

No. 740,298.

PATENTED SEPT. 29, 1903.

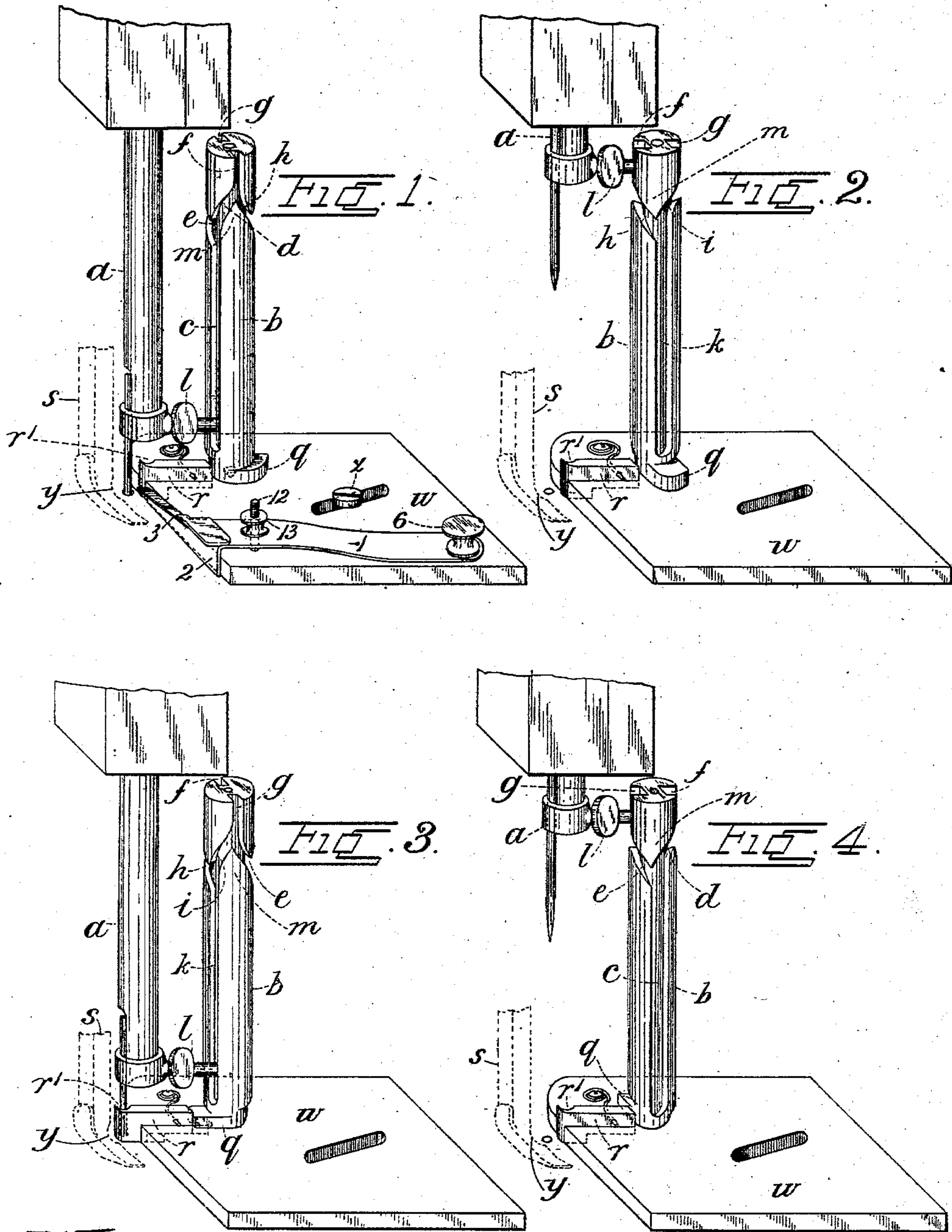
J. C. MOORE.

OVERSEAMING ATTACHMENT FOR SEWING MACHINES.

APPLICATION FILED JUNE 2, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
Peter A. Ross
William J. Firth.

Inventor:
John C. Moore
By Henry Comstock
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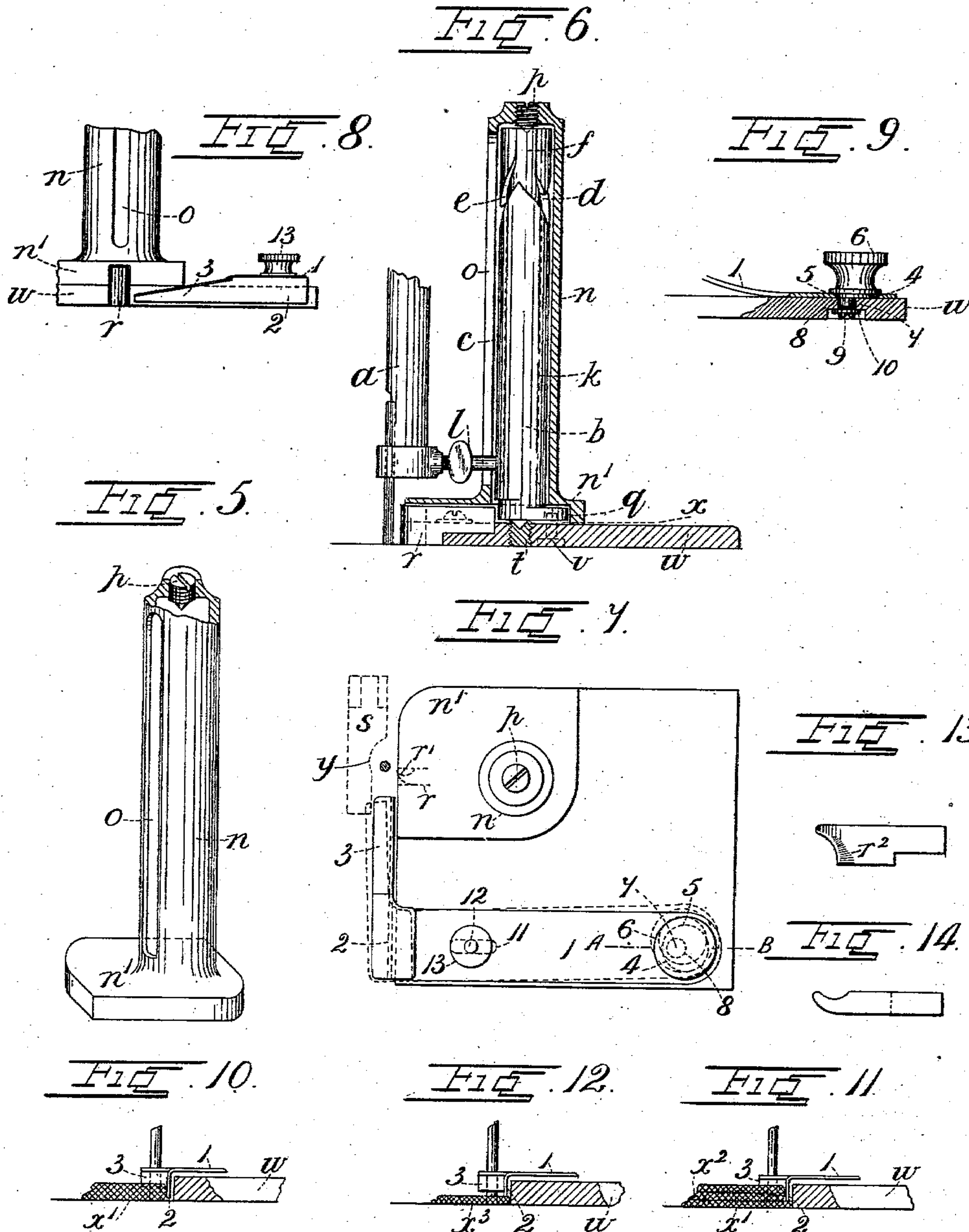
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UNITED STATES PATENT OFFICE.

JEHU C. MOORE, OF LONDON, ENGLAND.

OVERSEAMING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 740,298, dated September 29, 1903.

Application filed June 2, 1902. Serial No. 109,836. (No model.)

To all whom it may concern:

Be it known that I, JEHU C. MOORE, gentleman, of Room 451, Hotel Cecil, Strand, London, England, have invented certain new and useful Improvements Relating to Sewing-Machines or Sewing-Machine Attachments such as are used for Fancy Stitching, Blind-stitching, Overseaming, and Similar Work, of which the following is a specification.

10 This invention relates to sewing-machines or sewing-machine attachments (hereinafter referred to as "the attachment") of the kind which have mechanically-actuated devices other than the ordinary feed-motion for inter-
15 mittently shifting the work in respect to the needle to cause the stitches to be made in different or desired positions—as, for example, in fancy stitching, blindstitching, and overseaming.

20 The object of the invention is to simplify and improve the construction and operation of such attachments, more particularly as regards the means for transmitting the motion of the needle-bar or other part to the mechanism which operates the shifting or pushing device, also as regards the said pushing device and the means for pressing or guiding the work as it passes through the machine under the action of the attachment.

30 In an attachment made in accordance with my invention a projection on the reciprocating needle-bar or other part is adapted to engage with a combination of straight longitudinal and branching or connecting cam-
35 grooves in a rotary pillar, or what may be termed "zigzag" cam-grooves passing progressively around the pillar, their terminations or the extreme points of the zigzag opening into grooves arranged longitudinally
40 of the pillar and of suitable length whereby the reciprocating motion of the said needle-bar and the projection thereon is converted into an intermittent unidirectional motion of the rotary pillar, the said intermittent uni-
45 directional motion of the pillar acting by means of a cam on the pillar or other connecting mechanism to move the work shifting or pushing device in and out, as required. The branch cam-grooves may be
50 disposed at, or by adjustment of the pillar they may be brought to, such position within the stroke of the needle-bar that the

time and period of the rotary motion of the pillar and consequent transmission of the motion to the work shifting or pushing de- 55
vice may be regulated to take place at any required time in regard to the feed and position of the needle and to suit the special circumstances necessary to the nature of the stitches or work required to be done. The
60 said shifting or pushing device has a single blunt knife-edged or bulb-edged face, which may be suitably inclined or curved, so as to provide an overhung portion, whereby the narrow face disturbs a minimum portion of the
65 fabric and the curved or overhung portion causes the same to assume the most desirable position in regard to the needle. I also provide the attachment with an auxiliary presser device or guide independent of the usual presser-
70 foot of the machine, said device or guide being so constructed and arranged with horizontal inclined and vertical guiding or pressing faces and means of adjustment that the said guid-
75 ing or pressing faces can be set backward or forward to any desired position with respect to the shifting or pushing device or at a suitable angle therewith. Said guiding and
80 pressing faces are also adjustable as to height, so that they may or may not exert pressure upon the work, may serve as a guide there-
for, or may be moved to an inoperative position, according to the thickness and nature of the material constituting the work or other
85 requirement.

I will now describe an attachment made in accordance with my invention with reference to the accompanying drawings.

Figures 1, 2, 3, and 4 are similar perspective elevations showing the device and needle-bar, respectively, in the four successive positions for over stitching-work, the casing for the rotary cam-pillar being removed. Fig. 1 also shows the auxiliary work pressing or
90 guiding device, hereinafter described, attached to the base-plate of the attachment. Fig. 5 is a part-sectional perspective elevation of the casing for the rotary cam-pillar. Fig. 6 is a sectional elevation of the casing-pillar and base-plate. Fig. 7 is a part plan of the
95 base-plate of the attachment and auxiliary pressing and guiding device. Fig. 8 is an end view of Fig. 7 looking toward the right thereof. Fig. 9 is a section on line A B of Fig. 7.

Fig. 10 illustrates by a part-sectional elevation the method of using the auxiliary presser-foot for overseaming a single edge of cloth. Fig. 11 is a similar view to Fig. 10, illustrating the use of the auxiliary presser-foot for blindstitching. Fig. 12 is a similar view to Fig. 10, showing the use of the auxiliary presser-foot where very thin material is operated upon. Fig. 13 is a separate elevation of the work pushing or shifting device. Fig. 14 is a plan of Fig. 13.

Referring now to Figs. 1 to 6, *a* is the reciprocating needle-bar of a sewing-machine. *b* is a vertical pillar or spindle of height about the same as the stroke made by the needle-bar *a*. This vertical pillar is formed for a suitable distance upward from its base with a straight longitudinal groove *c*, which opens to the right and left into two helical cam-grooves, (marked, respectively, *d* and *e*.) Each of the grooves *d* and *e* after passing a quarter-way round the pillar *b* terminates in other longitudinal grooves, (marked *f* and *g*, respectively.) These grooves *f* and *g* are shorter than the first and are connected by two other helical cam-grooves *h* and *i*, similar to *d* and *e*, with another common longitudinal groove *k* passing down to the base of the vertical spindle in the same manner as the groove *c*. Thus the vertical spindle has two longitudinal grooves *c* and *k*, one on the opposite side to the other and each having bifurcated or V-shaped extremities, forming the grooves *d* and *e* and *h* and *i*, which join at each side with the upper intermediate short longitudinal grooves *f* and *g*. A projecting pin *l*, which may conveniently be in the form of an extension of the needle-clamping thumb-screw, as shown, engages with the described grooves and slides therein.

In order that the entrance to the cam-grooves may be in direct alinement with the straight longitudinal groove, so as to receive the reciprocating projection on its return movement, the face of the said cam-groove is set back beyond the center line of the longitudinal grooves, as shown at *m*. This is further insured by the rotary motion of the pillar being stopped while the projection is traveling in the longitudinal grooves. Thus at each upstroke of the needle-bar and each downstroke thereof a quarter-revolution is imparted to the rotary pillar. The rotary pillar is preferably mounted in a tubular casing *n*, Figs. 5 and 6, which has a longitudinal slot *o*, through which the reciprocating pin *l* projects, and the tubular case *n* is provided with a screwed plug or end piece, such as *p*, which forms the upper end bearing for the pillar. The bearing at the other end is suitably formed, as by a screwed plug *t*, in the base-plate *w*, this plug having a conical seating to receive a pin on the bottom of the pillar. The pillar is secured in position by suitable screws *v*, passed through the base-plate *w* of the attachment and up into the lower face of the enlarged base *n'* of the casing *n*. The

bearings *p* and *t* are so made that by adjusting them in regard to one another the spindle may be raised or lowered to suit the height or stroke of the needle-bar of various machines or to adjust the period of the stroke of the needle at which the rotary motion of the pillar *b* takes place. The under face of the enlarged base *n'* of the casing *n* is formed with recess *x* to allow of the rotation of a cam-like part *q*, carried by the base of the pillar—that is to say, at the fourth intermittent movement thereof—to move out the spring-returned pusher *r*, which thus intermittently presses the work out of alinement with the needle into a recess *y* cut in the side face of the presser-foot *s*. (Shown dotted.) For use with these pusher devices as hitherto made with a bifurcated extremity it is necessary that the ordinary presser-foot of the sewing-machine be cut away to a very large extent to allow of thick fabric being pushed back out of the path of the needle by the broad-ended bifurcated pusher. Owing to this large opening in the presser-foot when thin fabric is operated upon, there is nothing to keep the thin fabric down while the needle operates, and this causes the machine to miss stitches. Also the forward edge of the bifurcated pusher obstructed the proper formation of the stitch, and in attachments which feed while the pusher is out the said bifurcation forms a very undesirable obstruction to the feed of the material.

According to my invention the work-shifting device or pusher *r* consists of a single flat tongue or blade having a rounded nose and preferably provided at its forward end with a vertical groove *r'* in its rear face to allow of the passage of the needle when the pusher *r* is in its extended position. The groove *r'* may be dispensed with, however, or the nose of the pusher may be suitably curved. The nose of the pusher or the upper part thereof may be inclined or curved forward, as shown in Figs. 13 and 14, so as to better direct the turned-up edge of the material out of the path of the needle, and the side of the pusher which will first engage the work or that nearest the operator is formed with a depression *r''*, which gradually merges into the ordinary form of the pusher-nose at about half its height. The said depression serves to gradually assist the edge of the work to rise and turn over in the proper direction out of the path of the needle, the said operation being assisted by the overhanging portion of the pusher-nose, which keeps the work from rising too far. By using the improved pusher described the opening in the presser-foot may be much smaller than that hitherto used, and the efficiency of the work is also assisted by the auxiliary presser-foot hereinafter described, which serves to hold the goods firmly in position as it advances under the needle and prevents the sewing-machine from missing stitches.

The pusher described works in a stepped

slot in the base-plate *w*. (See Fig. 6.) The attachment is secured to the base-plate of the machine in a suitable position with respect to the lever-bar *a* by means of a screw *z*, passed through an elongated slot in the plate *w*. In operation, assuming the parts to be in the position shown in Fig. 1, the needle being in the act of making a stitch in the work, the needle-bar *a* and projection *l* rise to the position shown in Fig. 2 and complete the stitch. During this movement the pusher *r* is inoperative; but the pin *l* in passing the cam-groove *e* imparts a quarter-revolution to the pillar *b*. The feed of the work in the machine also takes place as usual while the needle is out of the work. From the position shown in Fig. 2 the needle-bar passes down to the position shown in Fig. 3. In so doing and before the needle reaches the work, but after the feed of the machine has taken place, the projection *l* in passing through the groove *h* imparts a quarter-rotation to the pillar *b* and cam *q*, so as to move out the pusher, which moves the work out of alinement with the needle. The needle then passes down outside the work and in the groove *r'* of the pusher, as in Fig. 3. The needle now rises again and completes the stitch, and in so doing the pin *l* in passing the cam-groove *i* imparts a further quarter motion to the pillar *b* and cam *q*, which allows the pusher to return under the action of its spring to inoperative position. The parts being now in the position shown in Fig. 4, the feed takes place, and the needle-bar moves down again to the position shown in Fig. 1, in so doing imparting a further, but inoperative, quarter motion to the pillar *b* and cam *q*, bringing them to the position shown in said figure, when the operations first described are repeated, so that every alternate stitch is outside the work.

By varying the arrangement of the helical and longitudinal grooves so as to divide the motion of the vertical spindle to other than the quarter movements described the stitches made external to the work may be caused to occur at other intervals.

I will now proceed to describe the construction and action of my improved auxiliary presser device or guide above referred to. This is shown in Fig. 1 as attached to the back plate *w* and is also represented in plan, Fig. 7, in end view, Fig. 8, looking toward the right of Fig. 7. Fig. 9 is a section on line A B of Fig. 8. This auxiliary presser or guide comprises a spring plate or tongue 1, secured to the base-plate *w* in such manner as to be capable of being slid or reciprocated backward or forward thereon with an eccentric motion, as hereinafter described. The plate 1 is bent or shaped so that its tendency is to rise from the surface of the base-plate *w*. Its forward end is formed as a flange 2 to fit over the forward edge of the base-plate, this flange 2 being continued back as an extension adapted to be parallel with said edge, as shown, and to reach to a suitable point

near the pusher *r*. For a convenient part of its length the flange 2 is bent over forwardly in the form of a flange 3, this last-mentioned flange being inclined or directed downwardly toward the pusher.

Figs. 10, 11, and 12 show three different methods of using the auxiliary presser-foot, as shown in Fig. 10, for overseaming a single edge of cloth *x'*. The flange 2 acts as a guide and presser-foot to keep the work pressed to the base-plate and in position as it approaches the pusher and needle. As shown in Fig. 11, for blindstitching the flange 2 acts as a presser-foot to the lower layer of material *x'*, while the flange 3 acts as a presser-foot to the double layer of material *x''*, the edge of which double layer is also guided by the side of flange 2, so as to cause the needle to split the goods, whereby the thread is not shown on the inner fold when the material *x''* is unfolded. This is useful in such work as blindstitching the turned-up edge of trousers. Fig. 12 shows the application to very thin material, such as *x'''*. In this case the lower edge of flange 2 is used as a presser-foot to the goods.

A circular hole 4 is formed near the rear end of the plate 1, this serving to cooperate with a cam or eccentric 5 on the under face of the milled button 6 to slide the plate 1 backward or forward with an eccentric motion, so as to move the guiding and pressing surfaces 2 and 3 toward or away from the base-plate *w* and toward or away from the pusher *r* to any required extent. The stem 7 of the milled button 6 fits snugly in a hole 8 in the base-plate *w*. It has a hollow thread to receive a screw 9, inserted from below, a spring-washer 10 being interposed between the screw 9 and the base-plate to keep the parts tight.

The plate 1 has an elongated slot 11 toward its forward end, through which passes a threaded pin 12, projecting from the base-plate *w*. A milled nut 13 works upon this pin, and by screwing or unscrewing this nut the plate 1 can be adjusted or set to exert any desired pressure upon the work or to stand up out of contact therewith, if so required. By turning the said milled head in one direction the turned-over edge which forms the guide and presser-foot is moved to and from the extreme position of the pusher or at an angle therewith, while by turning the milled head in the other direction the cam or eccentric connection serves to move the said edge to or from the side face of the pusher.

What I claim, and desire to secure by Letters Patent, is—

1. The improved attachment for sewing-machines comprising the combination of a rotary pillar or shaft, cam-grooves disposed around said rotary pillar, a reciprocating projection carried by the needle-bar of the sewing-machine, said reciprocating projection sliding in said cam-groove and thereby im-

parting an intermittent unidirectional rotary motion to said pillar, a work-shifting device having a single narrow face curved upward from the feed side to an overhanging portion, 5 a recess for the needle on the rear face of said work-shifting device, means for transmitting the intermittent motion of said pillar to the work-shifting device, an auxiliary pressing and guiding device having vertical and horizontal 10 guiding and pressing faces, means for adjusting said vertical and horizontal faces to and from the extreme forward position of the pusher at a suitable angle therewith and at a suitable height, all substantially as and 15 for the purposes set forth.

2. In sewing-machine attachments such as are used for fancy stitching, blindstitching, overseaming, and similar work, the improved means for imparting the required intermittent 20 work-shifting motion to the work-shifting device, comprising a rotary pillar, continuous zigzag cam-grooves disposed around said pillar, longitudinal guide-grooves into which the zigzag grooves open, a reciprocating projection on the sewing-machine, said 25 reciprocating projection sliding in said cam-grooves and rotating the pillar thereby intermittently in a uniform direction, a work-shifting device, means for transmitting the intermittent motion of the pillar to the work-shifting 30 device, substantially as and for the purpose set forth.

3. In sewing-machine attachments such as are used for fancy stitching, blindstitching, 35 overseaming and similar work, the improved means for imparting the required intermittent work-shifting motion to the work-shifting device, comprising the combination of a rotary pillar receiving an intermittent unidirectional 40 motion from a reciprocating part of the sewing-machine by means of cam-grooves and guide-grooves in the pillar, a spring-retained work-pushing device, a cam on said rotary pillar for periodically actuating said pushing device substantially as described. 45

4. In a device for the purpose specified, the combination with a non-rotative reciprocating part of a sewing-machine, said part having 50 a laterally-projecting pin, and work-shifting means, of a rotatable grooved pillar having its axis substantially parallel with the path of said pin, which latter engages the grooves in the pillar, said pillar being operatively 55 connected with the work-shifting means, whereby the reciprocating part gives to said pillar unidirectional movements about its axis for actuating said work-shifting means.

5. In a sewing-machine, the combination 60 with a work-shifting device, of means for imparting intermittent movements thereto, said means comprising a rotatably-mounted pillar operatively connected with said work-shifting 65 device and having in it a plurality of longitudinal guide-grooves and cam-like branch grooves connecting said guide-grooves progressively

around the pillar, and a reciprocating part of the machine operatively engaging said grooves and thereby imparting 70 to the pillar intermittent rotative impulses in one direction.

6. In a sewing-machine, the combination with a reciprocating part of the machine and a work-shifting device, of a rotatably-mounted 75 pillar operatively connected with said work-shifting device, said pillar having a plurality of longitudinal guide-grooves disposed about its periphery and a plurality of cam-like branch grooves connecting said guide-grooves progressively about the pillar, the 80 said reciprocating part engaging and sliding in said grooves for imparting intermittent rotary motion to the pillar, and said cam-like grooves having their faces, at the point where 85 said reciprocating part enters them, set back beyond the center line of the groove which said reciprocating part has just left, whereby the intermittent rotary impulses imparted to the pillar are commuted in one direction. 90

7. In a sewing-machine, the combination with the base-plate of the same, the needle-bar and needle, the presser-foot of the machine recessed at the side, and the work-shifting 95 means, of an auxiliary guide and presser-foot comprising a spring-carrying plate, and a guide and auxiliary presser-foot integrally connected and disposed with their broader faces perpendicular to each other, said auxiliary 100 presser-foot bearing flatwise on the goods at its end which is adjacent to the needle, and means for depressing said auxiliary foot.

8. In a sewing-machine, the combination 105 with the base-plate of same, a needle-bar and needle, the presser-foot of the machine recessed at the side, and work-shifting means, of an auxiliary guide and presser-foot comprising a carrying-plate mounted adjustably 110 on the machine, a guide and presser-foot thereon having their broader faces disposed perpendicularly to each other, the said face of the auxiliary presser-foot being inclined downward or toward the cloth-plate at its free 115 end which is adjacent to the needle, and means for depressing said auxiliary foot and for moving it toward and from the needle.

9. In a sewing-machine, the combination with the base-plate of the same, a needle-bar 120 and needle, a presser-foot, and work-shifting means, of an auxiliary presser-foot, a guide connected therewith, a lever-like spring-plate to which said auxiliary foot and guide are attached, a threaded pin or stud in the base-plate, said stud engaging a slot in the spring-plate and forming a fulcrum therefor, a nut 125 on said pin for depressing the plate, and means for turning the lever-like spring-plate about its fulcrum. 130

10. In a sewing-machine, the combination with the base-plate of the same, a needle-bar and needle, a presser-foot, and a work-shifting means, of an auxiliary presser-foot, a

5 guide connected therewith, a lever-like spring-plate to which said auxiliary foot and guide are attached, a threaded pin or stud in the base-plate, said stud engaging a slot in the spring-plate and forming a fulcrum therefor, the nut on said pin for depressing the plate, and an eccentric rotatively mounted in the base-plate and engaging a yoke in the end of said spring-plate, said eccentric serving to

turn the lever-like spring-carrying plate about its fulcrum.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JEHU C. MOORE.

Witnesses:

ALFRED B. CAMPBELL,
ERNEST F. FOTHERGILL.