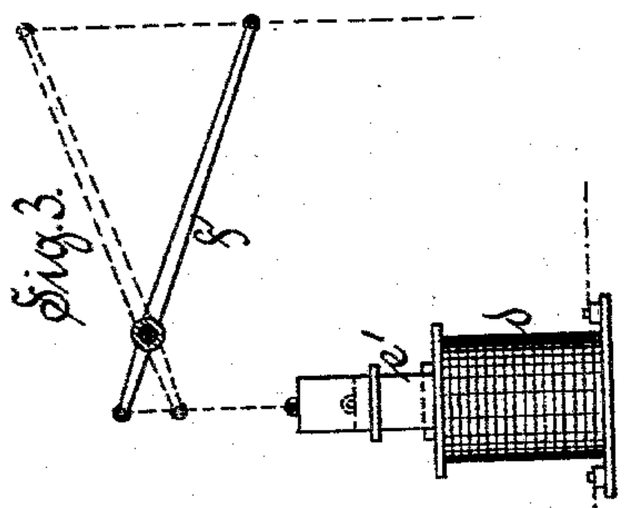
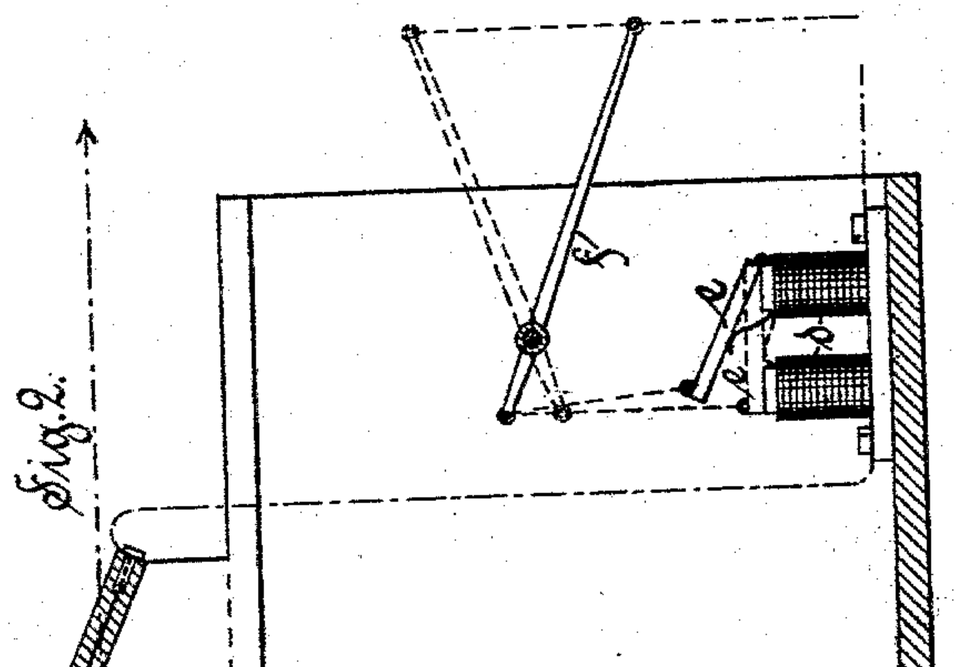
(No Model.)

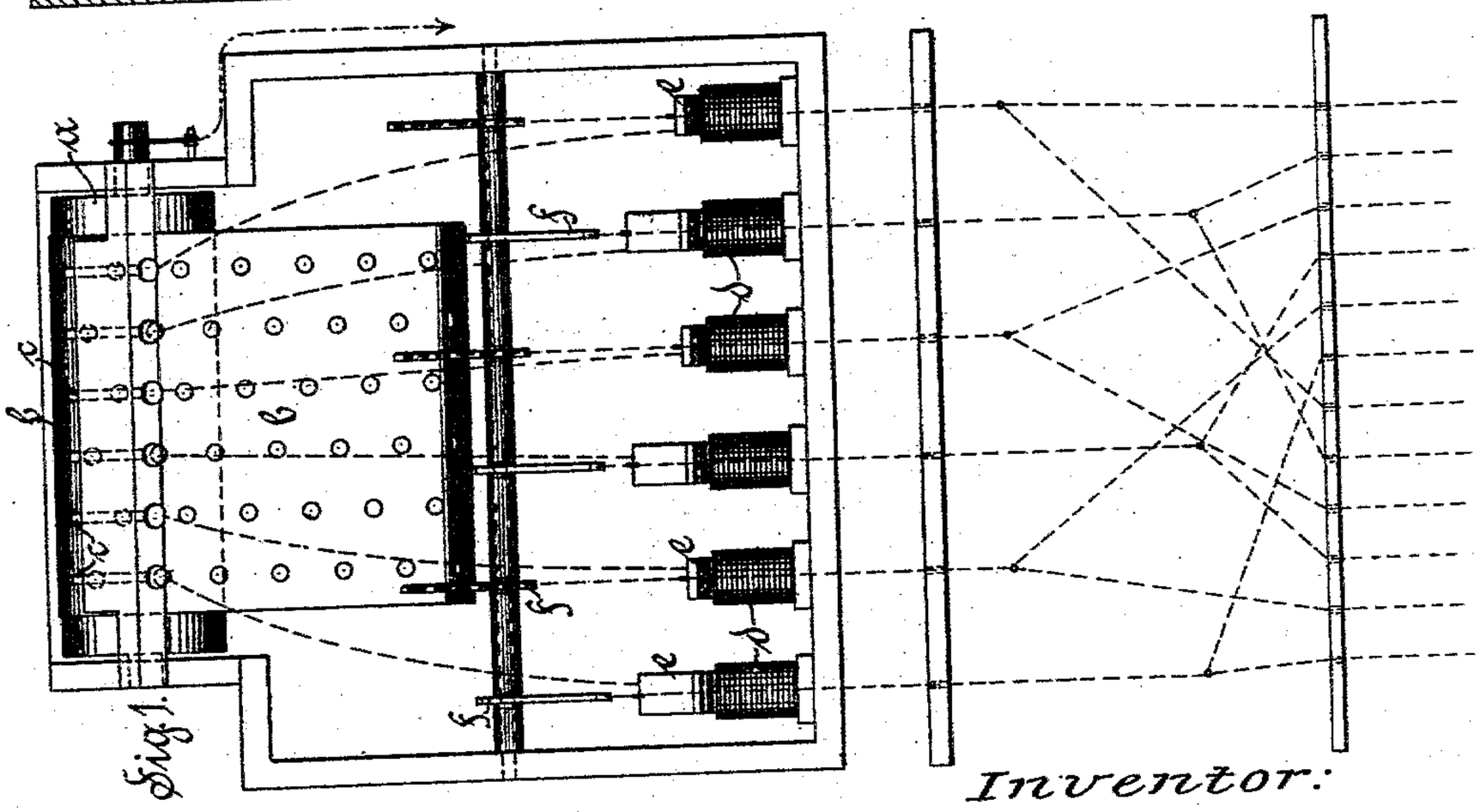
J. KAUFFMANN.

APPARATUS FOR FORMING SHEDS IN LOOMS ELECTRICALLY.

No. 515,775. Patented Mar. 6, 1894.







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JOSEPH KAUFFMANN, OF HANOVER, GERMANY.

APPARATUS FOR FORMING SHEDS IN LOOMS ELECTRICALLY.

SPECIFICATION forming part of Letters Patent No. 515,775, dated March 6, 1894.

Application filed April 30, 1892. Serial No. 431,264. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH KAUFFMANN, a subject of the King of Prussia and German Emperor, residing at Hanover, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Apparatus for Forming the Sheds in Looms Electrically, of which the following is a specification.

In lieu of producing a pattern in weaving by means of "Jacquard cards," in this invention, the pattern is woven directly from the pattern sheet containing it, while the transferring of the pattern from the pattern sheet onto the goods is performed as usual through raising and lowering the warp threads. The movement in itself is effected by connecting or dis-connecting an electric current.

In order that my invention may be more fully understood, I have caused to be appended hereunto one sheet of drawings marked with letters of reference indicating like parts in the various figures.

Figure 1 is an end view of the arrangement for transferring the pattern from the pattern sheet to the loom. Fig. 2 is a side view thereof. Fig. 3 shows the working of the warp threads in another manner than that shown in Fig. 1.

In carrying out my invention and referring to the figures generally, *a* is a metal roller mounted in a non-conducting support. Above this roller moves an endless pattern sheet *b*, formed of non-conducting material on which is marked by perforation, the pattern. The roller *a* is connected with one pole of an electric source, while the other pole ends in a row of contact springs *c* which rest on the pattern sheet *b* and are connected with a corresponding number of electro magnets. Now if the roller *a* is set in rotation, the pattern sheet is moved with it, and its several perforations which form the pattern, permit the several contact springs *c* to come into contact with the roller *a*. During the movement of the pattern sheet, the circuit is completed through the roller when the springs *c* come into contact with the said conducting roller *a*. The armatures *e* are then attracted and these armatures are connected with the warp threads of a loom, so that they are raised and lowered exactly according to the pattern on the pattern sheet *b* and thereby the pattern in the fabric produced. In lieu of employing magnets *d* and armatures *e*, the movements may also be effected through a solenoid or the like. In Fig. 3 the solenoid core *e'* is shown as connected with lever *f*, the free end of which is in direct connection with the warp threads.

The substantial utility of this invention is that the large number of cards for the production of a pattern may be dispensed with and only one pattern sheet is required, and, that the pattern formation can be separated as may be desired, as the electric connection between the contact springs and the magnets may be made as long as desired and one apparatus will serve simultaneously for several looms, as there may be several currents running from each contact spring.

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

In combination, the series of magnets with their armatures, the positive connections intermediate said armatures and the healds whereby the movement of the armatures will raise or lower the warps, and the means for energizing and de-energizing the magnets consisting of a cylinder, a pattern sheet carried thereby, one of said parts being a conductor and in the circuit, and the other a non-conductor, the movable contacts in the circuit and the electrical circuit, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JOSEPH KAUFFMANN.

Witnesses:

BERTHOLD FRENSDORFF,

ALFRED KARO.