(No Model.)

N. GREENING.

LOOM FOR WEAVING WIRE.

No. 457,027. Patented Aug. 4, 1891.

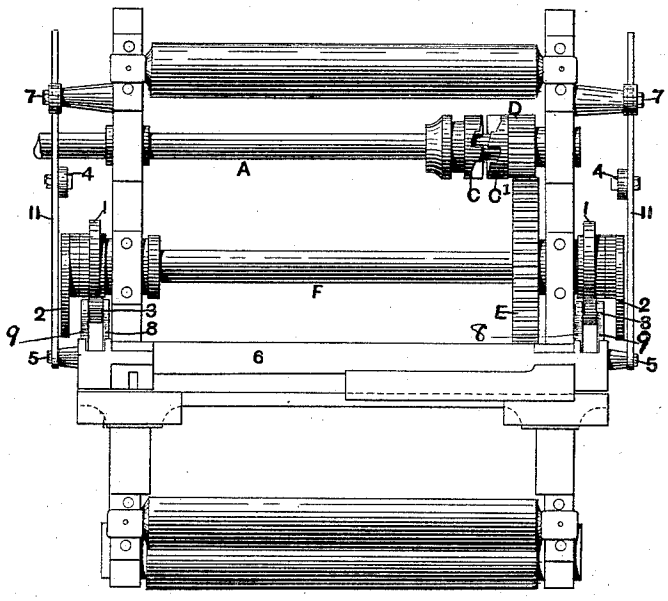


FIG. 1.

FIG. 3.

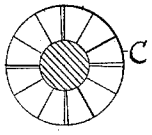
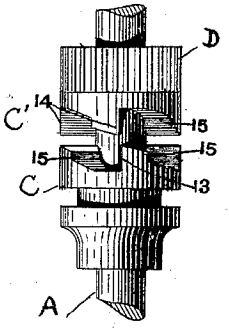


FIG. 4.



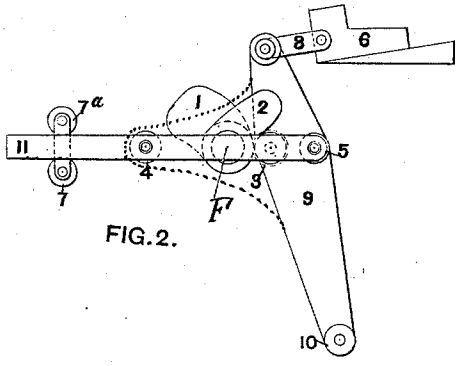


FIG. 2.

Witnesses,

Lillian C. Whittemore

H. A. Lamb

Inventor.

Nathaniel Greening

By his Attorney

Geo. P. Whittemore

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

NATHANIEL GREENING, OF WARRINGTON, ENGLAND.

LOOM FOR WEAVING WIRE.

SPECIFICATION forming part of Letters Patent No. 457,027, dated August 4, 1891.

Application filed January 7, 1890. Serial No. 336,211. (No model.) Patented in England March 29, 1889, No. 5,410.

To all whom it may concern:

Be it known that I, NATHANIEL GREENING, a citizen of the United Kingdom of Great Britain and Ireland, and a resident of Warrington, in the county of Lancaster, England, have invented certain new and useful Improvements in Looms for Weaving Wire, (patented in Great Britain March 29, 1889, No. 5,410,) of which the following is a specification.

This invention relates to the beating-up motions of wire-weaving looms.

According to these improvements there is secured upon each end of the second motion-shaft of the loom a two-leaved or duplex cam, each leaf or equivalent part of which engages with a friction-bowl. The friction-bowls, which are operated by the cams at each side of the loom, are mounted on or connected with an arm or lever pivoted near the bottom of the loom and the free or upper end of the lever is connected to the sley, so that motion imparted by the cams to the levers is communicated to the sley. In operation one leaf or equivalent part of the cam acts upon one of the bowls to give the forward or beat-up motion to the sley and the other leaf of the cam acts upon the other bowl to give the backward motion. The beating-up motion is thrown into and out of gear by means of a clutch constructed as hereinafter described, so as to give greater strength thereto and to avoid the clutch slipping out of gear accidentally when the apparatus is in action.

In the accompanying drawings, to which reference is hereinafter made, Figure 1 is a plan of a part of a loom having the improved beating-up motion applied thereto. Fig. 2 is an elevation of the beating-up motion, taken from the left of Fig. 1; and Figs. 3 and 4 are respectively a cross-section and a plan of the clutch, which is also shown on its shaft A in Fig. 1.

There is a complete set of the cams, levers, and friction bowls and links or rods constituting the beating-up apparatus at each side of the loom, and since these two sets are precisely similar in all respects, except that one set is right-handed and the other set left-handed, the description hereinafter given of the apparatus on one side will equally apply to that on the other side.

A is the first motion-shaft geared by the spur-wheels D E to the second motion-shaft F, on the ends of which the cams 1 and 2, which operate the beating-up motion, are mounted outside the framing. Outside the framing also a lever 9 is pivoted at 10 to the loom side and connected by the links 8 to the sley 6. On the lever 9 there is mounted the friction-bowl 3 and a stud 5, to which the rod 11 is connected. On this rod, which reciprocates with the motion of the lever 9 between the guide-bowls 7 7^a, there is mounted the friction-bowl 4 in such a position as to be in the plane of the cam 2 and to be in contact therewith during a part of the rotation of the cam. The cam 1 is in the same plane as the friction-bowl 3, and in contact with that bowl during a part of its rotation. The cams are shaped, as indicated in Fig. 2, so as to give successive motions and dwells, as is well understood.

In operation the cam 1, acting upon the friction-bowl 3 during its period of contact, presses forward the upper part of the arm or lever 9, to which the bowl is attached, and thus drives the sley forward to beat up, and at the same time draws forward the rod 11, carrying the friction-bowl 4. The continued rotation of the shaft F now brings the cam 2 into contact with the friction-bowl 4, and through the rod 11, upon which it is mounted, returns the lever 9, and consequently the sley also, to the first position represented in Fig. 2.

The clutch C on the shaft is constructed with vertical driving-planes 13, which engage with the similar vertical driven planes 14 on the part C'. The teeth of the clutch have vertical following planes 15 instead of the usual inclined planes. These vertical following planes give greater strength to the teeth and tend to prevent the accidental disengagement of the clutch while the apparatus is in motion. The surfaces between the vertical planes are slightly inclined, as in clutches of a similar type of ordinary construction. This form of clutch is very desirable in connection with the lay-driving mechanism herein described, for this reason, that in consequence of the construction of the lever 9, in which the center of gravity is on one side the support, it falls back from its work with considerable weight, and this weight would, unless some precaution were taken, cause the clutch

to be forced out of gear and thus stop the loom. The short vertical faces prevent this result.

The clutch constructed as hereinbefore described is put into and out of gear in the same manner and by the same means as similar clutches of ordinary construction.

Having now particularly described my invention and in what manner the same is to be performed, I declare that what I claim is—

1. In the beating-up motion of wire-weaving looms, and in combination, the shaft F, the cams 1 2 on said shaft, the levers 9, having the friction-bowls 3, the arms 11, pivotally attached to the levers, the guides 7 7^a for the arms, the bowls 4, mounted on said arms 11, said bowls 3 and 4 lying, respectively, in the paths of the cams 1 2, the sley 6, and the links 8, connecting the sley with the levers.

2. The combination, with the shaft A, having the clutch-face C, of the loose pinion D, having a clutch-face C′, each face of the clutch being constructed with vertical driving-planes 13 and 14, respectively, and vertical following planes 15, the surfaces between the vertical planes being slightly inclined, the shaft F, carrying the gear-wheel E, the cams 1 2, also on said shaft, the levers 9, having the friction-bowls 3, the arms 11, pivotally attached to the levers, the guides 7 7^a for the arms, the bowls 4, mounted on said arms 11, said bowls 3 and 4 lying, respectively, in the paths of the cams 1 2, the sley 6, and the links 8, connecting the sley with the levers.

In testimony that I claim the foregoing as my invention I have signed my name, in the presence of two witnesses, this 28th day of November, 1889.

NATHANIEL GREENING.

Witnesses:
WILLIAM E. HEYS,
G. W. ROWE.