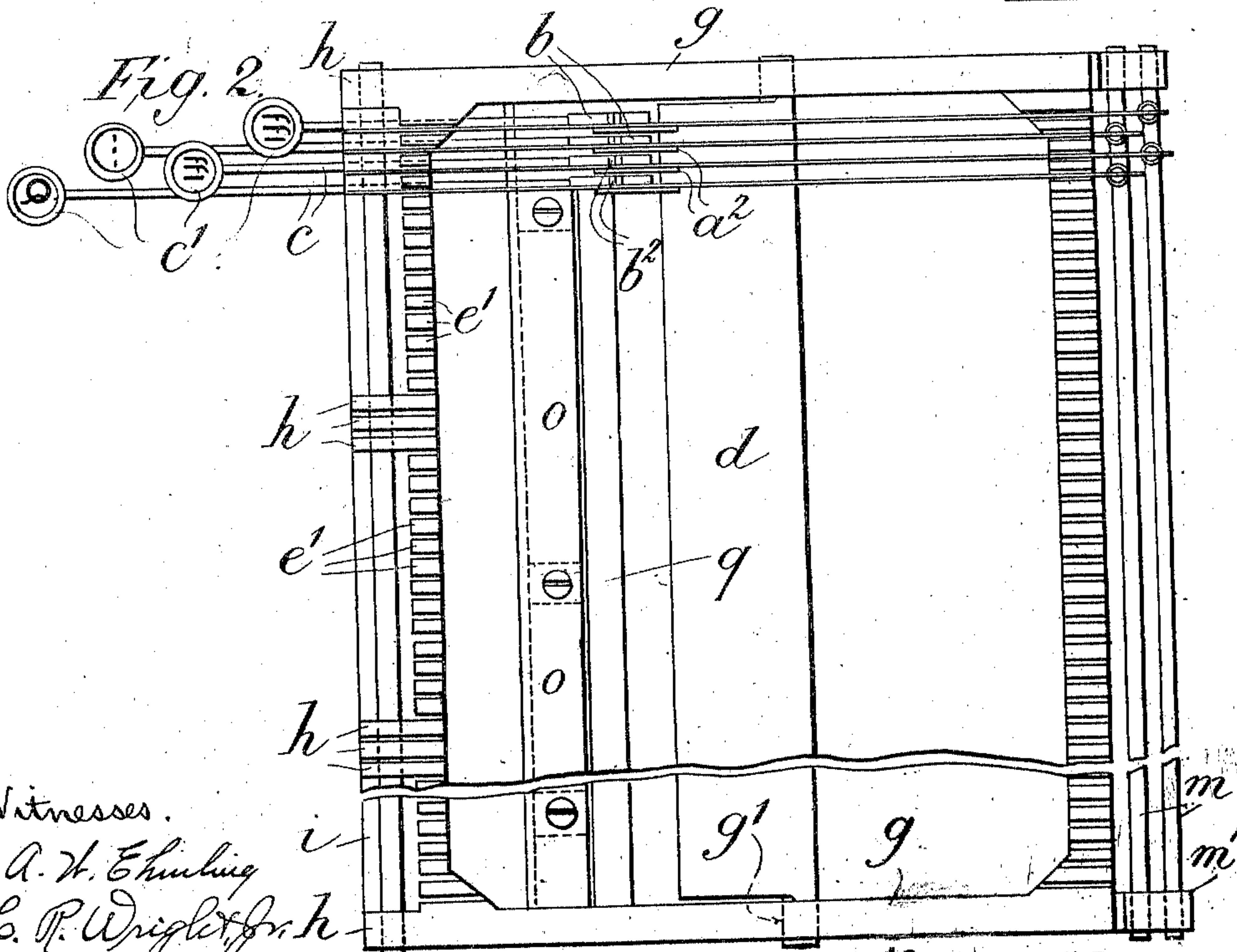
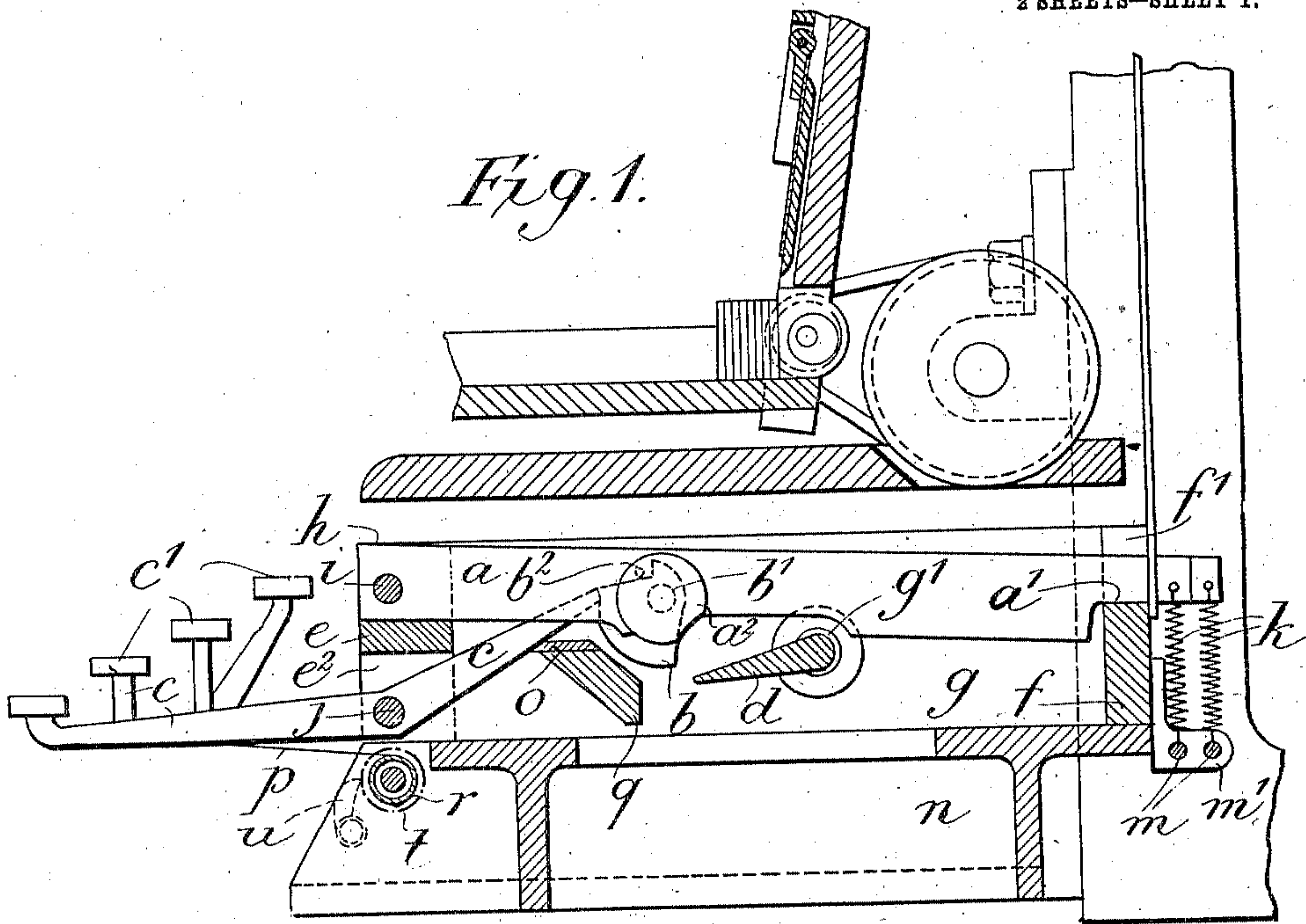


E. A. ADCOCK.
 KEYBOARD MECHANISM FOR PRINTING MACHINES.
 APPLICATION FILED DEC. 21, 1903.

966,978.

Patented Aug. 9, 1910.

2 SHEETS—SHEET 1.



Witnesses.

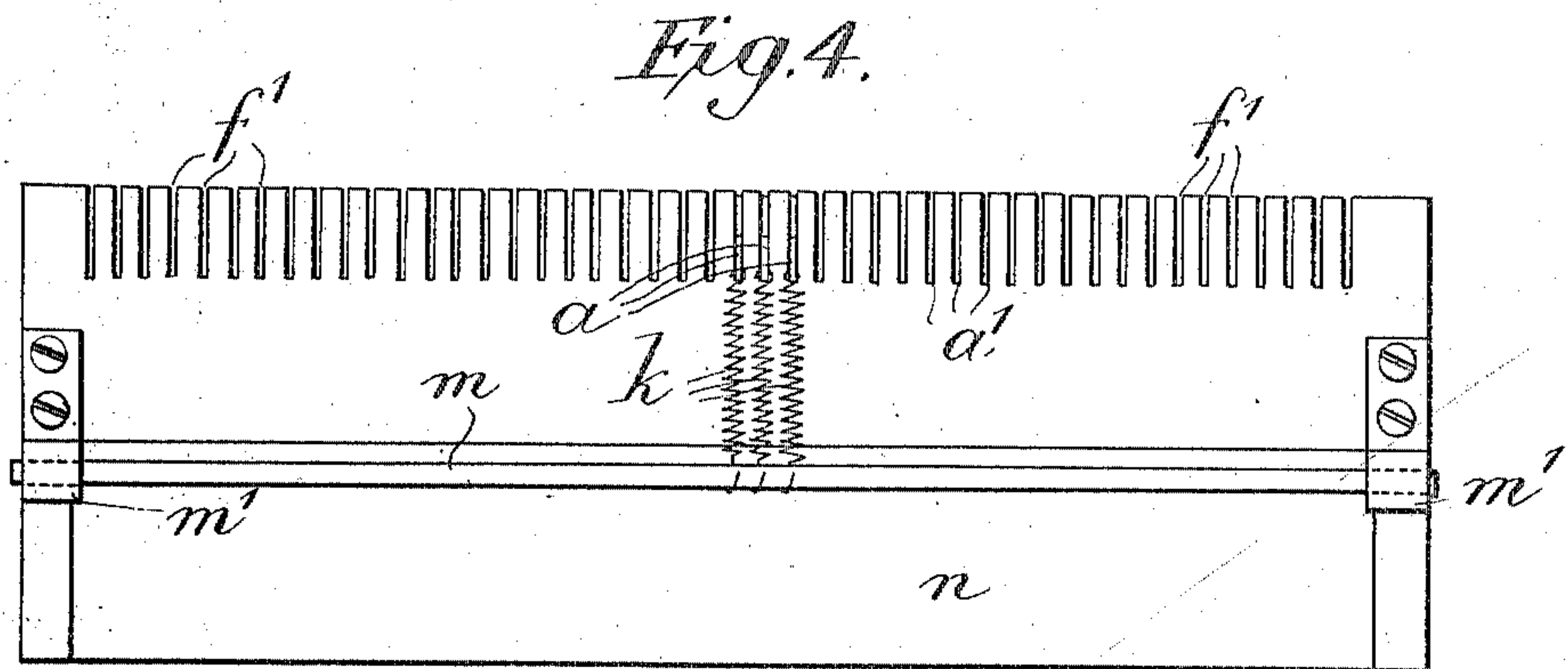
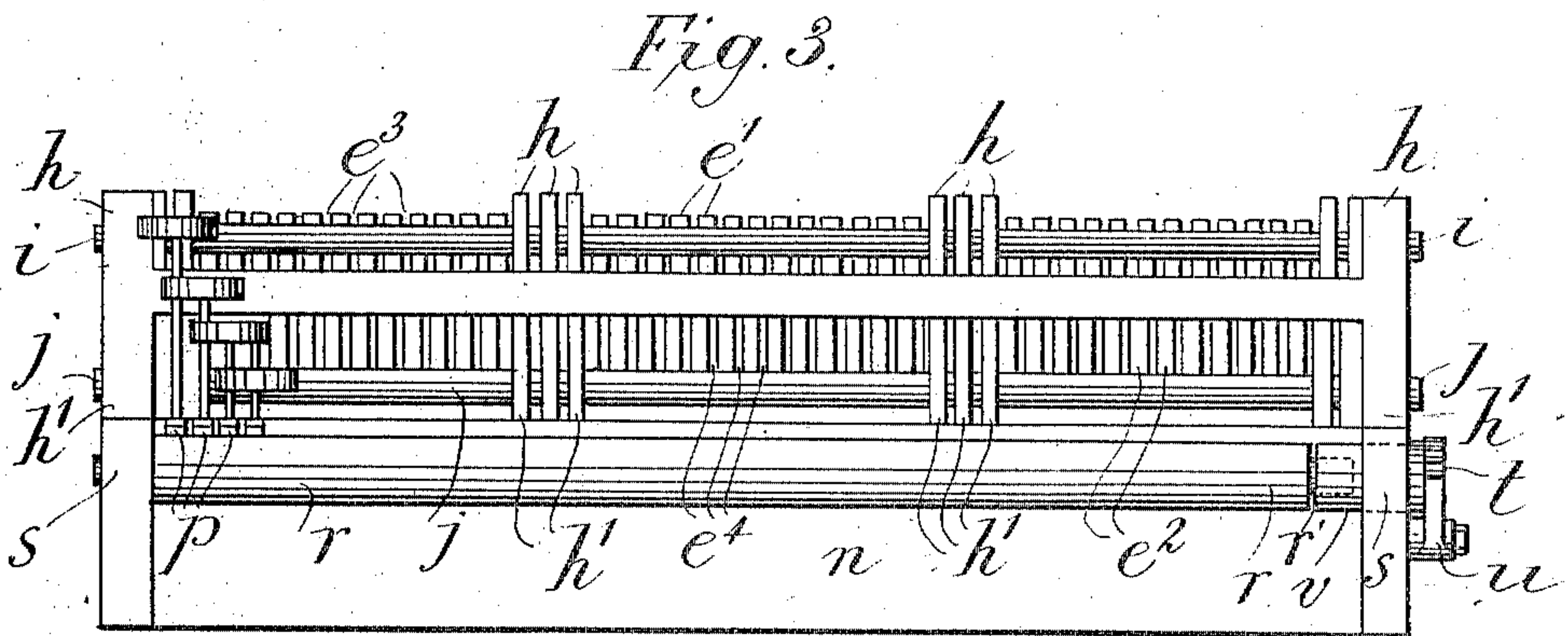
A. H. Ehmeling
 C. P. Wright, Jr.

Inventor, E. A. Adcock, By *[Signature]* Attorney.

E. A. ADCOCK.
 KEYBOARD MECHANISM FOR PRINTING MACHINES.
 APPLICATION FILED DEC. 21, 1908.

966,978.

Patented Aug. 9, 1910.
 2 SHEETS—SHEET 2.



Witnesses:
 A. H. Ehrling
 C. P. Wright, Jr.

Inventor
 E. A. Adcock,
 By A. S. Patton,
 Atty.

UNITED STATES PATENT OFFICE.

EDWARD AUGUSTUS ADCOCK, OF READING, ENGLAND, ASSIGNOR TO THE PULSOMETER ENGINEERING COMPANY, LIMITED, OF READING, ENGLAND.

KEYBOARD MECHANISM FOR PRINTING-MACHINES.

966,978.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed December 21, 1908. Serial No. 468,654.

To all whom it may concern:

Be it known that I, EDWARD AUGUSTUS ADCOCK, a subject of the King of Great Britain and Ireland, residing at Reading, in the county of Berks, England, have invented Improvements in or Relating to Key-board Mechanism for Printing-Machines, of which the following is a specification.

This invention relates more particularly to that kind of key-board mechanism for type setting and type distributing machines wherein lever (hereinafter called for distinction lifting levers) are used for actuating type ejectors, shutters or other devices and there are used in conjunction with such levers a power-driven actuating device, such as a pivoted plate, power transmitting devices, such as catches or pawls pivoted to the respective lifting levers, and key operated devices, such as levers, for controlling the position of the power transmitting devices, the arrangement being such that normally each power transmitting device will be held by the corresponding key operated device in a position in which the power driven actuating device cannot come into operative connection with such transmitting device and the corresponding lifting lever but upon depressing a key, the corresponding power transmitting device will be caused to assume a position in which the said actuating device will operate it and the corresponding lifting lever and cause the latter to actuate, for example, a type ejector in the case of a type setting machine, or a shutter and other devices in the case of a type distributing machine, the various parts afterward automatically resuming their original positions, if the key is released, ready to again go through the same cycle of operations when a key is again operated.

The present invention has special reference to improvements in the construction of key-board mechanism of the kind referred to whereby greater accuracy of working is insured, the construction of the various parts simplified, the assembling of the parts facilitated, the return of the parts to their correct normal position insured, the touch of the key levers readily adjusted to suit different requirements and the removal of a key lever without disturbing other key levers rendered practicable. For these purposes, key board mechanism of the kind referred to is, according to the present invention, constructed

in the improved manner that will now be described with reference to the accompanying illustrative drawings wherein—

Figure 1 is a sectional side elevation, Fig. 2 a partial plan and Figs. 3 and 4 partial front and rear elevations respectively of one construction of such mechanism.

In the example shown, the lifting levers *a* carrying the power transmitting devices or pawls *b*, the key levers *c*, and the power driven actuating device *d* are mounted in a metal frame or casting in one piece (hereinafter called the key-board frame) comprising front and rear cross members *e*, *f* respectively and longitudinal side members *g*. The front cross member *e* has extending respectively along its upper and lower sides and adjacent to its rear edge, upwardly and downwardly extending ribs *e*¹, *e*² respectively (Fig. 3) that are formed, as by milling, with a series of vertical notches or grooves *e*³, *e*⁴, the notches *e*³ in the upper rib *e*¹ being adapted to receive and guide the front ends of the lifting levers *a*, while those *e*⁴ in the lower rib *e*² are adapted to receive and guide the key levers *c*. The front ends of the side members *g* and intermediate portions of the said front cross member *e* are formed with upper and lower forwardly extending perforated lugs or bearings *h*, *h*¹ respectively through the upper of which, namely *h*, and the front perforated ends of the said lifting levers *a*, a transverse pivot pin or shaft *i* can be easily passed, while through the lower lugs or bearings *h*¹ and key levers *c* another transverse pin or shaft *j* can be easily passed to carry such key levers. The rear cross member *f* is formed with a series of vertical notches *f*¹ corresponding to those in the upper rib *e*¹ of the front cross member *e* to receive and guide the rear ends of the lifting levers *a*. These rear ends of the levers *a*, which may be notched at the underside, as at *a*¹, are each connected to a spring *k*, that serves to return the lever, when released, to its lower and inoperative position and hold it against the bottom of its guide notch *f*¹ in the rear cross member *f* which serves as a fixed stop to normally maintain it in the inoperative position. The several springs *k*, which may be coiled springs as shown, are or may be connected at their lower ends to one or more transverse rods *m* mounted in lugs *m*¹ fixed to

the rear cross member *f* of the key-board frame. This frame is fixed upon the base plate *n* of the machine.

By constructing the frame including the guides in one piece or casting in the manner set forth it results that the guides can be accurately machined so as to secure the requisite fixed relation between the elements of the lever mechanism in the following respects:—true alinement of the slots forming the front and rear lever guides and accurate spacing of the levers by the solid portions of the guides whereby smoothness of working is obtained, it being furthermore practicable to withdraw any particular lever without disturbing the remainder.

The key levers *c* are normally maintained in their inoperative position by a transverse abutment *o* upon or against which their inner ends are caused to bear under the action of their individual springs *p*. The abutment *o* is or may advantageously be formed as a hard metal plate removably attached to the upper side of an intermediate cross member *g* of the key-board frame so as to admit of ready adjustment in a horizontal direction.

The power transmitting devices or pawls *b* are each constructed and arranged substantially as heretofore, so as to be released when the corresponding key lever *c* is operated and to be returned to its inoperative position and held in that position when the key lever is released and the lifting lever *a* carrying it is returned to its lower and inoperative position. The portion of the lever *a* to which the pawl *b* is applied is strengthened by a metal disk *a*² fixed to one side thereof and carrying the pin *b*¹, upon which the pawl *b* is journaled, and also the pin *b*² used to limit the motion of the pawl when moving into its operative position. The power driven actuating device *d*, preferably in the form of a pivoted plate as heretofore, is mounted to turn in bearings *g*¹ in the side members *g* of the key-board frame, and is, also as heretofore, adapted to be swung to and fro through a suitable arc, as by a cam and lever, so as to engage and displace any pawl *b* which may be released by its corresponding key lever *c* and allowed to descend into the path of the said plate.

To enable the touch of the key levers *c* to be readily adjusted, the springs *p* for normally holding such levers in their inoperative position and for release, are fixed upon a spindle that is capable of being readily adjusted in a rotary direction to vary the pressure of the springs upon all the levers simultaneously and of being afterward fixed in the adjusted position. In the arrangement shown for this purpose by way of example in the accompanying drawings, the springs *p*, in the form of blade springs, are each arranged to act against the lower side

of the forwardly extending arm of the corresponding key lever *c* carrying the finger key *c*¹, the inner end of the spring being fixed to a transverse spindle *r*, that may be hollow, as shown, common to all the springs. The ends of the spindle are journaled in bearings *s* in the opposite side portions of the base plate *n* of the machine and one of such ends is provided with a ratchet wheel *t*, adapted to be rotated by a handle or key, and with which a spring detent *u* pivoted to the base plate is arranged to normally engage. By rotating the wheel *t* and spindle *r* in one direction, the pressure of the springs *p* against the key levers *c* can be increased, and upon disengaging the detent *u* from the wheel *t* and turning the spindle *r* more or less in the opposite direction, the pressure of the springs *p* can be diminished, the detent in each case serving to hold the spindle and springs in the adjusted position. To enable the spindle *r* with springs *p* to be readily removed from the base plate, the ratchet wheel *t* may, as shown, be fixed to a sleeve *v* mounted to turn in the bearing *s* in the corresponding side of the base plate *n* and adapted to fit and engage a reduced end portion *r*¹ of the spindle, the arrangement being such that upon removing the sleeve with ratchet wheel from the spindle, the latter, with attached springs *p*, can be at once removed from the base plate.

What I claim is:—

1. In key-board mechanism for a type-setting or type distributing machine of the kind referred to, a key-board frame having integral therewith a transverse front member having upper and lower sets of vertical slots for supporting and guiding two sets of levers.
2. In key-board mechanism for a type-setting or type distributing machine of the kind referred to, a key-board frame having integral therewith a front transverse lever supporting and guiding member, said transverse member having upper and lower sets of vertical slots for supporting and guiding two sets of levers and also at its upper side forwardly extending rod supporting lugs.
3. In key-board mechanism for a type-setting or type distributing machine of the kind referred to, a key-board frame comprising longitudinal side members and front and rear transverse lever supporting members, the front member being formed with upper and lower sets of vertical slots and the rear member with an upper set of slots, for spacing and guiding levers.
4. In key-board mechanism for a type setting or type distributing machine of the kind referred to, a key-board frame, longitudinally arranged lifting levers and key levers, a transverse front lever support integral with said frame and formed with upper and lower slots to respectively receive,

guide and space the front ends of the lifting-levers and the corresponding key-levers and a rear transverse lever support integral with said frame and formed with slots to receive, guide and space the rear ends of the lifting levers.

5. In key-board mechanism for a type-setting or type distributing machine of the kind referred to, a key-board frame having a front transverse lever support that is integral therewith and formed at its upper part with a vertical set of slots and with forwardly extending lugs, a rod carried by said lugs and longitudinally arranged lifting levers having their front ends extending through the slots and pivoted to said rod.

6. In key-board mechanism for a type-setting or type distributing machine of the kind referred to, a key-board frame comprising longitudinal side members and a transverse front member integral with each other, said transverse member being formed with a set of downwardly extending slots, a rod extending transversely through the slotted lower part of said transverse member, a set of longitudinally arranged key levers extending through the slots and pivoted to said rod, and a second transverse member arranged to the rear of said front members and adapted to limit downward movement of the inner ends of said key levers.

7. In key-board mechanism for a type setting and type distributing machine of the kind referred to, a key-board frame, longitudinally arranged lifting levers and key levers, a front transverse lever support, integral with said frame and having an upwardly extending slotted rib to accommodate and guide the front ends of said lifting-levers and a downwardly extending slotted rib to space and guide said key-levers.

8. In key-board mechanism for a type setting and type distributing machine of the kind referred to, a key board frame comprising side members integral with front transversely arranged supporting, guiding and spacing means, for lifting-levers and key-levers with transversely arranged rear supporting, guiding and spacing means for the lifting levers.

9. In key-board mechanism for a type setting and type distributing machine of the kind referred to, a key-board frame having side members formed with upper forwardly extending lugs, a cross member integral with said side members, upper forwardly extending lugs formed in said cross member, a shaft passing through and in part supported by said lugs and lifting-levers having one end mounted on said shaft.

10. In key-board mechanism for a type setting and type distributing machine of the kind referred to, a key-board frame having side members formed with lower forwardly

extending lugs, a cross member integral with said side members, lower forwardly extending lugs formed thereon, a shaft passing through and in part supported by said lugs and key-levers mounted on said shaft.

11. In key-board mechanism for a type setting and type distributing machine of the kind referred to, a key-board frame comprising side members, an upper front cross member, a lower front member and a rear cross member each integral with said side members and formed with a number of vertical slots, upper forwardly extending lugs and lower forwardly extending lugs formed on said side and cross members, a shaft passing through and supported by the upper forwardly extending lugs, lifting levers having their front ends mounted on said shaft and their rear ends extending through the slots in the rear cross support, a shaft passing through and supported by said lower forwardly extending lugs, lugs carried by the rear ends of said side frames, transverse rods mounted in said lugs and springs connecting said transverse rods and the rear ends of said lifting levers.

12. In key-board mechanism for a type setting and type distributing machine of the kind referred to, a key-board frame having side members formed with lower forwardly extending lugs, a slotted cross member integral with said side members, lower forwardly extending lugs formed on said cross member, a shaft passing through and supported by said lugs, key-levers mounted on said shaft, a transverse support intermediate of the front and rear ends of said side members, an abutment on said transverse support and a spring to each key-lever for normally holding said key-lever against said abutment.

13. In key-board mechanism for a type setting and type distributing machine of the kind referred to, a key-board frame having side members formed with lower forwardly extending lugs, a slotted cross member integral with said side members, lower forwardly extending lugs formed on said cross member, a shaft passing through and supported by said lugs, key-levers mounted on said shaft, a transverse support intermediate of the front and rear ends of said side members, an abutment on said transverse support, a transverse spindle mounted in said frame, a plurality of springs mounted thereon and arranged to normally hold each of said key levers in contact with said abutment.

14. In key-board mechanism for a type setting and type distributing machine of the kind referred to, a key-board frame having side members formed with lower forwardly extending lugs, a slotted cross member integral with said side members, lower forwardly extending lugs formed on said cross mem-

ber, a shaft passing through and supported by said lugs, key levers mounted on said shaft, a transverse support intermediate of the front and rear ends of said side members, an abutment on said transverse support, a transverse spindle mounted on said frame, separate springs mounted thereon and arranged to normally hold said key-levers in contact with said abutment and means whereby said spindle can be partly rotated to vary the pressure of said springs against said key lever.

15. In key-board mechanism for a type setting and type distributing machine of the kind referred to, a key-board frame having side members formed with lower forwardly extending lugs, a slotted cross member integral with said side members, lower forwardly extending lugs formed on said cross member, a shaft passing through and supported by said lugs, key-levers mounted on said shaft, a transverse support intermediate of the front and rear ends of said side members, an abutment on said transverse support, a transverse spindle mounted in said frame, separate blade springs mounted on said spindle and acting separately against the key levers to normally hold them in contact with said abutment and means whereby said spindle can be partly rotated for simultaneously varying the pressure of all of said springs against said key-levers.

16. In a key-board frame for a type-setting or type distributing machine, key-levers mounted in said frame, a transverse spindle

journaled at one end in one side of said frame, a rotary detachable carrier journaled in the opposite side of said frame and adapted to support the other end of the spindle and to rotate said spindle, blade springs fixed to said spindle and each acting against the underside of one of said key levers, a toothed wheel fixed to said carrier and means for preventing accidental return movement of said spindle and carrier after rotary adjustment thereof.

17. In a key-board frame for a type-setting or type distributing machine, key levers mounted in said frame, a transverse compound spindle mounted in said frame and adapted to be partly rotated therein, said spindle being made in two detachable parts that are in driving connection with each other and are separately removable from said frame, one of said parts serving as the main spindle and the other as a rotary adjustable carrier therefor, blade springs fixed to the main part of said spindle and each acting against the underside of one of said key-levers, a toothed wheel fixed to the carrier part of said spindle, and means for preventing accidental return movement of the compound spindle after rotary adjustment thereof.

Signed at London, England, this 9th day of December 1908.

EDWARD AUGUSTUS ADCOCK.

Witnesses:

W. Cross,

F. J. BROUGHAM.