

Aug. 7, 1951

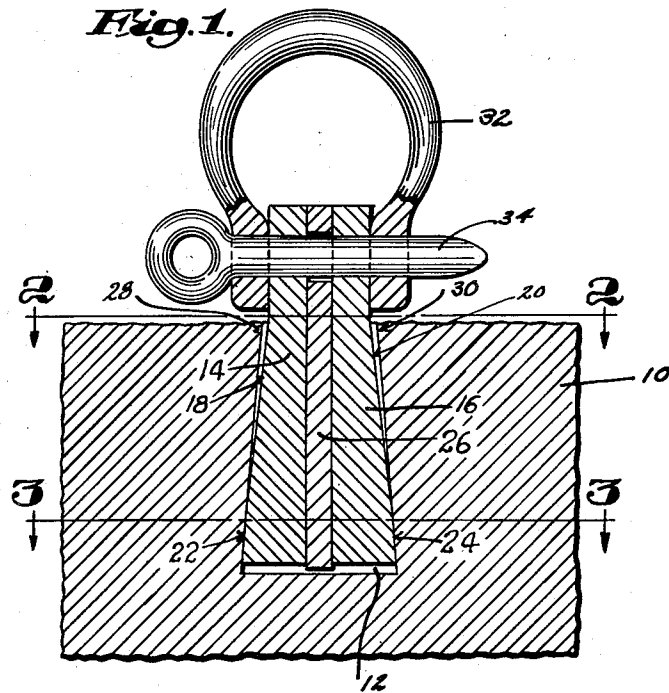
R. A. FLETCHER

2,563,164

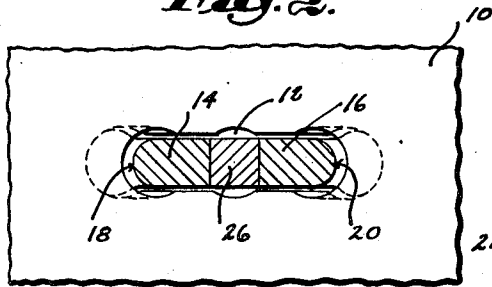
LEWIS

Filed July 12, 1948

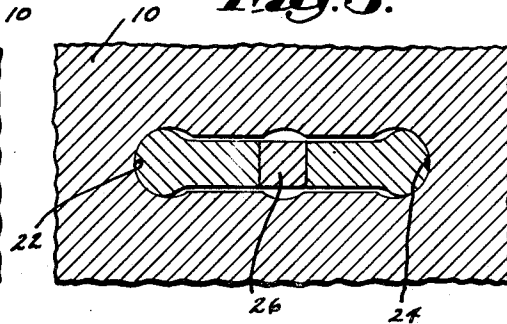
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Inventor:*  
*Ralph A. Fletcher,*  
*by* *Wm. A. Hamilton*  
*Attorney*

## UNITED STATES PATENT OFFICE

2,563,164

LEWIS

Ralph A. Fletcher, Westford, Mass., assignor to  
H. E. Fletcher Co., Chelmsford, Mass., a corpo-  
ration of Massachusetts

Application July 12, 1948, Serial No. 38,221

6 Claims. (Cl. 294—89)

1

This invention relates to an improved lewis of the type in which two dovetailed sections are held apart by means of a central key element, outer sloping sides of the dovetailed sections thus being supported in a position such that they may be wedged against corresponding dovetailed lewis slot sides formed in a block of granite or other heavy body which is to be lifted.

An object of the invention is to provide an improved stone lewis member which is of simple design, cheap to manufacture, easy to install, and exceedingly effective in its holding capabilities. More specifically, it is an object of the invention to deal with the problems encountered in connection with lewis members breaking out of the lewis slot and accidentally becoming disengaged from a block of stone during the period in which the stone is being conveyed from one place to another. Difficulty develops in many instances from faulty adjustment of the lewis in the lewis slot so that a relatively great amount of stress is brought to bear against relatively weak portions of the stone immediately adjacent to the slot, and especially the relatively thin stone portions forming the upper edges of the slot. In some cases these relatively weaker portions may start to crumble and break away thus allowing the lewis member to be pulled out.

The nature of the invention and its further objects and novel features will be more fully understood and appreciated from the following description of one preferred embodiment of the invention, selected for purposes of illustration and shown in the accompanying drawings, in which

Fig. 1 is an enlarged cross section and partial elevation of the stone lewis member of the invention shown in a wedged position in a lewis slot formed in a block of stone;

Fig. 2 is a plan cross-sectional view taken on the line 2—2 of Fig. 1; and

Fig. 3 is a plan cross section taken on the line 3—3 of Fig. 1.

In the structure shown in the drawings, 10 denotes a recessed body which may for example consist of a block of granite which has been separated from a larger body of granite at a quarry. Numeral 12 indicates a dovetailed lewis slot of the type usually employed for receiving a key lewis member. It often happens in quarrying operations that the separated block of granite may occur at appreciable depths below the ground level or other points to which it is desired to convey the block for further processing operations. It is necessary therefore to very solidly

2

secure the lewis member in the stone in order that it may support the block of granite in a suspended position safely and for some little time if so desired.

As a further aid to understanding the need for a device of the character about to be described, it is also pointed out that the operation of forming the dovetailed lewis slot 12 is a relatively troublesome one. The commonly followed method is first to form a hole by drilling with the drill being supported in an angular position. A second hole is then drilled with the drill being held at approximately the same angle of inclination as the first hole but in opposed relation to it. As a practical matter, it is extremely difficult to drill the second hole without some divergence from the desired angle of inclination. Upon broaching out intervening portions of stone and inserting key lewis sections in the resulting dovetailed slot, it frequently happens that the lewis sections do not bear evenly against the sides of the slot thus causing the difficulties above described.

In accordance with the invention a great deal of the difficulty is resolved by providing lewis sections 14 and 16 and forming them with recessed outer surfaces 18 and 20. These surfaces occur along intermediate and upper portions of the lewis sections. By means of such a construction there are obtained two opposite inclined bearing surfaces generally denoted by arrows 22 and 24. These bearing surfaces extend from the lowermost portions of the dovetailed lewis sections upwardly along opposite and equal paths which are characterized by a constant degree of inclination or slope for an appreciable distance. In relation to the bearing surfaces, the recessed areas deviate inwardly toward one another along a varying angle of inclination which bends away from immediately adjacent surfaces of lewis slot sides of the block of stone 10. Numeral 32 indicates a clevis or shackle which is formed with two free ends having openings located there-through and adapted to receive a pin transversely disposed through the upper ends of the lewis sections and key element, thus providing a means of attaching a lifting device.

It will be observed that when the two sections 14 and 16 are forced apart and held in wedged relation by a key element 26 the bearing surfaces will come to bear against the lowermost surfaces of sides of slot 12, and even in the event of these slot sides being somewhat uneven in pitch, contact will be established well down in the bottom of the lewis slot. As a result the stress developed

3

will be distributed throughout those portions of block 10 which occur in the lowermost parts of the slots rather than near the relatively thinner and weaker top edges 28 and 30. In practice this improved distribution of stress has been found to greatly reduce breaking out of the lewis member and less care is required in forming lewis slots and installing the lewis therein.

Another desirable feature incorporated in the lewis of the invention is the provision of rounded lewis surfaces which are so shaped as to coincide generally with the arc of curvature of the drill opening formed in the rock. Such openings are necessarily of rounded contour and by having the lewis bearing surface correspondingly curved, they are enabled to contact the drill opening throughout a relatively greater surface area, thus further adding to the desirable distribution of stress throughout those portions of a stone body which occur adjacent to the lower portions of a drill hole formed therein. This type of lewis construction differs materially from the standard type of lewis construction which is usually approximately rectangular in cross section and which therefore tends to meet the drilled hole surface throughout a smaller bearing area.

Having thus disclosed my invention and described in detail illustrative embodiments thereof, I claim as new and desire to secure by Letters Patent:

1. An improved lewis member for use in a dovetailed slot formed in a body of stone or similar material, the lewis member presenting two oppositely disposed dovetailed tenons adapted to be received in the dovetailed slot, a key member for holding the tenons in spaced-apart relation so that the surfaces of the tenons are locked against adjacent opposite surfaces of the dovetail slot the upper portions of the lewis member tenons being formed on two opposite sides with relieved surfaces to provide a clearance between the lewis member and each of two adjacent exposed edges of the slot when the tenons are in a locked position.

2. A structure as defined in claim 1 in which the tenons are formed with curved bearing surfaces.

3. An improved lewis member for use in a slot of the type having two oppositely inclined undercut edges, the lewis member presenting two oppositely disposed dovetail tenons adapted to be received in the slot substantially throughout their length, key means interposed between the

4

tenons for holding them in spaced-apart relation so that the outer surfaces of the tenons are locked against opposite surfaces of the inclined undercut edges the upper portion of the lewis member being formed on two opposite sides with relieved surfaces so located as to lie in spaced relation to each of the undercut edges of the slot when the lewis tenons are received therein in a locked position.

4. A structure as defined in claim 3 in which the tenons at their lower ends are formed with convex bearing surfaces which extend upwardly to merge with the said relieved surfaces.

5. An improved lewis member for use in a dovetailed slot formed in a body of stone or a similar material, the lewis member including two lewis sections, an intervening key element adapted to hold the sections in engagement with the dovetailed slot, the lewis sections being formed with two oppositely sloping sides whose angle of inclination corresponds substantially to that of adjacent surfaces of the dovetailed slot, each of said sides being relieved along their upper portions to provide a clearance between the lewis sections and upper exposed edges of the slot when the lewis sections are in locked relation therewith.

6. An improved lewis member for use in a dovetailed slot which is characterized by concave end surfaces, the lewis member including two lewis sections, a key element arranged between the sections for the purpose of holding each of the sections in engagement with a respective concave end surface of the slot, the lewis sections presenting lower convex bearing surfaces which coincide substantially with the concave end surfaces of the slot, the upper portions of the lewis sections being relieved to provide a clearance between the lewis sections and adjacent upper edges of the slot when the bearing surfaces are in contact with the end surfaces of the slot.

RALPH A. FLETCHER.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
361,927	Cartwright	Apr. 26, 1887
822,769	Quist	June 5, 1906
1,047,267	Merrill	Dec. 17, 1912