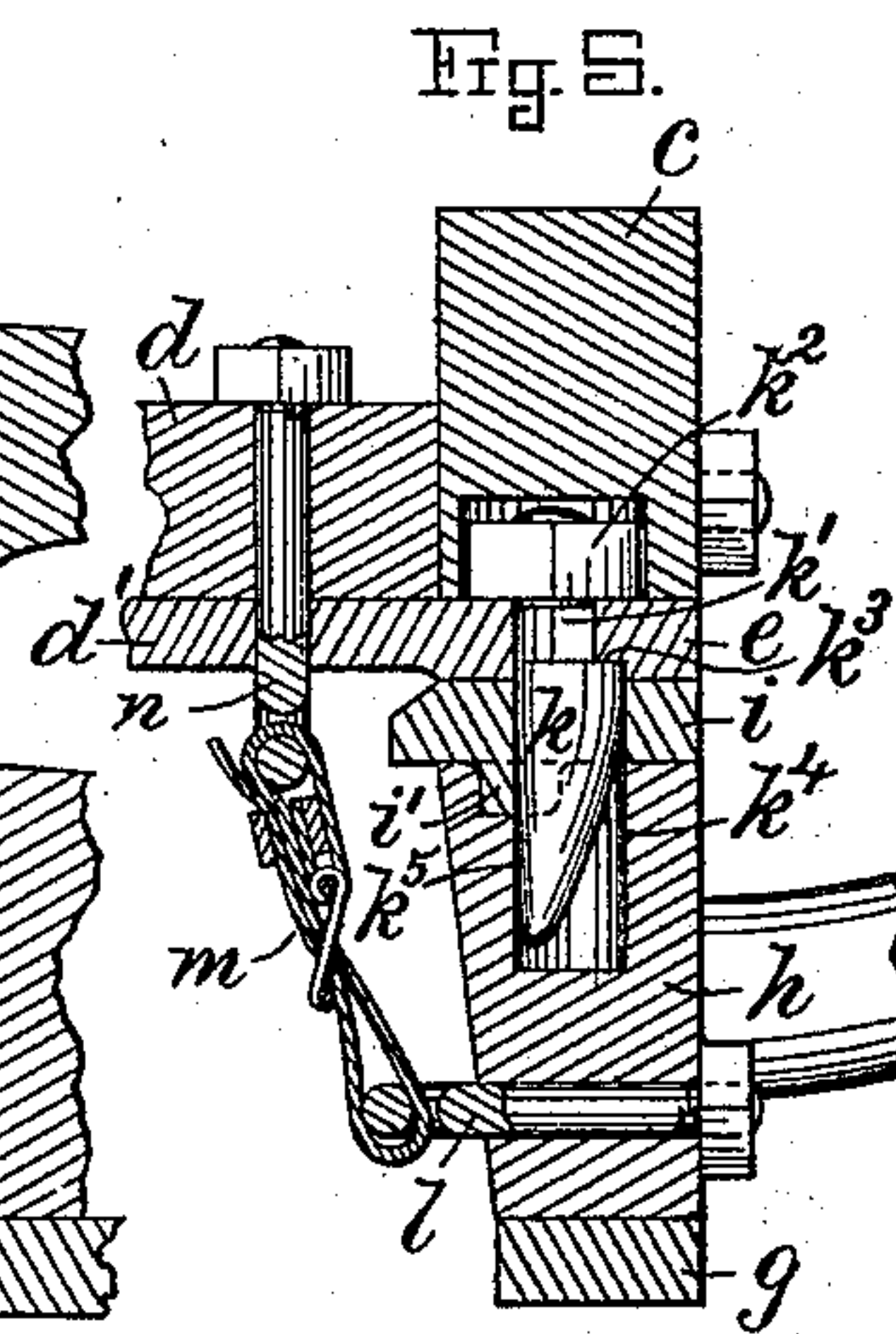
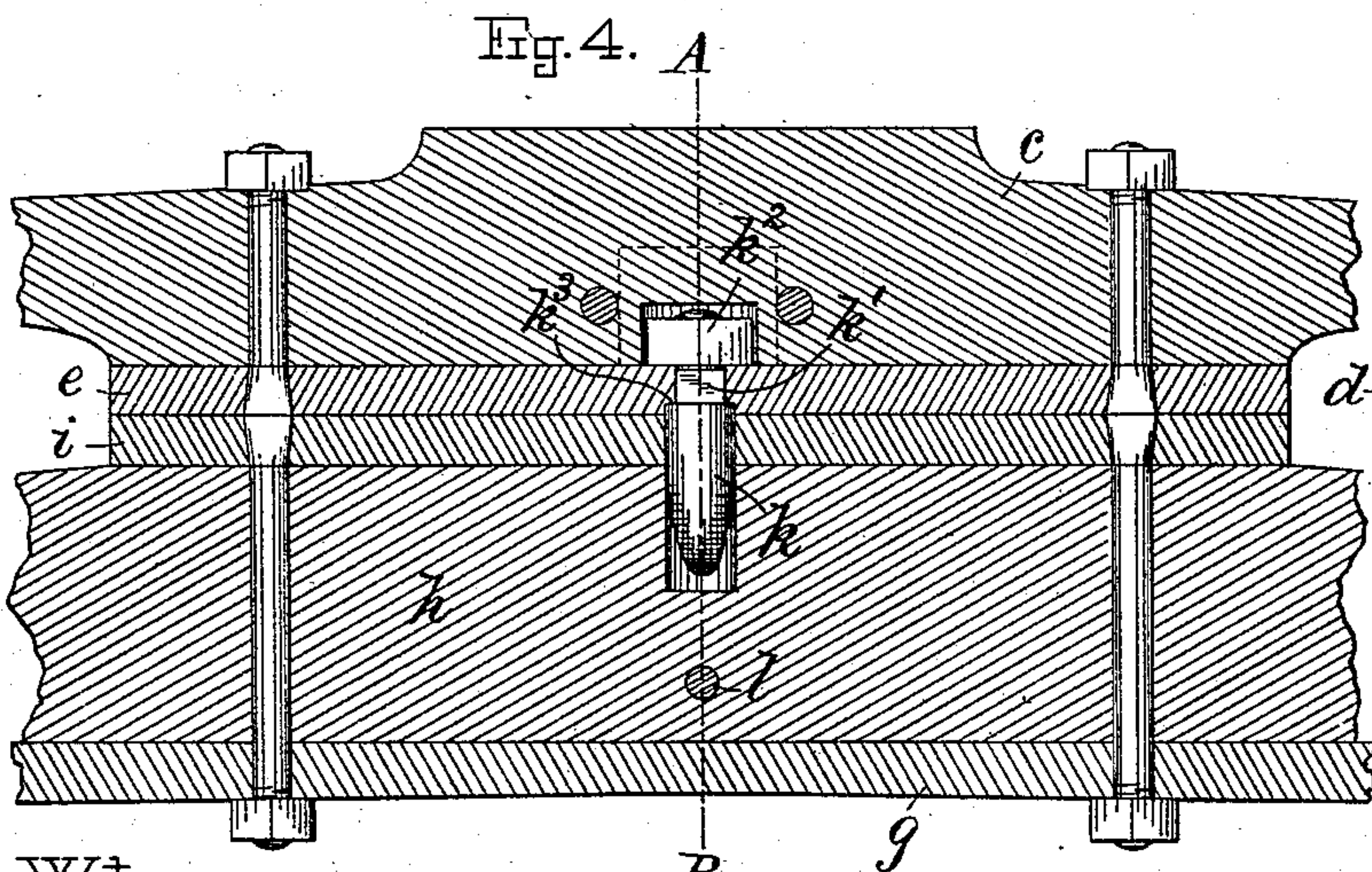
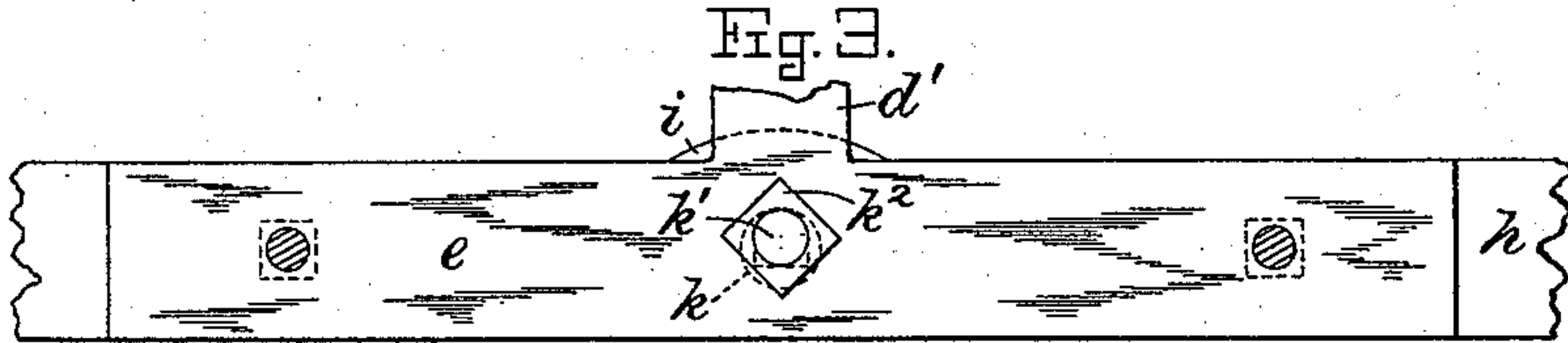
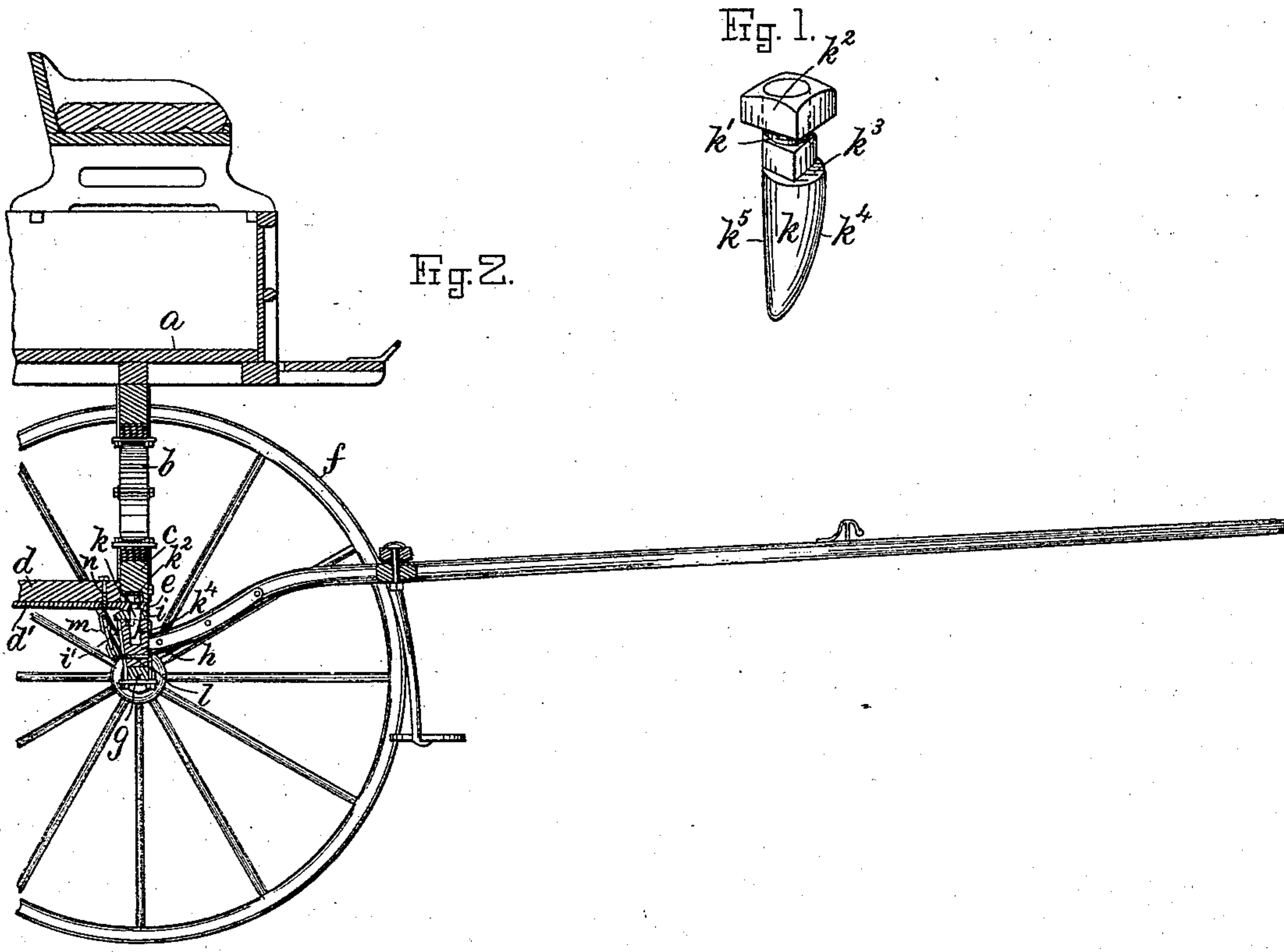


(No Model.)

J. E. FISHER.
KING BOLT.

No. 455,449.

Patented July 7, 1891.



Witnesses
Frank E. Greenwood.
M. H. Avery.

Inventor
John E. Fisher
by Henry Chadburn
his atty.

UNITED STATES PATENT OFFICE.

JOHN E. FISHER, OF BOSTON, MASSACHUSETTS.

KING-BOLT.

SPECIFICATION forming part of Letters Patent No. 455,449, dated July 7, 1891.

Application filed November 15, 1890. Serial No. 371,487. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. FISHER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in King-Bolts for Vehicles, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in king-bolts for vehicles, and more especially for vehicles in which the shafts or thills are rigidly attached to the axle-bed; and it consists in so forming the king-bolt as to allow the thills to be raised and lowered without bending the bolt or moving it in the rocker-plate, thus preventing the liability of breaking the bolt, enlarging the perforations in the rocker and axle-bed plates, or wearing away the rocker and axle-bed; also, to avoid the necessity of having the king-bolt extend through a perforation in the axle and weaken the axle, as is the case in vehicles provided with king-bolts as now in common use; also, in minor details of construction and arrangement of parts, as described and claimed hereinafter.

The invention is carried out as follows, reference being had to the accompanying drawings, whereon—

Figure 1 represents a perspective view of my improved king-bolt. Fig. 2 represents a central vertical section of the forward portion of a light express-wagon provided with one of my improved king-bolts. Fig. 3 represents a plan view of the top of the rocker-plate and a portion of the axle-bed with the king-bolt attached to the rocker-plate. Fig. 4 represents a detailed longitudinal section of the rocker, rocker-plate, axle, axle-bed, axle-bed plate, and showing the king-bolt in elevation. Fig. 5 represents a cross-section on the line A B, shown in Fig. 3.

Similar letters refer to similar parts on the different parts of the drawings.

The forward part of the body *a* of the wagon is supported upon the spring *b*, which is mounted upon and attached to the rocker *c* in any of the well-known manners. To the rocker is attached the perch *d*, and also to the under side of the rocker is attached the rocker-plate *e*, which is provided with a rearward extension forming the perch-iron *d'* in a manner as now in common use.

f represents one of the wheels of the wagon; *g*, the axle; *h*, the axle-bed, and *i* the axle-bed plate. On the under side of the axle-bed plate is preferably made the downward projection *i'* in such a manner as to re-enforce the perforation in said plate and to present a larger wearing-surface to the king-bolt.

k represents the king-bolt, which is provided with a screw-threaded shank *k'* in its upper end and with a nut *k²* for securing it to the rocker-plate. The king-bolt is also provided with a shoulder *k³*, which rests against the under side of the rocker-plate or within a countersink thereon. The portion of the shank resting within the perforation in the rocker-plate is made square to fit into the correspondingly-shaped perforation in the rocker-plate to keep the king-bolt from turning in said plate. The lower end of the king-bolt is made tapering, as shown, for a purpose to be described hereinafter.

The rocker and axle-bed plates are so arranged as to have their bearing-surfaces rest against each other when the thills are in the position occupied during the time a horse is harnessed to the wagon; but when the thills are lowered or raised from this position said plates are forced apart by turning on either the front or rear edges of the plates as a fulcrum, according to whichever way the thills are moved. In wagons having king-bolts as now in common use the axle is weakened by the perforation through which the king-bolt passes, and the movement of the thills up or down causes the king-bolts to be bent back and forth until they break or until they wear the perforations in the rocker and axle-bed plates large enough to compensate for this movement, which causes them to be weakened and to rattle. To obviate this liability of breaking the bolt and also to keep the wagon tight at this point, I attach the king-bolt firmly to the rocker-plate by means of the nut *k²* or by other equivalent means and make the lower end of the bolt with a taper on the front portion *k⁴* thereof to correspond to the curve described by the front surface of the perforation in the axle-bed plate when the thills are lowered, and on the rear portion *k⁵* of the bolt to correspond to the curve described by the rear surface of the perforation in the axle-

bed plate when the thills are raised above their normal position and as the downward movement of the thills is much larger than the upward movement I make the forward or
5 corresponding part k^4 of the king-bolt with a greater taper than the back part k^5 , and, if so desired, the taper on the back being so slight may entirely be dispensed with. The forward
10 taper on the bolt conforms with the curved surface described when the thills are lowered by the portion of the axle-bed plate against which the bolt rests.

To obviate the liability of having the king-bolt rise out of the perforation in the axle-bed plate when loading the wagon or when
15 the wagon is moving over an uneven surface, I supply the axle-bed with a bolt l , having a slotted head for receiving a chain or strap m , which strap also passes through a similar
20 bolt n , attached to the perch or other part of the body of the wagon. The strap is of such a length as to allow the raising and lowering of the shafts, as above described, but will effectually prevent the king-bolt from moving
25 out of the perforation in the axle-bed plate when the wagon is moved over an uneven surface at a high speed.

It will be obvious to any mechanic that the manner of attaching the king-bolt to the
30 rocker-plate may be varied at will within the scope of mechanical skill without departing from my invention; also, the holding of the king-bolt within the perforation in the axle-

bed plate may be accomplished in any well-known manner. 35

By the use of my improved king-bolt I am able to make the same of hardened steel and also to make the rocker and axle-bed plates of the same material, which causes them to wear much longer and to be much stronger
40 than the king-bolts now in common use, which are made of soft iron to allow them to be bent back and forth without breaking, which necessitates the making of the rocker and axle-bed plates from a similar soft material in order not to cut away the king-bolt. 45

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

In a vehicle, a king-bolt firmly attached to the rocker-plate and tapered on the front and
50 sides from the rocker-plate toward the end of the bolt, but approximately straight on the back portion of said bolt to present a nearly perpendicular surface against which the axle-bed and axle-bed plate rest when the vehicle
55 is drawn forward, as set forth and described.

In testimony whereof I have hereunto signed my name to this specification, in the presence of two subscribing witnesses, on this
60 13th day of November, A. D. 1890.

JOHN E. FISHER.

Witnesses:

HENRY CHADBOURNE,
FRANK E. GREENWOOD.