

O. FISCHER.  
WARP LEASING APPARATUS.  
APPLICATION FILED OCT. 15, 1908.

944,726.

Patented Dec. 28, 1909.

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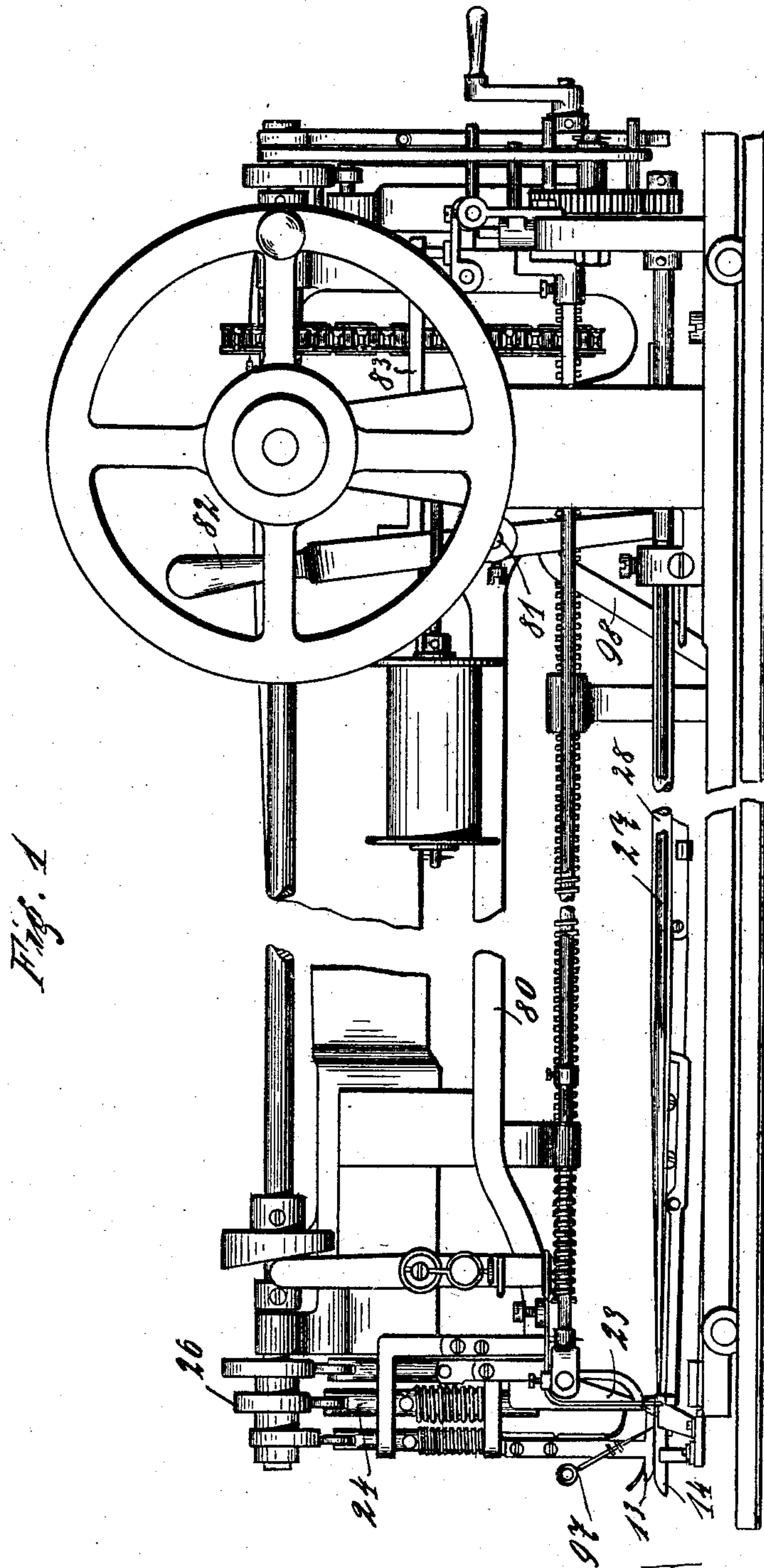


Fig. 1

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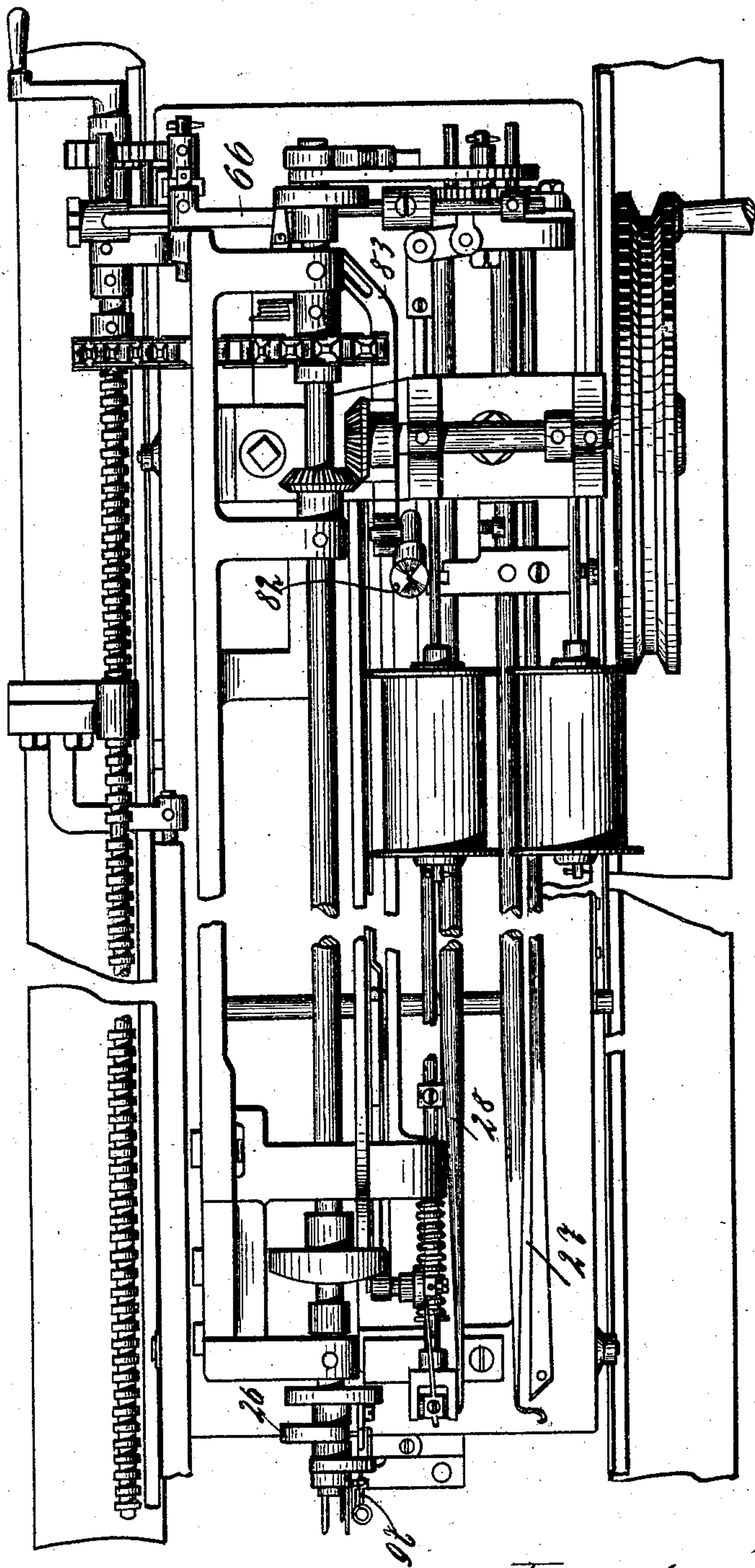
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Fig. 2

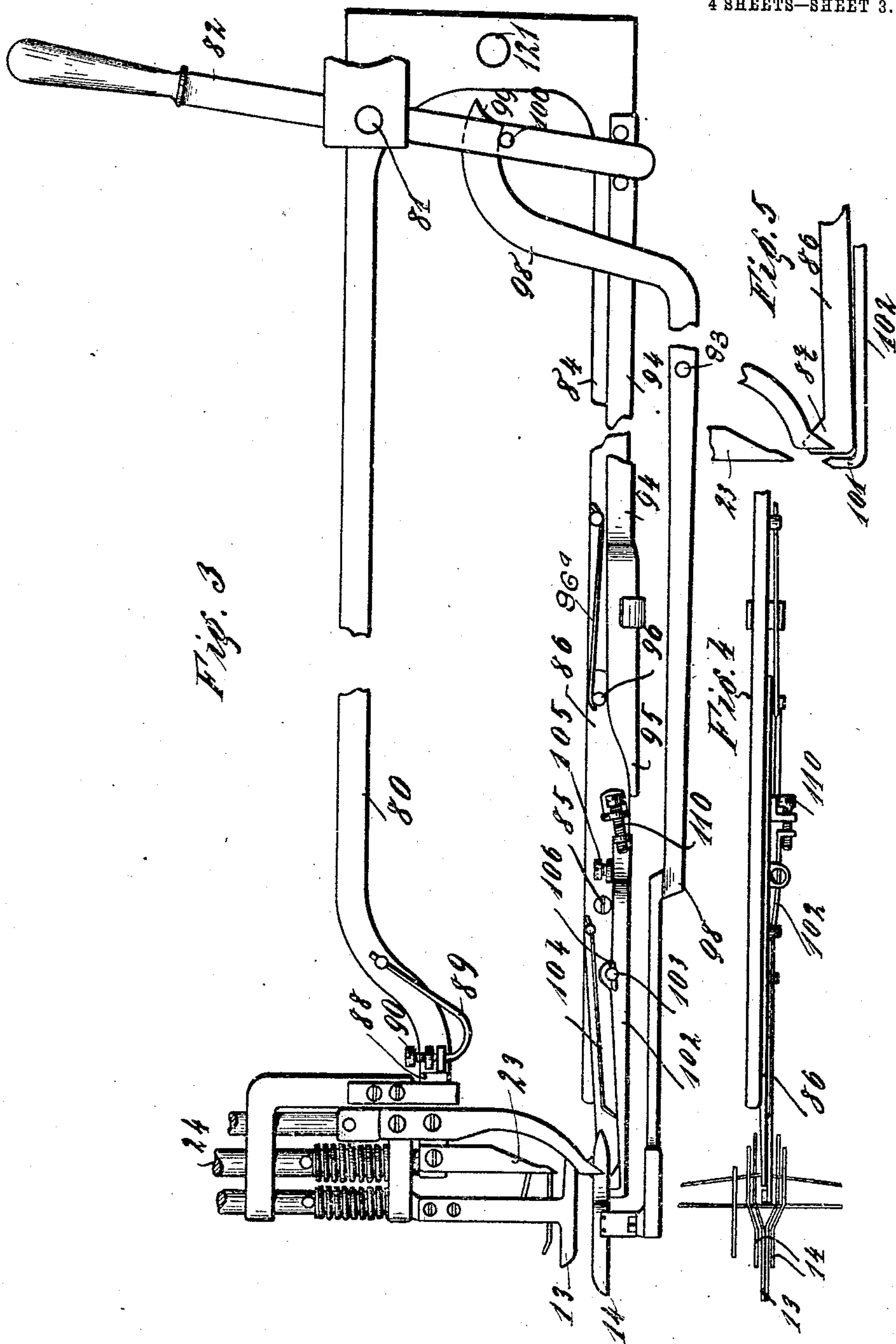


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4 SHEETS—SHEET 3.



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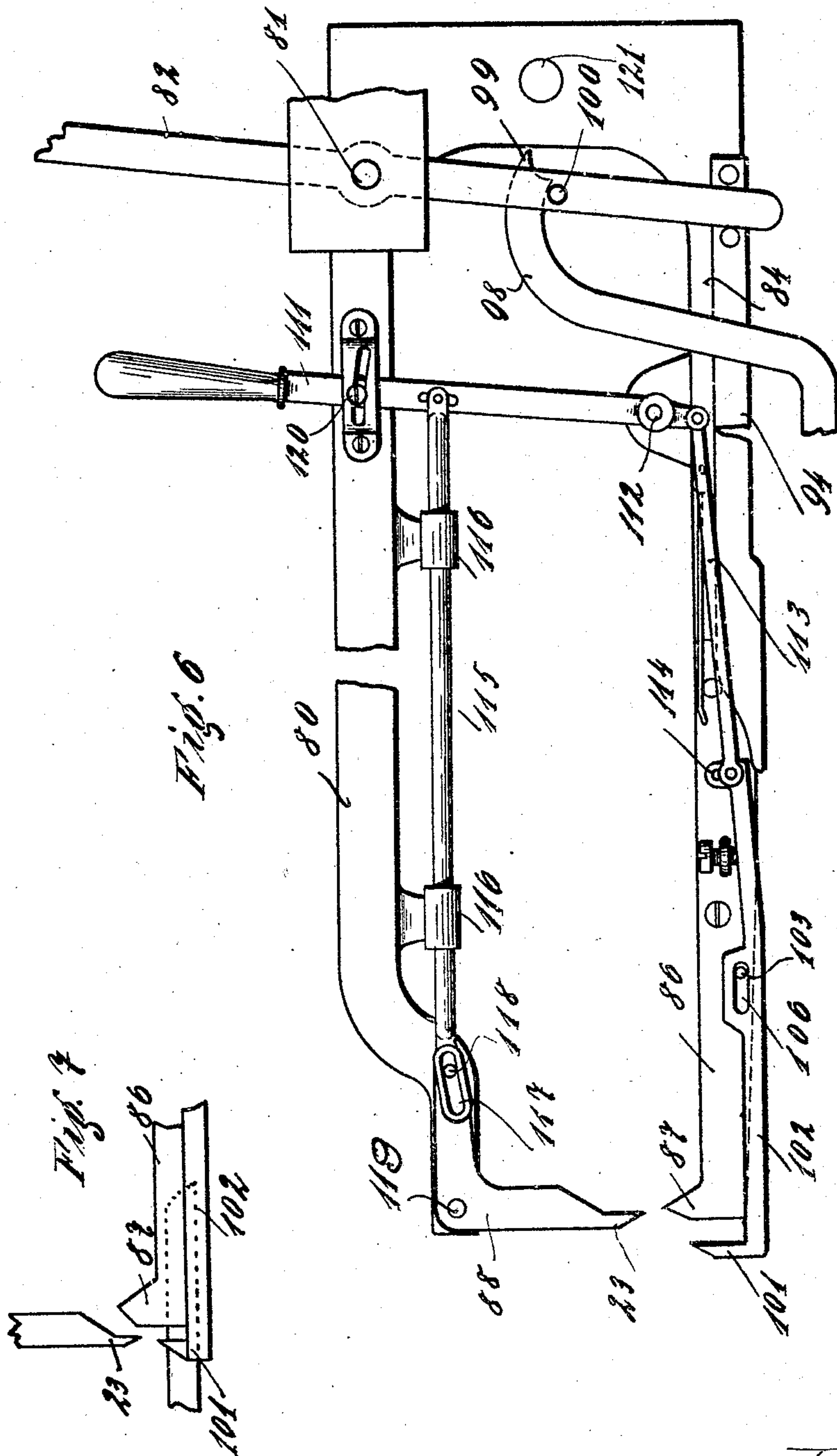


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# UNITED STATES PATENT OFFICE.

OTTO FISCHER, OF PLAUE, GERMANY.

## WARP-LEASING APPARATUS.

944,726.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed October 15, 1908. Serial No. 457,803.

To all whom it may concern:

Be it known that I, OTTO FISCHER, a subject of the King of Saxony, residing at Plauen-in-Vogtland, Germany, have invented certain new and useful Improvements in Warp-Leasing Apparatus, of which the following is a specification.

This invention is an improvement in the apparatus described in the specification of my United States application Serial No. 366730 filed 6th April 1907 and its object is to secure increased accuracy or precision in the working of the apparatus with regard to the reliability with which single threads are pricked off and transferred to the spindles.

The improvements consist in a better formation of the pricking off device itself and in the addition of a device which prevents the engaging and breaking of the warps by the descending pricking off needle, the said device being, like the needle, adjustable according to the thickness of the warps; the adjustment of both may be performed by means of a single device.

The invention enables the pricking off needle to be given a sharp point, well adapted to separate the threads, whereas formerly the point had to be rounded.

Several constructions embodying the invention are represented in the accompanying drawing, in which—

Figure 1 is an elevation of the pricking off device, and Fig. 2 a plan view thereof; Figs. 3 to 7 show several forms of means for preventing the pricking of threads by the pricking off needle.

The general organization and function of the machine being fully described in my prior specification already cited, the present specification will in the main be restricted to the novel features.

A bifurcated lever 80 is mounted upon the pivot 121 and its outer end attached to the vertically reciprocating rod 24 actuated by the eccentric 26. To the front end of the lower arm 84 of this lever a double armed lever 86 is horizontally pivoted at 85. This lever 86 has at its front end a projection 87, which projects upward behind the pricking off needle 23. The latter consists of a wedge-shaped finger to which a thin needle is joined. It is not fixed directly to the lever 80 but to a bell crank lever 88 pivoted to the front end of the lever 80, and having its

rear arm thrust upward by a spring 89. A screw 90 allows of adjusting the gap between the needle 23 and projection 87, according to the thickness and closeness of the warps.

For separating a warp from the other warps the lever 80 is rotated about pivot 121 by the rod 24, whereupon the needle pricks behind the warp to be separated, and its inclined surface thrusts the warp into the gap. Only a single warp can be separated in this manner, since while the needle is inserted its front edge holds back the other warps. When the needle ascends the front edge of the projection 87 holds back the threads. This renders the formerly used angle pieces unnecessary. The rotatability of the projection 87 on the arm 84 is for the purpose of allowing the device to be pulled out of the warp after the leasing. The return movement is produced in the known manner by means of the rod 66, which is moved by means of the rod 83 and lever 82 pivoted at 81. To the lever 82 is coupled a rod 94 slidable on the arm 84 and having an inclined surface 95 against which a pin 96 fixed to the rear end of the lever 86 is thrust by a spring 96<sup>a</sup>. Movement of the rod 94 toward the left (Fig. 3.) causes the pin 96 to move upward and toward the right on the surface 95, so that the projection 87 is rotated downward and allows the device to be withdrawn.

In front of the pricking device 23 the plates 13 and 14 are arranged in the known manner, and between these the threads must pass before they reach the pricking off device. The space between said plates is so narrow that the threads can only be side by side. Fig. 1 shows a very simple device for arranging the threads in order. An adjustable needle or needles 97 is or are arranged, with its other point or points projecting beyond the lower edge of the upper plate 13. This causes the threads to be slightly retarded when the apparatus advances, so that the density of the threads is reduced.

For withdrawal of the apparatus from the shed the plates 13 and 14 are opened by means of a double armed lever 98 pivoted to the frame at 93 and carrying at its front end the lower plate 14. The rear end of said lever 98 has an inclined surface 99 adapted to abut against a pin 100 fixed to



the lever 82 so that the lever 98 is rocked about pivot 93 when the machine is reversed by means of the lever 82.

Below the needle 23 and close in front of the projection 87 there is a wedge shaped finger 101 which rotates together with the projection 87 and is for that purpose connected to the lever 86 by means of the lever 102. This has the effect that on withdrawal of the apparatus from the warp the finger 101 rotates downward and does not interfere with the withdrawal. When the needle 23 and projection 87 ascend the finger 101 also ascends. Its wedge-shape which may be one-sided (Fig. 5) or two-sided (Fig. 6) causes the thread to be separated to assume the proper position below the needle or to be thrust back so far that the needle cannot prick into the thread. When the finger 101 ascends, together with the needle 23 and projection 87, the plates 13 and 14 hold the threads in position until the needle 23 has passed between them.

The finger 101 is adjustable for different thicknesses of thread. For vertically adjusting it the lever 102 is pivoted at 103 to the lever 86. A spring 104 thrusts the finger downward against an adjustable screw-abutment 105. For adjusting the distance of the finger 101 from the projection 87 the lever 102 is mounted in a slot 106 engaged by the pin 103, enabling it to be longitudinally moved. Various means of adjustment may be used, for example a screw 110 at the rear end of the lever 102, as shown in Fig. 3, but it is preferable to so connect the finger 101 to the needle 23 that both are simultaneously adjusted according to the thickness of the thread. An example of this is shown in Fig. 6. In this example a double armed lever 111 provided with a handle is pivoted at 112 to the lever 80 84 and is connected to a rod 113 which engages the lever 102. By rotating the lever 111 the lever 102 is moved on the pin 103, and the distance of the finger 101 from the projection 87 is altered. To enable the finger to rotate downward and to allow of vertically adjusting it, the rod 113 is coupled to the lever 102 by means of a vertical slot 114. A rod 115 is pivoted to the lever 111 and held against the lever 80 by guides 116 so that it can only move longitudinally. At the front end the rod 115 has an inclined slot 117 engaged by a pin 118 fixed to the bell crank 88. When the rod 115 is reciprocated by means of the lever 111 the pin 118 slides in the slot 117 and the bell-crank 88 is rotated about its pivot 119 so that the distance between the needle 23 and projection 87 is altered. A locking device 120 enables the lever 111 to be fixed in any of its positions. The lower end of the needle 23 is wedge-shaped and it is important that its forward surface is inclined, so that in case

another thread is lying close to the thread to be separated the former is thrust back by the inclined surface.

What I claim as my invention and desire to secure by Letters Patent of the United States is:—

1. In a warp leasing device the combination with a thread separating needle movable to prick behind the warp to be separated from above, of a projecting member located behind the needle and capable of similar movement as said needle, said member being separated from the needle by a narrow gap through which the warp to be separated passes.

2. In a warp leasing device the combination with a thread separating needle having an inclined surface in direction of advance of the apparatus and movable to prick behind the warp to be separated from above, of a projecting member located behind the needle and capable of similar movement as said needle, said member and needle being separated by a narrow gap into which the inclined surface of the needle thrusts the warp.

3. In a warp leasing device the combination with a thread separating needle movable to intersect the plane of the warp threads, a projecting member located behind the needle, and separated therefrom by a narrow gap through which the warp to be separated passes, and means for imparting similar movement to said member as to the needle, comprising a reciprocating rod, and a bifurcated lever in connection with said rod, the lever carrying on one limb thereof the needle and on the other limb the projecting member aforesaid.

4. In a warp leasing device the combination with a thread separating needle movable to intersect the plane of the warp threads, a projecting member located behind the needle and separated therefrom by a narrow gap through which the warp to be separated passes, and means for imparting similar movement to said member as to the needle, comprising a reciprocating rod, a bifurcated lever in connection with said rod, the lever carrying on one limb thereof the needle and on the other limb the projecting member aforesaid, and means for adjusting the needle on said bifurcated lever to regulate the width of gap between the needle and projecting member.

5. In a warp leasing device the combination with a thread separating needle movable to intersect the plane of the warp threads, a projecting member located behind the needle and separated therefrom by a narrow gap through which the warp to be separated passes, and means for imparting similar movement to said member as to the needle, comprising a reciprocating rod, a bifurcated lever in connection with said rod, the lever



carrying on one limb thereof the needle and on the other limb the projecting member aforesaid, and means for permitting downward movement of said projecting member 5 relatively to the bifurcated rod to allow withdrawal of said member from the warp.

6. In a warp leasing device the combination with a thread separating needle movable to intersect the plane of the warp threads, a 10 projecting member located behind the needle and separated therefrom by a narrow gap through which the warp to be separated passes, and means for imparting similar 15 movement to said member as to the needle, comprising a reciprocating rod, a bifurcated lever in connection with said rod, the lever carrying on one limb thereof the needle and on the other limb the projecting member 20 aforesaid, and means for permitting downward movement of said projecting member relatively to the bifurcated rod to allow withdrawal of said member from the warp, said means comprising a lever carrying said 25 projection and pivoted to the bifurcated lever and reversing mechanism connected to said lever.

7. In a warp leasing device the combination with a thread separating needle movable to intersect the plane of the warp threads, of 30 a projecting member located behind the needle and capable of similar movement as the latter, said member being separated from the needle by a narrow gap through which the warp to be separated passes, interspaced 35 plates forward of said needle and projection, and a needle carried by one of said plates and projecting beyond the edge thereof for arranging the warp threads in order.

8. In a warp leasing device the combination with a thread separating needle movable to prick behind the warp to be separated 40 from above, of a projecting member located behind the needle and capable of similar movement as the latter, said member being

separated from the needle by a narrow gap 45 through which the warp to be separated passes, and a movable finger located opposite said needle adapted to act on the warp thread to be separated and place it in the 50 desired position relatively to the needle.

9. In a warp leasing device the combination with a thread separating needle movable to intersect the plane of the warp threads, of a projecting member located behind the 55 needle and capable of similar movement as the latter, said member being separated from the needle by a narrow gap through which the warp to be separated passes, a movable 60 finger located opposite said needle adapted to act on the warp thread to be separated and place it in the desired position relatively to the needle, and means for permitting horizontal and vertical adjustment of said 65 finger.

10. In a warp leasing device the combination of a thread separating needle movable to intersect the plane of the warp threads, of 65 a projecting member located behind the needle and capable of similar movement as the latter, said member being separated from 70 the needle by a narrow gap through which the warp passes, means for adjusting the needle to regulate the width of gap aforesaid, a movable finger located opposite said 75 needle adapted to act on the warp thread to be separated and place it in the desired position relatively to said needle and means for permitting horizontal and vertical adjustment of said finger, the horizontal adjusting 80 means being in connection with the needle adjusting means whereby the needle and finger are adjusted simultaneously.

In witness whereof I have signed this specification in the presence of two witnesses.

OTTO FISCHER.

Witnesses:

OSKAR FISCHER,  
ADOLF GROSS.