

C. H. PERKINS.
Horseshoe Machine.

Patented June 1, 1858.

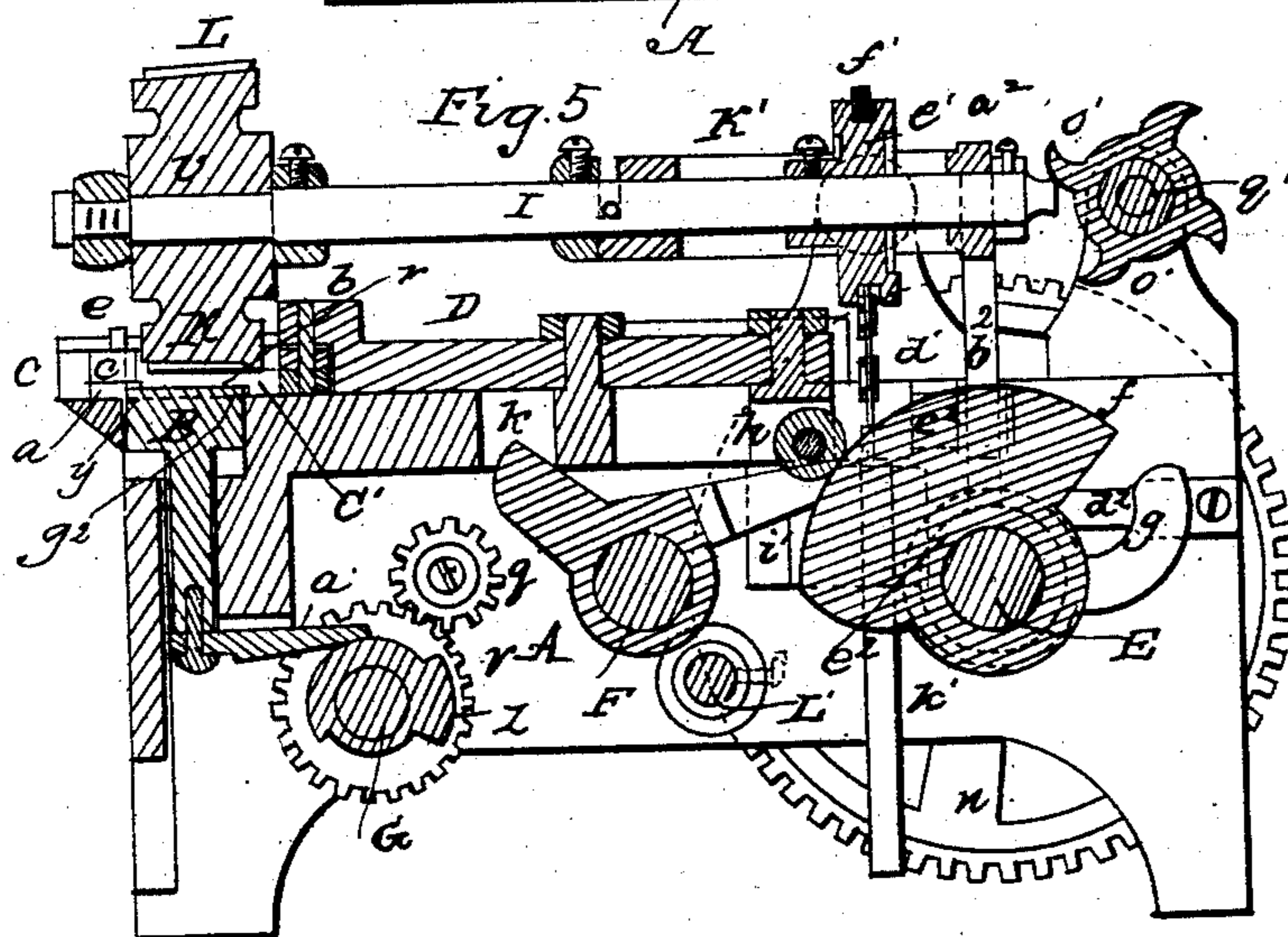
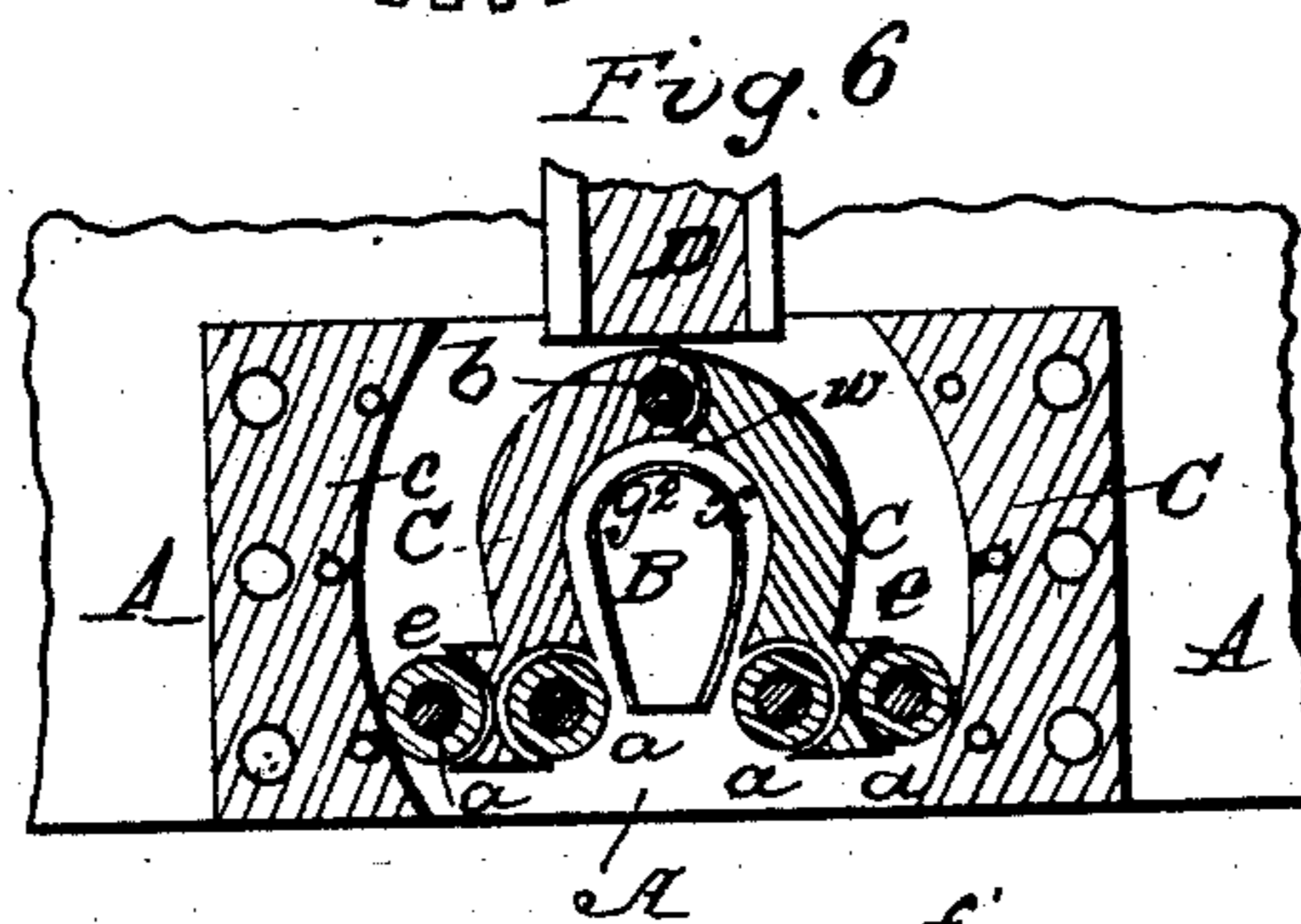
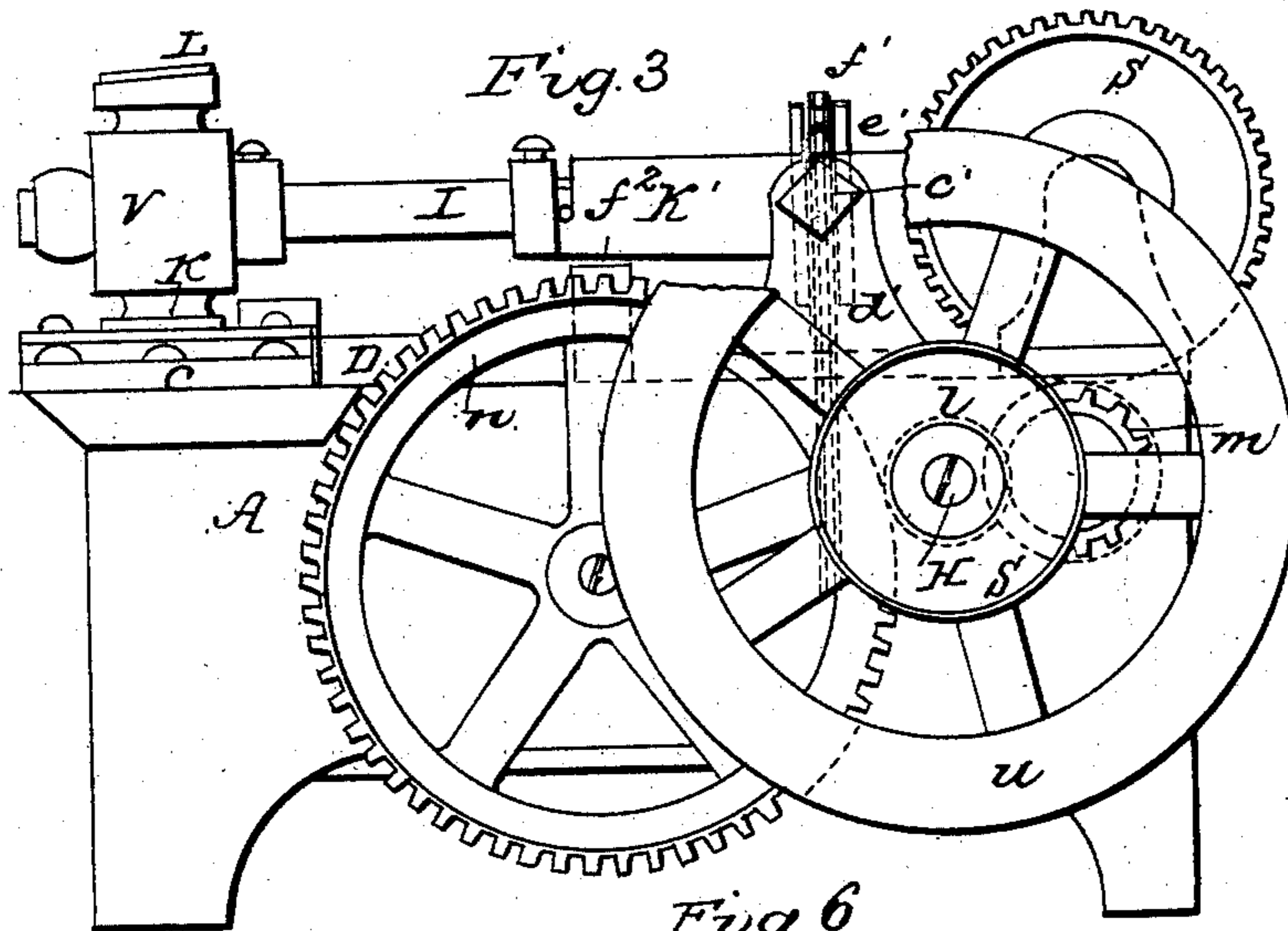
C. H. PERKINS.

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Horseshoe Machine.

No. 20,441.

Patented June 1, 1858.



C. H. PERKINS.
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3 Sheets—Sheet 3.

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Fig. 7

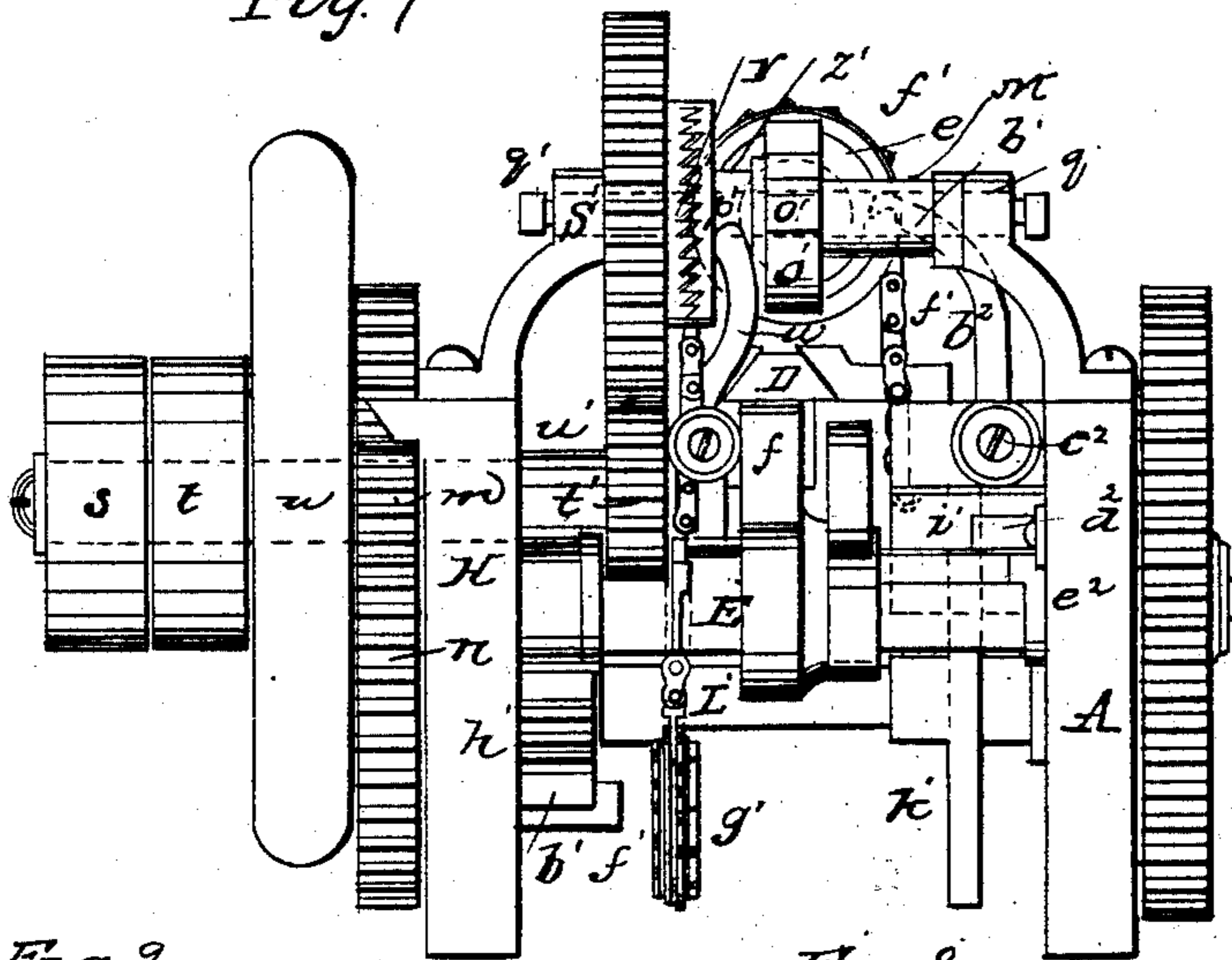


Fig. 9

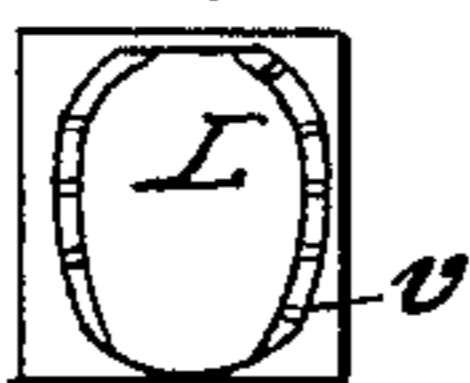


Fig. 8

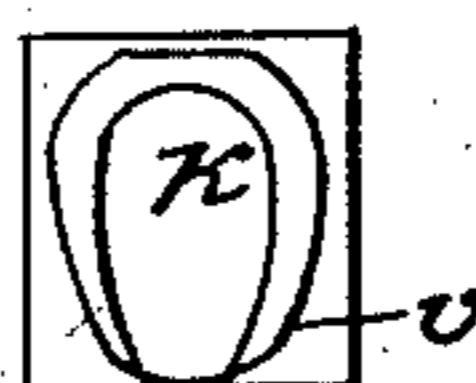
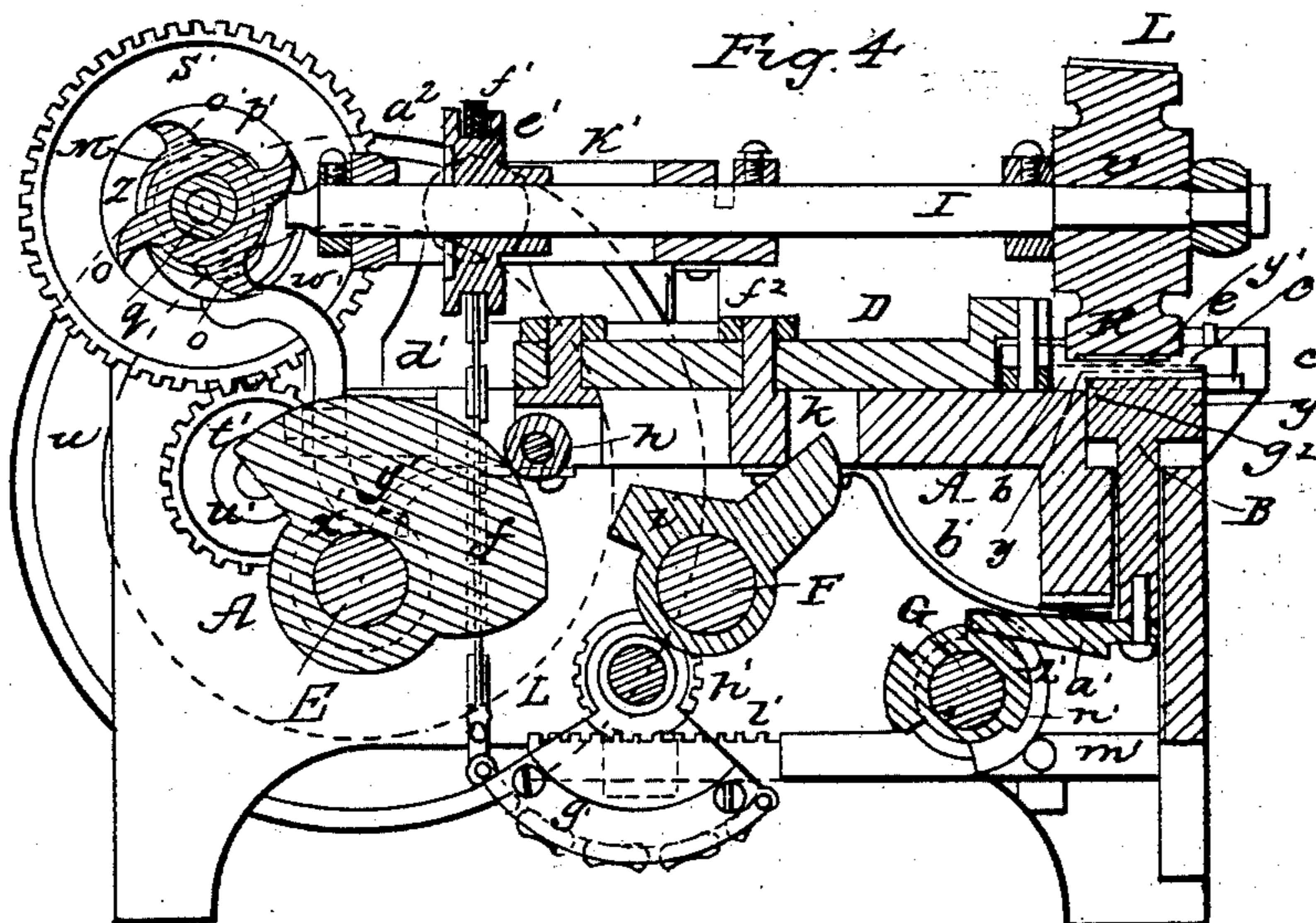


Fig. 4



UNITED STATES PATENT OFFICE.

C. H. PERKINS, OF PUTNAM, CONNECTICUT.

MACHINE FOR MAKING HORSESHOES.

Specification forming part of Letters Patent No. 20,441, dated June 1, 1858; Reissued March 3, 1863, No. 1,424.

To all whom it may concern:

Be it known that I, CHARLES H. PERKINS, of Putnam, in the county of Windham and State of Connecticut, have invented a new and useful Machine for Making Horseshoes; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1, denotes a top view; Fig. 2, a bottom view, and Fig. 3, a side elevation of it. Fig. 4, is a longitudinal and vertical section taken through the hammer shaft, and so as to exhibit the parts in a direction toward the fly wheel. Fig. 5, is a similar section, but made so as to represent the parts in a direction away from the fly wheel. Fig. 6, is a horizontal section of the benders, their cams and slide, the same also showing the top of the former B, the bed, and the die *w*. Fig. 7, is a rear end elevation.

Such other figures as may be essential to a correct delineation of the said machine are hereinafter referred to and described.

By means of the said machine, a bar or piece of iron of a necessary length may be bent around into a proper form and hammered out and creased so as to reduce it to the shape of a horse shoe.

Slight changes in the form and construction of some parts of the machine render it capable of manufacturing shoes for oxen.

In the drawings, A, denotes the frame for supporting the operative parts of the machine.

Near the front end of the table A, and arranged therein so as to slide vertically is that part of the machine which I term the "former," it being shown at B, in Figs. 2, 4, and 5, and in top view in Fig. 6.

The next part of the machine is what I term the "benders," they being shown at C, C, as connected to a slider D. These benders are curved arms jointed at their rear ends to the slider D, and carrying rollers *a, a*, on their front ends. The anterior part of the slider or that portion which is between the benders C, C, is made or constructed with a plane surface or straight die *b*, for forming on a horse shoe what is termed a "square toe."

Stationary cams *c, c*, affixed to the anvil or top of the bed A, and in positions as shown in Figs. 1, 3, 4, 5, and 6, govern the movement of the benders in lateral directions

toward the shoe blank, while such benders are being forced forward by their slider D. Their lateral movements in opposite directions are effected by curved stationary grooves *d, d*, into each of which a stud *e*, from one of the benders enters. The longitudinal movements and intervals of rest of the bender slider D, are produced by the operation of two cams *f, g*, (see Figs. 2, 4, 5 and 7,) which are fixed on a horizontal and transverse shaft E, one of them being made to act against a roller *h*, fixed in the rear end of the slider D. The other of the said cams acts against one arm of a bent lever *i* which turns freely on another shaft F, and has its other arm extended into a notch or recess *k*, formed in the slide, as shown in Figs. 4 and 5. G, is another or third shaft, which is situated at or near the front part of the table A, and with the other shafts E, and F, receives rotary motion from a driving shaft H, by a train of gears *l, m, n, o, p, q*, and *r*, arranged as shown in the drawings, the first of these gears being fixed on the shaft H, while the last is carried by the shaft G. A set of fast and loose pulleys *s, t*, and a fly wheel *u*, are applied to the driving shaft.

Over the bed or table A, is a tripping or hammer shaft I, which at its front end carries a hammer K, and a creaser L, they being projected from a heavy head or block of metal *v*, affixed to the shaft I, or arranged thereon as shown in the drawings.

Figs. 8, and 9, exhibit separate views of the working faces of the hammer and creaser. The object of the hammer is to reduce the shoe blank to its requisite thickness. This it accomplishes with the aid of the bed or anvil and the former, B, a raised die or projection *w*, from the bed and carried partly around the former as shown in Fig. 6, serving, under the blows of the hammer on the shoe, to hollow the shoe or make it concave in rear of the toe, in the customary manner. The purpose of the creaser is to form in the shoe the usual recesses and places for the nail holes.

During the operation of the machine, the hammer is made to strike several times on the shoe, after which, the shaft I, is turned around a semi-revolution so as to bring the creaser underneath the hammer. This having been accomplished, the shaft is made to play up and down so as to hammer the shoe with the creaser, these operations being

caused to follow that of bending the shoe blank about the former, B, which is effected by the action of the benders after the shoe blank has been placed in rear of, and with its middle against the said former. While the bending operation is taking place, the said former, B, should be in an elevated position so as to carry its beveled top surface, x , entirely above the shoe in order that the vertical edge y , of the said former may be presented to the shoe for the purpose of supporting its inner edge while the shoe is being formed by the benders. Soon after this has taken place, the former, B, should be moved downward so as to leave the beveled top surface x , projecting above the top of the table, where it should remain while the shoe is being hammered and creased. The purpose of the beveled top surface or bevel, x , of the top surface of the former B, is to cause the middle part of the shoe or that part near the toe to be spread out to a greater width, than at the heels or heel parts, and also, to give to the shoe the proper form to prevent it from "balling" with snow, when used while there may be snow upon the ground.

The mechanism for operating the former B, consists not only of a cam z , fixed on the shaft G, and made to work against a projection a' , from the foot of the said former, but a spring, b' , which serves to depress such former.

The tripping shaft I, is supported by and so as to be capable of revolving axially in, a rocker frame K', which turns on pivots, c' , c' , projecting from two uprights d' , d' , arranged as shown in the drawings. Within the said frame K', is a grooved wheel, e' , which is fixed concentrically on the shaft I and carries a chain, f' , in the groove of its periphery, one of the links of the chain being fastened to the periphery. This chain depends from the pulley and has one end fastened to a sectoral arm, g' , projecting from the shaft I, on which a pinion, h' , is fixed. To the other end of the chain, a weight, i' , is fastened, such weight being made to slide on a vertical rod, k' , extended downward from the table A.

The pinion, h' , engages with a slide rack l' , from which a stud m' , projects as shown in Figs. 2, and 4. A cam, n , carried by the shaft, G, operates against the said stud.

The object of the wheel e' , the chain f' , the sectoral arm, g' , the pinion, h' , the rack bar, l' , the cam n , and weight, i' , is to effect the semi-rotative motions of the tripping shaft at the proper times in order to bring the hammer and creaser into operation alternately on the shoe blank and at the times necessary.

The mechanism for tripping the shaft I may be thus described. A shaft, M, carrying a series of cams or wipers, o' , o' , o' , and

one part, p' , of a clutch turns on another shaft q' , and is arranged with respect to the rear end of the tripping shaft as seen in the drawings. The other part or half, r' , of the clutch is affixed to the side of a gear, s' , which is fixed on the shaft q' , and receives motion from a pinion t' , attached to the inner end of a shaft u' , whose outer end carries a gear, m , which engages with the gear or pinion l , of the driving shaft. In connection with the said mechanism for tripping the shaft, I, is a mechanism for clutching and unclutching the two shafts M, and q' . The same consists of a forked lever, w' , a cam x' , and a spring y' . The said forked lever plays at one end in the groove, z' , of the sliding part of the clutch. At its lower end it is borne against the cam by the spring the cam being fixed on the shaft E.

The next portion of the machine is that for preventing the fall of the tripping shaft or hammer shaft long enough to allow of the semi-rotation of the hammer shaft, and the withdrawal of the made shoe from its place about the former, B, and the substitution of a shoe blank for such shoe. Such mechanism consists of a catch, a^2 , (fixed on and projecting from the rocker frame, K', of the tilting shaft, a bent stop lever, b^2 , turning on a fulcrum c^2), a spring, d^2 , and a cam, e' , the whole being arranged as shown in the drawings. The cam is carried by the shaft, E, and works the stop lever in one direction, the spring serving to move it in the opposite direction. At a proper time, the stop lever is moved over the catch so as to latch it and hold the hammer shaft up or prevent it from falling during such times as the tilting cams are out of operation, the made shoe is being removed from the dies and a blank substituted for it.

The descent of the hammer shaft is assisted by a spring, f^2 , which is connected with it and the table, and serves by its retractive power to increase the downward velocity and of course the momentum of either the hammer or the creaser.

The above constitutes the mechanism or the machine for making horse shoes. The toe or rear end of the former, B, is furnished with a series of notches, as shown at g^2 (Fig. 6), the same being for the purpose as hereinafter stated.

In operating with the said machine a piece of bar iron of sufficient size to form a shoe, and heated or not as occasion may require is to be placed in the space between the toe die, b , and the former, B. Soon after this may have been accomplished, the benders will be advanced and bend the iron around the said former or the vertical sides of it. Next, the former will descend a little as before mentioned, and the hammer shaft commence and continue to be tilted until

the shoe blank may be hammered down to its required thickness, which having taken place, the hammer shaft will be turned suddenly around a semi revolution and so as to bring the creaser into operation on the shoe. After several blows by this creaser have taken place, the tripping of the hammer shaft will be arrested and it will be held up so as to enable it to be rotated in a manner to bring the creaser over the hammer, which operation next takes place. While it may be going on, the made shoe should be withdrawn from the machine and a blank put in its place.

Should the creaser be provided with a small cutter arranged at its toe, it may be made to sever the shoe into two parts so as to enable it to be used for oxen, provided such shoe be properly formed for such purpose, as it may be by suitably preparing the dies and bending mechanism to make it.

Having thus described the said machine for making horse shoes, what I claim therein is as follows:

1. I claim the combination and arrangement of the hammer, K, and the creaser, L, with one rotary tripping shaft, I, so as to be operated thereby substantially in the manner and for the purpose specified.

2. I also claim the mode of constructing and operating the former, B, that is making the said former with the vertical edge, *y*, and beveled top surface, *x*, and causing the said former to take two separate positions with respect to the benders and hammer in manner and for the purpose set forth.

3. I also claim constructing the bed or

anvil, A, with the projection or die, *w*, for hollowing the shoe or making it concave in rear of the toe as specified.

4. I also claim the combination of the straight toe die, *b*, with the benders, C, C, and the former, B.

5. I also claim the combination of a set of notches or their equivalent with the rear end or toe or other proper part of the former and for the purpose of maintaining the shoe blank in its proper place or position with respect to the former during the process of bending the shoe thereon.

6. I also claim in combination with mechanism for giving to the hammer shaft its tilting or vertical motions, mechanism for rotating the shaft at the proper times in order to bring the hammer and the creaser to operate alternately on the shoe as specified.

7. And in combination with the mechanism for tilting and turning the hammer and creaser shaft, I claim a mechanism for arresting the operations of the tilting mechanism, and for preventing the fall of the hammer shaft long enough to allow of a semi-rotation of the hammer shaft and the withdrawal of the "made" shoe from its place about the former, and the substitution of the shoe blank therefor.

In testimony whereof I have hereunto set my signature.

CHARLES H. PERKINS.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.