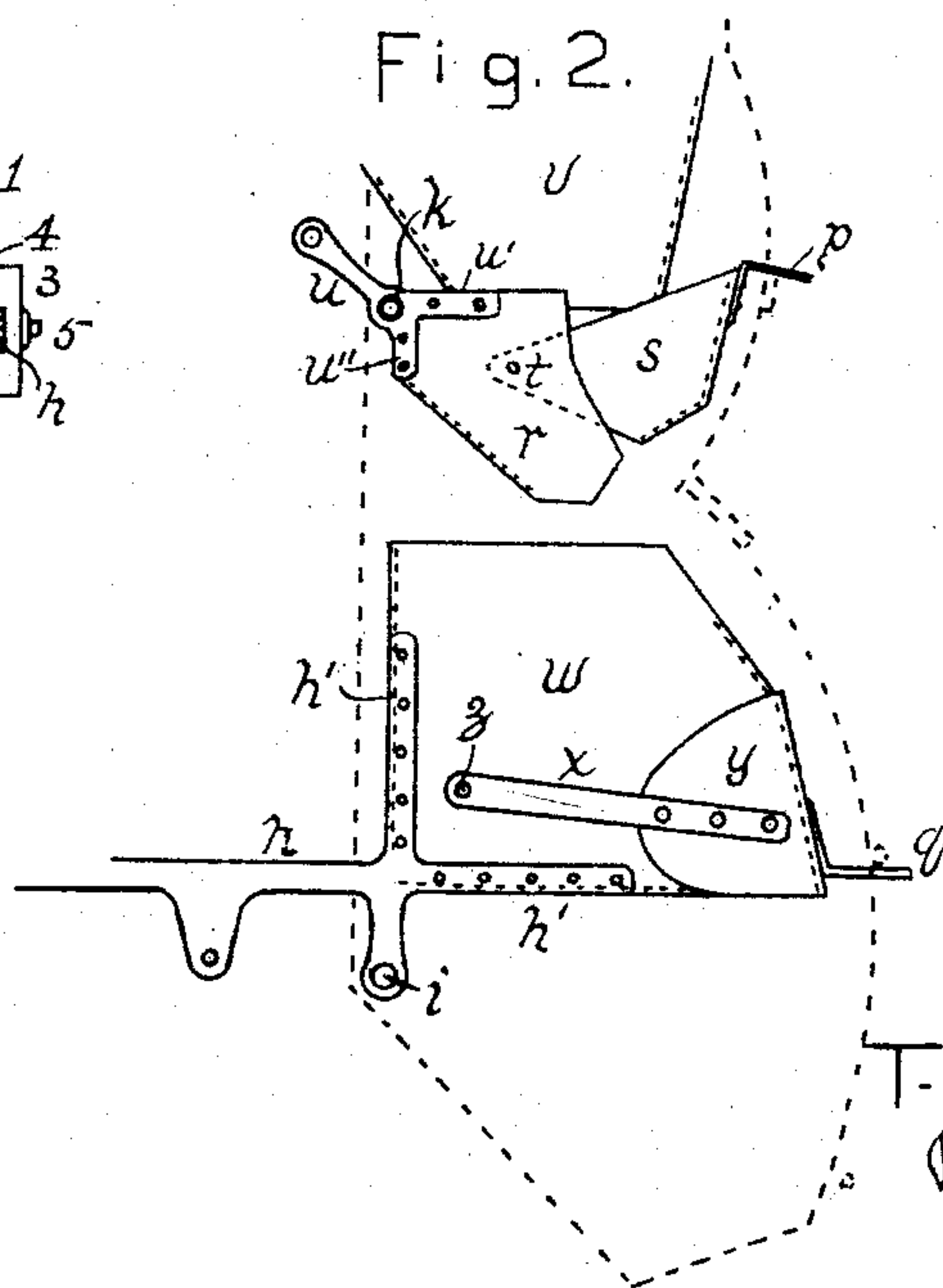
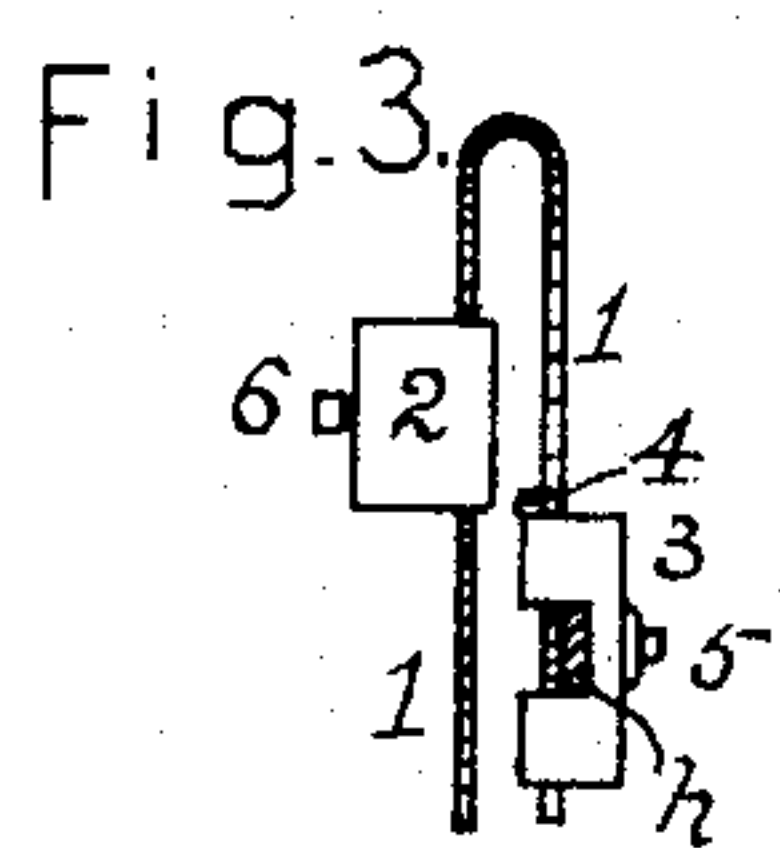
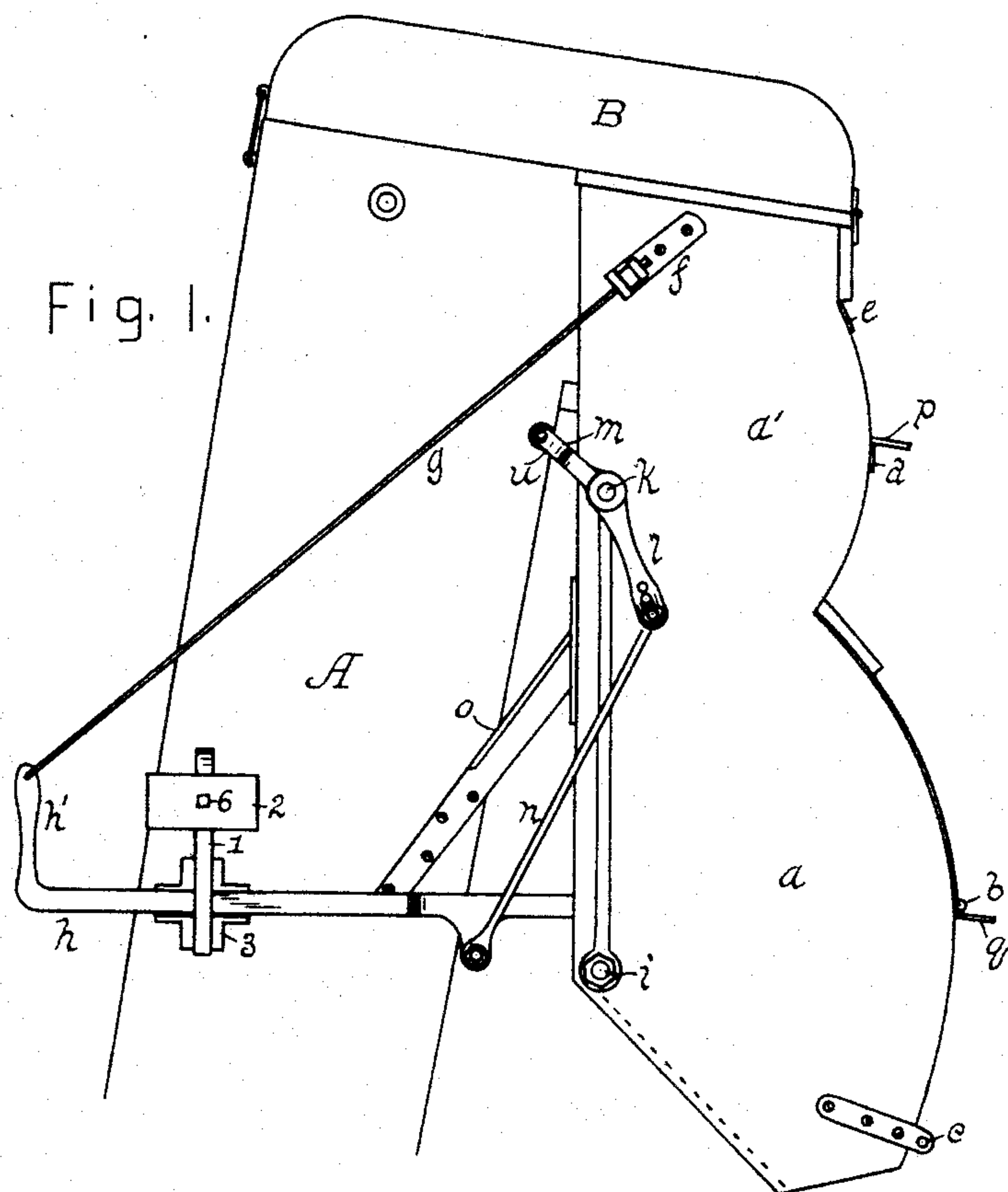


(No Model.)

T. J. UNDERWOOD.
AUTOMATIC GRAIN WEIGHER.

No. 411,763.

Patented Sept. 24, 1889.



ATTEST

Wm. Graham
W. W. Graham

INVENTOR

T. J. UNDERWOOD
By *C. P. Graham*
his attorney

UNITED STATES PATENT OFFICE.

THOMAS J. UNDERWOOD, OF DECATUR, ILLINOIS.

AUTOMATIC GRAIN-WEIGHER.

SPECIFICATION forming part of Letters Patent No. 411,763, dated September 24, 1889.

Application filed October 8, 1888. Serial No. 287,568. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. UNDERWOOD, a resident of the city of Decatur, county of Macon, and State of Illinois, have invented certain new and useful Improvements in Automatic Grain-Weighers, of which the following is a specification.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation of my weigher. Fig. 2 is a side elevation of the weighing-bucket and cut-off bucket. Fig. 3 represents the weight on the scale-beam, the latter appearing in cross-section.

A represents the elevator that raises grain to the weigher.

B is a removable cap for the elevator and the weigher.

a is the weighing-bucket compartment.

a' is the cut-off bucket compartment.

b and *c* are stops that limit the swing of the door of the weighing-bucket.

d and *e* are stops that limit the swing of the door of the cut-off bucket.

f is a bracket that acts through rod *g* as a stop for scale-beam *h*.

h' is an upwardly-projecting extension of the scale-beam, which provides a point of connection for rod *g*.

i is the pivot of the weighing-bucket.

k is the pivot of the cut-off bucket.

l is a lever that fulcrums on the pivot of the cut-off bucket and connects through rod *n* with scale-beam *h*. The lever has an extension *m*, that projects beyond the fulcrum and connects with the arm *u* of the cut-off bucket. (Seen clearly in Fig. 2.)

o is one of a pair of brackets, that secures the weigher to the elevator.

p is a pin on the door of the cut-off bucket, that strikes against stops *d* and *e* to limit the swing of the door.

q is a pin that performs a similar function for the door of the weighing-bucket by striking projections *b* and *c*.

r is the cut-off bucket, held by straps *u' u''*, that pivot on *k* and connect with extension *u*.

s is the door of the cut-off bucket, pivoted to said bucket at *t*.

v is a chute that conveys grain to the cut-off bucket.

w is the weighing-bucket, supported by

straps *h'*, that are formed of continuations of the scale-beam.

y is the door of the weighing-bucket, which is carried by straps *x* and pivoted through said straps at point *z* on the bucket.

1 is a recurved bar that carries weight 2. The weight has vertical adjustment on the bar, and is secured in any desired position of adjustment by set-screw 6.

The block 3 is slotted to receive the scale-beam, and has a dovetail groove or its equivalent at right angles to the beam to receive an end of bar 1. The bar has a stop 4, that limits its downward motion in the block, and it passes outside the scale-beam and retains the same. When the block is adjusted in its proper position on the scale-beam, it is secured from disadjustment by set-screw 5. The opposite side of the device is practically a duplicate of the side shown, and the parts of the buckets, &c., that extend from side to side are indicated by broken lines.

A register to indicate the number of discharges is to be connected with the weigher in some suitable and effective manner.

As shown in the drawings, the weighing-bucket is in condition to receive grain. When a quantity sufficient to tip the scale-beam has accumulated, the outer end of the weighing-bucket swings downward and the cut-off bucket is swung upward by the action of the scale-beam imparted through rod *n*, lever *l m*, and arm *u*. As the motion is continued the bucket of the cut-off is closed, and immediately after the door of the weighing-bucket is opened by pin *q* striking against stop *c*. The weighing-bucket swings from its fulcrum as it descends, thus increasing its momentum, and the momentum is further accelerated by the swing of the weight, which, from its elevated position, passes toward or over the fulcrum with great rapidity. When the weighing-bucket is in condition to discharge its contents, the scale-beam so nearly approaches the vertical that the weight will pass the fulcrum and tend to hold all the parts in their newly-acquired positions. This tendency is soon overcome by the accumulation of grain in the cut-off bucket and the shown position is reassumed.

All the connections between the buckets are positive and permanent. The rod *n* is

bolted to the scale-beam and to lever l . Extension m is a part of lever l , and arm u is secured to extension m by bolts or other unyielding fastenings.

5 The bucket r inclines the grain toward the outer end of the weighing-bucket with the effect that when there is a heavy flow of grain it will be carried to the bucket at a point farther from the pivot, and the beam will tip
10 with a less quantity of grain than when the flow is lighter. This expedient is necessitated by the fact that grain falling from the cut-off when the same has been closed cannot be accounted for, and that the quantity
15 so falling must vary with the flow of grain. So when the flow is light the grain falls nearly vertically, the weighing is very nearly accurate, and there is a very small quantity of grain in the air between the cut-off and weighing-bucket to affect the result. On the other
20 hand, when the flow is heavy the grain falls obliquely toward the outer end of the weighing-bucket, the beam trips with a light load, and the result is equalized by the greater
25 quantity of grain in the air below the cut-off at the instant the beam trips. The weight is adjustable on its bar in order that the time of the retention of the weighing-bucket in its discharging position may be regulated. It is
30 desirable that the position should be maintained until the discharge is completely effected, and no longer. Should the position

be too long maintained, the weight must be lowered; if not long enough, it must be raised.

I claim—

1. In automatic grain-scales, in combination, weighing-bucket w , rigidly secured to the scale-beam and having door y , pivoted at z , cut-off bucket r , having door s , pivoted at t , rod n , connecting the scale-beam with the cut-off bucket, projections p and q on the cut-off bucket and weighing-bucket, respectively, and stops c and d , to open the doors by limiting the downward swing of the projections, as and for the purpose set forth. 35 40

2. In automatic grain-scales, in combination, weighing-bucket w , secured to the scale-beam and having door y , cut-off bucket r , having door s and arm u , lever l m , fulcrumed on the pivot of the cut-off bucket and secured at one end to arm u , and rod n , connecting the scale-beam with lever l m , as and for the purpose set forth. 45 50

3. In combination, a weighing-bucket secured to a scale-beam, and a vertical bar adjustable on the beam and carrying a vertically-adjustable weight, as and for the purpose set forth. 55

In testimony whereof I sign my name in the presence of two subscribing witnesses.

THOMAS J. UNDERWOOD.

Attest:

I. D. WALKER,
L. P. GRAHAM.