

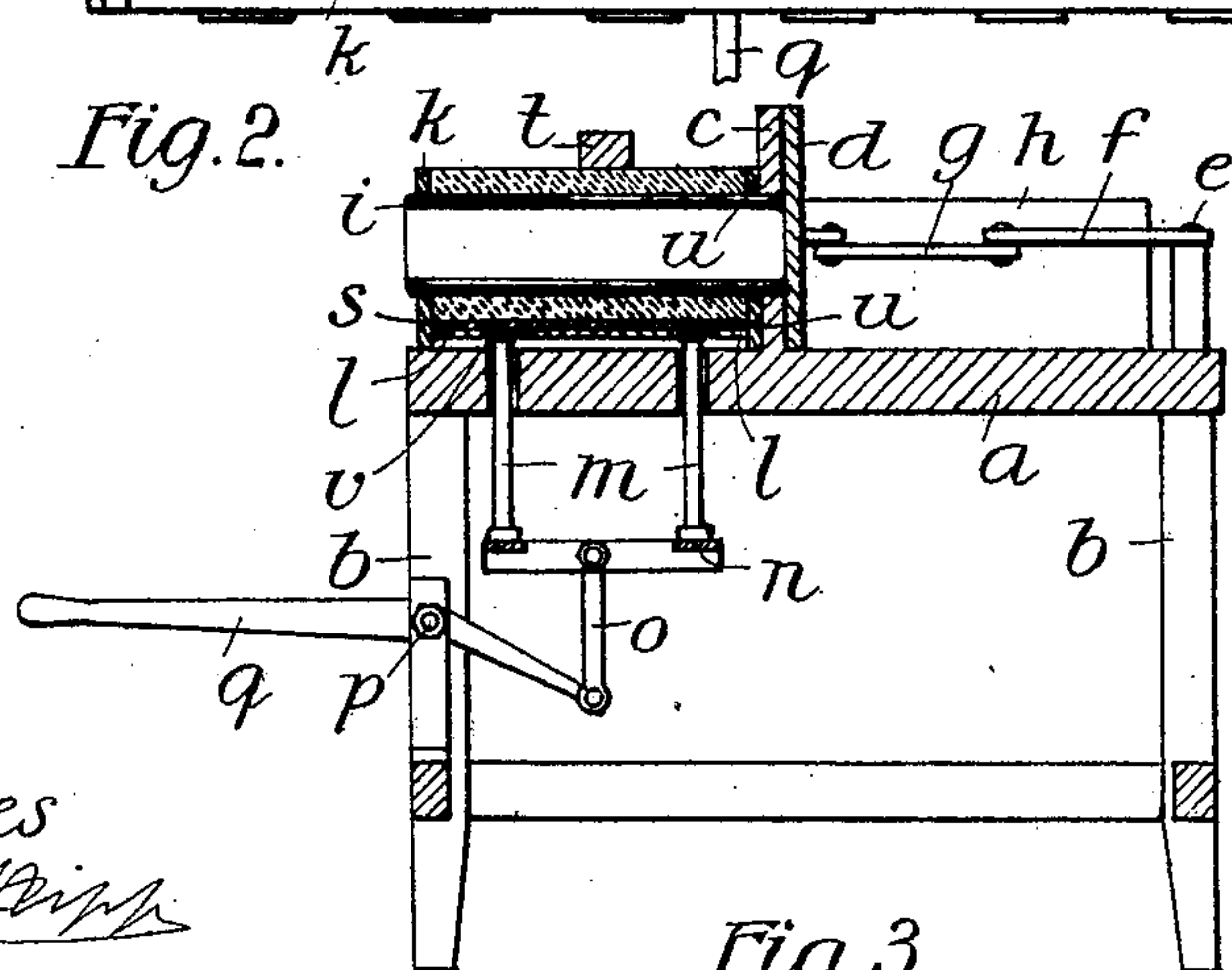
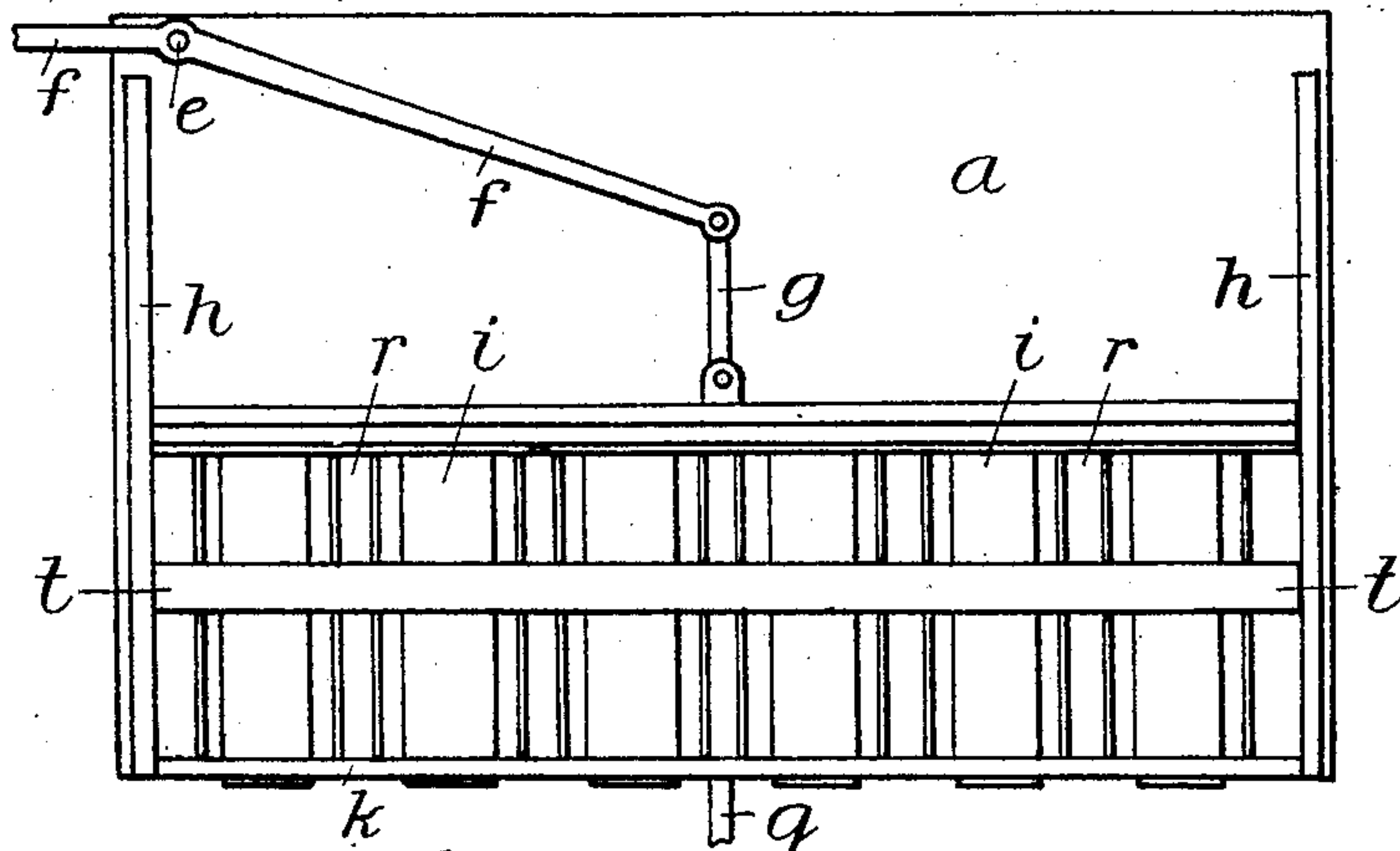
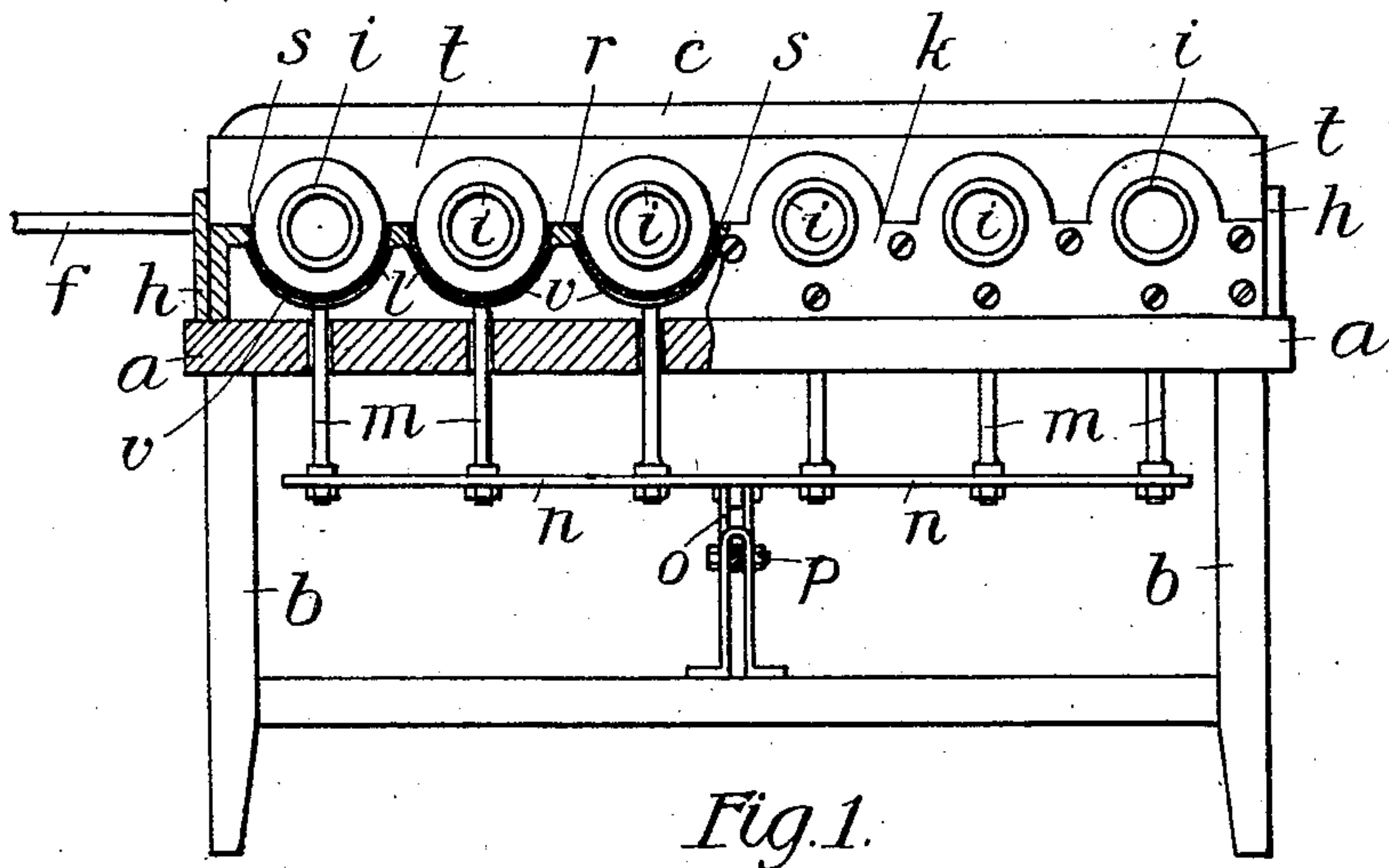
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N. KETELSEN.

MACHINE FOR THE PRODUCTION OF DRAIN TILES.

APPLICATION FILED APR. 6, 1906.



Witnesses

E. A. Kipp

Friedrich Lunow

Inventor

Nicholas Ketelsen

UNITED STATES PATENT OFFICE.

NIKOLAUS KETELSEN, OF KLAPPHOLZ PER HAVETOFT, GERMANY.

MACHINE FOR THE PRODUCTION OF DRAIN-TILES.

No. 832,132.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed April 6, 1906. Serial No. 310,391.

To all whom it may concern:

Be it known that I, NIKOLAUS KETELSEN, a subject of the King of Prussia, German Emperor, and a resident of Klappholz per Havetoft, Province of Schleswig, in the Empire of Germany, have invented a new and useful Improved Machine for the Production of Drain-Tiles, of which the following is a specification.

The present invention relates to an improved machine for the production of drain-tiles.

Special objects of the invention are to simplify and cheapen the construction and to render more efficient, serviceable, and durable in operation machines of the kind referred to.

With these ends in view the invention consists in the novel combination, arrangement, and adaptation of parts, all as more fully hereinafter explained, shown in the accompanying drawings, and then specifically set out in the appended claims.

Referring to the drawings, Figure 1 illustrates my improved machine in front elevation, partly in section. Fig. 2 shows a plan elevation of the machine, and Fig. 3 represents a transverse section of same.

Before proceeding to describe the construction of my improved machine in detail I wish to point out that farm-drainage has been grossly neglected so far, owing to the excessively high cost of the burnt-clay tiles hitherto in use. Especially, small farmers would not hear of draining the soil. My specific aim is to enable farmers to produce their own drain-tiles. Practical experiments have shown that even small farmers are quite prepared to set up a machine, provided the latter is simple in construction and provided such a machine does not lay special claims to the attention and intelligence of the operator. Based on these observations, my improved machine is constructed so that any ordinary farm-hand can operate same. Thus the spare time of farmers can be usefully employed for the cultivation of the ground. In fact, such a machine will even turn out to its owner a monetary profit directly by supplying drain-tiles to neighboring farmers not in possession of such a machine.

The table *a* rests on feet *b*, which may be steadied in position by staying-rods interconnecting their lower ends in the usual common way. Said table *a* carries at about its center a vertical wall *c*, firmly secured

thereto or integral therewith. In accordance with the internal diameter of the drain-tiles to be produced by the machine this fixed wall *c* is provided with a plurality of openings arranged side by side, with a sufficient space between them. It is to be assumed that drain-tiles of circular cross-section are to be manufactured, and to that end the drawings show the openings in the wall *c* of circular shape; but it is obvious and will be readily understood by the following description that I do not wish to confine myself to a circular shape, as oblong, square, and other polygonal cross-sections may likewise be produced with equal facility.

Behind the fixed wall *c* is a second wall *d* of similar dimensions. This wall or plate *d* is, however, rectilinearly movable on the table *a* by means of a two-armed lever *f*, having its fulcrum or pivot-point at *e* and being connected to the plate *d*, preferably at the center or thereabout, by the pitman-rod *g*. The table *a* has attached thereto rails *h* for rectilinearly guiding the plate *d* when the two-armed lever *f* is being swung in a horizontal plane around its fulcrum *e*.

The plate *d* carries the center pieces or cores *i*, around which the drain-tiles are to be molded. Said cores *i* correspond in number and arrangement, as well as in diameter, to the circular openings in the fixed wall *c*, through which they project and within which they may be moved to and fro.

At the front edge of the table *a* is attached a vertically-standing plate *k*. A similar plate *u* is fixed to the table *a* at a distance from the plate *k* corresponding to the length of the drain-tiles to be produced. In the example of the machine illustrated in the drawings the second plate *u* adheres to the fixed wall *c* and is held up thereby; but it may also be fixed to the table *a* independently and separate from the wall *c* in any suitable manner. Both plates *k* and *u* show circular holes in accordance with the holes in the fixed wall *c* for the penetration of the cores *i*. Around said holes and concentric therewith at a distance which agrees with the thickness of the drain-tiles to be manufactured the two plates *k* and *u* show at their top edges projections which cover semicircles or even a little more than semicircles, for a purpose to be described later on.

To constitute the lower mold of the machine, I fix between the two plates *k* and *u* members *l*, which are semicircularly dished

in cross-section and whose concave surfaces lie concentric with the cores *i* and a distance therefrom corresponding to the thickness of the drain-tiles to be produced.

5 To raise the drain-tiles above the mold when finished, I place into the hollow mold members *l* sheet-metal carrier-plates *s* of corresponding cross-sectional shape, said carrier-plates being adapted to be lifted by the
10 following means: The mold members *l* are each provided with transverse apertures, suitably two in number, one at or in the proximity of each end of the members. Into these transverse apertures fit lifting-forks *v*,
15 which bear against the under face of the carrier-plates *s*. The bearing-surface of the lifting-forks *v* preferably corresponds with the external configuration of the carrier-plates to insure a safe bedding of the latter
20 when being raised. The lifting-forks *v* are situated at the upper extremity of vertically-movable rods *m*, which penetrate the table *a* and which may be projected upwardly through the apertures of the mold members
25 *l*. All the rods *m* are connected together by a frame *n* beneath the table *a*, and said frame *n* is connected, by means of a pitman-rod *o*, to the inner and shorter end of a two-armed lever *q*. Said lever *q* has its fulcrum around
30 the pivot *p*, carried by the under frame *b*. Its external end terminates in a handle or foot-plate to facilitate its movement in a vertical plane.

The gaps between the mold members *l* are
35 closed by rails *r* at an elevation in agreement with the major axis of the cores *i*.

The machine is completed by a molding-ledge *t*, whose lower edge shows semicircular excisions corresponding in arrangement and
40 size with the semicircular projections of the terminal plates *k* and *u*.

The operation of my improved machine is as follows: The carrier-plates *s* having previously been placed in the concave mold
45 members *l*, I move the cores *i*, by means of the hand-lever *f*, toward the front edge of the table *a* till they engage and line the circular openings of the front terminal plate *k*. The carrier-plates *s* in conjunction with the cores
50 *i* then constitute the lower molds into which the material the drain-tiles are to be manufactured from is filled. It is non-essential whether clay or concrete material is employed, as like favorable results will be obtained in each case. After completely filling
55 the annular spaces between the cores *i* and the plates *s* the tile material is brought on top of the cores *i*, so as to cover up same higher than the top edges of the two terminal plates *k* and *u*. This being effected, I take the molding-ledge *t* and move same by hand to and
60 fro on the tile material. The rectilineal movement of the ledge *t* is attained by the guide-rails *h* on the table *a*. At the same
65 time the rails *h* cause the ledge *t* to have its

semicircular excisions at the lower working edge concentric with the cores *i* during the to-and-fro movement. When all the superfluous tile material has been removed by the molding-ledge *t*, which will be the case when
70 the ledge abuts on the gap-filling rails *r*, the drain-tiles are completed.

It must be observed here, before proceeding with the description of the following actions, that the stroke of the molding-ledge *t* extends
75 beyond the length of the drain-tiles owing to the fact that the ledge *t* may pass over the top edges of the two terminal plates *k* and *u*, these having been configured, as hereinbefore stated, to correspond with the excisions
80 of the working edge of the ledge. This configuration of the terminal plates *k* and *u* guarantees sharp-edged drain-tiles at both extremities, as the tile material under the influence of the ledge *t* when being passed over
85 the plates *k* *u* is forced against said plates. After taking off the molding-ledge *t* and after removing the cores *i* from the finished drain-tiles by turning the hand-lever *f* to its previous position I force the lever *q* downwardly,
90 thereby raising, through the agency of the pitman-rod *o*, the frame *n* and with same the vertical rods *m*. The forks *v* partake in the movement of the rods *m* and lift the carrier-plates *s*, with the finished drain-tiles resting
95 thereon, above the rails *r*. They can then be taken off and removed to the drying room or shed with facility.

Means of well-known construction may be provided to protect the guide-rails *h* and
100 other working parts from the destructive influence of the tile material. The superfluous tile material that has been pared off by the ledge *t* is caught in a receiver placed around the mold and may be used again for the next
105 or any other following charge of the machine.

While I have shown in the accompanying drawings the preferred form of my invention, it will be understood that I do not limit myself to the precise form shown, for many
110 of the details may be changed in form or position without effecting the operativeness or utility of my invention, and I therefore reserve the right to make all such modifications as are included within the scope of the
115 following claims or of mechanical equivalents to the structure set forth.

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. An improved machine for the produc-
120 tion of hollow drain-tiles comprising in combination a lower mold member semicircularly dished in cross-section, a circular stationary apertured plate located at each end of said mold, a cylindrical core located concentric-
125 ally with respect to said mold member, means for reciprocating the core axially with respect to the lower mold member whereby said core is adapted to pass through the apertures of said end plates, a hand-actuated
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ledge for forming the upper half of the drain-tiles around the top portion of the aforesaid core, means for rectilineally guiding the ledge during its movement, and means for raising 5 the finished drain-tiles above the mold, substantially as set forth.

2. An improved machine for the production of drain-tiles comprising in combination, a table, a plurality of mold members attached horizontally to said table, said mold 10 members being dished semicircularly in cross-section, rails connecting said mold members at the elevation of the major axis, circular stationary plates attached to the table at each end of the mold members for 15 forming the end faces of the drain-tiles, hollow cylindrical cores adapted to be rectilineally reciprocated on the table so as to occupy a position concentric with the lower mold

members and leaving half-annular spaces for 20 the reception of the tile material, said end plates being provided with apertures for the penetration of the cores, a hand-actuated ledge for forming the upper half of the drain-tiles around the top portions of the cores, 25 said ledge having semicircular excisions corresponding with the lower mold members, L-shaped rails for rectilineally guiding the ledge during its movement, and means for raising the finished drain-tiles above the 30 mold, substantially as described.

In witness whereof I have hereunto signed my name, this 21st day of March, 1906, in the presence of two subscribing witnesses.

NIKOLAUS KETELSEN.

Witnesses:

ERNEST H. L. MUMMENHOFF,
IDA CHRIST. HAUFERMANN.