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PATENTED NOV. 19, 1907.

F. H. RICHARDS.

MECHANISM FOR PRODUCING CHARACTER IMPRESSIONS.

APPLICATION FILED NOV. 20, 1901.

2 SHEETS—SHEET 1.

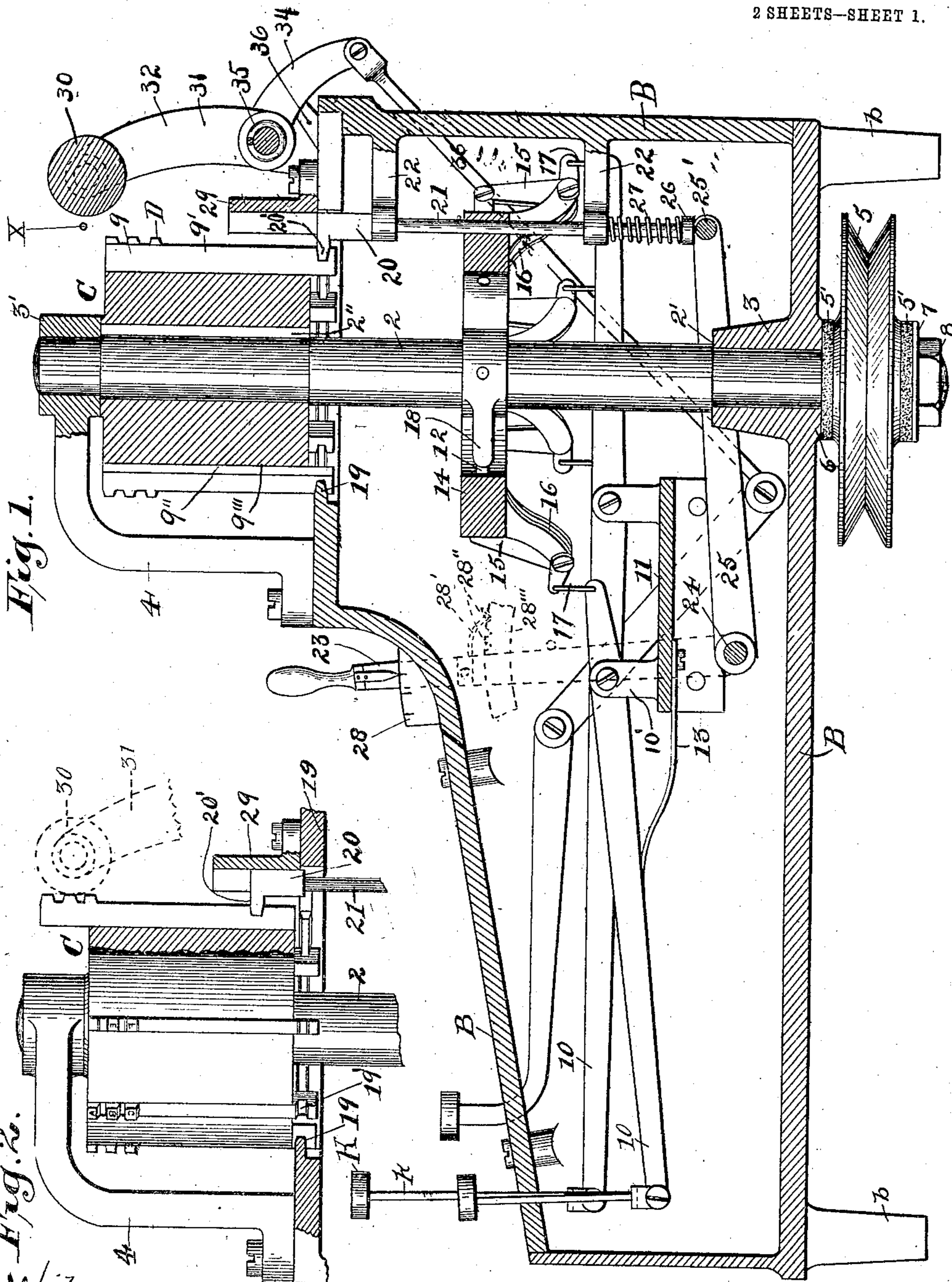


Fig. 1.

Fig. 2.

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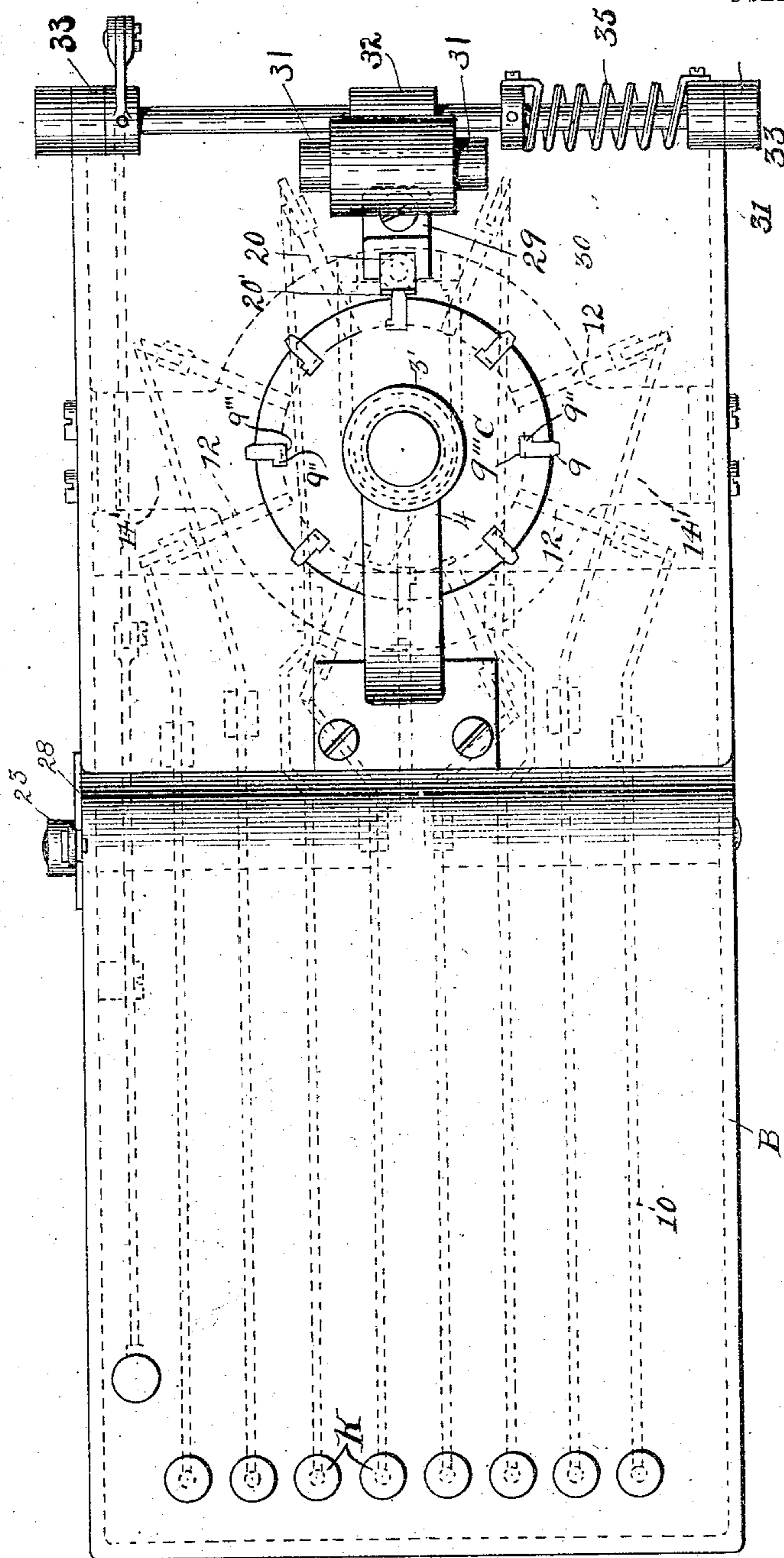
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2 SHEETS—SHEET 2.

Fig. 3.



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MECHANISM FOR PRODUCING CHARACTER IMPRESSIONS.

No. 871,145.

Specification of Letters Patent.

Patented Nov 19, 1907.

Application filed November 20, 1901. Serial No. 82,977.

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Mechanism for Producing Character Impressions, of which the following is a specification.

This invention pertains to the relationship and organization of various coöperative mechanisms and mechanical devices designed to effect the selective transfer and positive location of any one of a series of members or devices—such, for instance, as typographic impressors—to and at a given or fixed point, such members, in general, being disposed normally in various positions with respect to such given point.

A mechanical movement embodying the present improvements will comprise, ordinarily, a support or carrier, capable of angular adjustment, with which support there is combined mechanism for shifting said member to the proper angular position to bring the selected device into alinement with the fixed point. In coöperative relation with such support and the selective devices thereon there will be, ordinarily, suitable and proper mechanism whereby the selected device may be shifted axially of the support, these two movements, that is, the adjustment through a proper and controllable angle, and the axial movement relatively to the support will, as this mechanical movement is organized, be performed consecutively, that is, the angular adjustment will be completed before the axial shifting of the impressor or other device is begun. Although this support is capable, as aforesaid, of a movement about an axis, I do not deem it essential that this movement shall be the only one of which it is capable, since the organization may be such that there may be imparted to it a compound movement, that is, a bodily movement of the member along a predetermined path, in addition to the movement which it has about its own axis.

Various means may be employed for effecting the rotary and longitudinal or axial adjustment of the series of impressors or other devices, the organization and construction illustrated in the present drawings being one of simple character, and it not being contemplated by such illustration to restrict or confine the application of the pres-

ent mechanical movement to embodiment in such illustrated mechanisms and mechanical devices.

In these drawings, Figure 1 is mainly a longitudinal section through a key-controlled mechanism embodying my present improvements. Fig. 2 is a similar view of the rotary member or support embraced in the mechanism, illustrating the same in a position in which it has been adjusted to an angular position such that the selected device has been brought into vertical alinement with the point at which it is to be ultimately located; and Fig. 3 is a plan view of the mechanism shown in Fig. 1.

Similar characters of reference designate corresponding parts in all figures.

Although I do not propose limiting the application of the present invention to embodiment in any particular form or construction of mechanism, I have, for the purpose of illustration and for the sake of conveniently representing a construction for its practical application, shown the same as embodied in a key-operated mechanism, since such an apparatus or mechanism is particularly adapted for effecting the control of the various movements necessary for ultimately locating the selected device at the given or fixed point. Any suitable framework may be provided for supporting the operative parts and mechanisms, such framework constituting a portion of the main framework of the machine to which the present mechanism may be applied, or constituting a sub-frame of such framework.

Referring to the construction illustrated in the drawings attached to the present specification, the framework is therein designated in a general way by B, it being in this instance provided with supporting posts or legs b.

The relation between the constituent sub-movements embraced in the present mechanical movement is such that the particular device selected from among the assemblage thereof and occupying a normal position which is, in general, out of both the vertical and horizontal planes in which the fixed point is located is one of consecutive motion in different directions. More specifically, the present mechanical movement is one whereby the selected device is first moved into one of the planes of said fixed or given point, and subsequently, after its transfer

into that plane, the device is shifted in that plane in the direction of the fixed point and ultimately brought to rest thereat. In other words, the movement necessary for shifting the device from its normal position into the designed relationship with the given point is one composed of separate and individual movements, the second of which is not begun until after the completion of the first.

I prefer to mount the selective devices upon a member or support at least capable of rotation about its axis, and combined with such member, in proper cooperative relation therewith, suitable mechanism, whereby a particular device chosen from the plurality thereof mounted upon such member, may be brought into the vertical plane of the given point (assuming the axis of the member to be disposed vertically), and subsequently shifted relatively to the rotary member until it reaches or is adjacent to the given point. In the present embodiment, the rotary member or support, designated herein in a general way by C, is capable only of a movement of rotation, although the present invention is not limited in its scope of application to a member capable only of rotation about its own axis. For the convenient mounting and impartation of angular or rotary movement to this member C, it may be mounted as shown, this mounting comprising, as illustrated in the drawings, a shaft 2, which in this instance is disposed vertically, being mounted adjacent to its lower end in a bearing 3 formed in the frame B and at its upper end in a bearing 3' formed in an overhanging bracket 4 fixedly secured to the upper portion of such frame. A shoulder 2' extending between the main portion of the shaft 2 and a reduced portion forming the journal thereof constitutes means for maintaining the shaft in its proper vertical position, this shoulder resting upon the upper surface of the bearing 3. The member C may be attached to the shaft 2 in any proper manner, in this case a key 2'' rigidly connecting the two, and the member C rotating with the shaft 2.

It may be premised that the various devices which are capable of being located, selectively, at the given or fixed point are disposed circumferentially of the member C, and hence the rotary movement of the shaft will suffice to bring these circumferentially-disposed devices into the vertical plane of the given point, here designated by x , or substantially so. In order to permit the rotary member to be actuated through the separate angles requisite for alining the various devices upon their respective selection with the point x , I have, in the embodiment illustrated, represented a friction device normally operative to continuously rotate the shaft and hence the member C, but of such con-

struction as to be capable of being rendered inoperative when a selected device has assumed a position vertically below such point. As set forth, a driving-pulley 5 is loosely mounted upon the shaft 2 and driven conveniently by a belt, for instance, from a suitable source of power (not shown). In order to connect this pulley 5 with the shaft 2, friction washers 5', 5' on opposite sides of the hub of the pulley are shown, which frictionally engage with such hub and with proper opposing friction surfaces. In the construction shown, the latter friction face for the upper washer 5' is constituted by the face of a boss 6 extending from the lower or base-plate of the frame B, while the reaction face of the lower washer 5' is formed by the side face of a second washer 7; these several friction members being capable of being forced together more or less snugly by means of a nut 8 engaging with the lower end of the shaft 2. Means are thus provided for adjusting or regulating the friction effective for driving the shaft 2 when free so to do.

Referring now to the devices capable of selective location at the point x , these will, of course, depend upon the character of the apparatus to which the movement is applied. They are, in this case, represented in the nature of impression devices capable of operating upon material located at the given or fixed point x . As before stated, these devices, designated in a general way by D, are disposed circumferentially of the rotary member C and also axially thereof, all of such devices being normally out of alinement with the point x . Upon the angular movement of the member C, as aforesaid, to bring a chosen selective device into alinement with (that is, as here organized, vertically below) the point x , said device is so related to the member C that it may be shifted axially thereof and so brought into proper relation or juxtaposition with the point x .

According to the preferred embodiment of the present movement, each axially-disposed series of devices D will be mounted upon a proper element capable of longitudinal movement relatively to the member C. Each of such series may, therefore, be disposed upon suitable slides, designated herein by 9, each of which slides is mounted in proper guideways in the peripheral portion of the member C to move lengthwise thereof in order to bring any one of the series of devices thereon to the point x .

Briefly stated, there is embraced in the present mechanical movement an assemblage or series of selective devices disposed both circumferentially and axially of a member, all of which are capable of rotary movement with the member, and of axial movement relatively thereto. In this instance there are shown eight slides 9 (see Fig. 3), although manifestly this number may be less or

greater within the capacity of the mechanism and construction shown. These slides 9 may be of any proper construction, although they preferably will be so combined with their guideways as that they shall be confined therein to a lengthwise movement axially of the shaft 2 or member C. In the present construction, each slide 9 comprises a body portion 9', at the base of which there is a lateral extension or rib 9'' fitting into a corresponding channel or groove 9''' in the side face of the guideway formed in the member C.

As a simple and convenient means for stopping the rotation of the shaft 2 in such a position that the member C shall be brought to rest with the slide 9 thereon carrying the selected or chosen device D vertically below or in line with the point *x*, a key mechanism is illustrated embodying a series of levers controlling the setting of properly disposed stops, whereby a stop in proper coordinate relation with the given slide 9 will, when set, effect the arrest of the shaft 2 with the member C in proper position, as aforesaid. I do not deem, however, a key mechanism of this character as necessary or essential to a practical or operative embodiment of the present movement, since the mechanism shown is chosen merely as typical of the conditions requisite for causing the cessation of the rotary movement (a motion, it will be understood, not in itself essential to the invention) of the shaft with the member C in the proper position, as already described.

Referring to the particular embodiment set forth, a series of eight keys K are shown, each of which has a distinguished mark corresponding to that slide 9 upon the member or carrier C which, when the particular key is actuated, serves to stop the motion of the member C with the slide in line with the point *x*. Each key mechanism comprises a key K, as aforesaid, mounted at the upper end of a key-stem *k*, passing through an opening in the front portion of the frame B, and at its lower end pivotally connected with a proper key-lever 10 fulcrumed, in this case, intermediate its ends to a post 10' erected upon a supporting-plate or sub-frame 11 extending from side to side of the main frame B. Controllable from each key-lever 10 is a stop-pin 12 shifted, upon the actuation of the key connected to it, radially toward the axis of the shaft 2, but normally held in its retracted position by means of a spring 13 whose tension serves to elevate the outer end of the lever 10, and hence raise the key-stem *k* attached thereto to its highest position. These stop-pins 12 are preferably disposed, to insure their proper action, concentrically about the axis of the shaft 2, they being in this instance mounted in openings in an annular support 14 rigidly affixed to the main frame B. This support 14 has, in this construction, ears 14', 14' extending toward the

side members of the main frame, and is affixed by screws thereto in order to hold the annular support 14 in proper relation to the shaft 2.

A simple means for connecting each lever with its proper stop-pin 12 is shown in the present drawings comprising an angle-lever 15 fulcrumed intermediate its ends to the side pieces of a bracket 16 depending from the annular support 14, one of the arms of the angle-lever 15 being properly pivoted to its stop-pin, while the other thereof is connected by a link 17 with its operating lever 10. It is plain from this construction, that when a key K is depressed the inner end of the connected key-lever 10 is elevated, causing, through the connection described, the inward movement of the stop-pin 12 operative therefrom. It will be understood that as the stop-pins 12 are disposed concentrically about the axis of the shaft 2, they will be disposed at various points circumferentially of the supporting ring 14; hence the various levers 10 for effecting their movement will usually be of various shapes in order that the inner end of each lever may be brought into proper relation with the angle-lever 15, controlling the movement of the stop-pin whose setting the particular lever is designed to effect. These levers will also generally in some instances be bent in one direction or another, particularly as illustrated in Fig. 3, that their interference with other operative parts of the machine may be avoided. Cooperative relation between the stop-pins 12 and the shaft 2 exists in this case through the medium of an arm 18, the hub of which is rigidly affixed to the shaft 2 in such a position that the plane of movement of the arm corresponds to the plane in which the several pins 12 are disposed. Assuming a pin 12 to have been projected inward by the operation of the key K effective for its actuation, the projected pin protrudes into the path of the revolving stop-arm 18, and when this arm comes into contact with it the resistance opposing the motion of the shaft 2 is sufficient to overcome the friction exerted by the rotating driving-pulley through the friction-washers 5, described, and hence the motion of the shaft 2 with its member C will be arrested. In this position, therefore, the slide 9 carrying the selected device D, which is related to the key K depressed, will have assumed a position in which it is located directly below the given or fixed point *x*. The parts will remain in this position until the depressed key is released, whereupon, through the action of the spring 13, the key-lever will be returned to its normal position, and by reason of the fact that the projected stop-pin 12 is withdrawn from contact with the stop-arm 18, the rotary movement of the shaft 2 and member C will be resumed. It is during the arrest of

the shaft 2 that the slide 9 in line with the point x is shifted axially with reference to the member C and the chosen device on the slide brought into the proper relation with such point.

It should be stated that means will ordinarily be provided for maintaining the several slides 9 in their normal positions relatively to the member or carrier C. Such means may consist of a locking device effective for positively and effectively locking the slides in their normal positions during the rotation of the shaft 2. In the construction here shown such a locking device is set forth, comprising an annular locking ring 19 projecting inward from the opening in the frame B in which the member C is located, said ring being adapted to fit into a corresponding recess 19' formed in the lower end of each slide 9. The plane of this locking ring 19 is substantially perpendicular to the axis of rotation of the shaft 2, and hence during the rotation of that shaft the several slides are held in a fixed position.

Referring now to means whereby each slide 9, when brought below the point x , may be axially adjusted in order to shift the desired device thereon to such point, any proper mechanism for the purpose may be employed, a simple means being shown, and consisting of a slide-adjuster 20 having a tooth 20' located in a gateway formed by a discontinuance of the locking ring 19 and in position to bridge over such gateway and with a locking ring 19 constitute a complete ring when in its idle or normal position at which position it will project into the recess 19' of a slide 9 when adjusted into line with the point x . The end of the ring 19 at the gateway is seen at 19'', Fig. 2. For causing the adjusting movement of this member 20 at the will of the operator it is connected to a reciprocatory slide-bar 21 arranged to slide to and fro in brackets 22, 22 projecting from the rear end of the main frame B, and being operative from a lever 23 conveniently disposed at the side of the mechanism and externally of the frame B. This lever 23 is affixed to a rock-shaft 24 journaled in proper bearings in the side pieces of the main frame, from which rock-shaft extends an arm 25 carrying at its free end a roller 25' upon which rests a collar 26 affixed to the reciprocatory rod 21. Contact between the collar 26 and the roller 25' is, in this instance, maintained by a spring 27 inserted between such collar and the lower bracket 22, and tending to depress the slide-bar 21, and hence maintain the slide shifter 20 with its tooth 20' in line with the locking ring 19 and the lever 23 at one end of its limit of movement.

In the particular embodiment set forth there are three devices D upon each slide 9, and hence there will be three separate amounts of movement in order to adjust the

three devices to the point x . I have, therefore, shown at the side of the lever 23 an index-plate 28 having three separate index-marks thereon corresponding to the three movements necessary for shifting the three devices upon a slide to the point x . There may be combined with the described means for axially adjusting a slide 9, means for yieldingly holding the same in each of its several positions. As herein illustrated, such means comprises a spring-detent 28' adapted to engage with any one of a series of notches 28'' formed in a piece 28'''.

The slide-shifter 20 may be backed by a fixed surface in order to insure the positive and firm engagement of its tooth 20' with the recess 19' in the slide during the movement of the slide in its guideways, this surface being in this case formed at the bottom of a guide formed in an upright 29 erected upon the upper portion of the main frame B.

Preferably the tooth 20' is of a length sufficient to project inward beyond the outer edge of the guideway in the member C, in which the slide 9 is located. Hence, when the tooth is shifted out of alinement with the locking ring 19 during the adjustment of a slide axially of the member C, the latter will be locked from rotarial movement until the slide has again been brought to its normal position and the tooth 20' re-alined with the locking ring 19.

So far as the operative relationship existing between the various elements of the present mechanical movement is concerned, it is obviously immaterial whether the point x , relatively to which the various selective devices are capable of adjustment is a simple point or mechanism capable of utilizing the adjusted device for the purpose of impressing or otherwise treating a surface located at such point. I have, in the present case, disclosed means for supporting a strip or sheet of paper and moving the same subsequent to the adjustment of a device to the fixed point x , whereby such device, when of suitable form, becomes effective to make an impression upon the paper.

As herein set forth, a roller-platen 30 is shown journaled in side supports 31 constituting portions of a rock-frame, designated in a general way by 32, so mounted as to be shiftable toward and away from the member C. In this case the frame 32 is journaled in a bracket 33 extending from the main frame B, and is provided with an arm 34 and a retracting spring 35, normally tending to swing the frame into a position in which a fixed portion thereof contacts with a stop-shoulder 36. This arm 34 provides a simple means whereby the rock-frame may be rocked toward the member C and the platen 30 caused to cooperate with the device selectively brought to the fixed point.

An embodiment, such as hereinbefore de-

scribed, of the present mechanical movement, operates substantially in the following manner:--Upon the depression of a key K against the resistance of its elevating spring 13, the inner end of the key-lever 10 connected to the key-stem of the actuated key rises, and through the connecting-link 17 and crank-lever 15 effects the protrusion of the connected stop-pin 12 into the path of movement of the stop-arm 18 extending from the shaft 2. Assuming this shaft to be in continuous rotation from the driven pulley 5, the shaft 2 will be brought to rest upon the contact of the arm 18 with such projected stop-pin 12, and the pulley 5 will run idly between the friction-disks 5', 5'. In this position of the shaft 2 the slide 9 thereon which carries the device D coördinated with the actuated key K will have assumed a position in which it is in alinement with the fixed point x , while the tooth 20' of the shifter-bar 20 will have engaged with the notch 19' in the slide, which has, upon taking the position described, disengaged itself from the locking ring 19. As long as the key depressed remains in this condition the slide will be free to coöperate with the shifter-bar. This latter, through the described hand-lever 23, is drawn backward against the resistance of the spring 27 until the index-arm thereon, as it moves over the index 28, shows that the chosen device D has been brought to the point x . In this position the spring-detent 28' will have sprung into the proper notch to hold the slide 9 in its elevated position. Subsequent to this adjustment the arm 34 may be actuated against the resistance of the spring 35 to cause an impression movement of the frame 32 and the approach of the platen 30 thereon to the device at the point x , thus causing the coöperation of the two to effect an impression upon the paper with which the platen may have been provided.

Having described my invention, I claim—

45 1. The combination with a rotatable carrier and means for imparting a continuous rotary movement thereto, of a plurality of slides mounted in guide-ways on the carrier to have a shifting movement relatively there-
50 to in the direction of the carrier-axis and each of which slides is provided with a selective device; selective mechanism for arresting the rotary movement of the carrier when the selected slide is alined with the
55 point at which the selected device on the slide is to be ultimately set; and means for then shifting the selected slide in its said guideway to thereby position the selected device at said point.

60 2. The combination with a rotatable carrier and means for imparting a continuous rotary movement thereto, of a plurality of slides mounted in guide-ways on the carrier to have a shifting movement relatively there-
65 to in the direction of the carrier-axis and

each of which slides is provided with a plurality of selective devices; selective mechanism for arresting the rotary movement of the carrier when the selected slide is alined with the point at which the selected device on the
70 slide is to be ultimately set; and means for then shifting the selected slide in its said guide-way to thereby position the selected device at said point.

3. The combination with a rotatable carrier and means for imparting a continuous rotary movement thereto, of a plurality of slides mounted in guide-ways on the carrier to have a shifting movement relatively there-
80 to in the direction of the carrier-axis and each of which slides is provided with a plurality of selective devices; selective mechanism for arresting the rotary movement of the carrier when the selected slide is alined with the point at which the selected device on the
85 slide is to be ultimately set; means for then shifting the selected slide in its said guide-way to thereby position the selected device at said point; and means for locking all the slides when these are out of alinement with
90 said point and for releasing the selected slide when the latter is alined with the point.

4. The combination with a rotatable carrier and means for imparting a continuous rotary movement thereto, of a plurality of
95 slides mounted in guide-ways on the carrier to have a shifting movement relatively there- to in the direction of the carrier-axis and each of which slides is provided with a plurality of selective devices; selective mechanism
100 for arresting the rotary movement of the carrier when the selected slide is alined with the point at which the selected device on the slide is to be ultimately set; means for then shifting the selected slide in its said guide-
105 way to thereby position the selected device at said point; means for locking all the slides when these are out of alinement with said point and for releasing the selected slide when the latter is alined with the point; a
110 device coöperative with the set device; and means for effecting the coöperation of said coöperative device with the set device.

5. The combination with a rotatable carrier; and means for imparting a continuous
115 rotary movement thereto; of a plurality of slides mounted in guide-ways on the carrier to have a shifting movement relatively to the carrier in the direction of the carrier-axis and each of which slides is provided with a plu-
120 rality of selective devices; a stop arm rigid with said shaft; settable stop pins for engaging with said stop arm and thereby arresting the rotary movement of the shaft and the carrier; a locking ring with which all of said
125 slides engage when the latter are out of alinement with the point at which the selected device is to ultimately set; a slide adjuster with which each slide in succession engages as it passes its alining position with said
130

point; and means for actuating the slide adjuster variable distances to thereby bring any selected device to the point at which it is to be set.

5 6. The combination of a rotatable carrier; means for imparting a continuous rotary movement thereto; a plurality of slides mounted in guide-ways on the carrier to have a shifting movement relatively to the carrier in the direction of the carrier-axis and
10 each of which slides is provided with a plurality of selective devices; a carrier-shaft; a stop arm rigid with said shaft; settable stop pins for engaging with said stop arm and
15 thereby arresting the rotary movement of the shaft and the carrier; a locking ring with which all of said slides engage when the latter are out of alinement with the point at which the selected device is to be ultimately
20 set; a slide adjuster with which each slide in succession engages as it passes its alining position with said point; means for actuating the slide adjuster variable distances to thereby bring any selected device to the point at
25 which it is to be set; means cooperative with the set device; and mechanism for effecting the cooperation of said means with the set device.

7. The combination with a carrier, of a series of slides mounted thereon; a locking
30 notch in each slide; a locking ring engaging with the notches in the slides; a series of selective devices on each slide disposed in succession longitudinally of the slide; means for angularly adjusting said carrier to bring a
35 given slide into alinement with a fixed point; and means for adjusting the given slide to bring the selected device thereon into juxtaposition with the fixed point.

40 8. The combination with a carrier or support, of a series of slides mounted thereon, a series of selective devices on each slide disposed in succession longitudinally of the slide, means for angularly adjusting said
45 carrier or support to bring a given slide into alinement with a fixed point; a slide adjuster for shifting said given slide when the carrier or support has been adjusted; and a locking ring engaging with said slides when out of
50 their adjusted positions.

9. The combination with a carrier or support, of a slide mounted thereon and provided with a notch; selective devices on the
slide disposed longitudinally thereof; a slide-
55 adjuster provided with a tooth engaging with said notch when the carrier has been adjusted to bring the slide into alinement with a fixed point; lever mechanism for controlling the angular adjusting movement of the
60 carrier and the shifting movement of the slide; and means for shifting a body toward a device when it has been selected and brought into juxtaposition with the given point.

10. In a mechanical movement, the combination with a rotatable shaft, a carrier or

support secured thereto, and a series of slides mounted on the carrier or support, of a series of selective devices on the slides; a stop-arm extending from the shaft; a series of stop-pins disposed concentrically about
70 the axis of said shaft; lever mechanism for controlling the setting of said stop-pins; a locking ring engaging with the slides when the same are in their normal positions; and a slide-adjuster adapted to engage with a
75 slide when the same has been brought into alinement with a fixed point.

11. In a mechanical movement, the combination with a rotatable shaft, a carrier or support driven thereby and a series of slides
80 mounted on the carrier or support, of selective devices on the slides, a stop arm extending from the shaft, a series of stop pins disposed concentrically about the axis of said shaft, mechanism for controlling the
85 setting of said stop pins, a locking ring engaging with the slides when the same are in their normal positions, and a slide adjuster to engage with a slide when the same has been brought into alinement with a fixed
90 point.

12. The combination with a carrier or support, of a slide mounted thereon, a working device on the slide, means for adjusting the carrier or support to bring the slide into
95 alinement with a fixed point, an adjuster for shifting the slide when the carrier or support has been adjusted and a locking ring engaging with said slide when out of its adjusted position.

13. The combination with a carrier or support, of a series of slides mounted thereon and each provided with a recess, a series of selective devices disposed in succession longitudinally upon each slide, means for angularly
100 adjusting said carrier or support to bring a given slide into alinement with a fixed point; a locking ring engaging with the recesses in said slides when out of their adjusted positions and having a gateway at the
105 adjusted position; and a slide adjuster for shifting said given slide when the carrier or support has been adjusted and having a portion for bridging said gateway and supplementing said ring and engaging the recess of
110 the given slide.

14. The combination with a carrier or support, of a series of slides mounted thereon and each provided with a recess, a series of selective devices disposed in succession
115 longitudinally upon each slide, means for angularly adjusting said carrier or support to bring a given slide into alinement with a fixed point; a locking ring engaging with the recesses in said slides when out of their
120 adjusted positions and having a gateway at the adjusted position, a slide adjuster for shifting said given slide when the carrier or support has been adjusted and having a portion for bridging said gateway and supplementing
125 said ring and engaging the recess of the given slide.

menting said ring and engaging the recesses of the slides as they pass such gateway in the angular adjustment of said carrier or support and for engaging the recess of the
5 given slide for shifting the same, and means for actuating said slide adjuster.

15. The combination with a carrier or support, of a slide mounted thereon, a working device on the slide, means for adjusting
10 the carrier or support to bring the slide into alinement with a fixed point, a locking ring engaging with said slide when out of its ad-

justed position and having a gateway at the adjusted position, and an adjuster having a portion for bridging over said gateway and
supplementing said ring for engaging the
15 recess in said slide when the carrier or support has been adjusted and for shifting the slide.

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