O. SOLES.

FLIGHT EXTRACTOR.

APPLICATION FILED MAR. 19, 1908.

943,322.

Patented Dec. 14, 1909.

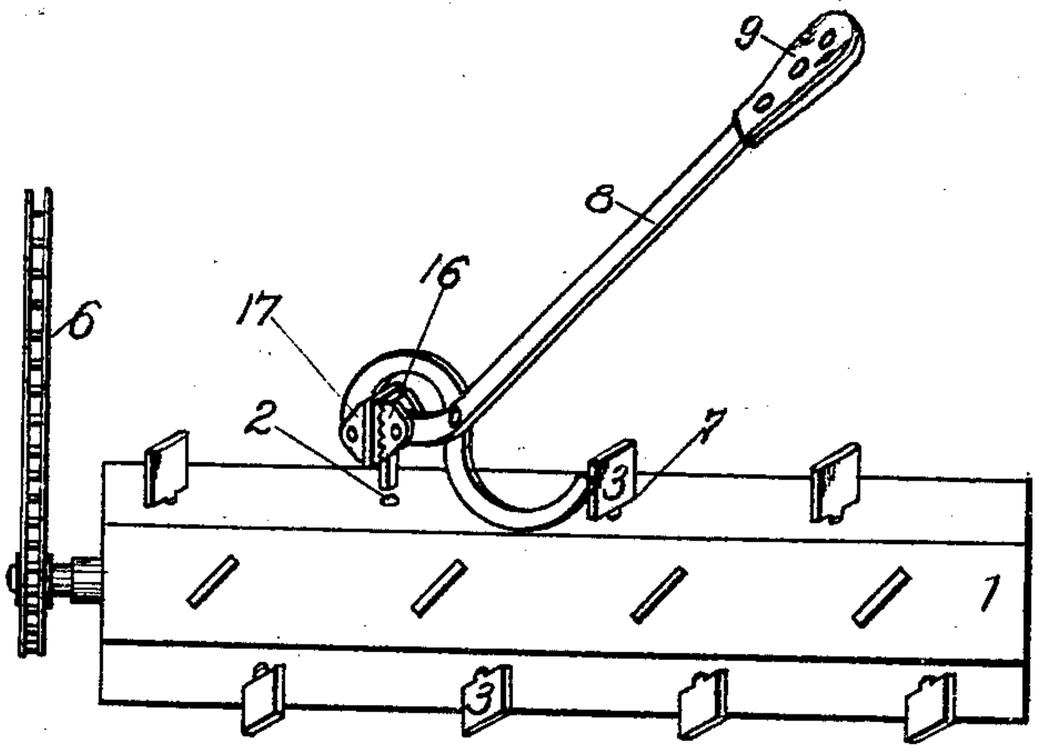

Fig. 1.

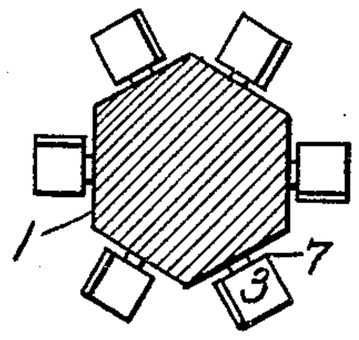

Fig. 2.

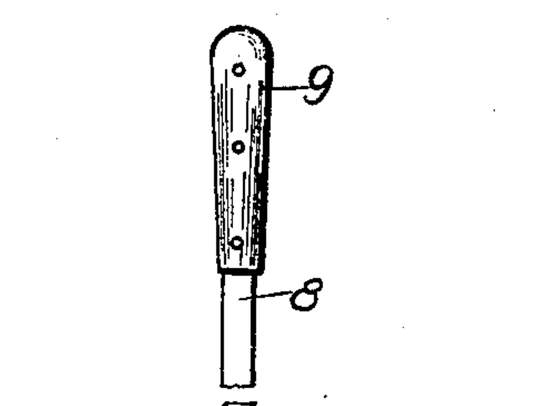

Fig. 4

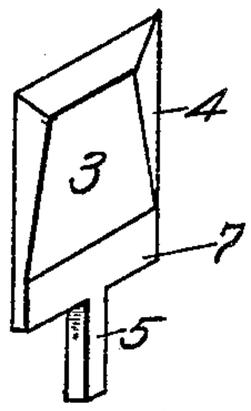

Fig. 3.

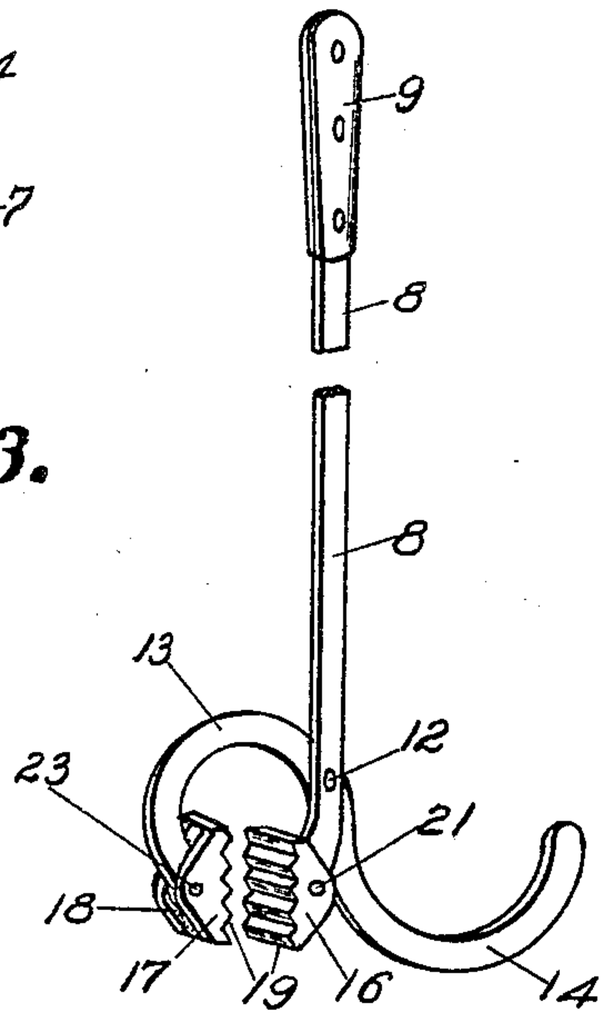

Fig. 5.

Witnesses
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UNITED STATES PATENT OFFICE.

OTTO SOLES, OF LOUISVILLE, OHIO.

FLIGHT-EXTRACTOR.

943,322. Specification of Letters Patent. Patented Dec. 14, 1909.

Application filed March 19, 1908. Serial No. 422,004.

To all whom it may concern:

Be it known that I, OTTO SOLES, a citizen of the United States, residing at Louisville, in the county of Stark and State of Ohio, have invented a new and useful Flight-Extractor, of which the following is a specification.

My invention relates to improvements in flight extractors in which pivoted jaws are provided and operate in conjunction with a rounded fulcrum portion; and the objects of my improvement are; first, to provide a device by which it will be possible to withdraw or extract the flights from conveyer shafts in flour mills or to perform similar work in the way of extracting firmly fixed wooden plugs and the like; second to provide a flight extractor, which will withdraw the flight in a true line with the principal axis of its stem; third, a provide a flight extractor by means of which flights may be withdrawn without injury to the flight or the shaft from which it is withdrawn.

I attain these objects by the device illustrated in the accompanying drawing, in which—

Figure 1 is a perspective view of a hexagonal conveyer shaft with flights fixed therein and the flight extractor shown in its relative position to the said shaft and one of the flights in the operation of extraction. Fig. 2 is a cross-section of the hexagonal shaft shown in Fig. 1, with the flights therein. Fig. 3 is a perspective view of one of the wooden flights. Fig. 4 is a side elevation of the flight extractor, without the pivoted jaws. Fig. 5 is a perspective view of the flight extractor illustrating the method of attachment of the pivoted jaws and the serrated faces of the said jaws.

Similar numerals refer to similar parts throughout the several views.

The hexagonal shaft 1 is one of the many types of wooden conveyer shafts, such as are used for conveying flour or any substance of similar physical character in mills, manufacturing establishments or other places where it is desired to convey large quantities of the said flour or other material in a convenient and rapid manner. In the said shaft are located a number of round holes spaced from each other in a spiral pathway around the shaft from end to end. One of these holes is shown at 2. Arranged upon the shaft and fixed thereto by means of stems driven into the said holes are flights 3. These flights are usually of a form similar to that shown in Fig. 3 and consist of the blade portion 4 and the stem portion 5. The blade portion is broad and flat and is adapted to engage a portion of the material to be conveyed while the stem of said flight is square in cross-section and of a length sufficient to provide stable attachment for the flight when driven into one of the holes arranged upon the flight. It will be understood that the blades of the flights being arranged at an angle to the axis of the shaft and coming into engagement with material to be conveyed will move the said material when the said shaft is rotated as for instance by the chain 6.

In the practical use of conveyers of this class it is often desirable to withdraw the flights and replace them with their blades at a different angle in order to convey the material in a different direction or more or less rapidly. The fact that the square stem of the flight is driven very tightly into the round hole in the shaft makes the operation of withdrawing or extracting the said flight difficult. Heretofore the extraction has been accomplished with much labor and inconvenience by inserting a cold-chisel or other similar instrument under the shoulder 7, and prying upward against the shoulder 7, or other similar crude methods. It is absolutely essential that the flight be carefully and steadily withdrawn from the hole in the shaft and in a line parallel with the axis of said hole in order that both the hole and the stem of the flight receive the least possible injury. In the methods heretofore in use the holes and the stems have often been permanently injured and the flights split and roughened in such way as to make them absolutely worthless. By means of the extractor herein shown a flight may be pulled without perceptible injury and with great convenience.

The handle portion 8 of the flight extractor consists of a bar of suitable metal having affixed at its upper end a grip 9. The lower end 10 is slightly curved and provided with a hole 11 for the purpose of providing a pivotal attachment for the jaw. At the point 12 the handle portion is pivotally connected to the lever portion, which consists of a suitable bar of metal bent into a compound curve and having the jaw por-

tion 13 and the integral fulcrum portion 14. The jaw portion 13 is provided with a hole 15 for the purpose of pivotal atttachment of the jaw.

Pivoted jaws 16 and 17 are similar to each other in their construction and consist of triangular blocks of metal or other suitable material. Each block is provided at its back with a recess or open slot 18, which receives the end of the jaw portion 13 and the curved portion 10 respectively. The face of each jaw is transversely serrated or roughened as shown at 19 for the purpose of preventing any slipping of the flight between the pivoted jaws. The jaw 17 is pivoted to the jaw portion 13 at the point 20, and the jaw 16 is pivoted to the curved portion 10 at the point 21.

It will be understood that in the use of the flight extractor the grip 9 is held in the hand of the operator. The pivoted jaws are then placed one on each side of the blade of the flight to be extracted and the fulcrum portion 14 is rested against the shaft. By means of a downward pressure upon the grip 9 the pivoted jaws will be brought tightly against the sides of the flight and the extractor, rocking upon the fulcrum portion, the flight will be withdrawn from the shaft and held in the position shown in Fig. 1. As the handle portion 8 descends toward the shaft the pivoted jaws with the flight tightly clamped between them and held from slipping by reason of their roughened faces are lifted upward and as the process of extraction is carried farther they accommodate themselves to a true vertical pull by reason of their pivotal attachment.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is—

In a flight extractor of the character described the combination of a handle portion provided with a grip at one end and forwardly curved at the other end, a lever portion pivotally connected to said handle portion, the two ends of said lever portion being reversely curved with reference to each other, the forward end of said lever portion being curved downwardly and the rear end of said lever portion being curved upwardly, the point of pivotal connection between said handle portion and said lever portion being at a point intermediate the ends of said lever portion, serrated-faced jaws consisting of triangular blocks provided at their backs with open slots, the forwardly curved end of the handle portion arranged in the slot of one of said jaws and the forward end of the lever portion arranged in the slot of the other jaw, said jaws being pivotally connected to said handle portion and to said lever portion respectively, and the said jaws adapted to move upon their pivotal connections to maintain their serrated faces in a parallel position with reference to each other, whereby to produce a pull in a vertical plane with respect to the surface against which the rear end of the lever portion bears in the process of extraction of flights.

In testimony that I claim the above, I have hereunto subscribed my name in the presence of two witnesses.

OTTO SOLES.

Witnesses:
GEO. W. GLASS,
ELTON L. MATHIE.