

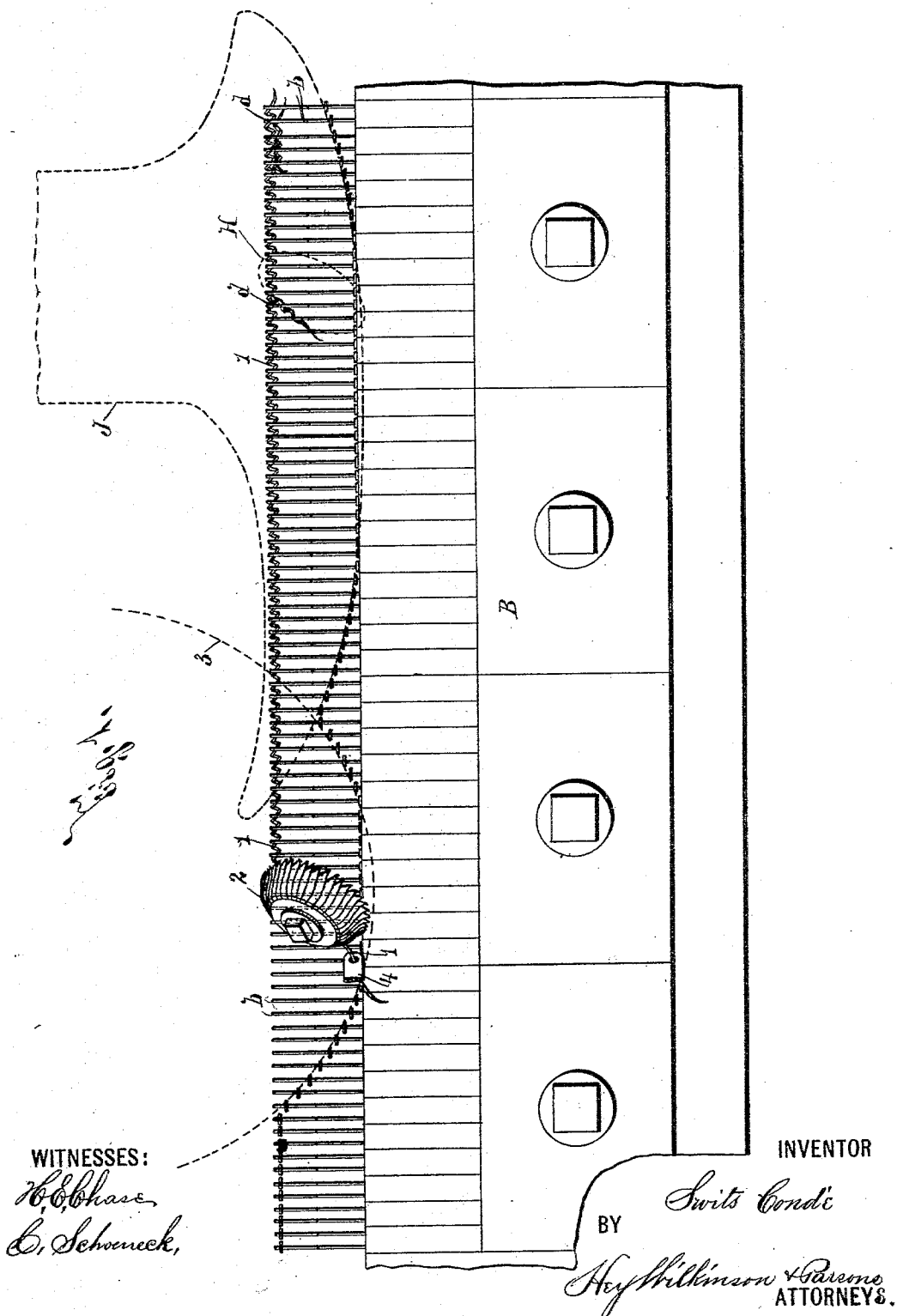
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5 Sheets—Sheet 1.

S. CONDÉ.
FEED FOR KNITTING MACHINES.

No. 510,958.

Patented Dec. 19, 1893.



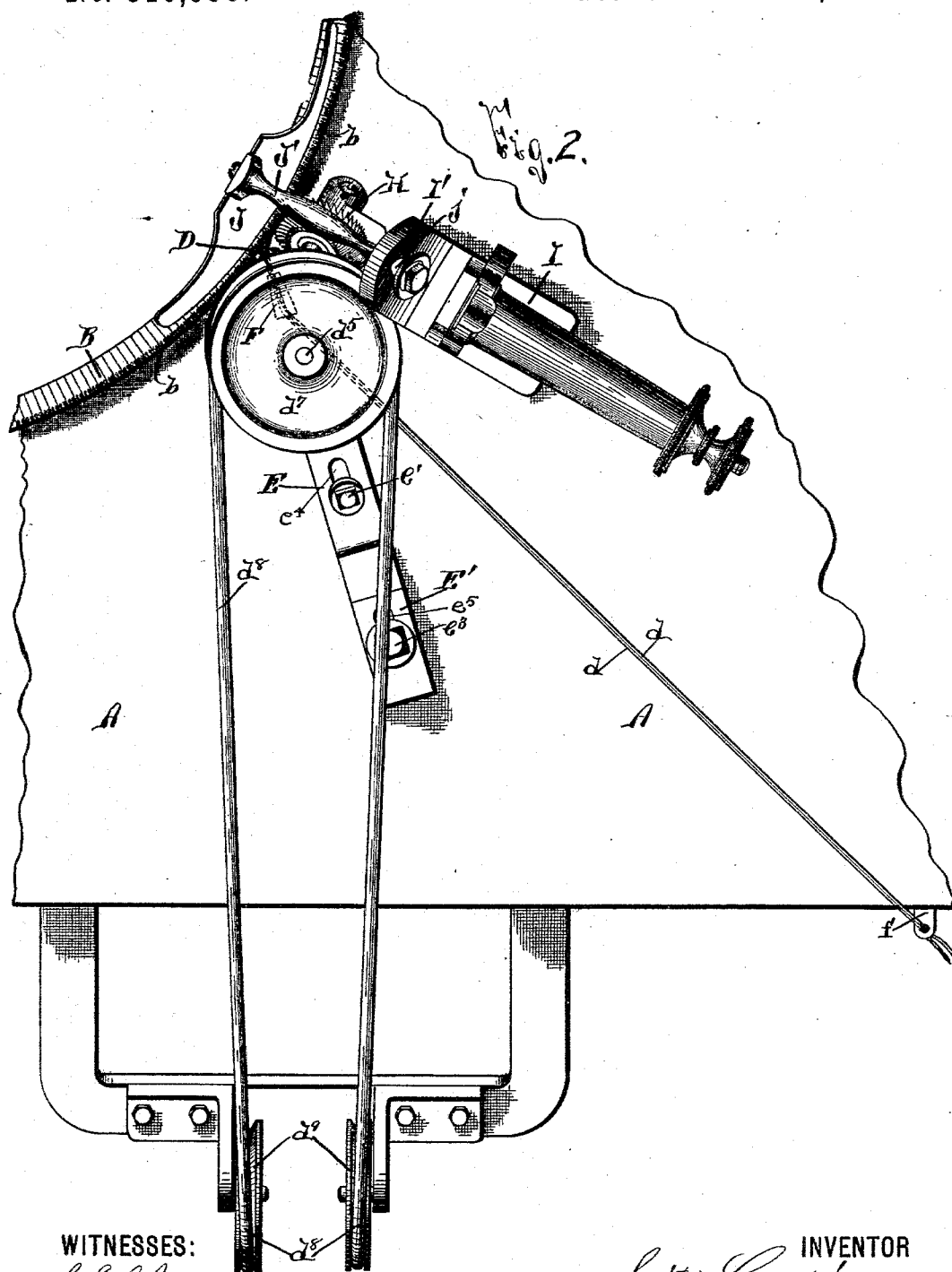
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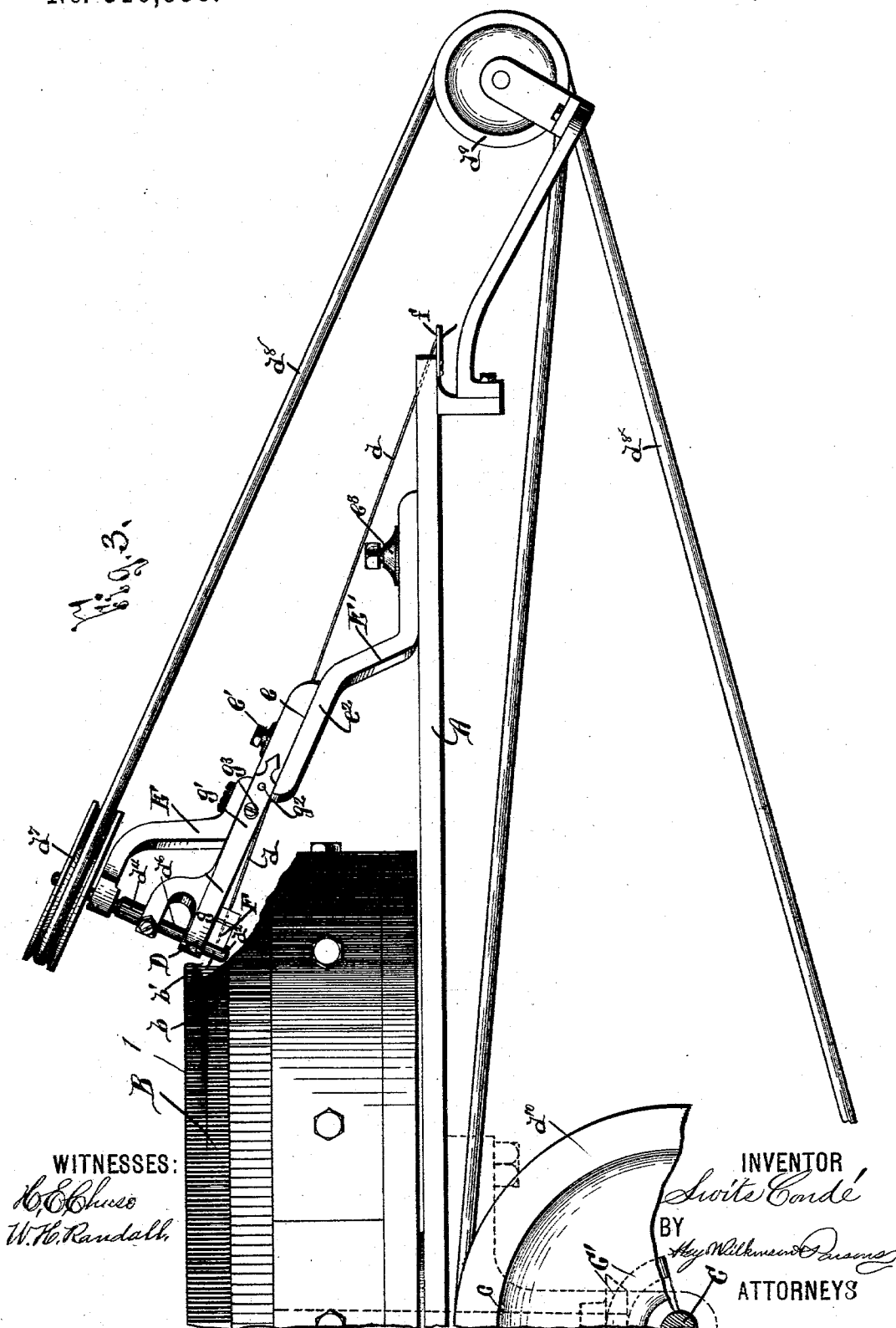
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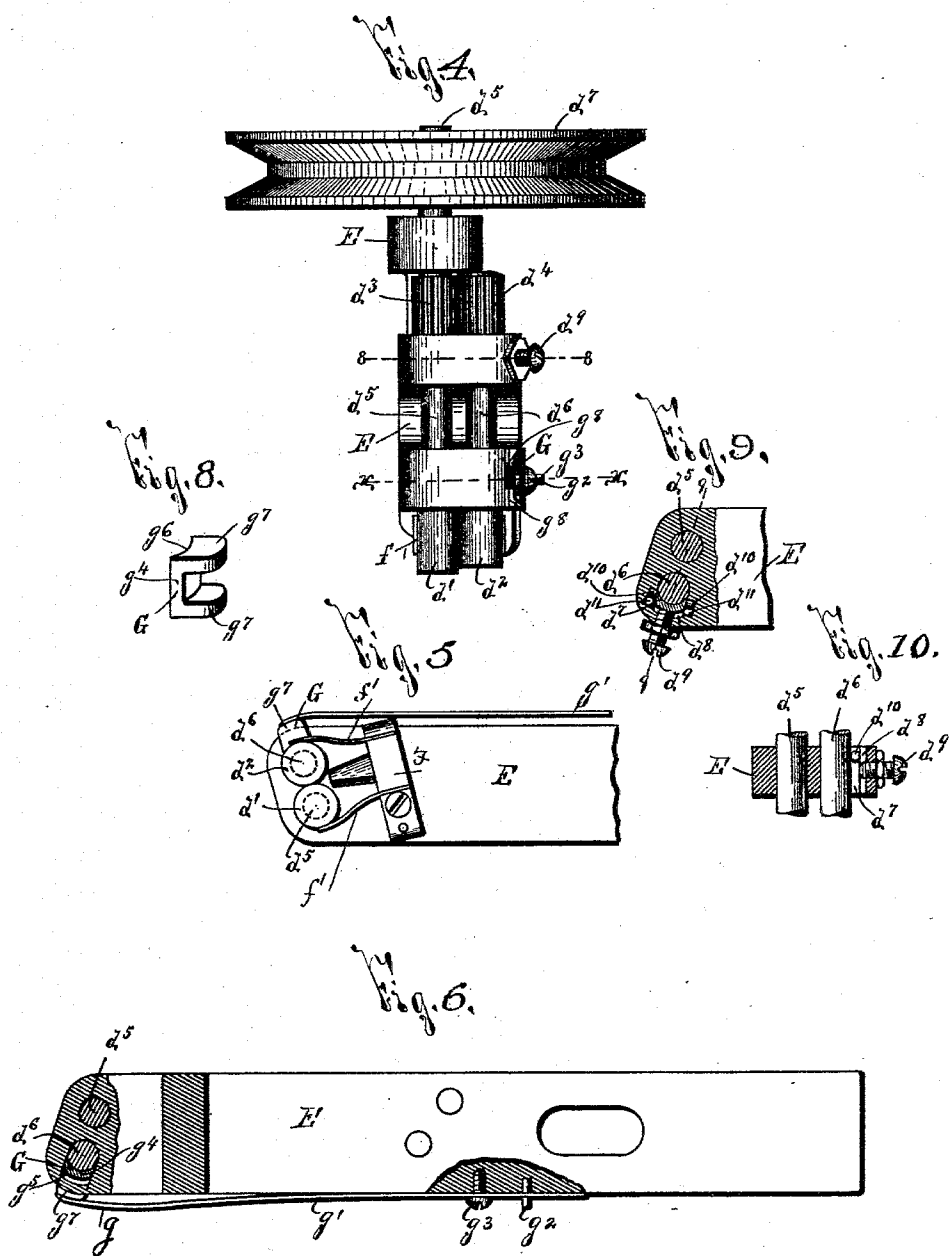
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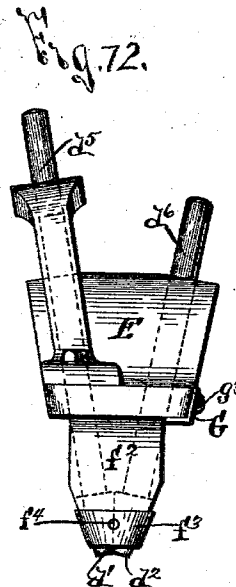
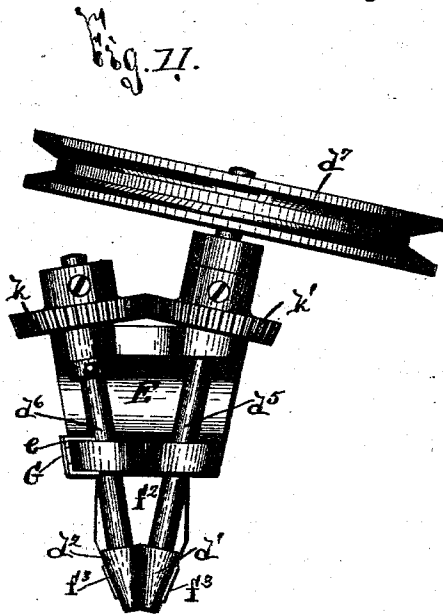
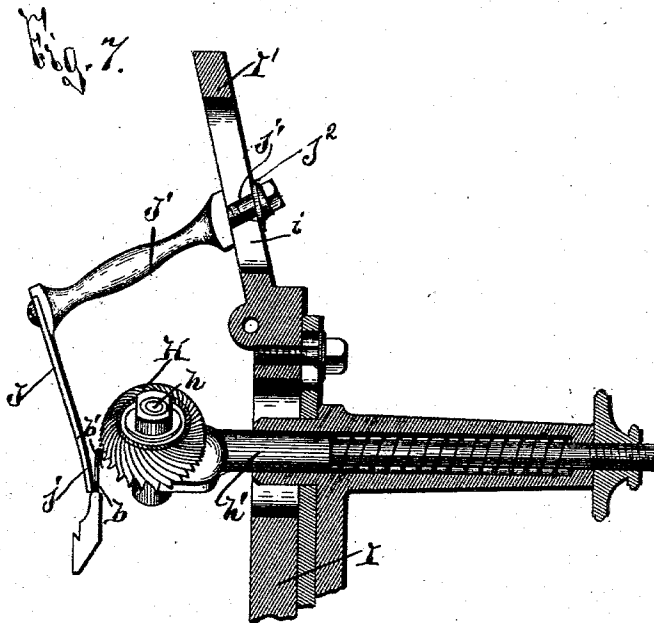
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UNITED STATES PATENT OFFICE.

SWITS CONDÉ, OF OSWEGO, NEW YORK.

FEED FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 510,958, dated December 19, 1893.

Application filed August 30, 1890. Serial No. 363,538. (No model.)

To all whom it may concern:

Be it known that I, SWITS CONDÉ, of Oswego, in the county of Oswego, in the State of New York, have invented new and useful Improvements in Feeds for Knitting-Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to a feed for knitting machines, and has for its object the production of a simple and effective device whereby a feeding strand is divided or broken into sections, which are fed at intervals to the knitting fabric; and to this end the invention consists, essentially, in a pair of feeds for feeding the same strand into the fabric, one of said feeds being arranged to feed the strand at a greater speed than the other feed for continually breaking the strand and feeding the same in sections at intervals.

The invention also consists in the detail construction and arrangement of the feed for continually feeding said strand to the feed of quicker movement, and in the detail construction and arrangement of the parts, all as hereinafter more particularly described and pointed out in the claims.

In describing this invention, reference is had to the accompanying drawings, forming a part of this specification, in which like letters and numerals indicate corresponding parts in all the views.

Figure 1 is an elevation of a portion of a needle cylinder illustrating by dotted lines one of the parts of the secondary feed of my invention as in operative position. Fig. 2 represents a top plan view of my improved feed and a portion of the needle cylinder. Fig. 3 is a side elevation of the parts as shown at Fig. 2, a portion of the needle cylinder being broken out for the purpose of more clearly illustrating the primary feed. Fig. 4 is a front elevation of the detached primary feed. Fig. 5 is an inverted plan view of a detached portion of said feed. Fig. 6 is a sectional view, taken on line $x-x$, Fig. 4. Fig. 7 is a detail sectional view, illustrating the construction of the secondary feed. Fig. 8 is an isometric perspective of the detached movable bearing for the lower end of one of the actuating shafts of the primary feed. Figs. 9 and 10 are, respectively, horizontal and vertical sec-

tional views showing the movable bearing for the upper extremity of said shaft; and Figs. 11 and 12 are, respectively, front and rear elevations of a detached modified construction of the primary feed.

A represents the frame of desirable form, size and construction, supported upon which is a knitting machine also of desirable form and construction, the one illustrated being a circular bearded-needle knitting machine, in which B represents the cylinder, and b the bearded-needles.

C represents a shaft from which motion is transmitted by any desirable form of mechanism C' to a shaft c by which the cylinder B is revolved.

The feeding mechanism consists of the primary feed D and the secondary feed. The latter feed feeds the strand d engaged thereby at a speed greater than the primary feed D, and consequently said strand is continually broken or divided into sections which are fed successively into the fabric by the secondary feed, whereupon the needles b forming a part of said secondary feed, knit the separate sections of the feeding strand d into the fabric.

The primary feed D preferably consists of a pair of rollers d' and d^2 journaled in a bracket E, which is provided with a rear inclined bearing face e mounted upon the inclined bearing face e^2 of a bracket E' secured to the table A. The bracket E is adjustably secured in position upon the bracket E' by means of a set screw e' having its upper extremity mounted in a slot e^4 in the rear extremity of the bracket E, and its lower extremity screwing into the face e^2 of the bracket E' . The bracket E' is also adjustably secured in position by a set screw e^3 having one end mounted in a slot e^5 in the rear extremity of said bracket and the other screwing into the top face of the frame A. By means of the adjustment of the brackets E E' the rollers d' d^2 are readily approximated the desired degree to the secondary feed. These rollers d' d^2 are preferably actuated by means of suitable gears d^3 and d^4 meshing with each other and mounted on the shafts d^5 d^6 of said rollers. Motion is conveyed to one of said gears as d^3 by means of a pulley d^7 , which is mounted on the shaft d^5 , and is rotated by a belt d^8 passing over guide pulleys d^9 and the driving

wheel d^{10} , which is preferably secured to the shaft C for rotating the needle cylinder. It will be understood that the primary feed is thus constantly operated to feed the strand d toward the needle cylinder, but it is evident that other suitable power transmitting mechanism may be used to actuate said feed, providing said mechanism actuates the same to feed the strand at a less speed than that at which said strand is fed by the secondary feed.

The feeding strand d passes from a spool or skein, not necessary to herein show or describe, through a guide f to the guide F at the rear of the rollers d' d^2 , whereby the yarn is fed between the rollers, as best seen at Fig. 5.

In order to adapt the primary feed to different thicknesses of yarn the lower end of the shaft of one of said rollers, and preferably the shaft d^6 of the roller d^2 is mounted with a movable bearing G, which is guided in the bracket E. This bearing G consists of an upright portion g^4 mounted in a cut-out g^5 in the shaft bearing of the bracket E and formed with a curved face g^6 adapted to bear against the shaft d^6 . Projecting rearwardly from the upright portion g^4 are lateral arms g^7 mounted in cut-outs g^8 in the bracket E for preventing upright displacement of the movable bearing G. The free extremity g of a spring g' bears against one of the arms g^7 of the movable bearing G, and the opposite extremity of said spring is secured to an arm of the bracket E by a dowel pin g^2 and an adjusting screw g^3 . As best seen at Figs. 9 and 10 the upper end of the shaft d^6 is permitted to move slightly by means of a sliding block d^7 mounted in a slot d^8 opening from the journal bearing of said shaft, and is prevented from undue movement by means of a set screw d^9 having its inner extremity arranged to make contact with said block. The block d^7 is held in position by lateral arms d^{10} provided thereon and movable in slots d^{11} in the bracket E.

For the purpose of constantly clearing the rollers d' and d^2 of all fuzz from the yarn I provide the wipers f' , which bear against the outer portions of their peripheries, and preferably consists of a spring metal for permitting the adjustment of the rollers.

The secondary feed as previously stated is so constructed as to feed the strand d at a greater speed than the same is fed by the primary feed, and, as here illustrated, I have shown this secondary feed to consist of the needles b of the cylinder B, and a burr wheel H loosely journaled on the inclined spindle h carried by an adjustable spindle h' mounted in a bracket I. This burr wheel H is of the ordinary construction and is provided with burrs which register with and engage the knitting needles for revolving the wheel H in the usual manner, and said wheel is so arranged as to catch the yarn fed from the primary feed to which it is in close proximity and in connection with the needles b to feed the same beneath the beards b' of the needles

b . When the advance end of the strand d is engaged between the wheel H and the needles b which feed the same at a greater speed than the primary feed D, the strand is broken or divided at a point in close proximity to the rollers d' d^2 , and the small section engaged by the burr wheel and knitting needles, is fed by the movement of said parts beneath the needle beards and just beneath the main strand 1, Fig. 1. This main strand 1 is fed from a suitable guide 4 a portion of which is illustrated at Fig. 1, to the fabric by any desired means, as by a burr wheel 2, Fig. 1, mounted on a suitable support, not illustrated, and, when the needles engaging the same have passed the wheel H, they operate in the usual manner to knit said strand 1 into the fabric and to simultaneously knit the small sections of the feeding strand d into said fabric. The usual depression wheel 3, partially indicated by dotted lines, Fig. 1, may be used for depressing the fabric while the main strand 1 is being fed to the needles b . As the needles b are continuously revolving at a greater speed than the strand d when fed by the primary feed, a considerable portion of the knitting fabric passes the wheel H before the rollers d' d^2 feed the strand d sufficiently forward to be again engaged by the burr wheel H and the needles b , whereupon said feeding strand is again broken and a second section is fed to and knitted into the knitting fabric.

It will be particularly noted that the sole function of the burr wheel H is to feed, in connection with the needles b , the small sections of the feeding strand d to the knitting fabric, and that said burr wheel does not otherwise aid in the knitting of the fabric.

J represents a depressor plate for depressing the knitting fabric after its passage from the depression wheel 3 until after the small sections of the feeding strand d are fed beneath the beards of the needles b engaged with said knitting fabric. This depressor plate is mounted on a bar J' supported on an upward extension or arm I' of the bracket I. The inner end of a screw j' is screwed into the rear extremity of the bar J' , and the outer end of said screw is passed through a slot in the upwardly extending arm I' , and interposed between the head of said screw and the adjacent or rearward face of the arm I' is a washer j^2 , whereby, when the screw j is turned, the bar J' is firmly secured in position.

At Figs. 11 and 12 I have illustrated a modified construction of my invention, in which the rollers d' d^2 are conically shaped and their actuating shafts d^3 and d^6 are inclined and connected at their outer extremities by bevel gears k and k' . This construction enables me to approximate the primary feed more closely to the secondary feed, and thus feed yarn of smaller size than it is possible or at least desirable to feed with the previous construction of my invention. In this modification the guide F consists of a

depending plate f^2 reinforced by a plate f^3 having the perforation f^4 at its central portion and having its opposite extremities slightly lapped upon the wheels d' and d^2 .

5 I have ascertained, upon practical operation, that my peculiar construction of feed is particularly adapted for feeding untwisted roving to the needles, owing to the slow operation of the rollers d and d^2 , which obviate
10 all breakage of the roving.

The feeding strands of the fabric fed by my invention may be differently colored, and the short sections fed at intervals thereto then give a peculiar mottled appearance to the
15 fabric, both novel and pleasing, and allow of numberless designs subject to the choice of the operator.

The operation of my invention will be readily understood from the foregoing description
20 and upon reference to the drawings, and it will be noted that my improved feed is in the nature of an attachment to the ordinary knitting machine, which is readily placed in or removed from operative position. It will also
25 be understood that the construction of said feed is very simple, and its operation is certain and effective.

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

1. The herein described feed for knitting machines, the same consisting of a continuously operating primary feed for feeding a
35 strand, a secondary feed for feeding to the fabric the strand fed by the primary feed at the same time said strand is being fed by the primary feed, and means to operate the primary feed and to operate said secondary feed to feed said strand at a greater speed than
40 the primary feed is simultaneously feeding the same, whereby the strand is divided into a number of small sections fed at intervals into the knitting fabric, substantially as and for the purpose described.

2. The herein described feed for knitting machines, the same consisting of a primary feed comprising a pair of continuously operating rollers for feeding a strand, a continuously operating secondary feed for feeding to
50 the fabric the strand fed by the rollers at the same time said strand is being fed by the rollers, and means to operate the rollers and to operate said secondary feed to feed said strand at a greater speed than the rollers are simultaneously feeding the same, whereby the
55 strand is divided into a number of small sections fed at intervals into the knitting fabric, substantially as specified.

3. The herein described feed for knitting machines, the same consisting of a primary feed comprising a pair of continuously operating rollers for feeding a strand, a movable bearing for one of said rollers, a continuously operating secondary feed for feeding to the
60 fabric the strand fed by said rollers at the same time said strand is being fed by the roll-

ers, and means to operate the rollers and to operate said secondary feed to feed said strand at a greater speed than the rollers are simultaneously feeding the same, whereby the
70 strand is divided into a number of small sections fed at intervals into the knitting fabric, substantially as set forth.

4. The herein described feed for knitting machines, the same comprising a pair of rollers for feeding a strand, the knitting needles
75 of a knitting machine, and a burr wheel between said rollers and the knitting needles operating in connection with said knitting needles, to feed said strand at a greater speed
80 than said rollers, whereby the strand is divided into a number of small sections fed at intervals into the knitting fabric, substantially as and for the purpose set forth.

5. The herein described feed for knitting machines, the same consisting of a primary feed comprising a pair of continuously operating rollers for feeding a strand, a guide for
85 guiding the strand between said rollers, a continuously operating secondary feed for feeding to the fabric the strand fed by said rollers at the same time said strand is being fed by the rollers, and means to operate the rollers and to operate said secondary feed to feed said strand at a greater speed than the
95 rollers are simultaneously feeding the same, whereby the strand is divided into a number of small sections fed at intervals into the knitting fabric, substantially as and for the purpose specified.
100

6. The herein described feed for knitting machines, the same comprising a pair of rollers for feeding a strand, a movable bearing for one of said rollers, a spring for forcing
105 said bearing to its normal position, the knitting needles of a knitting machine, and a burr wheel between said rollers and needles, substantially as and for the purpose described.

7. The herein described feed for knitting machines, the same comprising an adjustably mounted bracket E, a primary feed consisting of rollers journaled in said bracket for feeding the strand, a guide for guiding
115 the strand between said rollers, a secondary feed for feeding to the fabric the strand fed by said rollers, and means to operate the rollers and to operate said secondary feed to feed said strand at a greater speed than the rollers, whereby the strand is divided into a
120 number of small sections fed at intervals into the knitting fabric, substantially as and for the purpose described.

8. The herein described feed for knitting machines, the same consisting of a pair of rollers for feeding a strand, a guide for guiding the strand to said rollers, wipers bearing against said rollers, the knitting needles of a
125 knitting machine, and a burr wheel between said rollers and the knitting needles, and means to operate said rollers and to operate said burr wheel and needles to feed said
130

strand at a greater speed than said rollers, whereby the strand is divided into a number of small sections fed at intervals into the knitting fabric, substantially as and for the
5 purpose set forth.

In testimony whereof I have hereunto signed my name, in the presence of two at-

testing witnesses, at Oswego, in the county of Oswego, in the State of New York, this 23d day of August, 1890.

SWITS CONDÉ.

Witnesses:

W. ZELLER,

O. G. PHILLIPS.