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J. T. MEATS & J. E. GREENSMITH.

DOBBY MECHANISM FOR LOOMS.

APPLICATION FILED JAN. 7, 1903.

NO MODEL.

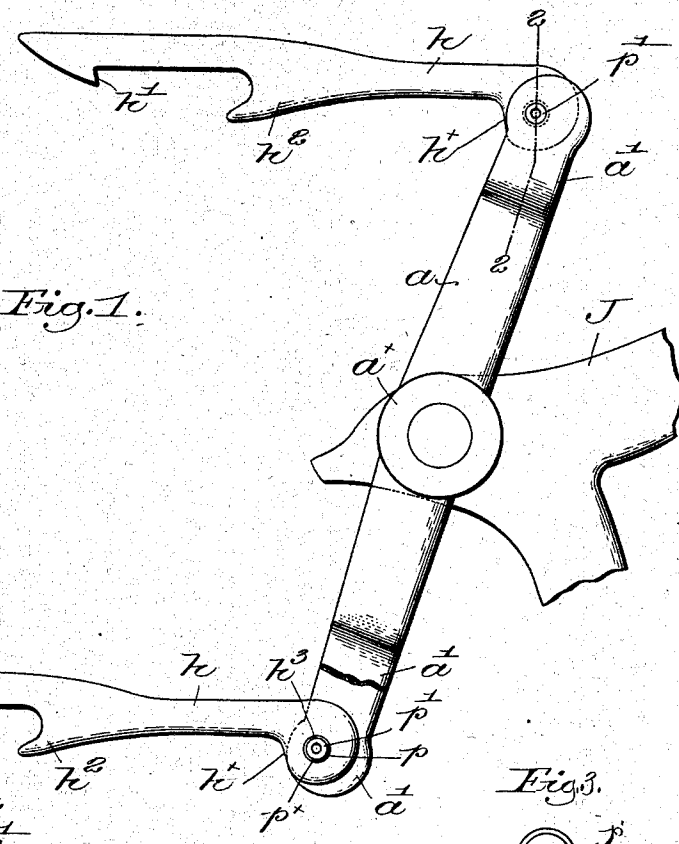


Fig. 1.

Fig. 2.

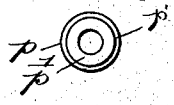


Fig. 3.

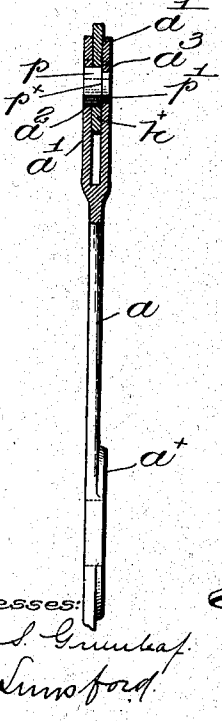
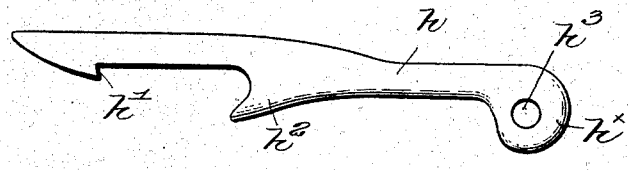


Fig. 4.



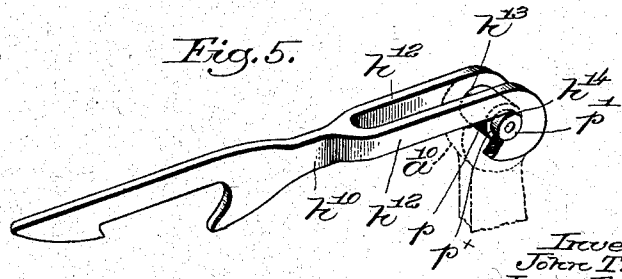


Fig. 5.

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UNITED STATES PATENT OFFICE.

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DOBBY MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 729,627, dated June 2, 1903.

Application filed January 7, 1903. Serial No. 138,096. (No model.)

To all whom it may concern:

Be it known that we, JOHN T. MEATS and JAMES E. GREENSMITH, citizens of the United States, and residents of Taunton, county of Bristol, and State of Massachusetts, have invented an Improvement in Dobby Mechanism for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the improvement of loom-dobbies by the production of novel features thereof, whereby the operation of the dobby as a whole is increased in accuracy, the life of certain members thereof greatly lengthened, and the cost reduced, together with greater ease in assembling and replacement of broken or injured parts.

It is usual to make the upright jack-levers and the hooks or latches carried thereby of cast malleable iron, the ends of the lever being bifurcated to receive one end of the hook, the hooks being pivotally connected therewith in various ways. One mode of effecting the connection is to provide the hook with two oppositely-extended integral lugs, which are inserted in holes in the bifurcated end of the jack-lever by spreading the sides to receive the lugs and then bending or squeezing the sides toward each other. This is objectionable because the bending in and out weakens the lever, and, furthermore, the soft pins or lugs and the holes in the lever wear rapidly, so that accurate picking is prevented and mispicks occur by reason of the lost motion. If a hook breaks, the spreading and squeezing of the bifurcated end of the lever must be repeated, when another hook is connected therewith. Another arrangement consists of a cast metal hook having an open eye to catch over a transverse pivot-pin cast integral with the bifurcated jack-lever, the hook being held in place by a back-stop on the lever. These pivot-pins wear out rapidly, and when either pin of a jack-lever is badly worn the entire lever must be discarded and replaced by a new one. Other structures are in use, but so far as we are aware they involve the use of cast metal, usually malleable, for one or both of the parts referred to, with the pivot-pin integral with either hook or jack-lever.

In our present invention we have provided a very durable pivot connection between the jack-lever and hook of such construction and arrangement that it can be readily removed when it is necessary to replace an injured hook, yet firmly held in place under ordinary circumstances.

The various novel features of our invention will be described hereinafter and particularly pointed out in the following claims.

Figure 1 is a side elevation, partly broken out, of a jack-lever and the hooks or latches connected therewith embodying one form of our invention. Fig. 2 is a partial sectional view on the line 2 2, Fig. 1, taken through the pivot connection and with the latter in elevation. Fig. 3 is an enlarged end view of the removable pivot-pin shown in Figs. 1 and 2. Fig. 4 is a side elevation of the hook detached and Fig. 5 is a perspective view of a modification of our invention to be referred to.

In Fig. 1 is shown a part of the jack J upon which is mounted in usual manner the upright or jack-lever a, shown as bifurcated at its upper and lower ends to present separated sides or cheeks a', between which the end of the hook or latch is inserted. The jack-lever is provided with a central hub or boss $a^{\times}$, as usual, and the lever may be made of cast metal, malleable or otherwise, as may be most convenient or desirable. Opposite circular apertures a^2 a^3 are made in each pair of cheeks in accordance with our invention, (see Fig. 2,) the aperture a^2 being of greater diameter. A pivot-pin p, herein shown as hollow, is reduced in diameter at one end at p' to leave an annular shoulder $p^{\times}$, the end p' entering easily the aperture a^3 while the opposite end of the pin will enter the aperture a^2. The length of the pin is such that when inserted in said apertures its ends will lie substantially flush with the outer faces of the cheeks, and the shoulder $p^{\times}$ will rest against the inner face of the adjacent cheek, as clearly shown in Fig. 2. The pin is pref-

erably made of mild steel, and preferably it is slightly case-hardened to provide a hard and durable wearing surface or skin, the case-hardening being insufficient to interfere with spreading or expanding of one end of the pin, to be referred to.

The hook, shown separately in Fig. 4, is struck up, stamped, or otherwise formed by suitable dies from sheet metal, preferably mild steel of the requisite thickness, and subsequently case-hardened, the shank h being enlarged at one end to form a closed eye $h^{\times}$. At its opposite extremity the shoulder or hook proper, h', is formed, and between the hook and the eye the metal is increased in depth at h^2 to be engaged by the pattern-finger or controlling-wire, when in use.

In assembling a hook-and-jack lever the eye end $h^{\times}$ of the former is inserted between the cheeks a' of the latter, the eye-opening h^3 being slightly larger than the diameter of the pivot-pin, and the latter is inserted, small end foremost, through the aperture a^2 and the eye of the hook, the end p' of the pin entering the aperture a^3. A conical tool is then inserted in the bore of the pin at the small end thereof and by a smart blow the bore is drifted or enlarged, expanding the small end of the pin laterally to completely and tightly fill or bind in the aperture a^3. Thus the pin is rigidly secured at one end to the jack-lever and any slight fin or upset portion of the metal which may sometimes be present around the drifted end of the pin overlaps the outer face of the cheek, assisting in retaining the pin in place. The hook rocks or is fulcrumed on the larger portion p of the hardened pin, and the wear of both parts is reduced to a minimum by case-hardening the same. By means of this pivot connection the use of malleable metal is obviated, with the objectionable bending before referred to, and wear of either pin or pin-holes is done away with. Should a hook break or become otherwise injured, the pivot-pin can be readily driven out by means of a suitable punch applied to its smaller end, the opposite cheek of the jack-lever being supported on a flat plate having a hole therein large enough to receive the larger end of the pin. A new hook can be placed in position and the pivot-pin inserted and expanded, as has been described.

In Fig. 5 a modified form of our invention is shown, the shank h^{10} of the hook being slotted or bifurcated to present cheeks h^{12}, having enlarged portions or eyes, one cheek having an opening h^{13} for the large end of the pin, while the other cheek has a smaller opposite opening h^{14} for the reduced end p' of the pin. The jack-lever is not bifurcated, but its end a^{10} is inserted between the cheeks of the hook and is provided with an opening to loosely receive the larger part of the pin. The small end of the latter is expanded in the opening h^{14}, as has been before described, and the pin is thereby rigidly secured to the hook while passing loosely through the jack-lever. In the modification the pin will be case-hardened, as before described, and the jack-lever may be similarly treated. The bifurcated end of the hook is somewhat distorted in Fig. 5 to more clearly illustrate the construction, and one of the cheeks is broken out for the same reason.

Inasmuch as there is practically no wear at the pivot connection between the jack-lever and hook in the construction herein described, it will be manifest that a mispick cannot occur because of lost motion between such parts, and the operation of the dobby as a whole is greatly improved and its accuracy increased.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In dobby mechanism for looms, a hook, an upright jack-lever therefor, and a separate removable pivot connection passed loosely through one member and having a smooth end rigidly fitted in an aperture in the other member.

2. In dobby mechanism for looms, a hook, an upright jack-lever therefor, one of said members having an eye, and the other member having a pin-receiving opening, and a pivot-pin passed loosely through the eye and laterally expanded to bind in and tightly fit the pin-receiving opening.

3. In dobby mechanism for looms, a hook, an upright jack-lever therefor, one member having an eye and the other member being bifurcated and oppositely apertured, and a separate, smooth pivot connection passing loosely through the eye and seated in the bifurcated member, said pivot connection being rigidly held by frictional engagement in one of the apertures of the bifurcated member.

4. A jack-lever bifurcated at its end and provided with opposite openings, a hook having an eye in one end adapted to enter the bifurcated portion of the jack-lever, and a pivot-pin passing loosely through the eye and entering the openings in the jack-lever, one end of the pin being laterally expanded to bind against the sides of the opening to fix the pin in position.

5. A jack-lever bifurcated at its end and provided with opposite openings, a hook having a closed eye at one end adapted to enter the bifurcated portion of the jack-lever, and a tubular pivot-pin passing loosely through the eye and seated in the openings in the jack-lever, one end of the pin being expanded laterally to bind in and tightly fit the opening and retain the pin in place.

6. A bifurcated jack-lever having opposite openings of different diameters, a hook having an eye at one end adapted to enter between the sides of the jack-lever, and a pivot-pin having its ends of different diameters to fit the openings, the pin passing loosely through the eye of the hook and having its larger end seated in the larger opening of the jack-lever

and its smaller end expanded to tightly bind in the other opening and retain the pin in place.

7. A bifurcated jack-lever having opposite pin openings, of different diameters, a hook having a closed eye at one end, and a removable, pivot-pin reduced at one end to leave an annular shoulder, the larger end of the pin passing loosely through the eye and entering the larger opening in the jack-lever and its smaller end entering and being expanded in the opposite opening, the shoulder resting against the inner face of the adjacent part of the jack-lever.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN T. MEATS,
JAMES E. GREENSMITH.

Witnesses:
THOMAS G. COX,
HORACE A. CROSSMAN.