

**Improved Forge Hammer.**

This engraving represents a new and improved forge hammer which has met with unparalleled popularity from the manufacturing community. Eighty of them have been sold in the past twenty months, to large and small concerns. They are made 10, 30, 40, 50 and 60 pounds weight. The 40 pound hammer will draw a three-inch bar three feet at one beat. It can be used in any building without injuring the foundation or walls, as it runs light and without noise.

The cylinder and hammer moving in vertical slides, each blow is square, exactly in the same place, and die work can be forged as exact as under

there are two small holes, F, in the cylinder, through which the air passes freely in and out.

Circulars giving fuller particulars sent on application to Charles Merrill & Son, manufacturers, 556 Grand st., N. Y.

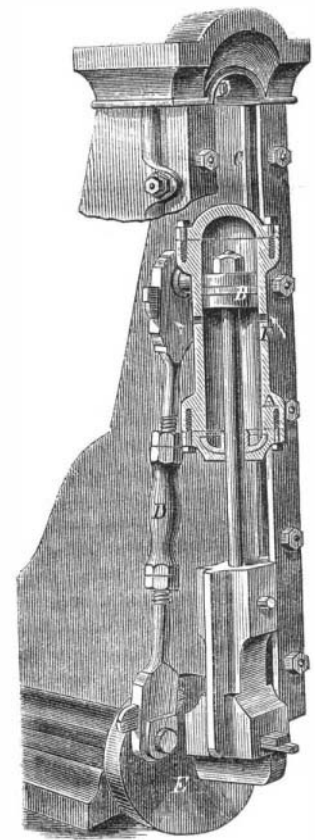
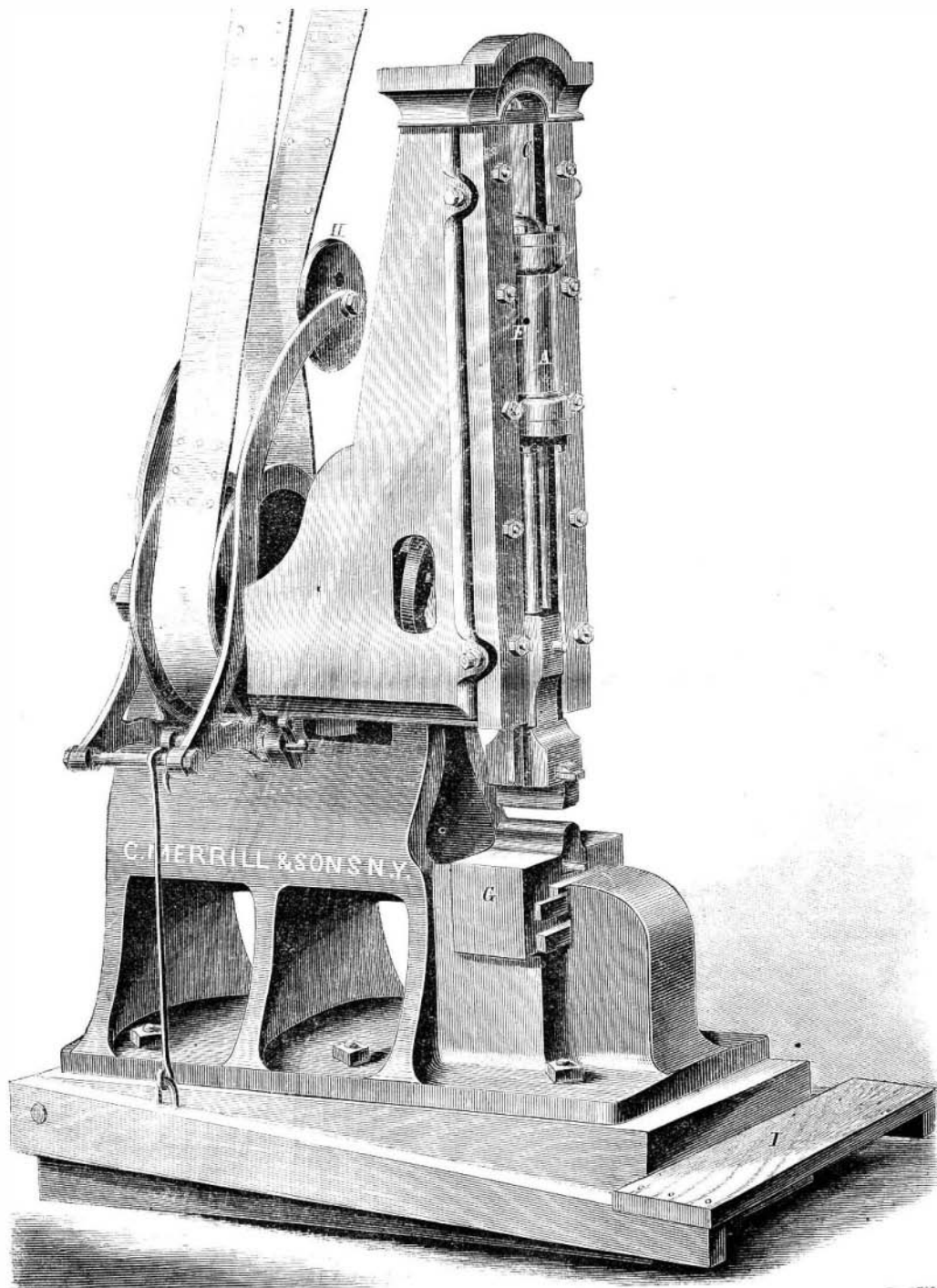
**Unmalted and Malted Barley as Food for Stock.**

Our readers will remember the excitement and discussions which ended in the abandonment of the duty on malt used for feeding stock. Most of them also will be aware that feeders of stock have not largely availed themselves of the privilege of obtaining duty-free malt under the restrictions prescribed.

ing the matter in the hands of Mr. Lawes. No doubts can now remain. The experiments were made on such a scale as to allow of arriving at general conclusions. Instead of the two cows and two oxen experimented upon for a few days by Drs. Thomson, Mr. Lawes took lots of ten, and continued the comparative experiments, some for ten and some for twenty weeks, and those conducted with sheep and pigs were on a similar scale. As regards the results of the feeding, we need only give the general conclusion arrived at by the author—"that a given weight of barley is more productive, both of the milk of cows and of the increase of live weight of fattening animals, than the amount of malt and malt dust that would be produced from it." We must add that these results are consistent with those obtained in the limited experiments of Drs. T. and R. D. Thomson, and also agree with those obtained in a previous inquiry by Mr. Lawes himself.

For further information on this part of the subject we must refer the reader to the report, and go back to the account of "the loss and chemical changes which the grain undergoes by malting," which will interest a larger number of our readers.

The preliminary experiments on malting appear to have been executed with the same care, but, unfortunately, the results as stated do not afford us a ready means of comparing them with those obtained by other chemists. On one point, however, they are sufficiently explicit. Dr. Thomson, who has always been considered an authority on this matter, states that the loss of weight which barley undergoes in the process of malting is about eight per cent. In the experiments of Mr. Lawes, however, the loss was found to be very much greater. He states the loss with barley of fair malting quality to amount to as

**HUTCHKISS'S ATMOSPHERIC FORGE HAMMER.**

a drop, and with greater rapidity; it is under the perfect control of the operator, can strike light or heavy, and give any number of blows in quick succession. It will draw, weld or swage in the most perfect manner, and requires less power than any other hammer giving the same blow. The working parts are simple, not liable to get out of order, and are carried in a strong iron frame.

We give a brief outline of its details and operation:—

The hammer derives the increased force of its blow from compressed air. The air is compressed within a cylinder, A, by the piston, B, which fits the cylinder air-tight (see Fig. 2). The cylinder moves in the slides, C, by the action of the connecting rod, D, driven by the fire-plate, E, by belting in the usual manner. The cylinder is air-tight at each end;

The reason for this will be found in the admirable and exhaustive report we now notice:—

*Report of Experiments Undertaken by Order of the Board of Trade to Determine the Relative Values of Unmalted and Malted Barley as Food for Stock.* By JOHN BENNETT LAWES. Presented to both Houses of Parliament by command of her Majesty. 1866.

This is not the first Government report on the relative advantages of malted and unmalted barley as food for cattle. In 1845 and 1846 Drs. T. and R. D. Thomson made a report which was, however, founded on few experiments continued for a very short time, and was necessarily inconclusive. For many reasons, therefore, to ease the mind of the Chancellor of the Exchequer, as well as to procure sound information for agriculturists, it was advisable to have the subject thoroughly investigated, and the Government did the best that was possible in plac-

much as nineteen per cent, two-thirds of this loss being moisture, and one-third solid substance. The loss of solid substance consists chiefly of non-nitrogenous matters, but includes also a small amount of nitrogenous and mineral matters. The last consists chiefly of soluble salts removed in the steeping, and it must be added that Mr. Lawes found that some sugar was also removed from the grain by the steeping.—*Chemical News.*

**BLEACHING BROOM CORN.**—"A broom maker, of Baltimore," writes us that broom corn is bleached by exposing it to the fumes of burning sulphur. A large box is provided, in the bottom of which a pot of brimstone is placed. The corn is then wet and hung up over it so as to expose a large surface, and the whole is covered with a piece of old carpet, to confine the vapor and allow it to escape slowly.