

No. 622,573.

Patented Apr. 4, 1899.

H. WALKER & W. JOHNSON.

CRUSHER FOR STONE, ORE, &c.

(Application filed Dec. 13, 1897. Renewed Feb. 18, 1899.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 1.

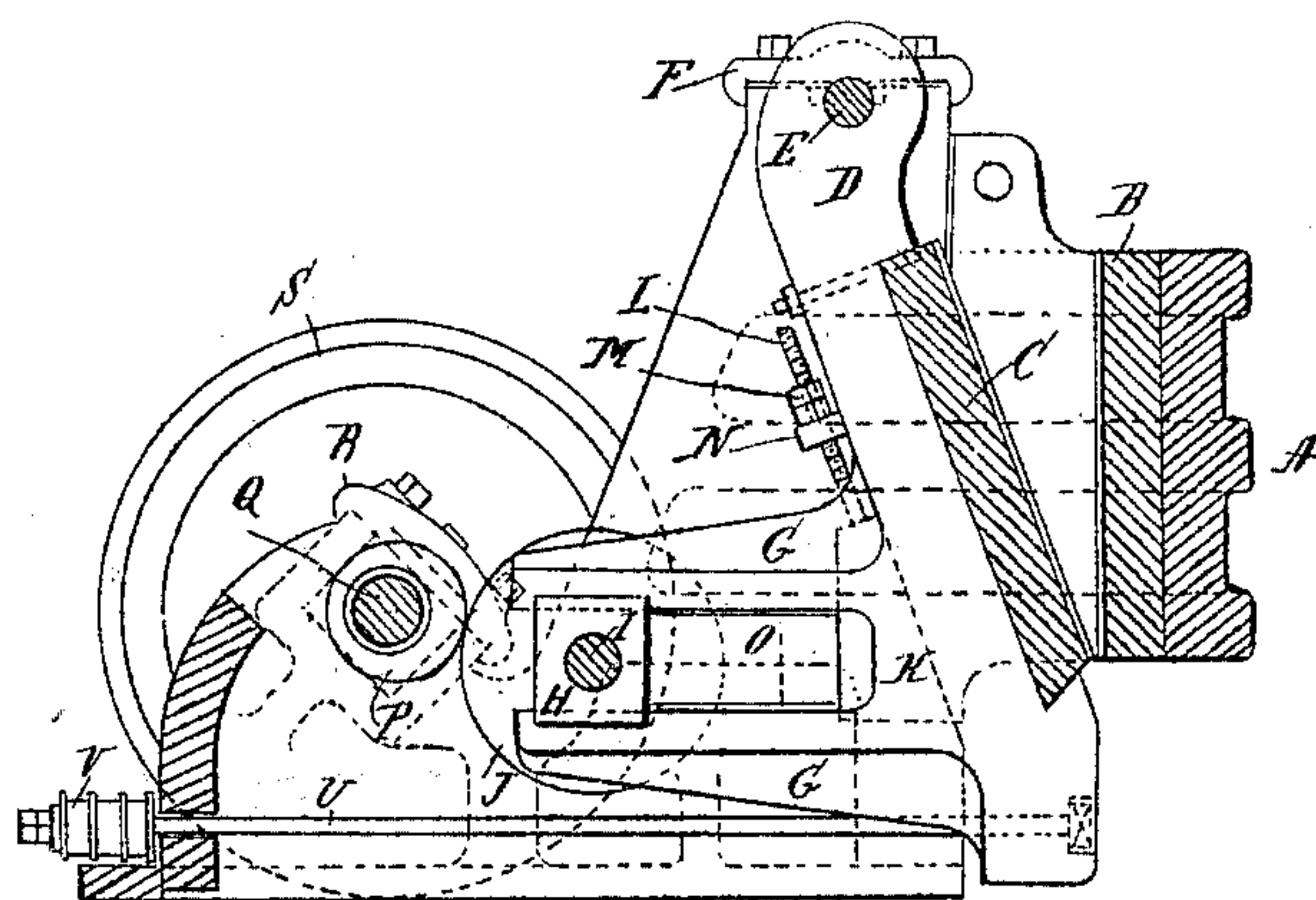
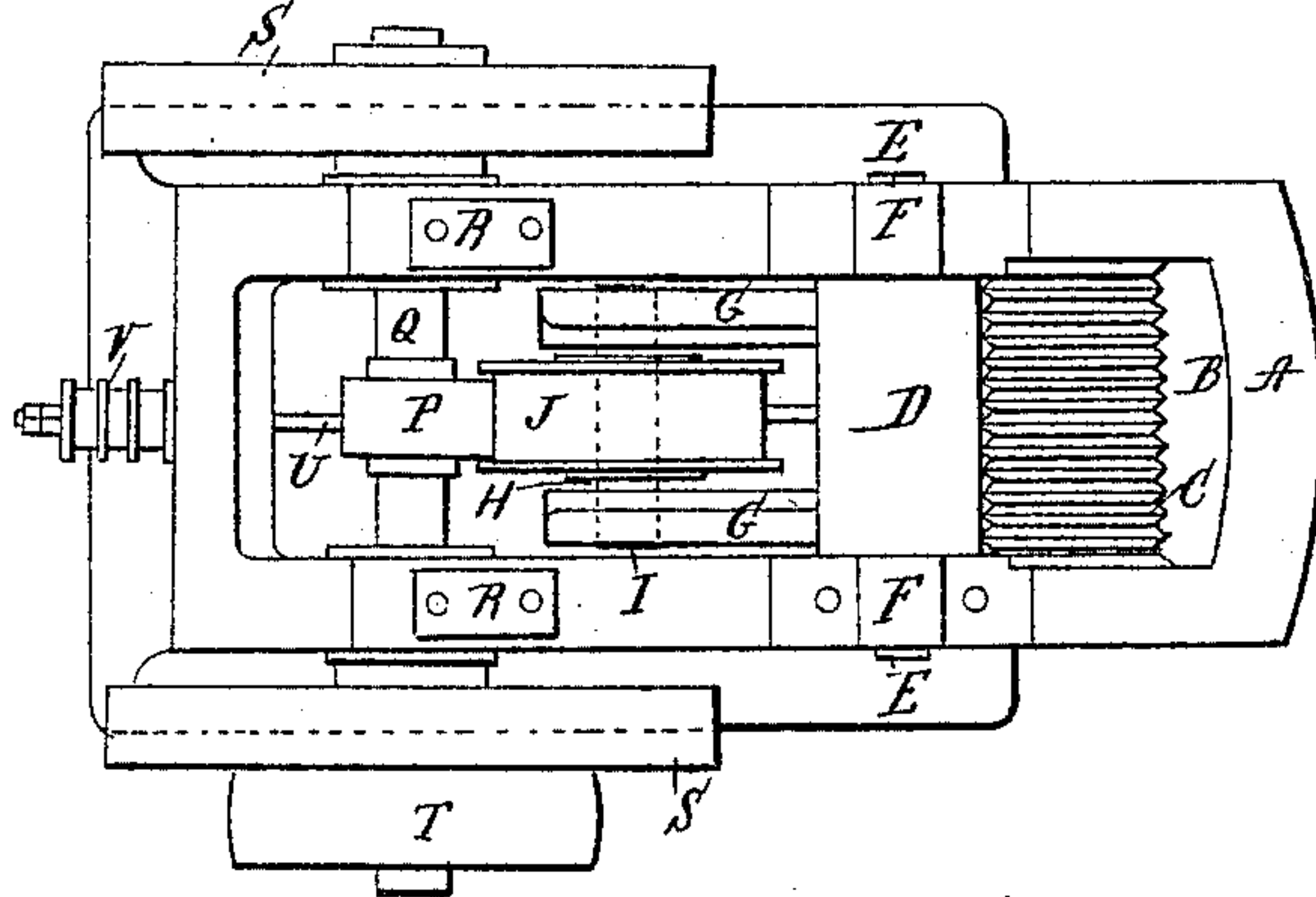


FIG. 2.



WITNESS
John Buckler
L. M. Fuller

INVENTORS
William Johnson and
Henry Walker
BY
Edgar Tate
ATTORNEYS.

No. 622,573.

Patented Apr. 4, 1899.

H. WALKER & W. JOHNSON.

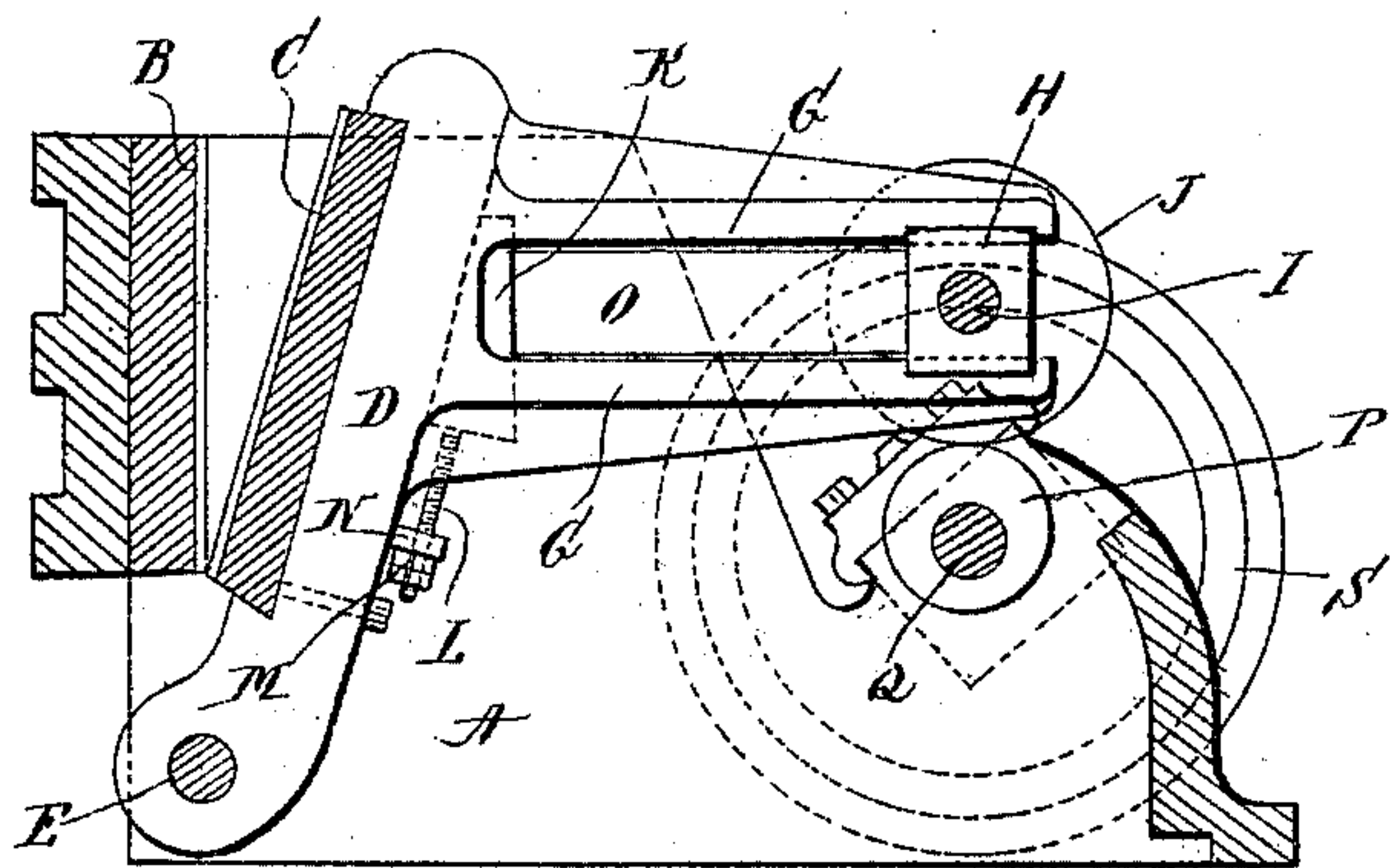
CRUSHER FOR STONE, ORE, &c.

(Application filed Dec. 13, 1897. Renewed Feb. 18, 1899.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 3.



WITNESSES

John Buckler,
Carrie C. Allen.

INVENTORS.

Harry Walker
William Johnson and
BY
Edgar A. L. H.
ATTORNEYS

UNITED STATES PATENT OFFICE.

HARRY WALKER AND WILLIAM JOHNSON, OF LEEDS, ENGLAND.

CRUSHER FOR STONE, ORE, &c.

SPECIFICATION forming part of Letters Patent No. 622,573, dated April 4, 1899.

Application filed December 13, 1897. Renewed February 18, 1899. Serial No. 706,065. (No model.)

To all whom it may concern:

Be it known that we, HARRY WALKER and WILLIAM JOHNSON, subjects of the Queen of Great Britain, residing at Leeds, in the county of York, England, have invented certain new and useful Improvements in Crushers for Stone, Ore, and Similar Substances, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in machines for crushing stone, ore, and similar material, and is applicable to machines of the Blake and similar type, and is the same as that for which Letters Patent were granted in Great Britain June 23, 1897, No. 13,826.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a sectional elevation, and Fig. 2 a plan, of a crusher constructed according to our invention; Fig. 3, a view similar to Fig. 1, showing the parts in a different position.

In the drawings forming part of this specification the separate parts of our improvement are designated by the same letters of reference in each of the views, and in said drawings A represents the framework of a machine fitted with the fixed crushing-jaw B and a swinging crushing-jaw C. The jaw C is secured to a casting D, which swings or is pivoted on a trunnion E, which is carried in bearings F (shown in the drawings hereunto annexed) at the top of the machine; but we would have it understood that in some cases it may be found advisable to arrange the pivotal support of the crushing-jaw C below the stationary jaw, as shown in Fig. 3, the construction and operation of this form of construction being substantially the same as that shown in Fig. 1. The casting D is provided with slide-arms G, fitted with journals or bearings H for carrying the spindle I, on which a friction ball or roller (a friction-roller J shown in the drawings) works. On the back of the casting D is fixed a wedge K, having a screw L, provided with nuts M and carrier N, the latter being rigid with casting D. Between the back of the wedge K and journals or bearings H of the friction-roller J is fixed a cross-bar or bridge-piece O.

In order to give movement to the swing crushing-jaw, a shaft Q is provided, with a portion of its length—that which is nearest to the center—of a larger diameter than the outside ends. Upon this enlarged part of the shaft and in a line with the friction-roller J is keyed a cam or eccentric P, (capable of being renewed as it wears away,) made of any suitable material, the wearing surface or bush of which can be replaced along with the friction-roller J when worn out. The said shaft Q is mounted in suitable bearings R, and fly-wheels S and driving-pulley T are mounted thereon. The revolving of the shaft Q causes the friction-roller J also to revolve in its bearings H because of the pressure of the cam or eccentric P coming in contact with the friction-roller, at the same time giving the necessary movement to the swinging crushing-jaw C. To keep the friction-roller J and cam or eccentric P in contact during each full and successive revolution, the casting D is so mounted that it will do this by its own weight, and a spring-rod U is also provided and fitted at one end with a suitable spring or springs V, as shown, and connected to the bottom of the casting D for preventing the cam or eccentric P from knocking or hammering against the friction-roller J when the machine is running empty, the spring giving the necessary and increased backward movement to do this.

In Fig. 1 the shaft Q is in front of the roller J, while in Fig. 2 the said shaft Q is mounted below said roller.

The material to be crushed or broken is placed between the fixed crushing-jaw B and swinging crushing-jaw C. The shaft Q and cam or eccentric P in the meantime are caused to revolve at the required speed. The cam or eccentric P being in contact with the friction-roller J causes the roller to revolve on its spindle or axis I in bearings H, the result being that as the full side of the cam or eccentric P runs toward the friction-roller J, a forward movement is given to the casting D, thereby causing the material between the fixed jaw B and swing crushing-jaw C to receive a crushing, granulating, or nipping action. As the full side of the cam or eccentric P leaves or recedes from the friction-roller J the casting D swings back to its center of gravity and the swing crushing-jaw C recedes with

it, thus allowing the crushed material to pass out from between the jaws B and C. The casting D is so made that it will by its own weight keep the friction-roller J in constant
 5 contact with the cam or eccentric P during each full and successive revolution; but to provide against the eccentric knocking or hammering the friction-roller J when the machine is running empty a spring-rod U, provided with nuts and spring V, is attached to
 10 the bottom of the casting D to give the necessary and increased backward movement.

To enable the material under treatment to be crushed to any desired size, a wedge K is
 15 fixed on the back of the casting D, this wedge being in contact with the cross-bar or bridge-piece O, which is in contact and fits against the friction-roller bearings H. By raising or lowering the wedge by means of the screw L
 20 and nuts M a larger or smaller opening is made at the bottom of the crushing-jaws B and C. This movement also causes the ends of the slide-arms G to approach or recede from the driving-shaft Q, thereby altering the po-
 25 sition of the bearings H in their relation to the slides.

Having fully described our invention, we claim as new and desire to secure by Letters Patent—

30 1. A crushing-machine, comprising an open frame or casing, a fixed jaw mounted in the back thereof, a support pivoted in front of said fixed jaw and adapted to swing in a vertical plane, a supplemental jaw connected
 35 with said support, two sets of arms connected with said support and projecting forwardly, sliding bearings mounted in each of said sets of arms, a shaft mounted in said bearings and provided centrally with a roller, a trans-
 40 versely-movable bridge-piece mounted in said arms back of said sliding bearings, a vertically-movable wedge between said pivoted support and said bridge-piece, a shaft mount-

ed adjacent to roller and provided with a cam-head centrally thereof which is adapted to
 45 operate in connection with said roller, and means for operating said last-named shaft, substantially as shown and described.

2. A crushing-machine, comprising an open frame or casing, a fixed jaw mounted in the
 50 back thereof, a support pivoted in front of said fixed jaw and adapted to swing in a vertical plane, a supplemental jaw connected with said support, two sets of arms connected with said support and projected forwardly,
 55 sliding bearings mounted in each of said sets of arms, a shaft mounted in said bearings and provided centrally with a roller, a transversely-movable bridge-piece mounted in said arms back of said sliding bearings, a verti-
 60 cally-movable wedge between said pivoted support and said bridge-piece, a shaft mounted in front of said roller and provided with a cam-head centrally thereof which is adapted to operate in connection with said roller, and
 65 means for operating said last-named shaft, said frame or casing being also provided in the bottom thereof with a spring-operated rod which is connected with the lower end of said pivoted support, substantially as shown and
 70 described.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of the subscribing witnesses, this
 24th day of November, 1897, by the said HARRY
 75 WALKER, and this 6th day of December, 1897, by the said WILLIAM JOHNSON.

HARRY WALKER.
 WILLIAM JOHNSON.

Witnesses for Harry Walker:

CHARLES BONFIELD,
 THOMAS HUFFINLEY.

Witnesses for William Johnson:

A. C. VAN BLARCOM,
 M. A. KNOWLES.