CLAIMS

1. A workpiece ejection device comprising an ejection member and a driving unit that pushes the ejection member in a first direction, the ejection member pushing a workpiece in a second direction that is different from the first direction,

wherein the ejection member includes a plurality of connecting pieces and an expandable and contractible string-like member that interconnects the plural connecting pieces in a bendable fashion, and

a direction turning section is provided to turn an advancing direction of the ejection member to the second direction.

2. The workpiece ejection device according to claim 1, wherein the ejection member includes a lateral side plate surrounding respective two opposing lateral surfaces of the plural connecting pieces that are interconnected, and the lateral side plate is formed of a thin plate having flexibility.

3. The workpiece ejection device according to claim 1 or 2, wherein the connecting pieces have insertion holes penetrating therethrough in the same direction as a direction in which the connecting pieces are interconnected, and the string-like member is inserted through the insertion holes.

4. The workpiece ejection device according to claim 1, 2 or 3, wherein the connecting pieces are each a plate-like member having a projection and a recess, and are interconnected in a state that the projection of each connecting piece is engaged in the recess of another adjacent connecting piece.

5. The workpiece ejection device according to claim 4, wherein the

projection and the recess have a thickness equal to or less than a half of a thickness of the connecting piece, and are arranged substantially in point symmetric relation with respect to a center of a lateral surface of the connecting piece.

6. The workpiece ejection device according to claim 4, wherein the projection and the recess have a thickness equal to or less than a half of a thickness of the connecting piece, and are arranged substantially in line symmetric relation with respect to a vertical center line in a lateral surface of the connecting piece.

7. The workpiece ejection device according to claim 6, wherein the connecting piece has a projection, a recess arranged above the projection, a projection, and a recess arranged under the latter projection, the latter projection and recess being provided in opposing relation to the former recess and projection, on inner peripheral side when the connecting pieces are in a bent posture, while the connecting piece has a projection and a recess provided in opposing relation to the projection on outer peripheral side when the connecting pieces are in the bent posture.

8. The workpiece ejection device according to claim 7, wherein the connecting piece includes connecting holes formed in the two projections provided on the inner peripheral side when the connecting pieces are in the bent posture, and a string latching hole formed in the connecting piece.

9. The workpiece ejection device according to claim 8, wherein the string-like member is stretched in a state coupling one of the connecting holes and the string latching hole and coupling the string latching hole and the other connecting hole.

10. The workpiece ejection device according to any one of claims 1 to 9,

wherein the driving unit includes a driver that reciprocally moves a moving body to which the ejection member is coupled directly or indirectly, and a sensor that detects application of an overload to the moving body, and the driver is stopped upon detection of the overload by the sensor.

11. The workpiece ejection device according to any one of claims 1 to 10, wherein the direction turning section includes one or more rollers that are disposed on inner peripheral side when the ejection member is in a bent posture, and that are in contact with one lateral surface of the ejection member, and one or more rollers that are disposed on outer peripheral side when the ejection member is in the bent posture, and that are in contact with the other lateral surface of the ejection member.

12. The workpiece ejection device according to any one of claims 1 to 11, further including a support roller that supports, from below, the connecting piece of which direction has been turned to the second direction.

13. A workpiece supply device comprising:

the workpiece ejection device according to any one of claims 1 to 12,

a magazine placement unit; and

an elevator that moves the magazine placement unit up and down.