

U. BILLINGS.  
HORSESHOE-MACHINE.

No. 170,931.

Patented Dec. 14, 1875.

Fig. 1.

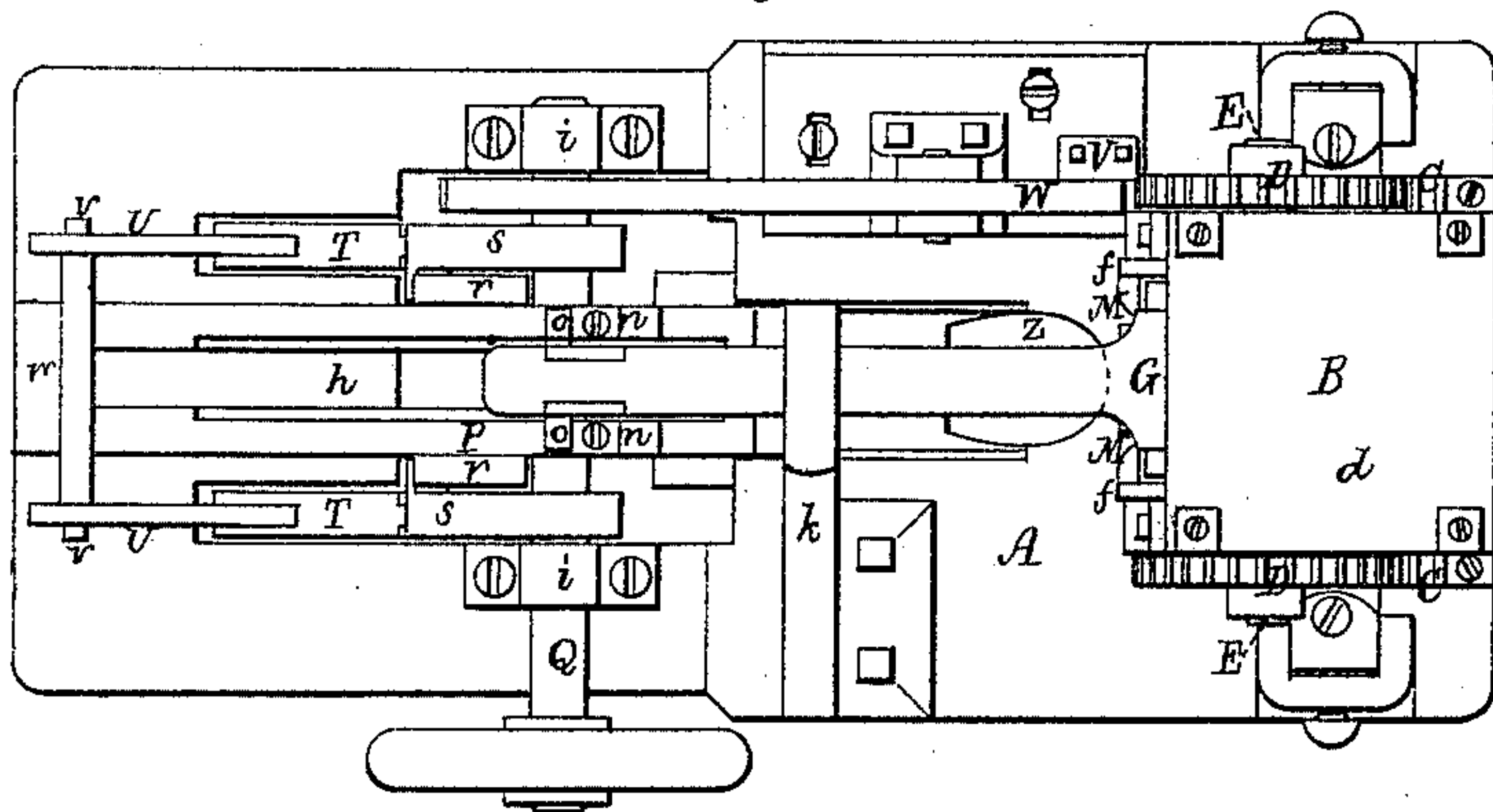


Fig. 2.

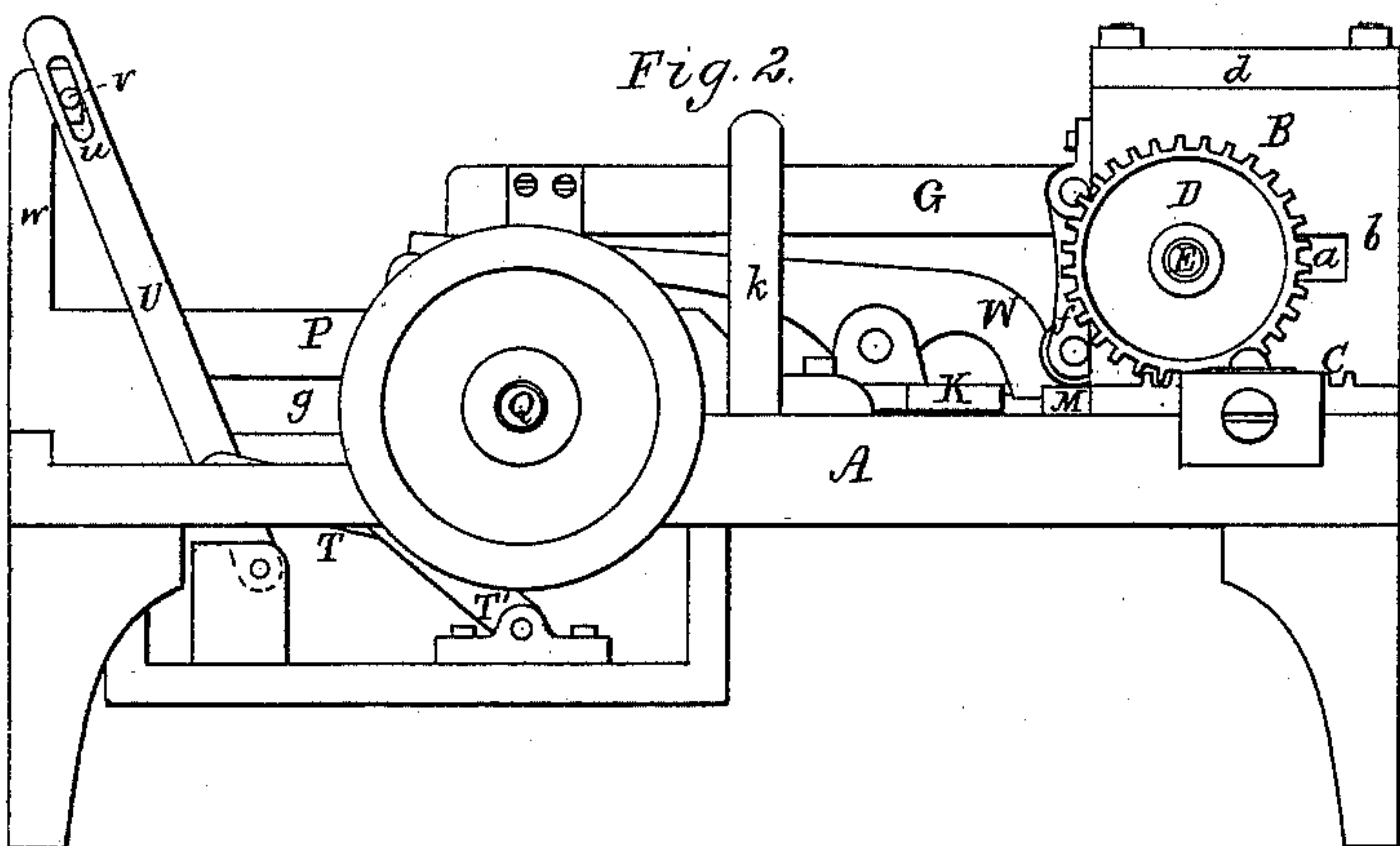


Fig. 3.

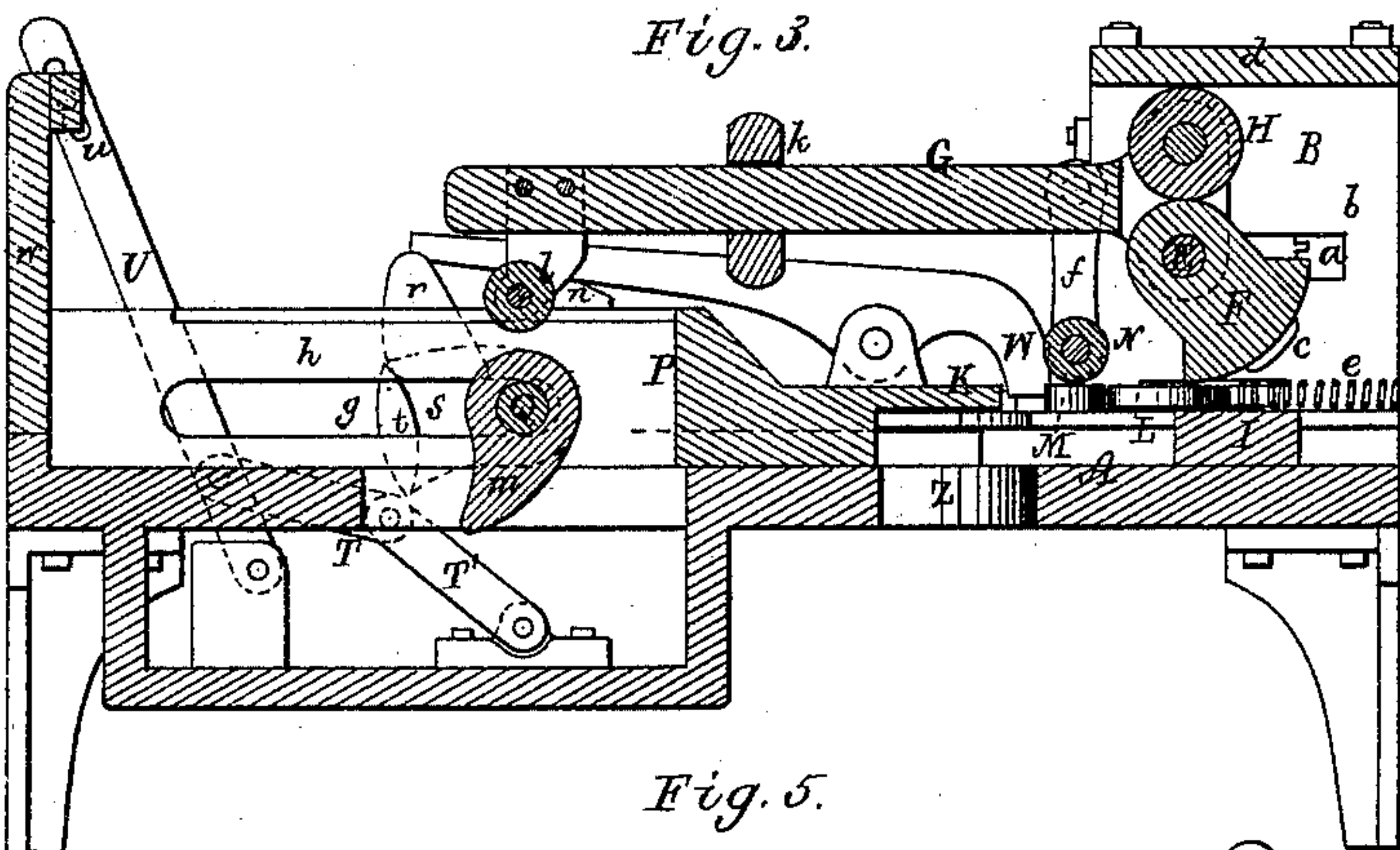


Fig. 5.

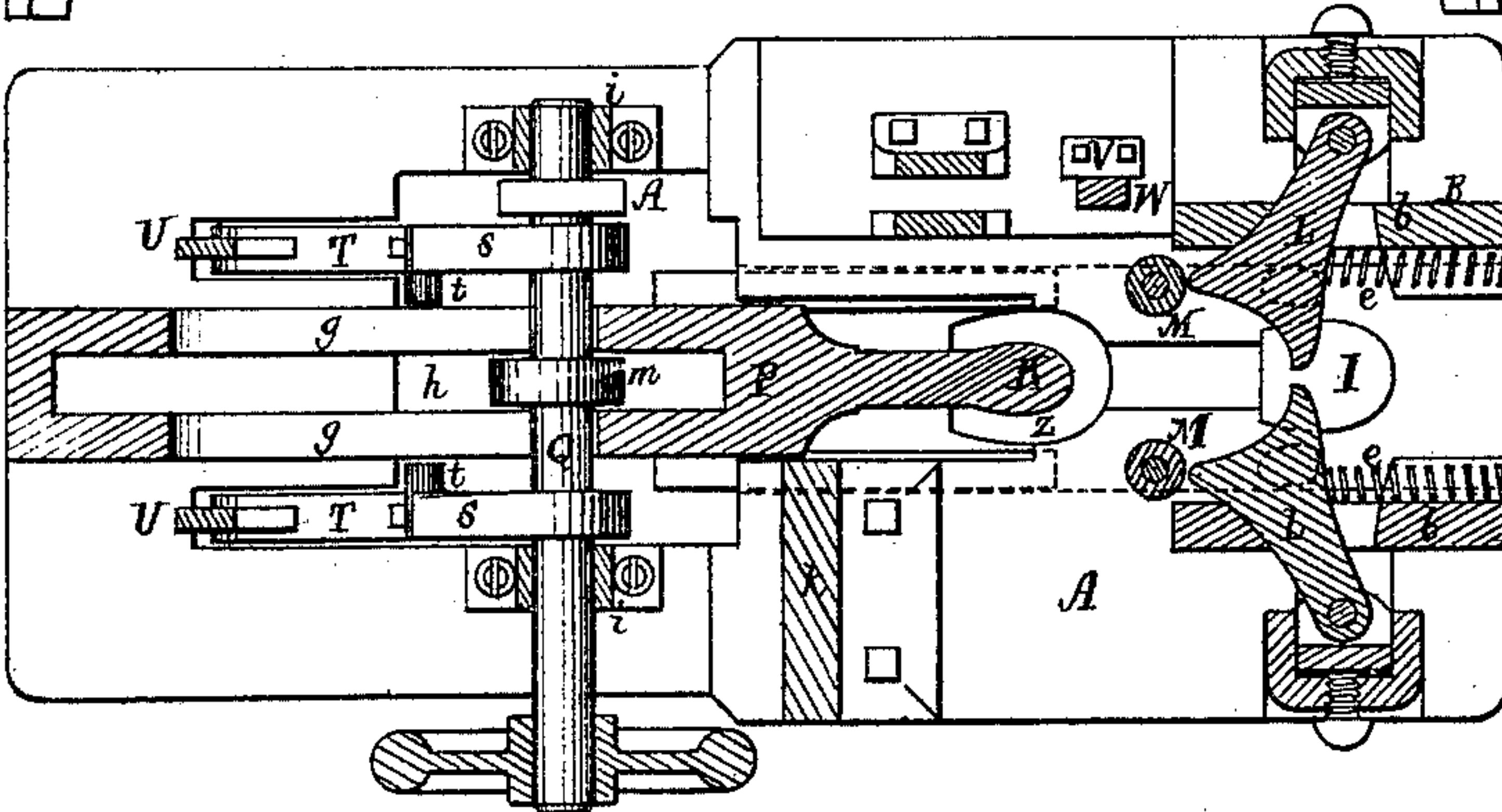


Fig. 6.

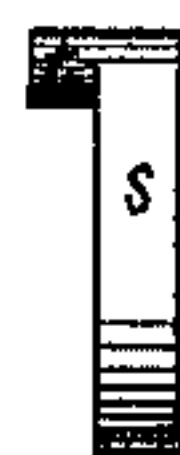


Fig. 7.

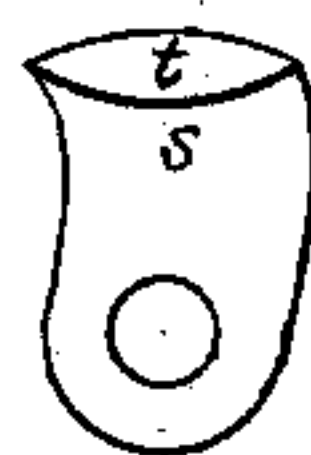
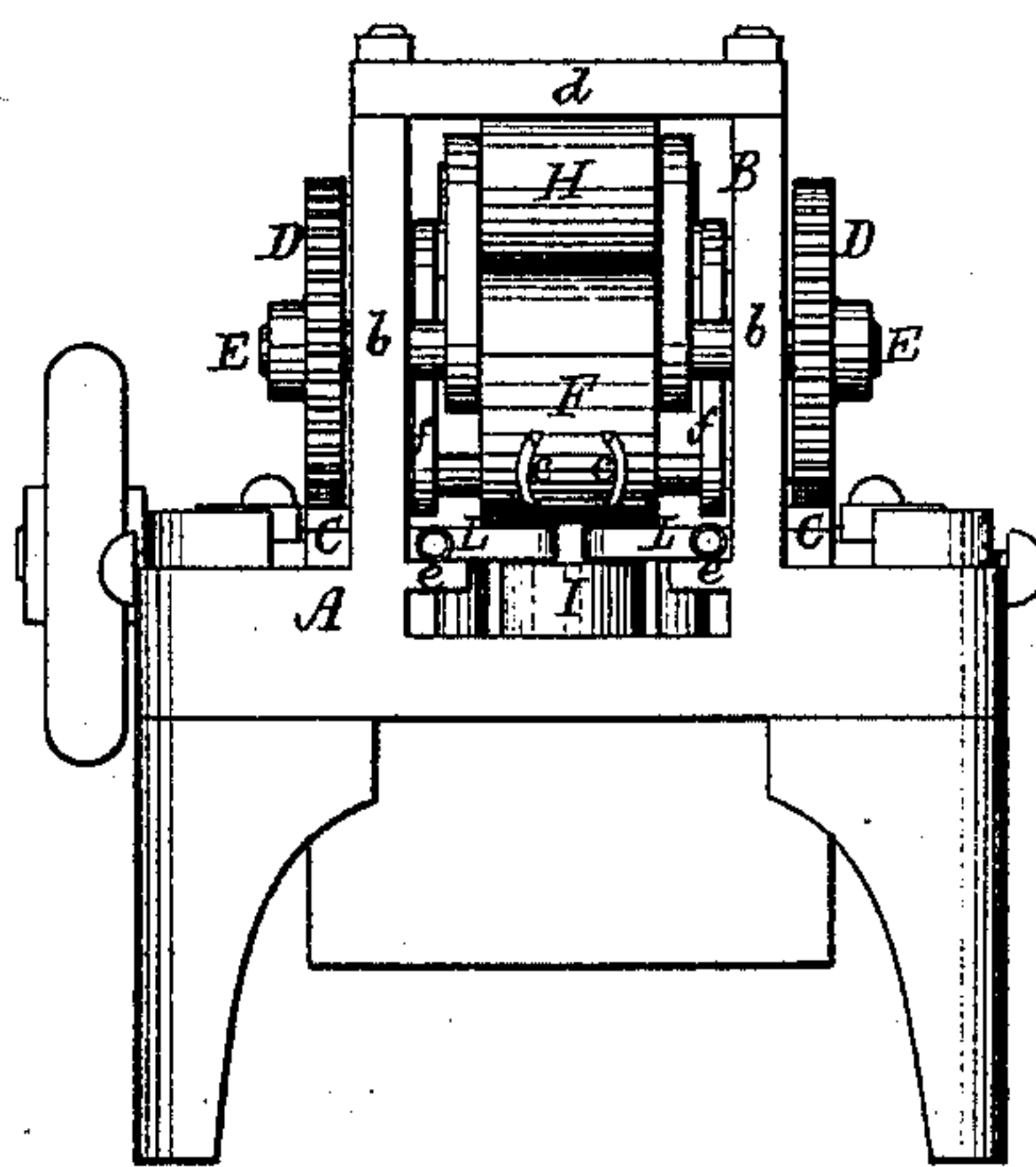


Fig. 4.



Witnesses  
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L. H. Miller

Uriah Billings  
by his attorney.  
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# UNITED STATES PATENT OFFICE.

URIAH BILLINGS, OF CAMBRIDGEPORT, MASSACHUSETTS.

## IMPROVEMENT IN HORSESHOE-MACHINES.

Specification forming part of Letters Patent No. **170,931**, dated December 14, 1875; application filed November 16, 1875.

*To all whom it may concern:*

Be it known that I, URIAH BILLINGS, of Cambridgeport, of the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Machinery for Making Horseshoes; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a side elevation, Fig. 3 a longitudinal section, and Fig. 4 a front-end elevation, of a machine embodying my invention, which relates to mechanism for advancing and retracting the former and its carrier, and also to mechanism for operating the creasers. Figs. 5, 6, and 7 are hereinafter described.

In the drawings, A denotes the table or frame of the machine, it being provided with a housing, B, erected upon it, as shown, and having a horizontal slot, *a*, made through each of its uprights or side posts *b b*. This housing is arranged between two toothed racks, C C, fixed to the frame. With these racks two gears, D D, affixed on an axle or shaft, E, engage, the said shaft being extended through the housing or the slots thereof. To the said shaft, at its middle, there is attached the creaser-sector F, it being the sector of a cylinder, and having projecting from its periphery the two creasers *c c*. The shaft E is pivoted in a slide-bar or carrier, G, to which there is also pivoted a roller, H, that is arranged immediately over the sector F, so as to work against the cap-plate *d* of the housing. Underneath the said sector F is the anvil I, which extends up from the frame, and serves to support the horseshoe while being bent against the former K by the heel-benders L L, and also while being creased and hollowed by the creasers and their sector. These benders, arranged as shown, and provided with springs *e e* to open them apart, are, with the rollers M M in rear of them, shown in Fig. 5, which is a horizontal section of the machine. Near these rollers is another horizontal roller, N, pivoted in vibratory hangers *f f*. With such rollers the former K operates to bend the blank preparatory to its reception by the flank or heel benders. This former K is projected from a slide-bar or carrier, P, which is slotted

lengthwise both vertically and horizontally, as shown at *g* and *h*, the driving-shaft Q of the machine being extended through the horizontal slot *g*, and supported in boxes *i i*, arranged as represented. The carrier G, supported by a stationary standard, *k*, through which such carrier slides when in operation, has, at or near its rear end, a friction-roller, *l*, against which a cam or wiper, *m*, fixed on the driving-shaft, operates, in order to effect the advance of the said carrier. Retraction of the carrier G is produced by the carrier P of the former K, which, during its retreat, carries abutments or projections *n n* against studs *o o*, extending from the carrier G, thereby, by the action of the abutments against the studs, drawing back the said carrier. From opposite sides of the carrier P there are extended two triangular studs or horns, *r r*. To operate with them are two duplex cams, *s s*, an edge view of one of them being shown in Fig. 6, and an inner side view of it in Fig. 7. The projecting parts *t t* of such cams, during revolution of the cams, act with the studs *r r* to impel the carrier P forward, after which they pass off and below the studs, in order to permit the carrier to be partially thrown back by the heel-benders and their springs, which aid in effecting its retreat, the balance of its backward motion being accomplished by the duplex cams *s s*, two sets of toggles, T T', and two slotted levers, U U, arranged as shown. The toggles are placed underneath the duplex cams, and pivoted to the frame and the slotted levers. These latter are pivoted in turn to the frame, and receive in their slots *u u* projections *v v* from the carrier P, or a part, *w*, extended up therefrom. During the revolution of the duplex cams they act against the toggles, and force those of each pair into, or nearly into, line, and thereby cause them to move the levers back. These levers in turn force the carrier backward to its rearmost position. V is the stationary cutter, and W the movable one, for separating the blank from a bar, such being as in other horseshoe-machines. The movable cutter is actuated by a cam, A, fixed on the driving-shaft.

In the operation of the machine, the blank, after being severed from the bar, will be driven forward, and will be partially bent by

the former K and the rollers M M, after which it will be moved forward upon the anvil, and against and between the heel-benders, which will close upon it and bend it at its heels up to the former. In the meantime the machinery for operating the creasers will be in action, whereby they will be caused to crease the blank. All this having being done, the former K, with the blank upon it, will be retracted, and the blank will be discharged from it through a hole, *z*, in the frame.

In the said machine I claim as my invention as follows, viz:

1. The combination, for advancing the carrier P, of the former K, and partially retracting it, such consisting of the duplex cams *s s*,

the projections *r r*, the two pairs of toggles T T', and the slotted levers U U, all arranged and applied to the driving-shaft Q, and to the said carrier, substantially in manner as specified.

2. The combination for operating the creasers, such consisting in the vibratory sector F, its shaft E, gears D D, and racks C C, the carrier G, and its actuating-cam *m*, all arranged and applied to the housing B and the driving-shaft Q, substantially in manner as set forth.

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Witnesses:

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