A. B. JUDSON.
MACHINE FOR PICKING, BREAKING, AND OPERATING ON ICE, COAL, ORES, AND OTHER SUBSTANCES.
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Fig. 2
1 2 2 1

Fig. 3
1 3 3 1

Fig. 4
1 6 5 6 4 1
7 8 7 9 7 10

WITNESSES:

Adoniram B. Judson
INVENTOR

By:

Harry Edward
ATTORNEY
MACHINE FOR PICKING, BREAKING, AND OPERATING ON ICE, COAL, ORES, AND OTHER SUBSTANCES.

To all whom it may concern:

Be it known that I, ADONIRAM B. JUDSON, a citizen of the United States, residing at No. 33 Washington Square, in the city, county, and State of New York, have invented a new and useful Machine for Picking, Breaking, and Operating on Ice, Coal, Ores, and other Substances, of which the following is a specification.

My invention relates to improvements in machines and tools of the type wherein repeated blows are delivered by a group of picks combined with a head. In machines and tools of this character fragments of the substance acted on are quite liable to be wedged and held among the picks.

It is the primary object of my invention to lessen this liability. This object is carried out by a group of unstable or semi-detached picks which are parallel with each other when the apparatus is at rest, and whose points, when they strike in company and simultaneously a mass, or masses, of ice, coal or other substances approach each other or separate from each other automatically with the motion of the apparatus and guided by planes of cleavage in the substance acted on, thereby lessening the liability of the wedging and retention of fragments among the picks.

The invention consists of the devices and parts, or their equivalents, hereinafter set forth in the accompanying drawings, of which—

Figure 1 is a perspective view of a head of immovable picks, adaptable to either a tool or a power machine, in position for delivering a blow in a vertical downward direction; Fig. 2 a vertical sectional view of a section of the lower plate of my invention, showing lodgments for two picks; Fig. 3, a repetition of Fig. 2, with picks in the position they occupy at the beginning of a blow; and Fig. 4, a vertical sectional view of a section of the two plates composing the head, showing three movable picks pointing in the directions they may chance to take at the end of a blow when in contact with the substance acted on.

Similar figures refer to similar parts throughout the several views.

The lower plate, 1, 1, has round perforations, 2, 2, larger above than below, in which picks, 3, 3 are inserted point first as far as they will go... The upper plate, 4, 4, is then fastened to the lower plate, 1, 1, by the screwbolts 5, 5. Lubricating apertures are provided at 6, 6, 6. The diameters of the rims of the perforations in the lower plate, at 7, 7, 7, determine the area of motion of the points of the picks. The device known as a cup and ball joint is useful here. This device and its modifications furnish three different methods of combining unstable picks with heads, which ordinarily carry a considerable number of picks, as is seen in Fig. 1. These three methods are shown at 8, 9 and 10, in Fig. 4, and either, or its equivalent, may be used. At 8, the base of a pick, in the shape of a ball, fills a rounded cup. Here the upper plate has a hemispherical excavation to accommodate the upper half of the base. At 9, the base of a pick, in the shape of the frustum of a cone, partly fills a cup of a corresponding shape, and at 10, the base of a pick, in an irregular shape, partly fills a cup of a corresponding irregular shape. The number, size, shape, and temper of the picks, the diameters of the rims and other details of the improved construction will vary with the nature of the substance to be acted on.

I am aware that previous to my invention, machines and tools for picking, breaking, and operating on ice, coal, ores and other substances have been made with unstable picks. I do not, therefore, claim such picks broadly, but I claim—

1. In a device of the class described, breaking elements, a head formed with apertures having walls for securing said breaking elements to said head against lateral removal, said apertures being formed to permit limited movement of said breaking element in all planes common to the normal axis of said elements.

2. In a device of the class described,
breaking elements, a head comprising a base block and a cap, said base block having an aperture, and means for securing the cap to the base block, said breaking means being held by walls of said aperture and cap against lateral removal but admitting limited movement to said breaking elements in all planes common to the normal axis of said element.

Dated, New York October 7th, 1911.

ADONIRAM B. JUDSON.

Witnesses:

BENJ S. BRANDNER,

HARRY EDWARDS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."