No. 892,861. PATENTED JULY 7, 1908.

W. H. LLOYD.

ROCK AND ORE CRUSHER.

APPLICATION FILED MAY 7, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

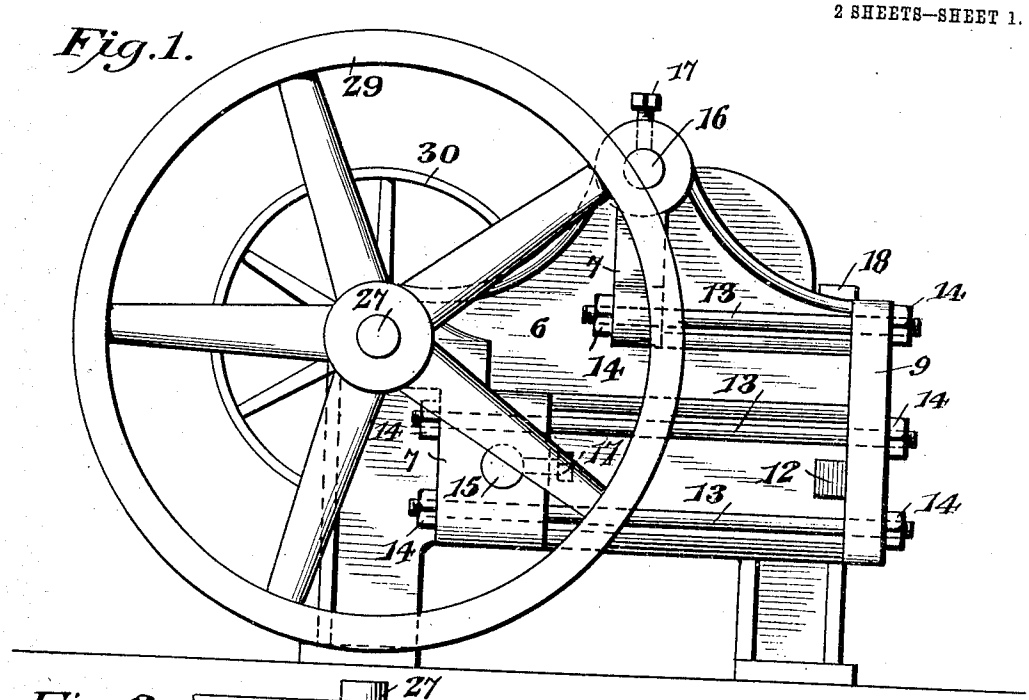
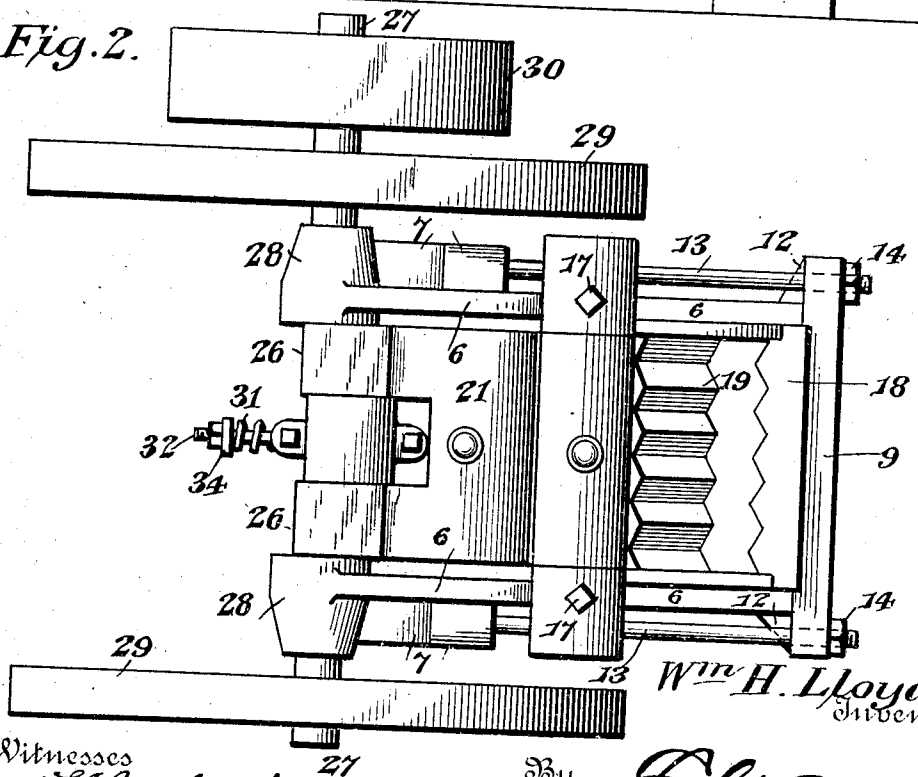


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

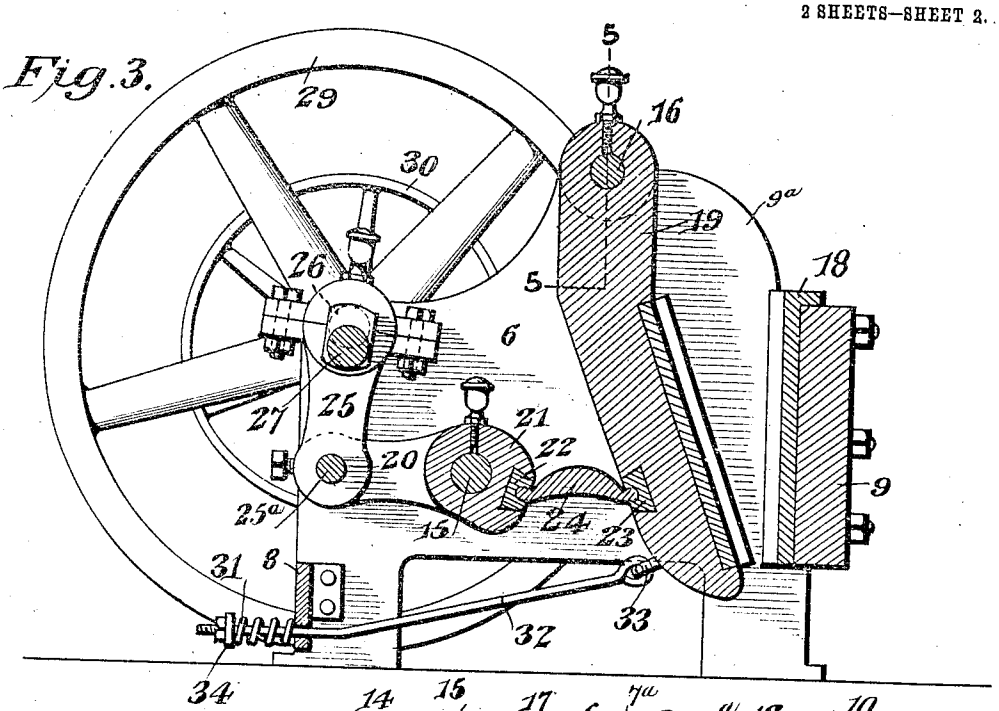


Fig. 4.

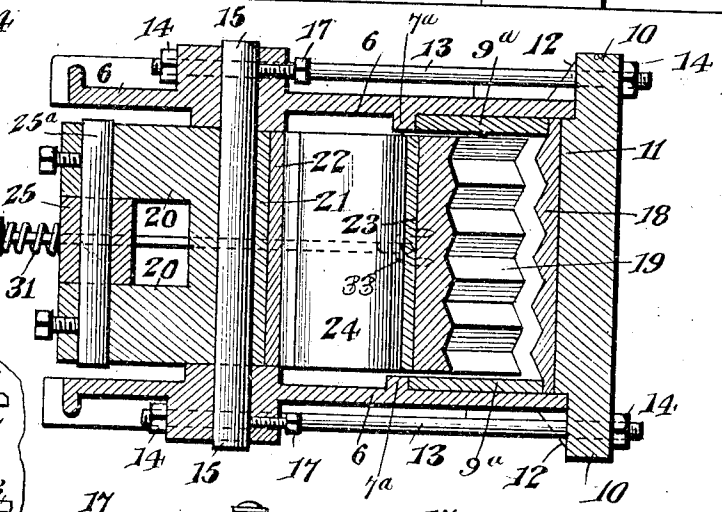


Fig. 6.

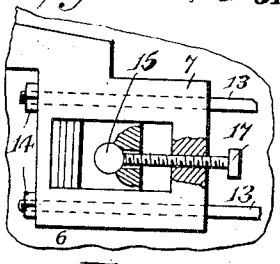
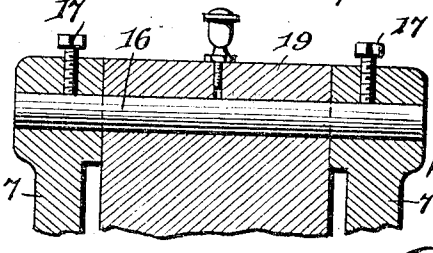


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM H. LLOYD, OF LOS ANGELES, CALIFORNIA.

ROCK AND ORE CRUSHER.

No. 892,861. Specification of Letters Patent. Patented July 7, 1908.

Application filed May 7, 1906. Serial No. 315,611.

To all whom it may concern:

Be it known that I, WILLIAM H. LLOYD, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Rock and Ore Crusher, of which the following is a specification.

This invention relates to means for disintegrating rock and the like, and one of the principal objects is to provide a novel structure, which while entirely effective for the purpose, is very compact, comparatively light in weight, is made up of easily detachable sections that are relatively small, so that the same may be readily packed upon animals, or the like for transportation, and yet when set up is rigid and strong to withstand the necessary rough work and hard usage incident to its use.

A further object is to provide a structure of this character, wherein the driving shaft is to a very great extent relieved of the lateral strain imparted thereto by the operation of the movable jaw.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of the machine. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical longitudinal sectional view therethrough. Fig. 4 is a horizontal sectional view. Fig. 5 is a detail cross sectional view on the line 5—5 of Fig. 3. Fig. 6 is a detail view partially in section of a slightly modified form of construction.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment illustrated, spaced side walls 6 are employed that are provided on their outer sides with outwardly extending reinforcing ribs or projections 7 and inwardly extending ribs 7^a. A web 8 connects the side walls at one end, and an end wall 9 is located against the opposite ends of the side walls and projects beyond their outer sides, as shown at 10. This end wall is provided with an intermediate thickened portion 11, against which the ends of the side walls abut, and the projecting portions 10 have lugs 12 that engage the outer sides of the side walls. The end and side walls are detachable, but are rigidly secured together by tie bolts 13. Said tie bolts pass through the projecting portions 10 of the end wall and through the reinforcing projections or lugs 7 of the side walls, the bolts having heads or nuts 14 on their ends. The side walls are also tied together by transverse pins 15 and 16 that bridge the space between said side walls and extend through the reinforcing ribs or projections 7. The pins are, in turn, held in the side walls and against movement by set screws 17. It will thus be evident that while the frame is composed of a number of comparatively small and light parts, which can be readily assembled or disassociated, when said frame is set up, it is very strong and rigid.

A stationary jaw 18 is preferably located on the inner side of the end wall 9 between the side walls and clamped between said stationary jaw and the ribs 7^a are end plates 9^a. A swinging jaw 19 is loosely journaled on one of the tie pins, as 16. In the present embodiment, this jaw is hung from its upper end, though the arrangement may be varied, as will be evident to those skilled in the art. A lever 20 is loosely fulcrumed on the other tie pin 15, this lever having a suitable head 21, in which is seated a bearing 22. The rear side of the swinging jaw 19 is also provided with a bearing 23, and a link plate 24 connects the head of the lever and the jaw, said link plate having its ends located in the bearings 22 and 23, as clearly shown in Fig. 3. It will be observed that the lever is disposed entirely between the side walls and above their lower edges. Its rear end is bifurcated and embraces the lower end of a pitman 25 to which it is connected by a pivot pin 25^a. The upper end of the pitman is engaged with the crank 26 of a driving shaft 27.

It will be observed by reference to Fig. 3 that the lever 20 and link 24 are disposed in alinement and that the fulcrum of the lever, the connection of said lever with the pitman and the bearings of the links are disposed in substantially horizontal alinement between the side walls, all of said devices being wholly located between said walls.

The driving shaft is journaled in ears 28, located on the side walls, and said driving shaft is preferably provided with the usual fly wheels 29 and driving pulley 30. The driving mechanism is of course for the purpose of swinging the jaw 19 towards the stationary jaw 18, but in order to move it in an opposite direction, a coiled spring 31 is employed, said spring being located on a draft rod 32, which is hinged, as shown at 33 to the swinging jaw, said draft rod passing through

the web 8. The spring 31 bears at one end against said web 8, and at its other end against an abutment 34 secured to the rod.

It is believed that the operation of the structure will be readily apparent. When the driving shaft 27 is rotated, the pitman 25 is given an up and down movement, thus causing the swinging of the lever 20. The lever, operating through the link 24, effects the swinging of the jaw 19, thus crushing the material placed between said jaw and the jaw 18. The size of the product allowed to pass through the machine can be readily varied by introducing links of different lengths between the lever and swinging jaw. Moreover, while in the present embodiment, the lever is fulcrumed between the power and the load, it will be evident that the arrangement may be varied to a considerable extent without departing from the spirit of the invention. The machine, as thus constructed, is very compact, so that it will occupy but very little floor space, is comparatively light in weight, and the sections thereof may be easily detached and packed. As already shown, the frame or body of the machine is strongly braced, and moreover, the tie pins constitute journals or fulcrums for the lever and jaw. In this structure, it will be noted that the power is delivered to the swinging jaw through the lever 20, and as the long arm of the lever is connected to the driving shaft, the lateral strain upon said shaft will be comparatively light.

It will of course be understood that the structure shown is open to various changes and modifications. Thus while links 24 of different lengths may be interposed between the lever 20 and the jaw 19, in order to take up the wear, in lieu of this arrangement, as illustrated in Fig. 6, the fulcrum 15 of said lever 20 may be mounted in boxings that are horizontally adjustable in slots in the enlargement 7 of the side wall, said boxings being held by suitable means, as for instance, screws threaded into the said enlargement 7, and engaging the opposite ends of the boxings.

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

In a crusher of the character described, the combination with side walls having outstanding projections and inset ribs, of an end wall located against the ends of the side walls and projecting beyond their outer faces, said end wall having a thickened portion fitted between the side walls, a stationary jaw located upon the thickened portion, side plates interposed between the ribs of the side walls and the stationary jaw, holding bolts passing through the projecting ends of the end walls and the outstanding projections of the side walls, tie rods bridging the space between the side walls, certain of said rods having their ends located in and secured to the outstanding projections, a movable jaw, and actuating means therefor including a device journaled on one of the tie rods.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM H. LLOYD.

Witnesses:

WM. B. HERRIOTT,

JUNE S. GODDARD.