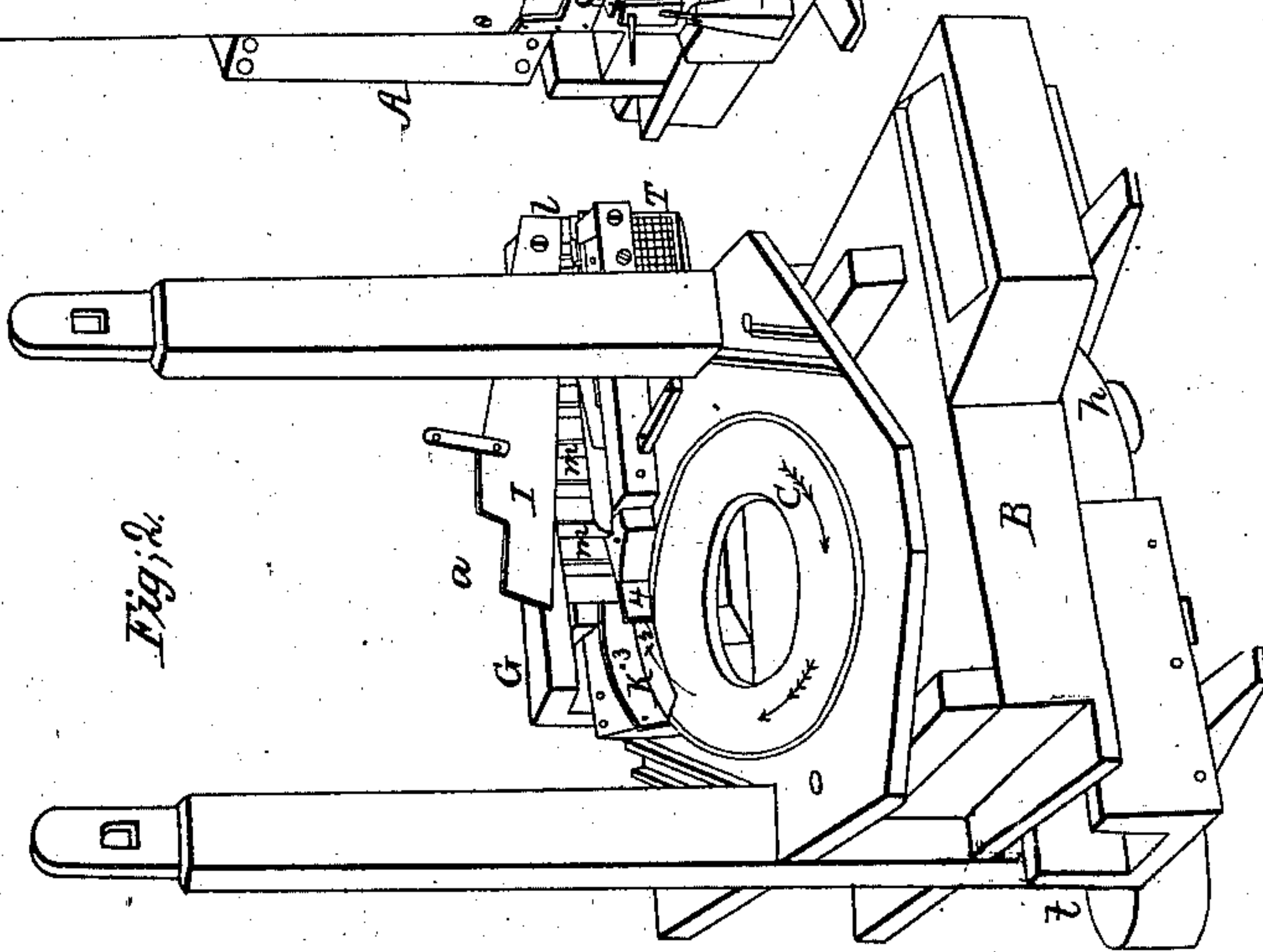
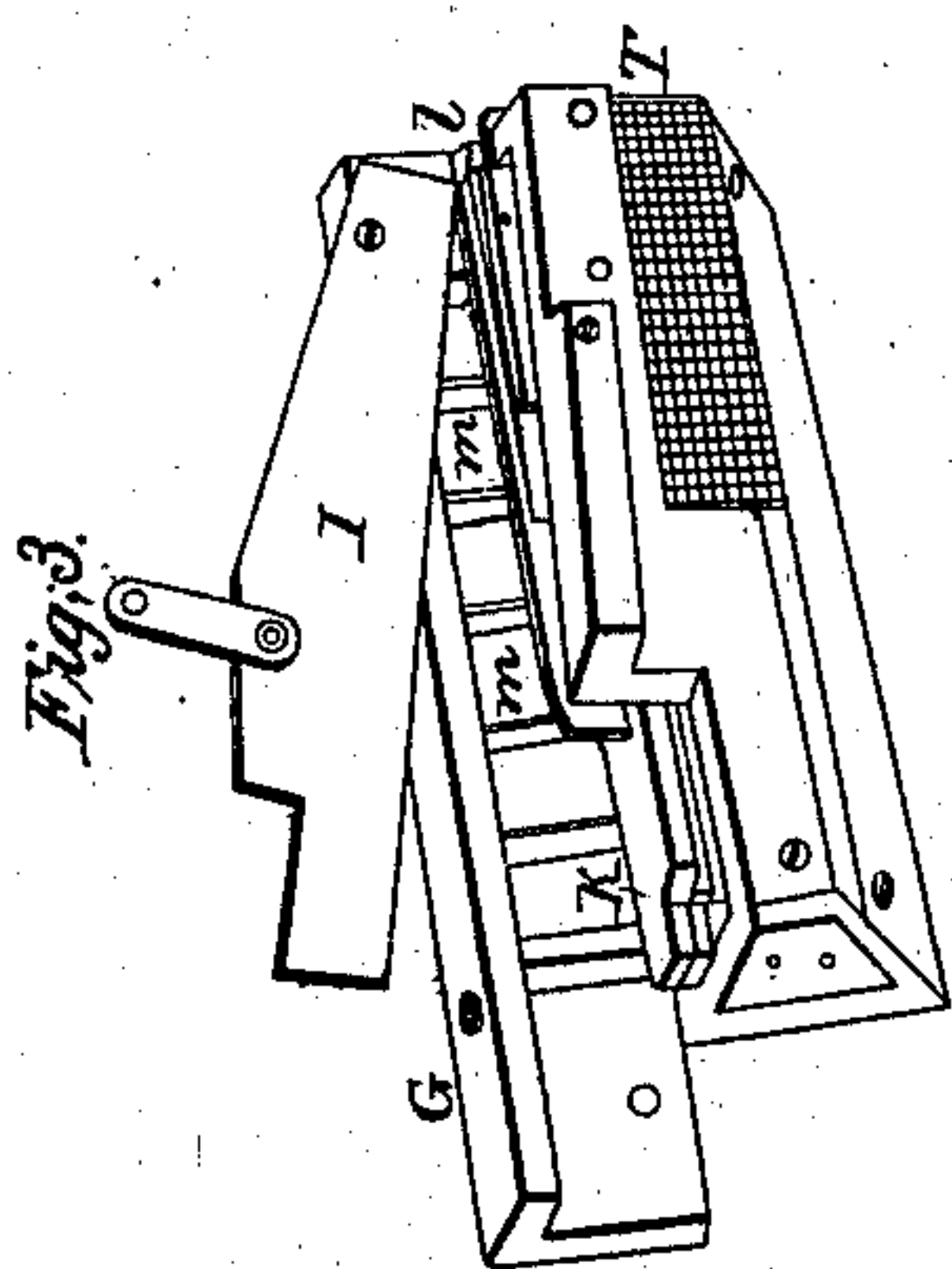
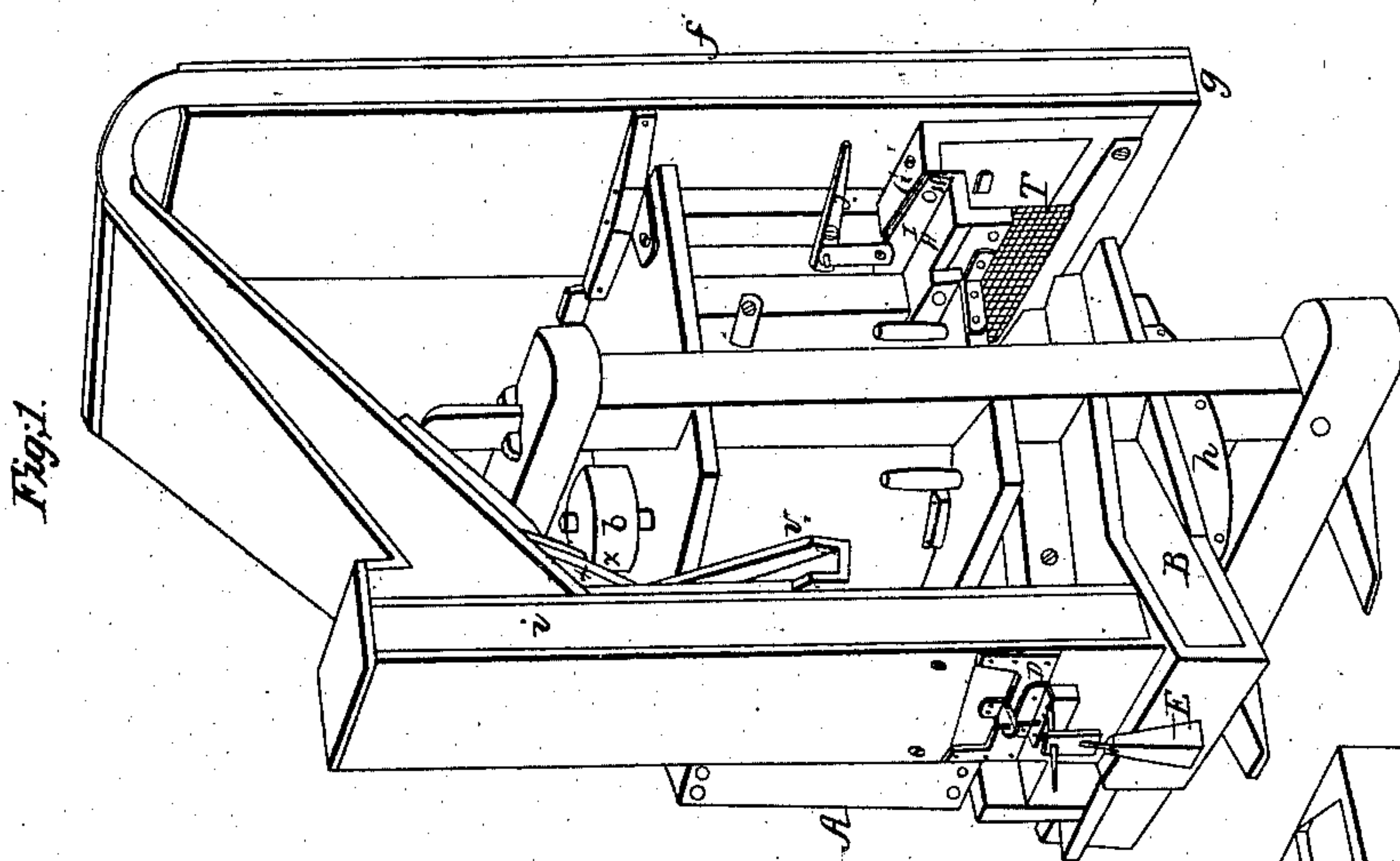
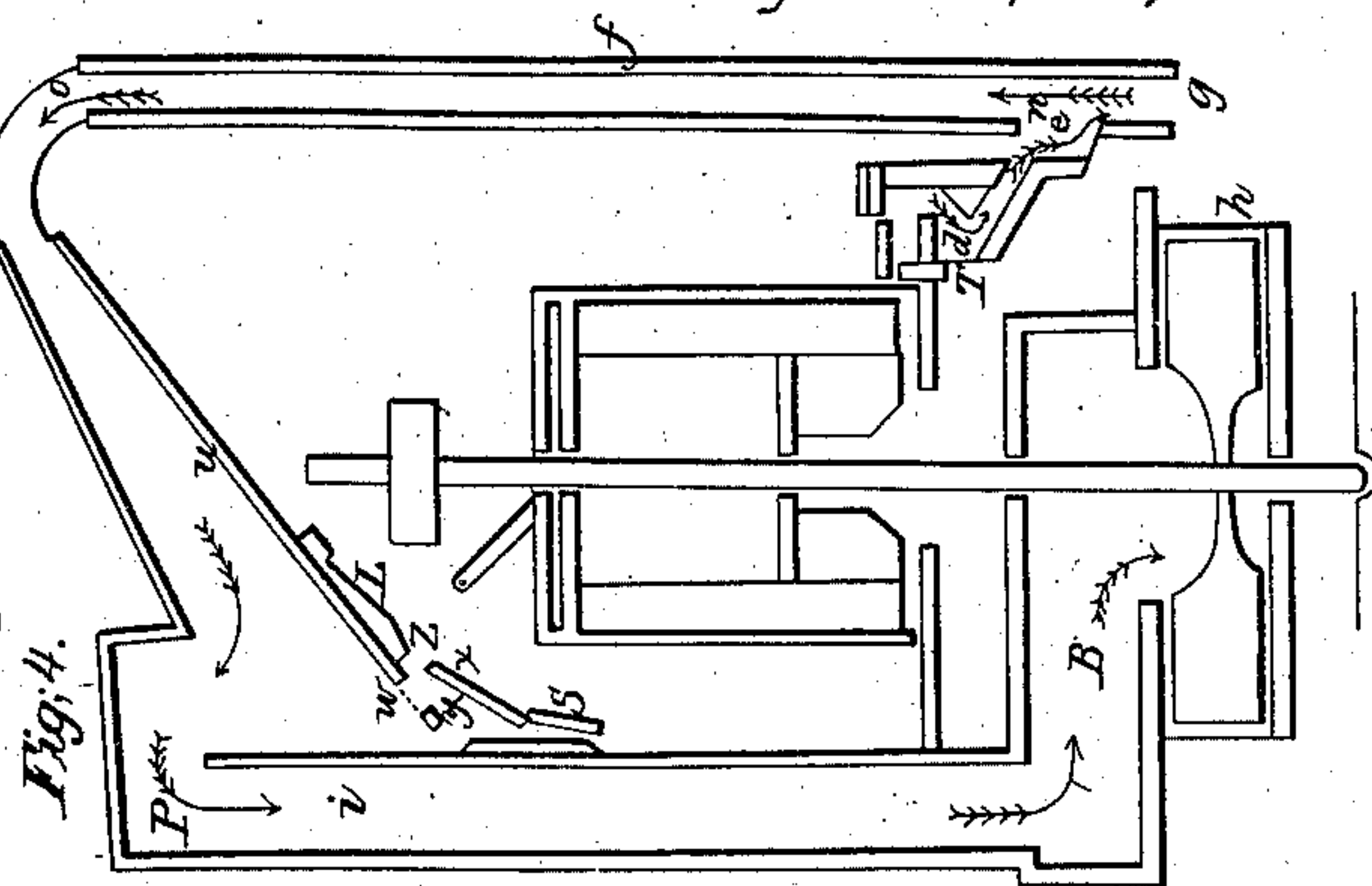
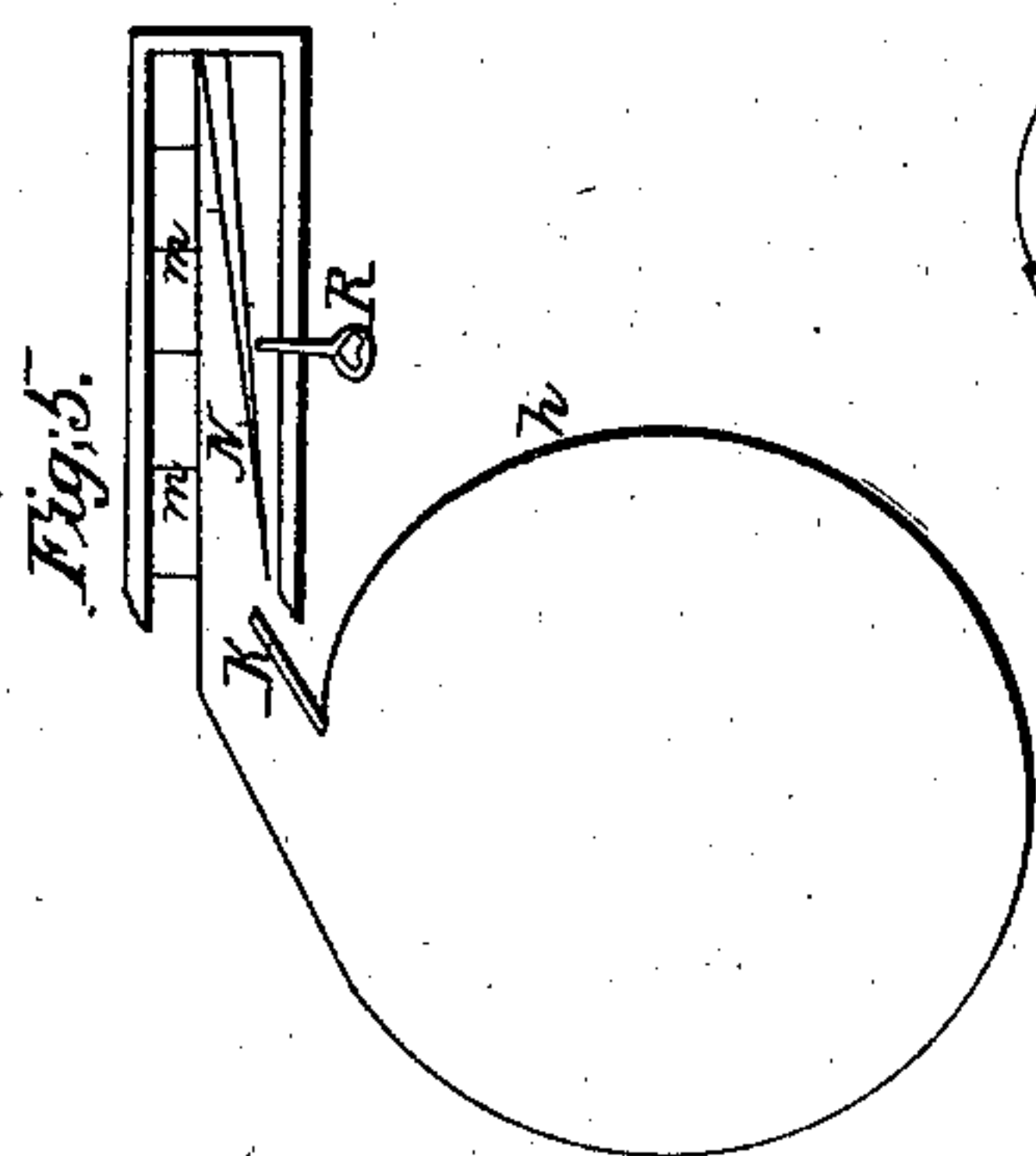


D. Pease.

Smut Mill.

N^o 64,027.

Patented Apr. 23, 1867.



Witnesses;
Am Baker
Henry Barnum

Inventor;
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United States Patent Office.

DAN PEASE, OF FLOYD, NEW YORK.

Letters Patent No. 64,027, dated April 23, 1867.

IMPROVEMENT IN SMUT-MILLS

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that I, DAN PEASE, of the town of Floyd, in the county of Oneida, and State of New York, have invented a new and useful Improvement in the Smut-Mill; 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 a part of this specification, in which—

Figure 1 is an external perspective view of the entire machine, including the improvement.

Figure 2 is a perspective view of the lower part of the mill, partly turned round, showing the improvement at *a*, as it is connected with the mill, in the rear.

Figure 3 is a view of the part composing the improvement taken off, and shown separately.

Figure 4 is a vertical cross-section, in outline, of the whole mill, including the improvement; and

Figure 5 is the essential part of the improvement, shown by a top view, and exhibits its connection with the circular figure of the cylinder case, which contains the revolving part of the mill.

The object of the improvement is to furnish the means of spreading the grain as it passes from the mill, in order to afford greater facility for the air which passes up through it to separate and carry off the foul stuff. It is designed to be used in connection with my smut-mill, patented by me on the 22d day of September, 1863, but may be attached to and used in connection with any other smut-mill or machine.

The force of the revolving cylinder, in the smut-mill, drawing in a volume of air, blows out, in a lateral direction, most of the dust, chaff, and light stuff, and discharges it at *A*, fig. 1, and the grain being brushed and scoured by the action of the cylinder, passes rapidly towards the discharge below, but still carries with it more or less light grain, chaff, and other foul stuff. This is acted upon with a view to its separation from the grain by the swift current of air which it meets near the discharge at the mouth of the air conductor *f*. But in order that the air should act advantageously for this purpose the volume of grain thus descending to the discharge should be well spread and divided in the passage. This, as smut-mills have been heretofore constructed, is not sufficiently provided for; and my invention provides a simple and effective spreader for this purpose, scattering and dividing this volume of grain in such a manner as to permit the swift current of air that passes up through it to carry off all the remaining dust, light grain, chaff, and other impurities, leaving the grain better cleansed than has heretofore been done.

In the operation of the smut-mill the uncleaned grain is introduced to the top of the cylinder through a spout, not shown in the drawings, but is situated near the shaft of the pulley *b*, fig. 1. It is cleansed by the action of a revolving metal cylinder, the stationary base of which is seen at *c*, fig. 2. When sufficiently scoured, it passes off from the cylinder chamber through a passage indicated by the arrows *d e*, fig. 4, and entering the air conductor *f*, near its mouth, is discharged at *g*. On entering the conductor *f* it meets a stiff current of air passing up the conductor, and which is drawn in by the swift operation of the fan-blower, located on the cylinder-shaft underneath the machine. The circular casement of this fan-blower is partially seen at *h*, figs. 1 and 2. This current of air carries the light impurities up the conductor *f*, and over into the upright part *l*, according to the course indicated by the arrows *n o p*, fig. 4. My improvement for spreading the grain is located in the passage for the grain leading from the bottom or lower part of the cylinder-chamber to the conductor *f*, and forms the commencement or upper part of this passage. The passage within the spreader extends from *k* to *l*, fig. 2, and is of a length corresponding to the width of the flat conductor *f*, fig. 1. This passage is contracted in breadth as it proceeds to the end *l*, so that the last of the partitions *m*, figs. 2 and 3, almost closes across it. The shape of the whole passage is seen at *k*, fig. 2, where 2 is the bottom, and is on a level with the base of the cylinder *C*. 3 is the farther side, and 4 a projecting portion of the opposite side. The parts composing the improvement are more distinctly shown in fig. 3, which is the attachment seen at *k l*, fig. 2, taken off and shown separately. This new attachment I call a spreader. The scoured grain in passing from the cylinder-chamber to the spreader, being driven with great force by the swift action of the cylinder, strikes the partitions *m*, figs. 2 and 3. These partitions are placed vertically against the farther side of the passage, and extend forward over the drip or inclined base below, but do not reach quite down to it; nor do they extend forward fully across the passage, but stop a little short of it, and near the edge of the bottom 2, fig. 2, and leave the front portion of the passage unobstructed. A portion of the passing grain strikes each of these partitions, and as it strikes immediately falls to the drip below, which leads into the conductor *f*, fig. 1. This operation divides the volume of grain, and occasions it to fall in a divided sheet to the mouth of the con-

ductor *f*, where it meets the swift current of air, which carries up the conductor the light grain, chaff, and other impurities, while the cleansed grain is discharged at the mouth *g* of the conductor. In fig. 1, the spreader is seen projecting at *G H*, where it is covered by its casement. *G* corresponds to the cover *G* in figs. 2 and 3, and *H* is the cover of the portion of the spreader on the opposite side of regulating slide *I*. This regulating slide is an important agent. It is operated by means of the hand-lever *J*. It is hung on the fulcrum pin *w*, and shuts down between the covers *G* and *H*. If the grain falls too much between the partitions nearest to *k*, fig. 3, the slide *I* is let down to cut it off and send it farther towards the end *l* of the spreader. If too little is dropped at the end *k*, the slide is raised. This slide, in figs. 2 and 3, is shown raised out of the way to show the partitions *m* and the spaces between them. In a mill of full size, these partitions are about two and a half inches apart. The passage for the grain from the spreader to the conductor *f* is angular in its course, as indicated by the arrows *d e*, fig. 4, which also assists in spreading the volume of grain as it passes down. Fig. 5 presents a top view of the spreader, as connected with the circle *h* of the cylinder case, and with the covers *G* and *H*, fig. 3, taken off, so as to show the upper edges of the parts. In this figure, *N* is the upper edge of a narrow flexible board or plate, lying diagonally from end to end of the passage, as shown in the figure, and is acted upon by the thumb-screw *R*. It is braced at each end, but being flexible is capable of being pressed inward in its centre by the screw, to narrow the passage, and to regulate the passage of the grain, and promote an equal spreading of its volume. As the impurities thus carried up the air conductor *f*, according to the course of the arrows *n o p*, fig. 4, include light grain, chaff, and other lighter material, the mill is designed to divide these materials, and separating the lighter and entirely valueless materials from the heavier portion, the former is carried over into the vertical portion *i*, fig. 1, of the conductor, and is discharged at the mouth of the fan-case at *t*, fig. 2, while the latter, containing material of some value, falls upon the inclined base *u* of the conductor, fig. 4, and sliding down this declivity, is discharged at the spout *V*, fig. 1. For the purpose of improving this separation, I have made a longitudinal opening in the under side, near the lower end of this declivity, and fixed therein a fine screen of wire cloth, at *W*, fig. 4, for admitting a current of air immediately under and quite across this broad conductor. Underneath this inclined plane, and at the angle formed by it and the upright part *i* of the conductor, is an enclosure, *x*, figs. 1 and 4. This enclosure is divided into two apartments by the partition *y*, fig. 4. In the upper part of this enclosure, and opposite the aforesaid wire screen, is an opening, *Z*, for the admission of a current of air to pass up through this wire screen, and thence through the aforesaid sheet of coarse material as it descends, assisting to carry over such dust and light stuff as may still be mingled therewith, into the conductor *i*. To this opening *Z* is affixed the slide gate *L*, to regulate the amount of air to be admitted. Thus the dust and light material are carried over into the conductor *i*, and the heavier portion is discharged at the spout *V*, fig. 1, as before mentioned. In the lower part of the enclosure *x* is another opening, to which is affixed a vibrating gate, *S*, which is actuated by the entering current of air, which tends to close it. It is opened against the force of this current by the accumulating weight of the descending material, which passes thence into the spout *V*, and is discharged. *T*, fig. 1, is another wire screen, inserted in the back side of the spreader. This screen is also seen at *T*, figs. 2 and 3. It is intended as a vent for the escape of the air driven through the spreader with the passing grain, to prevent this current of air from affecting the strength of the current drawn into the conductor *f* by the action of the fan-blower. *D*, fig. 1, is a swinging-valve gate in the outside of the conductor *i*. The strong draught, occasioned by the swift action of the fan-blower, tends to open this valve; and the weight *E*, hung upon a lever outside of the valve, keeps it closed, with a strength corresponding to the length of leverage used in hanging the weight. If the current of air in the conductor *f* is too strong, and carries up the grain, less leverage is given to the weight *E*, allowing the gate *D* to open, letting in a counter-current of air to modify the strength of the current in the conductor *f*. This device is not claimed as new.

Having thus described my improvement, with its adaptation and operation, what I claim as my invention, and desire to secure by Letters Patent, is—

The spreader shown separately in fig. 3, and as connected with the smut-mill shown in figs. 1 and 2, and fully described in the specification, the whole being constructed, adapted, and arranged substantially in the manner herein set forth.

DAN PEASE.

Witnesses:

WM. BAKER,
HENRY BARNUM.