

UNITED STATES PATENT OFFICE.

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PRODUCTION OF HEDDLES FOR USE IN LOOMS AND THE APPLIANCES USED THEREIN.

SPECIFICATION forming part of Letters Patent No. 794,590, dated July 11, 1905.

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To all whom it may concern:

Be it known that I, THOMAS ELLIS DEAN, a subject of the King of Great Britain and Ireland, and a resident of Tyldesley, in the county of Lancaster, England, have invented new and useful Improvements in and Relating to the Production of Heddles for Use in Looms and in the Apparatus or Appliances Used Therein, of which the following is a specification.

This invention relates to the production of healds or heddles for use in looms and to apparatus or appliances for use therein. Such healds are customarily treated, covered, or impregnated with size and varnish by means of a brush, dipping, or the like and are subsequently vigorously brushed to smooth the varnish or size so applied; and the objects of these improvements are to simplify such treatment, and thus effect an economy in time and labor.

In carrying this invention into effect the size, varnish, or other suitable liquid or semi-liquid is applied to the healds in the form of a spray, fine jets, or the like produced in the usual or any convenient manner. When a spray is employed, it may be produced by compressed air in the manner usual in spraying devices, or fine jets may impinge upon the healds or upon plates suitably arranged and may be broken up into spray. One or more devices for thus applying the size or varnish may be employed in suitable positions.

The spray or the like may be applied either before the brushing of the healds takes place or during such a brushing operation, the brush being, if desired, combined with the spraying or like device.

The spraying or similar device or devices may be combined with a machine of the usual or well-known construction, through which the shaft of healds is passed after the application of the varnish, size, or the like and in which reciprocating or other brushes, scrubbers, or similar devices are employed to consolidate, smooth, and equally distribute the size or other substance.

In a machine in which the shaft of healds passes backward and forward the sprayer or its equivalent may be put in or out of action by devices which are operated automatically

by the machine. Each spraying or other like appliance may also be provided with a supply-controlling device operated in any suitable manner.

In order to enable a jet or jets or a spray to be applied to any part of a stationary shaft of healds, the applying device may be provided with flexible connections arranged to permit the necessary movements.

The accompanying drawings illustrate the application of the spraying or like device to a machine in which the healds are subjected to a brushing action.

Figure 1 shows the apparatus in front elevation. Fig. 2 shows part of it in side elevation. Fig. 3 is a view in plan of one of the spraying and like devices and some of its accessories. Figs. 4 and 5 are views in detail at right angles to each other of details of a starting-handle for the spray or the like.

The machine illustrated comprises a main frame *a*, carrying within it another frame or carrier *b*, capable of sliding transversely and of running upon rails or the like *c*. Upon each side of the sliding frame or carrier may be fixed or suspended a shaft of healds, either *d* or *e*, *d* being on the right-hand side of the machine and *e* on the left.

f and *g* are revolving brushes, one on each side of the plane in which the healds are supported, and may be vertically reciprocated by the crank-shaft *h*.

The devices for spraying the varnish or the like upon the healds are indicated by *j j'* on one side of the brushes and by *l l'* on the other side. These devices may be supplied with compressed air or the varnish or the like in any suitable and convenient manner, and they have preferably placed opposite to them funnels or cones *m m'*, which receive the sprays or the jets of superfluous varnish and conduct such superfluity back to a receiver. Each spraying or equivalent device may consist of a single nozzle; but two or more may be employed. In the example shown one nozzle is above and one below the line of eyes in the healds. If desired, a further nozzle may be used to apply the varnish or the like along the line of eyes, and when two or more nozzles are used a different quality, grade, or

hardness of varnish or the like may be supplied to each of them or any of them according to the requirements of the different parts of the healds.

5 The operation is as follows: Assume the frame b to have moved from its extreme right-hand position, during which the shaft of healds e has been under the action of the brushes, and to have arrived at the intermediate position indicated in the drawing Fig. 1. The spraying device $l\ l'$ has not been in action during this motion. The spraying device $j\ j'$ now comes into action, the shaft of healds d passing between it and the funnel. The shaft d receives the varnish or the like and passes between the brushes, where the varnish is well rubbed and consolidated. During this rubbing or treatment by the brushes of the shaft of healds d the shaft of healds e is removed and a fresh one is put in its place on the frame, which now commences its return movement to the right. The supply of varnish or the like to the spraying device $j\ j'$ is now cut off, and the supply to the device $l\ l'$ is started just before the shaft of healds on the left of the frame comes opposite to it. The heald d thus after treatment with the brushes passes on its return movement in front of the device $j\ j'$ without receiving any varnish and is removed while the shaft of healds on the left of the frame is being sprayed with varnish or the like and brushed. Another shaft of healds may then be placed on the right of the frame and the operation be repeated.

Although the healds are described as being removed after one application of the varnish or the like and once brushing, they may, if desired, be varnished or brushed any convenient number of times before being removed.

The supply of varnish to the spraying device may be controlled by hand or automatically by the machine or by a combination of both methods. In the apparatus illustrated the varnish may be allowed to flow to the device $j\ j'$ by pulling to the right a handle n , connected to a bar or rod which operates the air and varnish or like taps of the devices through arms n' . The supply is cut off and the taps closed by the stop or the like o on the traversing frame coming into contact with one arm of a lever p on the fixed frame (shown more clearly in Fig. 2) and partially turning it around its pivot, so that its other end moves the lever q , the lower end of which engages with a bar or rod provided with the handle n and returns it and its attached parts. Weights or springs may be employed to hold the bars or levers in their extreme positions or other positions and prevent accidental displacement. So that either or any tap or taps of the spraying device may be thrown out of action, so as to be unaffected by the movement of the handle, the bar or rod connected to this handle may have wings r hinged to it,

with which the arms n' , connected with the tap or taps, engage. As shown in Fig. 5 to greater detail, these wings may occupy two extreme positions, in one of which, the lower, engagement with the arms n' is effected and in the other of which the handle may move without affecting the arms, or either of them. A similar device for cutting off or supplying the varnish and the air is shown on the left hand of the drawings, and the two bars connected with the handles may, if desired, be connected together, so that they move with each other. Adjustable stops may also be furnished, so that the movement of the handle or handles may be limited to any desired extent, and the supply of varnish or other liquid or the like to the sprays or jets may be graduated and regulated as desired. s and t indicate, respectively, the pipes for the compressed air and the varnish. $u\ u'$ are stops on the movable frame for effecting the reversal of motion of the machine by the gearing indicated at v in the manner usual in reciprocating machines of this type. In another form of machine the shaft of healds may be attached to an endless band or frame moving continuously in one direction instead of to a reciprocating frame, in which case only one set of spraying devices or only one spraying device need be used, conveniently placed in advance of the brushes or of each set of brushes or the like, or instead of a machine being employed to feed the shaft of healds past the spraying device and into and between the brushes the heald may be stationary and the brushes and the spraying device or devices may have the necessary movement imparted to them, the necessary flexible connections being provided. Similarly the spray may be applied by hand and moved over a shaft of healds while the shaft is being subjected to a brushing action, or the spray may be applied, as in the machine, before the healds come under the action of brushes. The requisite brushing may take place immediately following the application of the varnish or the like by means of a spraying device and be effected in the same machine as the spraying, or the spraying or the brushing may be accomplished in separate machines or as separate operations. Instead of the machines described either the operation of spraying or the operation of brushing after spraying, or both of them, may be effected manually.

Although stress has been laid throughout the description on spraying devices, it must be understood that such devices may be substituted by nozzles or the like capable of directing very fine jets against the healds and that the term "spraying device" includes a device capable of ejecting fine jets.

The different parts of the machine described and illustrated may be operated and driven in any convenient and usual manner.

The varnish is only shown as applied to one side of a heald; but it is evident that it may be similarly sprayed upon the healds from both sides.

5 The spraying device described is operated by compressed air in any suitable manner, the compressed-air supply and the varnish or the like supply being provided with different taps. The nozzle through which the spray emerges
10 is movable, so that it may be set to throw the spray at any required angle upon the healds, or the nozzle or the pipe to which it is attached may be adjustable, so that the position of the nozzle may be varied.

15 Having now described my invention, I declare that what I claim is—

1. Apparatus for varnishing and similarly treating healds for looms, comprising a movable frame supporting the heald, a spraying
20 device for applying varnish or the like located in the path of the heald on the frame and arranged to apply the varnish during the passage of the heald past the same, and a brushing or smoothing device located in the path of
25 movement of the heald on the frame and in advance of said varnish-applying device and arranged to smooth or similarly treat the so-

applied varnish on the heald, substantially as hereinbefore described.

2. A machine for use for varnishing and
30 similarly treating healds for looms, comprising a brushing device, a reciprocating traversing frame for bearing the shafts of healds, and spraying devices mounted upon each side of the brushing device, all constructed, ar-
35 ranged and operated substantially as hereinbefore described and as illustrated by the accompanying drawings.

3. A machine for varnishing and similarly treating healds, comprising a heald-carrier
40 and means for moving the same, a spraying device for applying varnish to the heald during its transit by said carrier, and a brush movable transversely of the line of travel of the carrier, and means for moving said brush
45 across the heald and transversely of its direction of travel.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS ELLIS DEAN.

Witnesses:

WILLIAM GEO. HEYS,
FRANK A. HEYS.