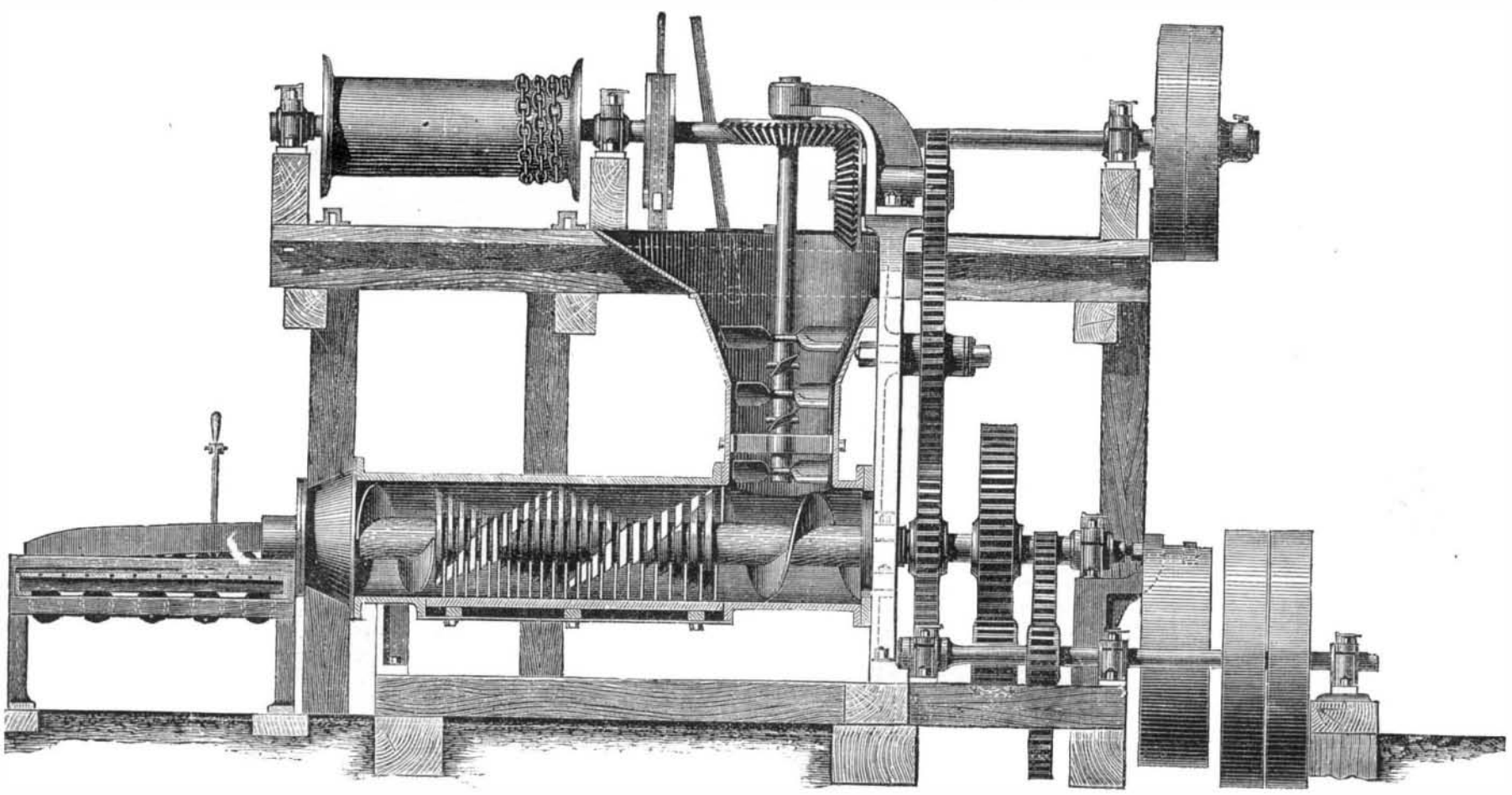
The producing power of the machine has been fairly tested, and, so far, the yield has been found to be at the rate of from 75 to 95 tuns of crude peat per ten hours. The output of raw material appears to depend much upon the state of moisture of the peat bog, being greatest when the peat is wettest and least fiberous.

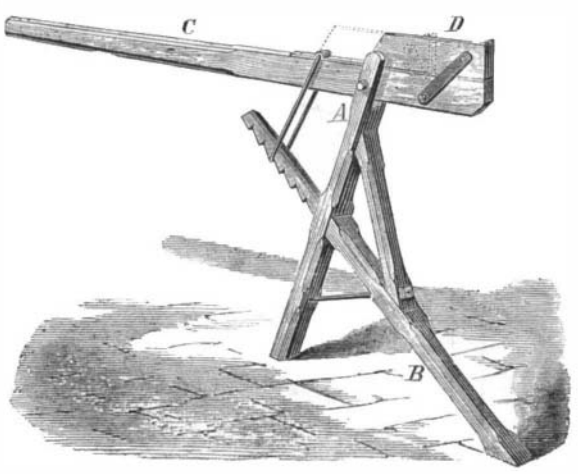
Various kinds of peat have been tried by this machine, and it is interesting to notice the difference between the peat dried without having been previously treated, by the machine, and that which has been operated upon. Peat of very fiberous nature when dry has an open spongy appearance, suggestive of cocoa nut fiber. The same peat treated by this machinery becomes compact and hard, and assumes a specific gravity of from 1·05 to 1·10, while black decomposed bog condenses to about 1·20. A set of machinery to work 100 tuns of crude peat employs, in all, ten men and five boys, including diggers, engine drivers, men in drying sheds, etc., so that the cost, allowing a fair amount for wear and tear, is placed at from 87 cents to $1.25 per tun.



PEAT COMPRESSING MACHINE—SECTIONAL VIEW.

THE HERCULEAN LIFTING JACK.

The invention illustrated in the accompanying engraving is an improved lifting jack, invented and patented by John Riddlesberger, of Franklin county, Pa., and which, it is claimed, may be advantageously applied to many uses. The framework consists of a standard, A, combined with an auxiliary standard and brace, B, in a strong and snbstantial manner. A lever, C, rests in a slot formed in the upper end of the post, A, and is secured by a bolt passing through it. By means of an attachment, D, on its short arm, the lever can be adjusted to different hights. The falling link shown



serves to secure the apparatus while the weight is suspended.

In operation, the short arm of the lever is placed under the axle of a wagon or other weight to be raised. The opposite or long arm is then borne down, when the falling link becomes engaged in notches formed in the under side of the post, B, as represented.

For further particulars regarding sale of territory, agencies, rights, etc., address Dr. I. N. Snively, Waynesboro', Franklin county, Pa.

The Modes of Steel Making.

A priori, the making of steel by removing carbon from cast iron is the most rational way, says the *Engineering and Mining Journal*, because it is the most direct; but a trial shows us at once that directness is not the only premise which must be regarded. There are two other things which go to the making of steel. One is purity of product and the other is equality of "temper." A pure product is only to be had by using a pure pig; and, as this article is not always obtainable, that process is, generally speaking, more rational which introduces some purifying operation—like the conversion of cast iron to wrought. As to the equality of temper, that depends upon the amount of carbon left in the steel (neglecting other elements). Here again repeated trials have shown that it is very difficult to hit the exact amount of carbon in every operation when oxidizing agents are used, and a large proportion of past failures have been due to this difficulty. So that, after all, the direct conversion of cast iron into steel is not the most rational mode, because it leaves two important requirements unregarded. On the other hand, wrought iron, being a purified product of a tolerably definite composition, satisfies these requirements, and may, therefore, rationally be used for steel making. In practice we find both these kinds of iron used together. In such cases, the wrought iron must be considered as the leading raw material, while the cast iron is a carbonizer.

The old idea that the direct conversion of pig metal into steel is the only rational process has cost inventors untold agonies of mental activity, and capitalists have suffered quite as much in pocket on account of it. The proof that the idea was wrong is to be found in the constant abandonment of the process in steel making of every kind. Crucible steel, furnace steel, and Bessemer steel making processes are now, in most cases, founded upon the principle of using wrought iron as a basis and either carbon or pig metal as a carbonizer.

Effect of Sulphur Water on Iron Pipes.

Dr. E. Priwoznik, in *Dingler's Journal*, says: It appears that, when the iron mains conveying the mineral water from a source near Hainburg, Austria, were taken up after having been for more than a dozen years underground, the iron thereof had been strongly acted upon, as exhibited, by the difference in structure, upon the fracture. On being analysed, the author found the interior layer to consist, in 100 parts, of: Hydrated oxide of iron $[(Fe^2)^2O^3(OH^6]$, 81·08; free sulphur, 12·29; sulphuret of iron, 4·48; hygroscopic water, 0·57; nickel, cobalt, magnesia, silica, traces of carbon, and chlorides of ammonium and sodium, 1·58. The second layer was found to contain only 79·2 per cent of iron, but no sulphuret or excess of carbon was discovered; while the third outmost layer was almost pure cast iron.

A Leaf from the Early History of the Mowing Machine.

Jeremiah Bailey, of Chester county, Pa., was one of the early American inventors, whose contributions to the mechanical arts have so greatly assisted the progress of the country. In 1822 he obtained a patent for a self-sharpening mowing machine, which was considered of so much importance that it was engraved and printed in London, in the *Mechanic's Magazine* for November 1, 1823, almost fifty years ago. We here give a copy of the engraving and quote the remarks of our venerable cotemporary:

"The mowing machine, of which the annexed cut is a representation, was invented by Jeremiah Bailey, of Chester county, United States, who has obtained a patent for the same. [Patented February 13, 1822.]

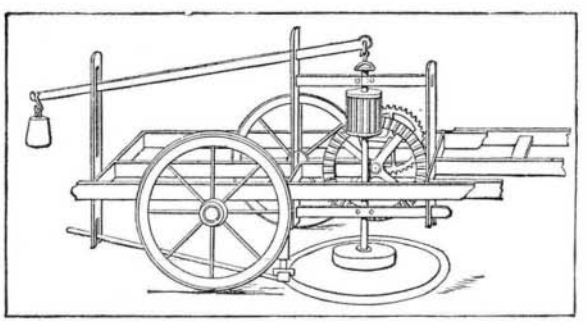
"It has been extensively used and approved of during the last season, in the neighborhood of the patentee, and promises to be of great public utility. It is understood that it will mow ten acres per day. The following description will explain its operation, and show the skill and ingenuity of the inventor.

"This machine is supported by two wheels on different axles. The left wheel is fixed to its axle so that they revolve together. The right revolves on its axle like a common cart wheel, and is placed about a foot further back than the other. The left works within the frame, and has a circle of cogs screwed on the outside of the fellows, but of a less diameter, to keep them from the ground. These cogs work into a vertical cog wheel in front, that turns an iron shaft extending horizontally towards the center of the machine; upon the inner end of this shaft is fixed a vertical fuce wheel, whose cogs turn a trundle head or a vertical shaft. To the bottom of this shaft, near the ground, is fixed a circular horizontal frame work, on the circumference of which is screwed the scythes in six parts, laid horizontally, with the edges turned outward, so as to form a complete circle. To keep the scythes at a proper distance from the ground, the bottom of the shaft is supported on a piece of wood of the machine, secured by a tye from the tail, somewhat resembling a sled runner, in which it works in the manner of a gudgeon—with the inequalities of the ground, the scythe frame, shaft and trundle head rise and fall.

"The edge of the scythe in its revolution passes under a whetstone fixed on an axis, and revolving with the scythe. To create friction, this axis is more or less inclined to the line of direction of the revolution according to the friction required. This stone, by means of a sliding rod, by which it is attached to the machine, rises and falls with the scythes.

"To prevent too great a pressure of the trundle shaft and scythe frames on the ground, a lever, like a steelyard, is fixed to the top of the shaft, extending to the tail of the machine, where it is weighed according to the nature of the ground and grass.

"The horse is put into shafts, and *walks* in front of the left side of the machine, and always on the mowed ground after the first swarth is cut.



"By the increase of velocity, the scythes revolve with great swiftness. The grass, as it is cut, is first thrown by the progressive motion against a rise in the scythe frame toward the center, and by the same motion is afterwards thrown off in a regular row, following the center of the machine."

New Plan of Removing Sand Bars.

A method of removing sand bars from rivers, invented and patented by Alfred Garnham, of St. Louis, Mo., consists in anchoring a cable under water, and providing the cable with angular arms, so arranged that the force of the stream will actuate the arms, make them revolve and beat up the sand, which is swept away, as fast as loosened, by the current.