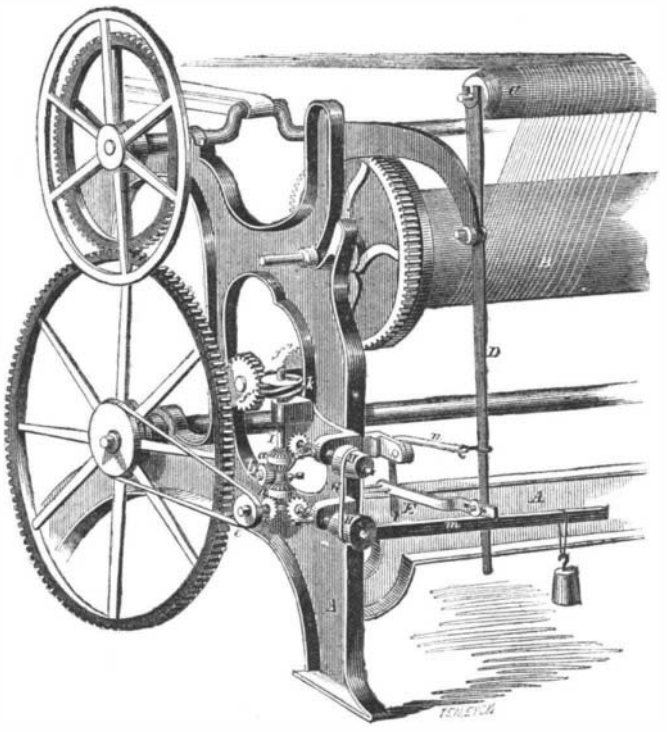
LOOM WARP REGULATOR.

The art of weaving, although one of the oldest and most universal, having come down to us through the remotest periods of antiquity, cannot be said to have arrived at a state of complete perfection, even in the present state of arts and manufactures. There has, as is well known to all manufacturers, always beeen more or less trouble in producing cloth in that state of perfection so much desired by the devotees of the spindle and loom; the chief difficulty consisting in not being able to overcome the irregular tension of the warp in weaving. All efforts hitherto made in this direction have met only with partial success, owing mainly to the imperfect theory and manner of construction of the various devices, in the first place; and secondly, to the great difference between the outside and inside diameter of the warp—in giving off as the weaving proceeds; and thirdly, to the constant jerking of the warp as the shades pass each other, and the lay beats up the filling. These render the operations of ratchet, and similar motions used for let-off motions, uncertain, and limited in their operations, and not unfrequently materially reducing the profits of a business by producing inferior goods, when the stock and expense of preparation had given promise of a better if not a perfect article.

The invention which is here illustrated has been tested on various styles of goods, from the lightest silk to the heaviest woolen; and the inventor feels confident that it will fully meet the wants of manufacturers in this respect, and bring the art of weaving nearer to a state of perfection than before attained.



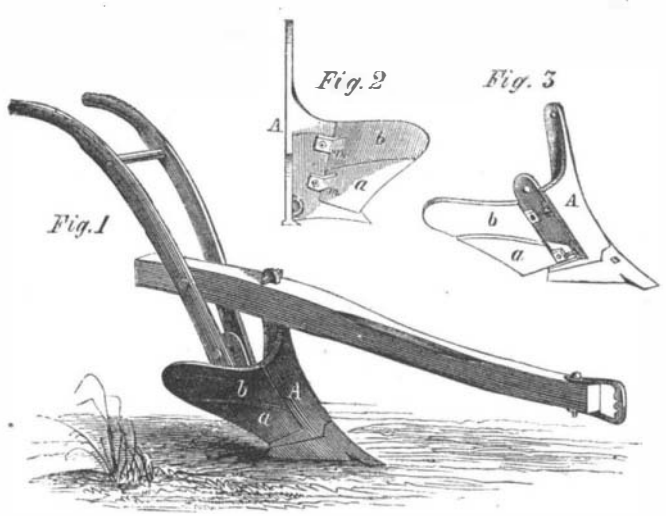
CONANT'S LOOM WARP REGULATOR.

A A A is the frame of the loom, **B B** is the warp beam, and **C C** is the whip roll, over which the warp passes in weaving. This roll is mounted on levers, or in a swinging frame, in such a manner that, if the warp does not unwind as fast as woven into cloth, it will be pressed forward or made to yield thereto, for the purpose hereafter explained. Upon the side of the loom is a short upright shaft, I, furnished with a worm, *k*, connected to the geared head of the warp beam, B, by means of the intermediate gears, *f* 1 and *f* 2, so that, as the shaft, I, revolves, it will operate to turn the warp beam. Upon the same shaft are two double-beveled gears, *a a*, which revolve loosely thereon in opposite directions, each engaging with a small planetary gear, *b*, which revolves loosely upon the stud, *c*, which is fast to the shaft, I. It will be seen by this arrangement that, when the two gears, *a a*, revolve at the same rate of speed in contrary directions, the gear, *b*, will revolve without changing its relative position; but if the upper one revolves while the lower one is held stationary, it will roll around upon the face of the lower gear, carrying the shaft, I, with it, at a rate of speed equal to one-half that of the impelling gear. Hence, it will be seen that whenever there is a difference of speed betweeen the gears, *a a*, the shaft, I, will revolve, and always in the direction of the greatest impulse.

The manner of its operation is as follows: Motion is imparted to stud gear and pulley, *e*, in any convenient manner, as shown, driving the lower gear, *a*, in one direction, and through it and another gear and shaft the lower conical pulley, H, which, by means of the small belt, G, and upper conical pulley, H, operating through a similar shaft and gear, drives the upper gear, *a*, in a contrary direction. Now, if at the point where the belt, G, is represented as running, the gears, *a a*, are driven at an equal rate of speed, the shaft, I, will not revolve at all; but, as the process of weaving goes on, the shortening of the warp will depress the roll, C C, causing the belt guide, E, attached to an arm, D, of the supporting frame, to move the belt, G, away from that point, which will, by the varying diameters, cause a difference in the speed of gears, *a a*, and thereby produce a slow motion in shaft, I, which will unwind the warp; the rate of delivery being always regulated hy the position of roll, C C, entirely independent of the tension of the warp, said tension being obtained by means of the weighted lever, *m*, and strap, *n*, or by a spring or other equivalent device.

By a careful examination, it will be seen that this is a strong and substantial arrangement, not liable to get out of order, very sensitive, and, most of all, sure in its operation. Friction straps require constant attention, and are an everlasting source of trouble. Ratchet motions require frequent sharpening and adjusting, are limited and uncertain in their operations, liable to be deranged by a single thread of warp being caught in it; while this, being composed of gearing which cannot disengage, will cut to pieees any ordinary amount of dangling warp threads, and can only be prevented from doing duty by throwing off the belt or chocking the gears. It is simple, cheap, requires no attention (more than a drop or two of oil per day), will last as long as any other part of the loom, will save three-fourths of the trouble of managing it, is applicable to old as well as new looms, to the lightest as well as the heaviest fabric, will always keep the tension of the warp uniform from one end to the other, irrespective of the inside or outside diameter of the warp, and will, on a good loom, with even stock, produce a perfect article of cloth. As an evidence of its importance, it has been already adopted by Messrs. Cheney, Bros., of Manchester, Conn., the pioneers of silk weaving in America, who, after careful inquiry and repeated experiments with various devices, have given this their unqualified approbation. Other parties engaged in cotton and woolen manufactures in various parts of New England are testing it, and the inventor has received numerous testimonials of its satisfactory operation.

The patent for this invention was granted April 17, 1860. Applications for foreign patents have also been made. Further information may be obtained by applying to H. Conant & Co., Willimantic, Conn.



GOOCH'S UNIVERSAL PLOW.

GOOCH'S UNIVERSAL PLOW.

The plow may be truly called the first and master-implement of the farm, as the entire superstructure of practical agriculture is based upon it. The crops are entirely dependent upon the plowing operation. If this is improperly executed, owing to a defective plow, the crop will be poor in proportion; if the plowing operation is executed in the best manner possible, the crops will be in proportion, all other things being equal. Every farmer knows this; how necessary then is it, that the very best and most perfect plows—and none others—should be used! Although one of the most ancient implements, yet until within the present century, the plow was a most rude and clumsy instrument; and it is but of very recent years that our farmers and inventors have devoted much attention to its improvement. All the efforts which have been expended in this direction have been amply rewarded with success, and we present in the annexed engravingsan invention which embraces several important features. It consists of a combination plow—a quadruple implement—which, by the construction and arrangement of its different parts, forms a cultivator subsoil, half-mold-board and common turning plow. Fig. 1 is a perspective view of the complete plow; Fig. 3 is a front view showing the parts ready to be united together; and Fig. 2 is a rear end view. Similar letters indicate like parts. The beam and arms are similar to others. The part, **A**, is constructed with dovetails and recesses, as shown in Fig. 2 and 3, and to this the extension parts, *b a*, are united by screws. These extensions have flanges, *m m*, for the screws to pass through, and the nuts hold them firm in their places. These parts and their combinations will be readily understood.

We will now describe their offices:—By attaching the extension piece, *b*, to A, it forms a subsoil and turning plow, for as it moves in the soil, a gap of about four inches wide is left between the point and mold board, and through this a portion of the broken soil passes and is left well pulverized in the furrow, and at the same time a sufficient portion is turned over. The land is thus left well broken and level, and in good condition for receiving wheat and oat seed. It is also well adapted for plowing between rows of corn and tobacco, as the middle of the furrow is left half-full of loose earth, which will prevent washing of the soil by heavy showers. By detaching the portion, *b*, and securing the part, *a*, it forms a half-mold-board plow, which turns the bottom part of the soil, while the surface part turns over the top of the mold-board, and drops into the furrow well broken. When the parts, *a* and *b*, are secured to **A**, as represented in Fig. 1, it forms a complete turning plow. As a cultivator it is very superior in its operations; and with this single combination implement a farmer has a plow for performing various necessary operations on a farm without being at the expense of purchasing several entire implements. It is very simple in its construction and can readily be changed to perform any of its offices.

A patent was issued for it on the 6th of May, 1860, and more information may be obtained by letter addressed to the patentee, J. H. Gooch, Oxford, N. C.

A correspondent of the Ohio *Cultivator* asserts that the only way to obtain a sure peach crop is by grafting upon the wild plum stock.