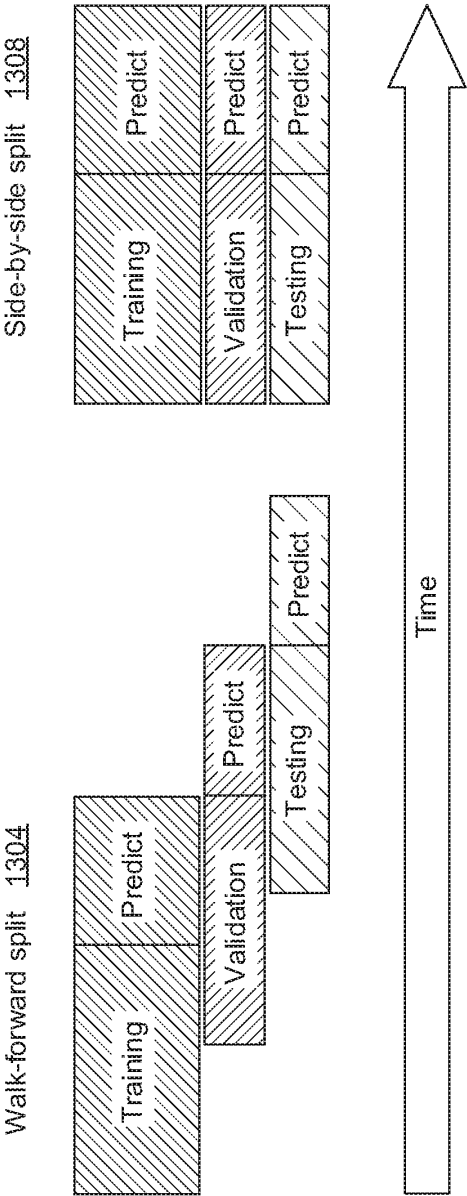


FIG. 13

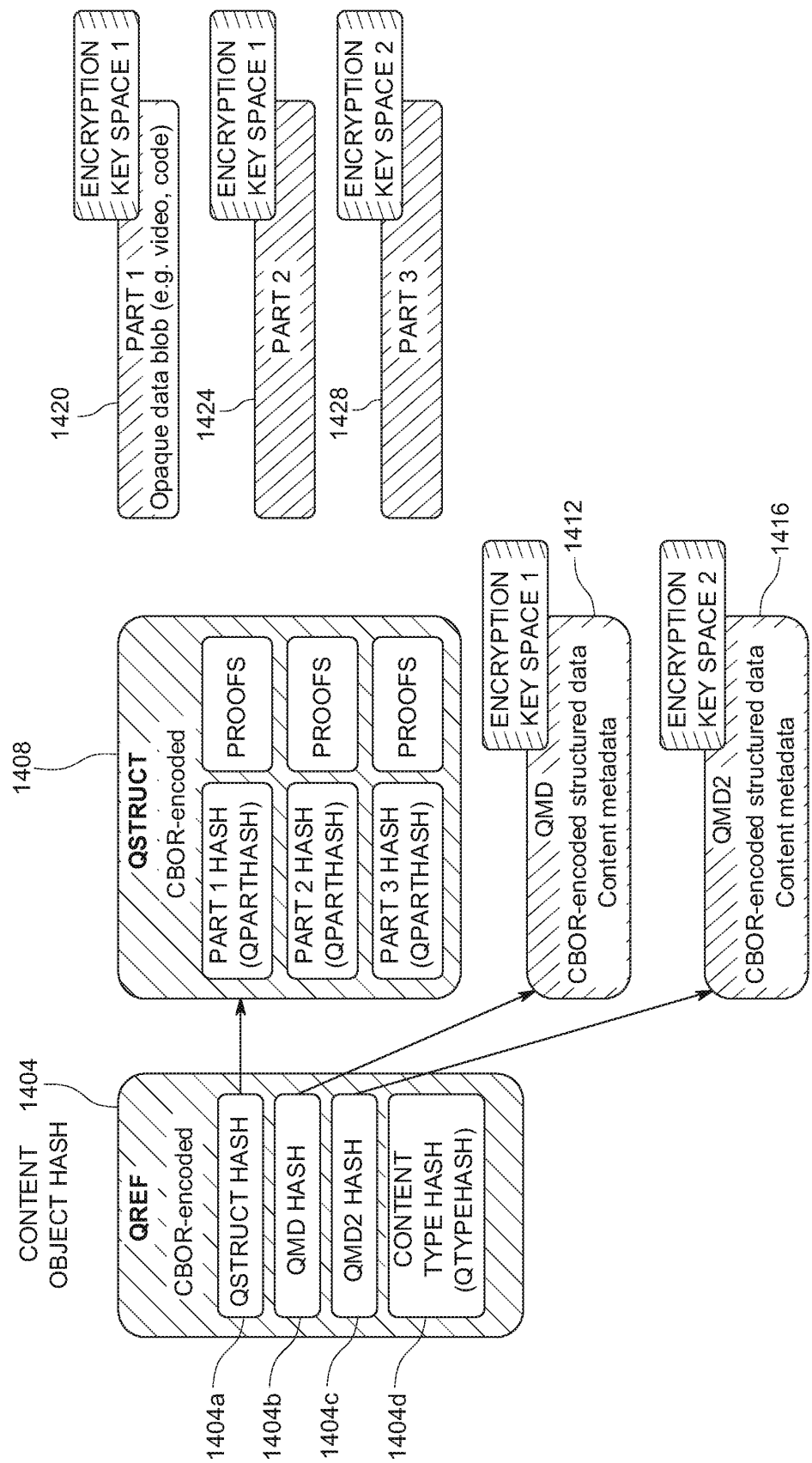


FIG. 14

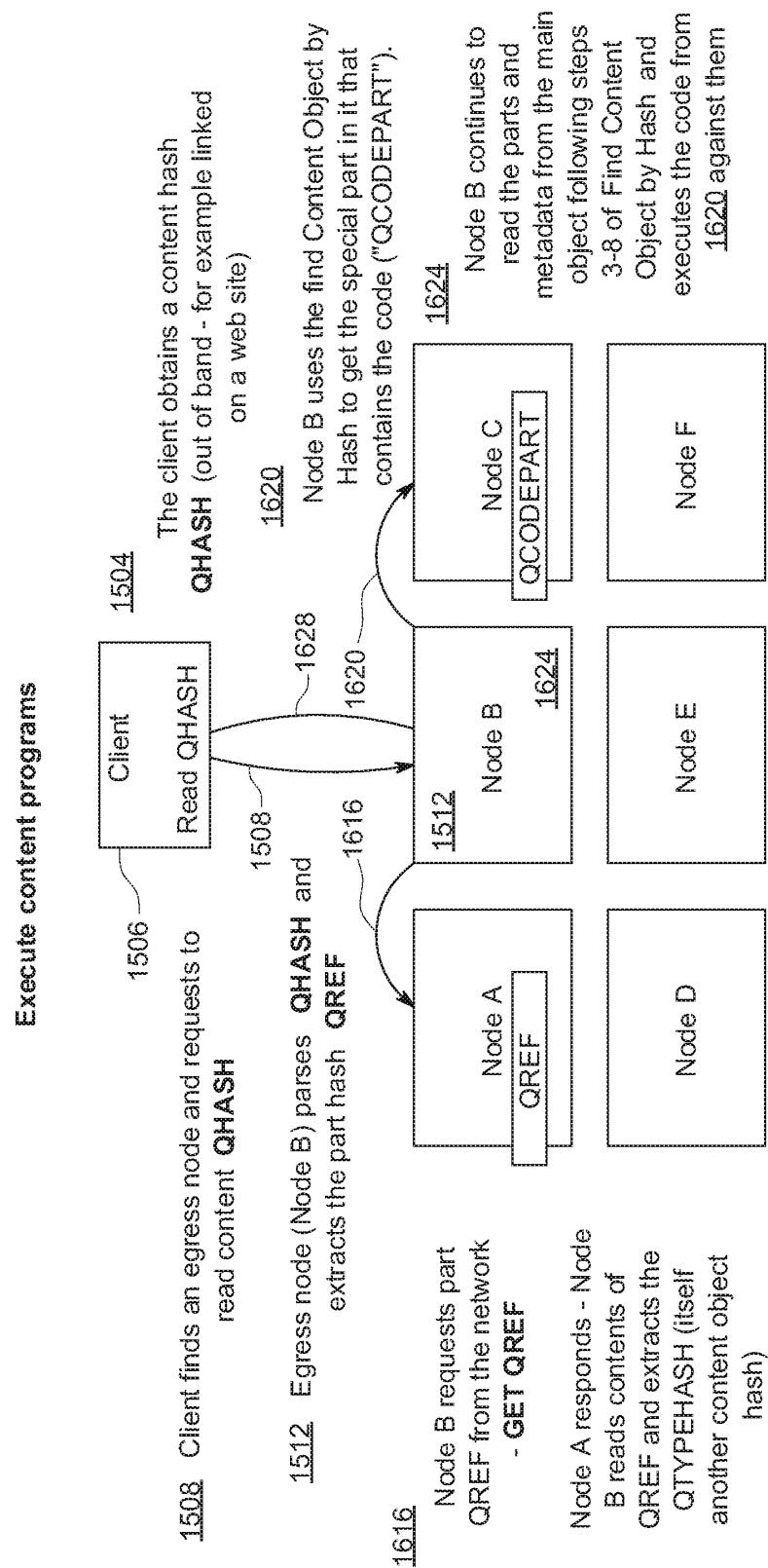


FIG. 16

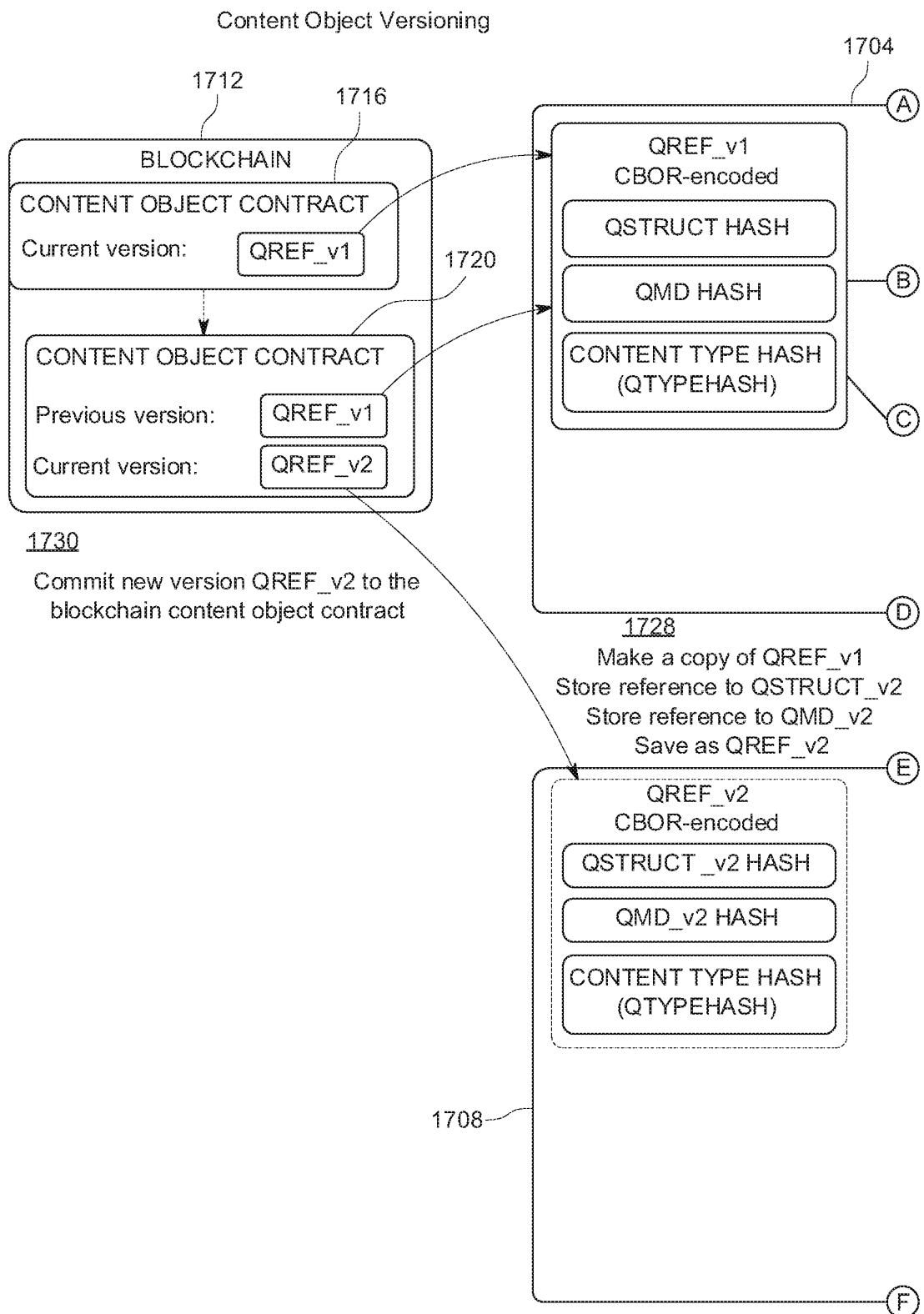


FIG. 17

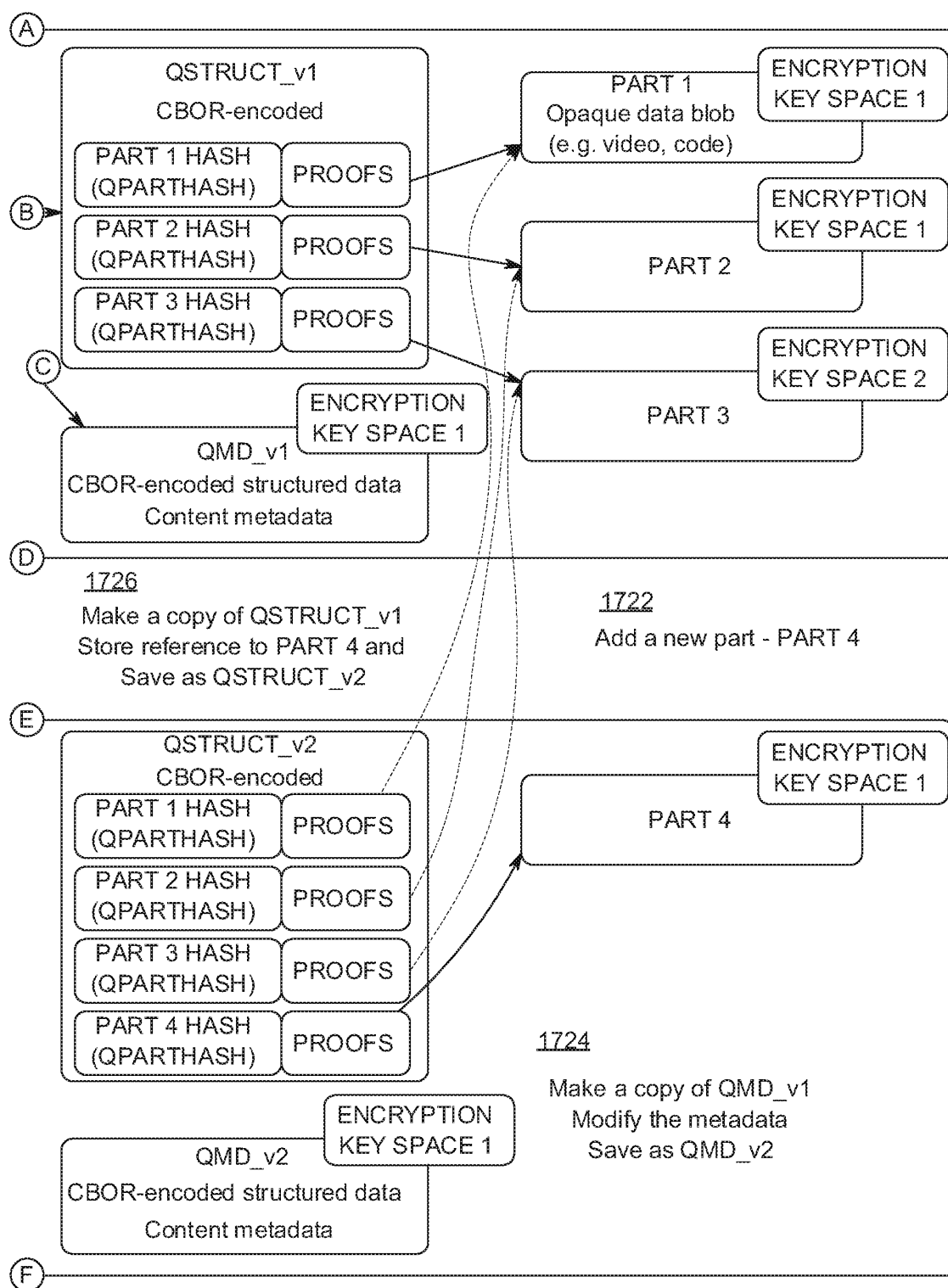


FIG. 17 (Continued)

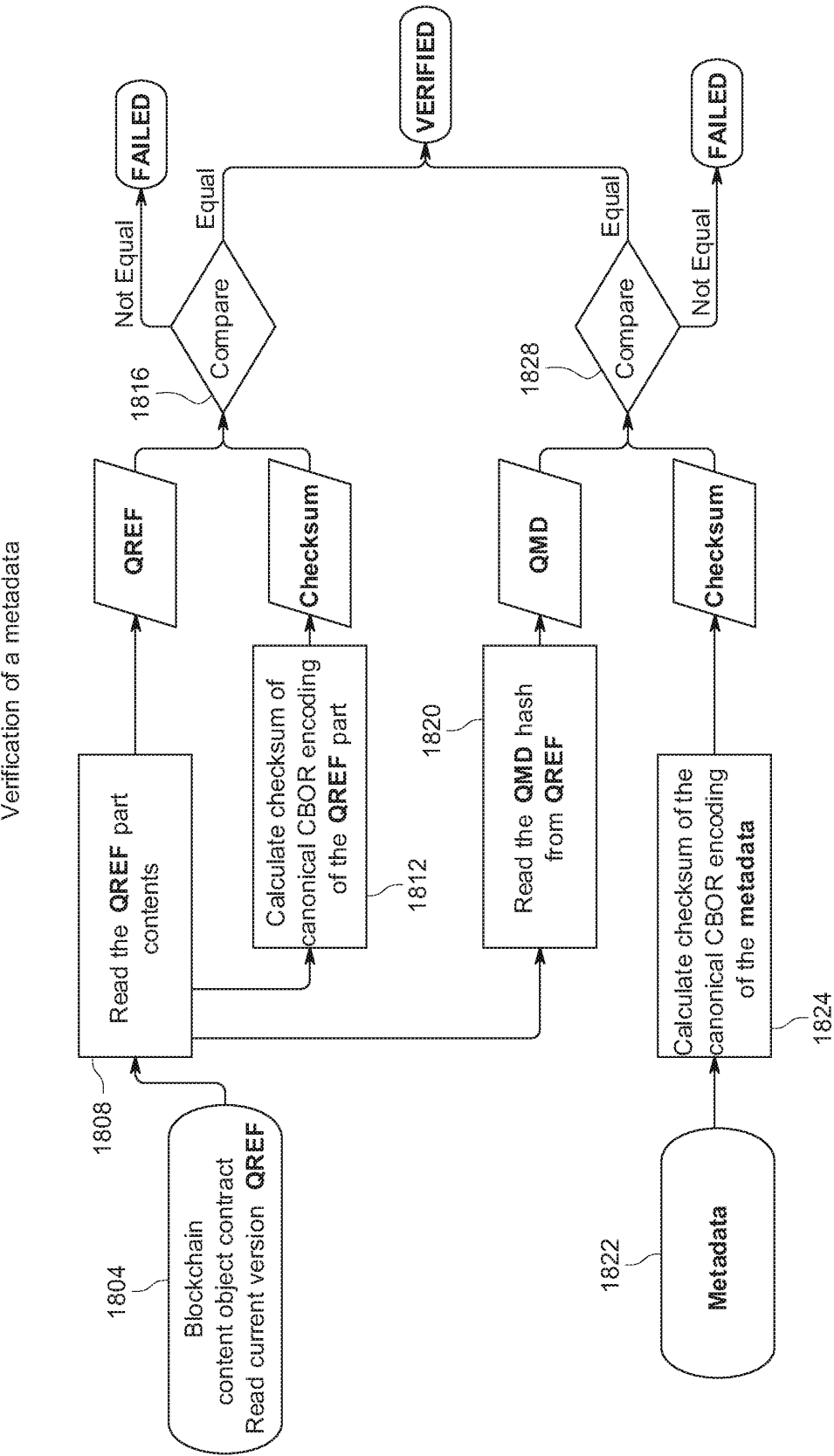


FIG. 18

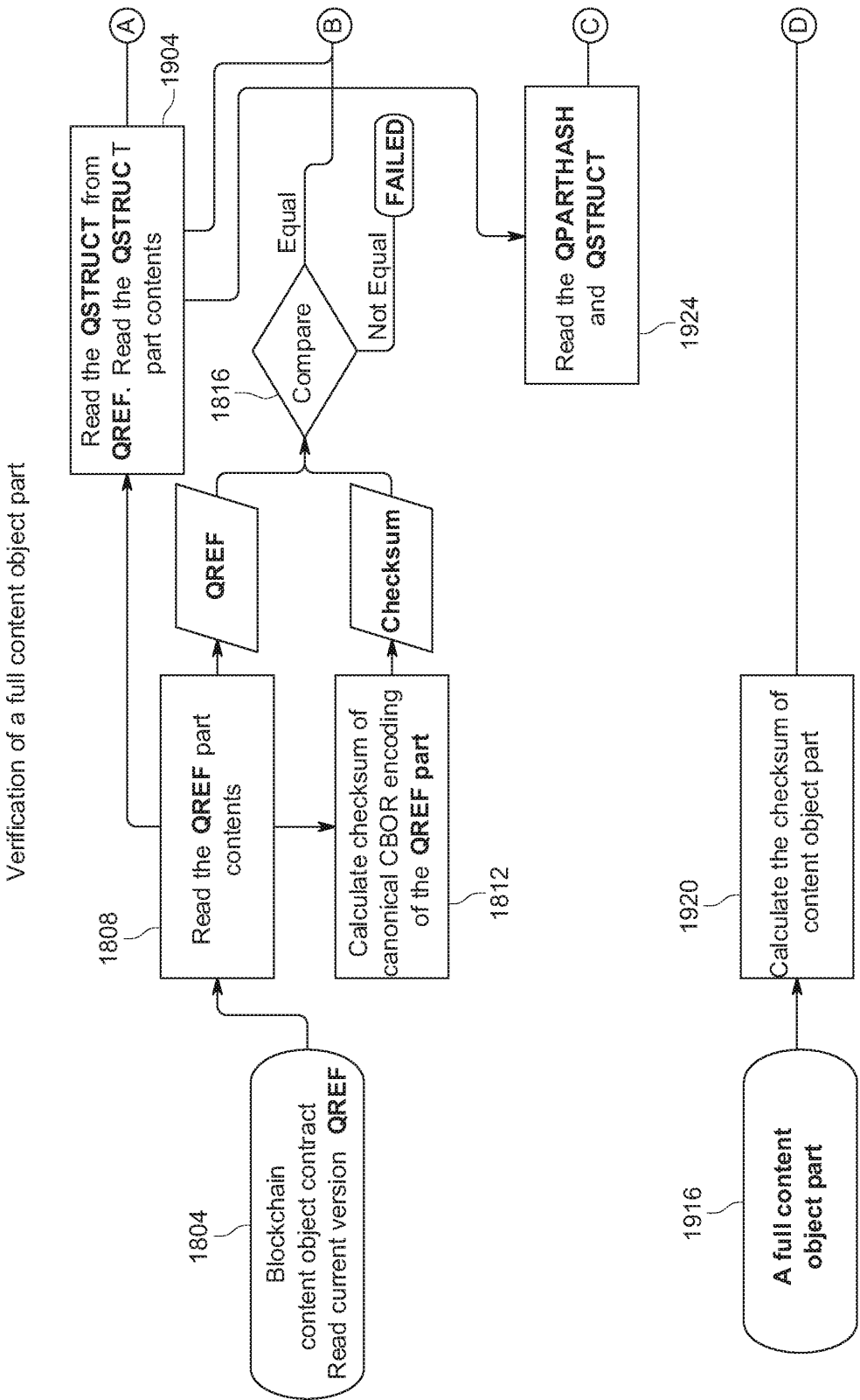


FIG. 19

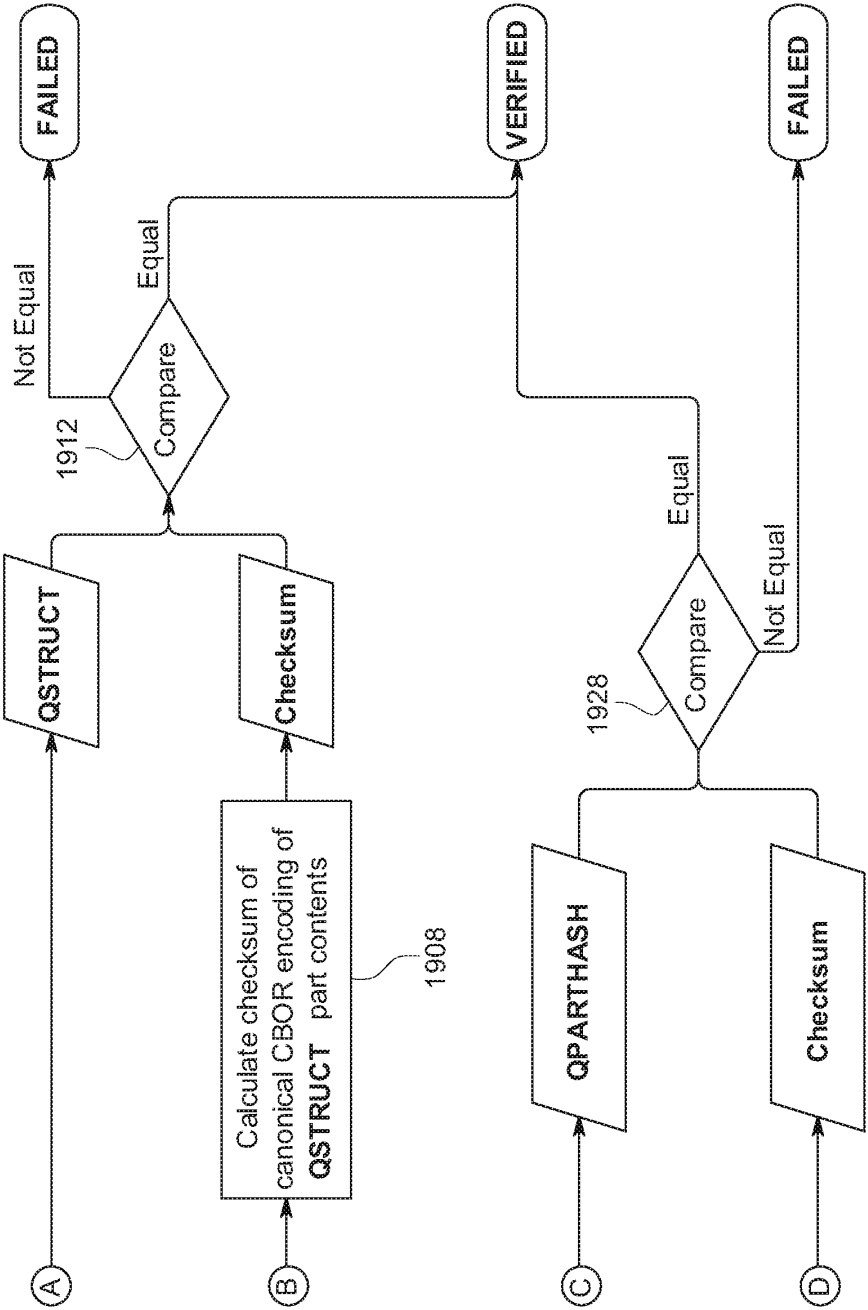


FIG. 19(Continued)

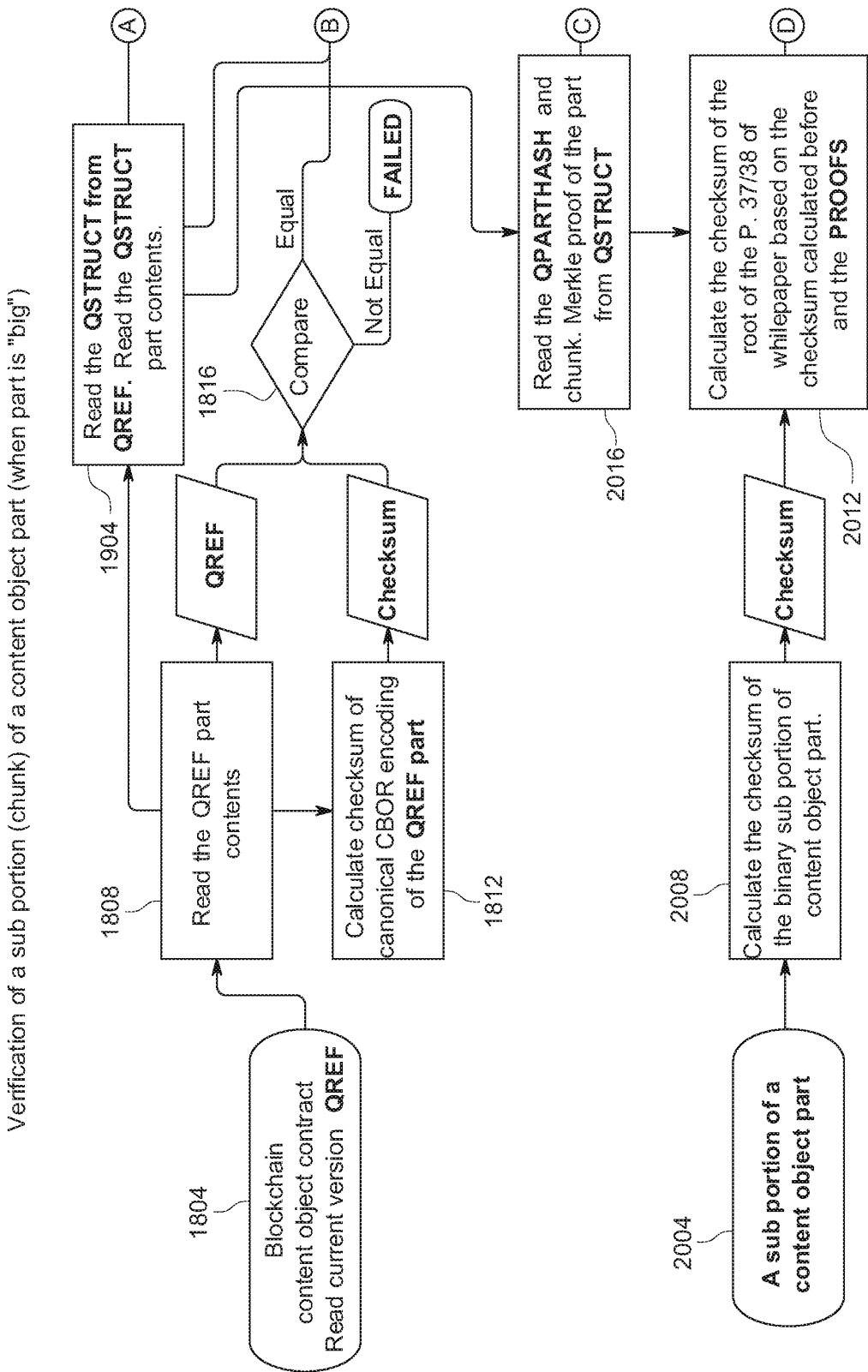


FIG. 20

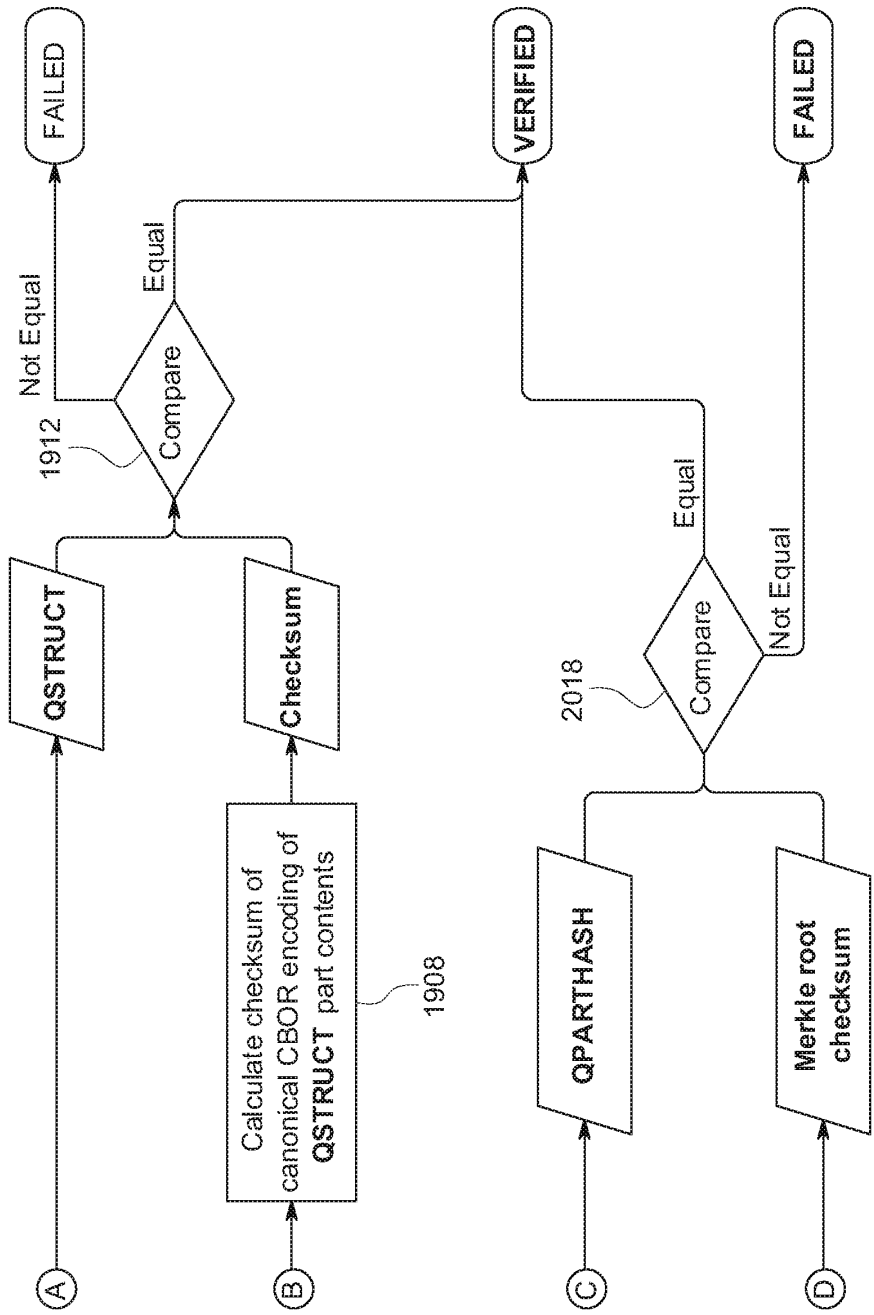


FIG. 20(Continued)

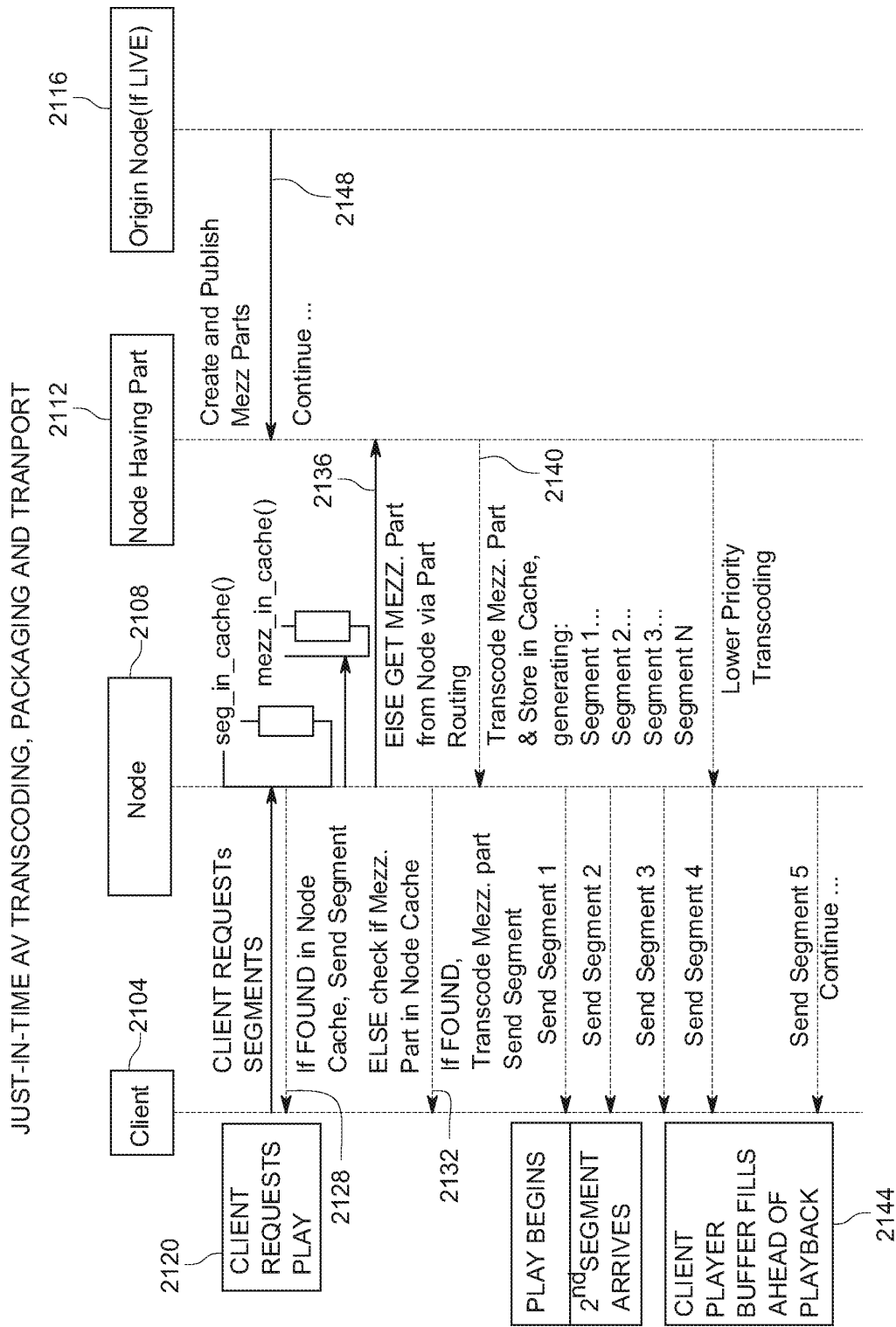


FIG. 21

```
-/ELV2/info (master) $ curl
http://localhost:8008/qlibs/ilibKRYmBlvGXzTA2sGdYJm5hi/q/hq___QmdWfBfLiJyGYi6V
8EzbuAB2xjq4QFfWorNYbudrANW9a/meta | jq
% Total    % Received % Xferd  Average Speed   Time    Time     Time
                                     Dload  Upload   Total   Spent    Left  Speed
100  8460    0  8460    0   0  192k    0  --:--:-- --:--:-- --:--:--    196k
{
  "id": "hq___Hvkav9kNRHxmdt6pA9iFTt",
  "hash": "hq___QmdWfBfLiJyGYi6V8EzbuAB2xjq4QFfWorNYbudrANW9a",
  "type": "hq___QmZeowebIC8JS9XvxdbtziwForbgMUr7gDTUDLyADPnP9",
  "meta": {
    "assets": {
      "01747a01-2906-4f82-9271-742b3de1968d": "OPL_OPP_IMF_IBC2018_Without_Leader_German.xml",
      "2b10be23-2b5d-425e-a448-044100fe6545": "DPP_IMF_IBC2018_video_2.mxf",
      "43195ef2-d212-4f52-bac3-b7bb5599493": "DPP_IMF_IBC2018_video_1.mxf",
      "49a325ea-3eca-473c-9ee0-da8fb5cad139": "DPP_IMF_IBC2018_EnglishAudio_1_stereo.mxf",
      "4bad9785-038b-4b9f-a710-aef47aea211c": "DPP_IMF_IBC2018_video_lead_in.mxf",
      "5852225d-f00f-4c76-beb6-97478cfc9acf": "OPL_DPP_IMF_IBC2018_Without_Leader_English.xml",
      "8696c1a5-c92f-41d9-89f4-364029c6054": "DPP_IMF_IBC2018_GermanAudio_audio_stereo.mxf",
      "a5459644-272b-4789-95bf-818bfe9dc40P": "CPL_CIPP_IMF_IBC2018_trailer_without_lead_in.xml",
      "c37533827-7440-4780-aca6-474c71a176df": "PKL_c3753827-7440-4780-aca6-474c71a176df.xml",
      "c8594a14-3001-44ae-957b-9bbfb015706": "CPL_OPP_IMF_IBC2018_with_lead_in.xml",
      "cf919e20-0747-4c03-8b0f-89861b8a89ea": "DPP_IMF_IBC2018_EnglishAudio_silence_stereo.mxf",
      "f1798564-2ead-4801-8e68-3417d5cf961c": "DPP_IMF_IBC2018_germanAudio_silence_stereo.mxf",
      "f8d4c364-93e3-4819-b1774115c0040,67": "DPP_IMF_IBC2018_EnglishAudio_2_stereo.mxf"
    }
  }
}
```

(A)

FIG. 22

FIG. 22(Continued)

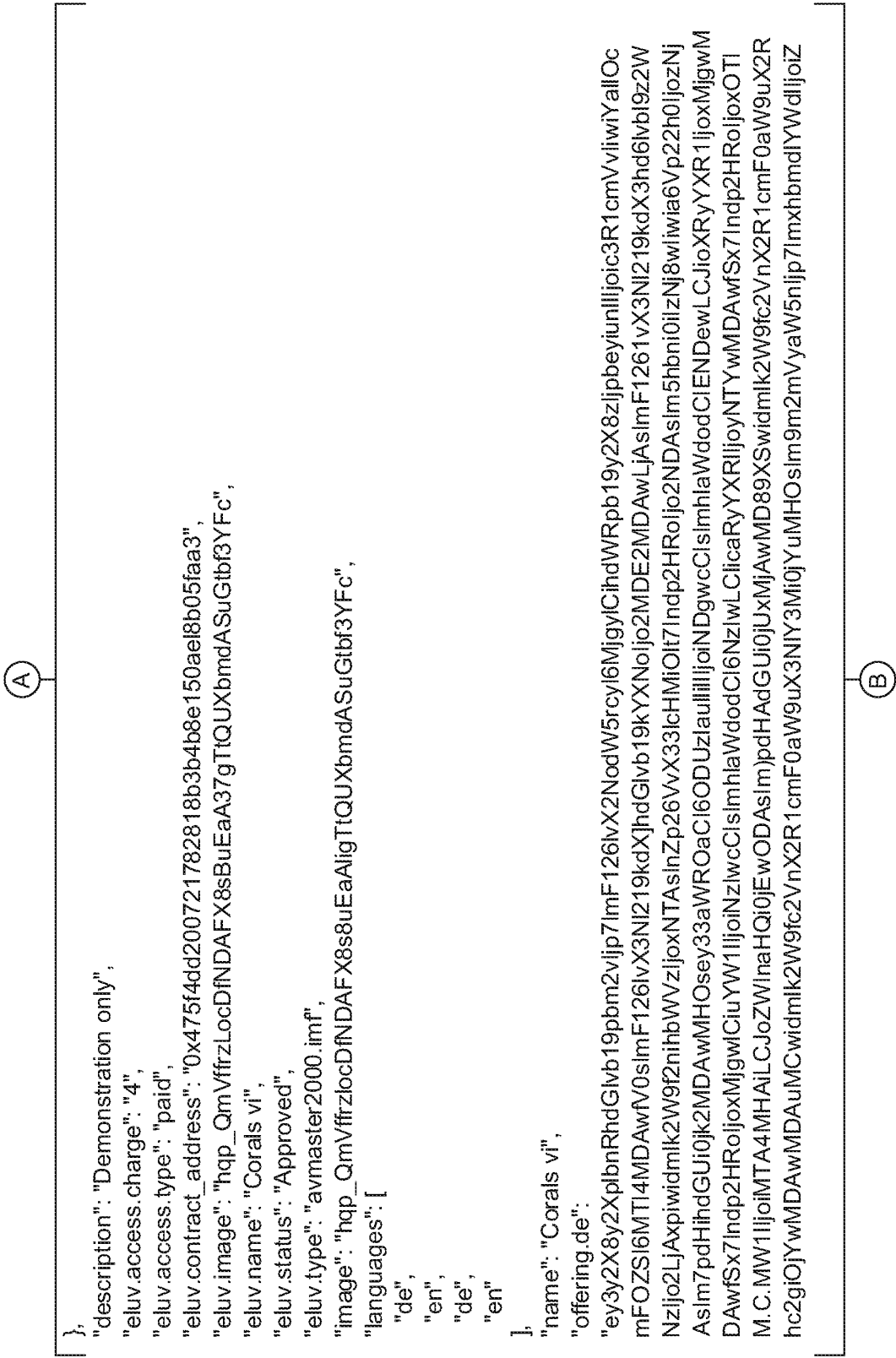




FIG. 22(Continued)

(D)

"CPL_OPP_IMF_IBC2018_trailer_without_lead_in.xml": "hqpilmT2pC3798LQzfnCUMRkFNLEkXqhCqYhZoKT44DhkUZEp",
 "CPL_OPP_IMF_IFIC2018_with_lead_in.json": "hqp_Ombri.MkoakfiEi4Y884efg5GC8KHLAESMQ68XQCfbk5L9w",
 "CPL_DPP_IMF_IBC2018_with_lead_in.xml": "hqp_ilmR5zUxu6p68Ms7H8cyckT1388vXNTcVKWdG5qFXKxjeJC",
 "DPP_IMF_IBC2018_EnglishAudio_1_stereo.mxf": "hqp_QmT2RsSvMsq4xnidtONR6KKunHSSxcTd5dmX9KCmcgegq",
 "DPP_IMF_IBC2018_EnglishAudio_2_stereo.mxf": "hqp_Qm2HVV9Vag3yo3eYsfEelsER7aKzpurbcHa9Ei8AjbQ2z",
 "DPP_IMF_IBC2018_EnglishAudio_silence_stereo.mxf": "hqp_QmbUd8ontivBswbRUXr8Nxs2AqTe3dwFGzST9gegyYyBZ",
 "DPP_IMF_IBC2018_GermanAudio_audio_stereo.mxf": "hqp_pmfTc5YMC6TErOkY0KdIEEBYVC2qoqE9PFP6nT3qttrbqf3",
 "DPP_IMF_IBC2018_GermanAudio_silence_stereo.mxf": "hqp_Qmck25x2w2TtVSTi8CTT6Ld1y08uKkdNuG8wUkAUue4nu8",
 "DPP_IMF_IBC2018_video_1.mxf": "hqp_QmRhV8V6cgCRQMuuQwxENIjb5G2f9C69fiuHkABH4ZyTsF",
 "DPP_IMF_IBC2018_video_2.mxf": "hqp_QmWRXv6tngfNz2fyKqHfUJ351nk5YVWyNon6dKRBML8nDuG",
 "DPP_IMF_IBC2018_video_lead_in.mxf": "hqp_Qmbad6iaVfr2SdNLJdFoWfE826j626dvng9GpdKcignUfQ",
 "OPL_OPP_IMF_IBC2018_Without_Leader_English.json": "hqp_QmWiGwQj9EzKncj8S3w6xAE843YE4MENNCvneCGq1zaS8q",
 "OPL_OPP_IMF_IBC2018_Without_Leader_English.xml": "hqp_pmcDcGheSVqapYQ242228MPPgHficEDYS2KCDcV8D7TpJV",
 "OPL_DPP_IMF_IBC2018_Without_Leader_German.json": "hqp_QmWxyml6Gopacrx4vR2bhz827kQf9snsi6v23uhq8Lo3Yf",
 "OPL_DPP_IMF_IBC2018_Without_Leader_German.xml": "hqp_QmR6W7h864GzgjVan67ShX4N3RqjR449o1T4ysREUic2TD",
 "PKL_c3753827-7440-4780-aca6-474c71a176df.json": "hqpilmQATbxbqaF6k2p1NHT8m9AkrtiFR5TDQSLcx7tzcii9Dz",
 "PKI_c3753827-7440-4780-aca6-474c71a176df.xml": "hqp_QmTtp1TcZySRLskTzsrBKE8mruTyYz9Ah12nWEhLUDJ9z",
 "VOLINDEX.xml": "hqp_QmQKUWPSdSeB5dMYXGceyFP6CYcr3K8gYAi8oNbmbDVdf",
 "coral-reef-poster.jpg": "hqp_QmVfrrzlocDINDAFX8s8uEGAJ3gTtQUXbmdASuGtbf3YFc"

(E)

FIG. 22(Continued)

(E)

```
},  
  "video": "hqp_QmT2RsSvNs4xnidtDNR6KKunHSSxcTd5dmX9Kcmcgeqq",  
  "visible": false,  
  "watermark": {  
    "font_size": "(h/20)",  
    "pos_x": "(w-tw)/8",  
    "pos_y": "(h-h/8)",  
    "text": "SHORT FRAGMENT FOR DEMONSTRATION ONLY - SEPTEMBER 2018"
```

FIG. 22(Continued)

```

{
  "title": "The IMF Movie",
  "description": "Drama - IMF saves the day! ",
  "language": "en",
  "program_length": "PT0H23M30.665",
  "audio_sequence": {
    "resources": [
      {
        "entry_point": 83.66691666666667,
        "source_duration": 348348,
        "timeline_start": 0,
        "timeline_end": 7.25725,
        "track_file_id": "11111111-1111-1111-1111-111111111111",
        "path": "/MEDIA/IMF Movie studio logo audio stereo.mxf"
      },
      {
        "entry_point": 148.81533333333334,
        "source_duration": 7173166,
        "timeline_start": 7.25725,
        "timeline_end": 156.69820833333333,
        "track_file_id": "22222222-2222-2222-2222-222222222222",
        "path": "/MEDIA/IMF Movie opening credits audio stereo.mxf"
      },
      {
        "entry_point": 0,
        "source_duration": 60190130,
        "timeline_end": 1410.65925,
        "timeline_start": 156.69820833333333,
        "track_file_id": "33333333-3333-3333-3333-333333333333",
        "path": "/MEDIA/IMF Movie main soundtrack English stereo.mxf"
      }
    ]
  },
  "video_sequence": {
    "resources": [
      {
        "entry_point": 83.66691666666667,
        "source_duration": 174,
        "timeline_start": 0,
        "timeline_end": 7.25725,
        "track_file_id": "44444444-4444-4444-4444-444444444444",
        "path": "/MEDIA/IMF Movie studio logo video.mxf"
      },
    ]
  }
}

```

(A)

FIG. 23

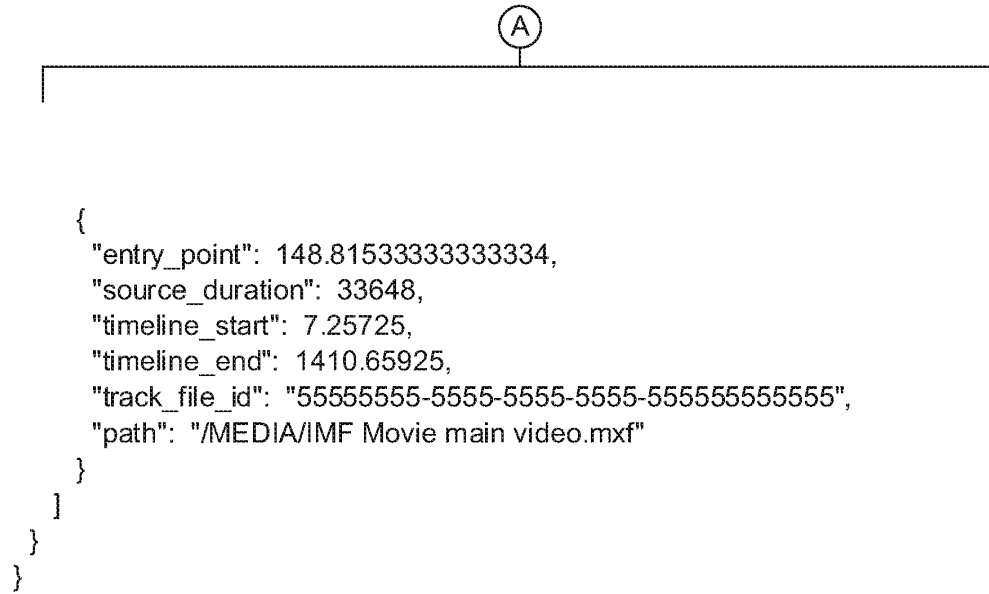


FIG. 23(Continued)

```
    },  
    "video": "hqp_QmTZRsSvNsq4xnidtDNRGKKunHSSxcTd5dmX9Kcmcgqqq",  
    "visible": false,  
    "watermark": {  
        "font_size": "(h/20)",  
        "pos_x": "(w-tw)/8",  
        "pos_y": "(h-h/8)",  
        "text": "SHORT FRAGMENT FOR DEMONSTRATION ONLY - SEPTEMBER 2018"  
    }  
}  
}  
}
```

FIG. 24

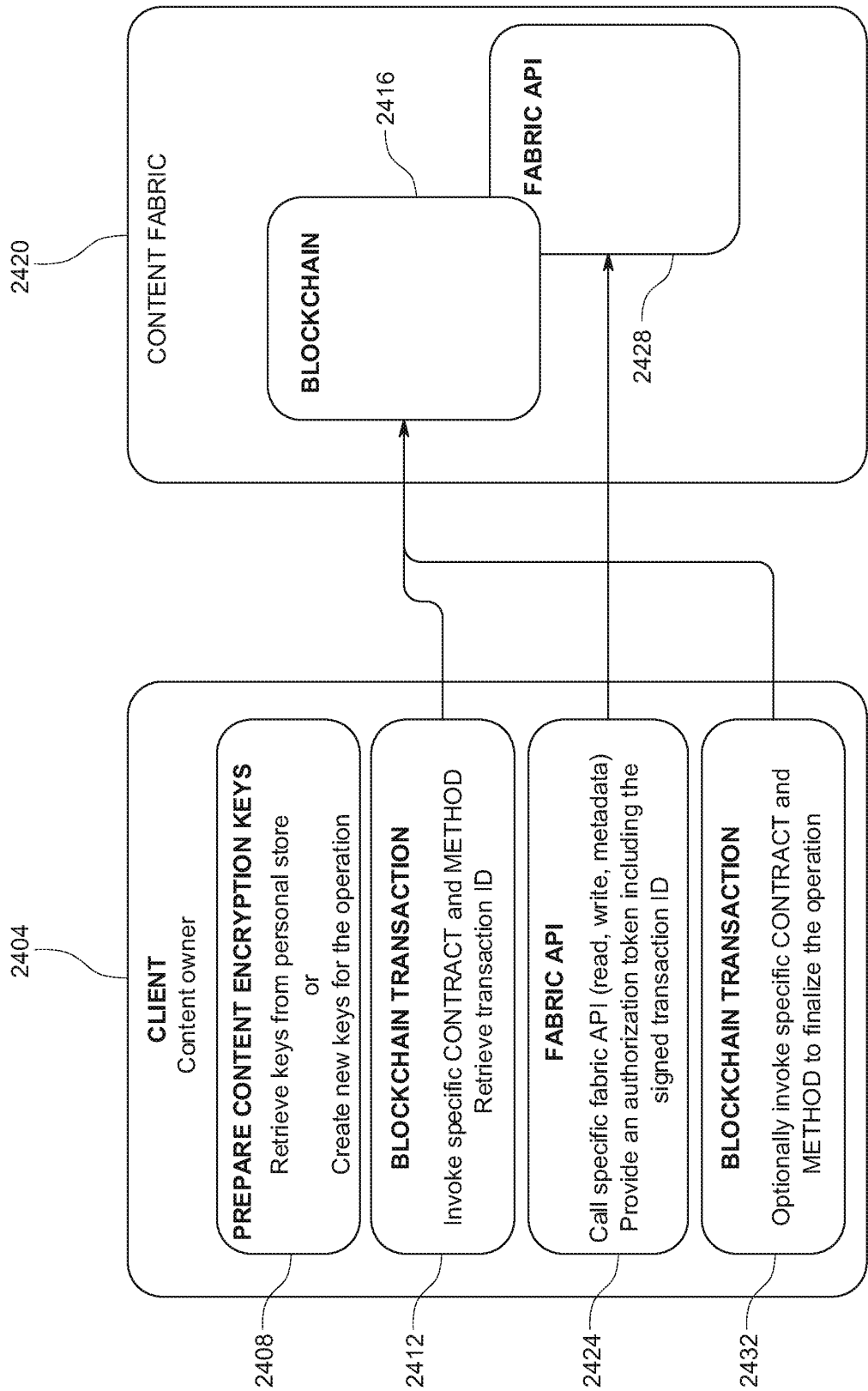


FIG. 25

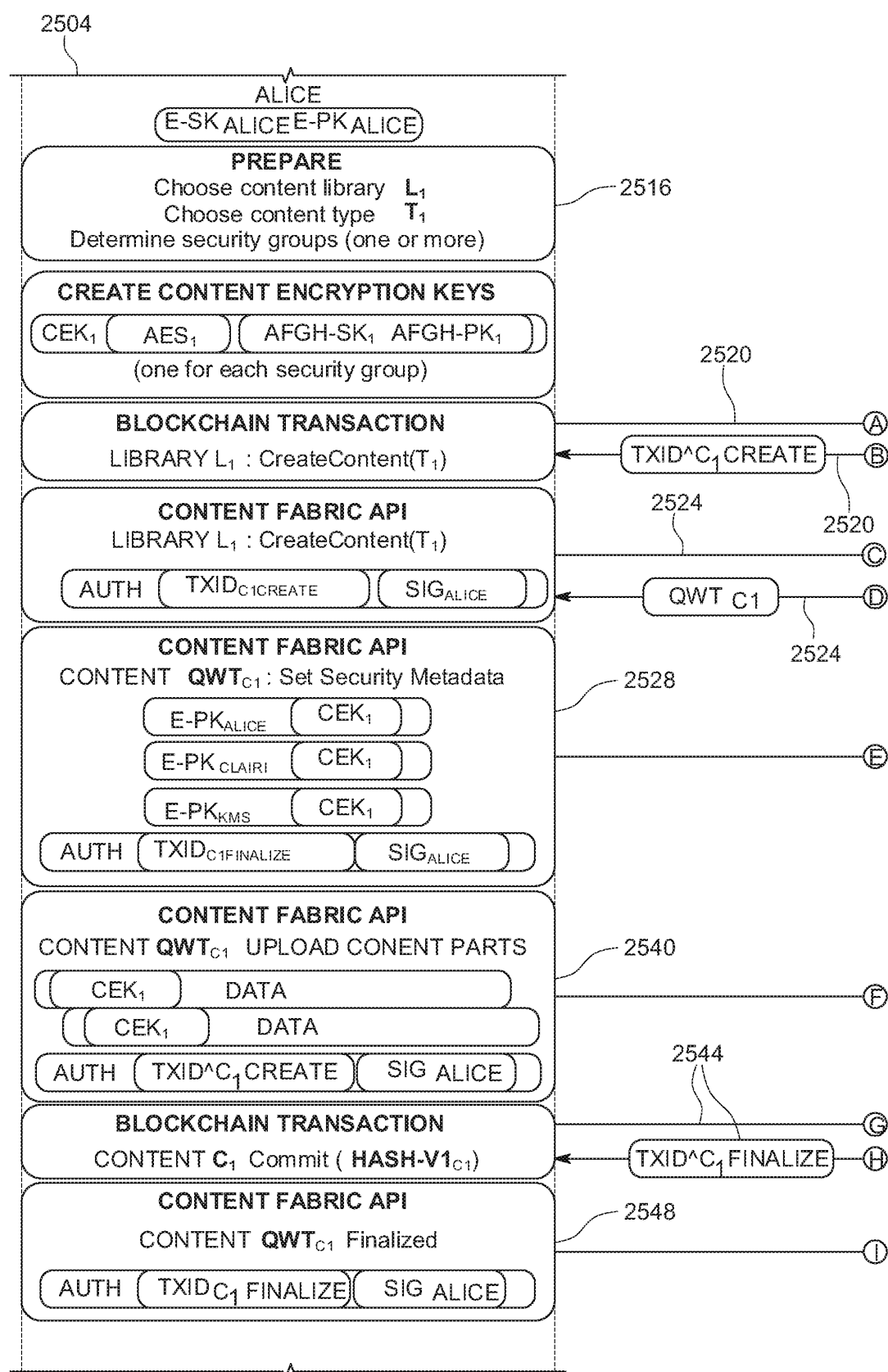


FIG. 26

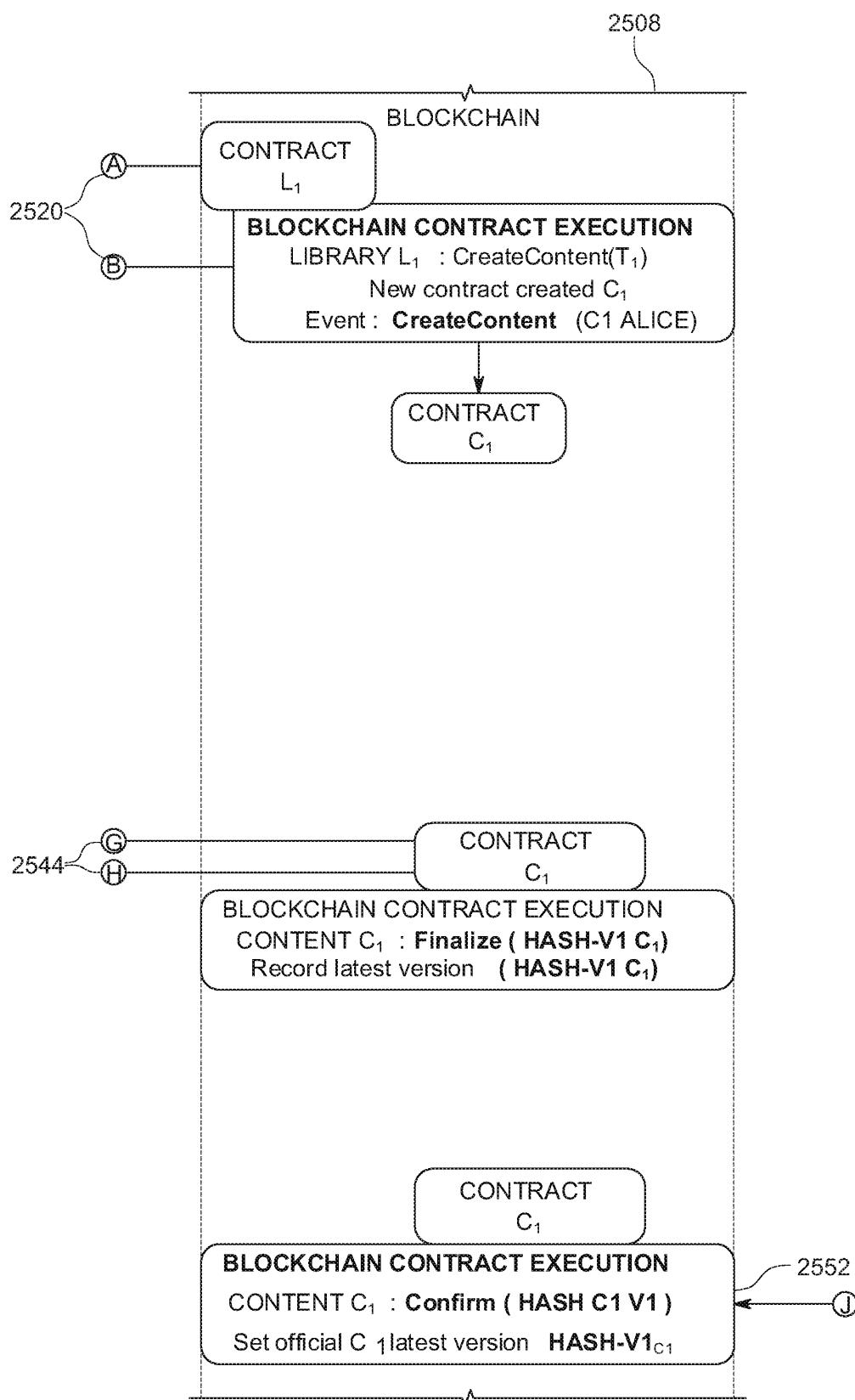


FIG. 26(Continued)

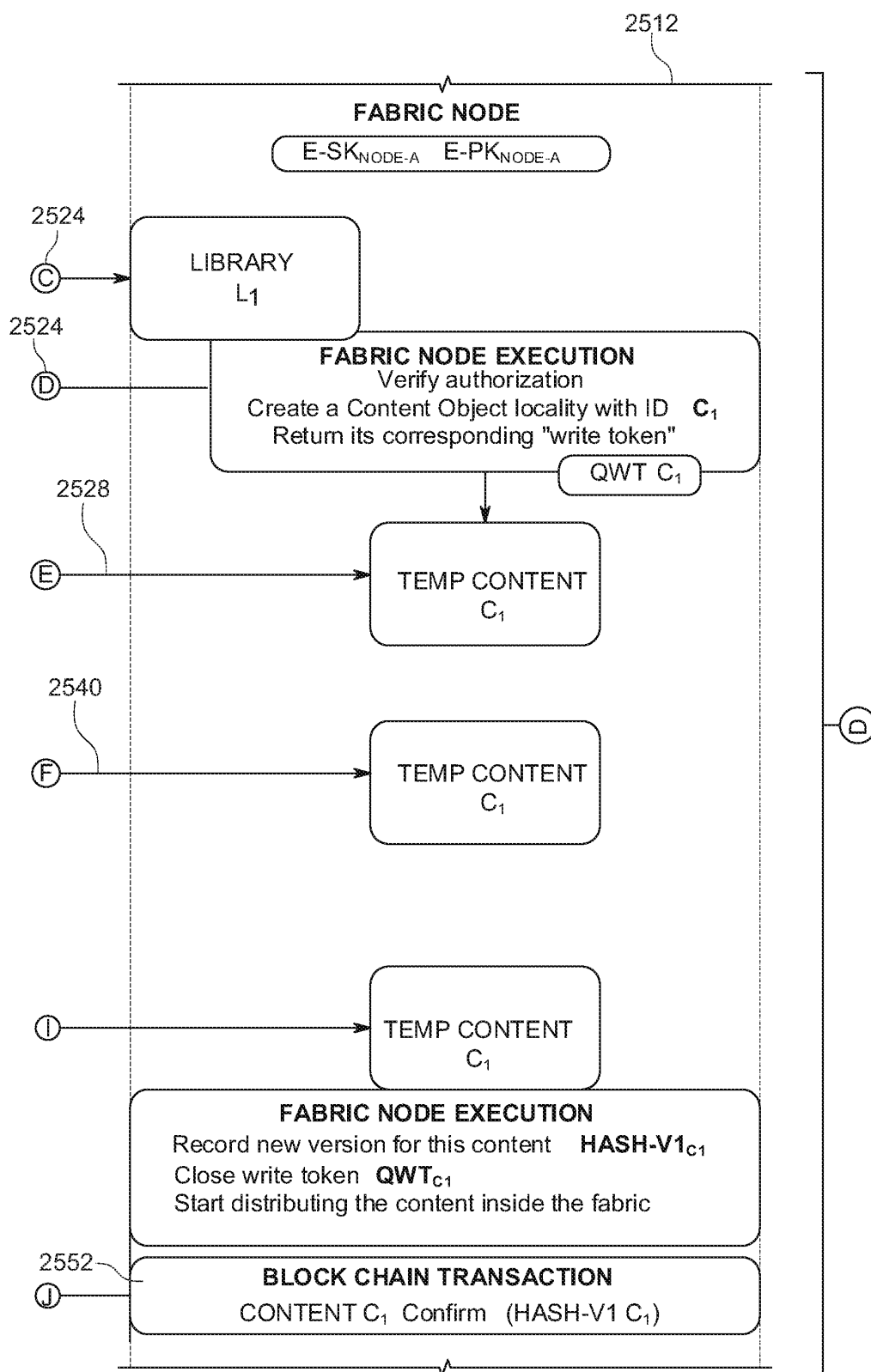


FIG. 26(Continued)

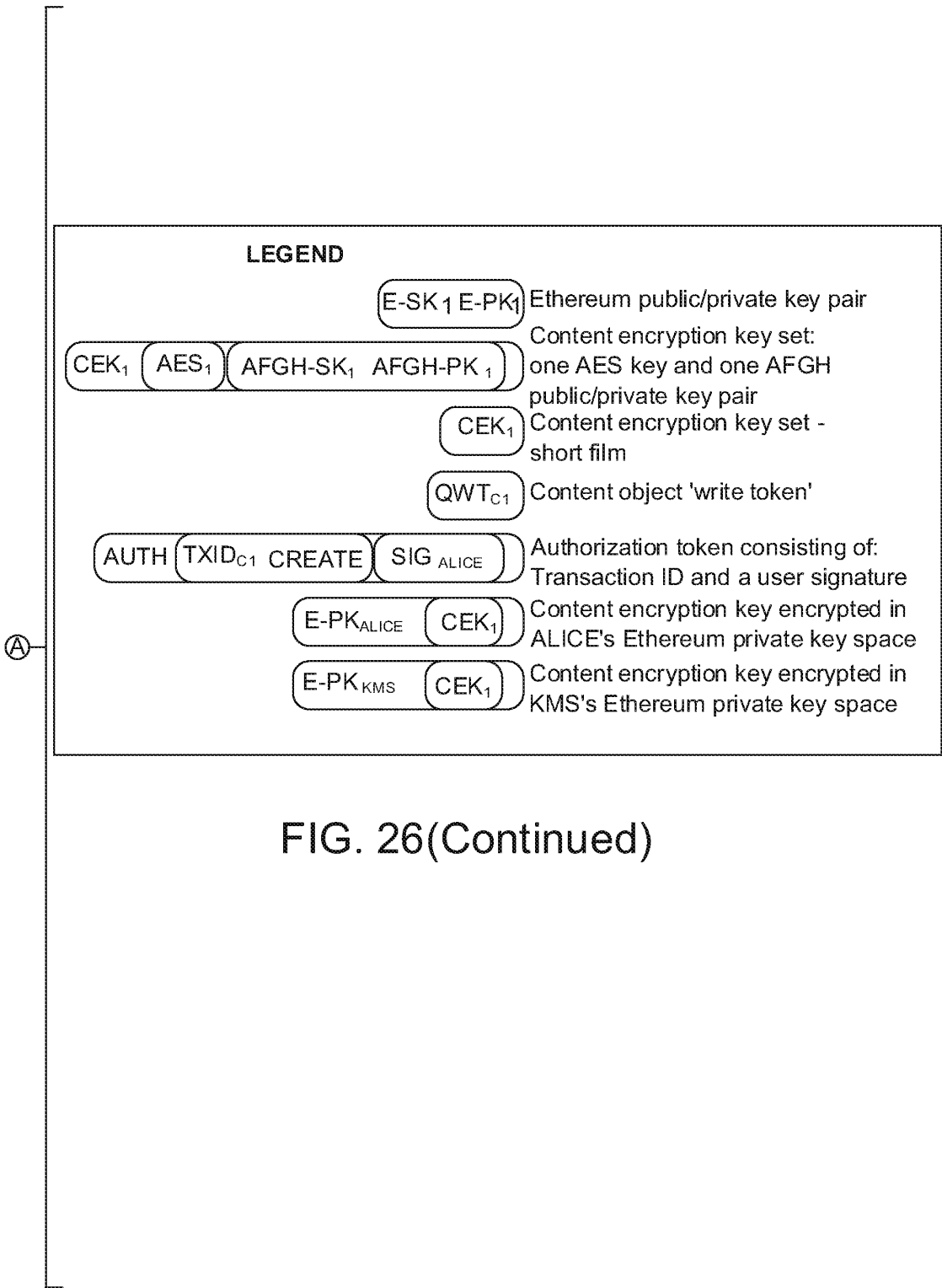


FIG. 26(Continued)

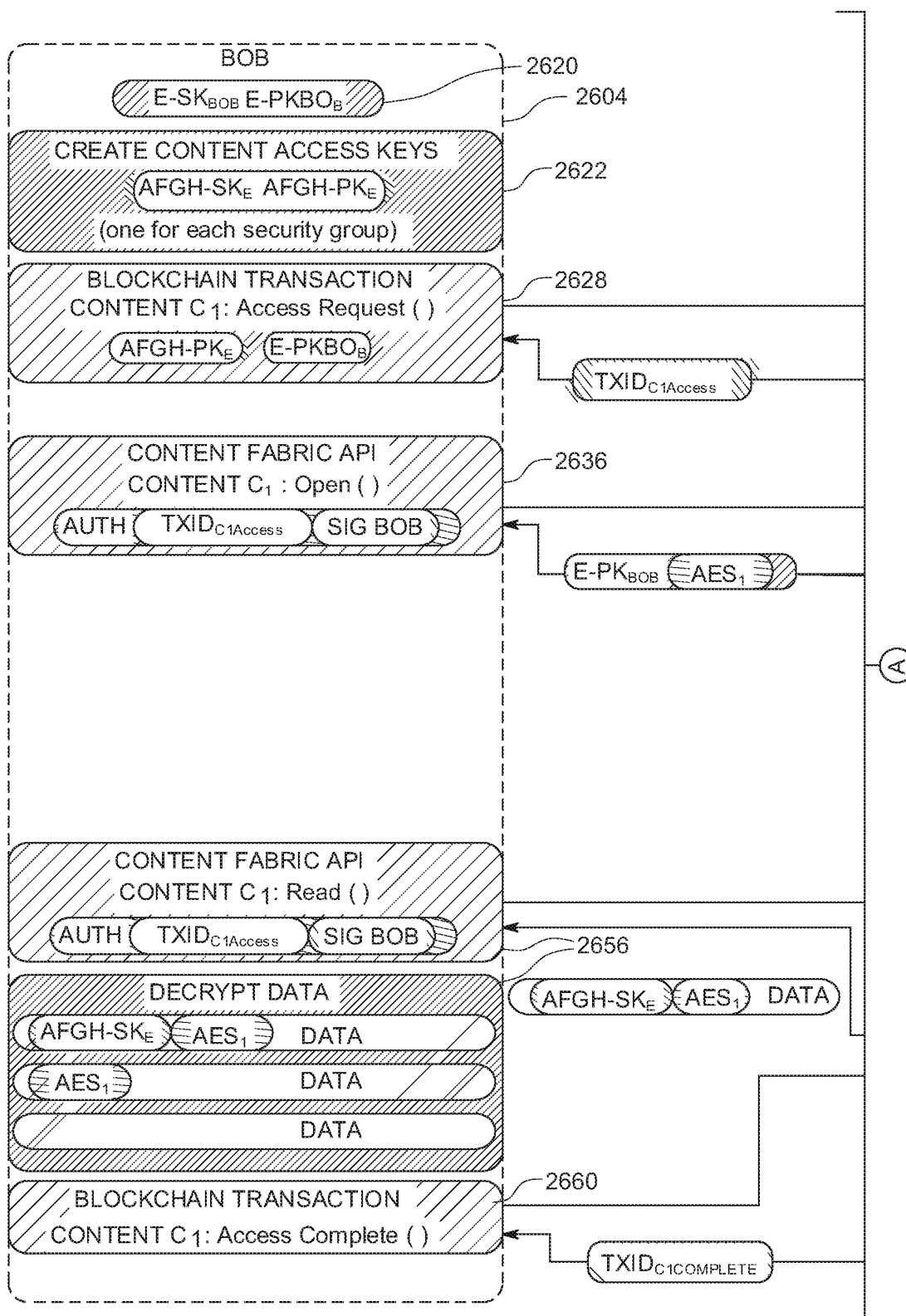


FIG. 27

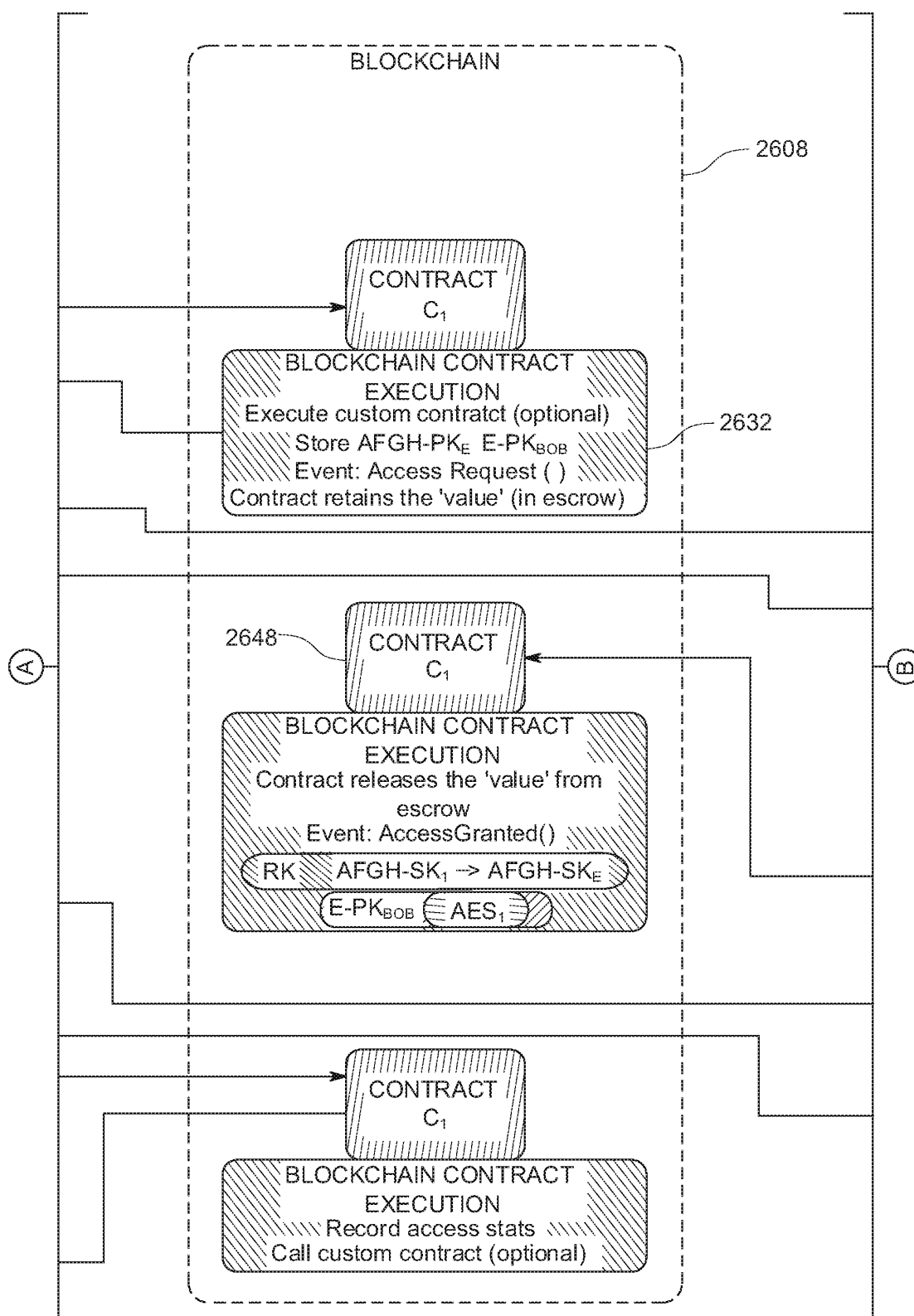


FIG. 27(CONTINUED)

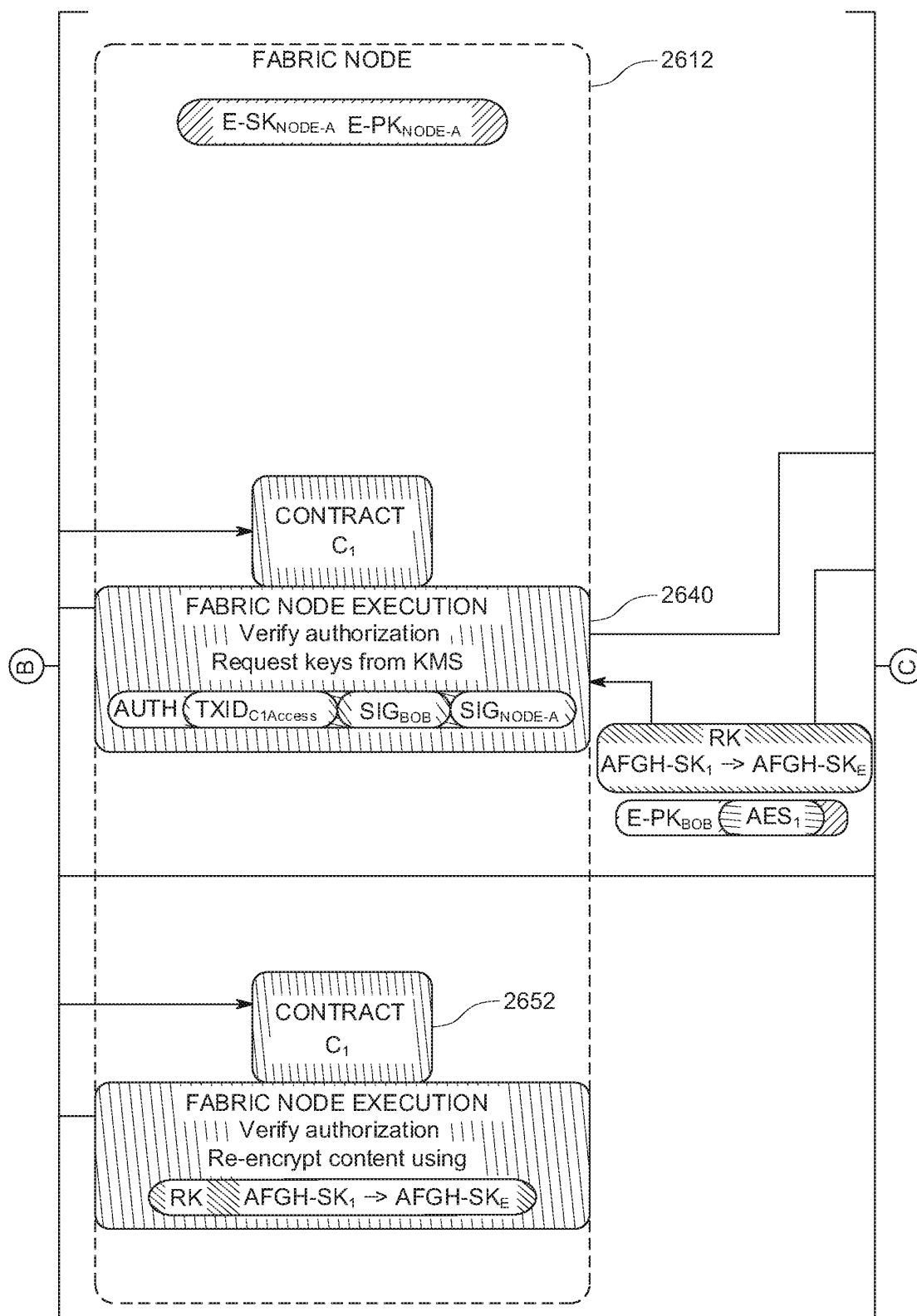


FIG. 27(CONTINUED)

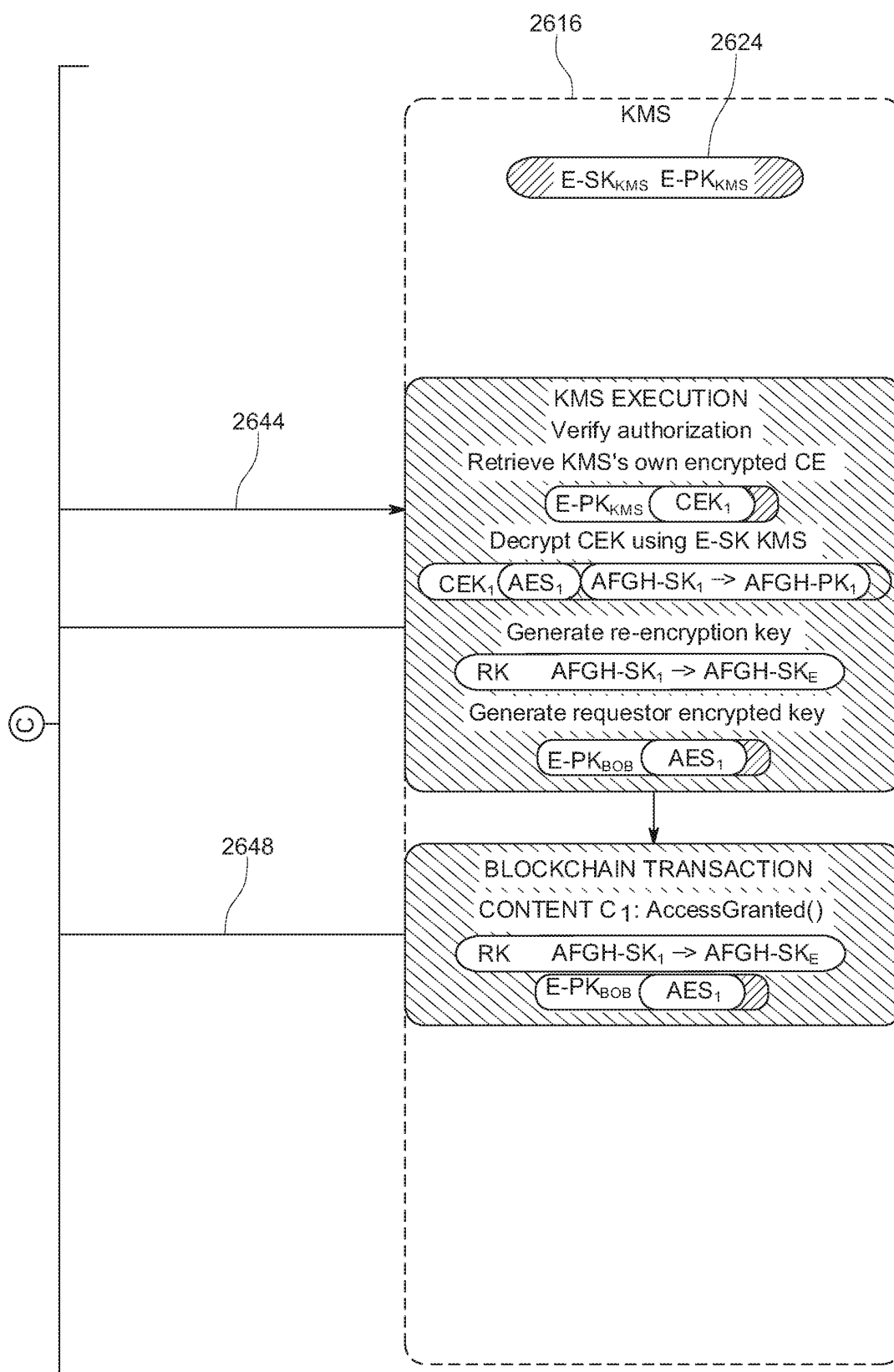


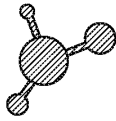
FIG. 27(CONTINUED)

ETHEREUM BLOCK

```
{
  difficulty: 1,
  extraData: "0xd783010803846765746887676d312e ... 382e31856c696e75780000000000000000c23219",
  gasLimit: 4712388,
  gas used: 104966,
  hash: "0x1bbb0764f01d1b819b0e52b0d483a730e6baceffa40700dbcb723e16309a4ee",
  logsBloom: "0x00000000000000000000000000000000 ... 0000080000000000000000000000",
  miner: "0x0000000000000000000000000000000000000000",
  mixHash: "0x0000000000000000000000000000000000000000000000000000000000000000",
  nonce: "0x0000000000000000000000000000000000000000000000000000000000000000",
  number: 5129,
  parentHash: "0x5c8c7fdb00993c181f9c2e00b90272f3632f487465d1714922a81c588d9413be",
  receiptsRoot: "0x55071ed2e6a29273009f09be5c828313302549aa18a199678ab821b51a780e76",
  sha3Uncles: "0x1dcc4de8dec75d7aab85b567b6ccd41ad312451948a7413f0a142fd40d49347",
  size: 2042,
  stateRoot: "0x9ac77a57b13e8b2c07aa39a2719fbbd1ce0a5d1b2c016ea9ca1c78f7f34761f7",
  timestamp: 1521233520,
  totalDifficulty: 6840,
  transactions: [ "0x491eec1437cb1eae6909e9ccf5358d845ae279d0b630c5e1edc99fff9a8c" ],
  transactionsRoot: "0x0cb2e230a55ea025bff4878b7c8672717fb709a640b0dc0e1b273a39d1411a5",
  uncles: []
}
```

(A)

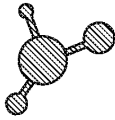
FIG. 28



Content Verification Info - VERIFIED!

```
{
  "hash": "hq_QmQedd9AuQSdoBjMzNUVp7BaqWRXAJiJGAdcLXLWWKyqiV",
  "qref": {
    "valid": true,
    "hash": "hqp_QmQedd9AuQSdoBjMzNUVp7BaqWRXAJiJGAdcLXLWWKyqiV"
  },
  "qmd": {
    "valid": true,
    "hash": "hqp_QmU4wn795KbSGvTH2uki6UwWT1xbv1yqDCM7bEdweYiad8",
    "check": {
      "valid": true,
      "invalidValues": []
    }
  },
  "qstruct": {
    "valid": true,
    "hash": "hqp_QmSHqXe9cr5EtgsYcg7dP9irZ4MHsTFo4Rc5e4hh8oHfPT",
    "parts": [
      {
        "hash": "hqp_QmUv75ETf9x22cjNNbTncVPMuKZpXLPFH7tVz2D9ACthqD",
        "proofs": {
          "rootHash": "acda1564dfc542064b7becdbc2d107c84fe1f942337bfe3c06f2b4eec5e806b8",
          "chunkSize": 49,
          "chunkNum": 49,
          "chunkLen": 50,
          "finalized": 116
        },
        "size": 2634
      }
    ]
  }
}
```

FIG. 29



Content Verification Info - FAILED!

```
{
  "hash": "hq_QmZ7oxvpECVgvED7QwMHgmKZGpEEoHkRhHWo2NNpeFZV2e",
  "qref": {
    "valid": true,
    "hash": hqp_QmZ7oxvpECVgvED7QwMHgmKZGpEEoHkRhHWo2NNpeFZV2e"
  },
  "qmd": {
    "valid": true,
    "hash": hqp_QmPaddxjFwCc9TPAg652MSRoV9iada8gjB1FSR2wKadbGf",
    "check": {
      "valid": true,
      "invalidValues": []
    }
  },
  "qstruct": {
    "valid": false,
    "error": "Hashes do not match",
    "hash": "hqp_QmUfPJ4ehcbi17fH26QvwY6ViFhACaMsENyvxyptdBPq4T"
  },
  "valid": false
}
```

FIG. 30