

(No Model.)

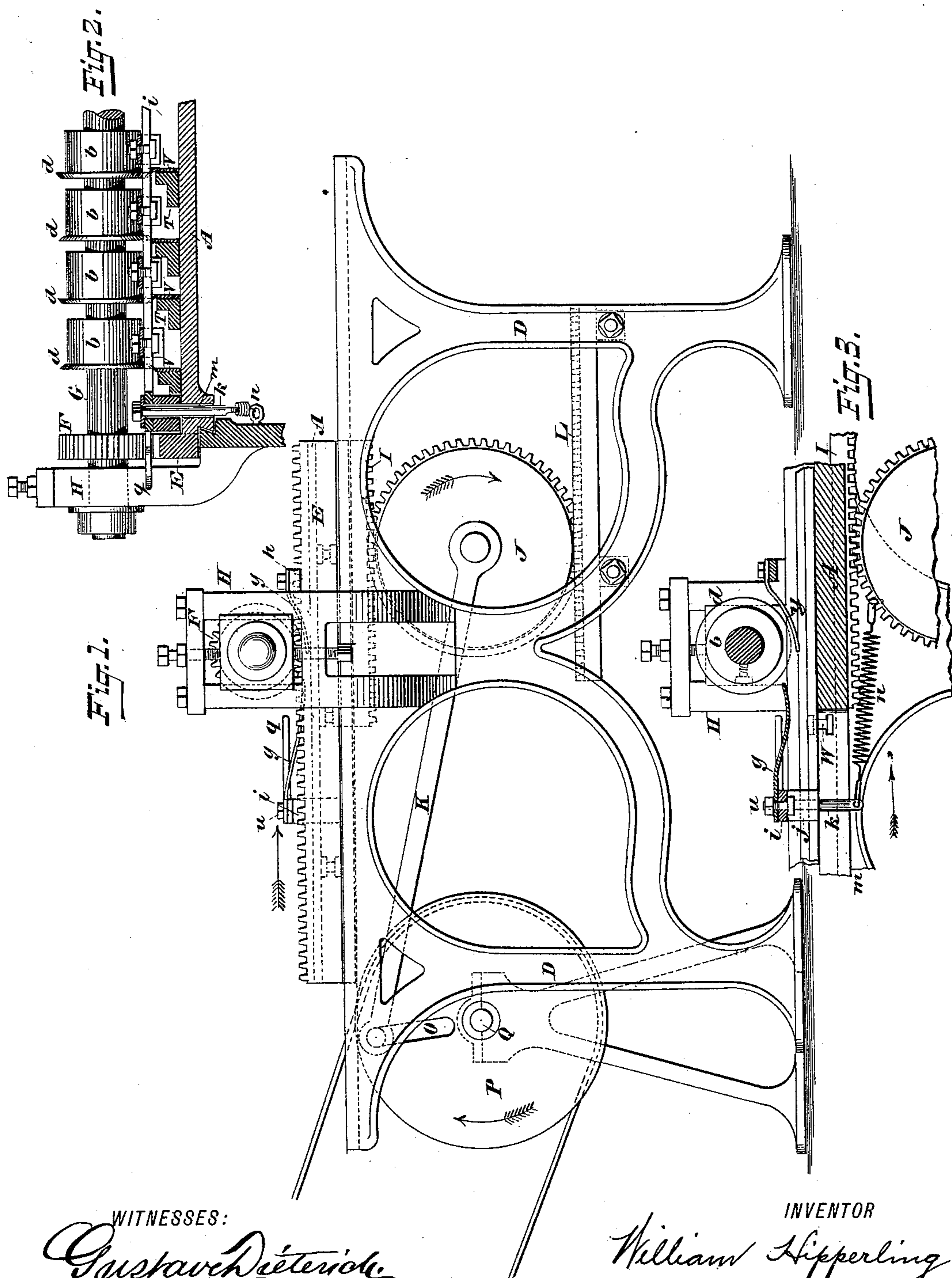
3 Sheets—Sheet 1.

W. HIPPERLING.

MACHINE FOR SLITTING SHEETS OF TIN.

No. 403,533.

Patented May 21, 1889.



WITNESSES:

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William Goebel.

INVENTOR

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(No Model.)

3 Sheets—Sheet 2.

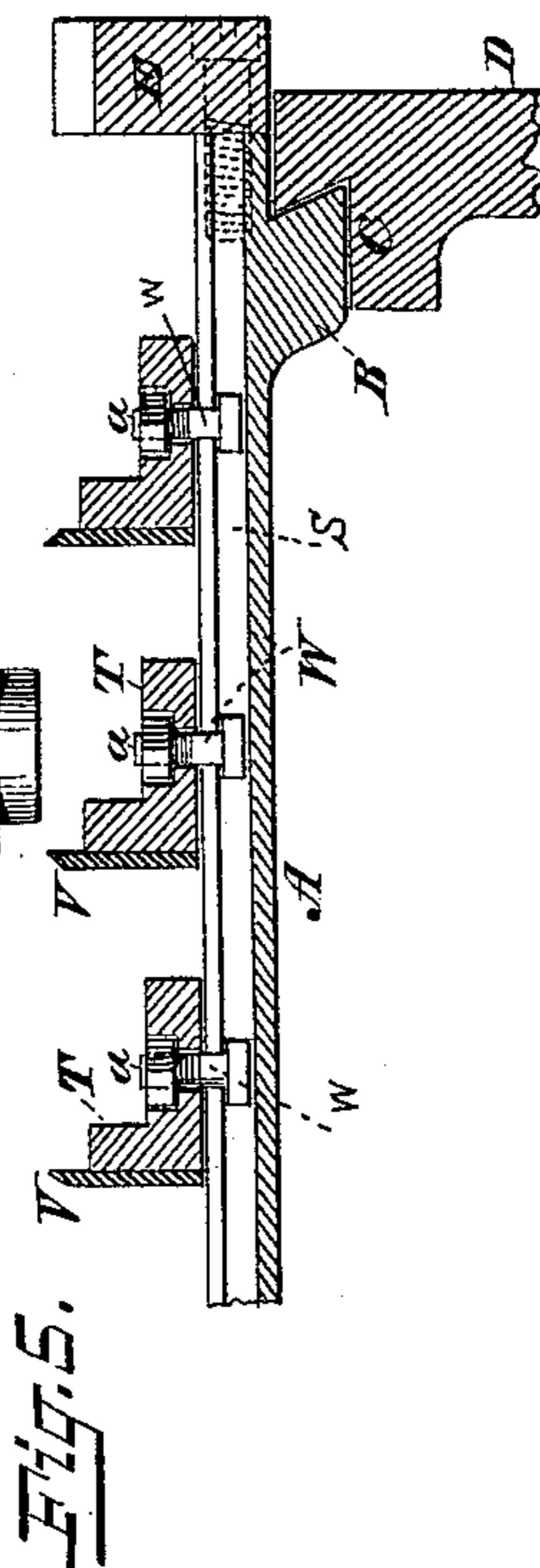
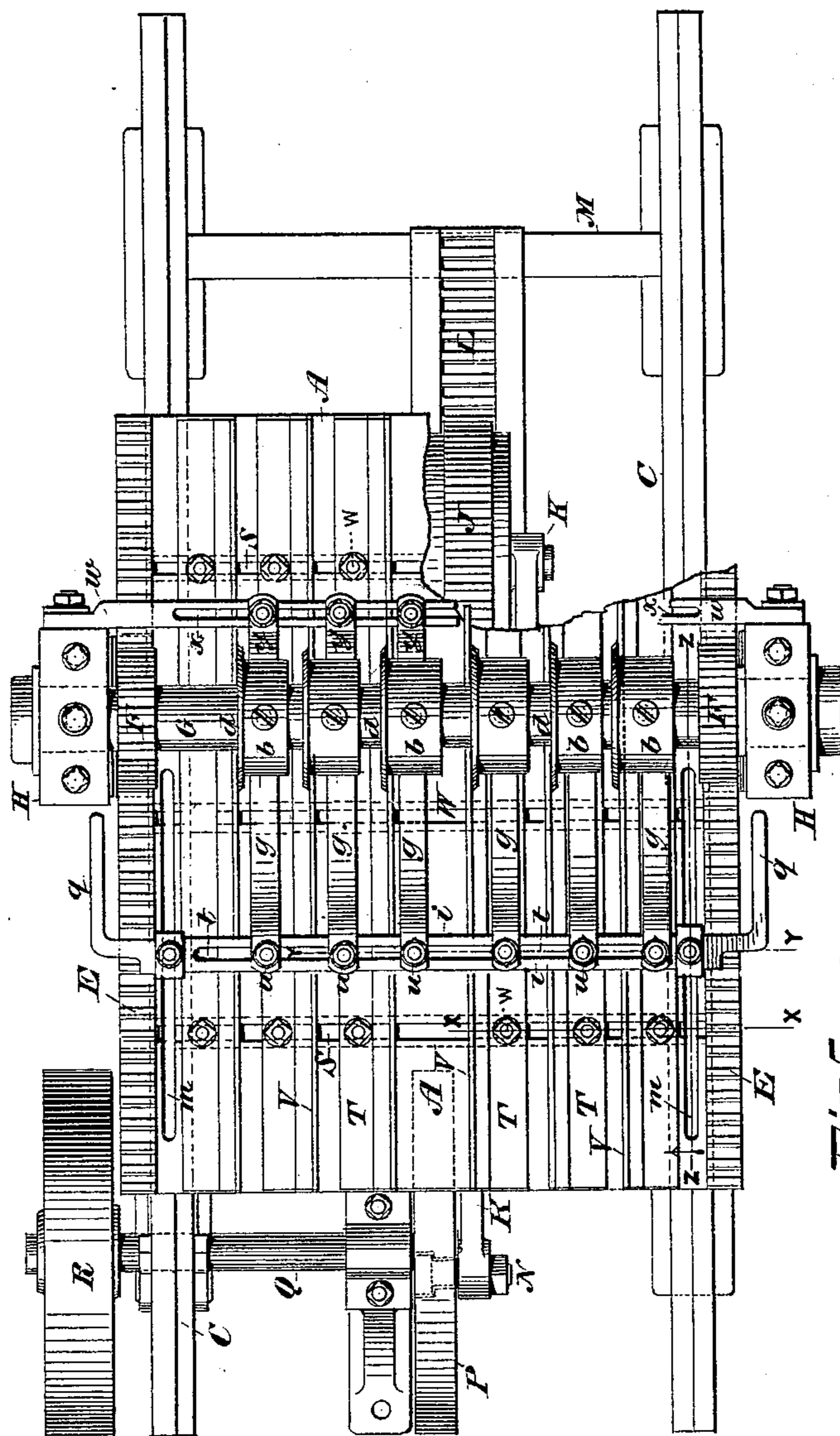
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Fig. 4.



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3 Sheets—Sheet 3.

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Fig. 6.

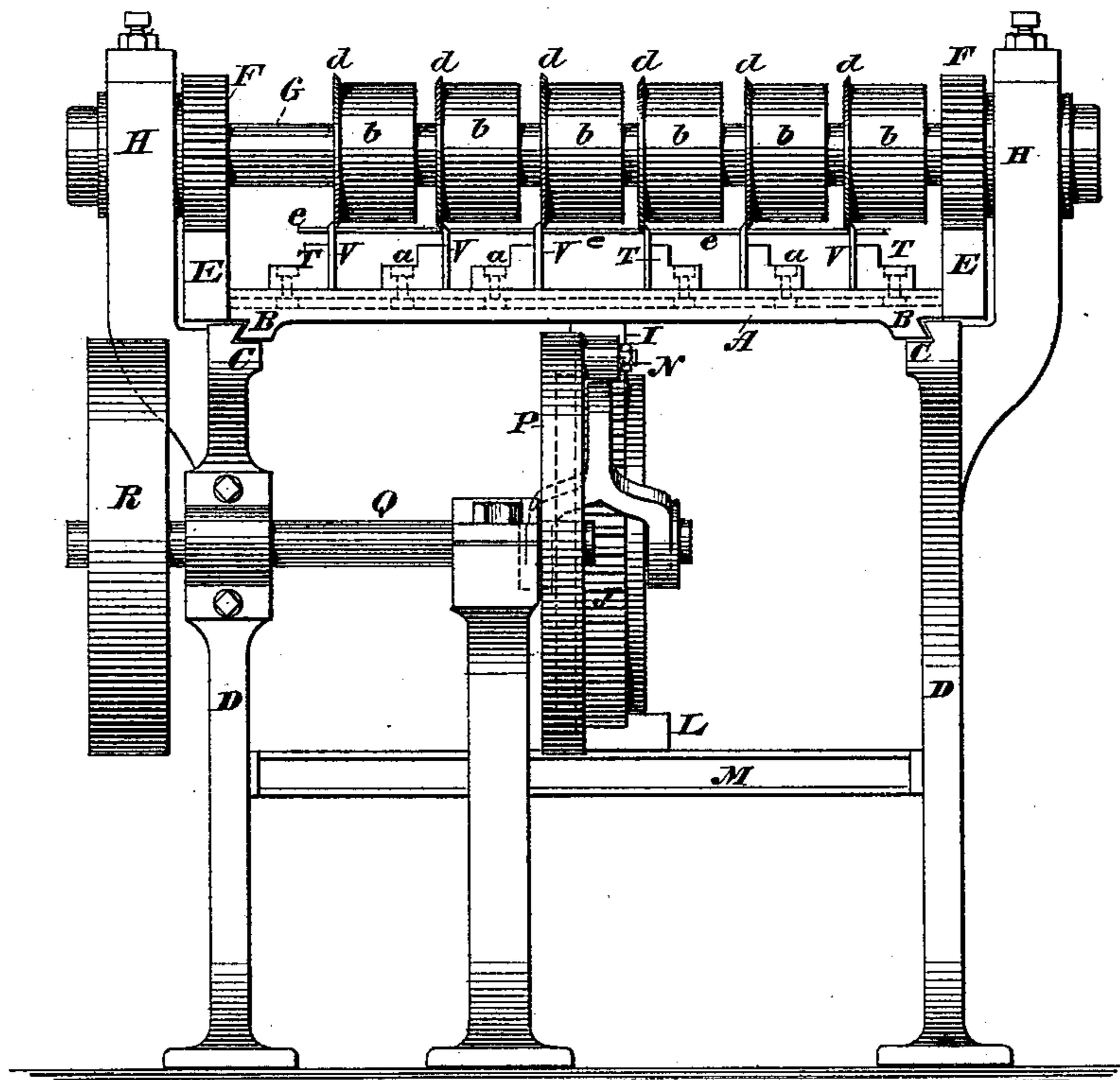
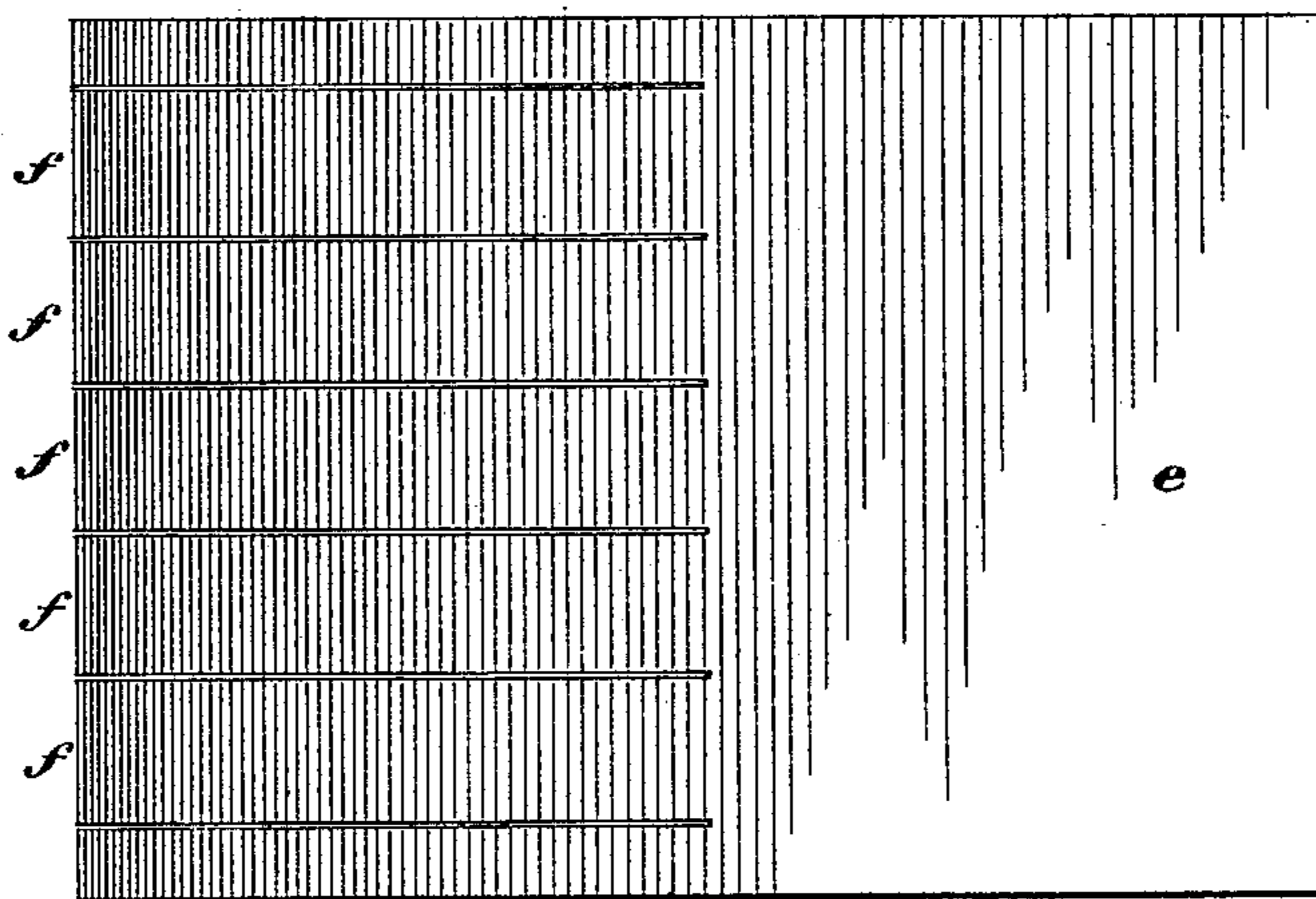


Fig. 7.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR SLITTING SHEETS OF TIN.

SPECIFICATION forming part of Letters Patent No. 403,533, dated May 21, 1889.

Application filed January 5, 1889. Serial No. 295,489. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HIPPERLING, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Machines for Slitting Sheets of Tin, of which the following is a specification.

The invention relates to an improvement in machines for slitting sheets of tin into strips of suitable width for the body of tin cans; and it consists of a reciprocating bed-plate carrying a series of laterally-adjustable longitudinal knives and rack-bars, which engage gear-wheels on a transverse shaft carrying a series of circular knives adapted, in conjunction with the aforesaid longitudinal knives, to slit the sheets of tin, the bed-plate being provided with spring stripper-fingers and with mechanism whereby a longitudinal reciprocating movement may be imparted to it during the operation of the machine, the whole being constructed and arranged in the manner hereinafter more fully described.

Referring to the accompanying drawings, Figure 1 is a side elevation of a machine embodying the elements of the invention. Fig. 2 is a sectional view on the line Y Y of Fig. 4. Fig. 3 is a sectional view on the dotted line Z Z of Fig. 4. Fig. 4 is a top view of the machine, one corner of the bed-plate being broken away for the purpose of disclosing the gearing below the same. Fig. 5 is an enlarged transverse section on the dotted line X X of Fig. 4. Fig. 6 is an end view of the machine; and Fig. 7 is a plan view of a sheet of tin, shown partly slit in the manner accomplished by the machine illustrated in the foregoing views of the drawings.

In the drawings, A designates the bed-plate of the machine, said bed-plate having longitudinal ribs B B, Fig. 5, which rest within the longitudinal grooves C C, formed in the inner edges of the sides D D of the machine, as shown more clearly in Fig. 6. To the opposite sides of the bed-plate A are secured the rack-bars E E, said bars extending the entire length of the bed-plate, as shown in Figs. 1 and 4, and being in engagement with the gear-

wheels F F, mounted upon the opposite ends of the shaft G, which is journaled in bearing-blocks secured in the frames H H, extending upward from the sides D D. Upon the under side and toward the rear portion of the bed-plate A is rigidly affixed the longitudinal rack I, as more clearly shown in Figs. 1, 3, and 6, which is engaged by the gear-wheel J, mounted upon an axle in the bifurcated end of the connecting-rod K, said wheel J being supported upon and engaging the teeth of the longitudinal rack-bar L, which is supported upon cross-bars M, connecting the sides D D of the machine. The front end of the connecting-rod K carries a pin, N, which is inclosed by and adapted to have a sliding movement, when desired, in a slot, O, formed in the wheel P, said wheel being mounted upon the shaft Q, as shown in Figs. 1 and 6, which is caused to rotate during the operation of the machine by power applied to the belt-wheel R.

The purpose of arranging the longitudinal ribs B B of the bed-plate A to fit the grooves C C is to admit of the plate having imparted to it a reciprocating movement between the sides D D, and this movement of the bed-plate A is effected by the rotation of the gear-wheel J between the rack-bars I L, the latter of which is stationary and operates in conjunction with the wheel J to insure the uniform reciprocation of the bed-plate A.

When power is applied to the belt-wheel R, the shaft Q and wheel P are caused to rotate, and this, through the connecting-rod K, imparts a combined rotary and reciprocating movement to the wheel J, which, as aforesaid, causes the bed-plate A to travel backward and forward between the sides D D. During the reciprocating movement of the bed-plate A the rack-bars E E, secured thereto, engage the gear-wheels F F, thereby causing them and the shaft G, to which they are secured, to have a rotary motion.

In the upper surface of the bed-plate A are formed the transverse grooves S, Fig. 4, and crossing these grooves are placed the longitudinal angle-bars T, upon which are secured the longitudinal knives V. The longitudinal

bars T are secured to the bed-plate A by means of short bolts W, Fig. 5, the heads of which are within and correspond with the outline in cross-section of the transverse grooves S, while upon the upper ends of said bolts W are the nuts *a*. The bolts W extend upward through the longitudinal bars T and have applied upon their upper ends the nuts *a*, by which the said bars may be securely clamped to the bed-plate. The purpose of employing the longitudinal grooves S and the bolts W, having nuts *a*, is to adapt the bars T to be adjusted laterally to suit the different widths of the strips to be cut from the main sheet of tin. It is obvious that by loosening the nuts *a* the bars T may be moved laterally toward or from each other, the heads of the bolts sliding in the transverse grooves S, and that the bars T may be secured in the desired position by again tightening the nuts *a*. The knives V, secured to the bars T, extend the entire length of and move with the bed-plate A.

Upon the shaft G are secured the hubs *b*, upon which are rigidly affixed the circular knives *d*, which correspond in position with and move against the edges of the longitudinal reciprocating knives V, as indicated in Figs. 2, 3, and 6, for the purpose of slitting the sheet *e* of tin into strips *f* of suitable width for the body of tin cans.

For the purpose of stripping the lengths of tin cut from the sheet *e* from the knives V *d*, I have provided spring-fingers *g* *y*, the former being secured to the transverse bar *i*, which is mounted upon standards *j*, being there secured by the bolts *k*, Fig. 3, which pass downward through the ends of said transverse bar *i*, the standards *j*, and the longitudinal slots *m*, formed in the bed-plate A. The lower ends of the bolts *k* are connected with the springs *n*, which retain them in a position whereby the spring-fingers *g* will remain in the position illustrated in Fig. 3 during the reciprocating movement of the bed-plate A, said position of the spring-fingers *g* being to the front of the circular knives *d*, and the fingers when in this position being adapted to retain the sheet in uniform relation with the longitudinal knives V.

During the reciprocating movement of the bed-plate A the bolts *k* remain in the slots *m*, said slots permitting the longitudinal reciprocation of the bed-plate without materially affecting the transverse bar *i*, held at the upper ends of said bolts. The extremities of the transverse bar *i* are provided with rearwardly-extending longitudinal arms *q*, which terminate in near relation to the frames H H, but do not come in actual contact with them until the bed-plate A has about completed its reciprocating movement toward the rear of the machine, at which time the front ends of the longitudinal slots *m* will come into contact with the bolts *k* and cause the transverse bar *i*, with its spring-fingers *g*, to have a limited longitudinal movement, this movement ceas-

ing as soon as the arms *q* come in contact with the frames H. The limited reciprocating movement of the transverse bar *i* and spring-fingers *g* is to cause the ends of said fingers to follow the edge of the sheet of tin beneath the circular knives *d*, and thus insure the proper regular slitting of the tin. During the return movement of the bed-plate A to the front of the machine the standards *j*, with the bolts *k* and transverse bar *i*, would be carried forward with the bed-plate unless some means were provided for retaining them at the desired position, and in the present instance when the bed-plate moves forward it will carry the standards *j*, with the bolts *k* and transverse bar *i*, forward until said parts assume the position illustrated in Fig. 4, at which time, the bed-plate continuing its motion, the bolts *k*, with the accessory devices, will be retained in position by the springs *n*, said springs being of sufficient strength to hold the bolts *k* while the bed-plate moves onward, the bolts remaining in the position illustrated in Figs. 3 and 4. The transverse bar *i* contains a longitudinal slot, *t*, (see Fig. 4,) in which are retained the bolts *u*, by which the spring-fingers *g* are secured in position, the purpose of the slots *t* being to permit the lateral adjustment of the spring-fingers *g* to suit the positions of the knives V *d* when the latter are adjusted to slit the sheet of tin into suitable widths.

At the rear edges of the frames H H is secured the transverse bar *w*, Fig. 4, having a longitudinal slot, *x*, and supporting the series of spring-fingers *y*, which project beneath the hubs *b* and operate to depress the strips of tin from the cutters during the reciprocating movement of the bed-plate A, carrying the tin. The spring-fingers are also adjustable laterally, by means of the screws retaining them in place being within the longitudinal slot *x*.

In the operation of the machine the sheet *e*, of tin, is placed upon the front end of the bed-plate A, said sheet resting upon the longitudinal knives V and being pushed forward beneath the transverse bar *i* and spring-fingers *g* until its edge comes into contact with the knives *d*, whereupon the bed-plate A moves rearward, carrying the sheet of tin beneath the knives *d* and causing them, in conjunction with the knives V, to slit the sheet of tin into suitable strips or widths, *f*, for the body of tin cans, the edges of the sheet *e* being also removed or trimmed, in order that the strips *f* may be of uniform width. During the forward movement of the bed-plate A, carrying the sheet of tin beneath the cutters *d*, the spring-fingers *g* keep the tin at the front side of said cutters evenly upon the knives V, while the spring-fingers *y* serve to strip the widths of tin from the cutting-edges. The series of strips of tin, *f*, will be taken from the rear of the machine, while the bed-plate A returns to the front of the machine and receives an additional sheet of tin

to be carried forward during the next rearward movement of said bed.

During the use of the machine the spring-fingers *g* press upon the sheet of tin being carried under the cutters *d* and hold it steadily in position upon the knives *V*, while the spring-fingers *y*, pressing downward upon the strips of tin, *f*, prevent the latter from curling upward around the hubs *b*. The fingers *y* thus insure the stripping of the widths of tin from the knives *d* and cause them to remain upon the table, from which they may be removed by hand.

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

1. The reciprocating bed-plate *A*, provided with the transverse grooves *S*, combined with the angle-bars crossing said grooves and carrying the longitudinal knives *V*, the adjusting-bolts *W*, for said bars, the rotating knives *d*, spring-fingers *g*, and mechanism, substantially as described, for imparting to the bed-plate a reciprocating movement and to the knives *d* a rotary movement, substantially as set forth.

2. The reciprocating bed-plate *A*, having transverse grooves *S* and carrying the angle-bars *T*, knives *V*, and rack-bars *E*, combined with the transverse shaft *G*, circular knives

d, gear-wheels *F*, engaging said rack-bars, spring-fingers for stripping the widths of tin from the knives, and mechanism, substantially as described, for imparting to the bed-plate a reciprocating movement between the sides of the machine.

3. The reciprocating bed-plate carrying the longitudinal knives and rack-bars *E*, combined with the transverse shaft carrying circular knives and engaging said rack-bars, the rack-bars *I L*, gear-wheel *J*, connecting-rod *K*, and wheel *P*, the latter being upon the driving-shaft, substantially as and for the purpose set forth.

4. The reciprocating bed-plate *A*, carrying the longitudinal knives *V*, combined with the circular knives *d*, the transverse bar *i*, spring-fingers *g*, secured to said bar, standards *j*, bolts *k*, slots *m*, springs *n*, and mechanism, substantially as described, for imparting a reciprocating movement to the bed-plate, substantially as and for the purpose set forth.

Signed at New York, in the county of New York and State of New York, this 3d day of January, A D. 1889.

WILLIAM HIPPERLING.

Witnesses:

CHAS. C. GILL,

W. A. C. MATTHIE.