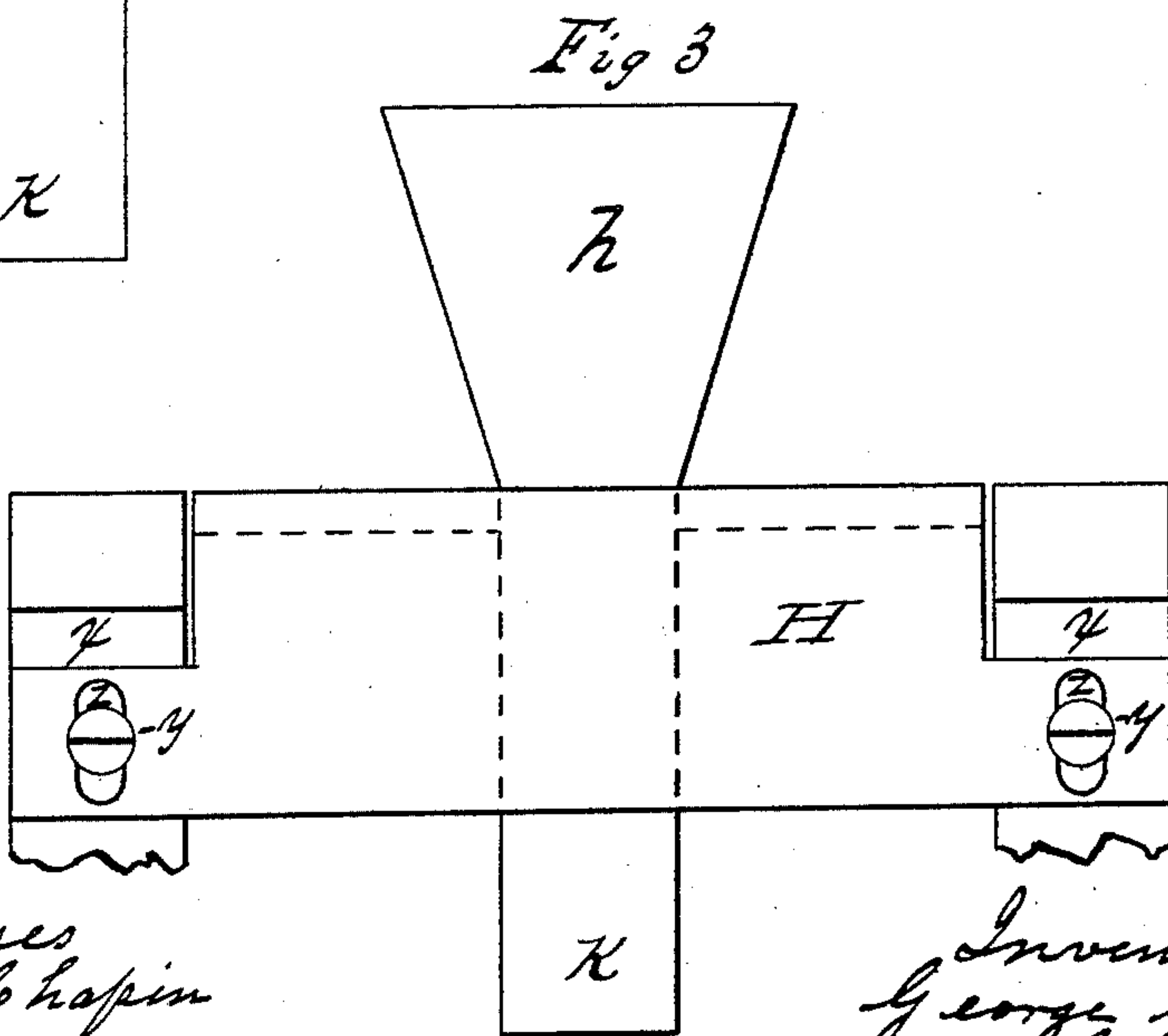
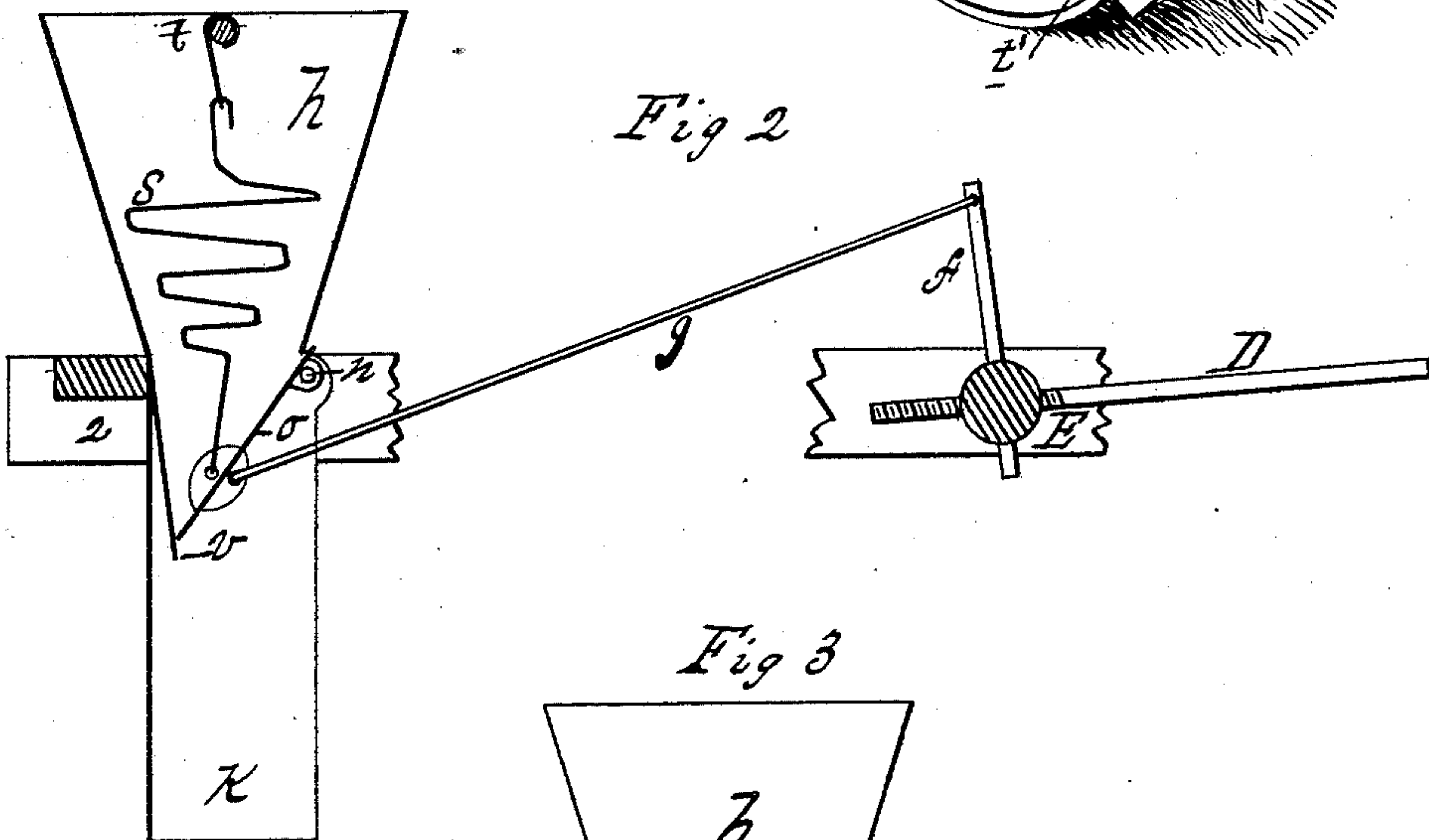
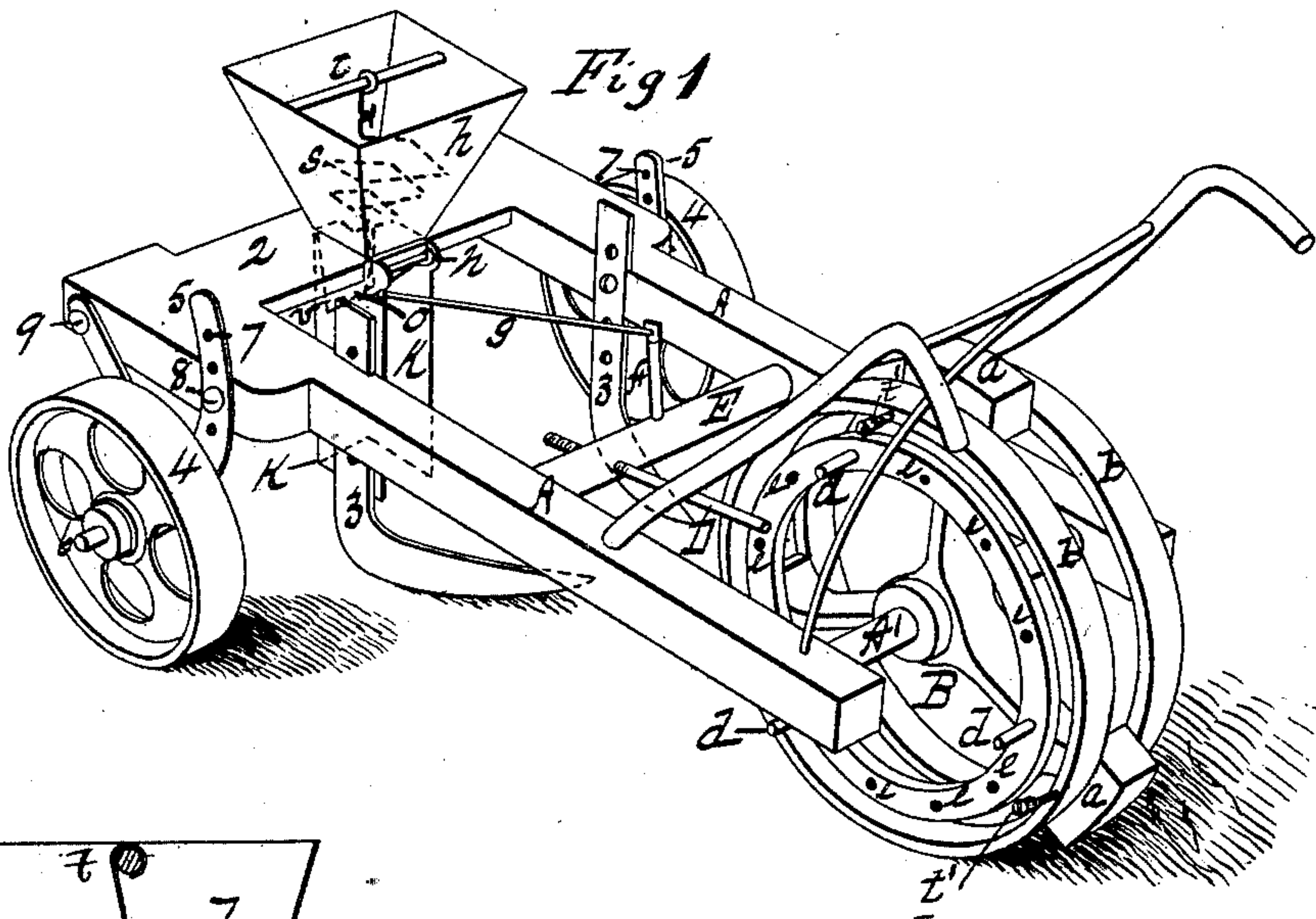


G. H. PEASE.  
 Combined Fertilizer-Dropper and Hill-Marker.  
 No. 223,065.      Patented Dec. 30, 1879.



Witnesses  
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# UNITED STATES PATENT OFFICE.

GEORGE H. PEASE, OF WESTFIELD, MASSACHUSETTS.

## IMPROVEMENT IN COMBINED FERTILIZER-DROPPER AND HILL-MARKER.

Specification forming part of Letters Patent No. **223,065**, dated December 30, 1879; application filed August 22, 1878.

*To all whom it may concern:*

Be it known that I, GEORGE H. PEASE, of Westfield, county of Hampden, and State of Massachusetts, have invented new and useful Improvements in a Combined Fertilizer-Dropper and Hill-Marker, which improvements are fully set forth in the annexed specification and in the accompanying drawings.

The object of my invention is to provide an improved machine for preparing a furrow, dropping a regulated quantity of fertilizer at regular intervals therein, covering the fertilizer, and following the before-mentioned operations by a hill-marker, which presses down the earth directly over the spot where the fertilizer was dropped, thus indicating where the hills are to be.

Referring to the drawings, Figure 1 is a perspective view of my machine. Fig. 2 shows a vertical section of the hopper and hopper-leg and the valve-operating devices. Fig. 3 illustrates a modified construction of that part of the frame of the machine to which the hopper is attached.

Like letters refer to like parts in all the figures.

The main operative elements of my machine are the actuating-wheel B, carrying on its periphery spotting-projections *a*, which support the rear part of the machine, and is arranged to revolve on a shaft, *A'*, running across frame A; pins *d* in the side of wheel B; furrow-covering arms 3 3, adjustable vertically on frame A; a lever, D, fixed in a rock-shaft, E; a vertical arm, *f*, also fixed in said rock-shaft; a connecting-rod, *g*, between said arm *f* and a hopper-valve, *o*, hung at a point, *n*, at the base of hopper-bowl *h*; a hopper-bowl, *h*, and hollow leg K; a coiled spring, *s*, acting as a retracting-spring to valve *o*, and to agitate the fertilizer in hopper *h*; a flat downwardly-projecting spring, *v*, against which the swinging end of valve *o* closes, and pivoted forward-wheel axle-supports 5 5, of V shape, pivoted by one arm to frame A, and adjustable thereon by the other arm.

Other parts of the machine are designated as follows, viz: A is the frame. *b* are the rims of wheel B. *e* are pin-holes in the side of wheel B. *n* is a joint-pin, on which hopper-valve *o* is pivoted. *t* is a bar across the hop-

per *h*, to which the top end of coiled spring *s* is attached. 2 is a cross-bar of the frame A, to which the hopper is attached. 4 4 are the forward wheels of the machine. 6 6 are the axles to wheels 4 4. H, Fig. 3, is an adjustable cross-bar, to which the hopper may be attached in a modified construction of the machine. *xx* are downwardly-projecting parts of frame A, against which cross-bar H may be secured by bolts *y y* through slots *z z* in said cross-bar.

In preparing land for planting it is usually made level and soft, and it is desirable that the plants should be set at regular intervals in the rows, so as to economize space. The most exact uniformity in the distance of one hill from another is obtained by the operation of my machine, in which spotting-projections *a* protrude from the periphery of wheel B.

The most convenient way to propel my machine is to attach a horse to it by a pair of set off shafts, which will permit him to travel between the rows of hills, and the machine may be guided or not by the handles shown on frame A.

The operation of the machine is as follows, viz: First, it is ascertained that the pins *d* in the side of wheel B are in the right position to actuate the fertilizer-dropping devices at such places in the rows as the projections *a* on the periphery of wheel B will form indentations upon, and, if not, said pins may be inserted into such of holes *e* as will cause the operation of lever D at the proper time. This change of pins *d* is provided for in the event of a possible change of position of the spotting-projections *a* on wheel B, to mark hills nearer together or farther apart. This may be effected by jamming the projections of the adjustment in position by means of set screws *t'*. The said positions of pins *d* having been found to be correct, it should next be ascertained if the end of lever D projects beyond the pins *d* as they strike it only sufficiently far to cause it to hold the hopper-valve *o* open long enough to drop the requisite quantity of fertilizer.

Lever D may be properly adjusted relative to pin *d*, to drop a greater or less quantity of fertilizer in each hill, by screwing it into or



out of the rock-shaft E, so that a pin shall strike it at a greater or less distance from its end. The next adjustment should be the height of the lower end of hopper-leg K. This leg plows the furrow down to the requisite depth at which the fertilizer is to be deposited, and the depth of the furrow it makes is fixed by raising or lowering the forward end of frame A, which is done by changing the position of the swinging arms of the V-shaped axle-supports 5 5 by securing them to the frame through such of holes 7 therein as will give the frame the right elevation for the purpose named above, the said axle-supports being pivoted at the extremity of one arm at 9 to frame A.

The final adjustment required is to drop down the furrow-covering arms 3 3, attached by bolts to the inner side of frame A, sufficiently low to make them follow and cover the furrow opened by the hopper-leg K.

The before-mentioned adjustments having been made, the machine is placed in position and hopper *h* is filled with fertilizer.

Upon starting the machine over the ground the furrow will be opened by leg K, wheel B will revolve, carrying pins *d* against lever D, and the latter, through rock-shaft E, vertical arm *f*, and connecting-rod *g*, will, as each pin strikes it, open hopper-valve *o* and drop the fertilizer. Immediately after, the furrow-covering arms 3 3 will replace the earth in the furrow, covering the fertilizer, and wheel B follows with its spotting-projections *a*, which strike the furrow just where the fertilizer has been dropped.

The proper function of the flat downwardly-projecting spring *v*, placed inside of leg K, just under the outlet to hopper *h*, is to agitate or loosen up the charges of fertilizer that lie between it and valve *o*, ready to drop when next the latter opens.

I have found that if the valve *o* is permitted to strike, in closing, against the unyielding side of leg K, the fertilizer dropping down into the cavity so formed was inclined to rest there when the valve reopened; but by hanging said spring as shown, and making it sufficiently yielding, so that when valve *o* strikes it in closing the aperture, it will cause a certain degree of flexure in said spring, and a reverse movement of it when valve *o* opens, said movements of the spring tending to keep the fertilizer at that point in a proper condition of looseness to drop down freely.

I show in this application a wheel, B, in which the spotting-projections *a* around its

periphery are integral parts of the wheel itself, and hence a wheel so made will always mark hills just the same distance apart. This wheel, however, need not of necessity be constructed in this way, but it may be made so that the spotting-projections would be secured to the wheel in such a manner as would permit of changing their positions thereon so as to vary the distance between the hills according to the service demanded of the machine, and in such a case pins *d* could be changed to such of the holes *e*, pierced around the side of wheel B, as would properly time the dropping of the fertilizer to correspond with the changed positions of the spotting-projections *a*.

I show herein a manner of adjusting, by devices equivalent to those shown in the other figures, the height of the lower end of hopper-leg K, so it will plow a furrow of the requisite depth. These equivalent devices are shown in Fig. 3—a modified construction of a portion of the forward end of frame A—and they afford every needed facility for the vertical adjustment of the hopper and its leg without in the least departing from the principle in the machine, which simply requires some proper means for said adjustment. In said Fig. 3, *xx* are downwardly-projecting parts of frame A, against which cross-bar H, to which hopper *h* may be attached, is secured by bolts *y y* through slots *z z* in the cross-bar.

It will be seen that by loosening bolts *y y*, cross-bar H and the hopper entire, with leg K, may be moved anywhere, vertically, within the limits of the length of slots *z z*, and so provide for the desired depth of furrow, while the forward wheels would be arranged to run at an unvarying distance from the frame.

What I claim as my invention is—

1. The combination, with the hopper, valve, and rock-shaft for operating the valve, of the wheel B, provided with movable projections *a*, extending from the periphery, and pins *b*, movable circumferentially, as and for the purpose set forth.

2. The combination, with the hopper *h*, of the inclined spring-valve *o*, operating appliances, and spring-bearing *v* for the said valve, for the purpose set forth.

3. The combination of the hopper *h*, its spring *v*, valve *o*, and the rock-shaft E, arms *f* D, connecting-rod *g*, and wheel B, its pins and projections, as set forth.

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Witnesses:

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