CLAIMS

1. An article sorting control apparatus, comprising:

a memory that stores sorting destination management information for conveying an article from a main conveyance path to a circulation conveyance path, via one of a first conveyance route connected to the circulation conveyance path from the main conveyance path via a first sub-conveyance path, and a second conveyance route connected to the circulation conveyance path from the main conveyance path via a second sub-conveyance path, and for sorting the article to a designated sorting destination among a plurality of sorting destinations while circulating the article in one direction via the circulation conveyance path, the sorting destination management information including reference conveyance route information to allocate one of the first conveyance route and the second conveyance route in accordance with each of the sorting destinations, fixed sorting destination information associating a fixed sorting destination among the sorting destinations to a destination, and dynamic sorting destination information associating a dynamic sorting destination among the sorting destinations to a destination that is allocated in accordance with a situation;

a processor configured to select a first diverging control signal or a second diverging control signal based

on the designated sorting destination of the article acquired from information read from the article, the sorting destination management information, and degree of congestion of the first and second sub-conveyance paths, and to allocate an arbitrary destination to the dynamic sorting destination; and

a communication interface configured to transmit the first or the second diverging control signal selected by the processor to an article sorting apparatus configured to distribute the article from the main conveyance path to the first or the second sub-conveyance path based on the first or the second diverging control signal.

2. The article sorting control apparatus according to claim 1, wherein

the communication interface receives an article detection signal from a sensor configured to detect an article conveyed by the first and second sub-conveyance paths, and

the processor detects the number of articles in the first and second sub-conveyance paths based on the article detection signal, and determines the degrees of congestion of the first and second sub-conveyance paths based on the number of articles.

3. The article sorting control apparatus according to claim 1, wherein

the memory stores the reference conveyance route information that allocates the first conveyance route to a first designated sorting destination, and the second conveyance route to a second designated sorting destination, and

when sorting a first article to the first designated sorting destination, the processor selects the first diverging control signal if the degree of congestion of the first sub-conveyance path is equal to or less than a reference value, and selects the second diverging control signal if the degree of congestion of the first sub-conveyance path exceeds the reference value, and when sorting a second article to the second designated sorting destination, the processor selects the second diverging control signal if the degree of congestion of the second sub-conveyance path is equal to or less than the reference value, and selects the first diverging control signal if the degree of congestion of the second sub-conveyance path exceeds the reference value.

4. The article sorting control apparatus according to claim 1, wherein the processor allocates a destination of a highest frequency as the arbitrary destination to the dynamic sorting destination based on sorting history information of each article.

5. The article sorting control apparatus according

to claim 3, wherein when sorting the first article to the first designated sorting destination, the processor allocates a destination associated with the first designated sorting destination to the dynamic sorting destination if the degree of congestion of the first sub-conveyance path exceeds the reference value, and when sorting the first article to the second designated sorting destination, the processor allocates a destination associated with the second designated sorting destination to the dynamic sorting destination if the degree of congestion of the second sub-conveyance path exceeds the reference value.

6. The article sorting control apparatus according to claim 1, wherein

the processor selects a sorting control signal for sorting the article to a designated sorting destination when sorting the article to the designated sorting destination, and

the communication interface transmits the sorting control signal to the article sorting apparatus.

7. The article sorting control apparatus according to claim 1, wherein the processor controls the first and second sub-conveyance paths at a first conveyance speed and controls the main conveyance path at a second conveyance speed greater than the first conveyance speed.

8. The article sorting control apparatus according to claim 1, wherein the processor acquires a destination recognition result from a server configured to recognize a destination based on image information read from the article, and determines the designated sorting destination of the article based on the sorting destination management information and the destination recognition result.

9. A sorting system including the article sorting control apparatus according to claim 1, and the article sorting apparatus,

the article sorting apparatus comprising:

the main conveyance path;

the first and second sub-conveyance paths;

the circulation conveyance path; and

a diverging device configured to distribute the article from the main conveyance path to the first or the second sub-conveyance path based on the first or the second diverging control signal.

10. A non-transitory computer-readable storage medium storing an article sorting control program for causing a computer to execute:

a procedure to set sorting destination management information, for conveying an article from a main conveyance path to a circulation conveyance path via one of

a first conveyance route connected to the circulation conveyance path from the main conveyance path via a first sub-conveyance path, and a second conveyance route connected to the circulation conveyance path from the main conveyance path via a second sub-conveyance path, and for sorting the article to a designated sorting destination among a plurality of sorting destinations while circulating the article in one direction via the circulation conveyance path, the sorting destination management information including reference conveyance route information to allocate one of the first conveyance route and the second conveyance route in accordance with each of the sorting destinations, fixed sorting destination information associating a fixed sorting destination among the sorting destinations to a destination, and dynamic sorting destination information associating a dynamic sorting destination among the sorting destinations to a destination that is allocated in accordance with a situation;

a procedure to select a first diverging control signal or a second diverging control signal based on the designated sorting destination of the article acquired from information read from the article, the sorting destination management information, and a degree of congestion of the first and second sub-conveyance paths, and to allocate an arbitrary destination to the dynamic sorting destination; and

a procedure to transmit the first or the second

diverging control signal to an article sorting apparatus configured to distribute the article from the main conveyance path to the first or the second sub-conveyance path based on the first or the second diverging control signal.