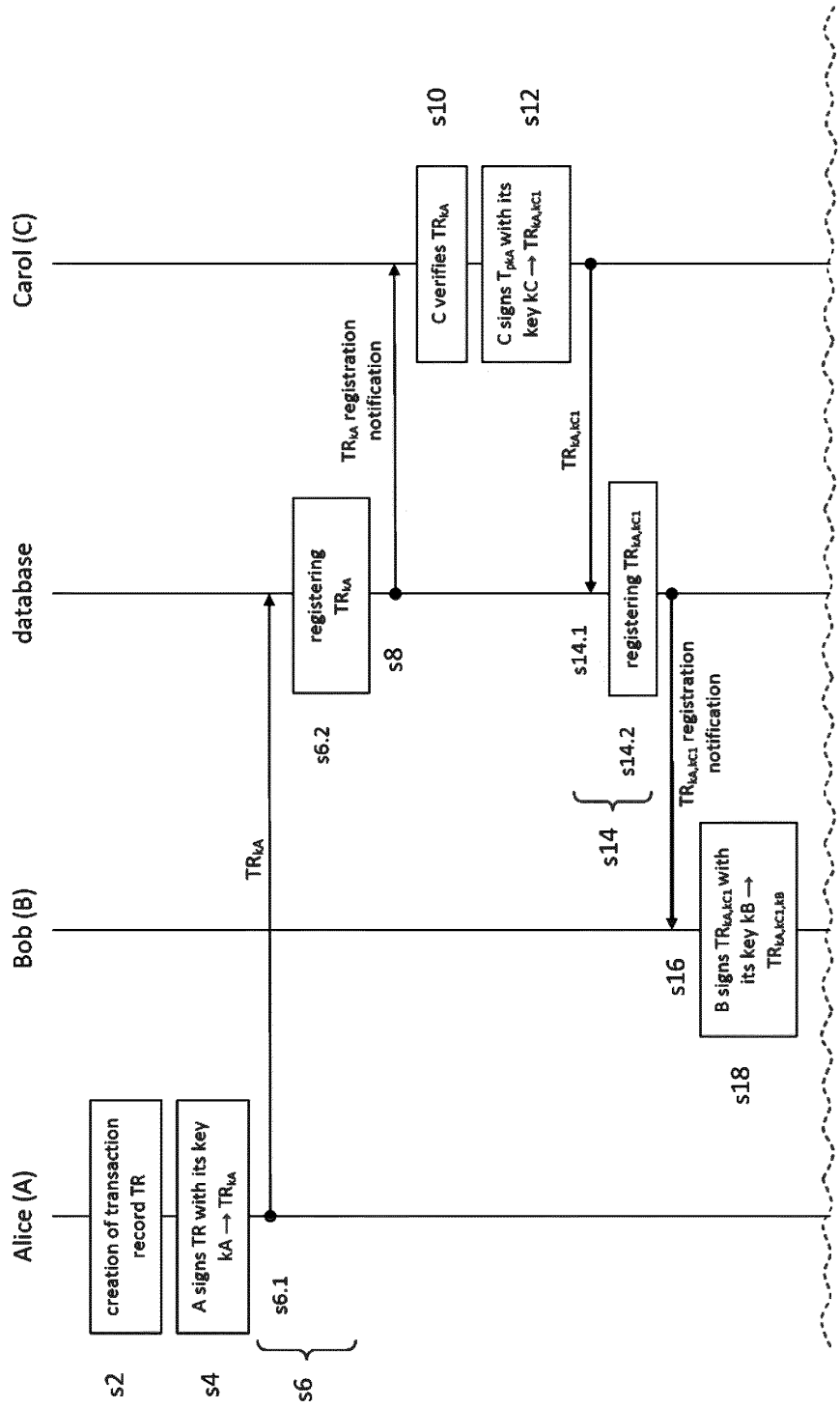

Alice (A)
Bob (B)
database
Carol (C)
creation of transaction record TR
A signs TR with its key kA → TRkA
TRkA
registering TRkA
TRkA registration notification
C verifies TRkA
C signs TpkA with its key kC → TRkA,kC1
TRkA,kC1
registering TRkA,kC1
TRkA,kC1 registration notification
B signs TRkA,kC1 with its key kB → TRkA,kC1,kB
s2
s4
s6
s6.1
s6.2
s8
s10
s12
s14
s14.1
s14.2
s16
s18

Fig. 1a

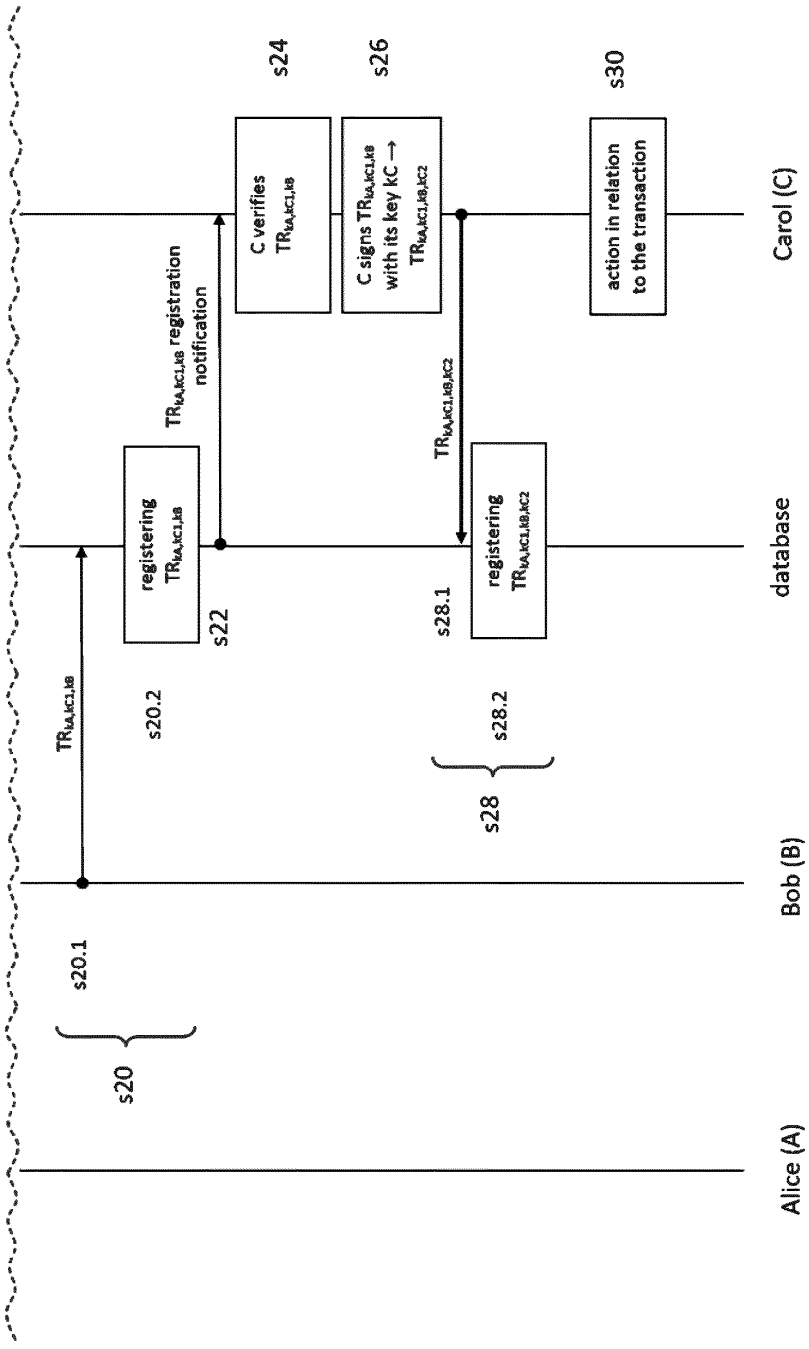

Alice (A)
Bob (B)
database
Carol (C)
s20
s20.1
s20.2
s22
s24
s26
s28
s28.1
s28.2
s30
registering
C verifies
C signs with its key kC →
action in relation to the transaction
registration notification

Fig. 1b

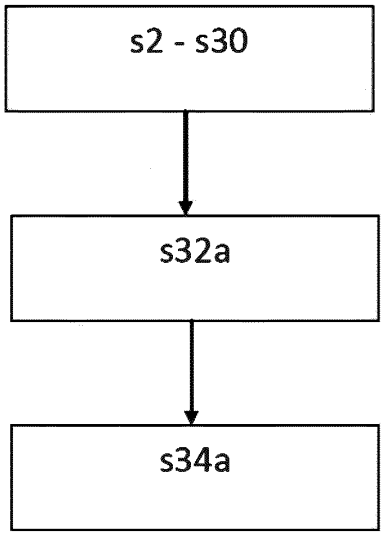


Fig. 2

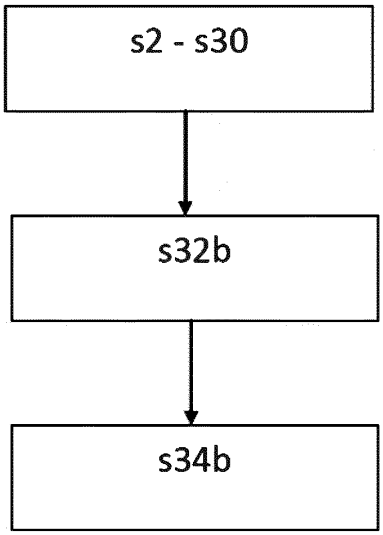


Fig. 3

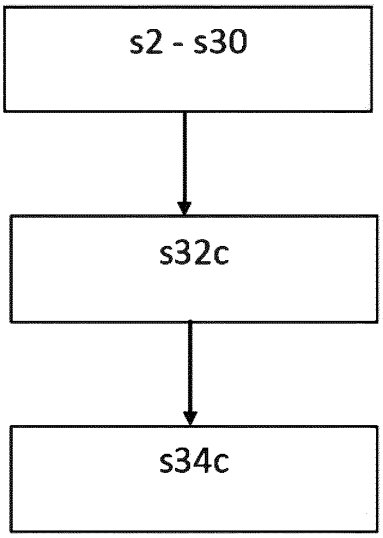


Fig. 4

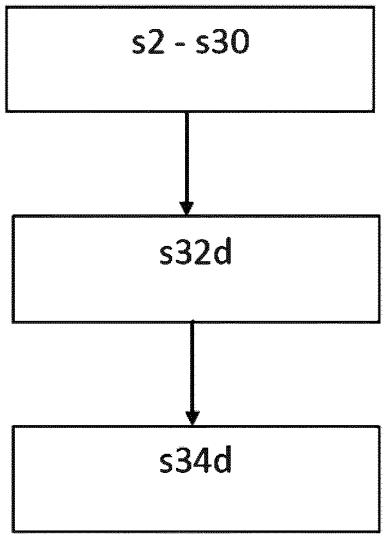


Fig. 5

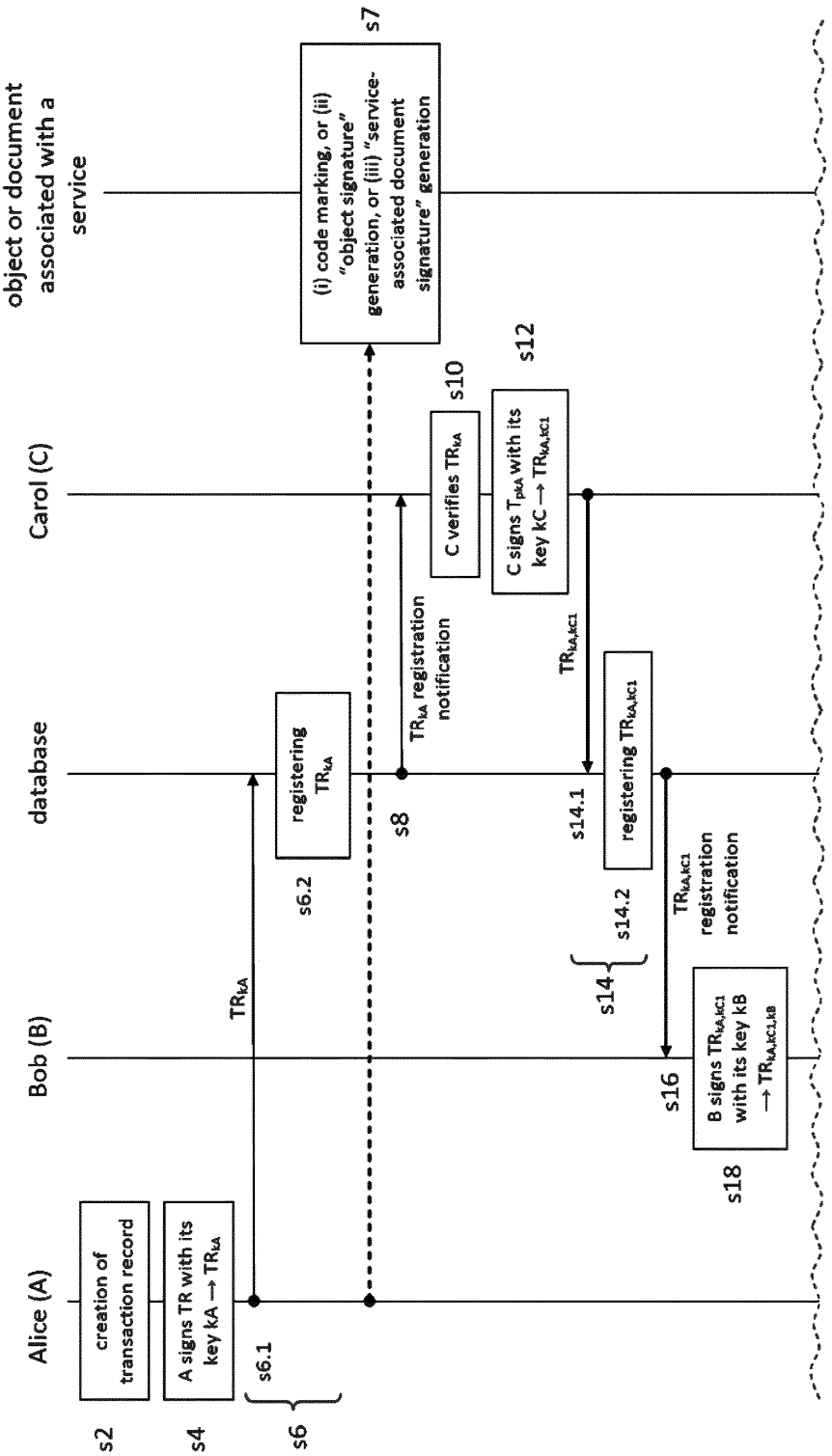

Alice (A)
Bob (B)
database
Carol (C)
object or document associated with a service
creation of transaction record
A signs TR with its key kA → TRkA
s2
s4
s6
s6.1
TRkA
registering TRkA
s6.2
s8
TRkA registration notification
C verifies TRkA
s10
C signs TpkA with its key kC → TRkA,kC1
s12
TRkA,kC1
registering TRkA,kC1
s14.1
s14.2
s14
TRkA,kC1 registration notification
B signs TRkA,kC1 with its key kB → TRkA,kC1,kB
s16
s18
(i) code marking, or (ii) "object signature" generation, or (iii) "service-associated document signature" generation
s7

Fig. 6a

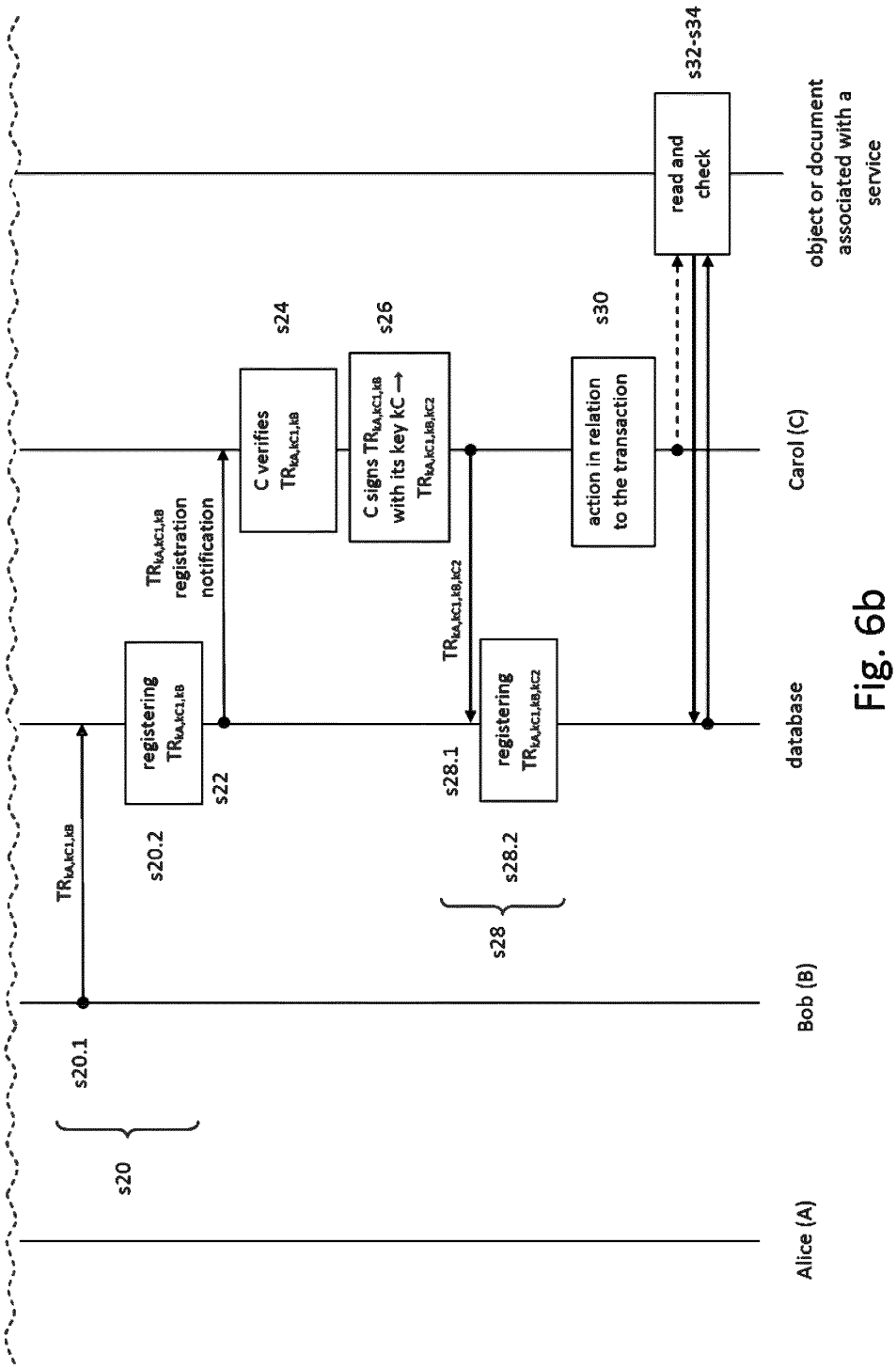

Alice (A)
Bob (B)
database
Carol (C)
object or document associated with a service
s20
s20.1
s20.2
s22
s24
s26
s28
s28.1
s28.2
s30
s32-s34
registering
C verifies
C signs with its key kC
action in relation to the transaction
read and check

Fig. 6b

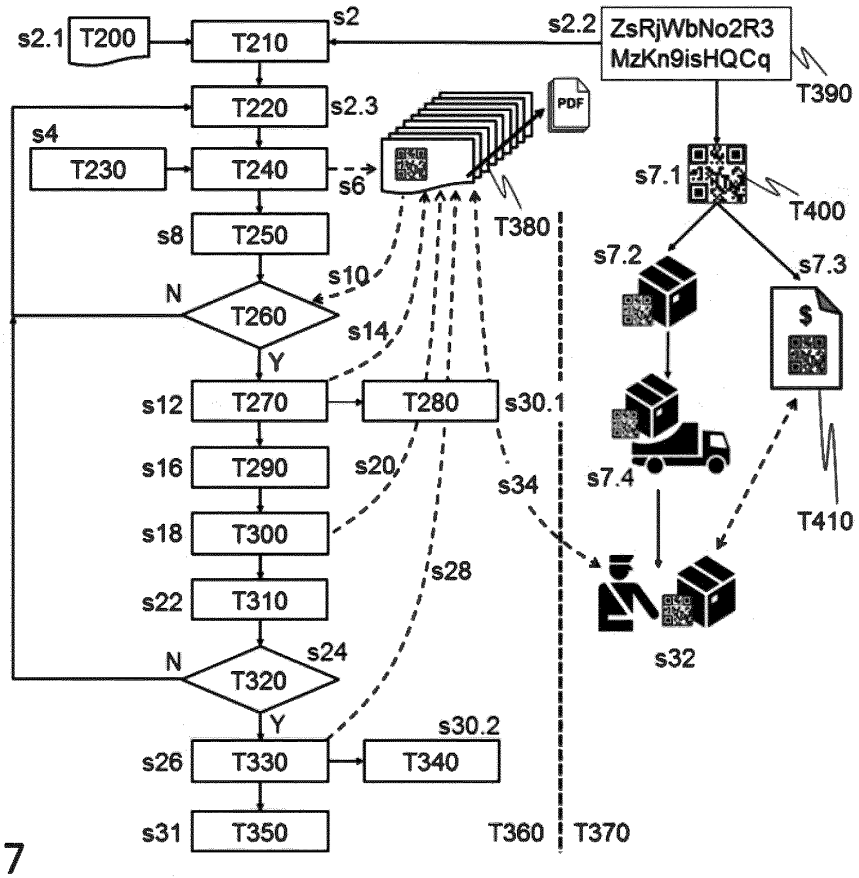

s2.1
T200
T210
s2
s2.2
ZsRjWbNo2R3
MzKn9isHQCq
T390
T220
s2.3
PDF
s4
T230
T240
s6
T380
s7.1
T400
s8
T250
s10
s7.2
s7.3
N
T260
s14
Y
s12
T270
T280
s30.1
s16
T290
s20
s34
s7.4
T410
s18
T300
s28
s22
T310
s32
N
s24
T320
Y
s30.2
s26
T330
T340
s31
T350
T360
T370

Fig. 7

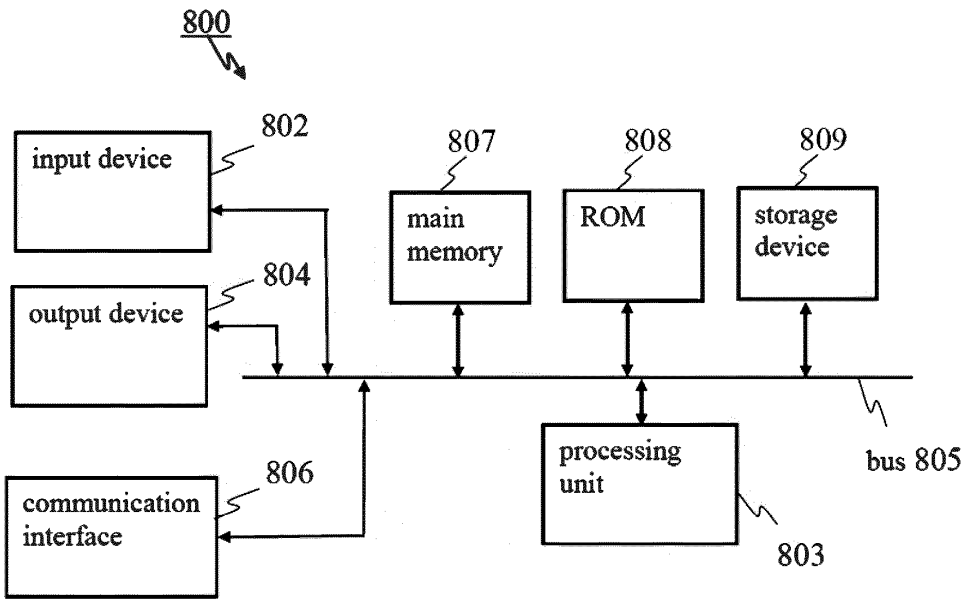

800
802
input device
807
main memory
808
ROM
809
storage device
804
output device
bus 805
processing unit
803
806
communication interface

Fig. 8