of the next, and consequently the pair of crimpers when in position for crimping one wire, are not in position to crimp the next. To correct this, the crimpers receive a movement laterally to the warp, between every two successive filling and crimping operations, the extent of such movement being equal to the distances between the warp wires. To effect this lateral movement, the shafts, N‴, M*, and M*', are all fitted so as to be capable of sliding in their respective bearings, and the shafts, N‴ and M*, are connected to an upright rod, *p*, outside the framing of the loom, and the shaft, M*' is connected by an arm, *r*, with a parallel shaft, Q, below it, the said parallel shaft being connected with the aforesaid rod, *p*, so that by a movement of the said rod, *p*, all the above-named shafts will move longitudinally simultaneously, and with them the arms carrying the crimpers. The movement of the rod, *p*, for the above purpose is produced by a cam on a shaft, R, which makes one revolution for every two filling operations. The said cam consisting of two segments, S S', curved in opposite directions from the plane of rotation. These segments act alternately upon the upper end of a lever, *t*, which works laterally to the loom on a fixed fulcrum, *t'*, and has its lower end connected with the arm, *u'*, of an upright shaft, *u*, on the opposite side of which are forked arms, *u''*, which take hold of the rod, *p*.—The segments, S', of the cam drives the upper end of the lever, *t*, out from the loom, throwing the lower end of the same and the arm, *u'*, of the upright shaft in towards the loom, throwing out the arms, *u''*, and the rod, *p*, and moving the crimpers towards the right hand of fig. 2.

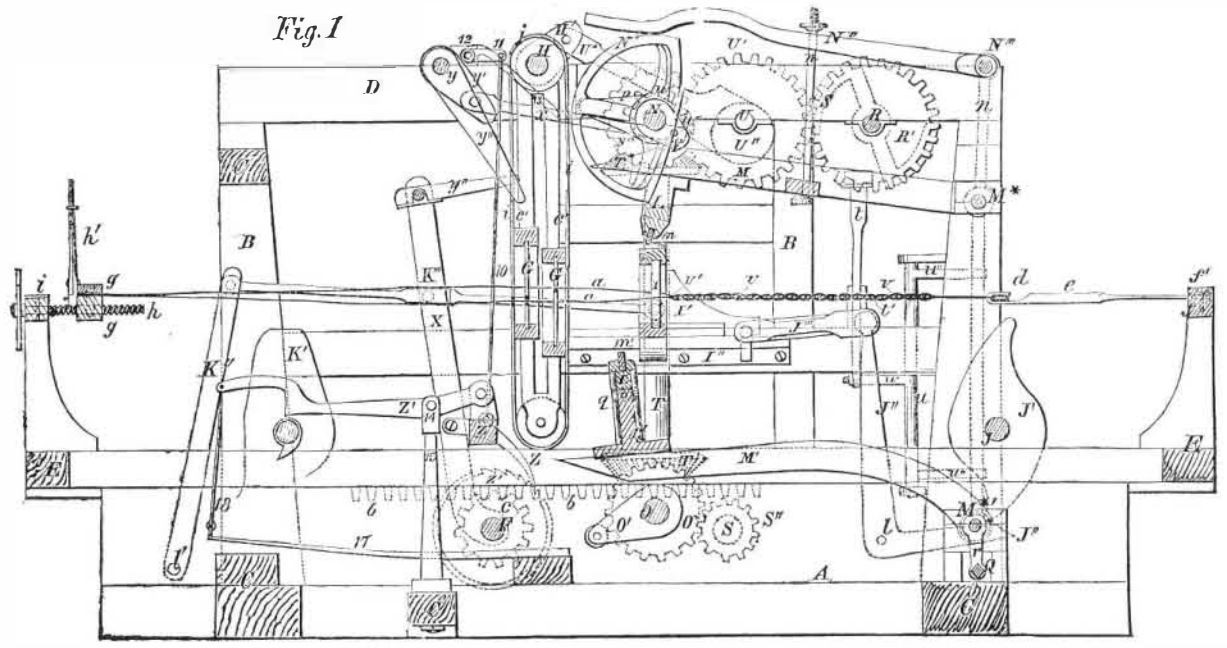
The power to drive the several parts of the loom is received by a short driving shaft, S. This shaft carries a small spur wheel, S'', dotted in fig. 1, which gears with a spur wheel (not shown) on the shaft, *o*, by which the lower crimper is operated. The shaft, *o*, also carries a bevel wheel, *o'''*, which gears with a bevel wheel, T', of similar size on an upright shaft, T, which is geared by a pair of bevel wheels, T'' N'''', of equal size with the shaft, N, by which the upper crimper is operated. The shaft, *o*, is also geared by bevel gearing, which is partly shown at U U, in fig. 2, with both the shafts, J and K, which drive the lay, the said shafts both making the same number of revolutions as the shaft, *o*. The shaft, N, carries a small spur wheel, *w*, which gears with and drives a spur wheel, U', on a shaft, U, and this wheel, U', gears with a wheel, R', of the same size on the shaft, R, and this drives the mechanism by which the lateral movement of the crimpers is produced. The shaft, U, carries an eccentric, U'', which is shown by a dotted circle in fig. 1, which eccentric is for the purpose of operating the heddles, G G', the rod, U‴, of the said eccentric being connected with an arm, H', on the rock shaft, H, and thus produces the necessary movement. The shaft, N, also carries a crank. This crank, Y, drives the shaft F, from which the warp carriage, E E, receives motion. It is connected by a rod, *x*, with an arm, *y'*, on a shaft, *y*, which carries two other arms, *y''*, connecting with two long levers, X, which work on the shaft, F, as a fulcrum, and carry each a pawl, Z, which engages with one of two ratchet wheels, Z', which are fast on the shaft, F. Every revolution of the shaft, N, acting through the above mechanism, causes the shaft, F, to receive a movement sufficient for the pinions, *c*, and racks, *b*, to move the carriage, E E, a distance equal to the desired distance between the filling wires. In order to enable the warp carriage to be run back when desirable or necessary, the pawls, Z, are connected by rods, 10, with arms, 11, on a shaft, 12, at the top of the loom, and the shaft is furnished with a lever handle, 13, for the purpose of raising the pawls from the ratchet wheels.

The warp carriage is held firm in its place during the operation of beating up the filling wires by means of a clamp, *z*, which reaches all across the carriage, and presses it down on its bed. This clamp, *z*, is attached to one end of a lever, which works on a stationary fulcrum, 14, in a standard, 15, the other end of the said lever being raised by a cam on the shaft, K, and by that means being caused to force down the clamp. The clamp is raised after the cam passes the lever, by means of a spring, 17, connected with the lever by a rod, 18.

Having described the several parts of the machine and their duties and individual operations, we will briefly describe the weaving process. The warp wire having been secured in the carriage before described, the pawls, Z, are thrown in gear and motion is communicated to the driving shaft to start again. When the lay is thrown back ready for its preparatory and least forward advance, the shed is open and filling wire is put in. The preparatory advance of the lay brings this wire to the position shown at *v'*, in fig. 1, ready to be operated upon by the crimpers, at the same time laying it parallel with the face of the reed or square with the warp. As the lay retreats the crimpers commence closing, and after its retreat has terminated, the lay remains stationary long enough for the crimpers to finish their operation and commence their opening. The final and most forward advance of the lay then takes place, the lay passing right through the open crimpers and beating the crimped wire up to its proper place. The forward movement of the warp carriage takes place during the final retreat of the lay or the early part of its next preparatory advance. The slacking of the warp wires by the screws, *h*, takes place during the final retreat or at an early stage of the preparatory advance of the lay. The lateral movement of the crimpers takes place during the final advance and retreat of the lay, so that when the crimpers close upon the next filling wire which is inserted and brought to the position of *v'*, they crimp it to form precisely the reverse of the last, that is to say, with its depressions opposite the elevations of the former one, and *vice versa*. The operation proceeds as above till the carriage has been driven up as far as convenient, when the loom is stopped, and the clamps, *f f*, and the tongs, *h'*, are unfastened, and the whole of the warp is pulled forward in the carriage, E E, by the attendants, or by

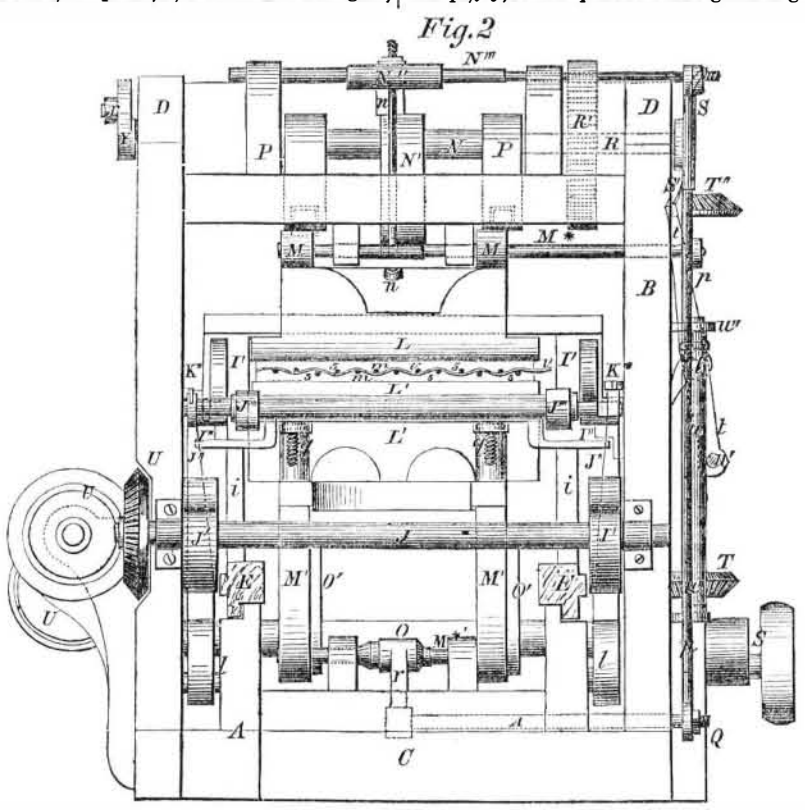
MACHINE FOR WEAVING WIRE.

Fig. 1



suitable mechanism, the clamps, *g g*, admitting of this drawing forward, as they only grasp it just tight enough to keep the wires properly extended and straight. The work is then again secured, the front part being secured this time by clamping it directly between the clamps, *f f*, the hooks, *e e*, being no longer necessary, and the rear part being secured by the tongs, *h'*, as before. When all is secure, the pawls, Z, are thrown out of gear, and the carriage, E, pushed back by the attendants to such a position as to bring the last filling wire at a proper distance from the lay, after which the pawls may be thrown in gear again and the loom started, when all will proceed as before till the warp carriage has again run up as far as it can, and the warp requires to be moved and the carriage run back. The fabric may be cut after being drawn past the clamps, *f f*, or if required to be of great length

Fig. 2



it may be wound up into a roll. There is no limit to the length that may be woven, as the warp wires may be joined.

We are informed that a weaving machine constructed as above may be operated more rapidly and with less expense that others in use. It will also produce work of a very superior quality. We regard the invention as one of importance, and advise all who are interested in good improvements to give it a careful examination. Address the inventor for further information.

Chicago Sewers.

An elaborate and interesting report on this subject has been presented to the City Council of Chicago, by the Board of Sewerage Commissioners of that place. It appears that three principal plans were proposed for the drainage of the city. These were first to drain the sewers into the river, and its branches directly and thence into the lake; second, into artificial reservoirs, to be thence pumped up and used as manure; and third, into the river at the city, and thence by the proposed steamboat canal into the Illinois river. The board adopted the first-named plan, which to drain into the river and branches directly and thence into the lake, the reasons in its favor being that it would allow the sewers to be constructed in such a manner as to take the utmost advantage of the natural facilities that the site of the city affords, and consequently that the sewerage may be less in extent and cost.

Meteorological Observations.

An arrangement has been entered into between Professor Henry, of the Smithsonian Institution, and Judge Mason, U. S. Commissioner of Patents, by which the system of meteorological observations, heretofore conducted by the Institution, will be hereafter executed under the direction of the Patent Office. In pursuance of this change, the Commissioner has issued a circular, directing attention to the severe storm of snow, hail, and rain, which extended itself over a large portion of the Union, from the 4th to the 6th of last month, and asking for information in regard to it.

Great Iron Manufactory.

The St. Louis *Republican* states that the American Iron Mountain Company have their furnace at the Iron Mountain in blast, producing an average yield of seventeen tuns per day, and some days as high as 18 tuns of No. 1 foundry metal, blown with hot blast. The hight of the furnace is 38 1-2 feet, 9 feet diameter of bosh, and 3 feet funnel head. This great yield is attributable alone to the superior quality of ore, which yields about 56 per cent., consumes about 120 bushels of coal per tun of metal, and about eight percent of limestone.

A Broad-Cast Sower Wanted.

MESSRS. EDITORS—I wish some of the inventors would perfect a good broad-cast sower for grain and grass seed, light, simple, and cheap, so that some of us who have been carrying from one-half to three-fourths of a bushel of wheat over our fields for thirty years, while sowing, may ride in some light sulkey or carriage the rest of our lives, and see horse power perform what we feel we have done too long. Drills do not answer among our sweet potato vines, nor for clover, &c., in the spring.

Woodbury, N. J., Jan. 1856. J. T.

The French *metre*, which has become the key to mensuration on the continent of Europe is equal to 3·2809 English feet.

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