

D. Moore. Sheet 1. 2 Sheets.
Type Rubbing Mach
N^o 10659. Patented Mar. 21. 1854

Fig. 1.

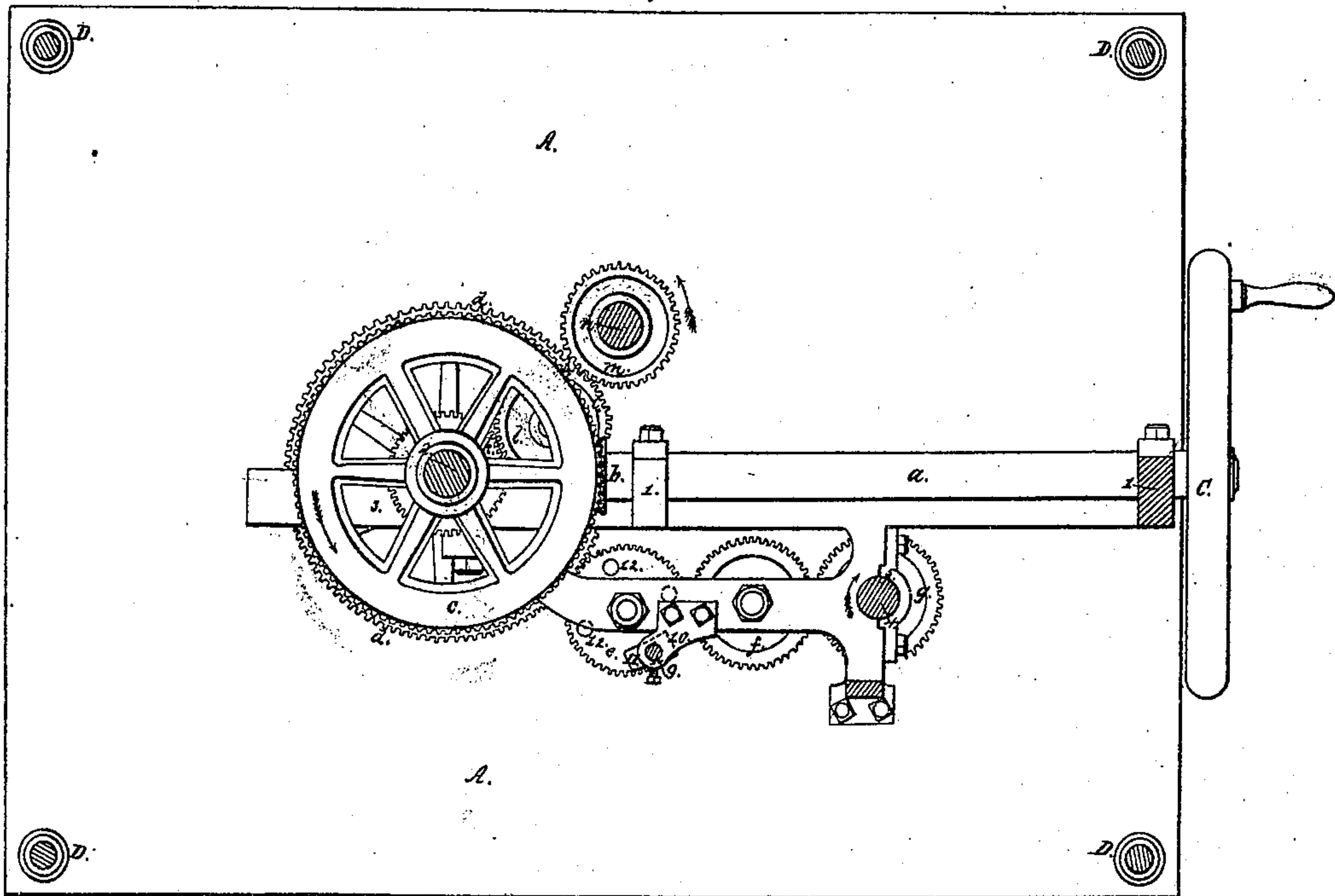
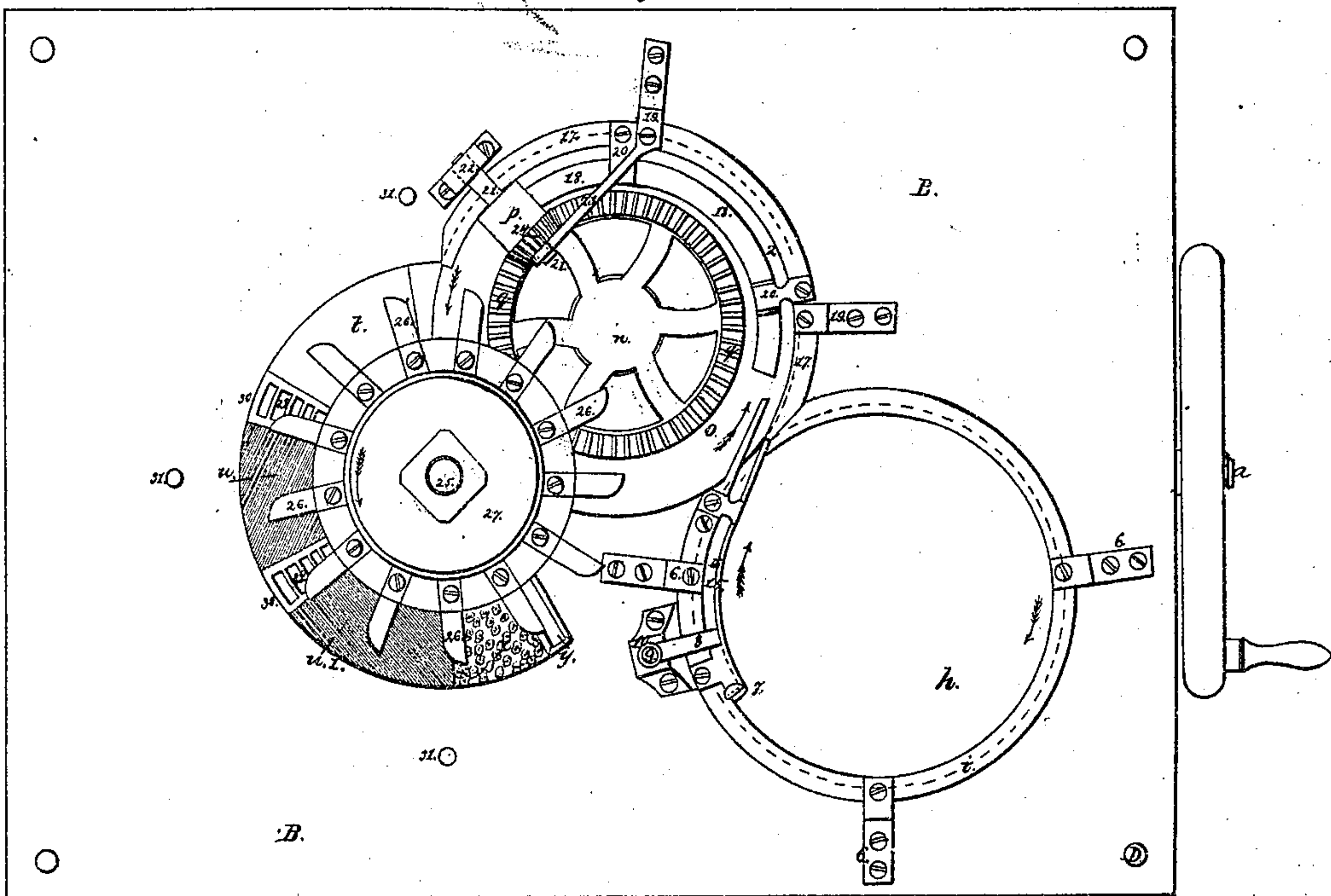


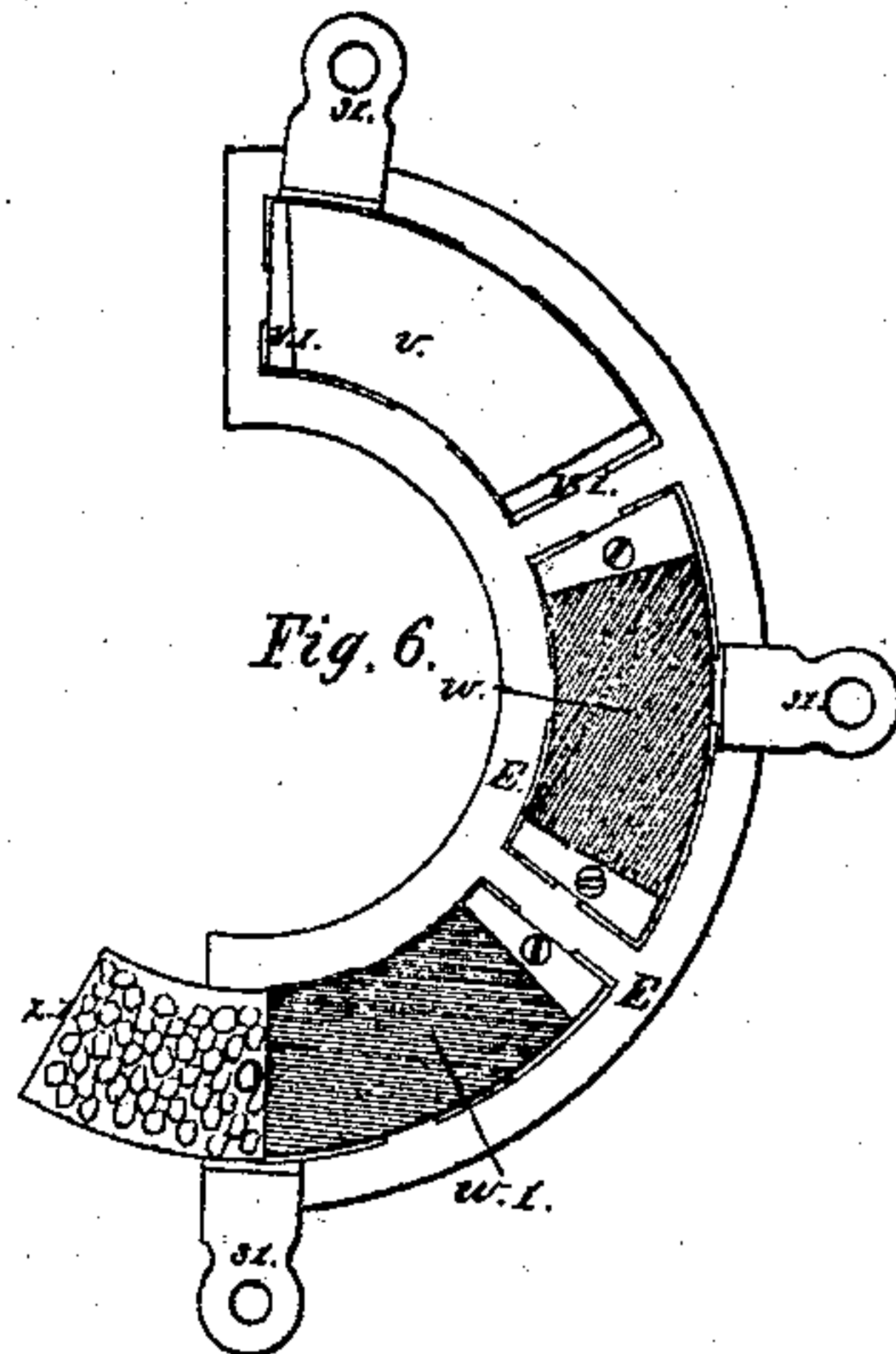
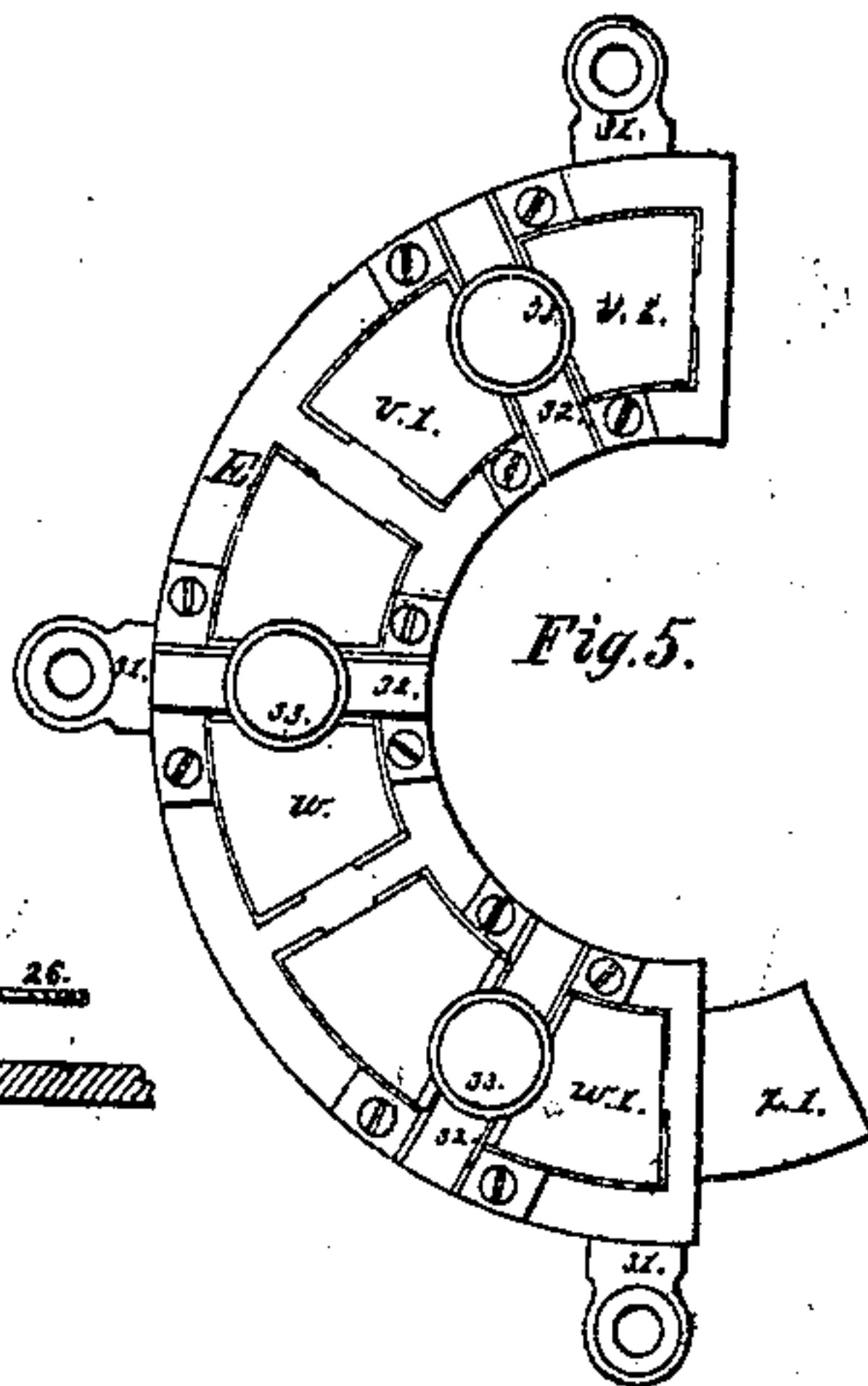
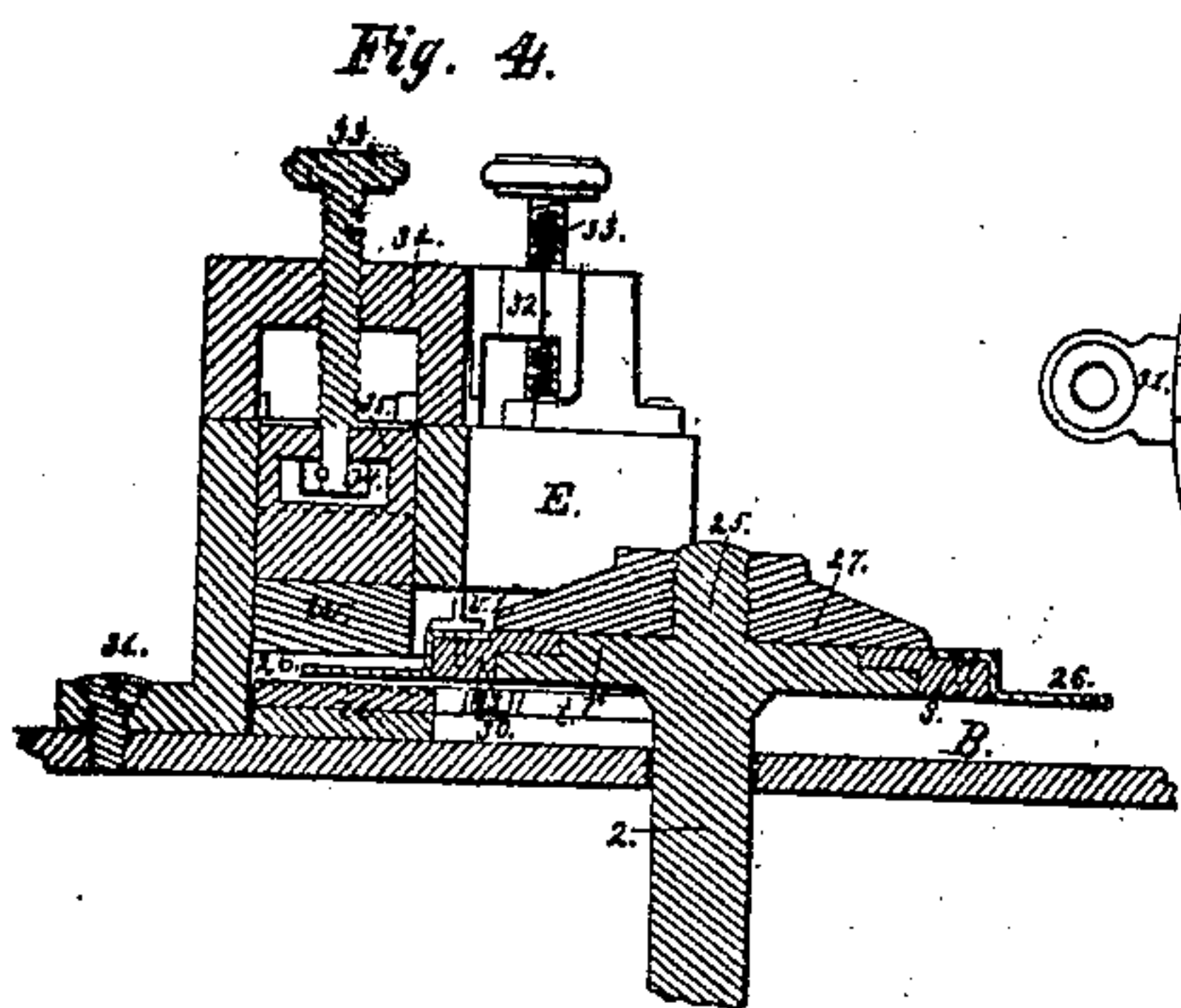
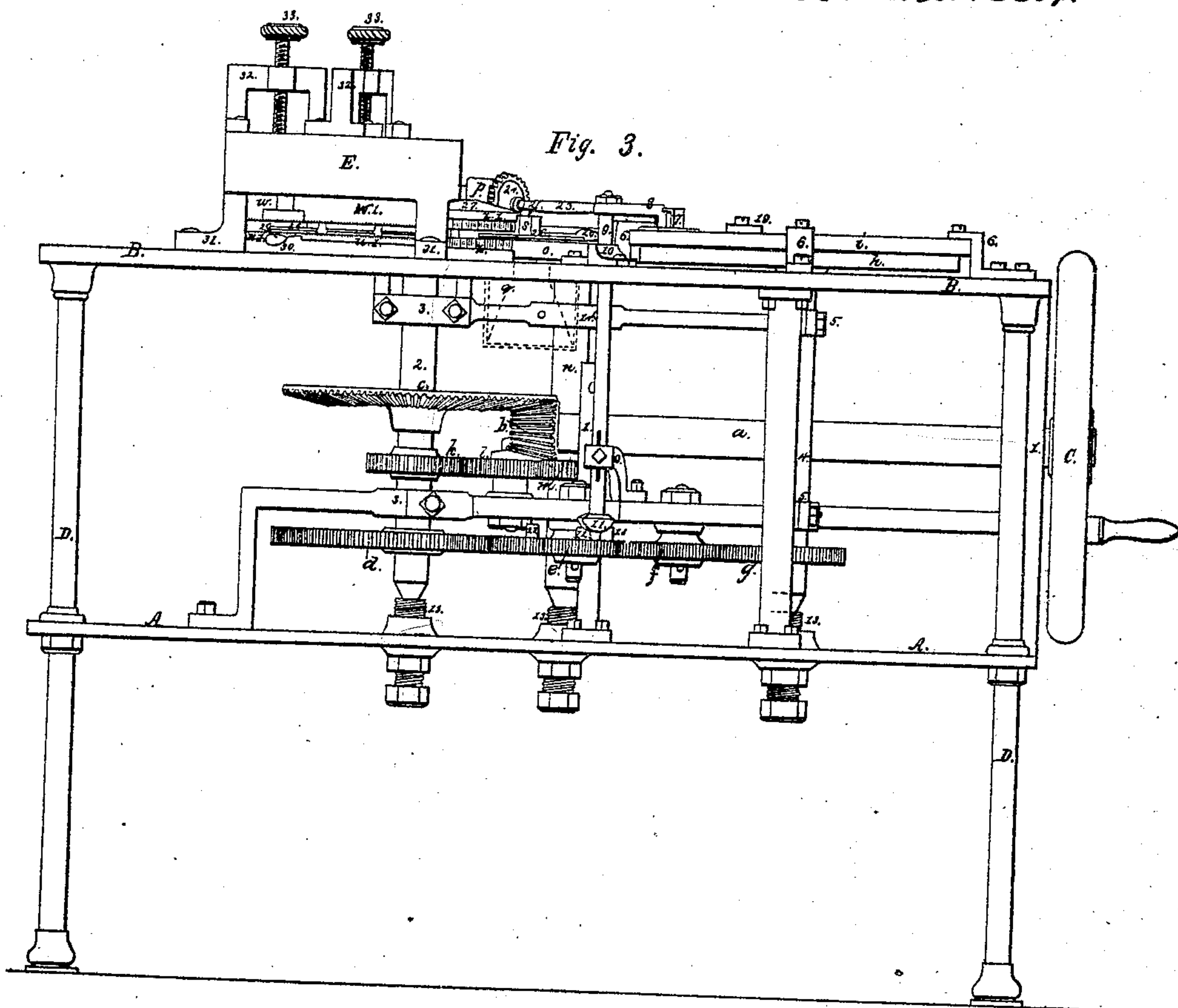
Fig. 2.



Witnesses.
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Inventor.
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D. Moore. Sheet 2. 2 Sheets
Type Rubbing Mach.
Nº 10659. Patented Mar. 21. 1854.



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UNITED STATES PATENT OFFICE.

DANIEL MOORE, OF NEW YORK, N. Y., ASSIGNOR TO GEORGE S. CAMERON.

IMPROVEMENT IN MACHINES FOR RUBBING TYPE.

Specification forming part of Letters Patent No. 10,659, dated March 21, 1854.

To all whom it may concern:

Be it known that I, DANIEL MOORE, of the city and State of New York, have invented and made certain new and useful Improvements in Machinery for Rubbing Type; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a plan of the gearing which propels the parts below the bed of the machine. Fig. 2 is a plan representing the working parts of the machine as with the upper half of the cutters removed. Fig. 3 is a side elevation of the machine complete. Fig. 4 is a section vertically of the cutters, fingers, and plates that move the type. Fig. 5 is a plan of the box containing the upper cutters, and Fig. 6 is a plan of the face of the upper cutters.

The like marks of reference denote the same parts.

The nature of my said invention consists in the use of a supply-plate, from which the type are thrown by centrifugal force through a gutter or trough onto a conducting-plate, that by an elastic roller supplies the type to a series of rotary fingers that carry the type first over a stone or similar rough surface that takes off any small burrs or feather-edges that in getting into the cutters might cause the type to deviate from its course. Next, the type is carried through between a series of two or more cutters, that successively remove the sides of the type and the burrs thereon, the type passing, finally, between brushes, which clean or remove from the type the fibers or shavings of metal that have been cut from the type and leave it ready for use.

It is well known that many machines have been invented for cleaning the sides of type and removing the burr left at the base of the letter in the matrix, and that a machine having some of the main features of this invention was patented by James L. Duncan, January 25, 1848; but my machine will be found, as hereinafter set forth, to contain improvements and distinct features of invention which render practical and effective the machine before mentioned and overcome difficulties which rendered the said machine inoperative.

In the accompanying drawings, A is the

lower and B the upper beds of the machine, which are connected and sustained by columns or legs D.

C is a fly-wheel on a shaft, *a*, to which competent power is to be applied by a handle or otherwise.

1 1 are bearings for the shaft *a*, and *b* is a miter-pinion on the inner end of said shaft *a*, gearing into a bevel-wheel, *c*, on a vertical shaft, 2, sustained in journals 3 3.

d is a gear-wheel below the journal 3, communicating motion through two pinions, *e* and *f*, set on studs or short shafts, to a gear-wheel, *g*, on a vertical shaft, 4, supported in bearings 5 and passing through an opening in the bed B. The lower end of this shaft, as well as the shaft 2 and shaft *n*, (hereinafter referred to,) are centered in screw-steps 13, by which they are adjusted vertically. The upper end of the shaft 4 carries above the bed B a circular centrifugal supply-plate, *h*, which rotates below but close to a stationary rim, *i*, supported by brackets 6. The type, being placed on the center in a pile, are thrown off by centrifugal force as the plate rotates in rows against the rim *i*, from which they pass, as next detailed.

16 is a curved guard having a trough, 15, of the required width for the passage of one type, this guard being connected above to the rim *i*, and at the end thereof is a vertical slide, 7, adjustable, so as to leave the space required for one type to pass when on its side between the plate and its lower end, and by this means prevent any types from passing that are not on their sides, and this slide is to be adjusted to suit any width of type.

8 is a stop or cut off passing down into the groove 15, and the other end attached to a vertical rod, 9, sliding in bushes 10, and having on its lower end an inclined shoe or cam, 11, that, taking pins 12 in the upper face of the wheel *e*, receives an alternating endwise motion which lifts the cut-off 7, allowing several type to pass through the gutter 15, near the edge of the plate *h*, onto a plate, *o*, the surface of which is to be on the same level as the plate *h*. The motions of this cut-off are so timed as only to allow the required number of type to pass, and then keep back the others on the edge of the plate *h*. This plate *o*, which I term the "conducting-plate," is set on the vertical shaft *n*, and driven in the direction of the arrow by

a wheel, *k*, on the shaft 2, taking an intermediate wheel, *l*, on a fixed stud on the frame, and communicating to a wheel, *m*, on the shaft *n*, the upper end of the shaft *n* being sustained by a journal, 14.

17 is a fixed rim sustained by brackets 19 and overlying the edge of the plate *o*.

18 is a curved bar or guard supported by plates 20 from the rim 17, leaving between said guard and rim a groove, *z*, into which the types pass from the groove 15, and are held back from being carried around on the plate *o* by an elastic roller, *p*, on a shaft, 21, in journals 22 and 23, the journal 23 being on the end of an arm from the bracket 19.

24 is a pinion on the shaft 21, moved by a spur-wheel, *q*, in the face of the conducting plate or disk *o*. It will now be seen that the pinion 24 being nearer the center of the plate *o*, and being larger than the roller *p*, the motion communicated is such that the surface of the elastic roller travels slower than the outer edge of the plate *o*. Consequently as the type pass from the groove *z* beneath the roller, that being elastic holds the type, moving it along as the roller rotates, while the plate *o*, moving faster, slides beneath said type and carries the preceding type on, as it rests on its surface, clear of the next type as it is delivered from under the elastic roller *p*, causing sufficient space to be left between one type and the other for the fingers (next described) to take and carry the same off the plate *o*, at right angles to its previous motion to rub the type. The upper end of the shaft 2 passes through an opening in the bed B and receives a disk, *r*, terminating as a screw, 25.

s is a flanged ring that sets over the disk *r*, (see Fig. 4,) and is secured in place by a circular nut, 27. Around the edge of this ring *s* are fingers 26, formed of metallic strips slightly thinner than the type with which they are to be used. By this means a whole set of fingers can be removed with the ring, and another set, either thicker or thinner, substituted, according to the thickness of type to be rubbed, thereby saving much time which has heretofore been occupied in removing the fingers separately.

t is a piece of stone or suitable substance with a fine-grained cutting or rubbing surface, attached to a bed-piece secured onto the bed B on a level with the surface of the plate *o*, so as to be removed and replaced by another when needed.

u and *u'* are steel cutters having grooves in their surface, forming cutting-edges, and 28 is a bridge between the stone *t* and the first metal cutter, *u*, formed as thin bars, over which the type are carried, while dust or cuttings from the type drop down and pass out through an opening, 30, on the end, preventing the cuttings from the first part passing into the cutter *u*. 29 is a similar bridge between the cutters *u* and *u'*, for the same purpose as the bridge 28. The stone *t*, cutters *u* and *u'*, and the bridges 28 29 form a level plane, the surface corresponding

with the upper surface of the plate *o*, and the fingers 26 travel in a plane parallel thereto.

E is a semicircular box attached by screws 31, through supporting-legs, to the bed B. This box is formed as three divisions. The first contains a block or follower, *v'*, to which a stone, *v*, is attached, similar to and coinciding in position with the stone *t* above the same. The second and third divisions receive steel cutters *w* and *w'*, with grooved surfaces similar to the cutters *u u'*; but the lines in which the grooves are made cross in the opposite direction to the grooves in the cutters *u u'* below, so that one counteracts the tendency of the other to slide the type either in or out. These blocks are so fitted into the box E that they slide closely and are firm in their correct position, and are adjusted vertically by means of screws 33, passing through yokes 32 and through a sling, 35, on each of the followers, (see Fig. 4,) the screw terminating with a washer and pin within the strap 35. By this means the opening between the stones and cutters is determined as required for a given letter.

x is a flat brush attached to the bed B, the ends of the hairs of which brush are slightly higher than the surface of the cutter *u'*, and *x'* is a similar brush attached to the cutter *w'* above.

y is an opening in the bed B at the end of the brush *x*, beneath which is a chute or conductor to convey the finished type to any proper receptacle. (See dotted lines, Fig. 2.)

The type, as before detailed, are carried on the plate *o* endwise between the fingers 26, which take against either the top or bottom side of the type, carrying it radially to the center of the shaft 2 between the stones *t* and *v*, which remove the burr or projection that is left in the matrix at the base of the letter in casting, and by its removal prevent said burr or projection getting into any one of the grooves of the cutters and carrying the type, as it is moved, either farther from or nearer to the ring *s* at the risk of breaking the hair-lines of the letter, and as the type progresses in its movement after leaving the stone it passes between the cutters *u* and *w*, and the cutter *w* is to be so adjusted as to remove all the burrs from the type, taking off a very thin shaving at a time, and then the type, being carried between the cutters *u'* and *w'*, is brought to the proper gage or thickness, the cutters removing any inequalities in the body of the type, the cutter *w'* being properly adjusted to give the required thickness; and, finally, the type, passing between the brushes *x x'*, has all the loose particles that adhere removed and the type entirely cleaned. The dust of the cuttings and shavings of metal from the cutters pass off their surface by the bridges 28 and 29.

It is well known that in some characters of type there is a slight burr or projection left on the top and bottom of the letter, which is removed after the type are set up in line by a file or otherwise; but as the type lie on their side

this projection is apt to catch in the fingers 26, causing them to force the type unequally through the cutters. To prevent this, I prefer that the edges of the fingers that take the type should be convex, to bear against the middle of the type and avoid the before-mentioned projection.

I will now proceed to show the differences and advantages which my machine possesses compared with others that have preceded it. First, by the use of the separate centrifugal supply-plate, that, being driven at a high degree of speed, will supply any required amount of types to the machine, whereas in all former machines the feeding-plate had to travel as slow as the fingers that carried the types from off said supply-plate; consequently no degree of speed could be attained to throw the types by centrifugal force to the edge, and the feeding had to be done by hand, the operator drawing the types up out of the concave plate to the entrance of the conducting-groove, which it was found practically he could not do with sufficient speed to keep the machine supplied, whereas in my machine all the operator has to do is to remove any types that may present themselves to the entrance of the groove on their edges; and in the previously-referred-to machine there was no chance for the type to arrange themselves around the edges, because they had to be kept down in the disk below the line in which the fingers traveled, whereas by the use of my centrifugal supply-plate the types will be thrown off to the edges in circles, which will allow the operator to see any type that may be on its edge, and thereby a constant supply is ready to pass into the groove when the cut-off is open; second, by the use of the cut-off motion and groove only the requisite number of type are supplied to the conducting-plate, preventing the motion of the type as they pass by centrifugal force through the groove from overriding each other; third, by the use of an elastic roller the type are separated and supplied with great regularity to the fingers, and the roller acts quicker than stops; thereby a greater number of types can be fed to the fingers, which consequently can be closer together, thereby allowing a greater number, probably twice as many type, to be rubbed each revolution of the machine, and it is found, practically, that a stop dropping, as is often the case, on a thin type will bend the same or injure the letter, whereas the elastic roller yields to the type and does not injure the same; fourth, by the use of stones or other

fine-grained cutting-surface the projections or burrs at the base of the letter are removed, for the purposes before mentioned; fifth, by the use of two or more cutting-blocks with intervening bridges the burrs on the type are gradually removed, instead of being taken off at one operation, which is found practically to break the hair-lines to such an extent as to prevent the successful operation of any machine so constructed; sixth, by reference to the drawings, Fig. 2, it will be seen that the lines of grooves are nearly at a tangent from the circle described by the fingers and type, by which means the metal is removed by a shearing-cut, and the type, traveling in so nearly the direction of said cutting-grooves, carries the dirt and cuttings out of said grooves, keeping them clean, whereas in all former machines these grooves have been so nearly radial as soon to become clogged and useless; and, lastly, the brushes cleanse the type of any particles that adhere thereto and leave them complete and ready for use, whereas these particles or fibers in any burnishing operation that has heretofore been resorted to have been found to adhere to such an extent as to render a separate cleaning necessary.

What I desire to secure by Letters Patent is—

1. The centrifugal supply-plate *h*, combined with the conducting-plate *o* by means of the channel 15, or its equivalent, to pass the type, as specified.
2. The elastic roller *e*, moved by the pinion 24 and spur-wheel *q* to separate the type, as specified.
3. The stones *t* and *v*, or similar cutting-surface, to operate first on the type, as described and shown.
4. The use of two or more pairs of cutters, the lower ones being connected by the bridges 29 to remove the projections and rub the type, as specified.
5. The brushes *x* and *x'*, to clean the type prior to delivery from the machine in the manner specified.
6. The means herein shown, consisting of the ring *s* and screw-nut, for changing a whole set of the fingers 26 according to the thickness of type to be rubbed, as specified.

In testimony whereof I have hereunto set my signature this 26th day of October, 1853.

DANIEL MOORE.

Witnesses:

LEMUEL W. SERRELL,
THOMAS G. HAROLD.