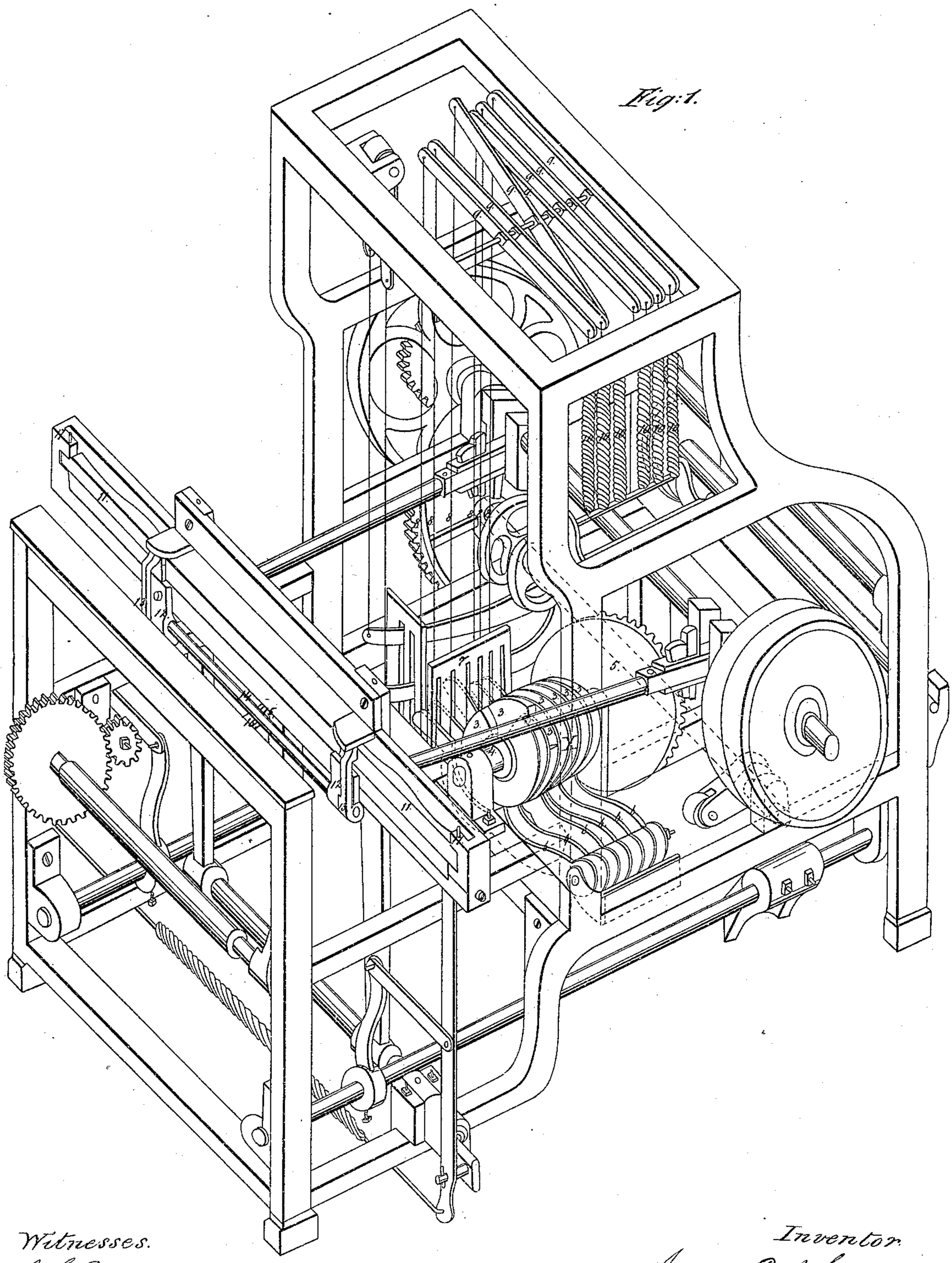
Sheet 1 - 4 Sheets.

# J. B. Kershaw.
# Loom Shedding.

No. 58,024. Patented Sept. 11, 1866.

Fig: 1.



Witnesses.
D. C. Dickson
Wm. L. Smithmeyer

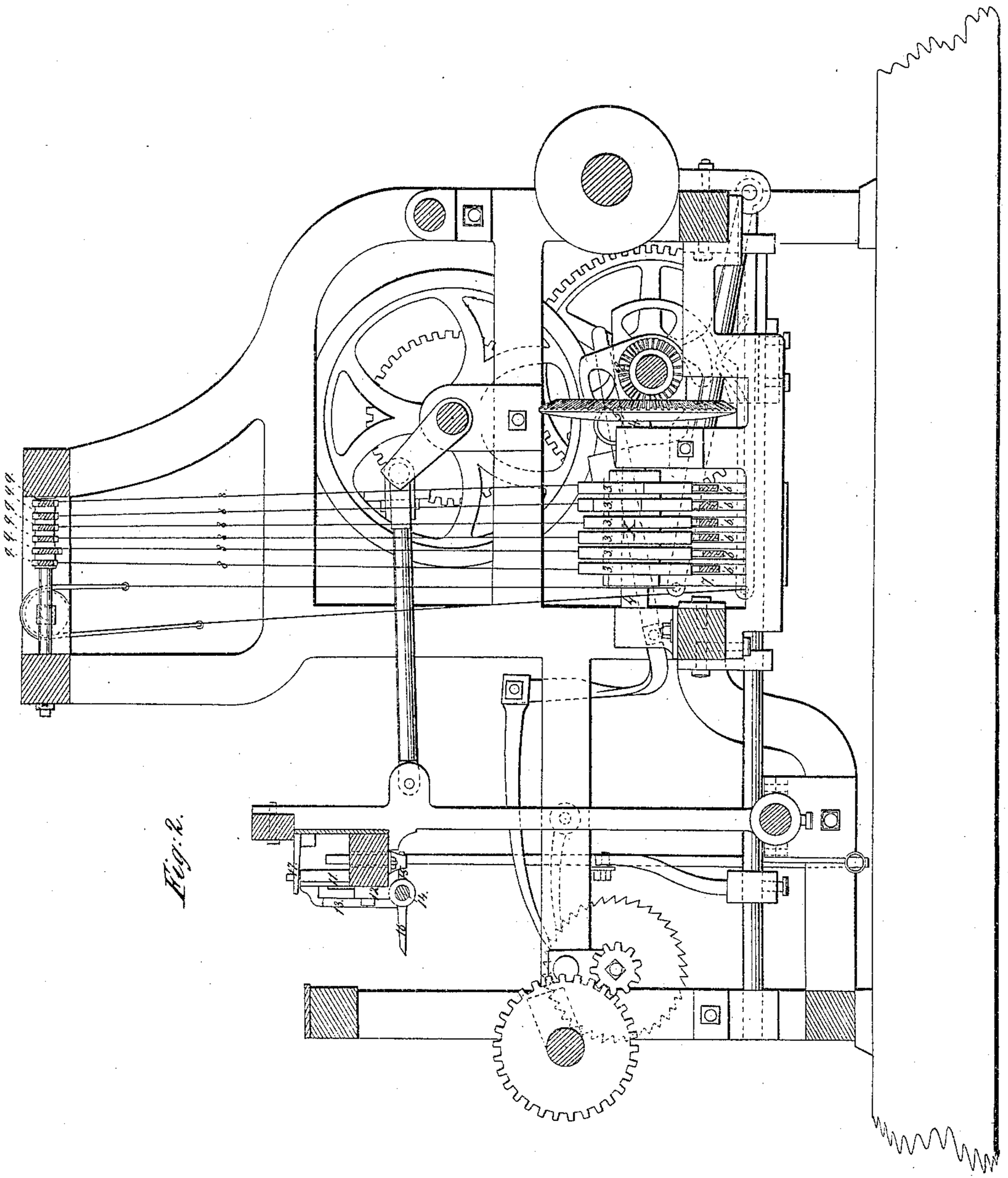
Inventor.
John B. Kershaw.

Sheet 2 - 4 Sheets.

# J. B. Kershaw.

## Loom Shedding.

No. 58,024. Patented Sep. 11, 1866.



Witnesses.

J. B. Dickson

Wm. L. Smithmeyer

Inventor.

John B. Kershaw.

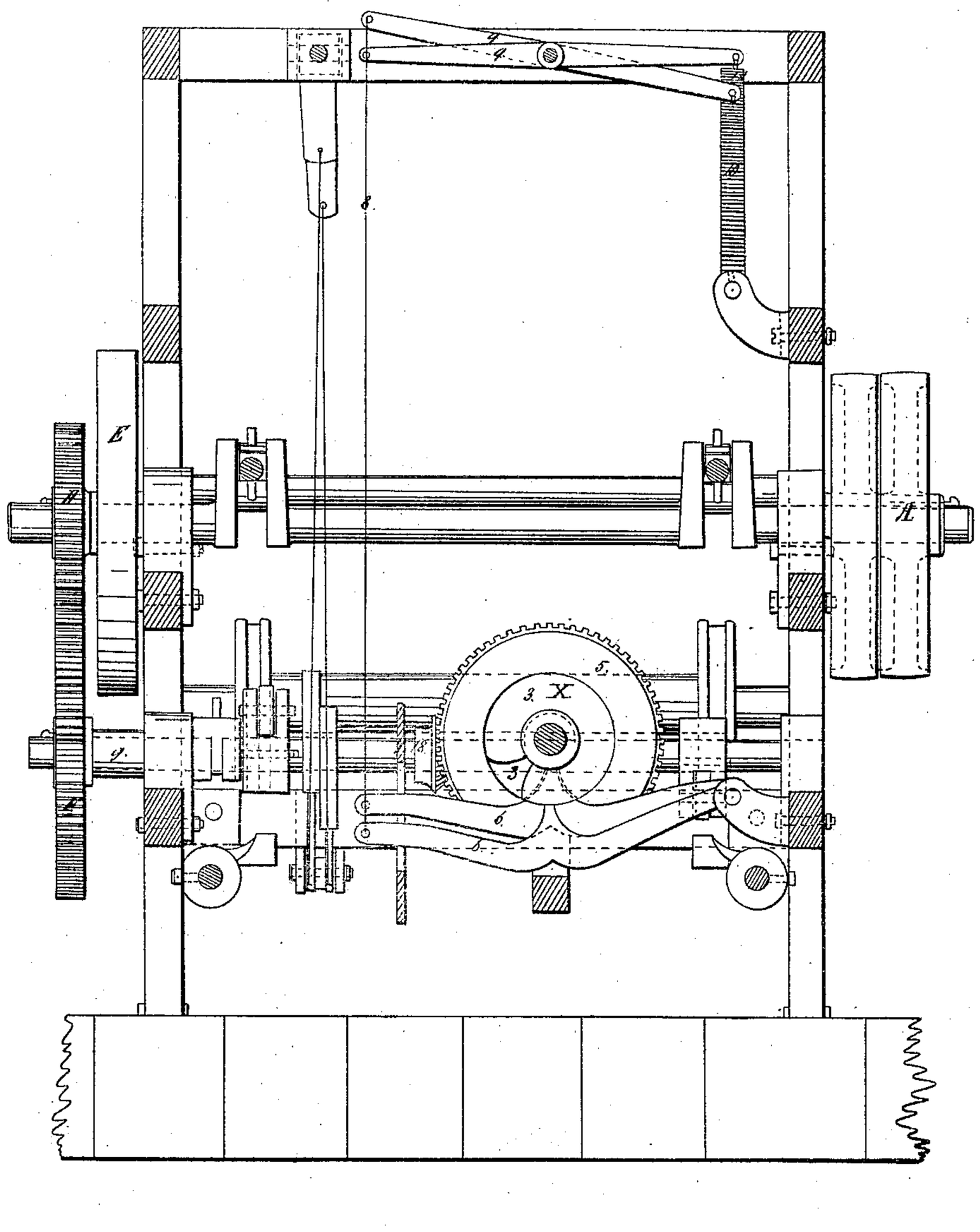
Sheet 3 - 4 Sheets.

# J. B. Kershaw.

## Loom Shedding.

No. 58,024. Patented Sept. 11, 1866.

Fig: 3.




Witnesses.
J. C. Dickson
Jno L Smithing

Inventor:
John B. Kershaw

Sheet 4-4 Sheets.

# J. B. Hershaw.

## Loom Shedding

Patented Sept. 11, 1866.

No. 58,024.

Fig: 4.

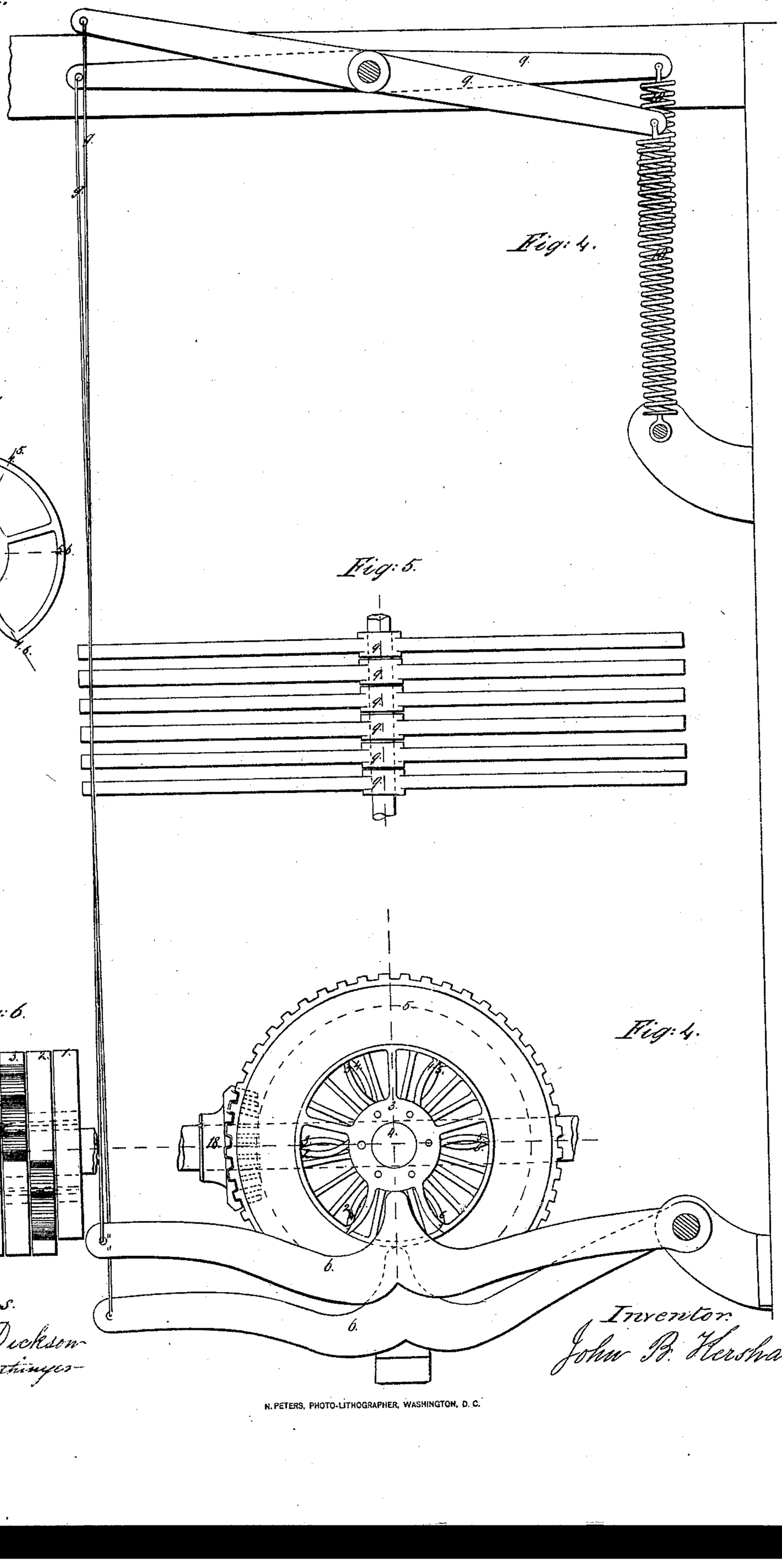



Fig: 7.

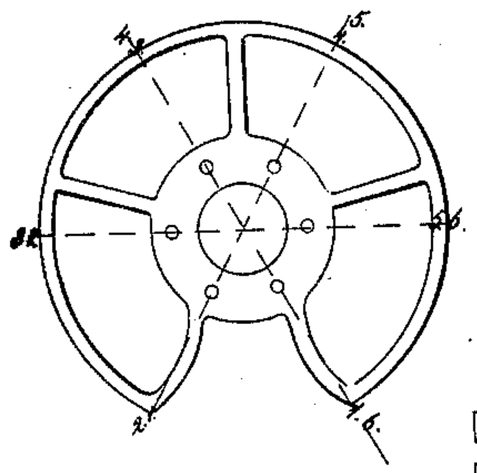



Fig: 5.




Fig: 6.




Fig: 4.




Witnesses.

J. C. Dickson

Jno. L. Smiturmyer

Inventor:

John B. Hershaw.

# UNITED STATES PATENT OFFICE.

JOHN B. KERSHAW, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO HIMSELF AND JAMES C. DICKSON, OF SAME PLACE.

## IMPROVEMENT IN LOOMS.

Specification forming part of Letters Patent No. **58,024**, dated September 11, 1866.

*To all whom it may concern:*

Be it known that I, JOHN B. KERSHAW, of Indianapolis, in the county of Marion and State of Indiana, have invented new and useful Improvements in Looms for Weaving Cloth; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of the same, in which—

Figure 1 is a perspective view of a loom complete with my improvements attached thereto. Fig. 2 is a vertical transverse section thereof. Fig. 3 is a vertical longitudinal section. Fig. 4 is an enlarged view of the cams 3 3, &c., on the cam-shaft 4, treadles 6 6 6, &c., jacks or levers 9 9 9, &c., and springs 10 10 10, &c., and showing their relation to each other. The harness through which the warp is drawn, and by means of which the shed is opened to let the shuttle pass through, are not here shown, but are suspended about midway between the treadles 6 and jacks 9, being connected thereto by straps in the usual manner. The cords 8 in the drawings occupy the position of the harness, and connect the jacks and treadles. These cords are operated separately and independently, and were the harness-frames in their places they would be moved in the same manner. Each treadle below is connected with its corresponding jack above. Fig. 5 is a top view of the jacks 9 9 9, &c. Fig. 6 is a face view of the cams 3 on cam-shaft 4. The cams are numbered 1, 2, 3, 4, 5, 6, being a set of six cams as used for weaving satinet. Each cam is open on its face, as shown, one-sixth of its circumference. Fig. 7 is a side view of the cams 3.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the combination of a variable pattern-cylinder, constructed as hereinafter set forth, with treadles, jacks, and springs for operating the harness of looms, so that with one set of cams composing the cylinder, by simply changing the position of the openings in the cams in a different relation to each other, the same cylinders will produce different styles of weaving.

To enable others skilled in the art to make and use my invention, I will proceed to describe it.

Instead of arranging the several cams in any particular set of cams to weave only one certain twill, and securing them upon the cam-shaft so as to be unchangeable, as is usually done, I construct my variable pattern-cylinder X as follows: I drill the center of each cam so as to turn freely on the cam-shaft 4. I also drill holes in the hub of the cam, as shown in Figs. 4 and 7, the number of holes in the hub corresponding to the number of cams in a set—that is, three holes in a set of three cams, six holes in a set of six cams, &c. These holes are centered upon a circle struck from the center of the cam, and are situate equidistant from each other on said circle—that is, three holes one-third the distance of the circumference of a circle apart, four holes one-fourth the distance of the circumference of a circle apart, six holes one-sixth the distance of the circumference of a circle apart, &c., corresponding with the opening in the cam, as shown in Figs. 4 and 7. This is done so that the relative position of the openings in the several cams may be readily and correctly adjusted when changing the cams to weave a different twill. One of the cams (generally the rear one) is made fast on the shaft by a set-screw or otherwise, and the others adjusted to it, and the whole are made fast together by one or more bolts through the holes in the hubs, said holes coinciding with each other when the openings in the cams are placed in their proper relation to each other. If necessary, the other outside or front cam may also be secured to the cam-shaft by a set-screw, which holds all securely on the shaft. The cams can be adjusted by loosening the set-screw of the front one, and withdrawing the bolt through the holes in the hub, when they can be turned on the shaft 4, and the openings arranged so as to weave any twill desired. In order to effect this, however, it is also necessary to arrange the harness so that they may be operated separately and independent of each other. This I accomplish by suspending the harness from the top to one end of the jacks or levers 9 9 9, &c., Fig. 4, the opposite end of the jacks being attached

to coiled springs 10 10, &c., which are attached to the frame of the loom and serve to raise the harness and treadles promptly whenever the openings in the cams are revolved, so as to receive the shoe of the treadle, as represented in Fig. 4.

As it is the office of the harness to open the shed in the warp for the passage of the shuttle, it will be easily understood that by means of the adjustment of the cams, as described, and the separate action of the harness, I can open the shed in the warp so as to produce any desired twill without changing the draft of the warp or removing the cams and replacing them by another set, or making any other change in the loom except that of changing the relative position of the openings in the several cams. The advantage of changing the twill of the cloth in this manner will be readily understood by weavers.

The cams here shown are the same as those in common use in all other respects than the arrangement for changing the relative position of the cavities. In other looms the cams are made in sets, with the openings or cavities arranged to weave a certain twill, and are secured upon the cam-shaft in a fixed and unchangeable relation to each other, and hence cannot be used to weave more than one twill for each set of cams, while I arrange any one set to weave a variety of twills.

I make no claim whatever to the cams in themselves considered; neither do I make any claim to operating the harness separately and independent of each other, as this is already done in other looms; but

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

The combination and arrangement of the variable pattern-cylinder X, constructed as described, with the treadles 6 6, jacks 9 9, and springs 10 10, the whole operating as and for the purpose set forth.

JOHN B. KERSHAW.

Witnesses:

O. F. MAYHEW,

M. W. NEWTON.