

No. 794,474.

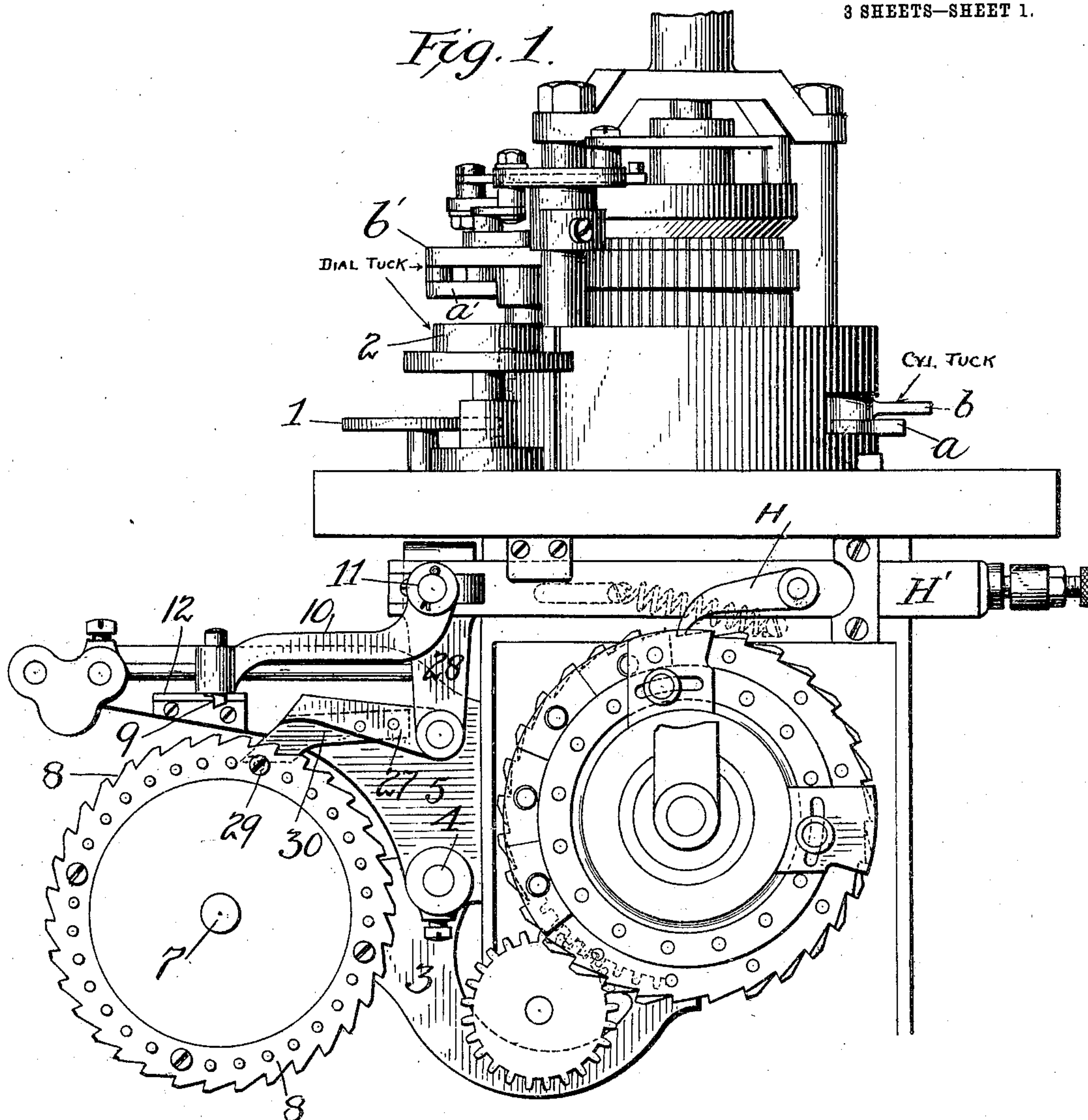
PATENTED JULY 11, 1905.

F. B. WILDMAN.
PATTERN MECHANISM FOR KNITTING MACHINES.

APPLICATION FILED MAY 27, 1904.

3 SHEETS—SHEET 1.

Fig. 1.



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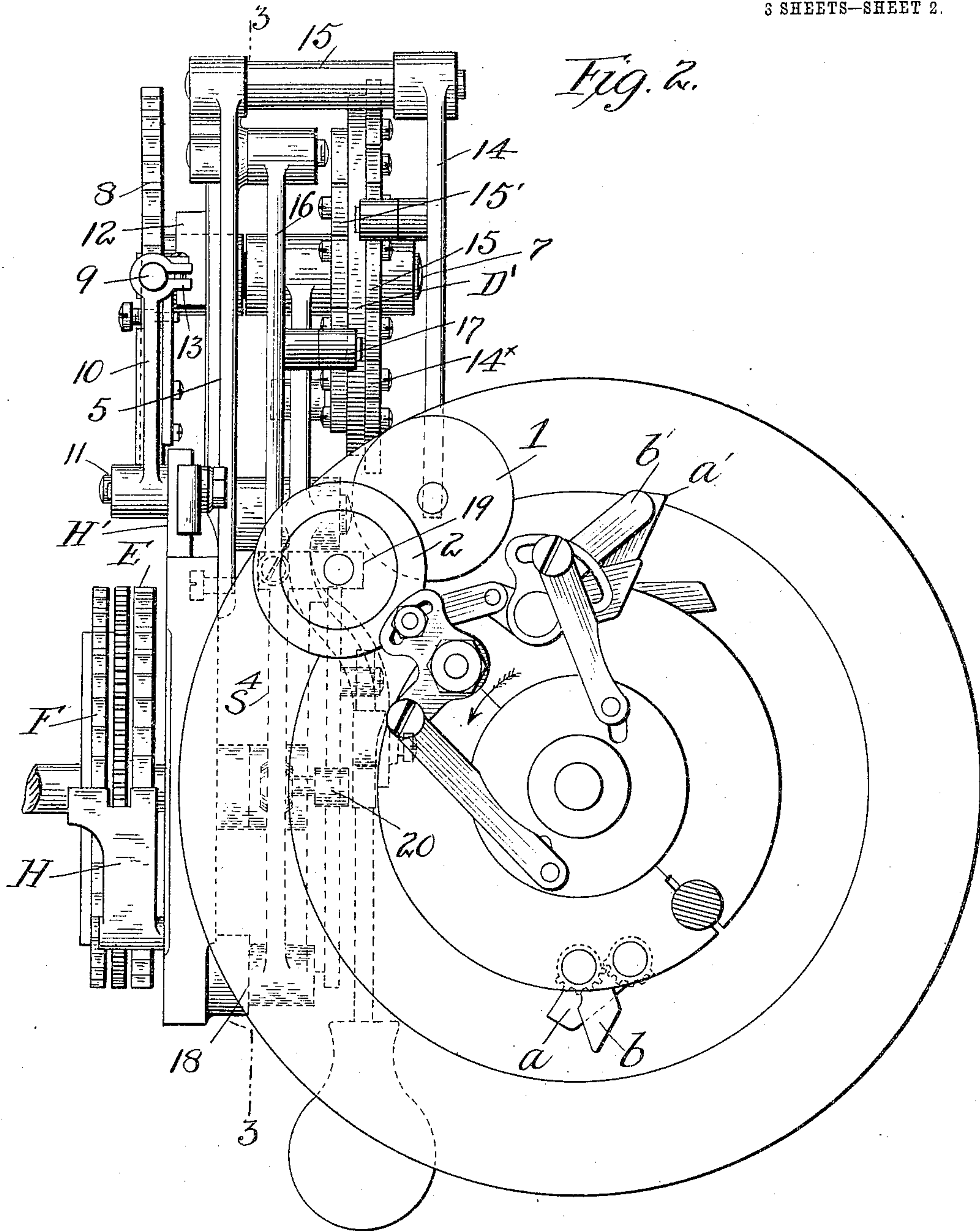
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3 SHEETS—SHEET 2.



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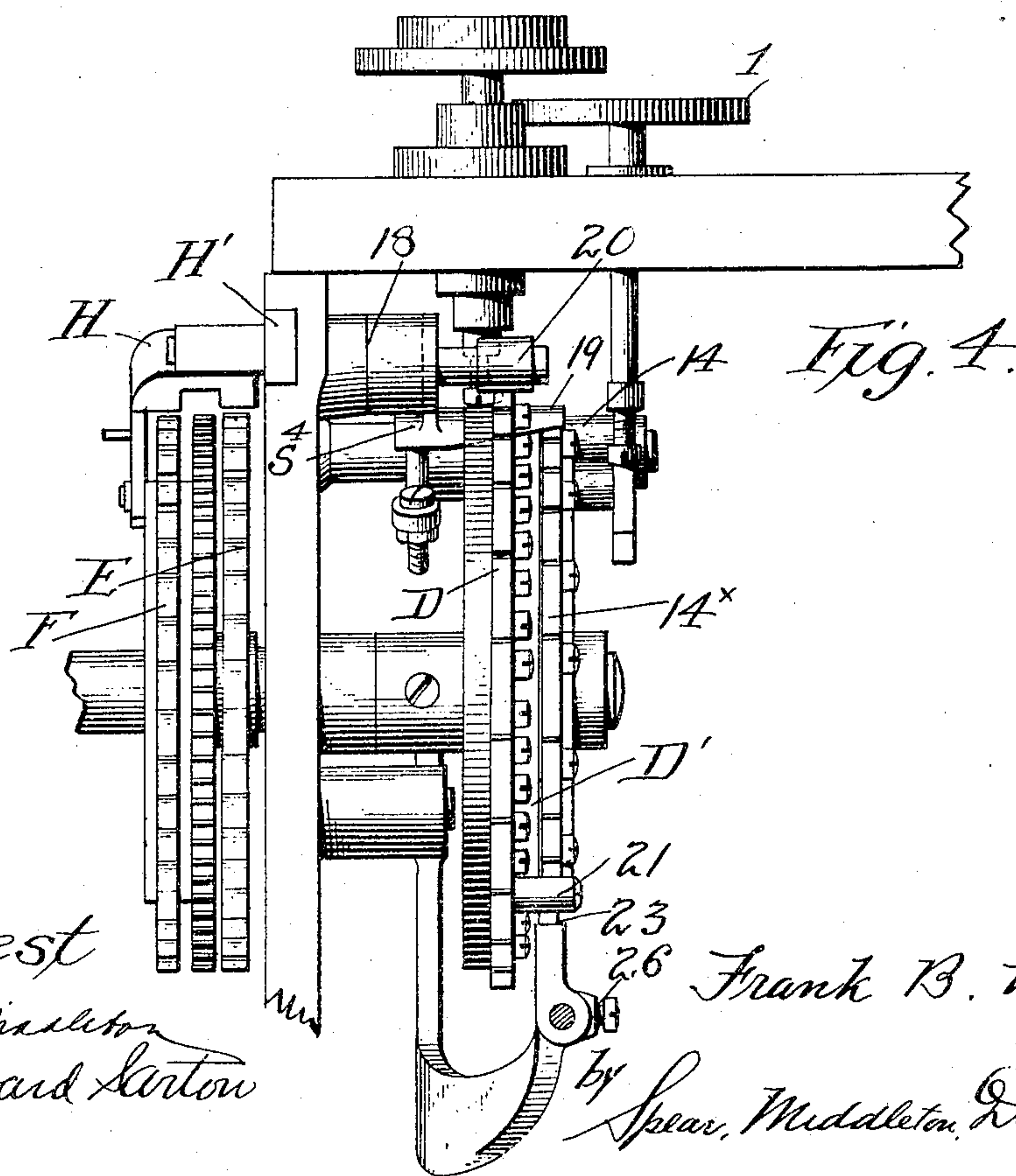
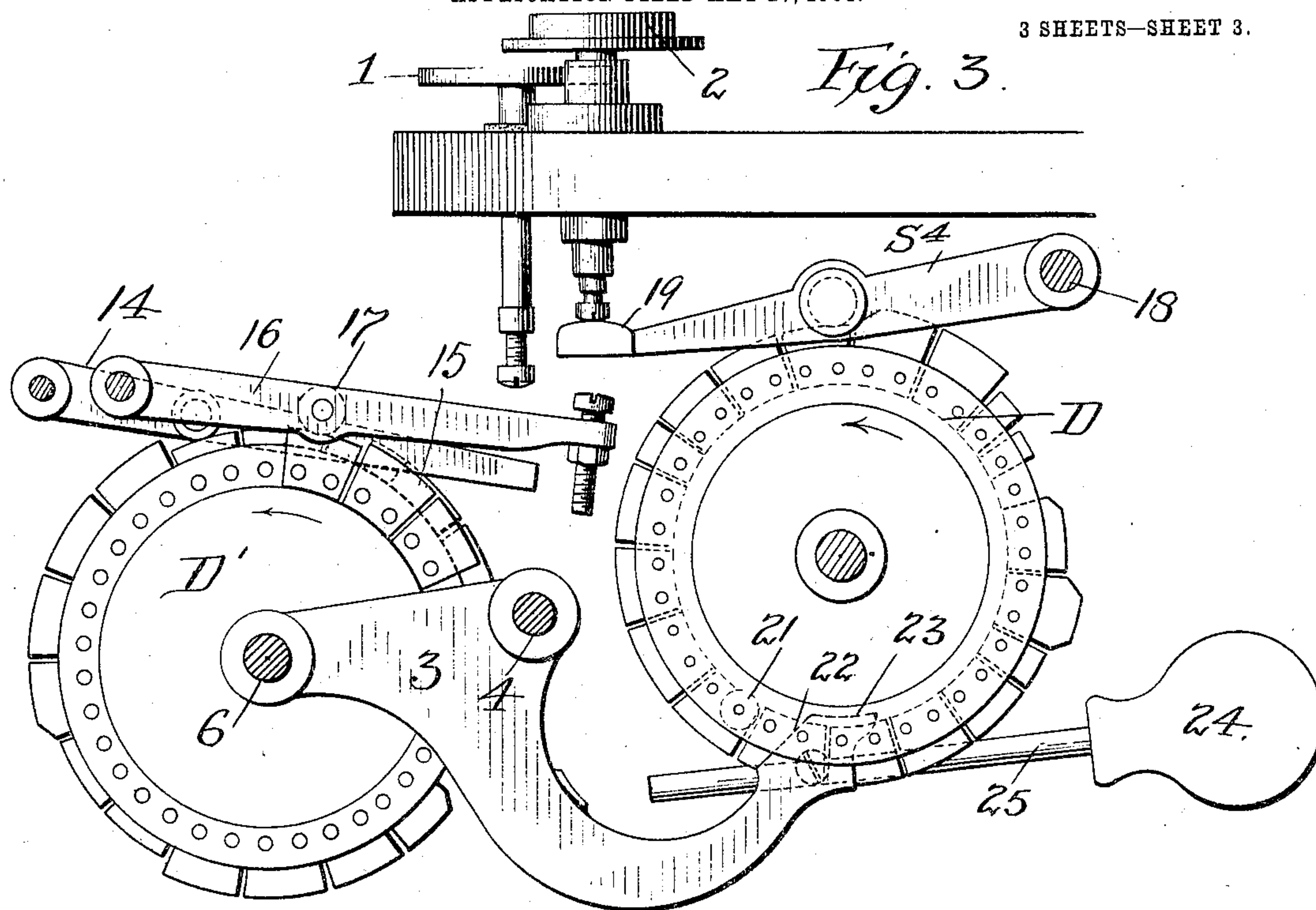
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3 SHEETS—SHEET 3.



Attest

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UNITED STATES PATENT OFFICE.

FRANK B. WILDMAN, OF NORRISTOWN, PENNSYLVANIA.

PATTERN MECHANISM FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 794,474, dated July 11, 1905.

Application filed May 27, 1904. Serial No. 210,098.

To all whom it may concern:

Be it known that I, FRANK B. WILDMAN, a citizen of the United States, residing at Norristown, Pennsylvania, have invented certain new and useful Improvements in Pattern Mechanism for Knitting-Machines, of which the following is a specification.

My invention relates to pattern mechanism for knitting-machines, and belongs more particularly to the form of machine disclosed in Letters Patent of the United States No. 500,151, June 27, 1893, and No. 613,346, November 1, 1898.

My attachment may be employed to adjust any of the knitting devices or their controlling means which are intended to produce knitting of various designs—such as tuck courses, welt courses—or produce any desired changes in the parts which are to occur intermittently and produce different effects in the work.

I have shown my improvements in connection with certain features disclosed in the patents above mentioned. It will be understood, however, that I do not limit myself in this respect.

The invention consists in the features and combination and arrangement of parts hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view of a machine embodying my invention. Fig. 2 is a plan view. Fig. 3 is a detail sectional view on line 3 3 of Fig. 2, and Fig. 4 is a front view of the pattern mechanism with the supplemental wheel in raised position.

In the machines of the type above referred to a pair of levers *a b* is employed for adjusting the knitting devices of the cylinder to produce different knitting effects, the said levers being operated by a disk 1, which is moved vertically to aline with either lever, which levers being carried by the rotary parts of the machine are brought thereby against the disk, and thus operated. The knitting-cams of the dial are likewise movably mounted and are adjusted to secure different knitting effects by arms *a' b'*, these, however, being shown as arranged in the present case like those shown in

an application for Letters Patent of the United States, Serial No. 208,864, filed May 20, 1904. The arms *a' b'* are intended to be operated by disks, one of which is shown at 2, arranged on the fixed part of the machine, the said arms *a' b'* being brought into engagement with the said disk by the revolution of the machine. This disk is raised and lowered, and my improvements consist in the means for controlling the vertical position of these disks, which, it will be understood, are representative of any devices for an equivalent purpose.

In the Patent No. 613,346 a lever *S*⁴ is employed for moving one of the disks vertically, said lever being in turn controlled by a pattern-wheel *D*, which is operated from mechanism consisting of the ratchet-wheels *E F*, a gear-wheel operated from the moving fabric, and a pawl *H* on a slide *H'* operated from the machine. In my present arrangement I employ the pattern-wheel *D* as the means for throwing into operation the improved pattern mechanism. This pattern mechanism includes a supplemental pattern-wheel *D'*, similar to the wheel *D*; but this supplemental wheel is carried by an oscillating lever 3, pivoted at 4 to the bracket 5, suitably secured to the machine-frame. The supplemental pattern-wheel is journaled in this oscillating lever at 6, and the shaft 7 of the said wheel has fixed thereto a ratchet-wheel 8, Figs. 1 and 2. This ratchet is adapted to be operated by a pawl 9, carried by an arm 10, pivoted at 11 to the reciprocating slide *H'* above mentioned. At times, however, the ratchet-wheel, as shown in the drawings, is down out of the range of the pawl, so that said pawl reciprocates idly above the teeth of the ratchet-wheel, and for this purpose a slideway 12 is provided on the bracket 5, upon which rests the lug 13, Fig. 2, of the pawl-lever to hold the same up out of contact with the ratchet-wheel during said reciprocation. At this time the supplemental pattern-wheel is therefore out of action, and the knitting devices of the machine are controlled solely by the pattern-wheel *D*. In order to bring the pattern-wheel *D'* into action to secure a more extended pattern action over that given by the pattern-wheel *D*, the lever 3 is operated to raise the

ratchet-wheel 8, as will be presently described, so that its teeth will be in the range of movement of the pawl 9, and thus said ratchet-wheel will be operated once for each
 5 reciprocation of the slide H', representing one revolution of the machine. The supplemental pattern-wheel will now operate the devices to control the character of the knitting, and for this purpose I provide a lever 14,
 10 pivoted to an arm 15, extending from the bracket 5, said lever when raised by the pattern-blocks 14^x on the pattern-wheel lifting the disk 1 into line with the appropriate arm on the rotary head to operate said arm, and
 15 thus adjust the knitting device connected therewith.

The pattern-wheel, as shown in Fig. 2, has two rows of pattern-blocks; one for the lever 14 and a second set 15', some of which are indicated in Fig. 3, for operating a lever 16, by
 20 means of a roller 17, on said lever bearing on the pattern-blocks. This lever 16 is also pivoted to the bracket 5, and at its front end said lever when raised engages the rear of the lever S⁴, and thus lifts the same to operate the
 25 disk 2 to control other knitting devices through the operation of the arms a' b'. This lever S⁴ is substantially the same as that similarly marked in the Patent No. 613,346 above
 30 mentioned, it being pivoted at 18 to the frame and having a lateral extension 19 at its rear end for operating the stem of one of the disks. This lever is operated by the pattern-wheel D by a roller 20 on said lever bearing on the
 35 pattern-wheel; but when the supplemental pattern-wheel is brought into action by lifting it, together with the ratchet-wheel and levers 14 and 16, then the said lever S⁴ is operated by the supplemental lever 16, controlled by
 40 the supplemental pattern-wheel.

The oscillating lever 3, which raises and lowers the supplemental pattern mechanism, is operated from the main pattern-wheel D by a pin 21 thereon engaging the incline 22 at
 45 the front end of the lever and forcing said end down. There is also provided a dwell or rest 23 on the lever, and so long as the pin is in engagement with this rest or extension of the contact-surface the ratchet and supplemental
 50 pattern-wheel will be held up and in effective operation by means of the pawl 9, operating said ratchet, and the knitting devices of both the cylinder and dial will be controlled through the levers 14 and 15 and the disks 1 and 2, respectively.
 55

In the machine shown the levers b and a control the needle-cam of the cylinder for producing tuckwork or plain rib, while the levers a' b' control the cams (on a two-feed machine) for tucking on the dial-needles; but these functions of the parts are mentioned simply to illustrate the principle of my invention, which may be carried out in practice in other ways than that mentioned and shown.
 60 It will be seen that the levers 14 and 16, op-

erated by the supplemental wheel D', control the cylinder and dial-cams to operate them simultaneously or separately.

As soon as the main pattern-wheel again moves far enough the pin 21 will leave the
 70 dwell or rest 23 and the supplemental pattern mechanism will drop down of its own weight to the position shown in Fig. 1, and the knitting devices will now be controlled by the main pattern-wheel D. The weight of the
 75 supplemental mechanism is partly counterbalanced by the weight 24 on an arm 25, adjustably held at 26 to the lever 23.

The pattern-wheel as used herein is representative of any other form of pattern member, though I prefer the said wheel to a chain. In case the supplemental pattern-wheel is lowered before the end of the full pattern is reached I provide means for continuing the
 80 rotation of the pattern-wheel to the starting-point of the pattern. This consists of a pawl 27, pivoted to an arm 28, depending from the slide, said pawl engaging the teeth of the ratchet and turning the same until a pin 29 on the ratchet engages an extension 30 on the
 90 pawl and lifts said pawl out of action, at which time the pattern-wheel is ready to start a new pattern.

I claim—

1. In pattern mechanism for knitting-machines, a pattern wheel or member, connections therefrom to the knitting devices, means for shifting the pattern-wheel from one position to another, means for rotating the pattern mechanism, normally out of engagement
 95 therewith and ineffective but rendered effective to rotate the said wheel when the latter is in its shifted position, substantially as described.

2. In combination, in pattern mechanism for knitting-machines, a pattern wheel or member normally at rest in one position, connections therefrom to the knitting devices constantly operating, means for operating the pattern-wheel when shifted into another position, and
 100 automatic means for shifting the said pattern-wheel.

3. In combination, in pattern mechanism for knitting-machines, a pattern wheel or member normally lowered and at rest, connections therefrom to the knitting devices, means for automatically raising and lowering the pattern-wheel and means for driving the said pattern-wheel when in its elevated position.
 105

4. In combination, in pattern mechanism for knitting-machines, a pattern wheel or member normally lowered and at rest, a ratchet-wheel connected with the pattern-wheel to drive the same and shifting therewith, a constantly-operating pawl, to and from which the ratchet-wheel is carried by the rising and falling movements, and connections leading from the pattern-wheel to the knitting devices, substantially as described.
 110

5. In pattern mechanism for knitting-ma- 130

chines, a pattern wheel or member, connections therefrom leading to knitting devices, a ratchet-wheel connected with the pattern-wheel, a pawl for operating the ratchet-wheel, means for operating the pawl and means for moving the pattern-wheel into operative position and for throwing the ratchet into engagement with the pawl, substantially as described.

6. In combination, in pattern mechanism for knitting-machines, a pattern wheel or member normally at rest in one position, a swinging lever carrying the same constantly operating, means for operating the pattern wheel or member when shifted into another position, automatic means for shifting the said lever, and connections between the pattern-wheel and the knitting devices.

7. In combination, in pattern mechanism for knitting-machines, a pattern wheel or member normally at rest in one position, a swinging lever carrying the same, a ratchet-wheel connected with the pattern-wheel and carried by the swinging lever, a constantly-operating pawl which engages the ratchet when the swinging lever is shifted to carry the pattern-wheel and ratchet into another position, and connections leading from the pattern-wheel to change the character of the knitting, substantially as described.

8. In combination, in a pattern mechanism for knitting machines, a main pattern-wheel, connections leading therefrom to change the character of the knitting, a supplemental pattern-wheel normally at rest, a connection leading therefrom to change the character of the knitting, means for driving the supplemental pattern-wheel, said means being controlled from the main pattern-wheel, the said connection leading from the supplemental pattern-wheel, transmitting its motion to the connections leading from the main pattern-wheel, substantially as described.

9. In combination, in pattern mechanism for knitting-machines, a main pattern-wheel, a supplemental pattern-wheel normally lowered and at rest, connections leading from the pattern-wheels to control the character of the knitting, means controlled by the main pattern-wheel for raising the supplemental pattern-wheel and means for driving the supplemental pattern when in an elevated position.

10. In combination, with the main pattern-wheel, the supplemental pattern-wheel, the pivoted lever carrying the supplemental pattern-wheel and operated by the main pattern-wheel, constantly-operating means for driving the supplemental pattern-wheel when elevated, and connections leading from the pattern-wheels to control the character of the knitting.

11. In combination, with a main pattern-wheel, a lever operated thereby to control the character of the knitting, a supplemental pattern-wheel normally lowered, means for driv-

ing the supplemental pattern-wheel, a lever operated thereby, said lever, when the supplemental pattern-wheel is raised, operating the lever of the main pattern-wheel, substantially as described.

12. In combination, a main pattern-wheel, a lever operated thereby to change the character of the knitting, a supplemental pattern-wheel normally at rest and in a lowered position, means for raising the supplemental wheel operated by the main wheel, means for driving the supplemental wheel when raised, a lever operated by the main wheel to control the character of the knitting, and a lever operated by the supplemental wheel when raised, and transmitting its motion through the lever of the main wheel.

13. In combination, a main pattern-wheel, a supplemental wheel normally inactive, a connection operated by the main wheel for changing the character of the knitting, a connection operated by the supplemental wheel when active, said connection operating through the connection belonging to the main wheel, substantially as described.

14. In combination, the main pattern-wheel, the lever operated thereby with connections therefrom to knitting devices to control the character of the knitting, a supplemental pattern-wheel, a pivoted lever controlled from the main wheel and carrying the supplemental wheel to raise and lower the same, a lever turning on a fixed pivot and operated by the said supplemental wheel, and means for operating the supplemental wheel when raised, substantially as described.

15. In combination, in pattern mechanism for knitting-machines, a pattern member, means for shifting the said member to and from operative position, means for operating it when in operative position, and means for operating the said member, to the starting-point of the pattern, when in its unshifted position, substantially as described.

16. In combination, in pattern mechanism for knitting-machines, a pattern member, means for operating the same in one direction only, means for automatically throwing said operating means out of action, and a pawl for rotating the pattern member to the starting-point and in the same direction as the said operating means moves it with means for throwing said pawl out of operation automatically.

17. In combination, in pattern mechanism for knitting-machines, a pattern member, means for operating the same in one direction only, means for automatically throwing said operating means out of action, and a pawl for rotating the pattern member to the starting-point and in the same direction as the operating means moves it, with means for throwing said pawl out of operation automatically, consisting of the pin on the ratchet-wheel engaging the pawl.

18. In combination, a pattern-wheel, means
for raising and lowering the same, a ratchet
moving with the pattern-wheel, a constantly-
operating pawl to engage the ratchet-wheel
5 when raised, a second constantly-operating
pawl for moving the ratchet-wheel to rotate
the pattern-wheel to the starting-point, a
slide to which the pawls are pivotally connect-
ed, and means on the ratchet-wheel for throw-

ing the said second pawl out of operation au- 10
tomatically.

In testimony whereof I affix my signature in
presence of two witnesses.

FRANK B. WILDMAN.

Witnesses:

MARTIN E. FARRELL,
CARRIE LANDIS.