

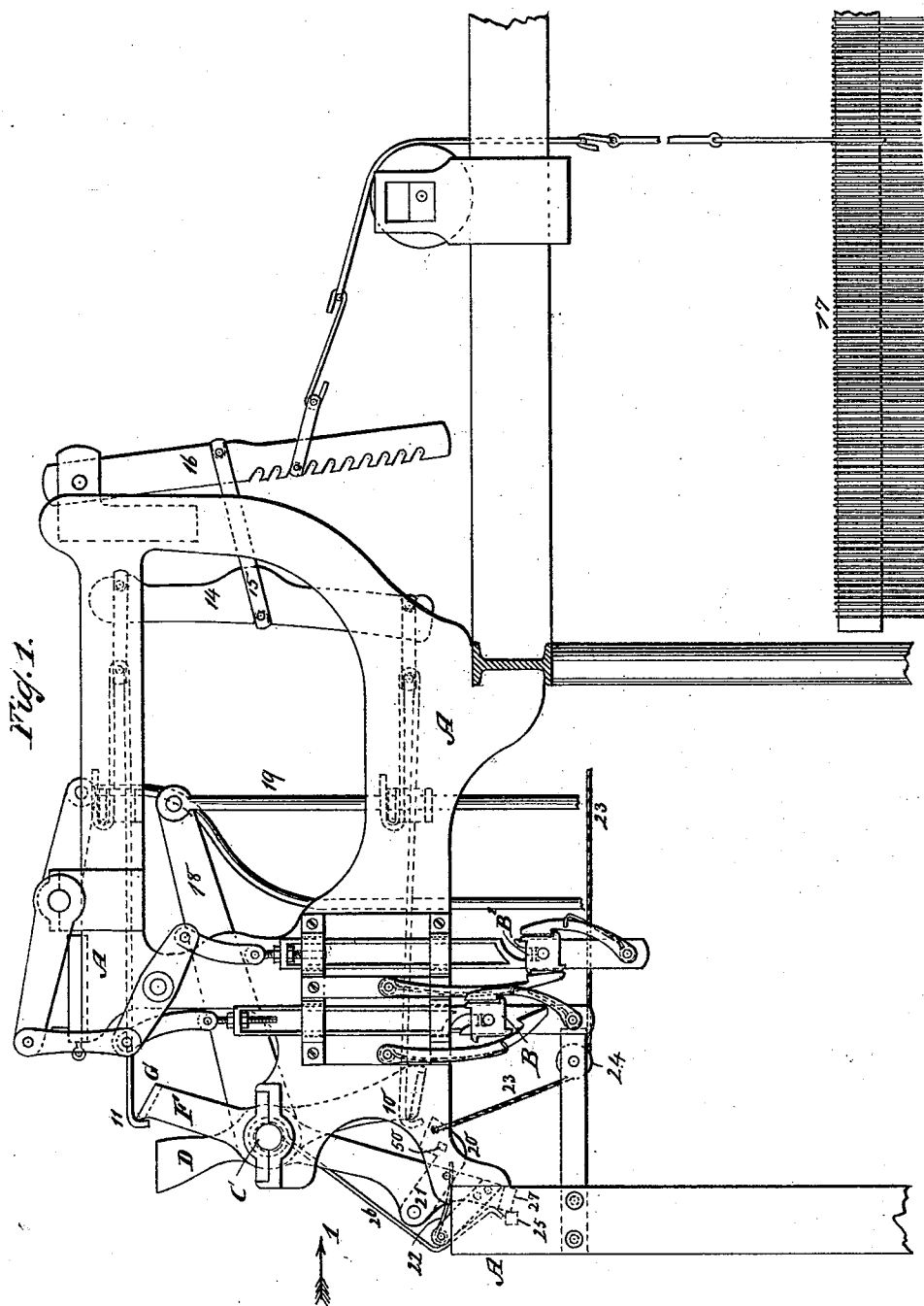
(No Model.)

3 Sheets—Sheet 1.

T. EHRENBURG.
HARNESS EVENER MECHANISM FOR LOOMS.

No. 512,172.

Patented Jan. 2, 1894.



WITNESSES:

E. Wolff.
Chas. E. P. P. P. P.

INVENTOR:

Theodor Ehrenberg

BY

Haupt & Haupt

ATTORNEYS.

(No Model.)

3 Sheets—Sheet 2.

T. EHRENBURG.

HARNESS EVENER MECHANISM FOR LOOMS.

No. 512,172.

Patented Jan. 2, 1894.

Fig. 3.

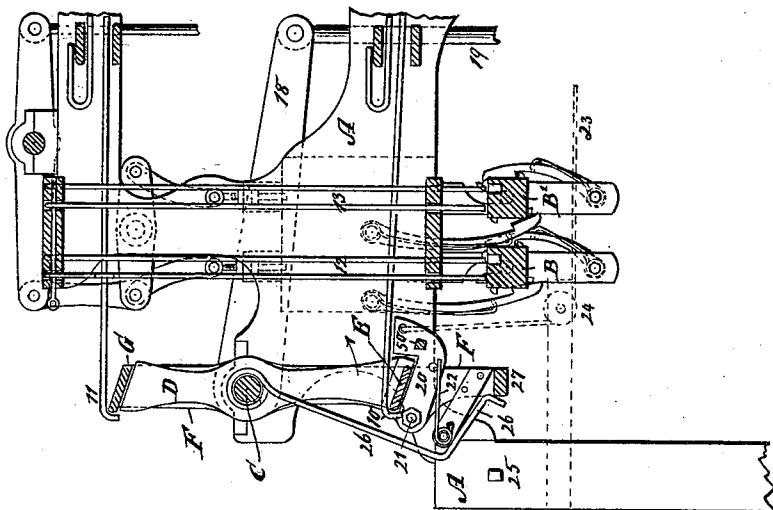
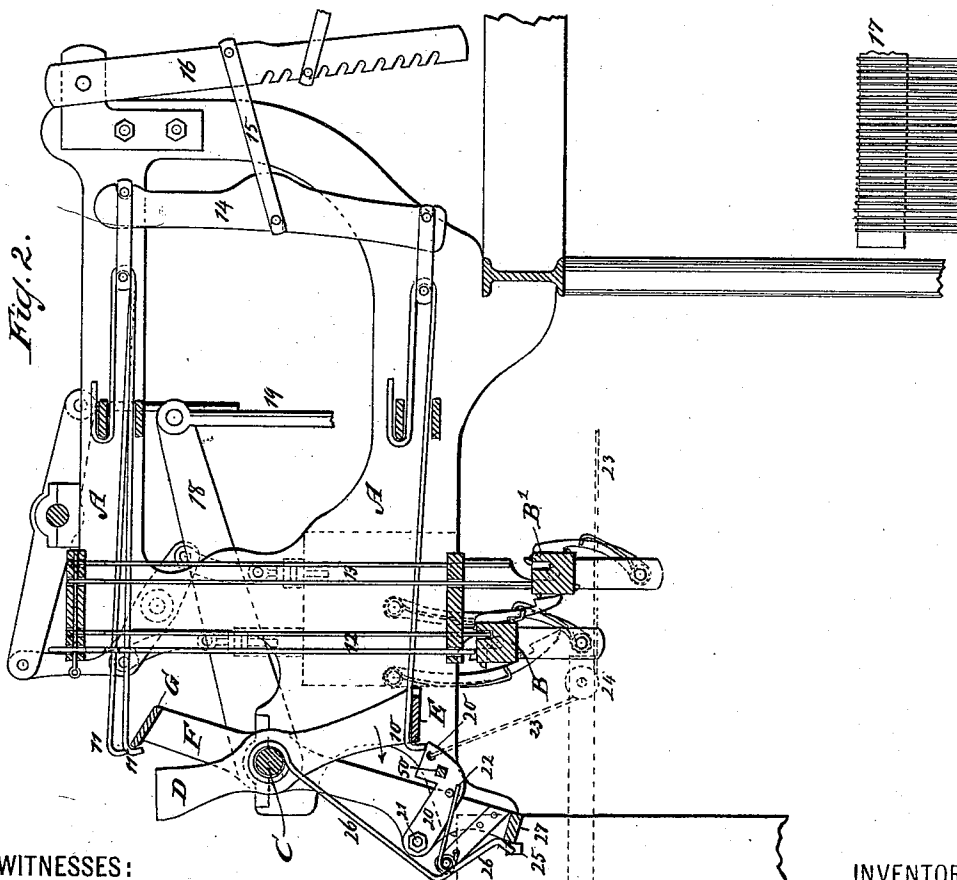


Fig. 2.



WITNESSES:

E. Wolff.
Chas. E. Doensgen.

INVENTOR:

Theodor Ehrenberg.

BY

Hauß & Hauß

ATTORNEYS.

(No Model.)

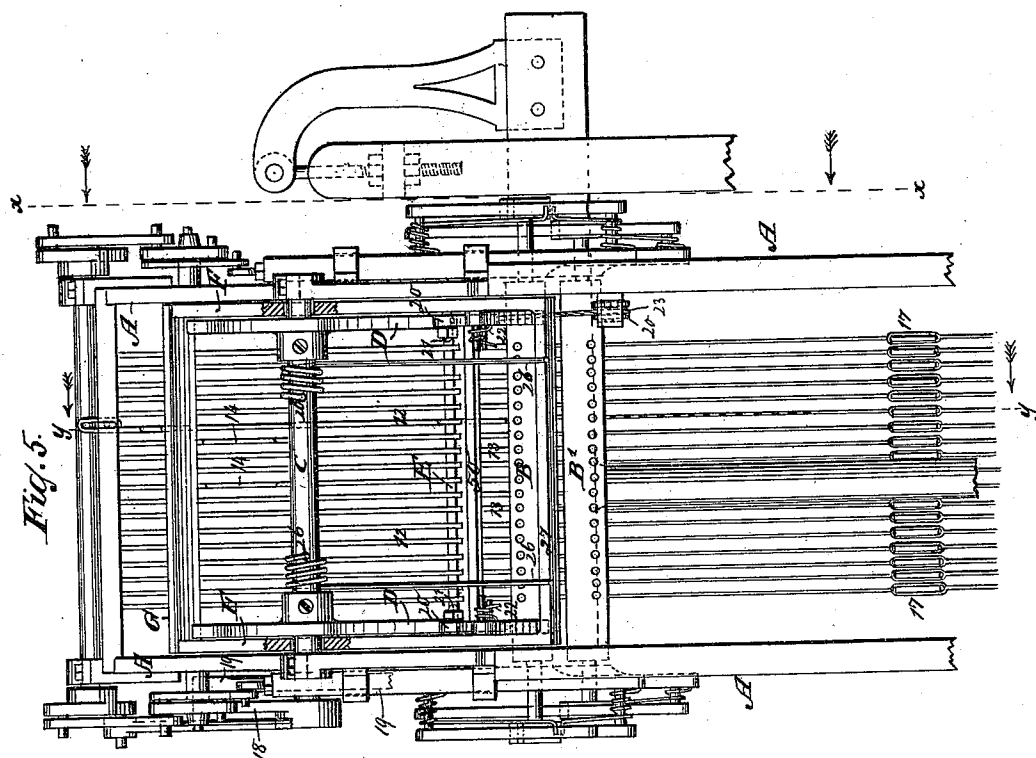
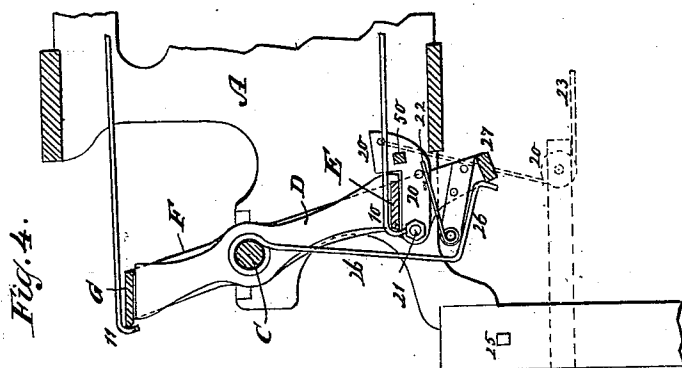
3 Sheets—Sheet 3.

T. EHRENBURG.

HARNESS EVENER MECHANISM FOR LOOMS.

No. 512,172.

Patented Jan. 2, 1894.



WITNESSES:

E. Wolff.
Chas. E. Pienzen.

INVENTOR:

Theodor Ehrenberg.

BY

Hauff & Hauff

ATTORNEYS.

UNITED STATES PATENT OFFICE.

THEODOR EHRENBERG, OF NEW YORK, N. Y.

HARNESS-EVENER MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 512,172, dated January 2, 1894.

Application filed September 14, 1893. Serial No. 485,488. (No model.)

To all whom it may concern:

Be it known that I, THEODOR EHRENBERG, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Harness-Evener Mechanism for Looms, of which the following is a specification.

This invention relates to an improvement in that class of Jacquard machines, which are provided with two knives, one of which (the top knife) is firmly secured to the upper ends of double armed levers which are firmly mounted on a rock shaft while the other (the bottom knife) is firmly secured to the bottom ends of the same levers so that if the rock shaft is turned in one direction the heddle frames which are connected to the hooks controlled by the top knife are raised and the heddle frames which are connected to the hooks controlled by the bottom knife are lowered and vice versa. Such machines have certain disadvantages namely: if one of the warp threads break, the heddle frames can only be brought in line or in the same level with each other when the knives occupy their intermediate position (Fig. 3) and in that position a portion of the warp thread is on its way to be raised and another portion is on its way to be lowered so that it is difficult to insert a fresh thread for the one which is broken.

The object of my invention is to do away with such disadvantages and in order to attain this object I have connected the bottom knife to levers which are firmly connected to the rock shaft while the top knife is connected to levers which are mounted loosely on the rock shaft and are provided with a clutch mechanism by means of which they can be thrown in engagement with the rock shaft and which is so constructed that it can be readily thrown out of engagement with the rock shaft whenever it is desirable.

In the accompanying drawings Figure 1 represents a longitudinal vertical section of my Jacquard machine in the plane $x x$ Fig. 5 looking in the direction of the arrow opposite to that line. Fig. 2 is a similar section in the plane $y y$ Fig. 5 when the levers which carry the top knife are free to turn on the rock shaft and the heddle frames controlled by both knives are clear down. Fig. 3 is a simi-

lar section showing both knives as occupying their intermediate position. Fig. 4 is a similar section when the top knife is in its extreme forward and the bottom knife in its extreme rearward position. Fig. 5 is an end elevation looking in the direction of arrow 1 Fig. 1.

In the drawings, the letter A designates the frame in which are mounted the pattern cylinders B B' of the Jacquard machine and also the rock shaft C on which are firmly mounted the levers D D which carry the bottom knife E and on which are loosely mounted the levers F F which carry the top knife G. In the frame A are also mounted the hooks 10, 11 and the needles 12, 13 which co-operate with the pattern cylinders B B' and govern the position of the hooks 10, 11. The hooks 10 engage a series of levers 14 near their lower ends and the hooks 11 engage the same levers near their upper ends and the levers 14 connect by links 15 with levers 16 (Fig. 1) from which motion is transmitted to the heddle frames 17.

The pattern cylinders, the hooks, the needles and the mechanism for imparting motion to the pattern cylinders and to the heddle frames are of well known construction and require no further explanation.

The rock shaft C receives its motion by means of a lever 18 and rod 19 which latter communicates with a treadle or other equivalent mechanism (not shown in the drawings). The levers F are provided with a coupling device by means of which they can be thrown in gear with the rock shaft C. This coupling device consists of dogs 20 which are connected to each other by a cross-bar 50 and to the levers F by means of pivots 21, and subjected to the action of springs 22 which have a tendency to throw said dogs upward. A cord 23 extends from one of the dogs 20 under a pulley 24 in such direction, that it can be readily reached by the operative attending to the loom. When the loom is in motion, the dogs 20 engage the lower ends of the levers D (see Figs. 3 and 4) and the levers F are compelled to move with the levers D but if anything gets out of order, for instance, if one of the warp threads breaks, the operative pulls the cord 23 at the moment when the knives G E occupy the position shown in Fig. 4. As soon as the

dogs 20 release the levers D, the knife G is pulled back to the position shown in Fig. 2 by the weight of the heddle-frames previously raised by the same, the backward movement of said knife being limited by a stop 25 which is in the path of the lower end of one of the levers F, and since at the moment when the cord 23 is pulled, the heddle frames which are governed by the bottom knife E, occupy their lowest position, the heddle frames which are governed by the knife G will be brought in line or in the same level with the heddle frames governed by the knife E, so that the defect in the warp thread can be readily corrected. The downward movement or fall of the heddle frames governed by the knife G is balanced by springs 26 attached to rock shaft C and which act upon a cross-bar 27 connecting the lower ends of the levers F. If the loom be started again, the top knife G remains stationary, while the bottom knife E moves in the direction of the arrow shown near it in Fig. 2, until the levers D are brought in line with the levers F and as soon as they reach this position, the dogs 20 engage their lower ends so that the levers F are coupled to the shaft C and compelled to move with the same as soon as the levers D begin their inward motion in the direction opposite to the arrow marked near it in Fig. 2.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a Jacquard machine, the combination with the hooks, the cylinders, and the needles, of a rock-shaft C, levers D rigidly mounted on the rock-shaft and having the attached knife E, levers F loosely mounted on the rock-shaft and having an attached knife G, a coupling device for throwing the loosely mounted levers into or out of gear with the rock-shaft, and means for operating the coupling device, substantially as described.

2. In a Jacquard machine, the combination with the hooks, the cylinders, and the needles, of a rock-shaft C, levers D rigidly mounted intermediate their extremities on the rock-shaft and having a knife E secured to their lower ends, the levers F loosely mounted intermediate their extremities on the rock-shaft and having a knife G secured to their upper ends, a coupling device for throwing the loosely mounted levers into or out of gear with the rock-shaft, and means for operating the coupling device, substantially as described.

3. In a Jacquard machine, the combination with the hooks, the cylinders, and the needles, of a rock-shaft C, levers D rigidly mounted intermediate their extremities on the rock-shaft and having an attached knife E, levers F loosely mounted intermediate their extremities on the rock-shaft and having an attached knife G, dogs 20 pivoted to the loosely mounted levers and adapted to engage the rigidly mounted levers, and means for operating said dogs, substantially as described.

4. In a Jacquard machine the combination with the hooks, the cylinders, the needles and the rockshaft, of levers D firmly mounted on the rock shaft, a knife E secured to these levers, levers F loosely mounted on the rock shaft, a knife G secured to these levers, spring actuated dogs 20 pivoted to the levers F and adapted to engage knife E, and thereby connect the levers F with the rock-shaft and a cord 23 for pulling said dogs backward against the action of their springs, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

THEODOR EHRENBERG.

Witnesses:

W. HAUFF,
WILLIAM MILLER.