

A. H. CARYL.
Hackling Machine.

No. 10,513.

Patented Feb. 14, 1854.

Fig. 2,

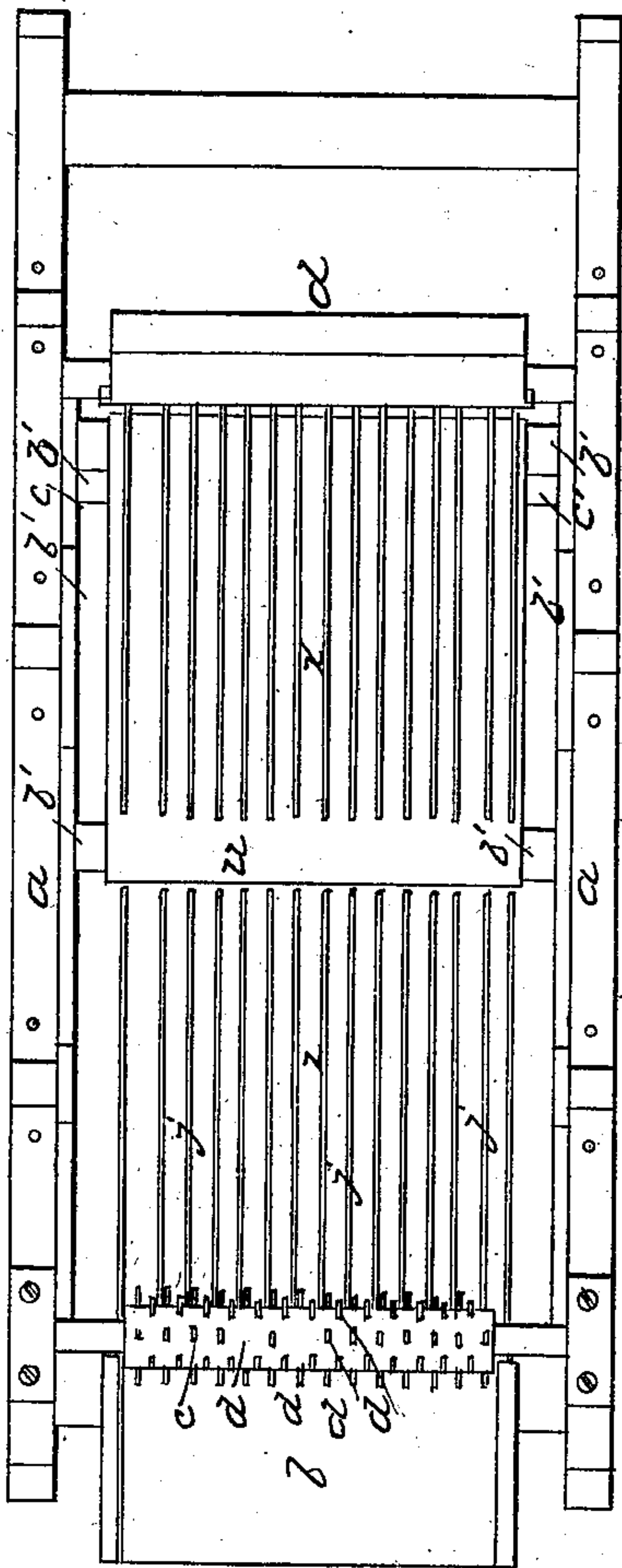
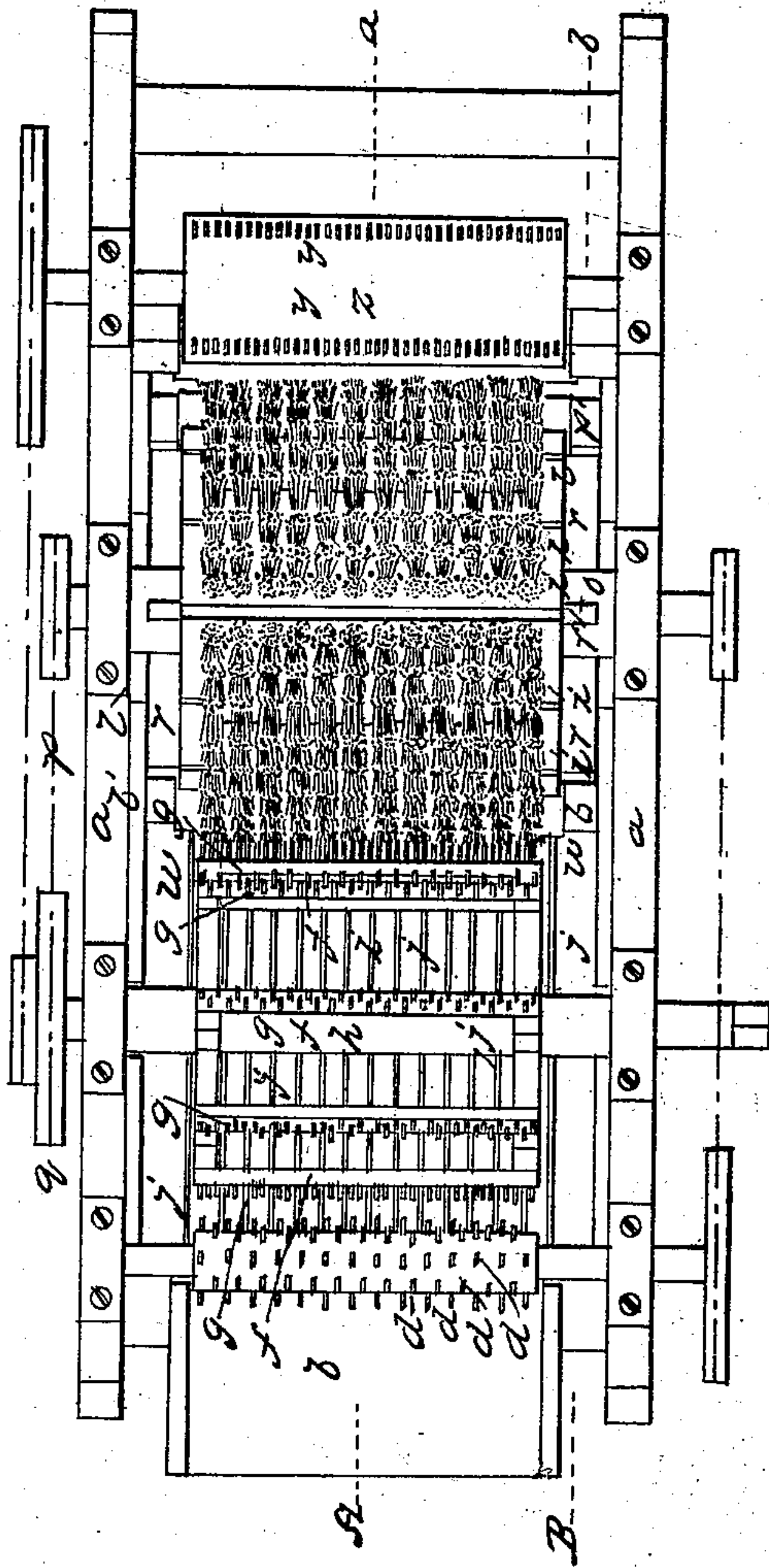


Fig. 1,



A. H. CARYL.
Hackling Machine.

No. 10,513.

Patented Feb. 14, 1854.

Fig 3

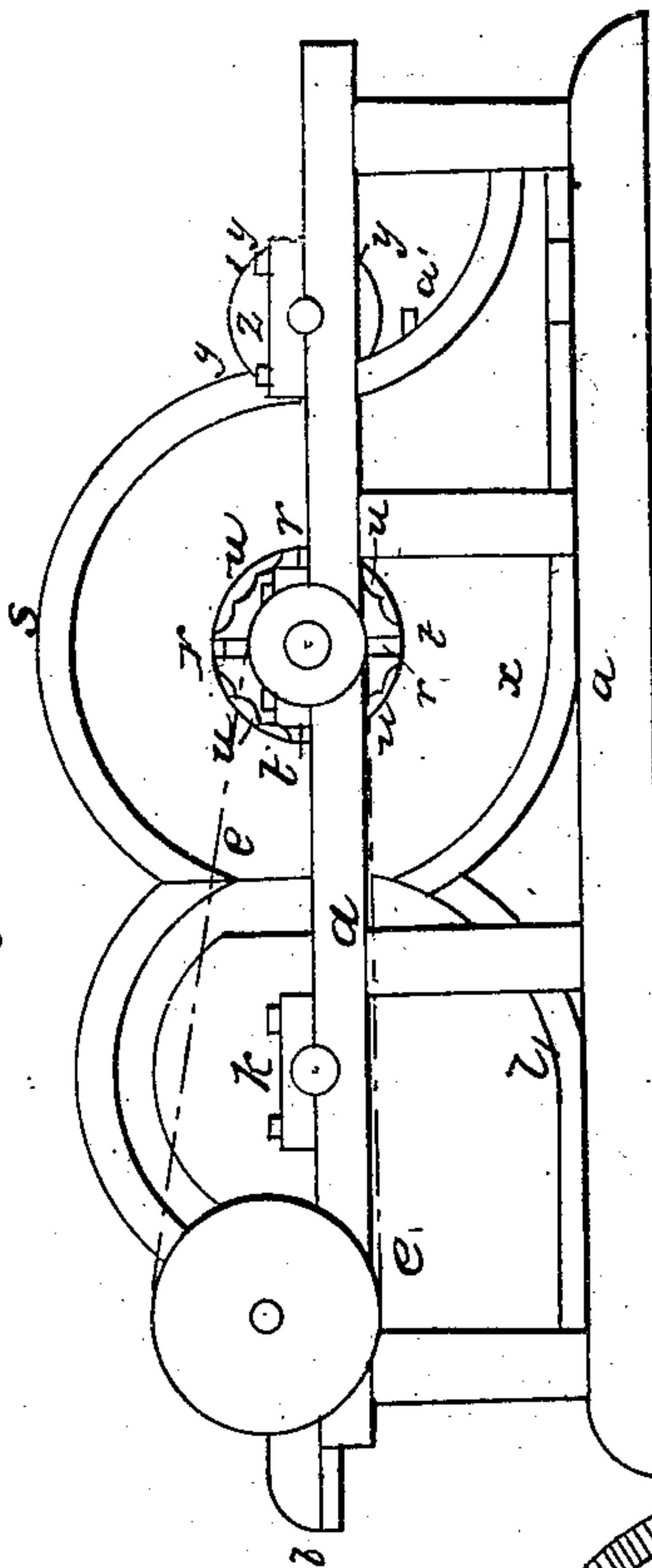


Fig 5. & B.

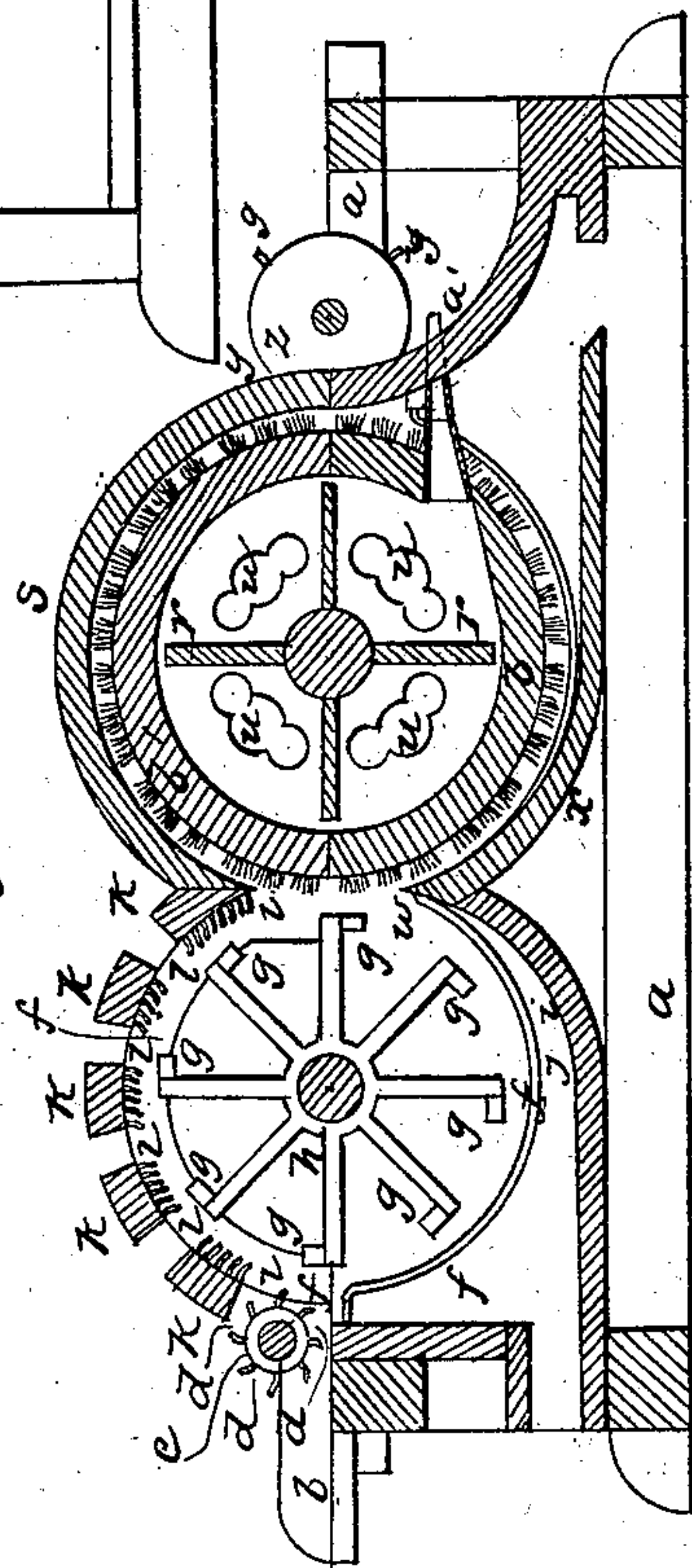
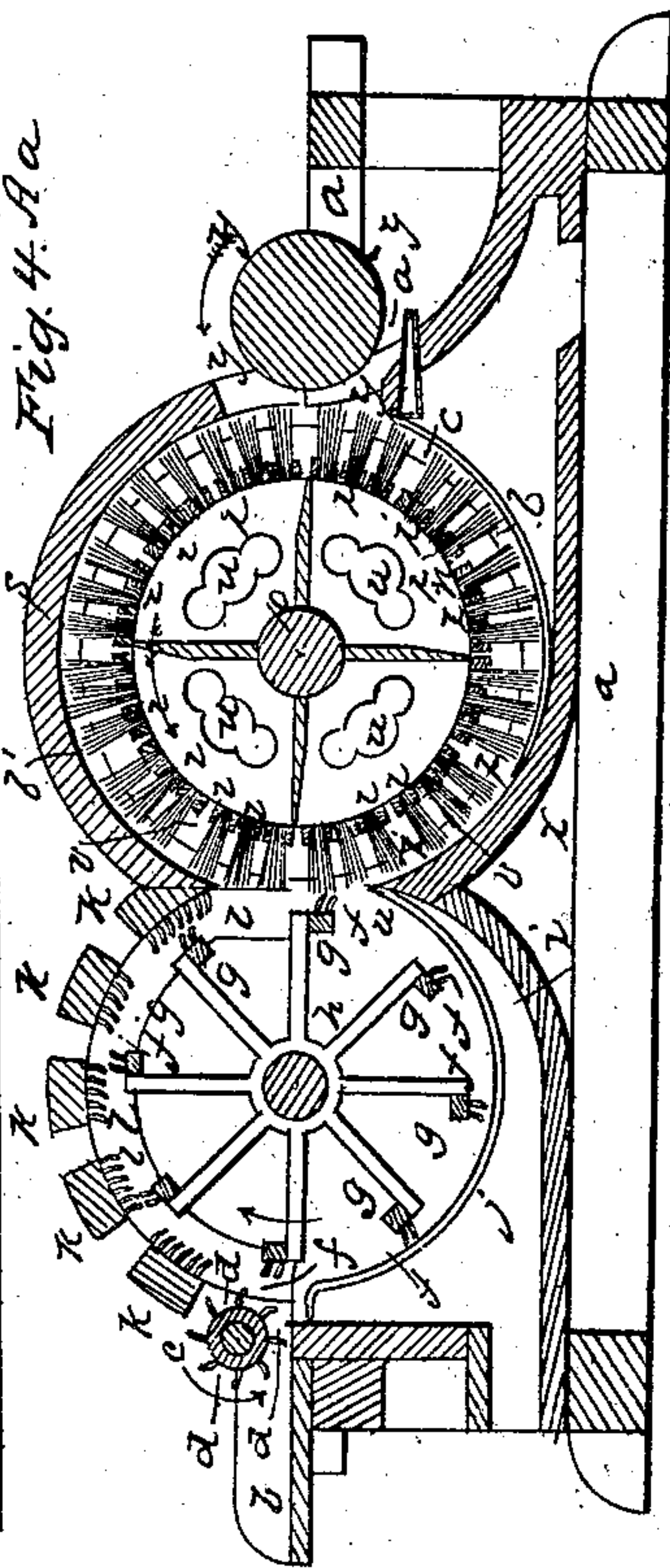


Fig 4. & A.



UNITED STATES PATENT OFFICE.

A. H. CARYL, OF SANDUSKY CITY, OHIO.

IMPROVEMENT IN PICKING AND CLEANING FLAX.

Specification forming part of Letters Patent No. **10,513**, dated February 14, 1854.

To all whom it may concern:

Be it known that I, A. H. CARYL, of Sandusky City, Erie county, Ohio, have invented a new and useful machine for picking, cleaning, and preparing flax, hemp, or tow to be used as stock for making paper and for other purposes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of the machine with the caps or covers removed; Fig. 2, a like plan with the picker, brush, and stripper removed; Fig. 3, a side elevation of the entire machine; Figs. 4 and 5, vertical sections taken at the lines A *a* and B *b* of Fig. 1.

The same letters indicate like parts in all the figures.

When the fibers of flax or hemp or of tow obtained therefrom are to be subjected to known processes to fit them for paper-stock—that is, for making pulp for the manufacture of paper—it is important to the success of these processes that the fibers be thoroughly separated from each other and from the woody and other foreign substances to which they are attached, or with which they are entangled.

Of all the machines heretofore made for the various purposes of picking and cleaning various kinds of fibers, I have not been able to find one of them suited to this purpose, although I have found many devices and parts which, under different combinations, have enabled me to produce a practically efficient machine for this special purpose.

The first part of my invention consists in combining together the following devices and means, viz: first, a rotating picker composed of teeth, hooked in the direction of the rotation, to take the fibers from the feeding apparatus, which teeth are arranged on a series of bars parallel, or nearly so, and connected with a shaft and separated from each other, leaving open spaces for the woody particles to fall or be blown through freely; and that the fibers on the teeth of one bar may be free from the adjoining bar, the said picker being placed over a grating; secondly, teeth hooked in the reverse direction and arranged in a series of bars above the picker, and separated from each other by open spaces for the free discharge of outward currents of air and for the

escape of impurities; thirdly, a current or currents of air to blow away the impurities and to act on the loose fibers hanging on the picker-teeth, and carry them up against the teeth on the bars above, that they may be properly acted upon; and, fourthly, a rotating brush of bristles, or their equivalents, placed near enough to each other to constitute a cylinder brush, to act upon the fibers where they are held by the teeth of the picker and draw them off over the edge of a concave without matting or tangling them.

In the accompanying drawings, *a* represents the frame, and *b* a feeding-table, on which the flax or hemp or tow to be picked and cleaned is put, and properly spread by an attendant. From this table it is regularly taken, and carried in by a feed-roller, *c*, armed with rows of teeth *d*, arranged at equal distances on its periphery. I prefer to make these teeth of iron wire, driven into the roller, and with their outer ends bent back in the reversed direction of the arrow. (See Fig. 4, which indicates the direction of rotation of the roller imparted by the belt *e*.) As the fibers are drawn in by the teeth on this feed-roller, they are presented to the action of the teeth of a picker of peculiar construction. The picker-teeth *f*, I prefer to make of wire, like those on the feed-roller, but bent in the reverse direction—that is, in the direction of the rotation, as indicated by the arrow. These teeth, instead of being on a cylinder, are arranged in rows on bars *g* on the ends of arms projecting from a shaft, *h*, receiving motion from some first mover. The spaces between the bars should be one foot, (more or less,) for the twofold purpose of permitting the free discharge of the woody and other foreign articles, and to leave room between the sets of teeth for the proper action on the fibers, which could not be the case if the sets of teeth were close together, or were arranged on the periphery of a cylinder. By reason of the direction of the hooked teeth on the feed-rollers and the picker, and the greater velocity of the latter, the fibers are caught by the teeth on the picker and drawn out, while they are partly held back by the feed-rollers, which, holding onto the mass, permits only such of the fibers to be drawn out as have actually been caught by the teeth of the cylinder.

Below the picker there is a solid concave, *i*, which extends from the feeding-table to the concave of a brush beyond the picker, and above this concave, and between it and the picker, there is a grating, *j*, of wires, arranged in the direction of the circumference. This grating permits the woody and other foreign particles to fall through, and retains such of the fibers as may drop from the picker-teeth, so that they may again be caught by the teeth and carried around to be discharged by the brush. Above the picker there is an open cap composed of bars *k*, with open spaces between them, and the inner surface of these bars is armed with teeth *l*, similar to the teeth on the picker, but reversed, and so placed in the circle as just to clear, although they may pass between each other. As the fibers are caught and carried around by the teeth on the picker, they are caught and combed out by the teeth *l* on the bars *k* above, which effectually liberates the woody and other foreign particles, which drop through the open-work of the picker, or are blown out through the spaces between the bars *k* of the cap by the action of a constant current of air coming from the brush in manner to be hereinafter described. The open-work of the picker and cap are not only necessary to the proper discharge of the impurities, but to an efficient action of the teeth on the fibers, as I have found by experiment that it is wholly impracticable to produce the required effect on the fibers either by a closed cylinder or cap, whether the teeth be arranged in rows or close together. In either case the teeth become clogged, and the impurities cannot be discharged.

Back of the picker there is a cylinder-brush, *m*—that is, a brush with the ends of the bristles equidistant from the axis of rotation. The bristles are set in lags or staves *n*, attached to the periphery of two heads on a shaft, *o*, mounted in suitable boxes in the frame, and receiving motion by a belt, *p*, from a pulley, *q*, on the picker-shaft, so as to rotate the brush in the direction of the arrow, but with greater velocity than the picker. On the outside of each head of the brush-cylinder there are radial vanes or wings *v r*, that project from the shaft and the casing *s*, which surrounds the brush, and the vanes or wings have apertures *t* at the ends surrounding the shaft, through which currents of air enter by the rotation of the vanes, and part of the air that enters passes to the inside of the brush-cylinder through apertures *u* in the heads, and thence forced out through slots or apertures *v*, made at given distances apart through the cylinder, the rows of bristles being separated to leave a free passage for the currents of air, which are thus forced out to act on

the fibers carried around on the teeth of the picker and blow out the impurities, while the brush, by moving faster than the picker, removes the fibers from the picker-teeth. The action, it will be seen, is peculiar, from the joint action of the picker, the currents of air, and the brush. The combing action and the currents of air keep the loose ends of the fibers back, so that the brush shall take them where they are hung on the teeth of the picker and draw them from the picker-teeth over the edge *w* of the concave *x*, below the brush. They are thus drawn away from the picker over the concave, and kept from tangling until they are stripped from the brush by rows of radial teeth *y* on the periphery of a discharge-roller, *z*, back of the brush, which is rotated in the direction of the arrow. This discharge or stripping action is aided by a blast of wind just below the discharge-roller through a long narrow aperture, *a'*. This blast of wind is effected by the vanes or wings *r r*, which are surrounded by a curb, *b'*, or casting at each end, with a spout, *c'*, leading from each into a long casing just below the discharge-roller leading to the long aperture *a'*, before described. As the stripping-roller rotates, the teeth first catch the fibers on the brush, strip them off, and then they are discharged into a suitable receptacle from the teeth of the stripping-roller by the blast of wind.

Although I have described the mode of producing the currents of air required, I do not wish to be understood as limiting myself thereto, as the required currents may be obtained by other and equivalent means; nor do I wish to limit myself to the special mode of construction of the other parts as long as the same ends are obtained by equivalent means in the combination herein specified.

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

The employment of a picker having teeth hooked in the direction of the rotation and arranged on separate bars, so connected with the shaft as to leave open spaces for the free passage of foreign substances, substantially as specified, when this is combined with hooked teeth in a series of bars above with open spaces between them, substantially as specified, with a current or currents of air, substantially as specified, to act on the fibers during the operation of combing, and with the rotating brush acting on the picker-teeth, substantially as specified, the whole of these being combined together in the manner and for the purpose substantially as specified.

A. H. CARYL.

Witnesses:

ALEX. PORTER BROWNE,
WM. H. BISHOP.