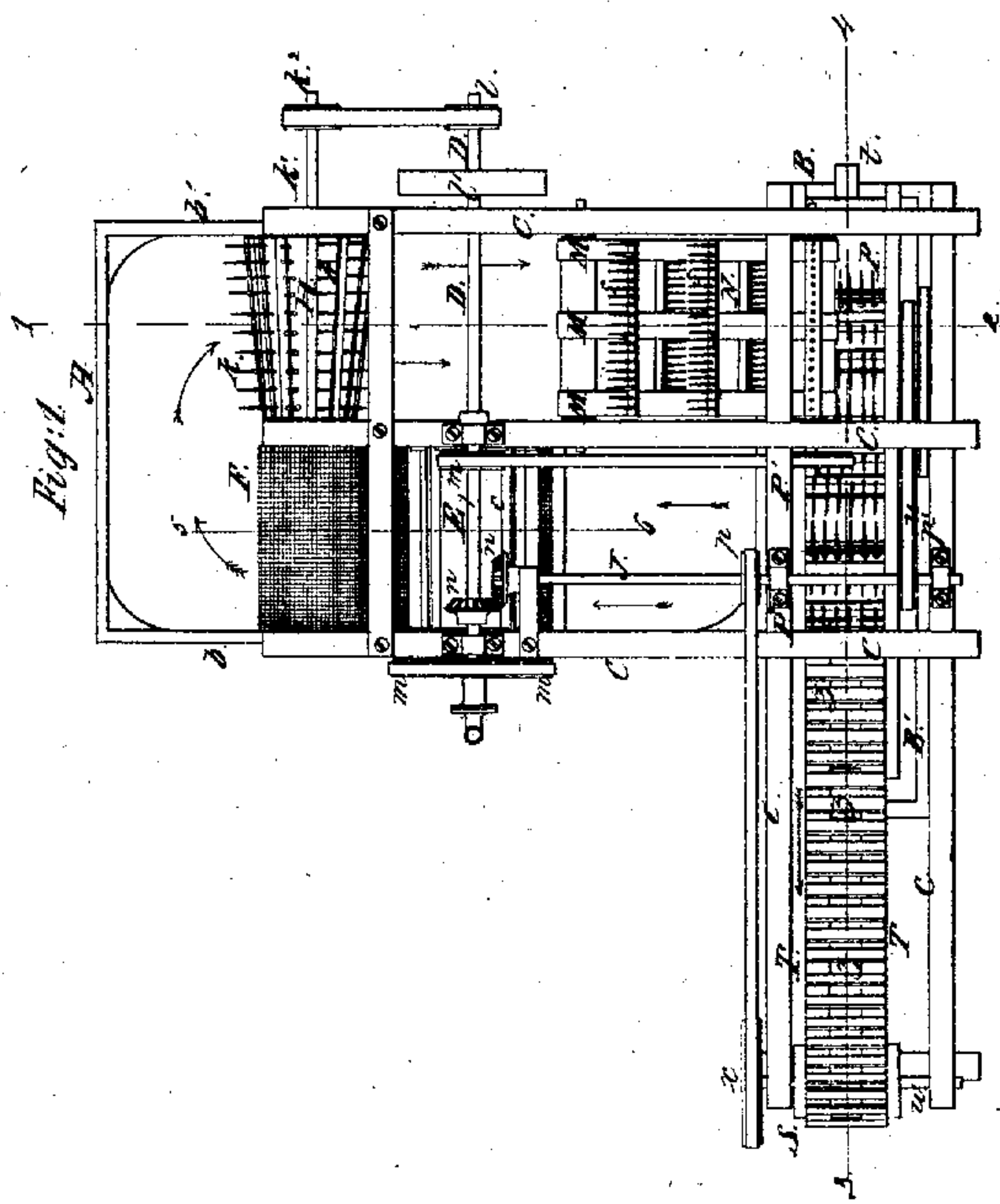
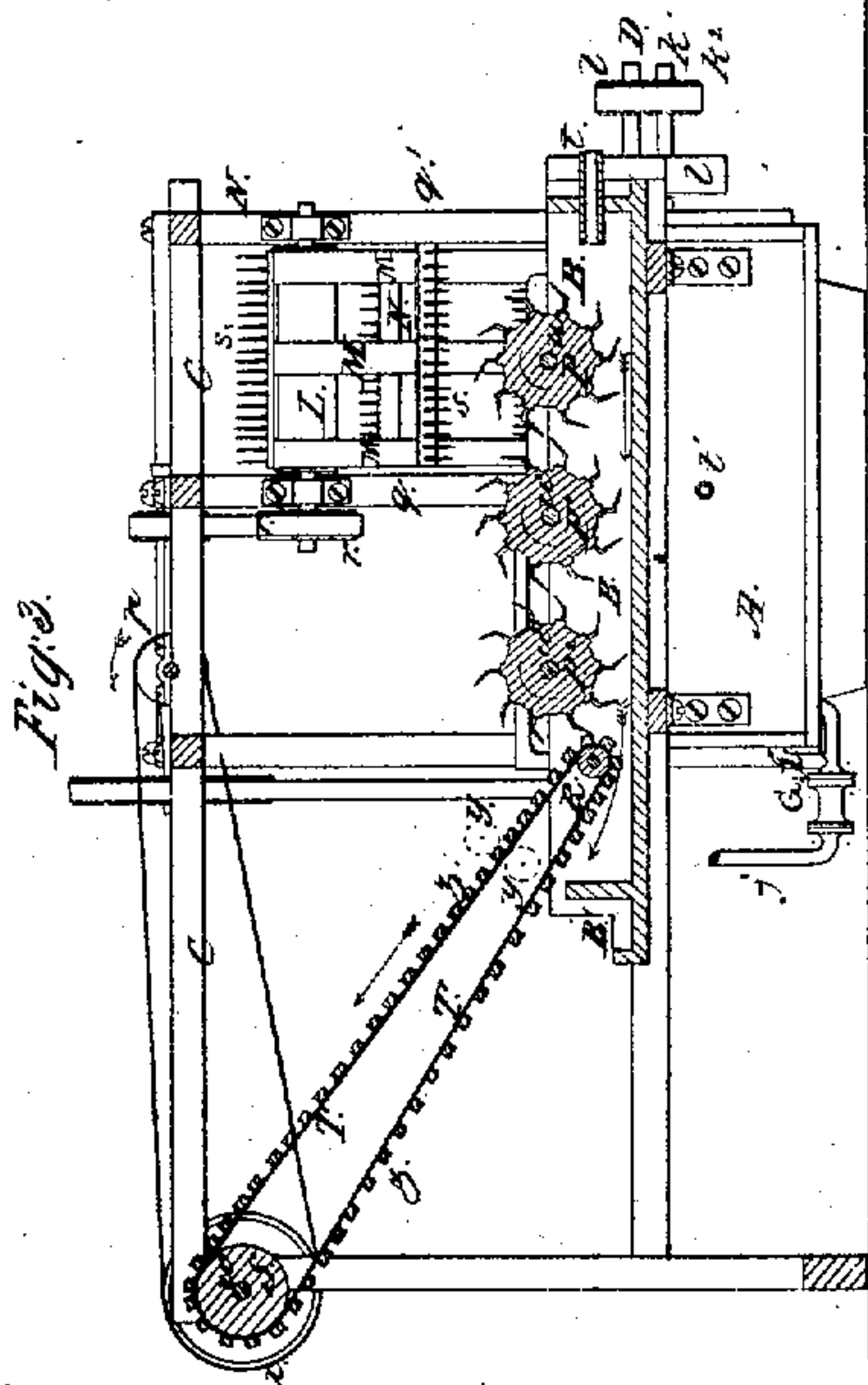
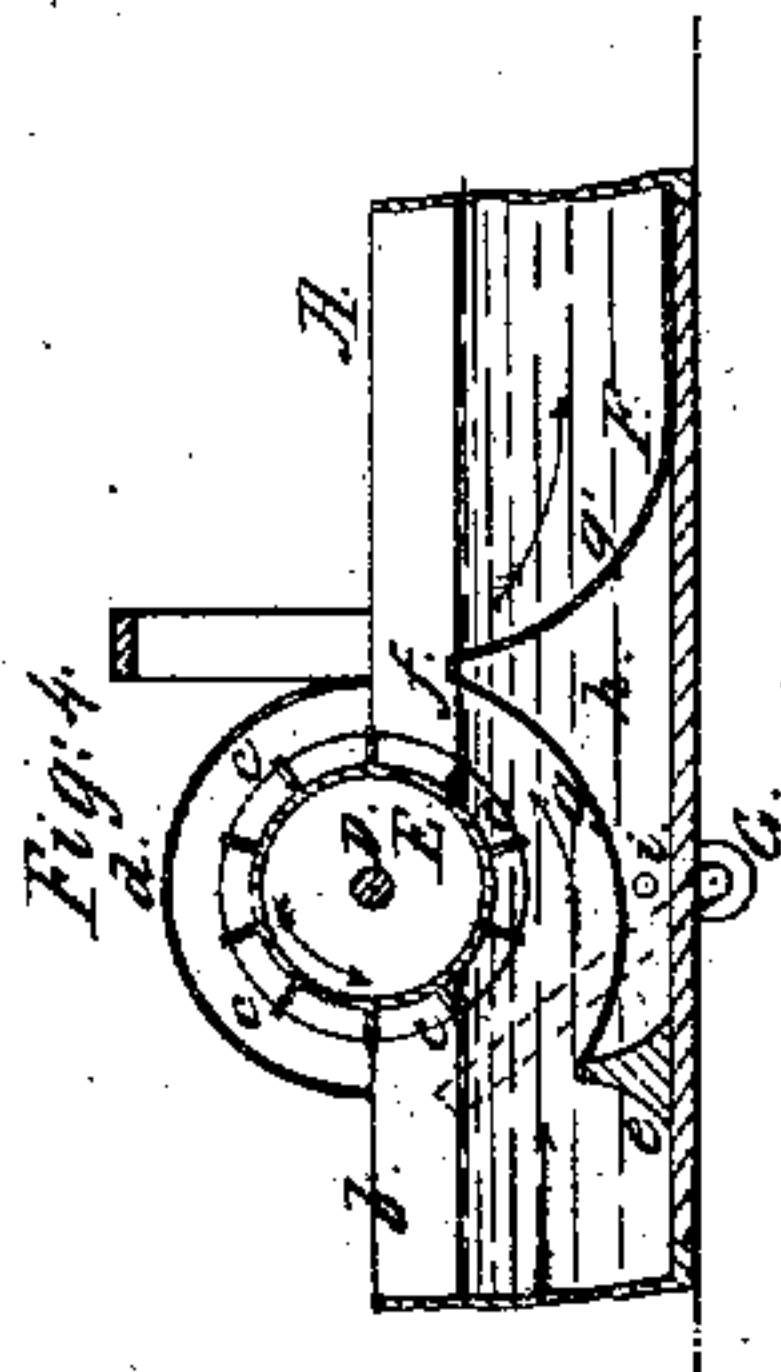
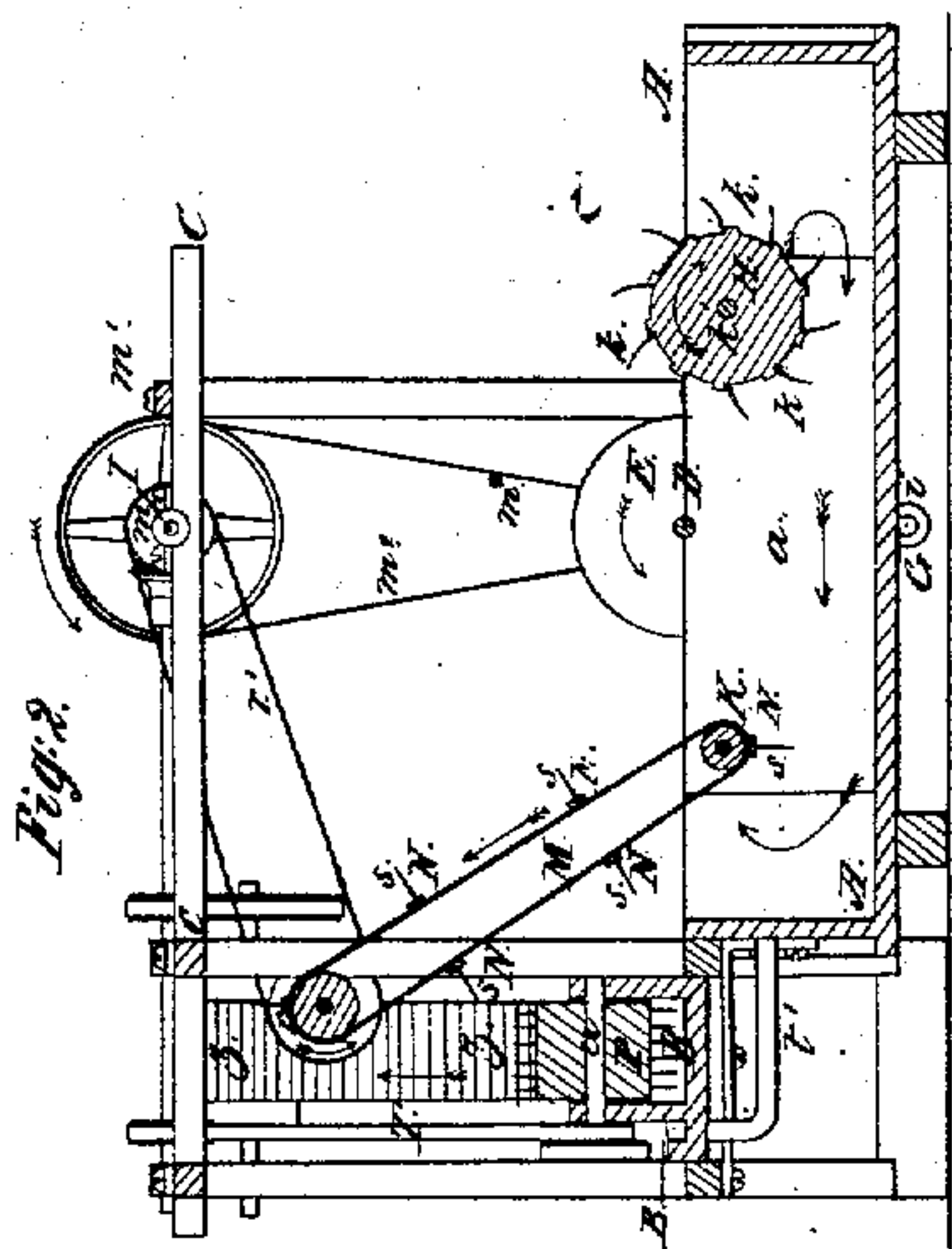


W. Adamson,
Wool-Washing Machine,

N^o 62,517.

Patented Mar 5, 1867.



Witnesses:
Mr. Albert Steel
Rumfordham

Inventor:
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By his Atty
H. Howson

United States Patent Office.

WILLIAM ADAMSON, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 62,517, dated March 5, 1867.

IMPROVED APPARATUS FOR WASHING FIBROUS SUBSTANCES.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM ADAMSON, of Philadelphia, Pennsylvania, have invented certain Apparatus for Washing Fibrous Substances; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention consists of certain apparatus, fully described hereafter, for thoroughly and rapidly washing, with a moderate supply of water, hair, wool, and other fibrous material.

In order to enable others familiar with apparatus of this class to make and use my invention, I will now proceed to describe its construction and operation. On reference to the accompanying drawing which forms a part of this specification—

Figure 1 is a plan view of my apparatus for washing hair, wool, and other fibrous substances.

Figure 2, a vertical section on the line 1-2, fig. 1.

Figure 3, a vertical section on the line 3-4, fig. 1; and

Figure 4, a vertical section of part of the apparatus on the line 5-6, fig. 1.

Similar letters refer to similar parts throughout the several views.

A is a trough or reservoir, separated by a partition, *a*, into two channels, communicating with each other at opposite ends of the trough, so that the water and other contents may be impelled in the courses pointed out by the arrows, the trough being in fact very similar to that of a rag-mill used in paper manufactories. Situated at right angles to the trough A, but elevated above the latter, is an oblong trough, B. Above these troughs, and connected to the same by suitable uprights, is the framework C for supporting the gearing, described hereafter. The driving-shaft D extends across the trough A, and turns in suitable bearings on the edges of the same, and on this shaft, between the side *b* and partition *a* of the trough A, is a wheel, E, provided with paddles, *e*, and above the wheel is a suitable cover, *d*. Beneath the wheel E is a perforated shield, F, one end of which is secured to a projection, *e*, on the bottom of the trough, the portion of the shield beneath the wheel being of the concave form shown in fig. 4, and rising to a point, *f*, from whence it descends with a curve, *g'*, to the bottom of the trough, to which it is secured. A pipe, *j*, communicates with the space *h* between the shield and bottom of the trough, the pipe having such a stuffing-box, G, fig. 3, that it can be adjusted to any desired angle, (see dotted lines, fig. 4.) Between the partition *a* and side *b'* of the trough A, is a cone-shaped roller, H, having curved teeth, *k*. This roller is secured to a shaft, *k'*, having a pulley, *k''*, a belt from which passes round a pulley, *l*, on the shaft D, which has also a driving-pulley, *l'*. In suitable bearings on the frame C turns a shaft, I, having two pulleys, *m* and *m'*, a belt, *m''*, from the latter pulley, passing round a pulley on the driving-shaft D. At right angles to the shaft I, and geared thereto by bevel-wheels *n n*, is a shaft, J, on which are two pulleys, *p* and *p'*. In the trough A, between its partition *a* and side *b'*, turns a roller, K, and a similar roller, L, turns in bearings in the uprights *g* of the frame C, the latter roller having a pulley, *r*, for receiving a belt from the pulley *m* of the shaft I. Passing round the two rollers K and L, are three or other suitable number of belts, M M M, which are connected together at intervals by cross-slats, N, each of which has a row of teeth, *s*, so that the belts with the cross-slats form an endless rake. In the trough B turn three or more rollers, P P' and P'', on the surface of each of which are a number of bent teeth, the rollers being caused to revolve simultaneously in the direction of their arrows by a suitable system of belting or gearing. Near one end of the trough B turns a roller, R, and a shaft, *w*, carrying a larger roller, S, turns in suitable bearings on the frame C, a pulley, *α*, on this shaft receiving a belt from the pulley *p*, on the shaft J. Two belts pass round the rollers R and S, and these belts are connected together by a number of slats, *z*. In some cases I propose to use two rollers *y y*, situated in respect to the endless band of slats as shown by red lines fig. 3, for a purpose described hereafter.

Operation.

A supply of clean water is introduced through the pipe *t*, into the oblong trough B, where the last washing alluded to hereafter is conducted. The water passes over the rear end of this trough into a receptacle, B', at the end of the same, and passes thence through the pipe *t'*, (fig. 2,) into the trough A at the rear end of the same. As the paddle-wheel E revolves in the direction of the arrow, there must be a constant flow of water in

the direction of the arrows, through the two channels of the trough A, precisely as in the rag-mill used in paper-works. The hair, wool, or other fibrous material to be washed is thrown into the trough at the rear of the paddle-wheel E, between which and the perforated shield F, the fibres are carried. By the combined action of the wheel and shield the masses of fibres become broken up and distributed, and in this condition are carried with the stream of water towards the conical spiked roller H, which again agitates and separates the fibres. It may be remarked here that should the toothed roller H be cylindrical instead of conical, the fibres would accumulate at one end of it, but by making the roller of the tapering form represented, the fibres in contact with it are equally distributed throughout its length, and after leaving the roller are equally distributed throughout the width of the channel along which they must take their course—an important feature, as will be readily understood hereafter. The fibres which have thus been agitated and separated by the action of the roller H, have received their preliminary washing, and are carried in a well-distributed mass towards the endless rake composed of the belts M and their spiked slats, by which rake the fibres are carried upwards and thrown over into the trough B, near to the point where the fresh water enters the same. Here the fibres receive their last washing in clean water by the action of the toothed rollers P P', and P'', which also propel the fibres along the trough towards the endless band T, of slats, up which the fibres are carried, and from which they fall into a proper receptacle or on to any appliances for conveying the wet fibres to an adjacent drying apparatus. When the rollers *yy*, (fig. 3,) are used, they serve to compress from the fibres the superfluous water, which falls into the trough B. By using two washing troughs, and by causing the supply of water to pass first into the trough where the last and cleanest washing is conducted, and thence into the trough where the first washing takes place, as thorough a cleansing of the fibrous material is effected as if two separate machines with two supplies; or, in other words, double the quantity of water were used. It is important that the water should be carried off at a point near the paddle-wheel E, for it is at this point where the greatest amount of dirt is discharged from the fibres. Should the water be carried off from the space beneath the perforated shield F, directly through the bottom of the trough, such a partial vacuum would be caused beneath the shield that the fibres would collect above it, choke the perforations, and prevent the free escape of the dirty water. The discharge pipe *j* may be so adjusted that its upper end is nearly as high as the desired level of water in the trough, so that while it serves to carry off the dirty water from beneath the shield, no such vacuum can be caused there as to produce the above-mentioned objectionable results. It will be evident that the system of belts, pulleys, and other driving appliances may be changed, and many different parts of the apparatus modified without departing from the main features of my invention.

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

1. The use, for washing fibrous material, of two troughs and one supply of water, which first passes into and through the trough where the last washing is conducted, and thence into the trough where the first washing takes place, all substantially as set forth for the purpose specified.
2. The adjustable pipe *j*, arranged for the withdrawal of the dirty water from the trough beneath the perforated shield F, substantially as described.
3. The trough B, with its rollers P.
4. The combination of the said rollers P with the endless band T of slats.
5. The endless band T, in combination with the rollers *yy*.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WM. ADAMSON.

Witnesses :

H. HOWSON,
C. B. PRICE.