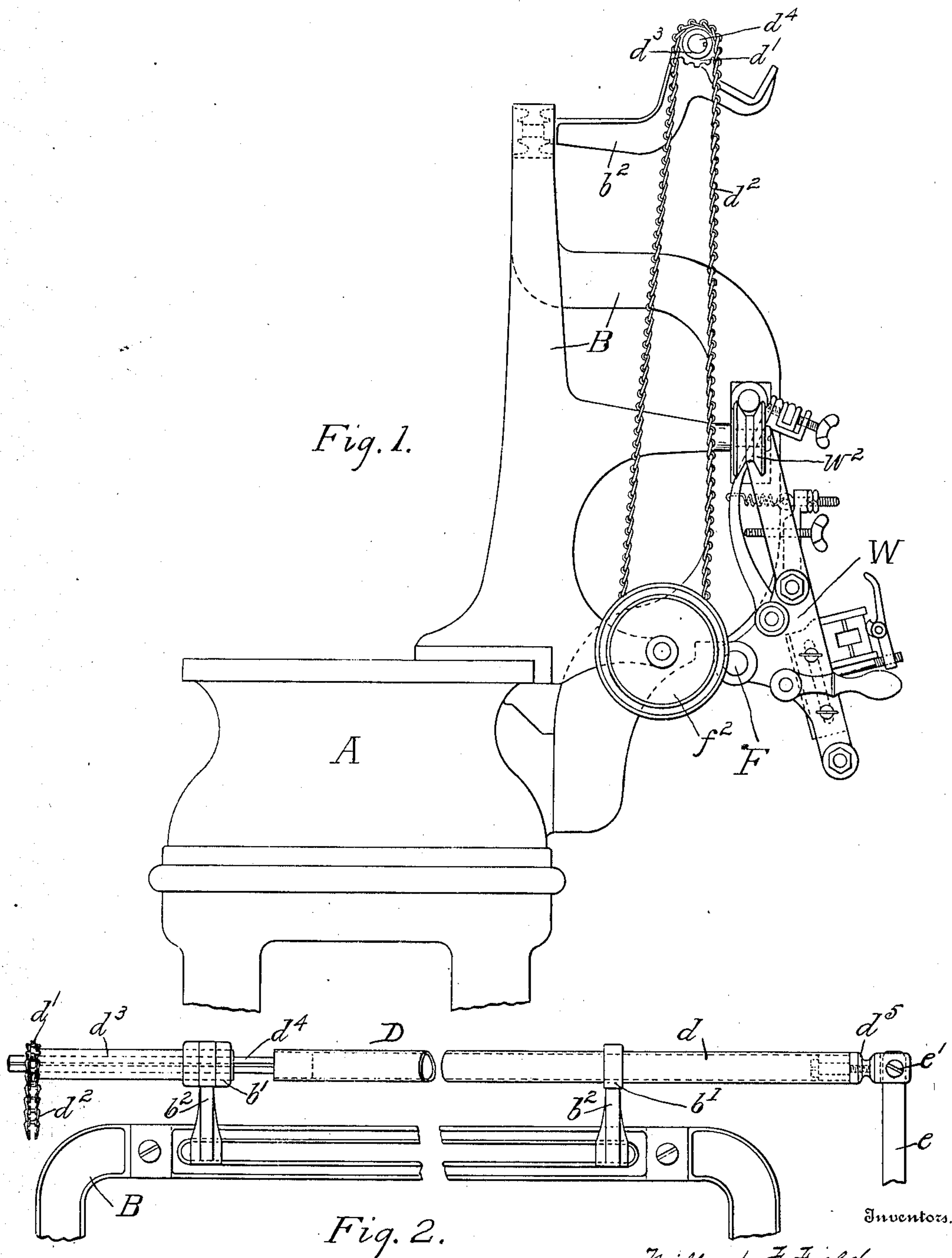


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M. F. FIELD & E. F. HATHAWAY.
SHIFTER ROD FOR POWER DRIVEN MACHINES.

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UNITED STATES PATENT OFFICE.

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SHIFTER-ROD FOR POWER-DRIVEN MACHINES.

No. 871,681.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed May 16, 1904. Serial No. 208,142.

To all whom it may concern:

Be it known that we, MILLARD F. FIELD, of Winthrop, and EDGAR F. HATHAWAY, of Boston, both in the county of Suffolk and Commonwealth of Massachusetts, have invented certain Improvements in Shifter-Rods for Power-Driven Machines, of which the following is a specification.

The invention relates to shifter or "shipper" bars and the connection of such a bar with the driving mechanism and with an adjustable operative part in a power driven machine, and consists in a shifter-bar supported in bearings which permit both a rotary and a longitudinal sliding movement of the bar, and in a swivel connection of the bar with interconnecting devices which control the driving mechanism, and a longitudinally sliding connection with means for adjusting another operative part in the machine.

In the drawings the improved shifter-bar is illustrated as applied to a warp-drawing machine, wherein

Figure 1 is an end elevation of such a machine; Fig. 2 is a front elevation of the shifter-bar and its connections and the upper part of the frame of the machine to which the shifter-bar bearings are attached.

Referring to the drawings, A is the frame of the machine; B, the standards which support the shifter-bar d and its bearings b' upon arms b^2 , and certain operative parts of the machine, among which is the warp holding frame W supported by and adapted to be adjusted longitudinally upon the grooved rolls w^2 .

The invention may be applied to a warp treating or warp drawing machine of any suitable type, as, for example, a machine wherein the old warp threads are manipulated for union with new warp threads by relative movement of means for operating upon warp threads in succession. In the disclosed type of the invention such relative movement is obtained by movement of means for operating upon the warp threads across the warp. If such operating means be a warp drawing needle or needle for putting warp threads through harness eyes, it may, if desired and in the present type of the invention, be operated in accordance with the disclosure of the patent to Field, No. 755,861,

Mar. 29, 1904, in which corrective or compensating or adjusting movement may be imparted to the warp holding frame as herein described.

The longitudinal adjustment of the frame W is controlled and effected by a toothed rack, not shown, on the rod F, which rack is engaged by a worm on the periphery of the wheel f^2 . Upon the same shaft with the wheel f^2 , but obscured by it as located in Fig. 1, is a sprocket wheel, and upon the portion d^3 of the shifter-bar D is another sprocket-wheel d' . These two sprocket-wheels are connected by a sprocket-chain d^2 . The sprocket-wheel d' is secured to a sleeve d^3 , which latter is supported by and adapted to turn in one of the bearings b' . For convenience the shifter-bar D is made up of two portions, one d , which may be of wood larger than the other portion d^4 , which may be of metal, securely attached to the part d , by a rivet or any other convenient means, and fitted within the sleeve d^3 ; the sleeve and portion d^4 of the shifter-bar being connected by a spline and groove or equivalent means, by which the portion d^4 will be permitted to slide longitudinally in the sleeve, but the two will turn together when the whole bar D, is rotated. At the end of the shifter bar D opposite to the sprocket-wheel d' is a swivel joint d^5 , one portion of which swivel is pivotally connected at e' with the lever e , by which the belt or clutch of the driving mechanism is operated. A ball and socket may be employed instead of the swivel joint.

By this construction of shifter-bar, the operator is enabled to start and stop the machine by sliding the bar d longitudinally in its bearings, the part d^4 sliding within the sleeve d^3 , and without changing the position of his hand, to rotate the bar, and thus for example as illustrated, change the position of a warp-holding frame W for the purpose of adjusting the angle or slope of warp-threads in relation to the warp-feeding devices in a warp drawing machine. As there are occasions when these operations must be performed in quick succession, this construction of shifter-bar is an element of economy and a great convenience in the successful operation of a machine of this kind, and of any machine in which certain of its opera-

tive parts require close attention and repeated quick adjustment as well as quick cessation of the movement of the machine.

We claim:

1. In a power driven machine provided with a shifter to apply and withdraw the power, and means to independently adjust operative parts therein, a rotatable shifter-bar which has a swivel connection with the power shifter, and a longitudinally sliding connection with the said means for adjusting other parts of the machine.
2. In a warp-drawing machine, shifting devices for the driving mechanism, a warp-holding frame, means to move the frame longitudinally, and a rotatable shifting-bar which has a swivel connection with the said shifting devices, and a longitudinally sliding connection with said warp-frame moving means.
3. In a warp-drawing machine, the combination of a warp-holding frame, means to adjust said frame at right angles to the path of reciprocation of the drawing-in device, shifting devices for the driving mechanism of the warp-drawing machine, a shifting-bar adapted to be rotated in its bearings, which bar has a swivel connection with the shifting devices, and a longitudinally sliding connection with the adjusting means for the warp-holding frame.
4. In a power driven machine means provided with a shifter to apply and withdraw the power, and means independently to adjust the operative parts therein, a slidable and rotatable bar operatively connected to actuate the shifter and said adjusting means.
5. In a warp drawing machine the combination with means for adjusting the position of the warp threads relatively to the drawing needle, means for applying power to said machine and manual means for controlling said power applying means and said adjusting means.
6. In a warp drawing machine the combination of an adjustably supported warp-holding frame, means for applying power to the machine, a single adjusting member having connections for adjusting said frame and applying power to said machine.
7. In a warp drawing machine the combination with means for effecting adjustment of the position of the warp relatively to operative parts on the machine, means for applying power to said machine and means accessible to the operator at any position on the machine for controlling both said adjusting means and said power applying means.
8. In a warp drawing machine the combination with means for adjusting the position of the warp relatively to operative parts on the machine, of a rotatable shifter bar extending lengthwise of the machine for controlling both said adjustment and the application of power to said machine.
9. In a warp drawing machine the combination with means for adjusting the position of the warp relatively to operative parts on the machine, means for applying power to said machine and a single controlling member having two movements, one of which effects control of the power and the other controlling said adjusting means.
10. A warp drawing machine having means for automatically adjusting the relation of the warp to the operative parts on the machine and a manually operated member also for adjusting the relation of said warp and for applying power to said machine.
11. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for operating in succession upon the threads held therein, means for imparting relative movement to said warp support and said operating means, shifting devices for the driving mechanism of the machine, and a rotatable shifting bar which has a swivel connection with the said shifting devices and a longitudinally sliding connection with said means for imparting relative movement to the warp support and said operating means.
12. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for operating in succession upon the threads held therein, means for imparting relative movement to said warp support and said operating means, a shifter to apply and withdraw the power, and a slidable and rotatable bar operatively connected to actuate the shifter and the means for imparting relative movement to said warp support and said operating means.
13. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for operating in succession upon the warp threads held therein, means for imparting relative movement to said warp support and said operating means, means to apply power to said machine, and manual means for controlling said power applying means and said means for imparting relative movement to said warp support and said operating means.
14. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for operating in succession upon the warp threads held therein, means for imparting relative movement to said warp support and said operating means, means for applying power to the machine, and a single adjusting member having connections for applying power to the machine and for controlling the relative longitudinal movement between said warp support and said operating means.
15. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for operating in succes-

sion upon the warp threads held therein, means for imparting relative movement to said warp support and said operating means, means for applying power to the machine, and means accessible to the operator at any position on the machine for controlling both said adjusting means and said power applying means.

16. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for operating in succession upon the warp threads held therein, means for imparting relative movement to said warp support and said operating means, means for applying power to the machine, and a rotatable shifter bar extending lengthwise of the machine for controlling both the application of power to the machine and the means for imparting relative movement to said warp support and said operating means.

17. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for operating in succession upon the warp threads held therein, means for imparting relative movement to said warp support and said operating means, means for applying power to the machine, and a single controlling member having two movements, one of which effects control of the power and the other controlling said adjusting means.

18. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for putting warp threads through harness eyes, means for imparting relative movement to said warp support and said warp thread putting means, a shifter to apply and withdraw power, and a slidable and rotatable bar operatively connected to actuate said shifter and said means for imparting relative movement to said warp support and said warp thread putting means.

19. A machine for operating upon warp threads comprising a warp thread adapted to co-act with means for putting warp threads through harness eyes, means for imparting relative movement to said warp support and said warp thread putting means, means to apply power to the machine, and manual means for controlling said power applying means and said means for imparting relative movement to the warp support and said warp thread putting means.

20. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for putting warp threads through harness eyes, means for imparting relative movement to said warp support and said warp thread putting means, means to apply power to the machine, and a single adjusting member having connections for applying power to the machine and for imparting relative movement to the warp support and said warp thread putting means.

21. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for putting warp threads through harness eyes, means for imparting relative movement to said warp support and said warp thread putting means, means for applying power to the machine, and means accessible to the operator at any position on the machine for controlling both said power applying means and said means for imparting relative movement to the warp support and said warp thread putting means.

22. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for putting warp threads through harness eyes, means for imparting relative movement to said warp support and said warp thread putting means, means for applying power to the machine, and a single controlling member having two movements, one of which effects control of the power and the other controlling said means for imparting relative movement to said warp support and said warp thread putting means.

23. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for putting warp threads through harness eyes, means for imparting relative movement to said warp support and said warp thread putting means, means for controlling the application of power to the machine, and common means for applying power to the machine and for imparting relative movement to said warp support and said warp thread putting means.

24. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for putting warp threads through harness eyes, means for imparting relative movement to said warp support and said warp thread putting means, means for controlling the application of power to the machine, and common means for applying power to the machine and for imparting relative movement to said warp support and said warp thread putting means, said common means being accessible to the attendant at different positions along the machine.

25. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for operating in succession upon the threads held therein, means for imparting relative movement to said warp support and said operating means, means for applying power to the machine, and common means for controlling the application of power to the machine and for imparting relative movement to said warp support and said operating means.

26. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for operating in suc-

cession upon the threads held therein, means for imparting relative movement to said warp support and said operating means, means for applying power to the machine, and common means for controlling the application of power to the machine and for imparting relative movement to said warp support and said operating means, said means being accessible to the attendant at different positions along the machine.

27. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for drawing warp threads in succession, means for imparting adjusting movement to said warp support with reference to said drawing means, a slidable and rotatable bar, a shifter for applying power to the machine, operating connections between the bar and the shifter to actuate the latter upon sliding movement of the bar, and gearing between said bar and the warp support to impart adjusting movement to the latter.

28. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for drawing warp threads in succession, means for imparting adjusting movement to said warp support with reference to said drawing means, a shifter to apply power to the machine, a slidable and rotatable bar, operating connections between said bar and the shifter to actuate the latter upon sliding movement of the bar, and flexible driving connections between said bar and the warp support to impart adjusting movement to the latter.

29. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for drawing warp threads in succession, means for imparting adjusting movement to said warp support with reference to said drawing means, a shifter to apply power to the machine, a slidable and rotatable bar having operating connections to the shifter to actuate the latter upon sliding movement of the bar, a sleeve with which said bar has sliding connection, said sleeve and bar being operatively connected to rotate together, and gearing between said sleeve and said warp support.

30. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for drawing warp threads in succession, means for imparting adjusting movement to said warp support with reference to said drawing means, a shifter to apply power to the machine, a slidable and rotatable bar having operating connections to the shifter to actuate the latter upon sliding movement of the bar, a sleeve with which said bar has sliding connection, said sleeve and bar being operatively connected to rotate together and flexible gear-

ing between said sleeve and said warp support.

31. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for drawing warp threads in succession, means for imparting adjusting movement to said warp support with reference to said drawing means, a shifter to apply power to the machine, a slidable and rotatable bar, a swivel connection between said shifter and said bar whereby the shifter may be actuated upon sliding movement of the bar, a sleeve mounted upon the machine, said bar being slidable within said sleeve, a spline and groove connection between said bar and said sleeve, and gearing between said sleeve and said warp support.

32. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for drawing warp threads in succession, means for imparting adjusting movement to said warp support with reference to said drawing means, a shifter to apply power to the machine, a slidable and rotatable bar having swivel connection with said shifter whereby the latter is actuated upon sliding movement of the bar, a sleeve mounted upon the machine frame and having a gear thereon, said bar having sliding movement within said sleeve, a spline and groove connection between said bar and said sleeve, and gearing intermediate said gear upon the sleeve and said warp support.

33. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for operating in succession upon the threads held therein, means for imparting relative movement to said warp support and said operating means, shifting devices for the driving mechanism of the machine, a rotatable bar connected with the shifting devices, said bar having connections d^3 , d^4 and gearing for imparting relative movement to the warp support and the operating means.

34. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for operating in succession upon the threads held therein, gearing F , f^2 for imparting relative movement to said warp support and said operating means, means to apply power to the machine, rotatable and shiftable bar D having connection d^5 with the means to apply power to the machine, said bar having sliding connection d^3 , d^4 and gearing d' , d^2 for imparting relative movement to said warp support and said operating means.

35. A machine for operating upon warp threads comprising a warp support W , gearing F , f^2 for imparting corrective movement thereto, bar D having operative connection

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with means for applying power to the machine, sliding connection d^3 , d^4 for said bar and gearing connecting said bar with the gear f^2 .

- 5 36. A machine for operating upon warp threads comprising a warp support adapted to co-act with means for operating in succession upon the warp threads held therein, means for imparting relative movement to

the warp support and said operating means, 10
and a manually operable bar for imparting corrective movement to said warp support.

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