(No Model.) 2 Sheets—Sheet 1.

J. S. WINSOR.

MACHINE FOR MAKING WEAVERS' HARNESS.

No. 306,306. Patented Oct. 7, 1884.

Fig. 1.

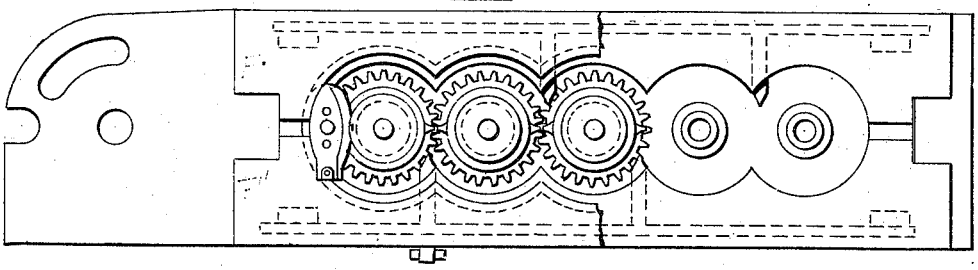


Fig. 2.

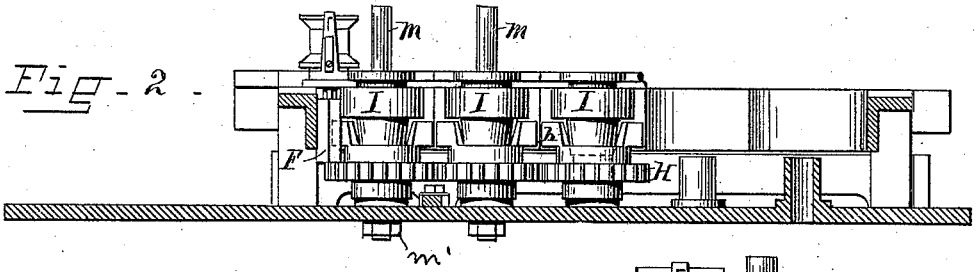


Fig. 3.

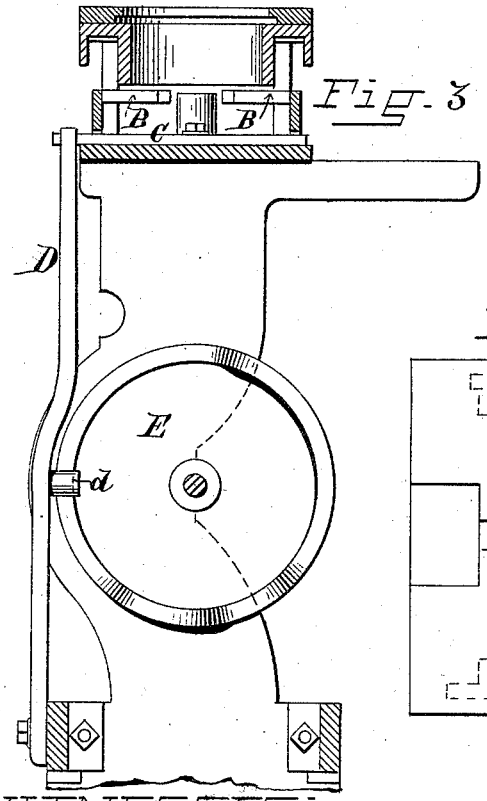


Fig. 4.

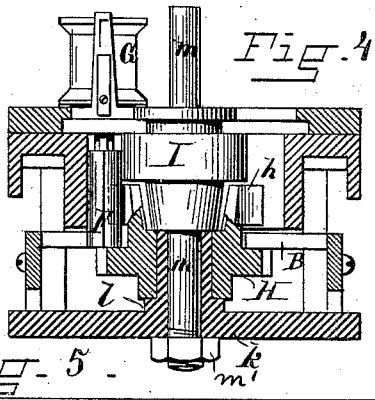
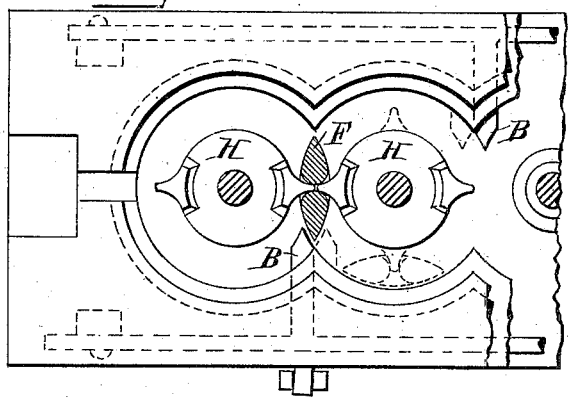


Fig. 5.



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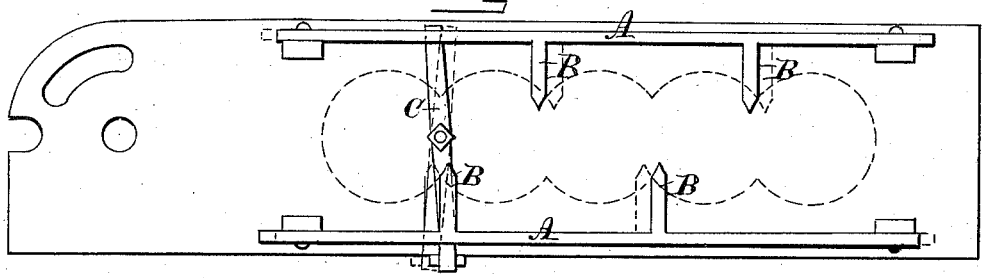
(No Model.) 2 Sheets—Sheet 2.

J. S. WINSOR.

MACHINE FOR MAKING WEAVERS' HARNESS.

No. 306,306. Patented Oct. 7, 1884.

Fig. 6.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING WEAVERS' HARNESS.

SPECIFICATION forming part of Letters Patent No. 306,306, dated October 7, 1884.

Application filed January 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH S. WINSOR, of the city and county of Providence, and State of Rhode Island, have invented certain new and useful Improvements in Machines for Making Weavers' Harness, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to that class of machines which are described and claimed in Letters Patent No. 12,175, granted to me January 2, 1855; and the invention relates more particularly to the switch-motion by which the movement of the twine-spools relative to the studs is controlled.

The object of my invention is to produce a simpler and more accurately-operating switch-motion than that described in my former patent, above referred to; and to this end my invention consists in the peculiar and novel construction and arrangement of parts, as hereinafter described.

In order that my invention may be fully understood, I will now proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a plan view, partly broken away, of a portion of a machine for making weaver's harness, with my improvements applied. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a transverse vertical section of the same, and showing also the cam for operating the switch-motion. Fig. 4 is a transverse vertical section of a portion of the machine-frame on an enlarged scale, showing one of the spool-carriers and one of the geared carriers by which the former is moved. Fig. 5 is an enlarged view in horizontal section of a spool-carrier engaged by a pair of the geared carriers, the two opposite positions of the switches being indicated in solid and in broken lines. Fig. 6 is a plan view of the switch mechanism.

In machines for making weavers' harness, such as are described in my said former patent, four of the switches by which the direction of movement of the spool-carriers or travelers is changed are each operated by a separate cam, and for this reason it is difficult to so adjust the switches as to insure and maintain them in such relation that they will direct the carriers invariably in their proper movements. In order to avoid this defect, I connect two switches on each side of the machine to a bar, and connect the two switch-bars to a centrally-pivoted lever, so that the two switch-bars and their four switches are operated simultaneously by connections with a single cam, whereby no repeated cam-adjustments are necessary, and whereby, also, the construction of the machine is simplified by dispensing with the cams shown in my said patent for operating three of the switches and three entire sets of operative connections therefor.

In the said drawings, A A designate the switch-bars; B B, the switches or switch-points; C, the centrally-pivoted connecting-lever, and D the cam-lever. The cam-lever D is connected at its upper end to either the lever C, as shown in Fig. 3, or with one of the switch-bars A, and at its lower end the said lever is pivotally attached to the machine-frame.

At the point indicated in Fig. 3 the lever D is provided with a pin or projection, *d*, which comes in contact with the cam E, which is mounted upon a cam-shaft journaled horizontally in the machine-frame, and connected by suitable gearing with the driving-shaft of the machine, as described in my said patent. By this arrangement the four switches are operated simultaneously and are caused to guide the spools in the manner described in my previously referred to patent.

The gears or geared carriers H, for operating the spool-carriers or travelers F, as heretofore constructed, have been supported on spindles which have been each provided with a circular portion forming a part of the way through which the spool-carriers move. These spool-carriers or travelers have to be frequently removed for cleaning and oiling, and the gears and spindles have to be readjusted after each such removal, which is a very objectionable consequence of the former arrangement.

In accordance with my invention I cast upon or otherwise secure to the plate *k* the sleeves *l*, so as to form a fixed center for each of the geared carriers H. The sleeve *l* is bored out to receive the spindle or stud *m*, and is trued so as to form a bearing for the gear H. Thus the spindle or stud *m*, with its center I,

as also the gear H, can be readily removed. The plate *k* is secured in position upon the machine-frame directly under the plates F', which form the external portions of the ways for the spool-carriers. The centers I are keyed to the studs *m*, and serve the purpose of forming the turning-points, together with the ways for the spool-carriers, as fully described in my former patent. The studs *m* are each secured in place in the plate *k* by a nut, *m'*, which is secured upon the lower end of the stud, and which, by being tightened up, causes the under side of the center I on the stud to bear upon the top of the sleeve *l* by reason of the action of the nut on the lower end of the stud.

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

1. The combination, with the spool-carriers, the centers, the geared carriers, and the plates forming the external portions of the spool-carrier ways, of the switch-bars having the switch-points, the centrally-hinged connecting-lever, the hinged cam-lever provided with the pin, and the cam, all constructed and arranged to operate substantially as described.

2. The combination, with the spool-carriers, the studs, and the plates forming the external portions of the spool-carrier ways, of the plate *k*, the sleeves *l*, and the geared carriers H, substantially as and for the purposes set forth.

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