

No. 739,877.

PATENTED SEPT. 29, 1903.

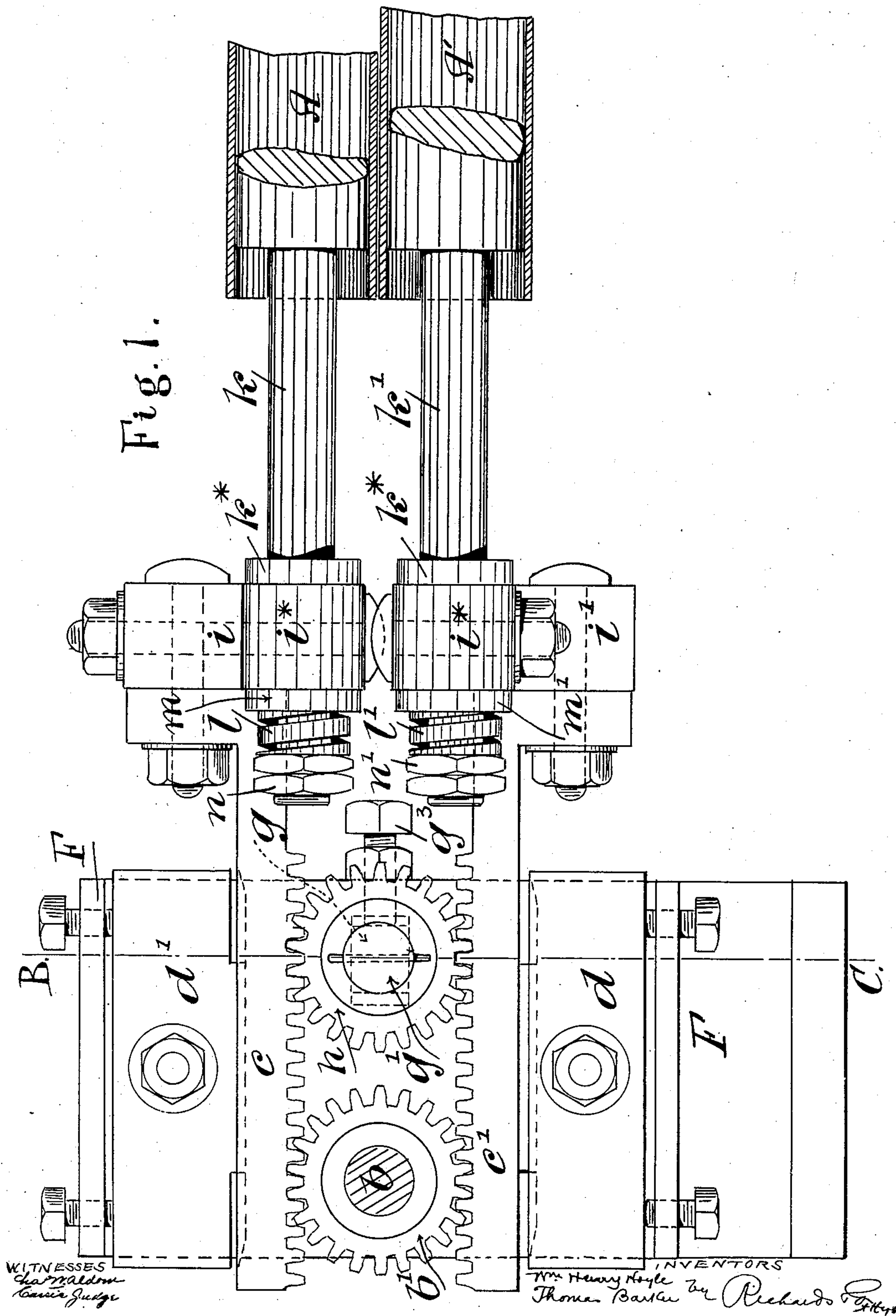
W. H. HOYLE & T. BARKER.

MECHANICAL MOVEMENT.

APPLICATION FILED AUG. 29, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 4.

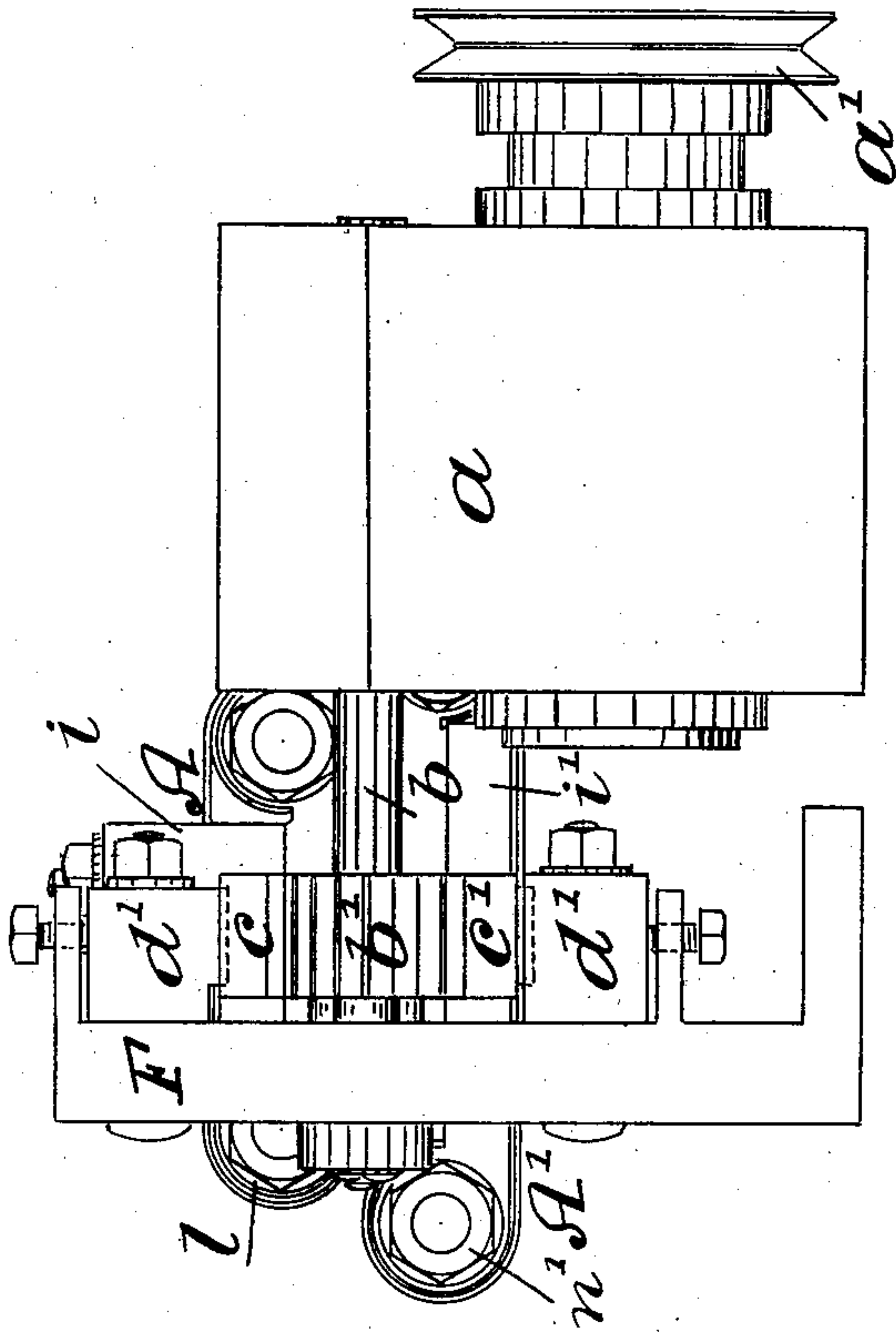


Fig. 3.

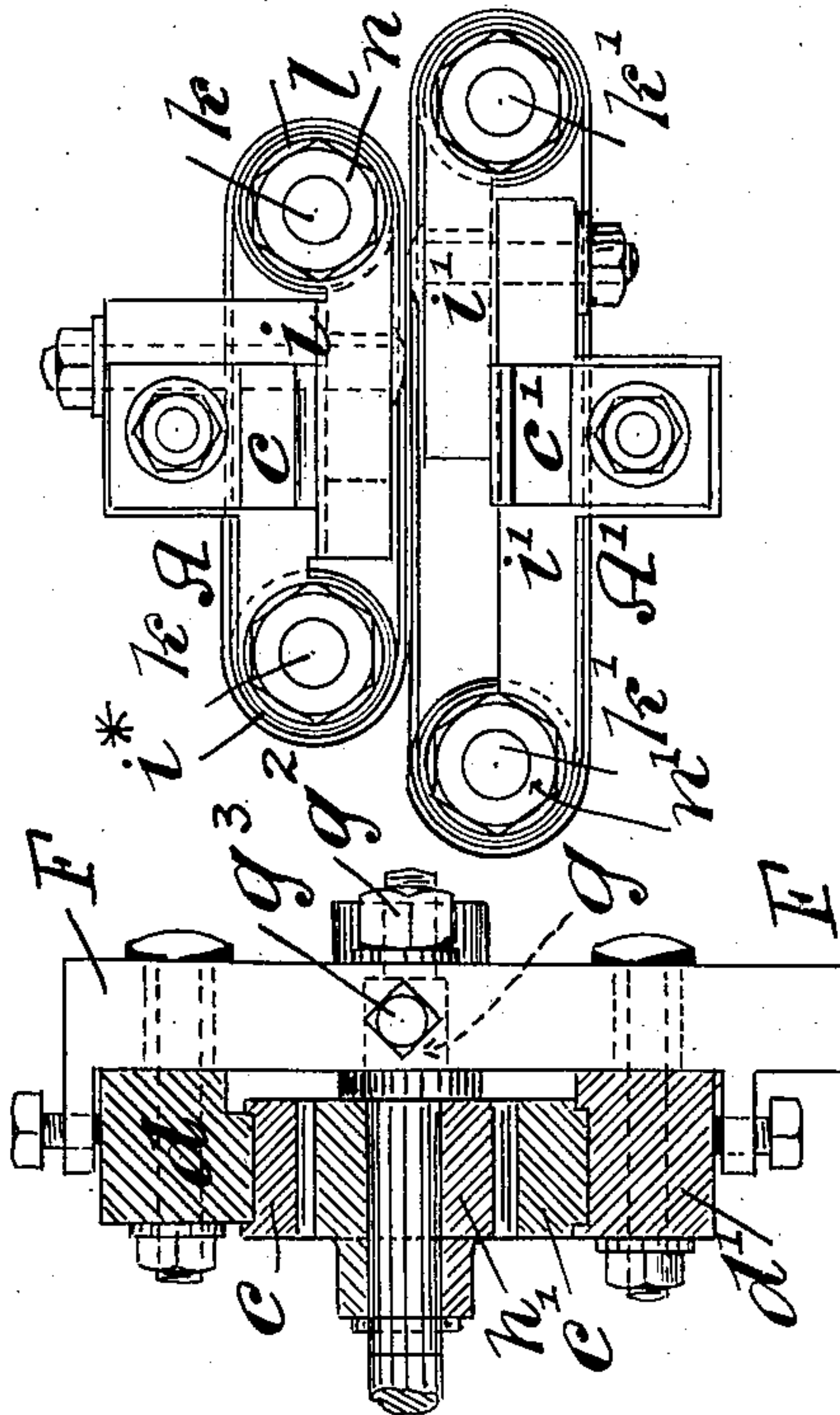
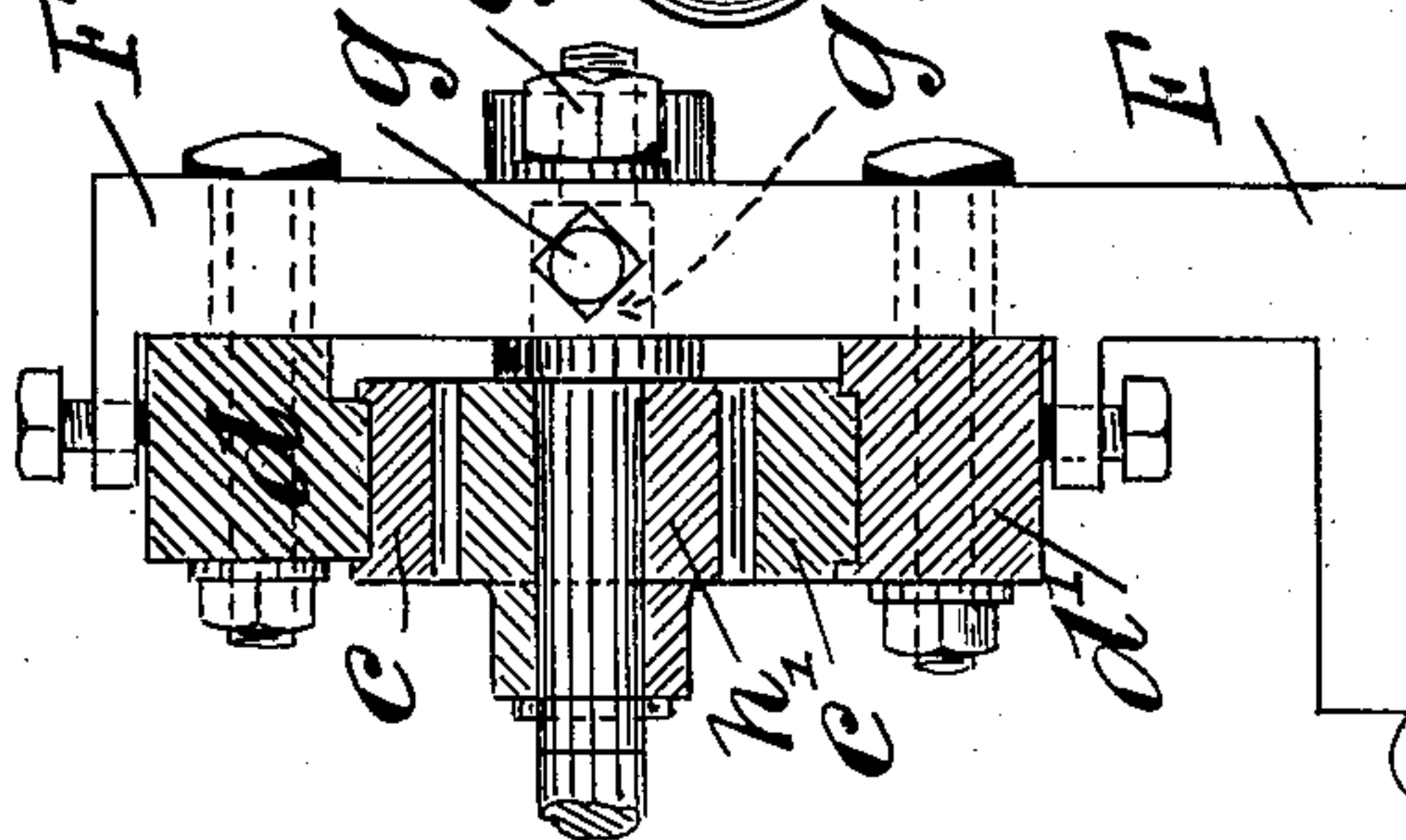


Fig. 2.



**WITNESSES:**

Ra<sup>W</sup>aldon  
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William Henry Stogle.  
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ATTORNEYS.



# UNITED STATES PATENT OFFICE.

WILLIAM HENRY HOYLE AND THOMAS BARKER, OF BOLTON, ENGLAND.

## MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 739,877, dated September 29, 1903.

Application filed August 29, 1902. Serial No. 121,536. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM HENRY HOYLE, cotton-spinner, residing at 86 Chorley New Road, and THOMAS BARKER, consulting engineer, residing at 164 Crook street, Bolton, in the county of Lancaster, England, subjects of the King of Great Britain and Ireland, have invented certain new and useful Improvements in Mechanical Movements, (for which we made application for patent in Great Britain, No. 2,540, dated January 31, 1902,) of which the following is a specification.

Our said invention relates to sliver-rubbing apparatus for carding-engine condensers and other machinery having "rubbers" for rubbing fibrous material. These rubbers consist of endless bands or aprons, which rub the sliver, yarn, or the like and deliver the same by a combined rotary and reciprocating movement, as is well understood. For certain purposes it is found necessary to reciprocate the said rubbers at a greatly-increased velocity; and the object of the first part of this invention is to obtain a very much quicker and smoother reciprocating movement for the said rubbers than has hitherto been possible. The second part of the invention has reference to improved means for cushioning the ends of the shafts of the rubbers, and so rendering it possible to reciprocate the rubbers at the very high speed which is obtainable under the first part of our invention.

In order that our invention may be readily and clearly understood, we will now describe the same in detail, and particularly with reference to the annexed two sheets of drawings.

In the said drawings, Figure 1 is a front elevation showing part of the mechanism employed under our invention to effect a rapid reciprocation of the rubbers. The figure also shows the way in which the ends of the rubber-shafts are connected and cushioned. Fig. 2 is a sectional elevation, on a smaller scale, of the supporting-framing and racks, the view being taken on the line B C, Fig. 1. Fig. 3 is an end elevation of the rubbers, together with the attached cross-heads and racks. Fig. 4 shows an end elevation of the complete mechanism for effecting reciprocation of the rubbers.

In carrying our invention into effect we employ an ordinary or suitable doffing-comb mo-

tion to give an oscillating movement to the shaft *b*. Doffing-comb motions are at the present time used for the purpose of oscillating the comb-shafts of carding-engines, as is well understood. The doffing-comb motion is contained within the oil-tight box *a* and is operated from any suitable driving source by the pulley *a'*, so as to oscillate the shaft *b*. Upon the shaft *b* a spur-pinion *b'* is fixed, which gears with and reciprocates two racks *c c'*. These racks *c c'* bed upon and work against slide-blocks *d d'*, which are adjustably carried in a bracket or framing *F*.

The framing *F* not only supports the racks *c c'* and the shaft *b*, but also carries an adjustable stud *g*, upon the turned end *g'* of which is loosely mounted a spur-pinion *h*, the teeth of which mesh with the racks *c c'*. As the racks are moved to and fro by the spur-pinion *b'* the loosely-mounted spur-pinion *h* is correspondingly rotated, as will be well understood. The function of the loose pinion *h* is to take up all wear and slackness in the teeth of the racks *c c'* and pinion *b'*. By slackening back the nut *g<sup>2</sup>* and adjusting the squared stud *g* by means of the setting-up screw *g<sup>3</sup>* the squared head of the stud is moved along the slot in the framing *F* and with it the spur-pinion *h*. By these means the two spur-pinions are brought nearer together, causing the teeth of the pinions to press against the teeth of the racks in opposite directions, thus taking up all wear and slackness.

The racks *c c'* are bolted to cross-heads *i i'*, formed with journals *i\* i\**, through which pass the ends of the rubber-shafts *k k'*. These rubber-shafts *k k'* are also mounted in the ordinary journals fixed on the main framing of the machine.

In order to cushion the ends of the rubber-shafts and permit of their being reciprocated at the high speed obtainable under our invention, we mount springs *l l'* upon the reduced ends of the rubber-shafts *k k'*, these springs pressing the cross-heads against collars *k\* k\**, formed on or secured to the said rubber-shafts. Between the coiled springs *l l'* and the cross-heads loose collars or washers *m m'* are interposed. In practice the coiled springs are compressed by lock-nuts *n n'* between such nuts and the loose washers *m m'* until



the compression of the springs equals or is a little in excess of the force or power required to reciprocate the rubbers. With the improved arrangement of parts and by carefully  
 5 adjusting the lock-nuts  $n n'$  so as to compress the springs  $l l'$  against the loose washers  $m m'$  we obtain a very smooth and quiet reciprocating movement with little or no knocking or noise.

10 The operation of the improved mechanism is as follows: When the shaft  $b$  is oscillated, (by the doffing-comb mechanism within the box  $a$ ,) the wheel  $b'$  is rotated in reverse directions and imparts reciprocating motion to  
 15 the racks, thereby giving a reciprocating movement to the cross-heads  $i i'$ , which in turn give a reciprocating movement to the rubber  $A A'$ . The cushioning arrangement takes up the vibration and while elastically  
 20 pressing on the rubber-shafts permits the same to revolve freely and without noise.

It will be understood that the rubber-shafts are rotated by spur-gearing in the usual manner, so that the required traveling or revolving  
 25 movement is obtained in addition to the reciprocating movement herein particularly described.

We declare that what we claim is—

1. In a device of the character described, an oscillating shaft, a spur-pinion carried there- 30  
 by, racks gearing with said pinion, rubber-shafts operatively connected with said racks and means for taking up the wear of said pinion, substantially as described.

2. In combination, in mechanism of the 35  
 class described, an oscillating shaft, means for operating it, a spur-pinion  $b'$ , racks  $c, c'$ , gearing therewith, an adjustable pinion  $h$ , and means for supporting said racks, substantially as herein described. 40

3. In combination, an oscillating shaft, means for operating it, a gear carried by said shaft, racks engaging opposite sides of the gear, cross-heads connected to said racks, the rubber-shafts and yielding connections be- 45  
 tween the said rubber-shafts and the cross-heads, substantially as described.

In witness whereof we have hereunto set our hands in presence of two witnesses.

WILLIAM HENRY HOYLE.

THOMAS BARKER.

Witnesses:

RICHARD IBBERSON,  
 ALFRED YATES.