

No. 814,085.

PATENTED MAR. 6, 1906.

J. F. SAUERMAN.
ORE AND COAL CRUSHING MACHINE.

APPLICATION FILED JULY 3, 1905.

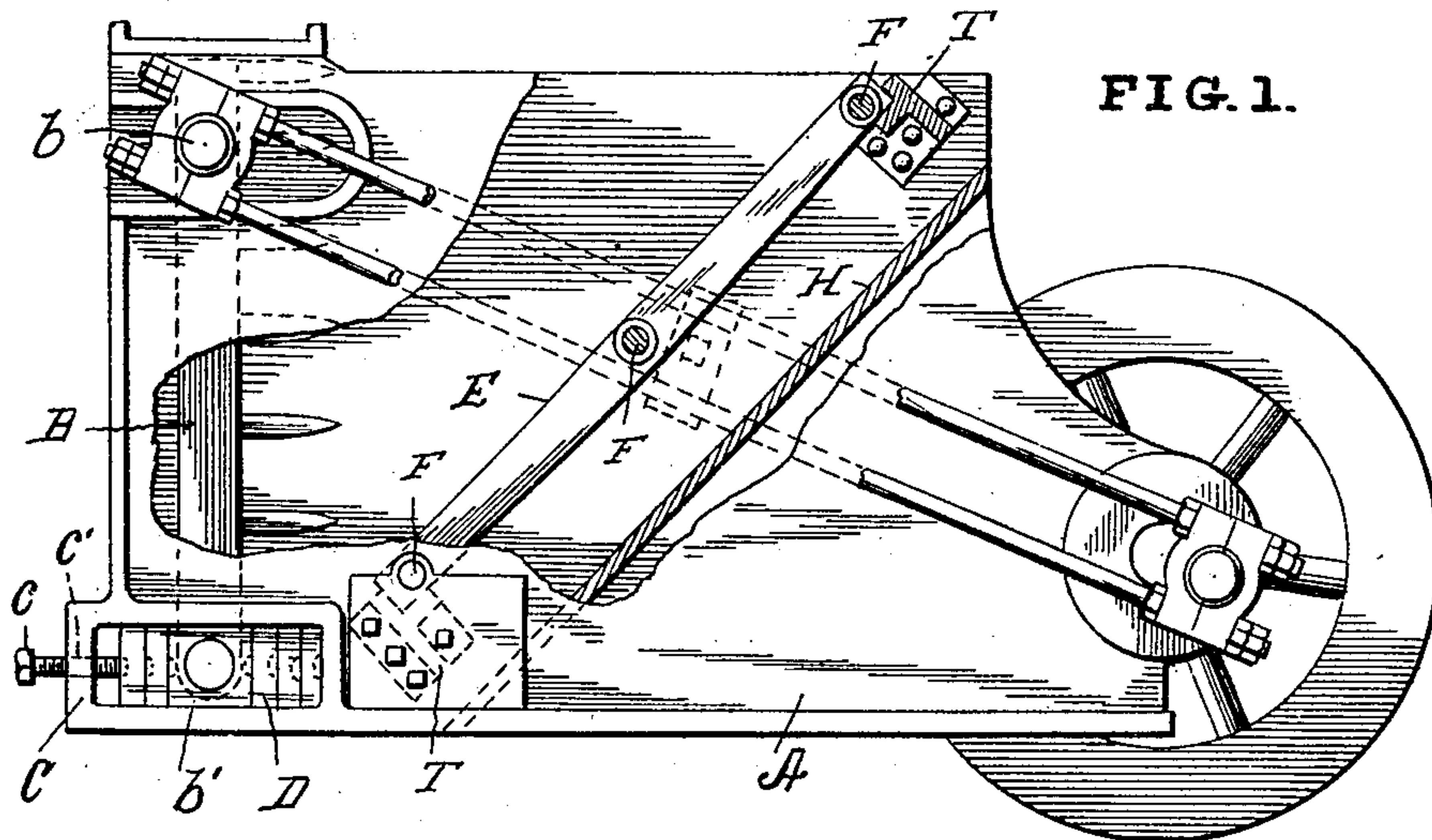


FIG. 1.

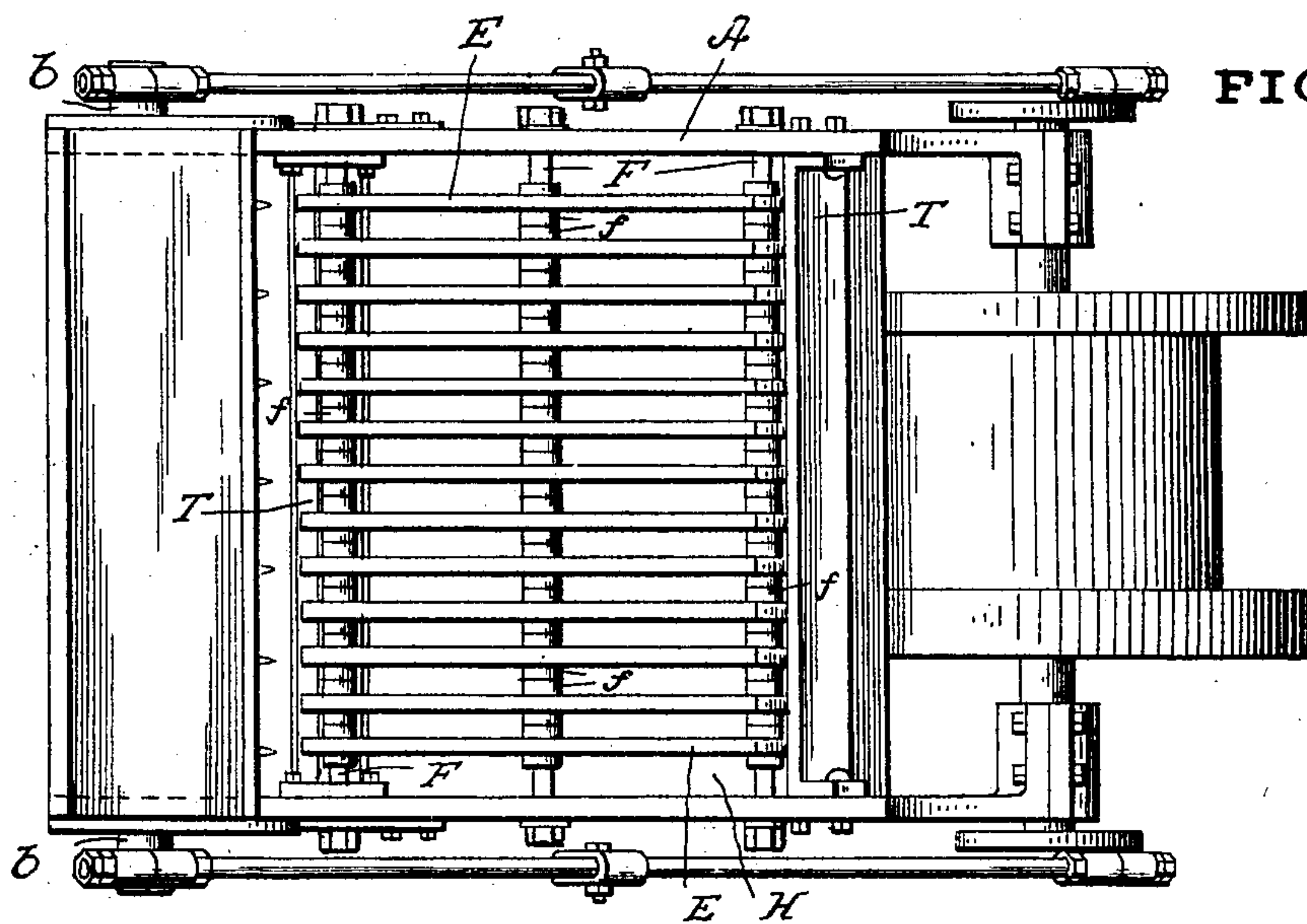


FIG. 2.

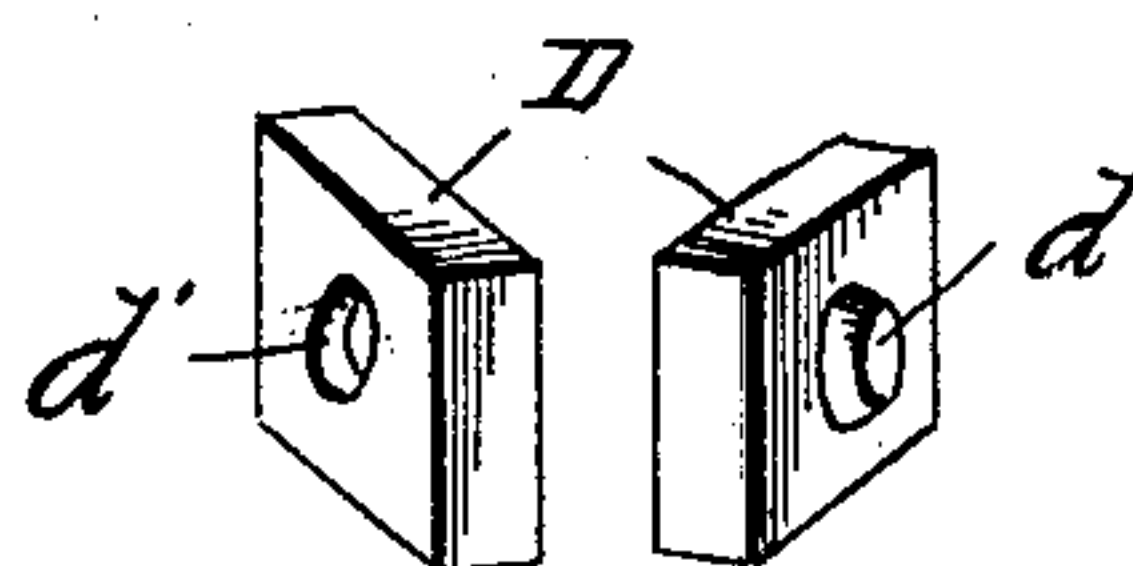


FIG. 3.

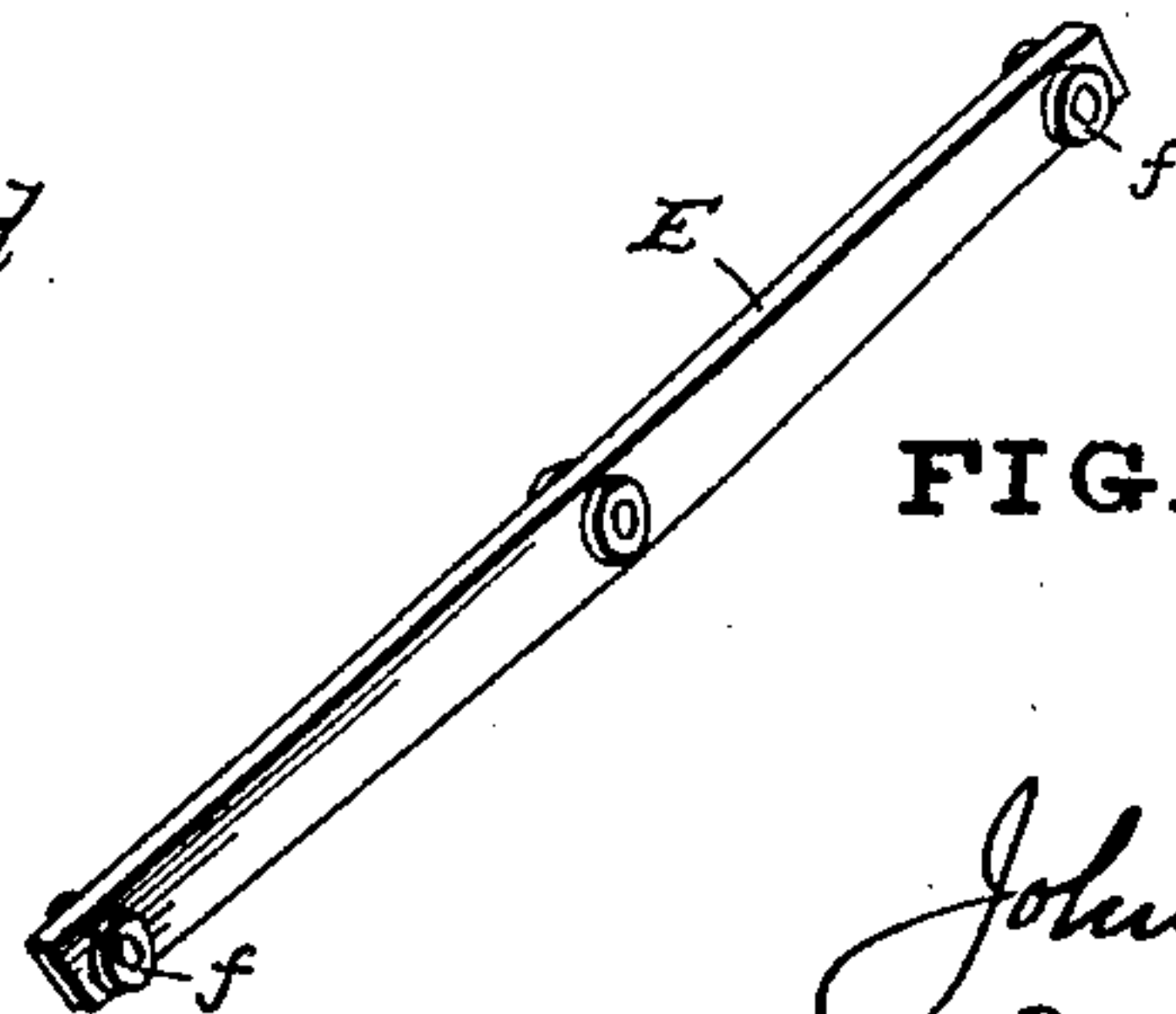


FIG. 4.

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ORE AND COAL CRUSHING MACHINE.

No. 814,085.

Specification of Letters Patent.

Patented March 6, 1906.

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To all whom it may concern:

Be it known that I, JOHN F. SAUERMAN, a citizen of the United States, residing at Russellville, in the county of Pope and State of Arkansas, have invented certain new and useful Improvements in Ore and Coal Crushing Machines, of which the following is a specification.

The invention to be hereinafter described relates to ore and coal crushing machines.

It pertains more especially to that character of crushing-machine in which the material to be broken up is run between a stationary back plate and a reciprocating or swinging crusher-head.

It is desirable in a machine of the above type that as the material is crushed to the desired size it may be at once delivered from the machine and that the construction shall be such that the same machine may be adjusted and employed to crush different ore to different sizes, as well as to enable the crushing-stroke of the crusher-head to be readily varied according to the character of material to be treated.

With the above general objects in view the invention consists of the parts and combinations that will be hereinafter described and then definitely pointed out in the claims.

In order to enable one skilled in the art to which the machine applies to construct and use the same, I will now describe the same more specifically in connection with the drawings, which form a part of the present application.

Figure 1 is a side elevation of the machine, partly broken away. Fig. 2 is a plan view of the same with the several parts in the same relative positions as in Fig. 1. Fig. 3 is a view showing the opposite faces of the packing-washers. Fig. 4 is a perspective of one of the removable bars of the back plate.

The machine as a whole comprises the following elements: A suitable frame A of any usual construction, a swinging crusher-head B, pivotally and adjustably mounted in a sliding block *b'*, which is slidably mounted in a suitable journal-box C, in which are placed a plurality of packing-washers D, held firmly in place by an adjusting-screw *c*. This crusher-head may be operated by any suitable means—such, for instance, as that shown in the drawings, a shaft journaled in bearings at opposite sides of the machine and carrying axially-alined crank-pins at its opposite extremities on which are journaled driving-

rods, the driving-rods having their opposite ends journaled upon suitable studs or pins projecting from the sides of the crusher-head. Motion may be communicated to the shafts by any suitable means, such as a pulley mounted thereon, as illustrated in the drawings. Since the operating means and their connections form no part of the present application, it will not be necessary to further describe the same.

I will now proceed to describe the construction and supporting means of the backing-plate. This backing-plate comprises a plurality of separate heavy metal bars E, preferably all of the same dimensions. These bars are removably mounted upon a plurality (three being shown in the drawings) of spacing-rods F. The preferred form of mounting these bars is to string them upon the rods by passing the rods through openings in the bars. In order to keep the bars separated from one another, so that the finer particles of ore may pass between them, washers *f* are strung upon the rods F and so arranged that they shall constitute spacing-blocks for the same. The size and number of these washers may be varied widely, so that the spaces between the bars may be varied at will by merely putting washers of greater thicknesses or in greater numbers between them. In putting together this back plate the spacing-rods F pass through and are securely fastened to the side pieces of the framework of the machine, thus constituting both spacing and bracing rods. In order that this back plate may be adequately supported to sustain the immense strain upon it while in use, there is placed at each end thereof a supporting cross-beam, preferably a T-beam T, upon which rest the ends of all of the individual bars of the back plate, as shown in Fig. 1. These T-beams, like the spacing-rods F, are securely fastened to the framework of the machine. Behind this back plate I place a sheet-metal chute H, which may be attached to the framework or suspended beneath the back plate in any desirable manner. This chute is to direct any particles which may pass through between the bars into a suitable receptacle below the machine proper.

In order that the crusher-head may also be adjusted when desired, the following construction has been used: a pivot-stud *b* on the opposite extremities of the lower edge of the head, journaled to turn in bearing-blocks *b'*. These blocks *b'* are slidably mounted in

the journal-box C. To provide a quick and positive means of adjusting the block *b'* in the journal-box C, the following means have been used: removable, interchangeable, and
 5 interlocking packing-washers D, acted upon by an adjusting-screw *c*, which takes through a screw-threaded hole *c'* in the journal-box C. These washers, as clearly shown in Fig. 3, are made with a stud *d* on one face and a hollow or
 10 depression *d'* of equal dimensions in the opposite face. When it is desired to move the crusher-head in one direction, the screw *c* is loosened, one or more washers removed from the side in the direction in which the move-
 15 ment is desired, the block *b'* carrying within it the stud *b* of the crusher-head B, moved the desired distance, the washers placed in the opposite side of the box C, so that they interlock with those previously there, and, finally,
 20 the set-screw *c* again tightened.

It is obvious that many changes may be made in the constructions as herein set forth without in any way departing from the spirit of the invention, and therefore I do not wish
 25 to be held to the precise constructions illustrated.

Having described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

30 1. In an ore-crushing machine of the class described, a suitable frame, a reciprocating crusher-head mounted in said frame, means for reciprocating said crusher-head, and a back plate, said back plate consisting of a
 35 plurality of separate bars spacing-rods on which said bars are strung, means for adjusting the said bars toward and from each other on said rods, and supporting cross-
 40 beams independent of said rods for sustaining the ends of the bars against the crushing strain.

2. In an ore-crushing machine of the class described, the combination of a frame, a crusher-head pivotally mounted therein,
 45 means for reciprocating said crusher-head, a

back plate comprising a plurality of bars, independent washers for holding said bars spaced apart, rods on which said bars and washers are strung, supporting-beams independent of the said rods for sustaining the ends
 50 of the bars against the crushing strain, and an inclined plate secured to the frame and extending beneath the said bars to form a chute for carrying away the material as it is crushed to the proper size and passes between the
 55 bars.

3. In a machine of the class described, the combination of a suitable frame, a crusher-head pivotally mounted to swing in said frame and provided with a series of pins, a
 60 series of separated inclined bars toward and from which the crusher-head is adapted to swing, means for swinging said crusher-head, spacing-rods extending transversely of the frame and on which the said inclined bars are
 65 strung, a supporting-beam extending transversely of the frame adjacent the upper ends of the inclined bars upon which the ends of said bars rest to withstand the crushing
 70 strain.

4. In a machine of the class described, the combination of a frame, a crusher-head pivotally mounted therein, means for swinging said crusher-head, a series of separated bars forming a back plate with which the crusher-
 75 head coacts, and means for adjusting the pivotal connection between the crusher-head and frame, said means comprising an elongated bearing, a movable pivot-block in said bearing, and a series of interchangeable wash-
 80 ers, each having a recess in one side and a projection on the other side, whereby they serve to reciprocally lock each other in place.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. SAUERMAN.

Witnesses:

WILL GUEST,
 J. M. BALL.