

(No Model.)

2 Sheets—Sheet 1.

J. B. & O. B. JOHNSON.

PRESS.

No. 356,475.

Patented Jan. 25, 1887.

Fig. 1.

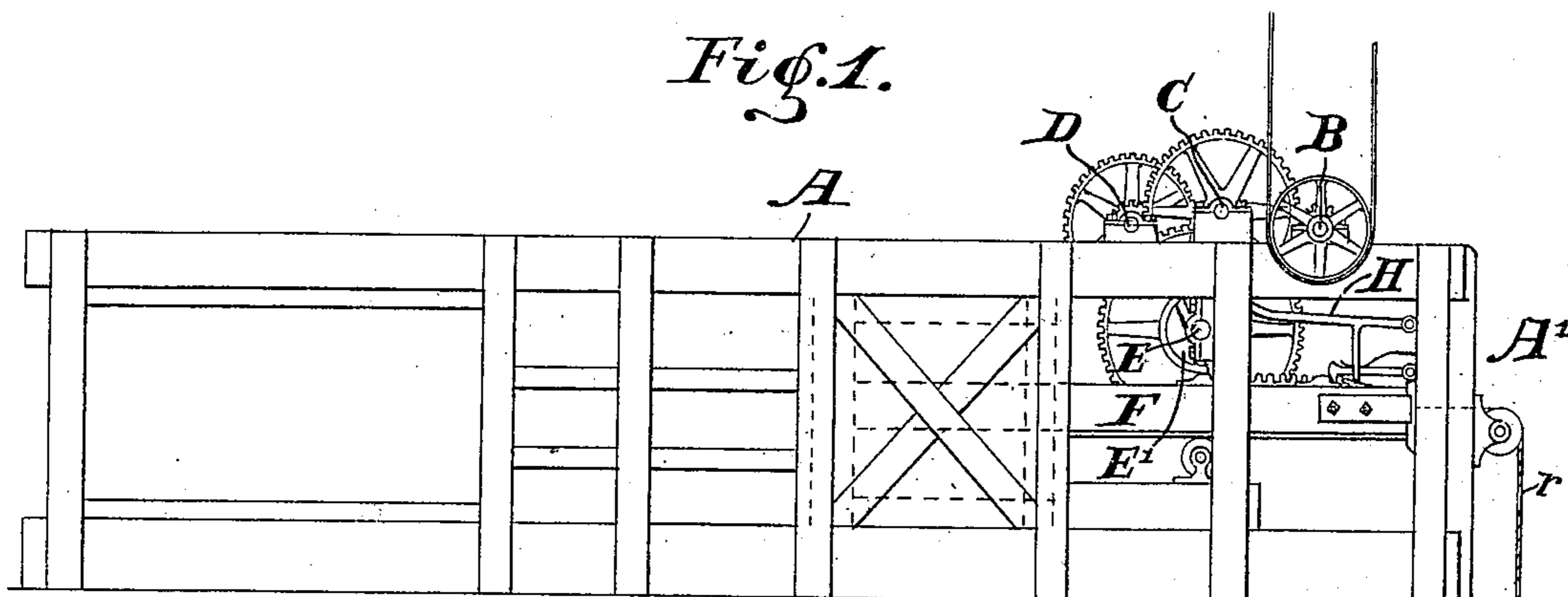


Fig. 2.

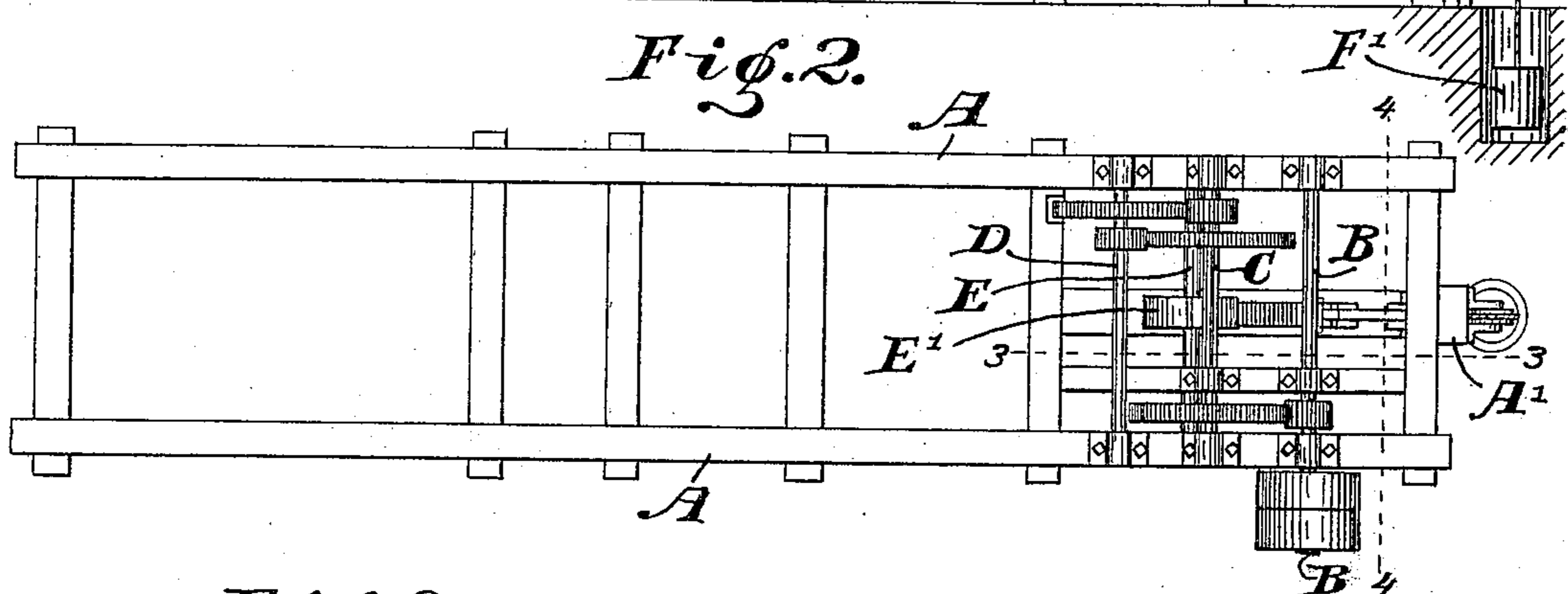


Fig. 3.

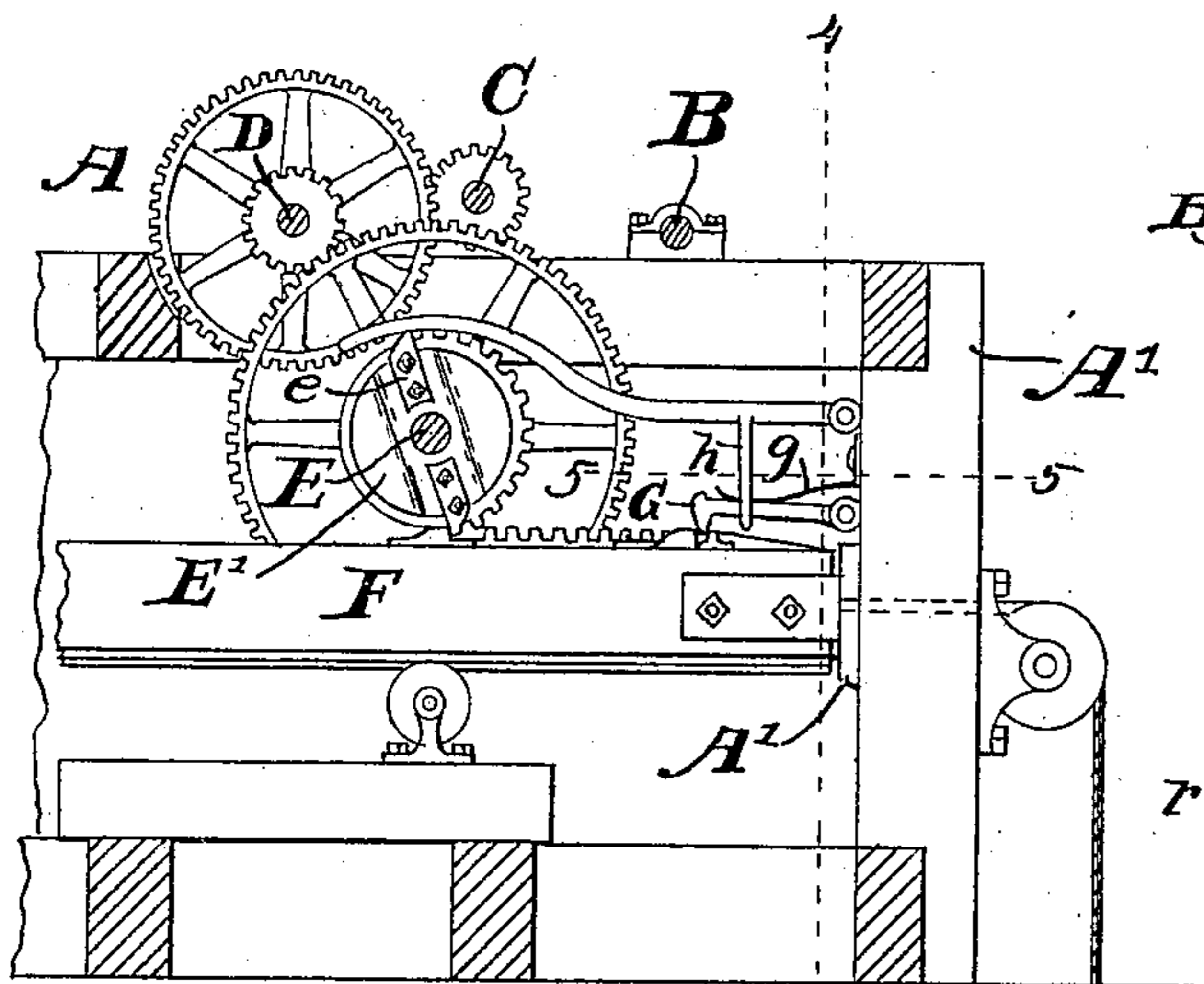
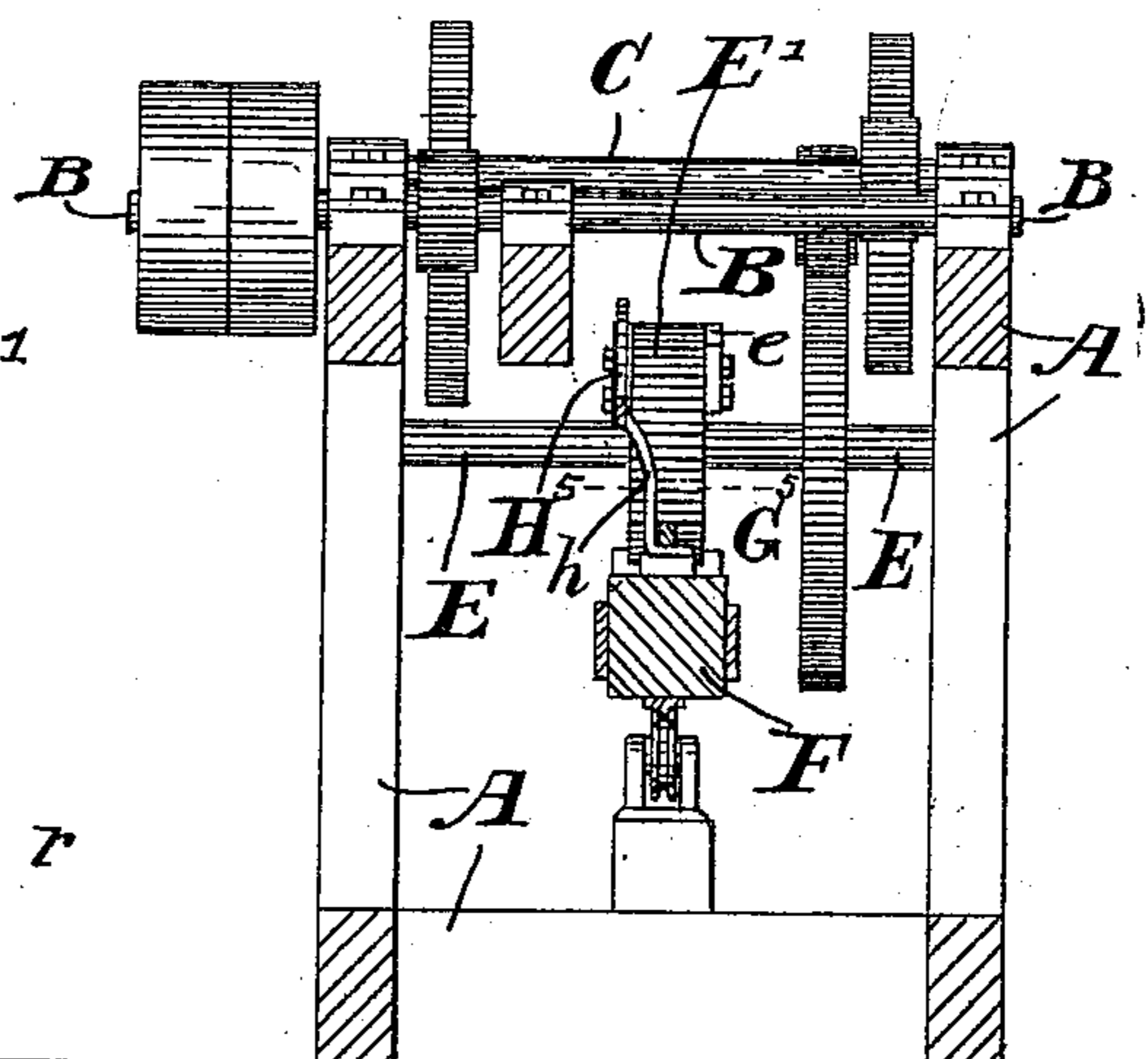


Fig. 4.



WITNESSES.

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2 Sheets—Sheet 2.

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Fig. 5.

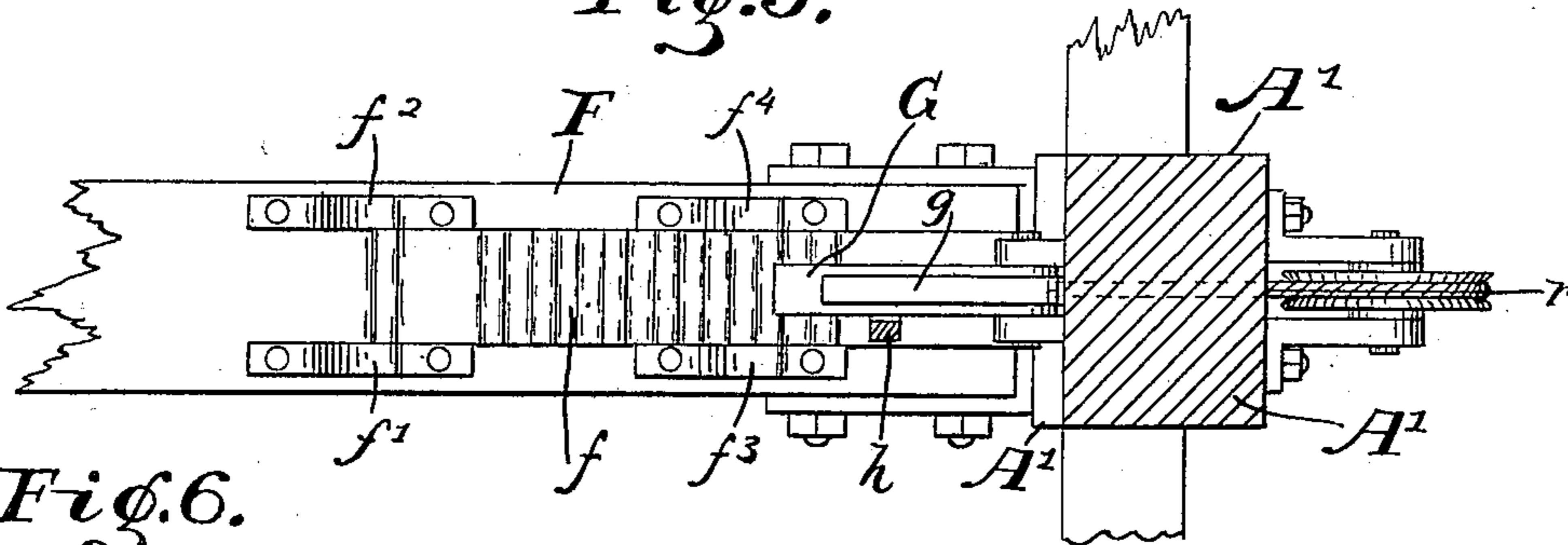


Fig. 6.

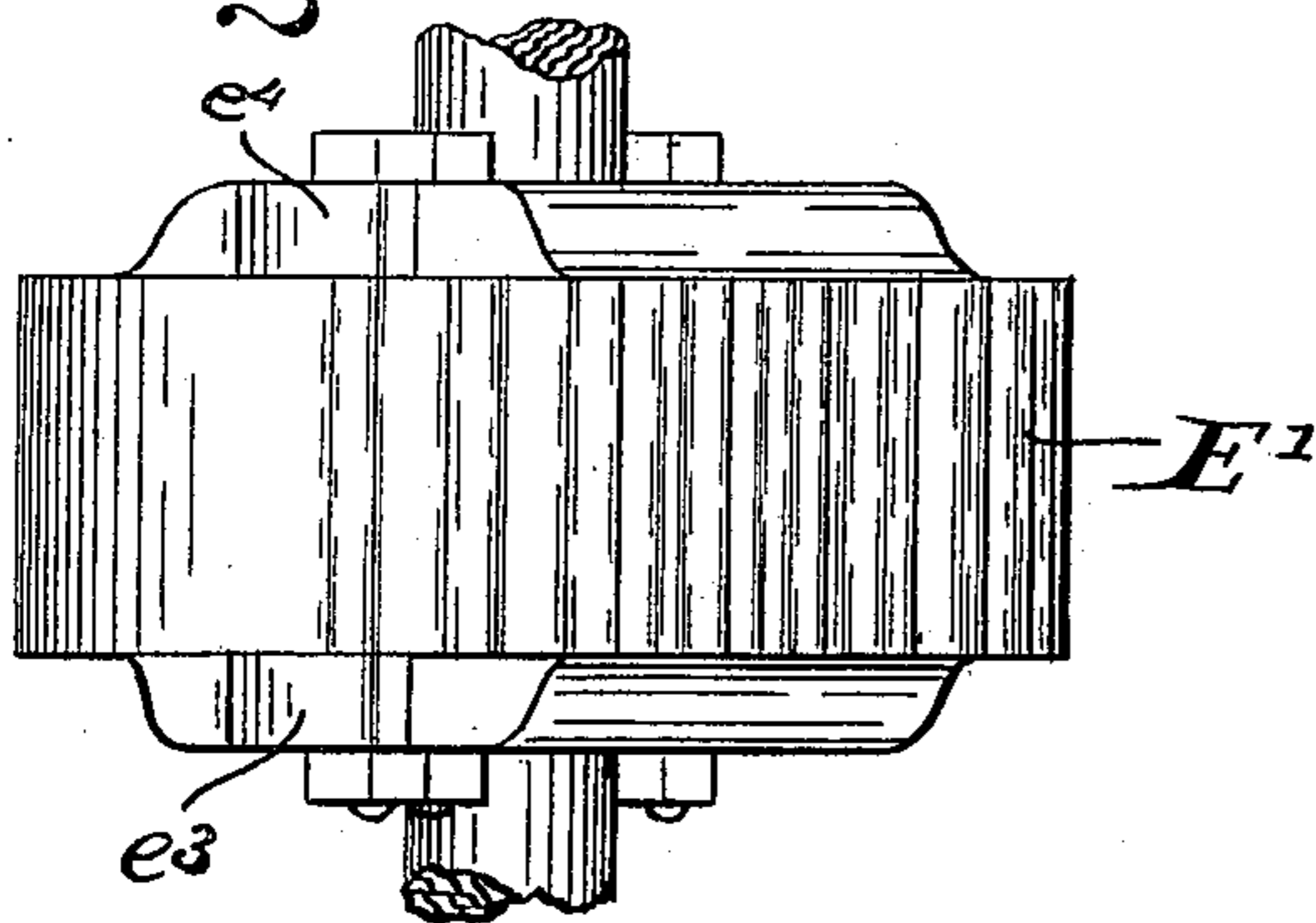


Fig. 7.

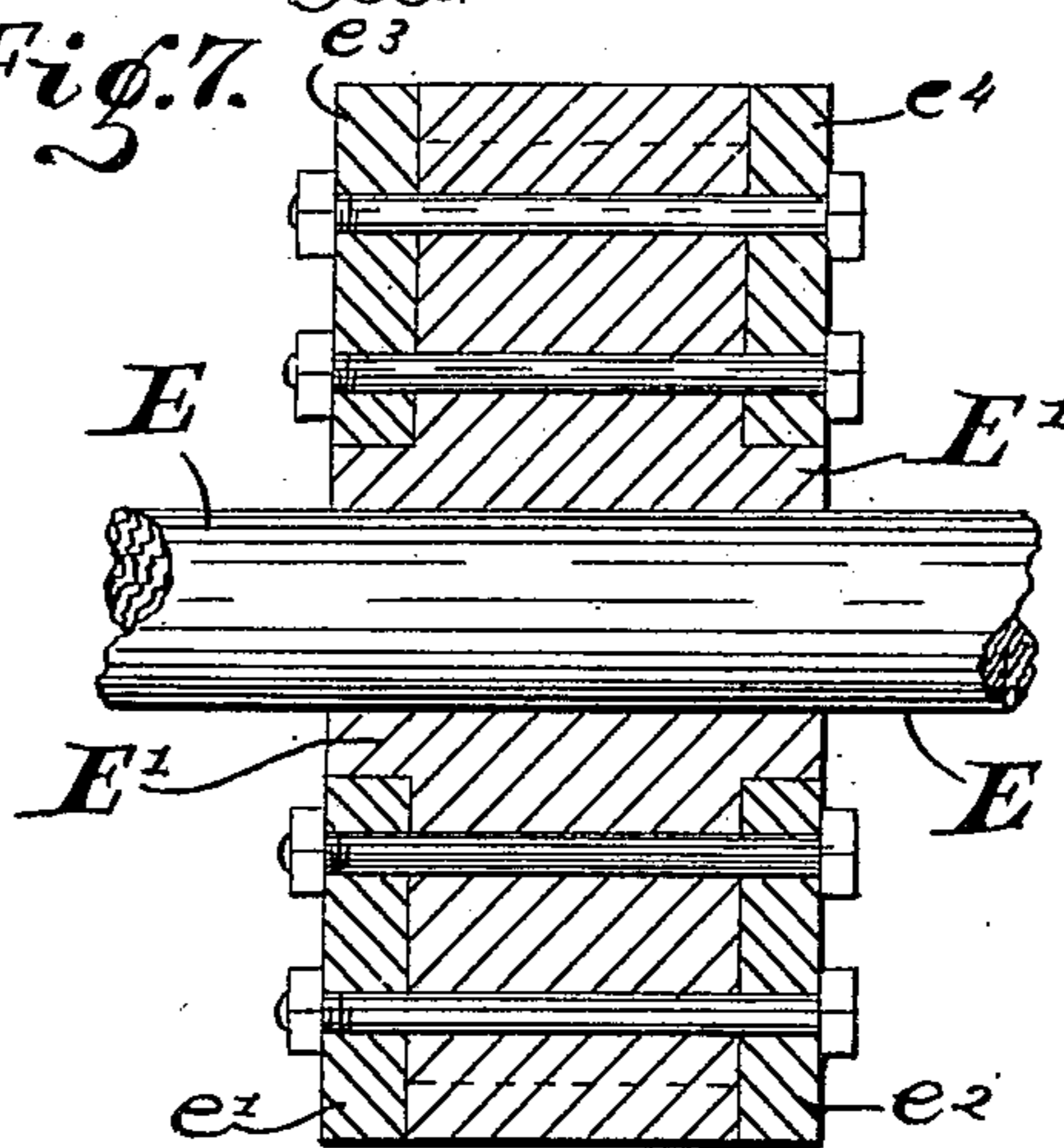
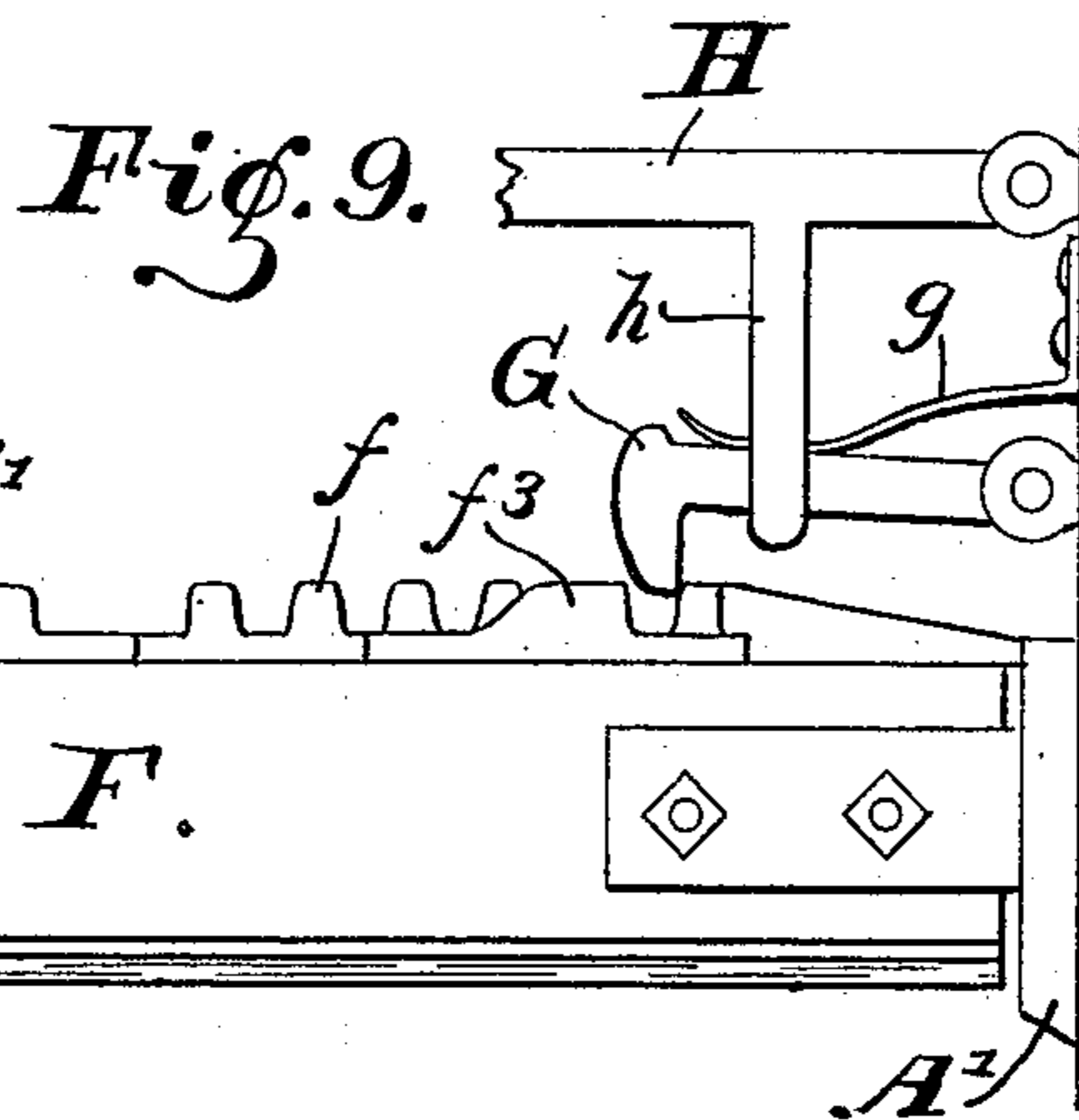
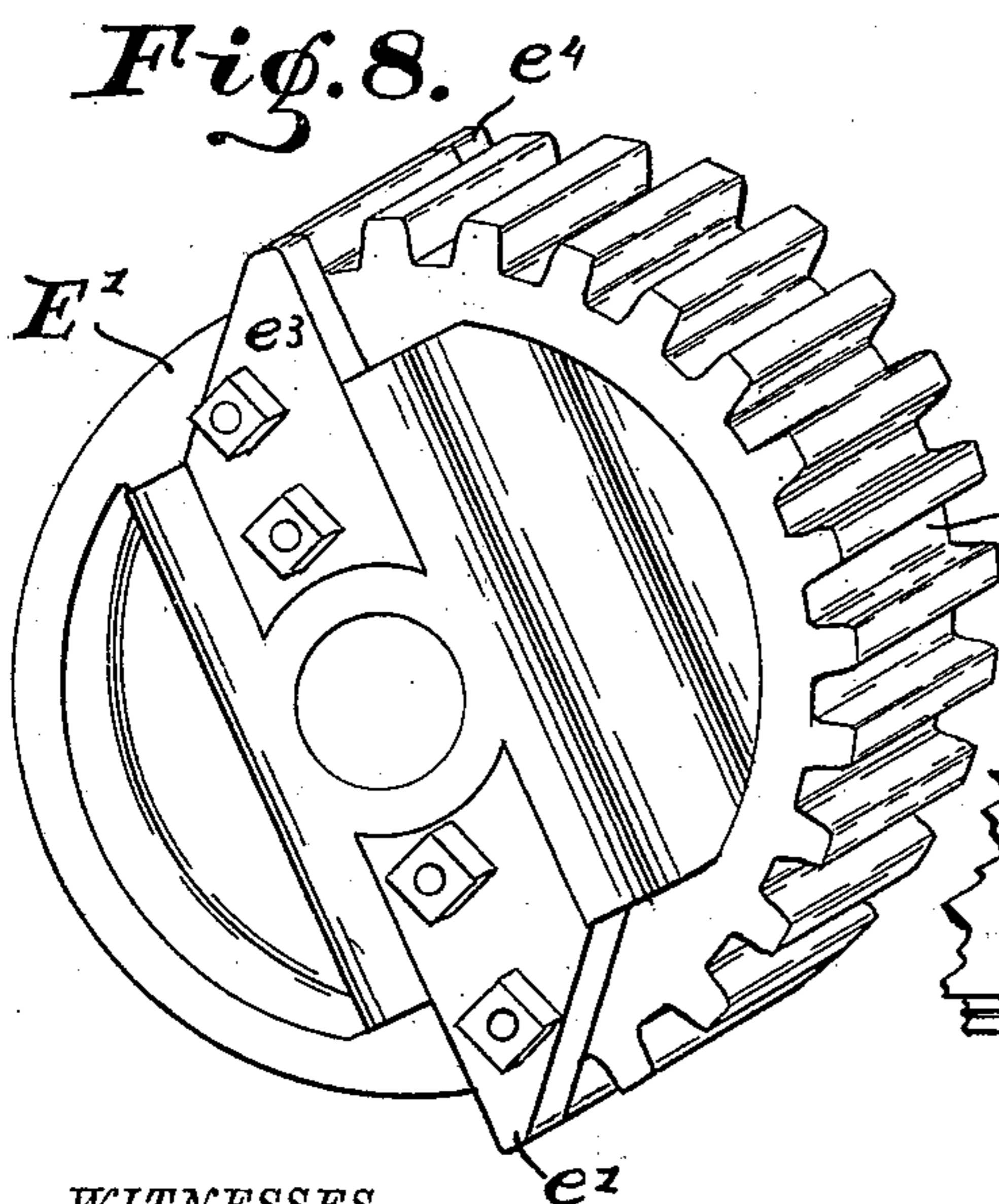


Fig. 8.



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UNITED STATES PATENT OFFICE.

JESSE B. JOHNSON AND OSCAR B. JOHNSON, OF INDIANAPOLIS, INDIANA.

PRESS.

SPECIFICATION forming part of Letters Patent No. 356,475, dated January 25, 1867.

Application filed March 30, 1886. Serial No. 197,117. (No model.)

To all whom it may concern:

Be it known that we, JESSE B. JOHNSON, and OSCAR B. JOHNSON, of the city of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Presses, of which the following is a specification.

Our said invention relates to that class of presses which are used for baling hay, excelsior, cotton, &c.; and it principally consists in the means whereby the plunger is operated and held in position.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation of a press embodying our said invention; Fig. 2, a top or plan view of the same; Fig. 3, a detail sectional view on an enlarged scale, looking upwardly from the dotted line 3 3 in Fig. 2; Fig. 4, a transverse sectional view looking toward the left from the dotted line 4 4 in Fig. 3; Fig. 5, a top or plan view of the rear portion of the plunger and adjacent parts, as seen when looking downwardly from the dotted line 5 5 in Fig. 3; Fig. 6, a top or plan view of the wheel which operates the plunger; Fig. 7, a central vertical section of the same; Fig. 8, a perspective view of said wheel; and Fig. 9, a detail side elevation on an enlarged scale of a portion of the plunger and adjacent parts, similar to a portion of Figs. 1 and 3.

In said drawings, the portions marked A represent the frame-work of the press; B, the main or driving shaft; C, D, and E, counter-shafts, respectively, through which, by means of the gear-wheels thereon, the power of the prime mover is multiplied before reaching the plunger; F, said plunger; G, a detent by which the plunger is held in place, and H a pivoted arm connected to said detent and operated by a trip on the wheel E'.

This press is operated, as usual, by power applied to the main shaft, and transmitted through the various counter-shafts and the gear-wheels thereon to the shaft E in a well-known manner, which will be readily understood upon an examination of the drawings. Upon this shaft E is a wheel E', which has cogs for only a portion of its circumference, which cogs engage with a rack-bar on the plunger

F. On the sides of this wheel, alongside the last cogs of the series, are supplemental cogs e' , e^2 , e^3 , and e^4 , which, as the wheel revolves, come in contact with corresponding supplemental cogs secured to the plunger F, alongside the rack-bar, as will be presently more fully described. These supplemental cogs are made of finely-tempered steel, and very hard, so that they will endure the excessive strain just before they part contact with the rack-bar. They are also sloped off on the back side, so that they will entirely free themselves from the rack-bar at once, instead of resting upon the last cog thereof during a short period, as would otherwise be the case. These cogs may be formed, as shown, by supplementing the sides of the last one of the regular cogs; or said last cogs may be cut out altogether and solid steel cogs inserted, which project on both sides of the wheel in a similar manner. In either case one cog will serve also as a trip for the arm H.

The plunger F carries the head of the press, and is operated to move reciprocally, as is usual in such presses. It is provided with a rack-bar, f , with which the cogs on the wheel E' engage. Alongside this rack-bar, at its ends, are arranged supplemental cogs f' , f^2 , f^3 , f^4 . The upper end of the plunger is adapted, when withdrawn from operating the head of the press, to come in contact with a timber, A', on the frame and be stopped thereby. It is aided in this rearward movement by a weight, F', which is connected thereto by a rope, r , running over a sheave on the frame-work, as shown. The rack-bar f is just of sufficient length to give the necessary movement to the plunger. The supplemental cogs f' , f^2 are so arranged that the supplemental cogs e' , e^2 on the wheel E' will come in contact therewith, and pull it along a short distance before the engagement between the regular cogs of said rack-bar and said wheel, the regular cogs of the rack-bar preferably not commencing for a space equal to that occupied by two or three of said cogs. By this means, notwithstanding that the plunger may be slightly out of position, the cogs will be brought into exact engagement, and any possibility of their "riding" is precluded. At the outer end of the rack-bar are the supplemental cogs f^3 , f^4 , which

are usually constructed of hardened steel, the better to resist the unusual pressure coming upon them just at the termination of the stroke of the press. They are also inclined upon its outer side to permit the detent, which is provided to hold the plunger in position, to automatically pass over them as said plunger returns to position.

The detent G is hung to the frame A, just above the plunger F, and its point is adapted to engage with the extreme cog in the rack-bar on said plunger, and is held into engagement with said cog, when not forcibly raised therefrom, by a spring, *g*. The rack-bar (or supplemental cogs along-side it) is inclined outside of this cog, so that the detent will pass into engagement with it as the plunger returns to this position.

The arm H is pivoted to the timber A', above the detent G. The trip-arm *h* thereon extends down and engages with said detent G, and the main portion extends forward alongside the wheel E' in position so that when said wheel revolves the combined supplemental cog and trip *e*³ may come in contact therewith.

The operation is as follows: The machinery being set in operation, the cogs of the wheel E' engage with those of the rack-bar *f* and drive the plunger F forward, which operates upon the head of the press to compress the material therein in the usual and well-known manner. As the wheel E' revolves, so that its cogs escape from engagement with said rack-bar, the plunger will be started back by the force of the compressed material, and will be continued in its backward course by the rope and weight attached thereto until its end strikes the bumper A', when the detent G will engage with its extreme cog and hold in that position until released. As the wheel E' continues to revolve, the combined supplemental cog and trip *e*³ thereon will come into contact with the arm H and begin to raise it just as the cogs come round and begin to engage with the teeth of the rack-bar, and this arm, through its hooked arm *h*, will raise the detent G out of engagement with the rack-bar and permit the plunger to be again operated. The arrangement of these various parts so that the cogs of the wheel will just engage with, instead of reaching beyond, those of the rack-bar, as will be readily understood, is very important, as otherwise there would be danger of breakage.

Having thus fully described our said invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a press, the combination of the plunger and rack-bar thereon, the ends of which are provided with supplemental steel cogs and

a partially-cogged wheel engaging with said rack-bar, and also provided with supplemental steel cogs at the end of its cogged portion, substantially as described, and for the purpose specified.

2. The combination, in a press, of a plunger having a rack-bar thereon and a partially-cogged wheel engaging with said rack-bar, a detent adapted to engage with one of the cogs of the rack-bar and hold the plunger to its rearward position, an arm connected to said detent and extending alongside the wheel, and a trip on said wheel adapted to operate said arm and release the detent, substantially as set forth.

3. The combination, in a press, of a plunger, a rack-bar thereon, having a cog at one end inclined on its outer side to permit a detent to pass over it, said detent, an arm for operating said detent, and a partially-cogged wheel for operating said plunger, said wheel being provided with a combined supplemental cog and trip, substantially as shown and described.

4. The combination, in a press, with the plunger, its rack-bar, the wheel for operating the same, the detent for holding the plunger in position, a pivoted arm connected to said detent and passing alongside a wheel, and a trip on said wheel for raising said arm and relieving the detent, substantially as set forth.

5. The combination, in a press, of the plunger, the rack-bar thereon, supplemental cogs alongside said rack-bar, and a partially-cogged wheel arranged to engage with said rack-bar and provided with supplemental cogs for engaging with the supplemental cogs on the plunger, substantially as set forth.

6. In a press, the combination of a plunger, a rack-bar thereon, a supplemental cog arranged to one side of said rack-bar, and the space of two or more cogs from the last of the regular cogs, and supplemental cogs secured to the side of the wheel engaging with said rack-bar, which engage with said supplemental cogs, said wheel being cogged for a portion of its periphery only, whereby the regular cogs on the wheel will always be brought into exact engagement, notwithstanding that said plunger may be slightly out of position, substantially as set forth.

In witness whereof we have hereunto set our hands and seals, at Indianapolis, Indiana, this 25th day of March, A. D. 1886.

JESSE B. JOHNSON. [L. S.]
OSCAR B. JOHNSON. [L. S.]

In presence of—

E. W. BRADFORD,
CHARLES L. THURBER.