

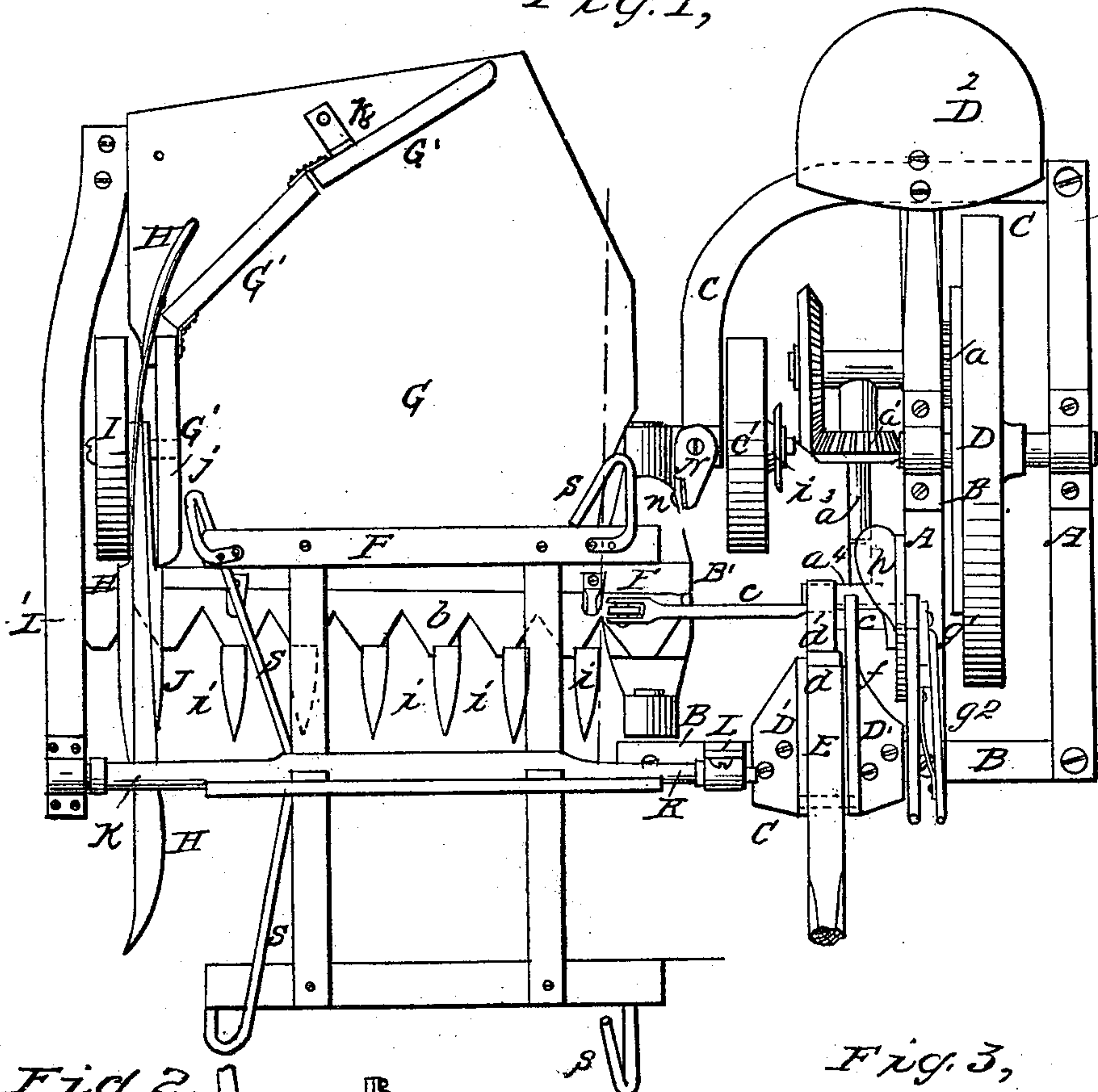
S. HULL.

## Harvester.

No. 41,040.

Patented Dec. 22, 1863.

Fig. 1,



*Fig. 2,*

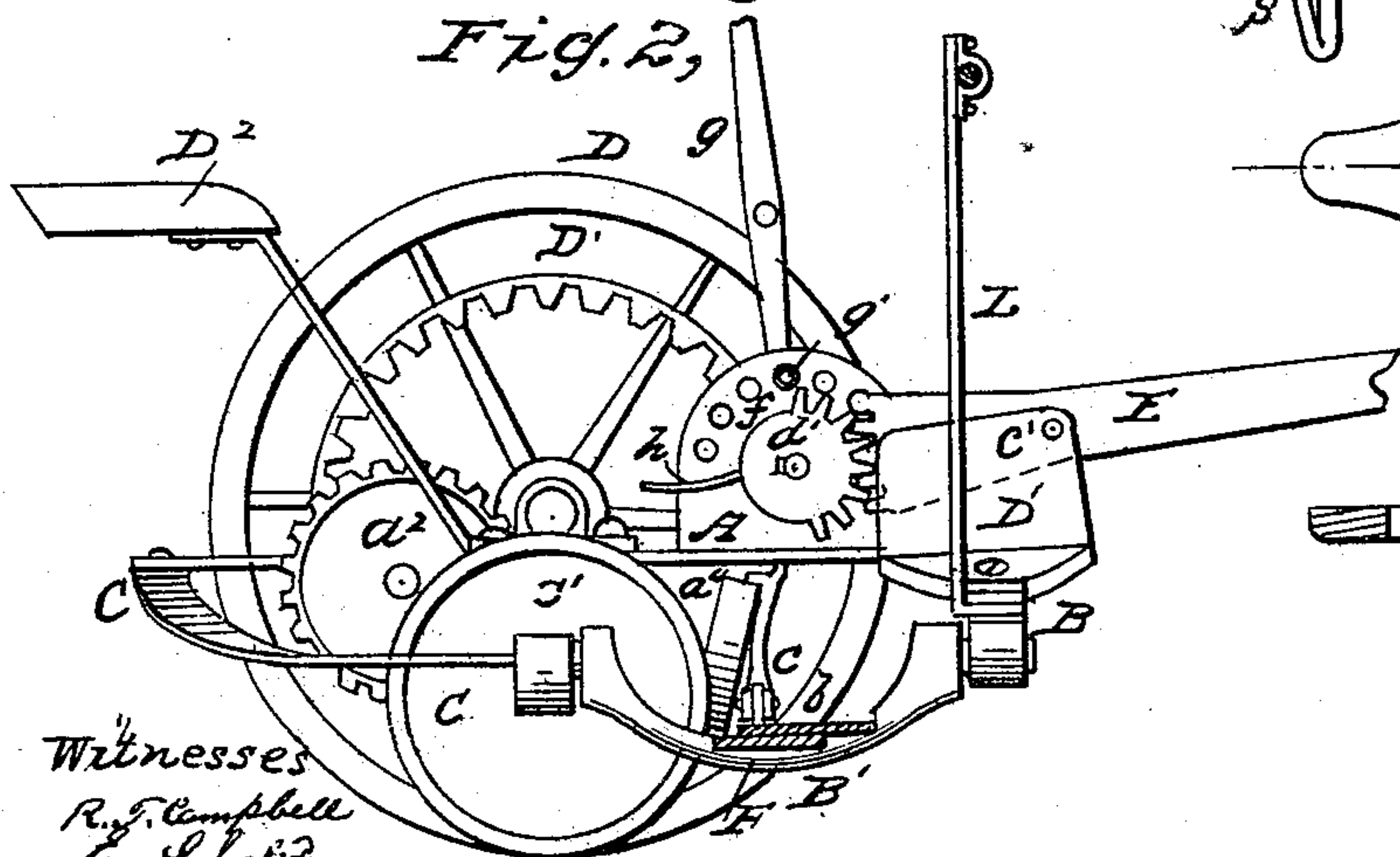
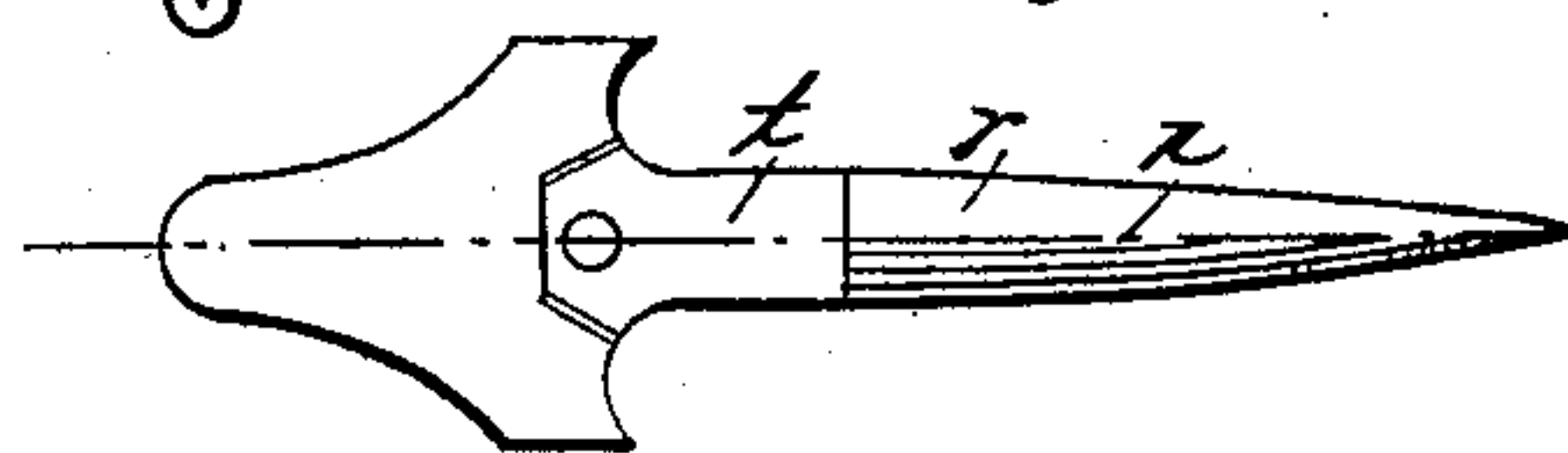


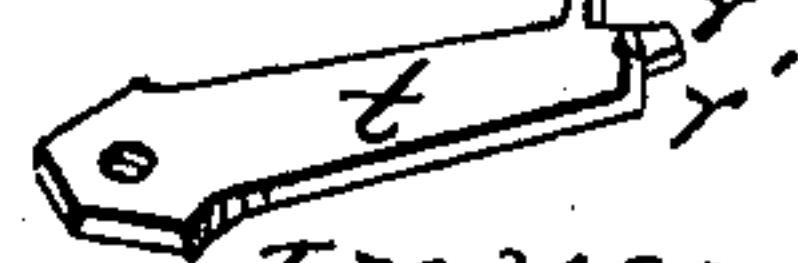
Fig. 3,




Exh. 4,



Fig. 5, r



 Inventor  
Stephen Hull  
by his atty  
Mason Fenwick & Sawyer

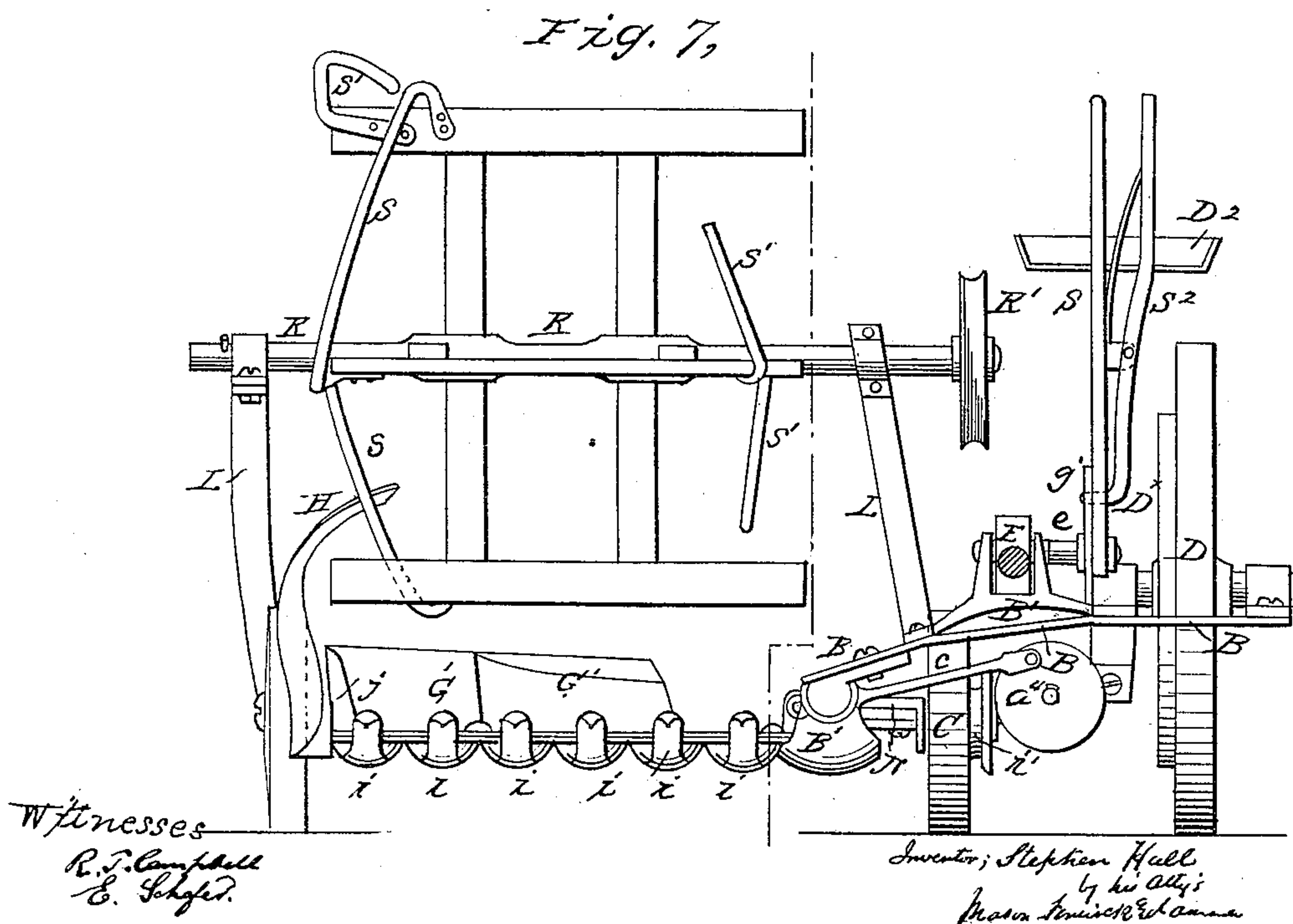
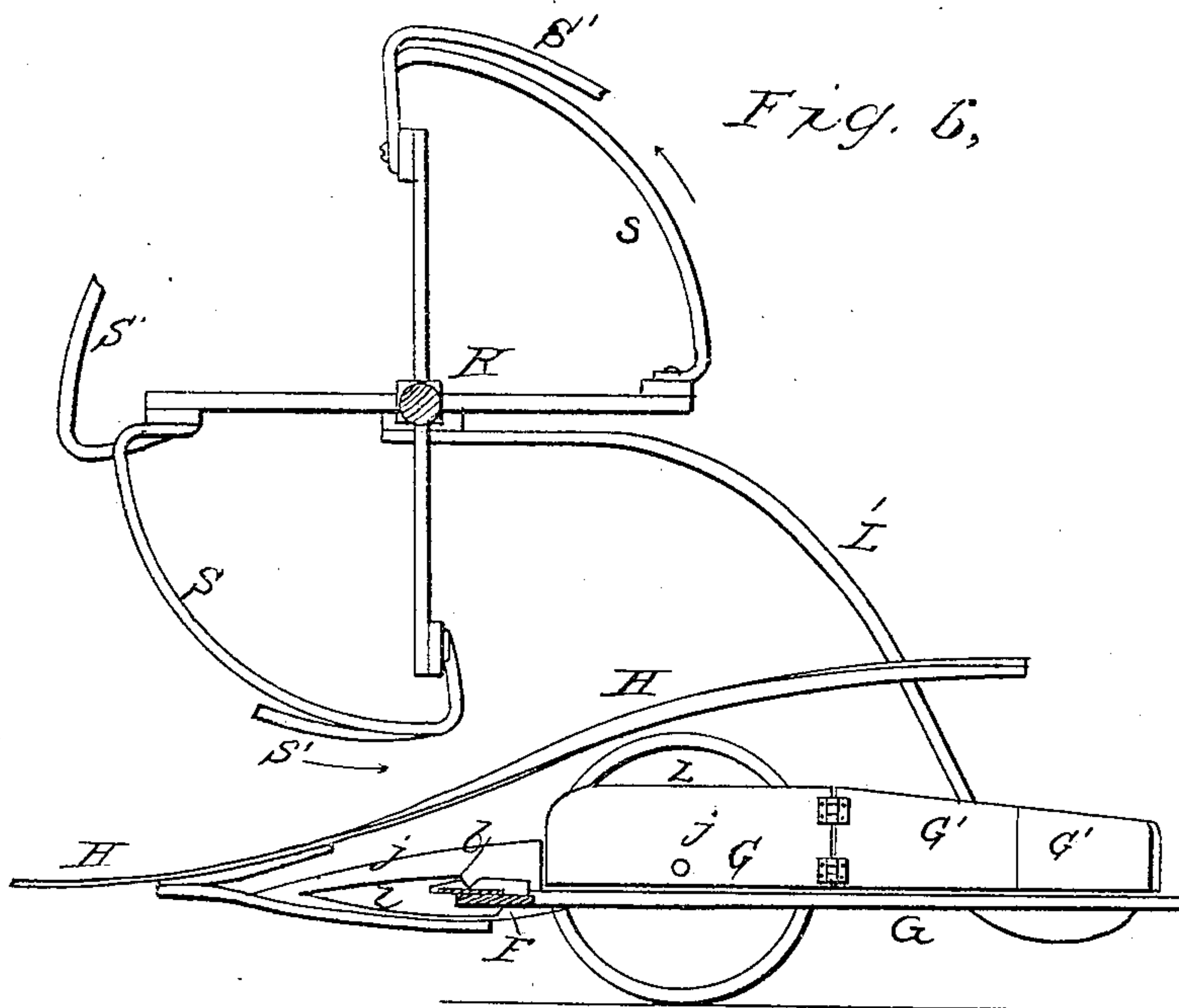
Witnesses  
R. F. Campbell  
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Witnesses  
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E. Schfer.

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# UNITED STATES PATENT OFFICE.

STEPHEN HULL, OF POUGHKEEPSIE, NEW YORK, ASSIGNOR TO HIMSELF  
AND WM. VAN ANDEN, OF SAME PLACE.

## IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. 41,040, dated December 22, 1863.

*To all whom it may concern:*

Be it known that I, STEPHEN HULL, of Poughkeepsie, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Reaping and Mowing Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top view of my improved machine. Fig. 2 is a sectional view of Fig. 1, showing the raising and lowering device for the frame of the machine. Fig. 3 is a top view of the improved tooth, detached from the machine. Fig. 4 is a longitudinal vertical section through Fig. 3. Fig. 5 is a perspective view of the removable cutting-plate for the tooth. Fig. 6, Sheet 2, is a vertical longitudinal section, showing the reel and spring divider. Fig. 7, Sheet 2, is a front view of the machine complete.

Similar letters of reference indicate corresponding parts in the several figures.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, A A represent two longitudinal bars, and B a transverse bar, while C is a curved bar, all of which are suitably bolted together, so as to form the frame of the machine for containing and supporting the cutting apparatus, the machinery which gives motion to the cutters, the reel, and the driver's seat. The front bar, B, which is at right angles to the parallel bars A A, is depressed or inclined downward, and receives on its end a bearing for the gudgeon of a curved hinged beam, B', and the curved bar C extends downward in the same plane as bar B, and forward a sufficient distance to receive on its end the opposite end or gudgeon of the hinged beam B'. This beam B' is thus supported by the frame of the machine, of which it forms a part, and the curved bar C forms within or between it and the inner bar A a convenient space for the interposition of a small supporting-wheel, C', the axle of which being suitably affixed to the bar C this wheel forms the inner support for the frame, while the large driving-wheel D constitutes its outer sup-

port. This frame is suspended beneath the axle of the driving-wheel D, as shown in Figs. 1 and 7 of the drawings, and the driving-wheel D has an "inside-gear" wheel, D<sup>x</sup>, secured to its spokes concentric with its axis, which engages with the teeth of pinion *a*. This pinion communicates a reciprocating motion of the sickle *b* through the medium of bevel spur-wheels *a'* *a*<sup>2</sup>, inclined shaft *a*<sup>3</sup>, crank-wheel *a*<sup>4</sup>, and connecting-rod *c*, as shown clearly in Fig. 1.

D' represents a flanged block, which is bolted securely to the inclined portion of the bar B, and between the flanges of this block is pivoted, at *c'*, a draft-pole, E. The rear end of this pole has affixed to it a segment-rack, *d*, which engages with a toothed pinion, *d'*, that is keyed to a transverse rock-shaft, *e*. This shaft *e* has its bearings in the extended portion of block D', and also in a perpendicular plate, *f*, and carries on one end a long lever, *g*, which is in a suitable position to be operated by the driver who sits in the seat D<sup>2</sup>. The plate *f* is perforated, as shown in Fig. 2, to receive the tooth *g'* of a spring-lever, *g*<sup>2</sup>, which is pivoted to the lever *g* and extends up in a line with this lever *g*, so that by grasping the two levers with the hand the tooth *g'* may be released from the fixed plate *f*, and thus released. The driver can rock the pinion *d'* and vibrate the pole E, the outer end of which being attached to the team, this movement of the pinion *d'* will raise or depress the front end of the machine. Then, by releasing the spring-lever *g*<sup>2</sup> the tooth *g'* will catch into one of the perforations in plate *f* and establish the parts in their adjusted position. On the outside of plate *f*, and keyed the shaft *e*, is a treadle or foot-plate, *h*, upon which the driver puts his foot, and by means of which he obtains a leverage to assist him in effecting the above-described adjustment of the machine. By these means the front end of the entire machine can be easily and quickly raised or depressed, whether it be in operation or at rest.

The hinged beam B' is lowered downward and suitably recessed to receive the finger-beam F, which is secured to it by bolts or in any other convenient manner. The platform G is secured to this beam F on one side, and the fingers *i i* are secured to it on the other side, in the usual manner. The platform is made



of a quadrangular or polygonal form, as shown in Fig. 1, and upon this platform I arrange a fender, G', which is made up of a number of hinged boards, as represented in Figs. 1, 6, and 7. The longitudinal board *j* of this fender G' is secured in a perpendicular position to the outer edge of the platform; but the other boards constituting this fender are loosely hinged to the fixed board, so that they may be moved about on the platform and fixed by means of a plate, *k*, and screw either in the position for giving a side delivery, (shown in the drawings,) or set back in a line with the outer edge of the platform for obtaining a back delivery; or any degree of inclination may be given to the fender G' by simply loosening the screw in plate *k*, which attaches the rear end of this fender to its platform G.

In connection with the adjustable fender G' I employ a curved strip, H, which is attached securely at its forward pointed end to the outer dividing-shoe, J, and which extends backward, upward, and inward, its rear end being free to vibrate as it is shaken by the motions of the machine, or the outer end of the platform rolling over rough land. This strip H may be called an "auxiliary divider," as it effectually separates the cut grain from that which is standing and prevents the cut grain from falling off the outside edge of the platform beneath this divider. It may also be called a "spring-fender," as it is made sufficiently thin to receive a vibrating or trembling motion from the jarring motions of the machine, and thus as the cut grain falls on it it will be thrown off again toward the center of the platform, and this rebounding of the cut grain will prevent it from falling over or behind the fender G'.

The divider J, to which the spring-fender is secured, is bolted to the outer end of the finger-bar F, and, extending back, forms a bearing for the outer supporting-wheel, I, which supports the outer end of the platform and also the cutting apparatus. (Shown in Figs. 1, 6, and 7.)

The reel is also constructed with a view to the proper delivery of the standing crop to the cutters, and the deposit of the cut product upon the platform in such a condition that it can be readily bound into sheaves. The reel-shaft K has its bearings in a standard, L, which is secured to and which projects up from the inclined bar B, and also in a curved support, L', which is secured to a beam projecting from the platform G near its rear end, and projects forward to a suitable point. To the wings or parallel ribs of the reel I attach curved rods *s s'*, which extend out from their ribs and are curved, as shown in Figs. 1, 6, and 7. One end of each rod *s* is secured at or near the end of a rib, and extends inward or obliquely toward the middle of the opposite rib. The auxiliary rods *s'* do not extend from rib to rib, still they are bent inward toward the middle of their respective ribs. Thus constructed the

reel operates with great efficiency in gathering the upper ends of the standing grain together at the same time that the grain is pressed back upon the cutters, and being thus compressed the grain is much more easily cut, after which it falls upon the platform in a compact heap, ready to be bound into sheaves. These reel-gatherers will be found very useful in cutting grain which has been blown down, as the rods *s s'* will lift it up and draw it into the cutters, which will cut it uniformly. The reel-shaft K carries on one end a grooved pulley, K', over which a band passes, which communicates with a grooved pulley, *i'*, on the hub of the central supporting-wheel, C', and in this way the wheel C' acts as the driver for the reel, giving to it a motion toward the cutters, as indicated by the arrows in Fig. 6, Sheet 2. The reel-shaft is allowed to have an endwise play in its bearings for the purpose of allowing the hinged beam B' to play freely in its bearings as the outer end of the cutting apparatus rises and falls in accommodating itself to the uneven surface of the field.

In Figs. 3, 4, and 5 I have shown a new mode of securing the plate *t*, upon which the sickles slide, to the finger *i*. This plate *t* is formed, as represented in Figs. 3 and 5, with a tenon, *r*, on one end, on each side of which is a perpendicular projection, *r'*. The opposite end of this plate, which is made of steel, is formed as shown in Fig. 3, and perforated to receive a pin, *w*, which projects up from the lower surface of the slot in the finger. The finger is suitably recessed to receive the rear end of plate *t*, and mortised to receive the tongue or tenon *r*, as shown in Fig. 4. The perpendicular portions *r'* press against the lower side of the slot in the finger, and when the plate is thus fitted in its place the end of pin *w* is hammered down over the plate, thus riveting it rigidly in its seat.

The pivoted plate N (shown in Fig. 1) is used to control the extent of vibration of the cutting apparatus, and when this plate is slipped under the notch *n*, which is made in the hub of the hinged beam B', it prevents the outer end of the cutting apparatus from rising too far. When it is not to be used this plate can be slipped out of the way.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. While not claiming a spring-bar *per se* in combination with the platform of a harvester, I do claim the spring device H, constructed and applied substantially as shown and described, in combination with the divider J and the platform G, substantially in the manner and for the purpose described.

2. In combination with the platform G, the adjustable sectional jointed fender G', so constructed and applied that by a simple manipulation the machine can be made to deliver the grain either at the side or at the rear end of the platform, substantially as described.

3. A reel constructed with obliquely-curved compressing-rods  $s s s'$ , applied to its wings and operating substantially as herein described.

4. Combining with the spring-fender H the obliquely-curved compressing-rods  $s s s'$  on the reel, substantially as described.

5. The spring-fender H, in combination with the adjustable sectional hinged fender G' and platform G, substantially as and for the purposes described.

6. The hinged fender G', in combination with obliquely-curved rods or gatherers  $s s$  on the reel, substantially as and for the purposes described.

STEPHEN HULL.

Witnesses:

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E. Q. ELDRIDGE.