

(No Model.)

5 Sheets—Sheet 1.

G. W. CUMMINGS.

STAND, PRESSER, AND GUIDE FOR CIRCULAR KNITTING MACHINES.

No. 467,534.

Patented Jan. 26, 1892.

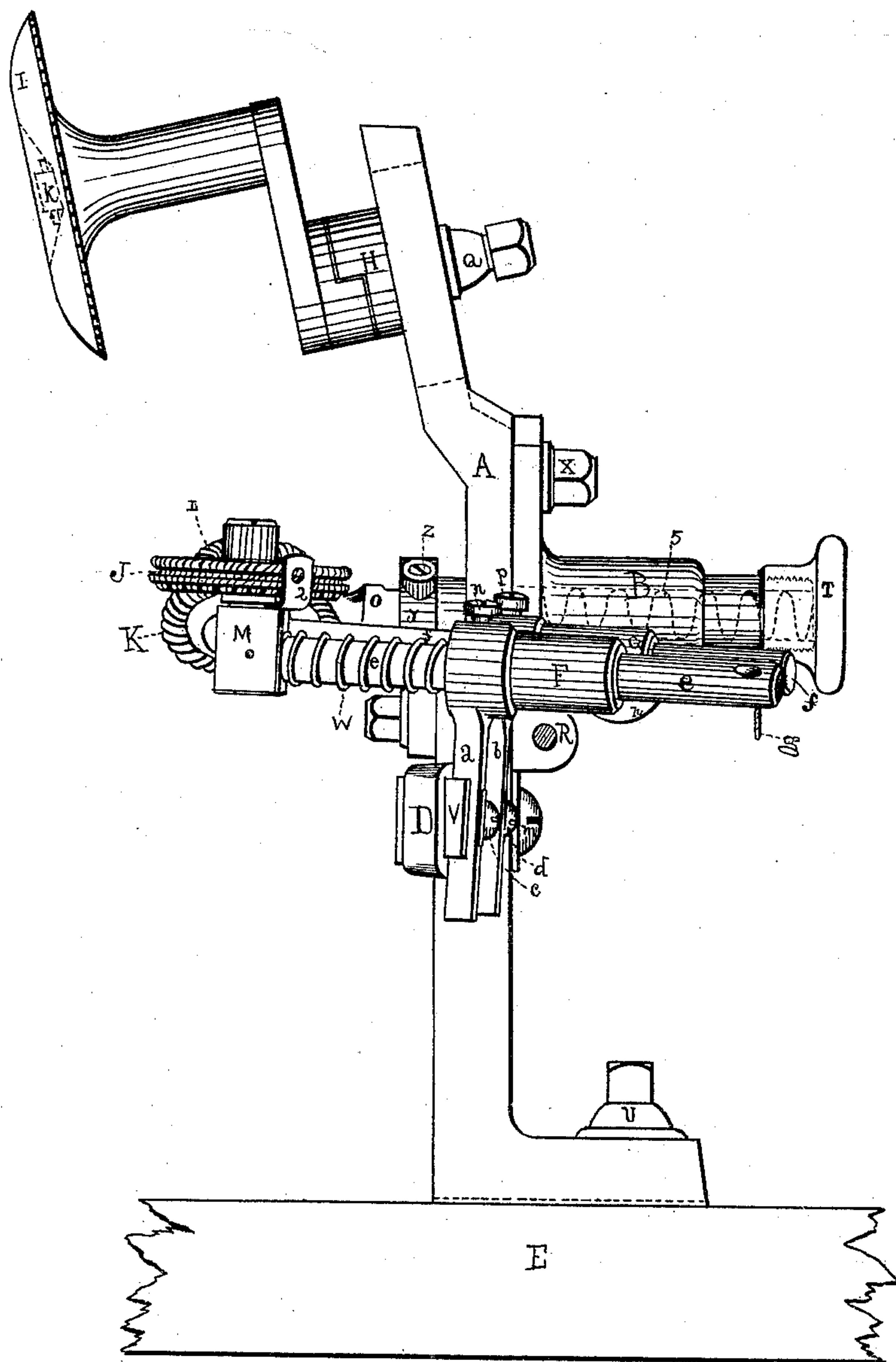


Fig. 1.

Witnesses

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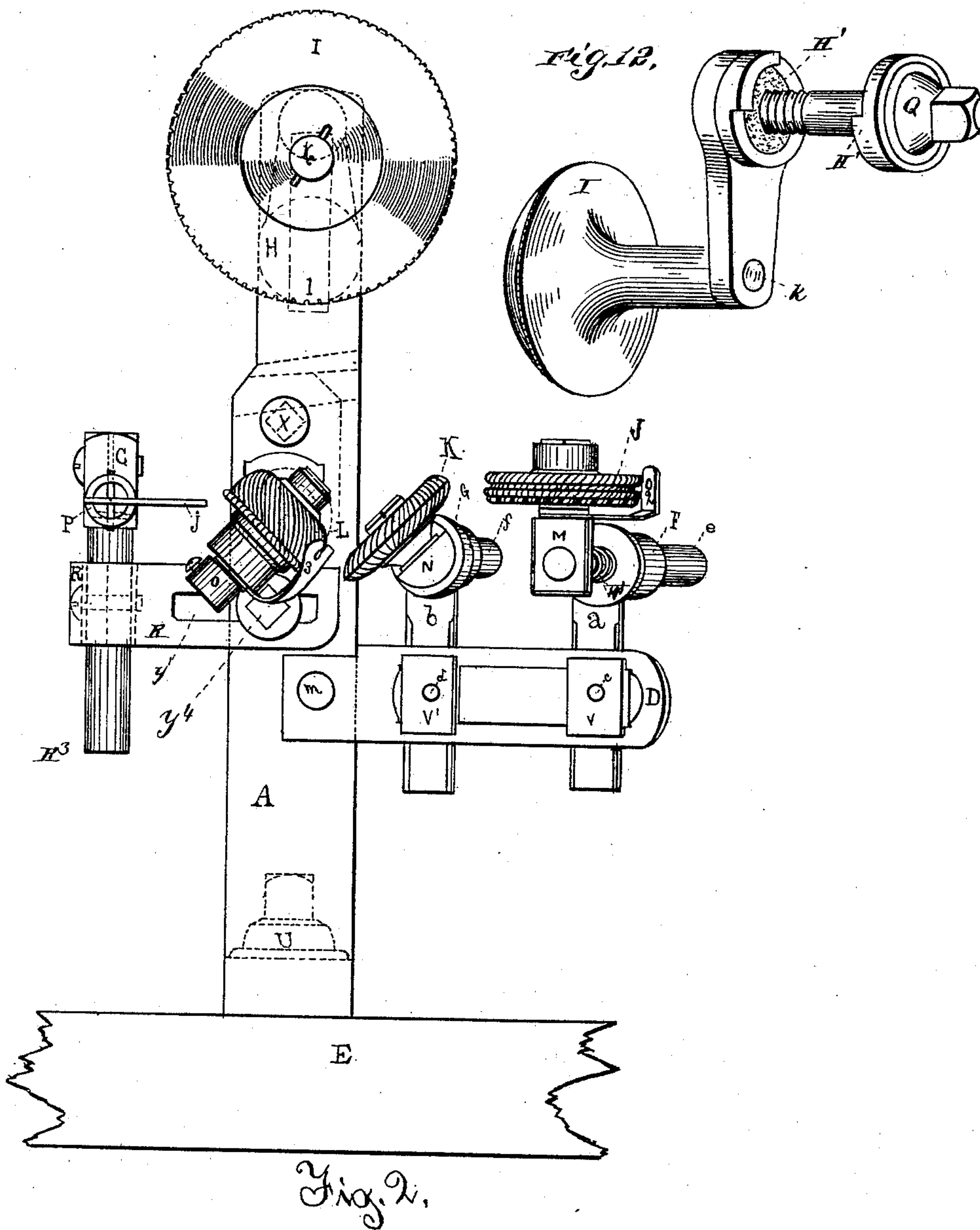
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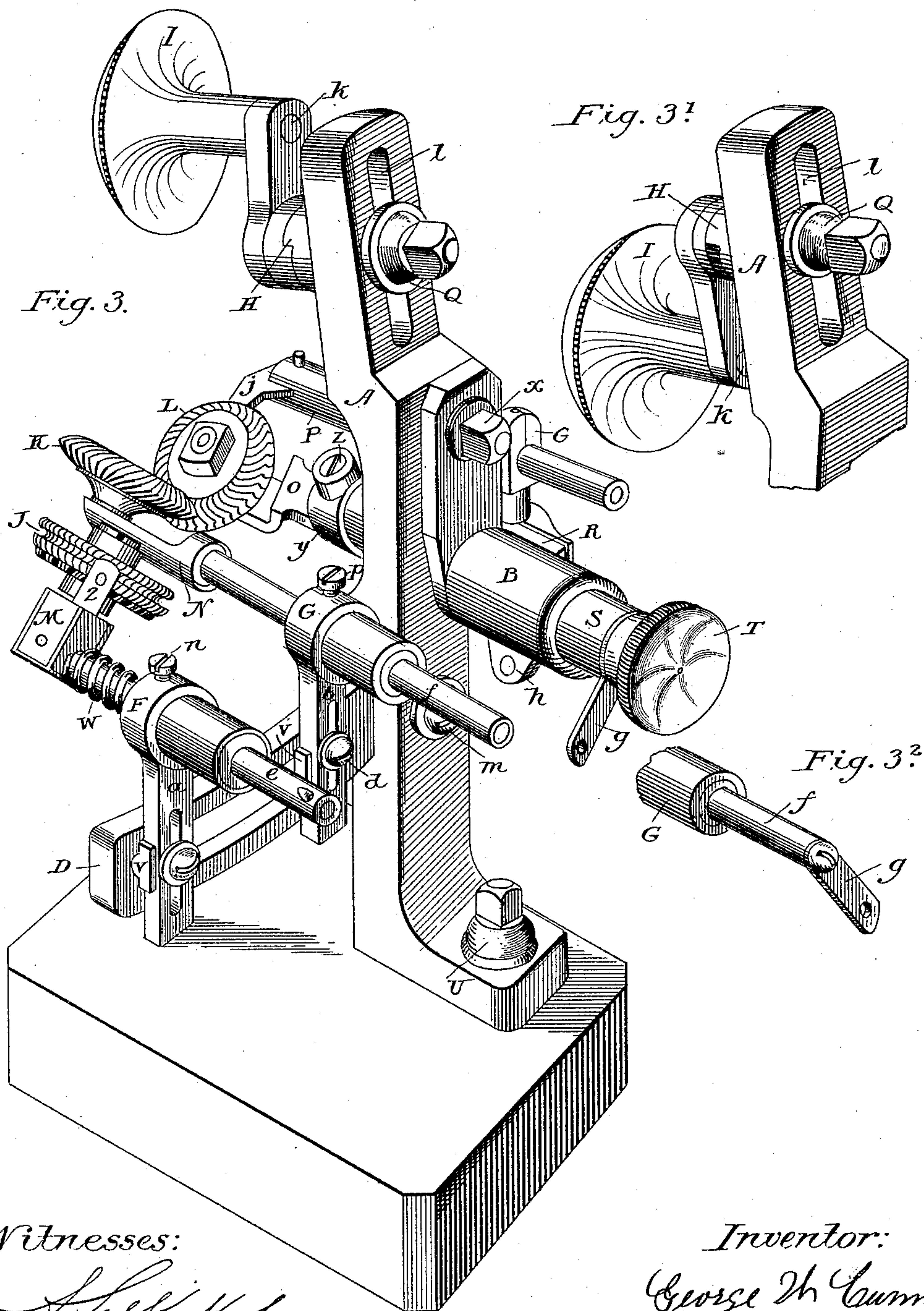
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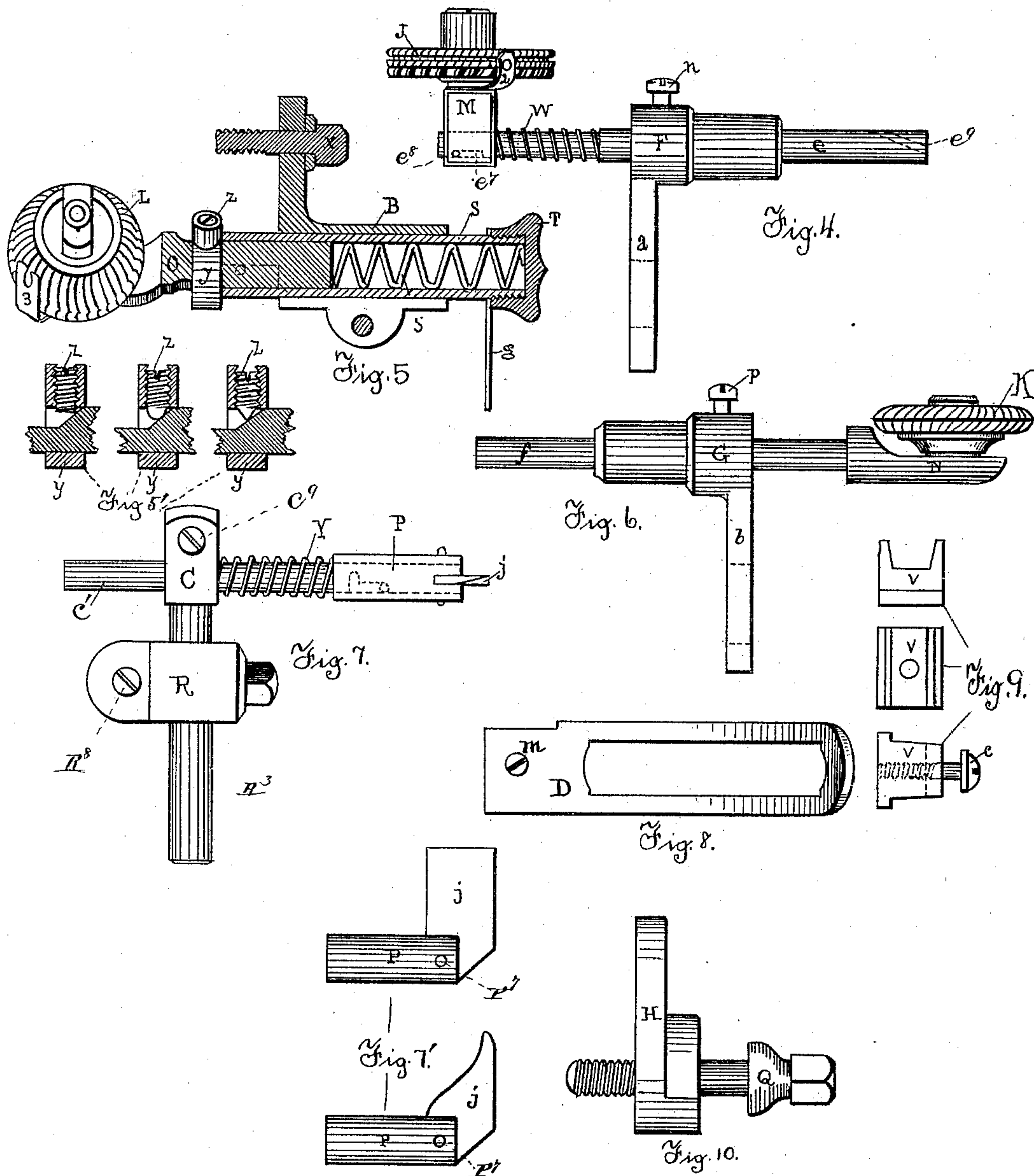
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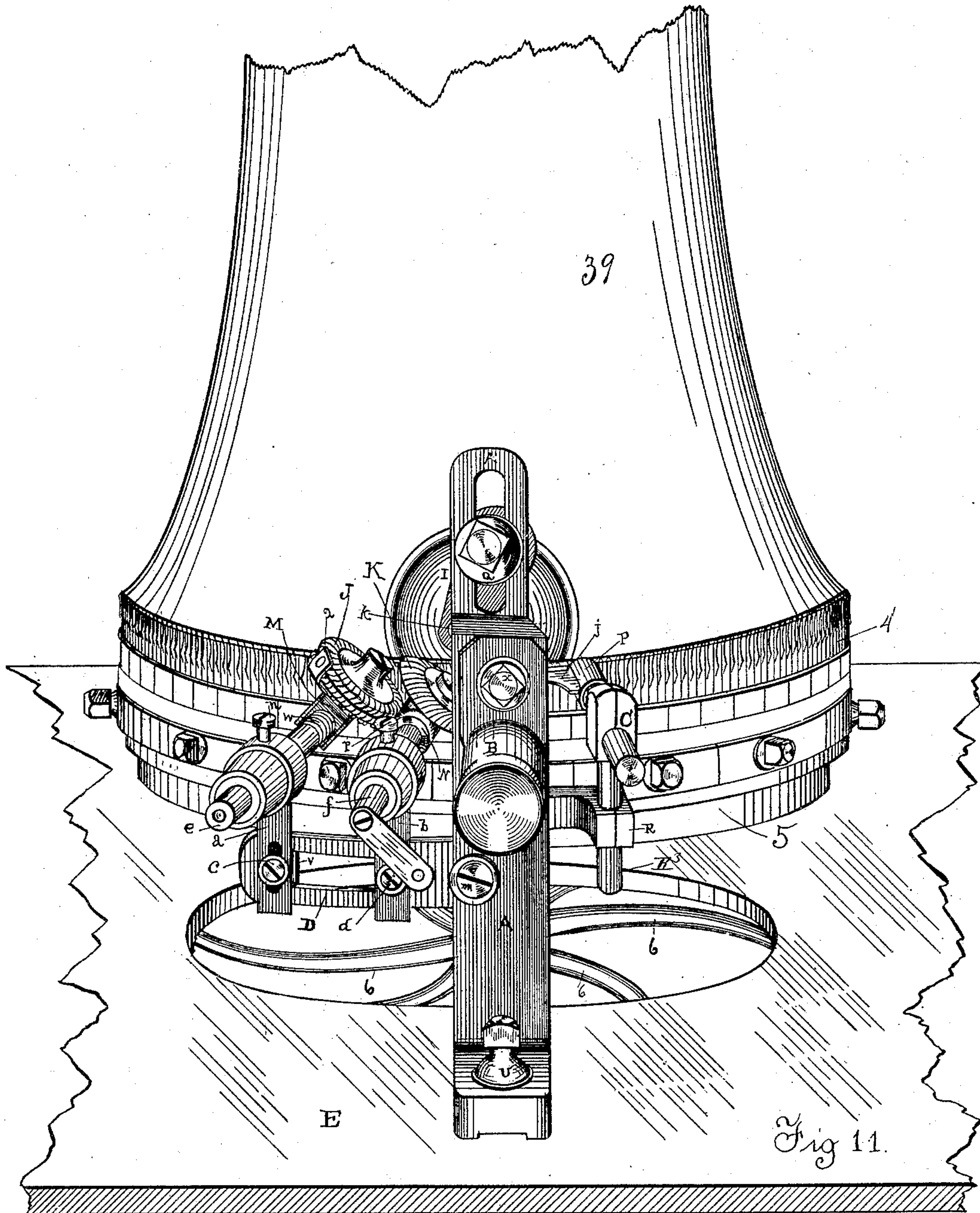
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UNITED STATES PATENT OFFICE.

GEORGE W. CUMMINGS, OF COHOES, NEW YORK.

STAND, PRESSER, AND GUIDE FOR CIRCULAR-KNITTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 467,534, dated January 26, 1892.

Application filed February 27, 1888. Serial No. 265,370. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. CUMMINGS, a citizen of the United States, residing at Cohoes, Albany county, and State of New York, have invented a new and useful Stand, Presser, and Guide for Circular-Knitting Machines, of which the following is a specification.

My invention relates to the stands of knitting-machines for holding the arms upon which the burrs and presser are placed, to new and useful means of attaching the burr to the stand, to a new construction of a presser, and to the guides for guiding the yarn to the needles where plush-work is done or where only the usual plain knitting is effected.

Heretofore in the use of knitting-machines it has been necessary to employ two stands, one of which was used in holding the appliances for feeding the thread or yarn to the machine and the other to hold the presser used to press the barbs of the needles down to allow the stitches to be cast off. The use of the two stands rendered the space required to place such stands around the needle-frame so great that but few feeds could be utilized in one machine. Greater time was consumed to do the knitting and greater distance was required to effect a feed. In knitting plush-work the plush-burr was on a separate stand. The presser has been heretofore large and cumbersome, covering more needles than was necessary. The push-down being fixed rigidly on the stand, the operator was compelled to remove the same from such stand when he desired to remove the burrs for oiling or repairing. Usually four feeds was the largest number which could be heretofore used successfully on one knitting-machine.

The objects of my invention are to decrease the distance necessary to effect a feed, to enable twice at least as many feeds to be employed in one knitting-machine, to lessen the space occasioned by each set of feeding appliances around such machine, to shorten the time consumed in knitting, to reduce the size of the presser, to enable the operator to remove or repair the burrs without removing the push-down, to simplify the construction of the guides for the thread or yarn, to reduce in a marked degree the number of parts of a knitting-machine, and to enable the po-

sitions of the several burrs and stand when affixed to the machine to be varied either severally or collectively with the greatest ease and rapidity.

In order to explain my invention, reference is made to the several drawings which accompany this specification and which are made a part hereof, in which—

Figure 1 is a view of the stand with its several parts and the appliances affixed thereto when seen from the side from which the yarn or thread is fed to the machine. Fig. 2 is a view of the stand with its several parts as seen from the side which comes in contact with the needles. Fig. 3 is a perspective view of the stand and its several parts when seen from the feeding side. Fig. 3' is a perspective view of the push-down when in proper position on the machine for work with part of the stand which supports it. Fig. 3² is a view of part of the shaft supporting the clearing-burr, a guide affixed to the shaft, and part of the support of said shaft. Fig. 4 is a side view of the plush-burr and its supports. Fig. 5 is a side view of the sinker or feed burr with a sectional view of part of its supports. Fig. 5' shows sections of the several forms of the points of the screw and of that part of the shaft or spindle which supports the sinker or feed burr which is operated upon by said screw. Fig. 6 is a side view of the clearing-burr with its supports. Fig. 7 is a side view of the presser with its supports. Fig. 7' shows plan views of the various ways in which the presser is sometimes constructed by me. Fig. 8 is a side view of that arm of the stand to which the plush-burr and clearing-burr are attached. Fig. 9 are plan and side views of metal supports which are placed in the slot of the arm shown in Fig. 8 and hold the plush-burr and clearing-burr by screws, as seen in the lower of the three views in Fig. 9, which pass through the slots in the uprights which support the plush and clearing burrs, as seen in Fig. 3. Fig. 10 is a side view of the modified form of construction of the crank part of the push-down, showing its inner face flush and without any projection thereon, with a screw for attaching said push-down to the stand. Fig. 11 is a perspective view which shows my improvements in their proper operative relation to a knitting cylinder and needles. Fig.

12 is a perspective view of the push-down, with the parts thereof pushed away from each other to show more clearly the position of the leather washer between the arm thereof and the metal washer when in proper position for work.

Similar letters and figures indicate like parts in the several views.

In the drawings, A represents the stand which supports the push-burr, clearing-burr, sinker or feed burr, presser, and push-down, and is constructed so that its foot can be firmly affixed to the table of the machine, as in Figs. 1, 2, 3, and 11, by screw U, and has a slot in the upper part to enable the operator to readily move the push-down in or nearly in a vertical direction.

B is a metal sleeve with a slit running lengthwise thereof, firmly affixed by any suitable means—as, for instance, the screw α —to the stand A through the medium of an end projection therefrom to hold the hollow tube S, which passes through it, the sleeve being clamped upon the tube by means of the screw h , which enters a hole in a projection on each side of said slit.

S is a hollow tube having on one end a movable cap T and a guide g and at the other end a ring y , and within it a part of the arm O, which holds the sinker or feeding burr, and the springs placed between said arm and said cap T.

L is the sinker or feeding burr placed on the extended upright portion of the supporting-arm O.

3 is the guide (seen in Figs. 2 and 5) placed on the spindle which supports the sinker-burr and underneath said burr, and which, extending up on the outside of said sinker-burr beyond the nibs of the wings on said burr, and guides the thread or yarn which has been placed in the slit therein to said burr.

Z is a screw constructed with its end either flat or coniform or convex, as seen in the three views of Fig. 5', which enters the ring y and, coming in contact with the inclined cut-away portion of the arm O, holds the sinker or feed burr and presses such arm back in the barrel S, and thereby said feed-burr, away from the needles, and thus changes the length of the stitch. O is the said arm, part of which is inserted in the tube S, supporting said sinker or feed burr at its turned-up end.

g is the guide through a hole in which the yarn or thread is fed to the guide of the sinker or feed burr. Said guide g is constructed of a piece of sheet metal and has a hole therein at or near each of its ends, the diameter of one of the holes corresponding to the size of either the outer surface of the tube S, where the guide is to be used in connection with the sinker or feed burr, Fig. 5, or of a screw which enters the end of the shaft of the clearing-burr f when the guide is used in connection with the clearing-burr, Fig. 3'. When the guide g is used with the sinker or feed burr, the tube S is inserted in the large hole

of the guide g , and said guide g is held in position—that is, from coming off tube S—by the movable cap T, which is screwed on the end of the tube S beyond said guide, as seen in Fig. 5. When the guide g is used on the shaft of the clearing-burr f , Fig. 3', a screw f^9 is inserted in one of the holes of said guide, and, entering the hollowed end of the shaft of the clearing-burr f , holds said guide g in position.

T is a cap fitted to and screwed on the outer end of the tube S to form a head for the spring inclosed in said tube to press against and also, when the guide g is used in said tube, serving to keep the said guide g on said tube.

I is the push-down; k , the arm of the push-down, which may be made either integrally with said push-down or separately therefrom and attached in any manner to said push-down, which arm is in turn attached to the stand A by means of the screw Q, which passes through the vertical slot in said stand A and said arm and a metal washer H placed between the said stand and said arm k . The arm k has a projection on its inner face. A recess is cut in the said washer H. The push-down can be turned around on the screw Q in or nearly in a vertical plane and held in an elevated position by the projections on the arm and washer H, as seen in Fig. 3. I usually place a leather washer H', as seen in Fig. 12, between the arm k and the metal washer H to create greater friction; but the leather-washer is not an absolute necessity. When in position on the knitting-machine for use, the push-down is turned down, as seen in Fig. 3'. On the right of and attached to said stand A by means of a screw T' or other suitable means is the slotted arm R. In a vertical hole in said arm is placed a shaft R' with a slitted tubular head C. Through the latter slitted tubular head a rod c' is horizontally passed and held in position in such tubular head by means of a screw C', which enters the holes in such tubular head, as shown in Fig. 7. Upon the under side of said rod c' is a substantially L-shaped recess. On said rod c' and at one of its ends is placed a sleeve P, the latter being held in position on said rod by a pin, which passes through holes in the sleeve P and the recess in the rod c' . Upon said rod c' and between the slitted tubular head C and the sleeve P is placed a spring Y. In a slot in the outer end of said sleeve P is placed the removable presser j , the latter being held in position by a pin P', which enters holes in the sleeve P and corresponding holes in said presser j . The presser j is usually made of sheet metal, rectangular in form with a corner cut off, or of the irregular form, as shown in Fig. 7'. By the use of the spring Y on the rod c' the presser is kept in position against the needles. When necessary to push the presser away from the needles, the sleeve P and the presser j may be pressed back on the rod away from the needles.

Having the recess described on the under side of said rod c' , the presser j and the sleeve P can be turned partly around on said rod c' and be held in such new position by the spring pressing the pin inserted in the holes of said sleeve and in said recess against one wall of the offset of said recess. When the presser is again needed, the sleeve P must be turned to its normal position, when the spring, acting upon the end of the sleeve, throws the presser against the needles. By this manner of applying the presser to the needles no new adjustment of said presser is made necessary. The slot T' in the arm R enables the operator by loosening the screw T^4 , which holds said arm R to the stand A , to move the presser j and its support to the right or left, as may be desired, and upon tightening the said screw to keep such arm in its place. The shaft with its slitted tubular head C being cylindrical and fitting a vertical hole in said arm R , the operator can turn the presser around in a horizontal circle and can raise and lower the presser at will. As seen in Fig. 7, the part of the arm which holds the shaft R^3 , with the slitted tubular head C , is also slitted on one side, and the width of the slit is enlarged or decreased, as desired, by a screw R^8 . By means of the latter screw the said shaft, with its slitted tubular head, can be held in any position.

On the left of the stand A , and either made integrally therewith or separate therefrom and affixed thereto by any suitable means is a slotted arm D , preferably formed in the arc of a circle. In the slot of said arm D are placed blocks of metal v , plan and side views of which are shown in Fig. 9. To said arm D by means of said separate blocks of metal v , placed in the slot of said arm D , and the screws c , which pass through the slots in the upright standards or supports a b and the said blocks of metal v , the said upright standards or supports a and b for either or both the plush-burr and clearing-burr are secured.

a is the standard for the plush-burr, said standard being constructed with a slot in its upright part and a hollow head F . Through the latter the shaft e , which supports the plush-burr, passes. The said shaft e has at one end a hole e^9 , extending upward and at an angle to the top side of said shaft, said hole acting and being used as a guide for the yarn as it comes from the spool. The shaft e is held in position in said hollow head F of its support by means of the screw n , which enters a hole in said hollow head F and comes in contact with said shaft. At the opposite end of said shaft is a movable standard M , upon which a guide 2 and the plush-burr J are securely placed. The movable standard is in turn fastened to and on the shaft e by a pin e^8 , which passes through the sides of such standard and into a recess e^7 , cut in the under side of said shaft e , as shown by the dotted lines in Fig. 4.

Upon the shaft e , and between the shoulder on the shaft e and the movable head M , is placed a spring W , so that when a jar occurs the plush-burr can recede from the needles and prevent the latter being broken. The guide 2 , placed underneath the plush-burr, guides the yarn from the guide e^9 in the end of the shaft e to said plush-burr.

E is part of the table of the knitting-machine. As shown in Fig. 11, through the hole in the table are seen the spokes 6 of the wheel which turns the knitting-machine.

3^9 is the article which is being knitted upon the machine.

4 are the needles fastened in the frame 5 of the machine.

By means of the slot in the arm D the plush-burr can be moved from right to left. By means of the slot in the upright standard or support a the plush-burr can be lowered or raised in a vertical direction, and by means of the hollow head F , the shaft e being cylindrical, the plush-burr can be turned in a circle. To the same slotted arm D , I secure by means of the block of metal v , placed in the slot of said arm D and the screw d , the upright slotted standard b , which has a hollow head G , through which is passed a shaft f , which supports the head N , which latter in turn supports the clearing-burr K . The shaft f is held in position in said hollow head by the screw p . By means of the slot in the arm D the clearing-burr can be moved from right to left and the reverse. The slot in the upright standard b enables the operator to move the clearing-burr up and down, and as the shaft f is cylindrical and the head C tubular the clearing-burr can be turned in a circle.

The plush-burr, the clearing-burr, and the sinker or feed burr are of the usual form of construction well known to knitters or persons operating knitting-machines. When plush-work is being done on the machine, the plush-burr, the clearing-burr, the sinker or feeding burr, the push-down, and presser are required. When, however, only the plain knitting is required, the plush-burr and clearing-burr are to be dispensed with.

As heretofore stated, the guide g can be placed at the end of either the tube S , which supports the sinker or feeding burr, or at the end of the shaft f , which supports the clearing-burr.

The operation of feeding the yarn to the needles, clearing the yarn from the needles, pushing the stitches down from under the barbs of the needles, and pressing heretofore adopted in knitting is similar to the manner in which I do the same work.

I operate my machine in the following manner: When plush-work is required, I affix the stand A to the table E of the knitting-machine. To the stand A , I screw the arms R and D , (provided, however, that the said arms R and D have not been constructed integrally with the stand.) To the slotted arm D , I secure the upright standards a b with the

supports for the plush-burr and clearing-burr and said burrs. To the arm R, I secure the shaft *c'* for the presser, and on said shaft *c'* the spring Y and the sleeve P, and to the latter I attach the presser *j*. I then secure the push-down I and the washer H, and, if necessary, the intermediate leather washer H' to the stand A by means of the screw Q. The yarn coming from the spool is inserted in the guide or hole *e'* in the end of the plush-burr shaft *e*, is then drawn to and through the hole in the guide 2 on the side of the plush-burr, and is then taken up by the plush-burr and carried to the needles, the yarn only being acted upon by every third needle. The clearing-burr then takes the yarn which comes from the plush-burr and throws it down as the needles revolve, so that when it gets to the feed-burr it passes under said feed-burr, and it is thrown off at the same time as is the yarn or thread fed to the needles by the sinker or feeding burr. Another thread is taken from a second spool, and after passing through the guide *g* and through the guide 3 of the sinker or feeding burr is acted upon by the nibs of the wings of the feed-burr and carried to the revolving needles above the yarn from the plush-burr, and is thrown off at the same time as is the yarn from the plush-burr. When the knitting is merely plain work, I dispense with the plush-burr J and the clearing-burr K and feed the single yarn to the needles by passing such yarn through the guides *g* and 3 to the feed-burr and thence to the needles.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a stand consisting of a slotted upright trunk, one or more slotted arms, and a foot for attachment to the table of a knitting-machine with the burrs, push-down, and presser of the knitting-machine supported by said stand, substantially as described.

2. In a knitting-machine, the combination of a slotted stand for the support of the push-down, the push-down, its arm formed with a projection, the metallic washer placed between the arm of said push-down and the said slotted stand, and the screw which passes through the slot of said slotted stand, the said metallic washer, and the arm of said push-down to hold the said push-down in place, as and for the purpose described.

3. In a knitting-machine, the combination of a presser, a spindle having a substantially L-shaped recess in one side thereof, a sleeve covering part of said spindle and holding the presser, the pin which passes through holes in said sleeve and through the recess in said spindle, the spring placed upon the spindle between the sleeve and the upright shaft, and an upright shaft with its holding-screw supporting said spindle placed in a slotted arm attached to the stand of said knitting-machine, the said slotted arm attached to said stand,

and said stand, as and for the purpose described.

4. In a knitting-machine, the combination of the sinker or feed burr, the supporting-spindle having a part thereof cut away at an angle, which spindle enters into a metallic barrel attached to the stand of a knitting-machine, the said metallic barrel, at one end of which is a removable cap and at the other end a ring to hold the screw which acts upon the angular cut-away portion of said spindle, the said screw placed in said ring, a spring placed within said barrel between the said removable cap thereof and the end of said spindle, a stand of a knitting-machine, and the means for attaching the said metallic barrel to the said stand, as and for the purpose described.

5. The combination of a sinker or feed burr of a knitting-machine and the metallic slitted guide for feeding the yarn placed upon the spindle which holds the said sinker or feed burr and extending up beyond the nibs of the wings of the feeding-burr, substantially as described.

6. In a knitting-machine, the combination of the sinker or feed burr with its supporting-spindle, the latter having a part cut away at an angle which enters into a metallic barrel attached to a stand of a knitting-machine, said metallic barrel with a removable cap at its outer end and a ring at its inner end, in which ring is inserted a screw to act upon the angular cut-away portion of said spindle, said screw, the spring placed within said metallic barrel between the removable cap and the end of said spindle, the stand of a knitting-machine, the means of attaching said barrel to said stand, and the slitted guide for the yarn also attached to the said supporting-spindle underneath the said sinker or feed burr, as and for the purposes described.

7. In a knitting-machine, the combination of the sinker or feed burr with its supporting-spindle, the latter having a part cut away at an angle which enters into a metallic barrel attached to a stand of said machine, said metallic barrel with a removable cap at the outer end thereof and a ring at the inner end thereof, in which is inserted a screw to act upon the angular cut-away portion of said spindle, said screw, the spring placed in said barrel between the said removable cap and the end of said spindle, the said stand, means of attaching said barrel to said stand, the slitted guide for the yarn also attached to said supporting-spindle underneath said sinker or feed burr, and the metallic guide placed upon and at the outer end of said barrel and held in position on said barrel by said removable cap thereof, as and for the purpose described.

8. In a knitting-machine, the combination of a burr and its support, the slotted upright support for the spindle of such burr, the movable rectangular block of metal in the slot of the slotted arm of the stand, a screw

which, passing through the slot in said slotted upright support into the said rectangular block of metal, holds the said slotted upright support in place, the said slotted arm of the stand, and the said stand, as and for the purpose described.

9. In a knitting-machine, the combination of a clearing-burr, the spindle to which said burr is attached, the sleeve in which said spindle is placed and held, the upright slotted arm of said sleeve supporting and fastening the same to the slotted arm of a stand, the movable rectangular block of metal placed in the slot of said slotted arm of said stand, the screw which, passing through the slot in the said upright slotted arm of said sleeve and the said movable rectangular block of metal placed in the slot of said slotted arm of said stand, holds the said slotted upright arm of said sleeve in place, the said slotted arm of said stand, and said stand, as and for the purposes described.

10. In a knitting-machine, the combination of the plush-burr, the plush-burr head attached to and moving upon a spindle, the said spindle, near one end of which spindle is a slot to allow the plush-burr head to slide back on said spindle and at the other end of which spindle is a hole extending diagonally through to its side for the yarn to pass and be guided through, the sleeve in which said spindle is placed and held, the spring placed on said spindle between a shoulder thereon and the plush-burr head, the upright slotted arm fastened to said sleeve and supporting and fastening the same to the slotted arm of a stand of such knitting-machine, the movable block of metal placed in said slot of said slotted arm of said stand, the screw which, passing through said slot in said upright slotted arm fastened to said sleeve, enters the said movable rectangular block of metal in said slot of said slotted arm and secures said slotted upright which holds the sleeve to the slotted arm of the said stand, the said stand of said machine, and the slotted arm of said stand, as and for the purposes described.

11. In a knitting-machine, the combination of the metallic guide having a hole therein

for the yarn to pass through, placed upon the pin around which the plush-burr revolves and underneath and extending on the outside of said plush-burr, the said pin, and the plush-burr head, and the said plush-burr, as and for the purpose described.

12. The combination of the knitting-cylinder and the needles of the knitting-machine, a presser, a feeding-burr, and a stand for said machine, consisting of a trunk and one or more slotted arms for holding the presser and the feeding-burr, and the means for supporting and attaching said presser and feeding-burr to said stand, substantially as described.

13. The combination of a knitting-cylinder and needles of a knitting-machine, a presser, a feeding-burr, and push-down, and a stand consisting of a slotted trunk and one or more slotted arms for holding the presser, feeding-burr, and push-down, and the means for supporting and attaching said presser, feeding-burr, and push-down to said stand, substantially as described.

14. The combination of a knitting-cylinder and needles of a knitting-machine, a presser, feeding-burr, push-down, clearing-burr, and a stand consisting of a slotted trunk and one or more slotted arms for holding the presser, feeding-burr, push-down, and clearing-burr, and the means for supporting and attaching said presser, feeding-burr, push-down, and clearing-burr to said stand, substantially as described.

15. The combination of a knitting-cylinder and the needles of a knitting-machine, a presser, feeding-burr, push-down, plush-burr, and clearing-burr, and a stand consisting of a slotted trunk and one or more slotted arms for holding the presser, feeding-burr, push-down, plush-burr, and clearing-burr, and the means for supporting and attaching said presser, feeding-burr, push-down, plush-burr, and clearing-burr to said stand, substantially as described.

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