

No. 677,220.

Patented June 25, 1901.

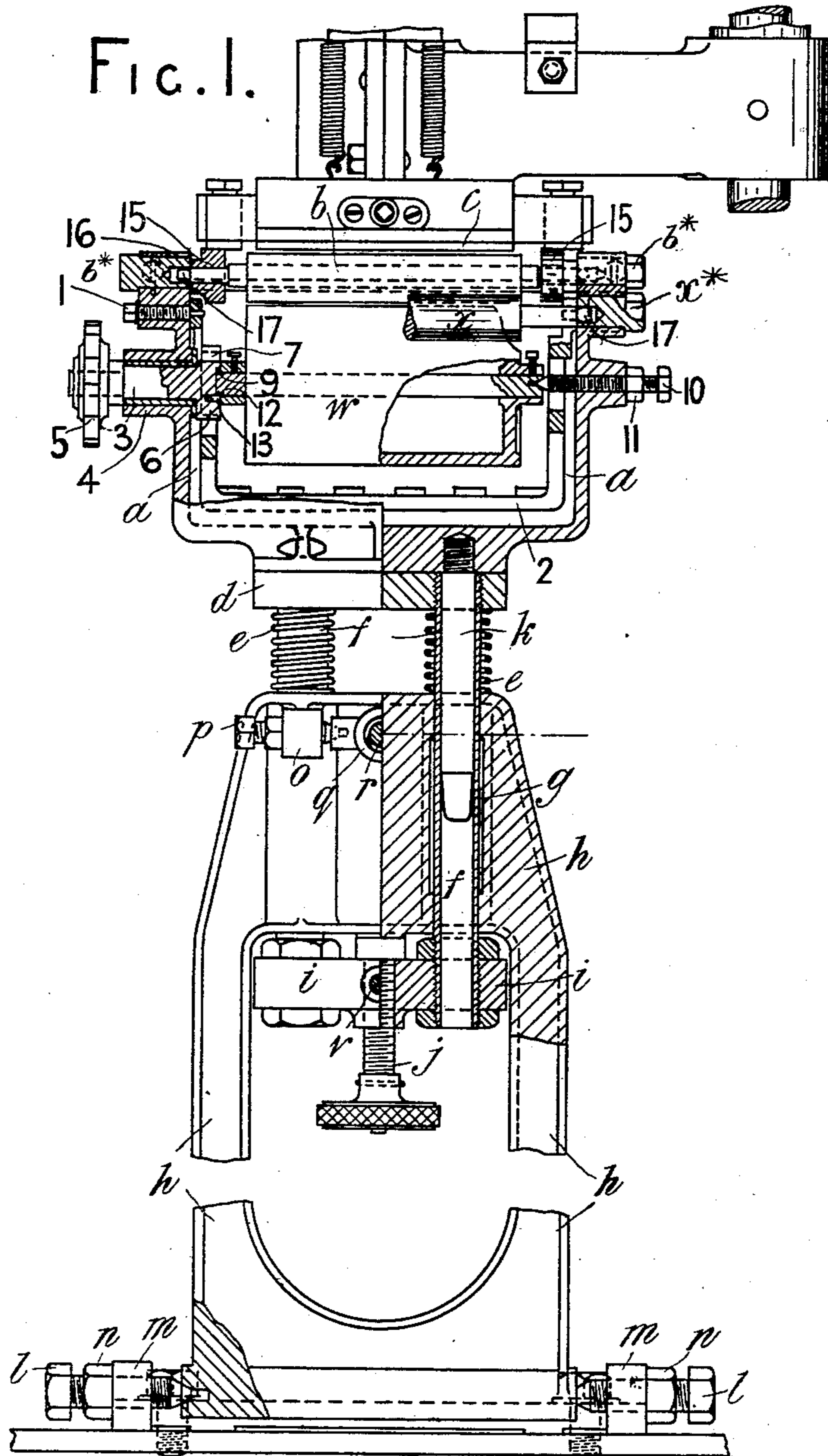
J. Y. JOHNSTON.

INKING APPARATUS FOR PRINTING OR PRINTING AND EMBOSING PRESSES.

(Application filed Jan. 23, 1900.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses

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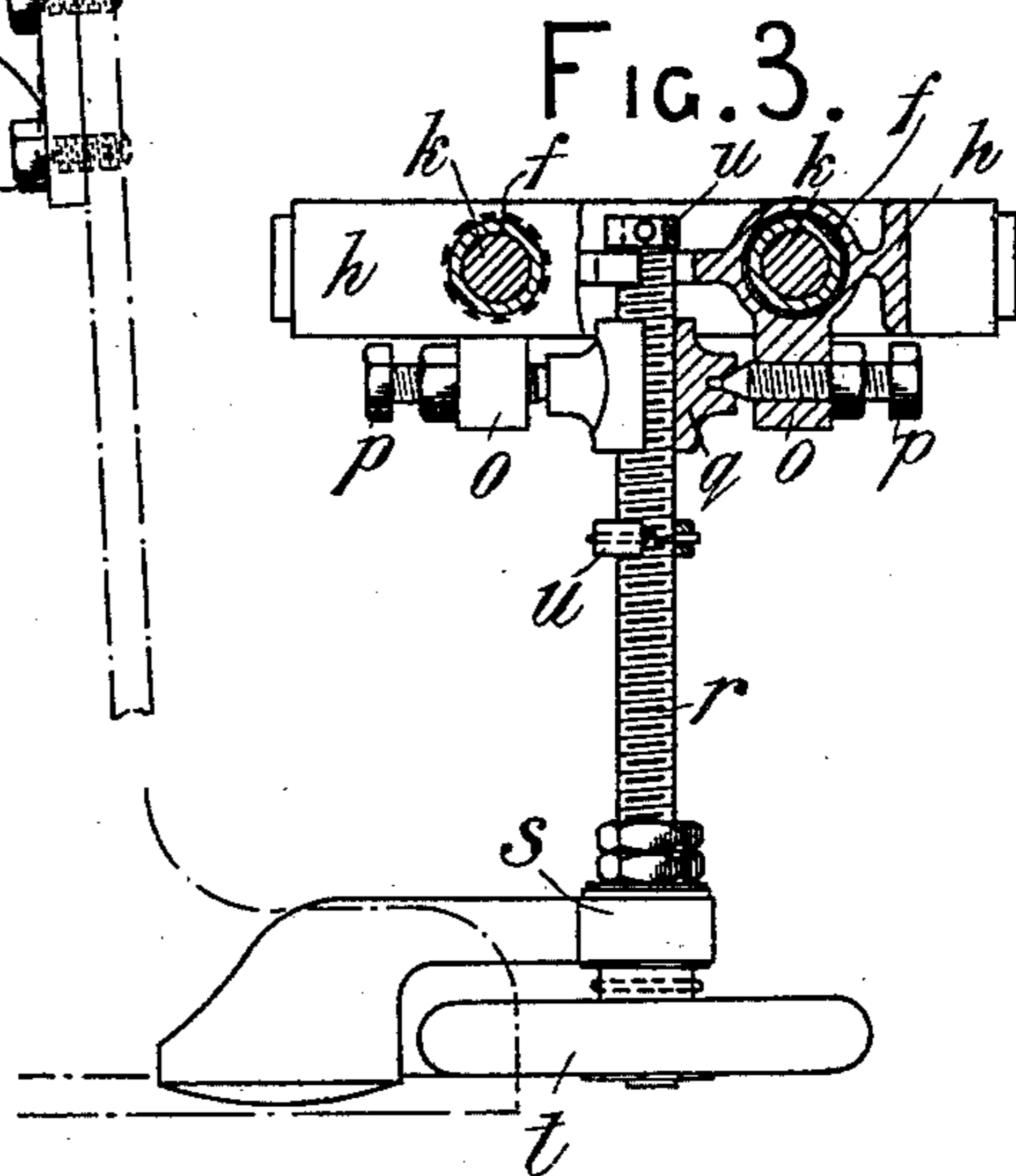
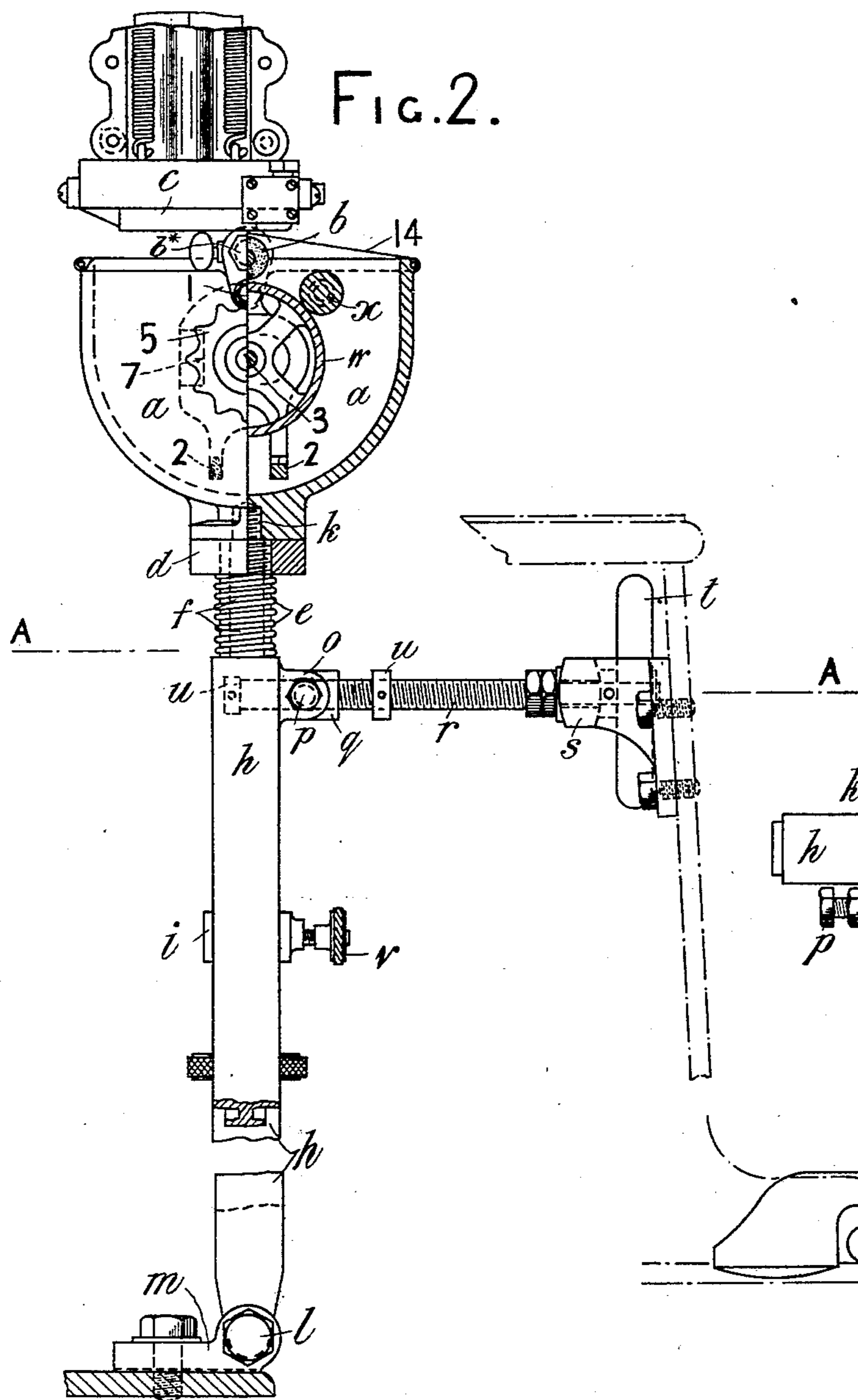
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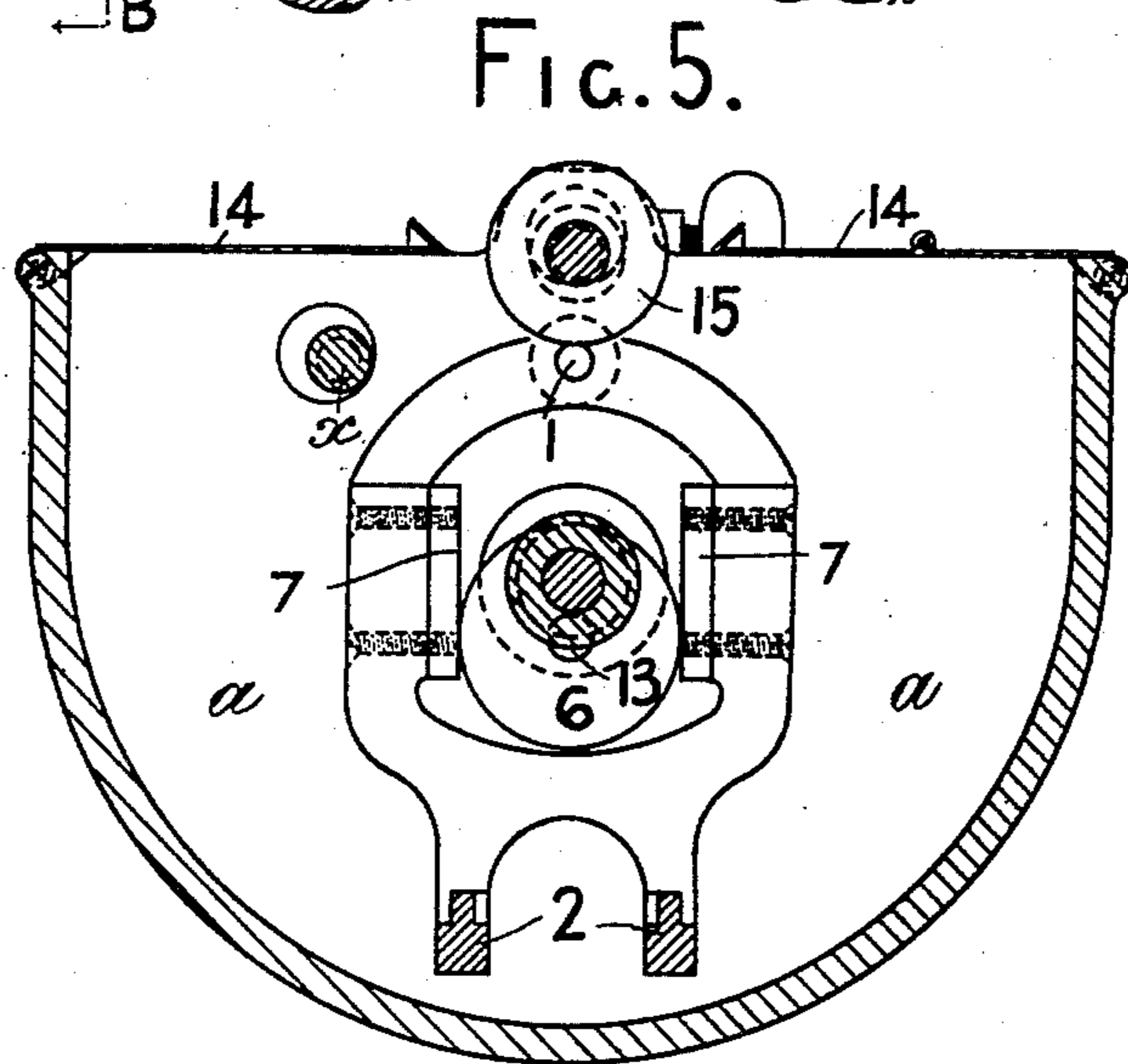
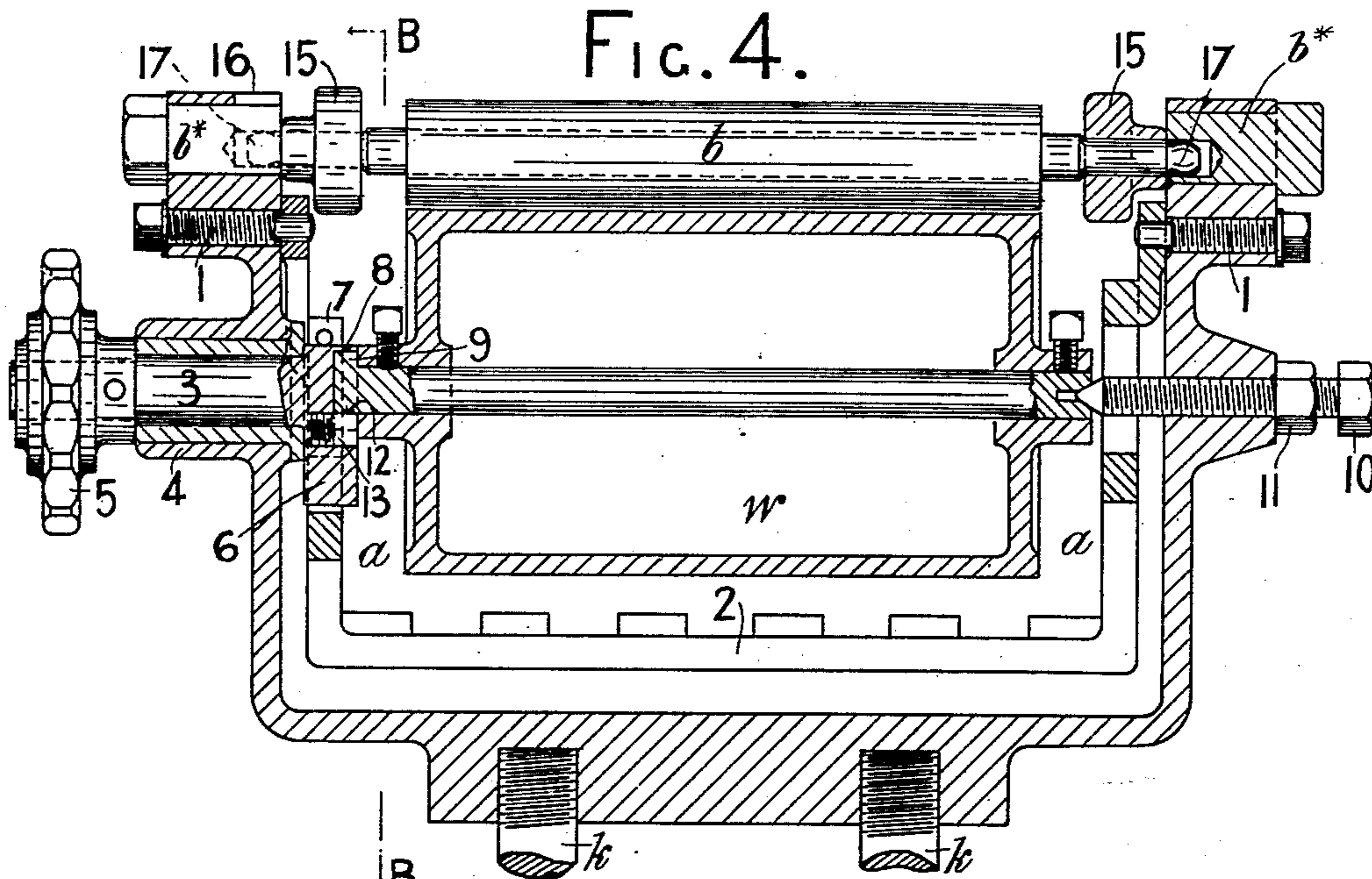
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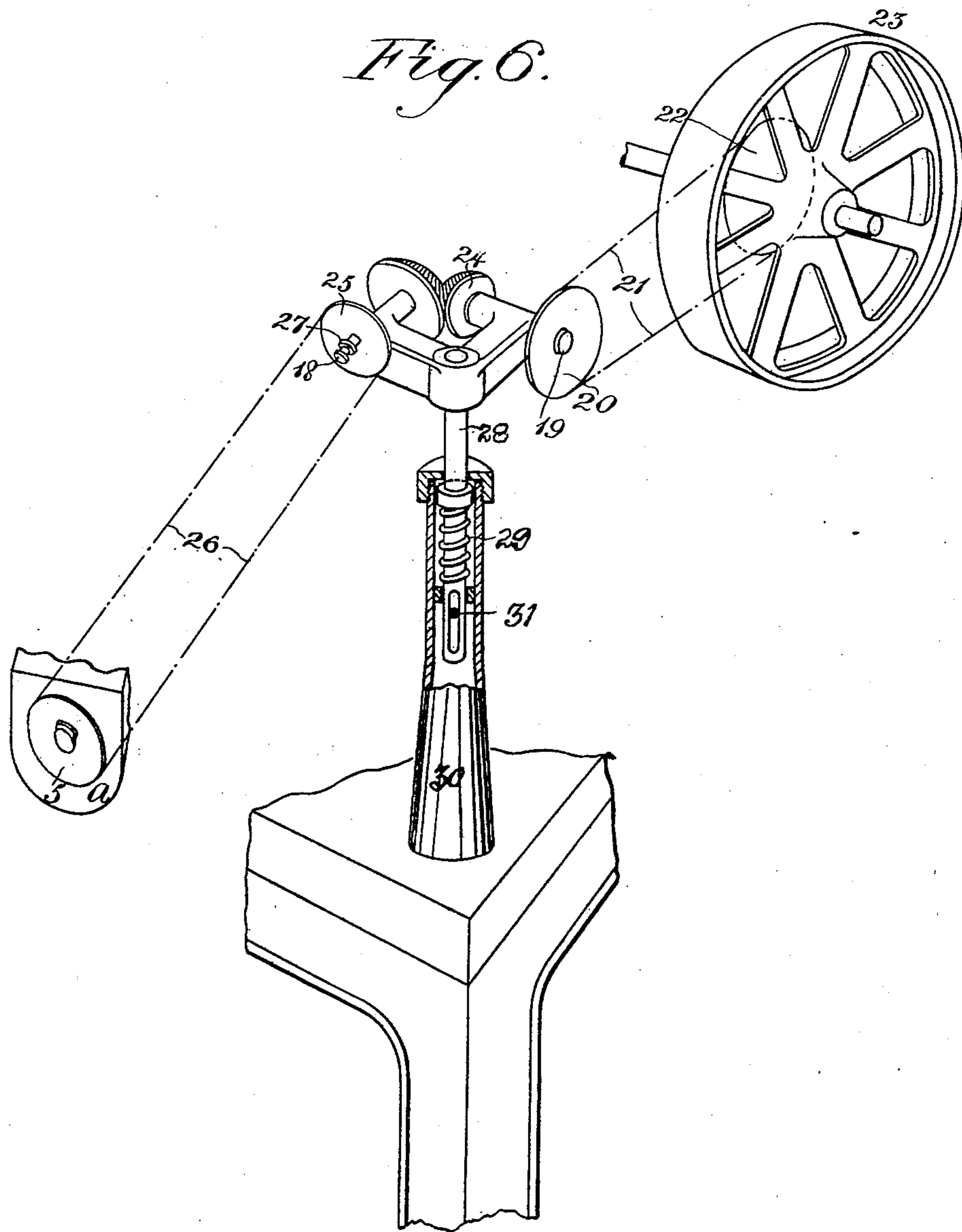
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4 Sheets—Sheet 4.



Witnesses

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# UNITED STATES PATENT OFFICE.

JOSEPH YARDLEY JOHNSTON, OF LONDON, ENGLAND, ASSIGNOR TO THE JOHNSTON NORTH AMERICAN PATENTS COMPANY, LIMITED, OF SAME PLACE.

INKING APPARATUS FOR PRINTING OR PRINTING AND EMBOSSING PRESSES.

SPECIFICATION forming part of Letters Patent No. 677,220, dated June 25, 1901.

Application filed January 23, 1900. Serial No. 2,450. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH YARDLEY JOHNSTON, a citizen of the United States of America, residing at the city of London, England, have  
5 invented Improvements in Inking Apparatus for Printing or Printing and Embossing Presses, of which the following is a specification.

This invention has reference to printing or  
10 printing and embossing press inking apparatus of the kind in which an ink-reservoir is supported adjustably by an elastic or spring support and is furnished with an inking-roller suitably fed with ink which may be  
15 kept stirred by an agitator, the arrangement being such that the reservoir and roller can be by suitable means depressed to allow the forward edge of a relatively-moving die or  
20 other surface to be inked (hereinafter referred to as a "die") to pass the inking-roller without making contact with it and that after the said edge has passed the reservoir and rollers will be in an automatic manner raised, so as to bring the inking-roller into and keep  
25 it in contact with the said die or surface, so as to insure its effectual inking as it and the inking-roller move in relation to one another.

Objects of this invention are to enable the reservoir of such an inking apparatus to be  
30 readily removed and replaced accurately in position relatively to the die of the press, that such position should be capable of nice adjustment vertically and laterally, so as to insure the inking-roller meeting and acting  
35 upon dies of different thickness and width in the required manner.

Referring to the accompanying drawings, Figures 1 and 2 are respectively a rear elevation and a side elevation, both partly in section; and Fig. 3 is a sectional plan through  
40 A A, Fig. 2, of inking apparatus according to this invention. Fig. 4 is a longitudinal section through the ink-reservoir, and Fig. 5 is a cross-section on the line B B, Fig. 4. Fig. 6 is a diagrammatic view hereinafter referred to.  
45

*a* is the reservoir, with inking-roller *b*, and *c* is a die the surface of which is to be inked. The die is carried by a die-block mounted in a revolving arm forming part of the press to

which my inking apparatus is supposed to be  
50 applied.

*d* is a table which rests on springs *e*, which surround tubes *f*, that are fixed in the table *d* and work through guiding-holes *g* in a suitable standard or frame *h*. At or near their  
55 lower ends the tubes *f* are connected with a cross head or plate *i*, provided with means, such as an adjusting-screw *j*, whereby the height of the table *d* can be adjusted according to requirement. Projecting from the under  
60 side of the ink-reservoir *a* are pins or rods *k*, which are formed with tapering ends and fit into the upper ends of the tubes *f*, so as to retain the reservoir in its proper position upon  
65 the table.

Instead of the tubes above referred to pins, rods, or plates, projecting from the lower side of the table *d*, may work in grooves or guides in the standard *h*. A screw *j* or equivalent is provided for adjusting the distance of the  
70 table from the frame *h*. In some cases a weighted lever or levers or a pneumatic arrangement may be substituted for the springs. With such an arrangement by means of the screw *j*, when it is not desired to ink the die  
75 *c*, the parts can be so adjusted that in the highest position of the table *d* the inking-roller *b* will be clear of the die *c*. The screw *j* also serves to adjust the position of the inking-roller *b* to suit dies of varying thickness,  
80 as well as to regulate the force with which the springs *e* shall press the inking-roller *b* against the die.

The frame *h* is pivoted at its lower end on screw-centers *l*, which are carried in lugs on  
85 a bracket *m*, secured to a part of the press-frame. The screw-centers are furnished with lock-nuts *n* and are of sufficient length to serve for accurately adjusting the position of the frame *h* in a direction parallel to the  
90 inking-roller axis. To admit of other adjustments, the bolt or screw holes in the bracket *m* are of elongated form.

The pivoted frame *h* has lugs *o*, that carry adjustable screw-centers *p*, which so support  
95 a nut *q* that it can swivel. Through this nut there passes a screw *r*, the outer end of which passes through a bracket *s*, fixed to the frame

of the press. It is provided with a hand-wheel *t* and with means for preventing end motion and taking up wear; also, with collars *u* to prevent its being drawn out of the nut *q* and to limit the extent of its motion. By rotating the screw the position of the top of the pivoted frame, and consequently of the ink-reservoir and the inking-roller *b*, can be adjusted as required.

*v* is a pinching-screw for locking the adjusting-screw *j*. The screw *r* may also be locked by similar means.

The ink-reservoir *a* may be rectangular in plan and have its bottom curved to a circular arc internally, but so formed externally as to rest securely upon the table *d*.

*w* is a roller which dips into the ink contained in the reservoir and conveys it to the inking-roller *b*, which is in contact with it. The roller *w* is secured on its spindle by set-screws.

*x* is an evening-roller bearing against the roller *w*.

Suspended in the reservoir by screw-studs *l* is an agitator comprising bars *2*, provided with teeth inclined in opposite directions to effectually stir the ink and produce cross-currents therein. The rollers and agitator are worked through a short spindle *3*, which is supported in a bearing *4*, lined with a hardened-steel bush that can be readily renewed when worn. On the spindle *3* is fixed a sprocket-wheel *5*, which is preferably geared to the main pulley of the press. At the inner end of the spindle *3* is an eccentric *6*, preferably formed in one piece with it and rotating between parallel faces *7*, formed on the agitator, thus causing the said agitator to oscillate. The eccentric is formed with an axial recess *8*, adapted to receive a flange *9* on the one end of the spindle of the roller *w*, the other end of which is supported by a screw-center *10*, provided with a lock-nut *11*. The flange is formed with a semicircular notch *12*, which fits over a stud *13*, that projects into said recess from the eccentric, so that the spindle is driven by and practically forms a continuation of the spindle *3*.

In practice the inking-roller *b* advantageously comprises a spindle surrounded by a wooden body covered with plush or other suitable material; but metal may be employed in place of wood, and for some purposes the roller may consist of ordinary inking-roller composition cast around the spindle in the usual way. The ends of the spindle of the roller *b* rotate in holes formed eccentrically in plugs *b\**, which are inserted in openings in the ends of the reservoir and by turning which the distance of the inking-roller as a whole from the main roller may be regulated according as more or less ink is required on the die. The ends of the roller may be similarly adjusted independently in cases where one end of the die-surface requires more ink than the other or where the die presents an uneven surface. The plugs are fixed in the

required attitudes by set-screws. The roller *x*, which is supported in eccentric adjustable plugs *x\** in a similar manner, may be of metal; but in some cases, especially when using deeply-sunk dies, I employ a roller covered with flexible or brush-like material—such as plush, for example.

The rollers *b* and *x*, in order that their ends may be adjusted independently without detriment to their freedom of rotation, have their spindles formed with partly-spherical end portions *17*, as shown.

The reservoir *a* is provided with hinged covers *14*, arranged one each side of the inking-roller *b* to arrest dust and dirt and check evaporation of ink. Near each end of the spindle of the roller *b* is a disk or roller *15*, free to rotate on the spindle and of slightly larger diameter than the roller. These disks or rollers are intended to bear against any suitable contrivance with which the press is provided for effecting the temporary depression of the inking-roller necessary to prevent the inking of the die edge by contact with the die.

The inking-roller *b* can be removed after partly drawing out its outer eccentric plug, the end of the spindle being lifted through a gap *16*, provided for the purpose in the reservoir end. The roller *x* is removed by drawing back one of its eccentric plugs. The screw-center *10* being then screwed back, the roller *w*, with its spindle, can be lifted out. The ink-agitator is removed by drawing back the studs *11*. Thus the whole of the interior mechanism of the ink-reservoir can be quickly taken apart when required for cleaning or other purpose.

When apparatus according to this invention is used in a press furnished with suitable depressing mechanism for enabling the front edge of a die to clear the inking-roller, the screws *j* and *r*, in combination with the adjustable eccentric bearings of the inking-roller and the depressing devices, afford convenient means for meeting with accuracy all the various requirements in charging the die with the necessary ink.

As will be seen, the ink-reservoir *a* can be removed by simply lifting it off without disturbing or affecting the adjustments, and it can be replaced or another reservoir be substituted for it with the certainty of exactly occupying the previous position, as the parallel pins *k*, which fit into the tubes *f*, accurately locate and secure the reservoir *a* in place.

The sprocket-wheel *5* can conveniently be driven from a sprocket-wheel *22* on the belt-pulley *23*. (See Fig. 6.) The intermediate gear, comprising chain *21*, sprocket-wheel *20*, spindles *18* *19*, bevel-wheel and pinion *24*, a sprocket-wheel *25*, and a chain *26*, is supported by a bracket formed with bearings for the spindles *18* and *19* and with a shank fitting in a socket formed at the upper part of a standard attached to the machine-frame.

The shank 28 rests on a spring 29 within the socket 30 and is prevented from rotating by a horizontal pin 31, passed through a slot in its lower end. The gearing is supported on the spring in order that it may automatically adapt its position to variations in the vertical adjustment of the ink-reservoir effected by the screw *j* and to the small downward motion of the reservoir, caused each time by the passage of the depressing devices over the disks 15, provided for said devices to act against. It also enables the driving-chain to be readily disengaged from the sprocket-wheel 5 to allow the reservoir to be readily removed.

What I claim is—

1. An inking apparatus for printing, or printing and embossing presses comprising an adjustable table, tubular sockets formed in said table, a freely-removable ink-reservoir, and projections thereon, said projections being adapted to fit said sockets and to slide vertically but not horizontally therein, as set forth.

2. An inking apparatus for printing or printing and embossing presses comprising a spring-supported table, a removable ink-reservoir freely supported by said table and means for insuring the correct relative positions of the said table and reservoir, as set forth.

3. An inking apparatus for printing or printing and embossing presses comprising a vertically-adjustable spring-supported table, a removable ink-reservoir freely supported by said table and means for insuring the correct relative positions of the said table and reservoir, as set forth.

4. An inking apparatus for printing, or printing and embossing presses comprising a standard adjustably mounted on the press-frame, a yielding table carried by said standard, a removable ink-reservoir freely supported by said table and means for insuring the correct relative positions of said table and reservoir, as set forth.

5. An inking apparatus for printing, or printing and embossing presses comprising a standard pivoted to the press-frame, a yielding table carried by said standard, means for turning said standard upon its pivots, and a removable ink-reservoir freely supported by said table, as set forth.

6. In an inking apparatus for printing or printing and embossing presses the combination of an ink-reservoir with inking-roller, a spring-supported table carrying said ink-reservoir and mounted upon a non-yielding pivoted standard mounted on the press-frame, means for vertically adjusting said table and parts supported thereby and for turning the standard about its pivots so as to laterally adjust it and the parts carried by it as set forth.

7. In an inking apparatus for printing or printing and embossing presses the combination of a table, tubes extending through and

projecting below said table, a standard formed with guide-holes adapted to receive said tubes, springs interposed between said standard and table, a cross-head connecting the lower ends of said tubes, an adjusting-screw passing through said cross-head, and an ink-reservoir provided with pins adapted to fit into said tubes, as set forth.

8. In an inking apparatus for printing or printing and embossing presses the combination of a table, tubes extending through and projecting below said table, a pivoted standard formed with guide-holes adapted to receive said tubes, springs interposed between said standard and table, a cross-head connecting the lower ends of said tubes, an adjusting-screw passing through said cross-head, a trunnion-nut carried by said standard, a longitudinally-immovable adjusting-screw passing through said nut, and an ink-reservoir provided with pins adapted to fit into said tubes, as set forth.

9. In an inking apparatus for printing or printing and embossing presses the combination of an ink-reservoir and an ink-agitator, arranged within said reservoir and comprising a pair of horizontal bars suspended from pivots at the ends of the reservoir, the bars being formed with teeth inclined in opposite directions, as set forth.

10. In an inking apparatus for printing or printing and embossing presses, the combination of an ink-reservoir, an ink-agitator pivoted within said reservoir, a short spindle supported in a bearing at one end of the reservoir, means for rotating said spindle, an eccentric fixed to said spindle and faces formed on the agitator between which the eccentric rotates so as to oscillate said agitator, as set forth.

11. In an inking apparatus for printing or printing and embossing presses, the combination of an ink-reservoir, an ink-agitator pivoted within said reservoir, a short spindle supported in a bearing at one end of the reservoir, means for rotating said spindle, an eccentric fixed to said spindle, faces formed on the agitator between which the eccentric rotates so as to oscillate said agitator, an ink-conveying roller, a flange at one end of the spindle of said roller, an axial recess in the face of said eccentric to receive the said flange, means to prevent relative rotation of the spindle and eccentric and a screw-center for supporting the other end of said spindle, as set forth.

12. In an inking apparatus for printing or printing and embossing presses, the combination of an ink-reservoir, an ink-conveying roller mounted therein, an inking-roller whose spindle has partly-spherical end portions, and adjustable plugs extending through the ends of the reservoir and formed with eccentric holes in which the end portions of the spindle rest, as set forth.

13. In an inking apparatus for printing or printing and embossing presses, the combina-

tion of an ink-reservoir, an ink-conveying roller mounted therein, an inking-roller whose spindle has partly-spherical end portions, an evening-roller whose spindle has partly-spherical end portions and adjustable plugs extending through the ends of the reservoir and formed with eccentric holes in which the end portions of the spindles rest, as set forth.

14. In an inking apparatus for printing or printing and embossing presses, the combination of an ink-reservoir, an inking-roller whose spindle has partly-spherical end portions, an evening-roller whose spindle has partly-spherical end portions, and adjustable plugs extending through the ends of the reservoir and formed with eccentric holes in which the end portions of the spindles rest, an ink-agitator pivoted within said reservoir, a short spindle

supported in a bearing at one end of the reservoir, means for rotating said spindle, an eccentric fixed to said spindle, faces formed on the agitator between which the eccentric rotates so as to oscillate said agitator, an ink-conveying roller, a flange at one end of the spindle of said roller, an axial recess in the face of said eccentric to receive the said flange, means to prevent relative rotation of the spindle and eccentric and a screw-center for supporting the other end of said spindle, as set forth.

Signed at 22 Bride Lane, London, England, this 12th day of January, 1900.

JOSEPH YARDLEY JOHNSTON.

Witnesses:

WILLIAM B. CHILD,  
ARTHUR WOOSNAM.