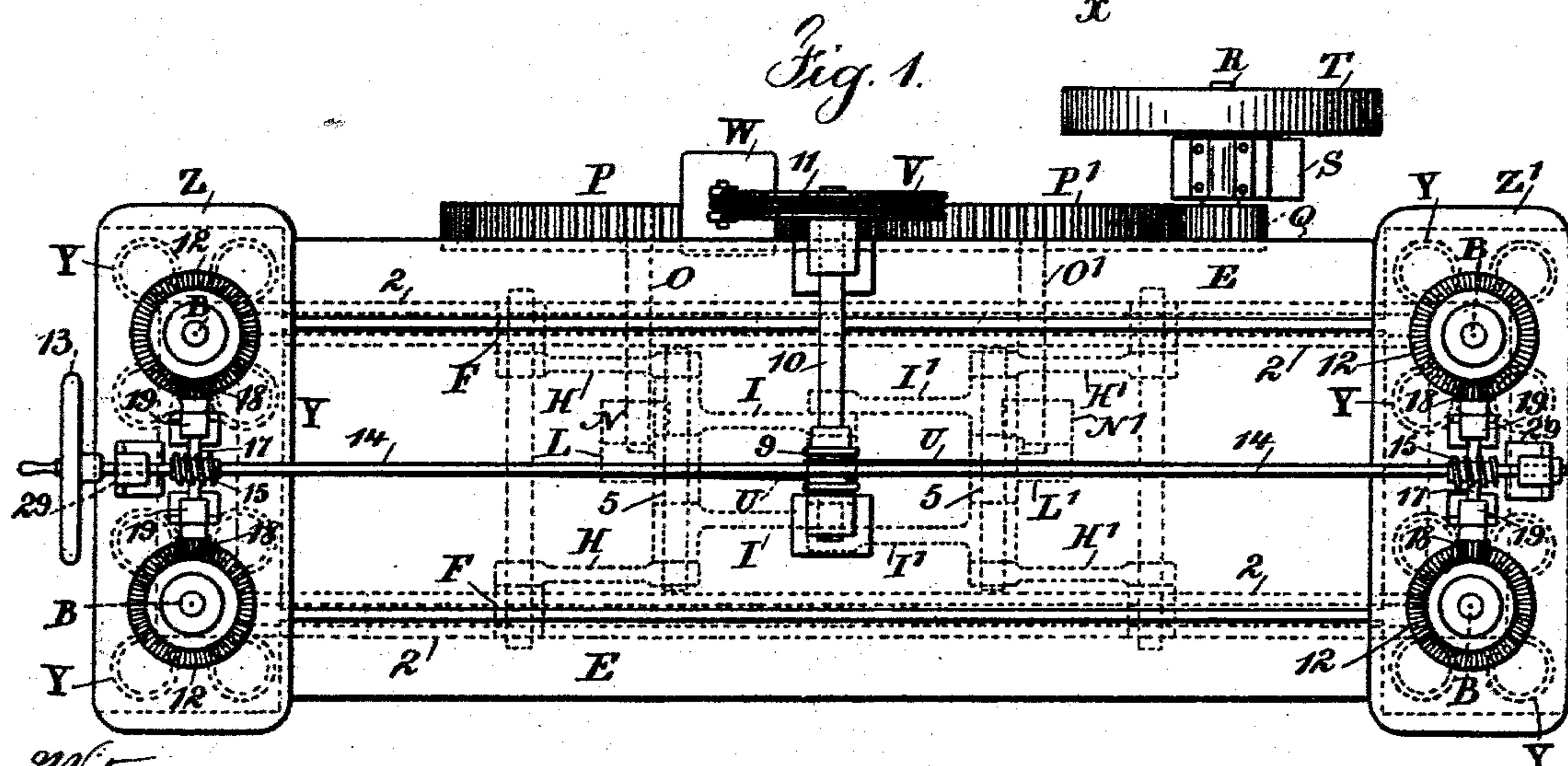
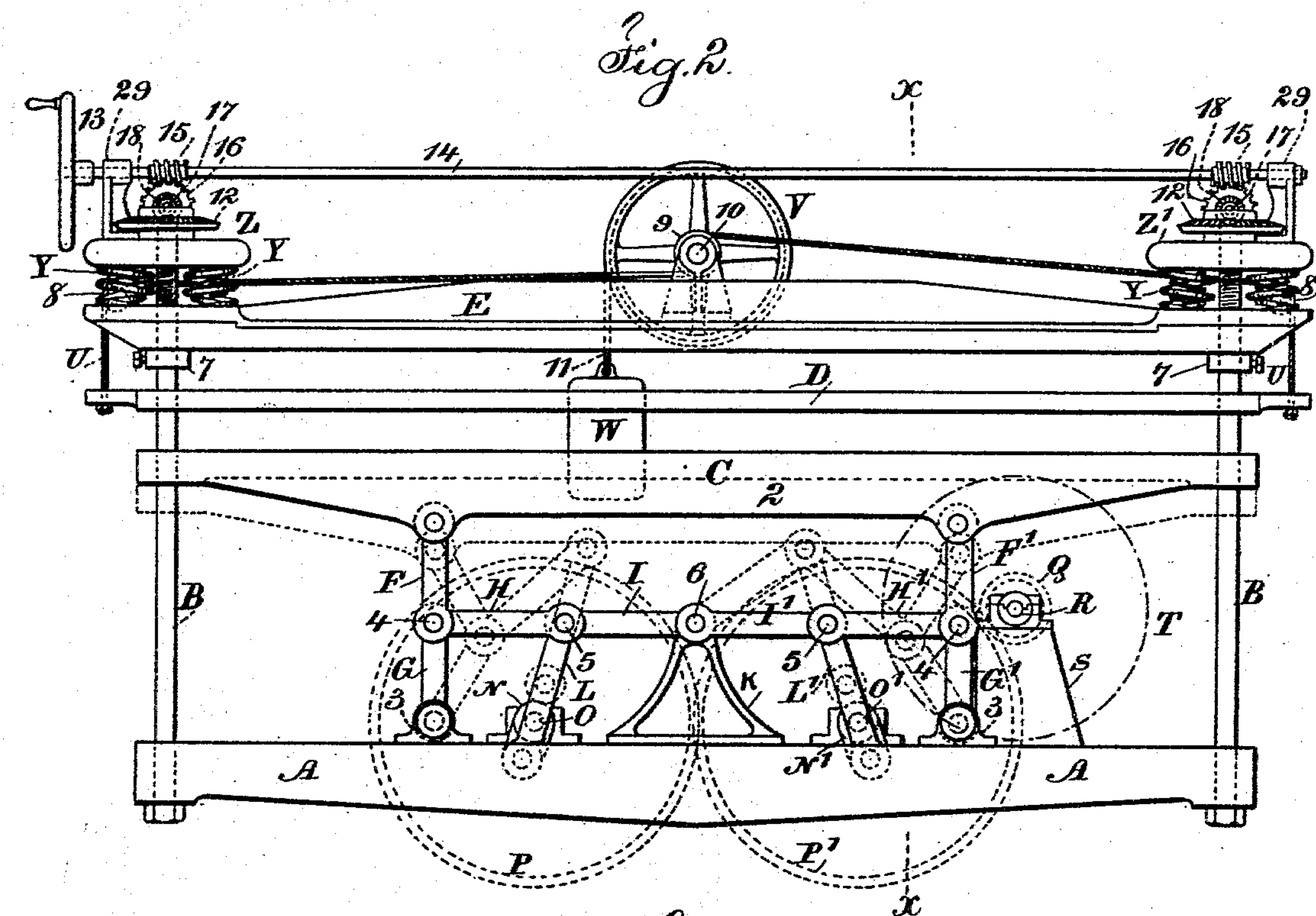


2 Sheets—Sheet 1.

No. 516,012.

Patented Mar. 6, 1894.



Witnesses
Chas. H. Smith
J. Staib

John J. Hayes Inventor
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Atty.

2 Sheets—Sheet 2.

No. 516,012.

Patented Mar. 6, 1894.

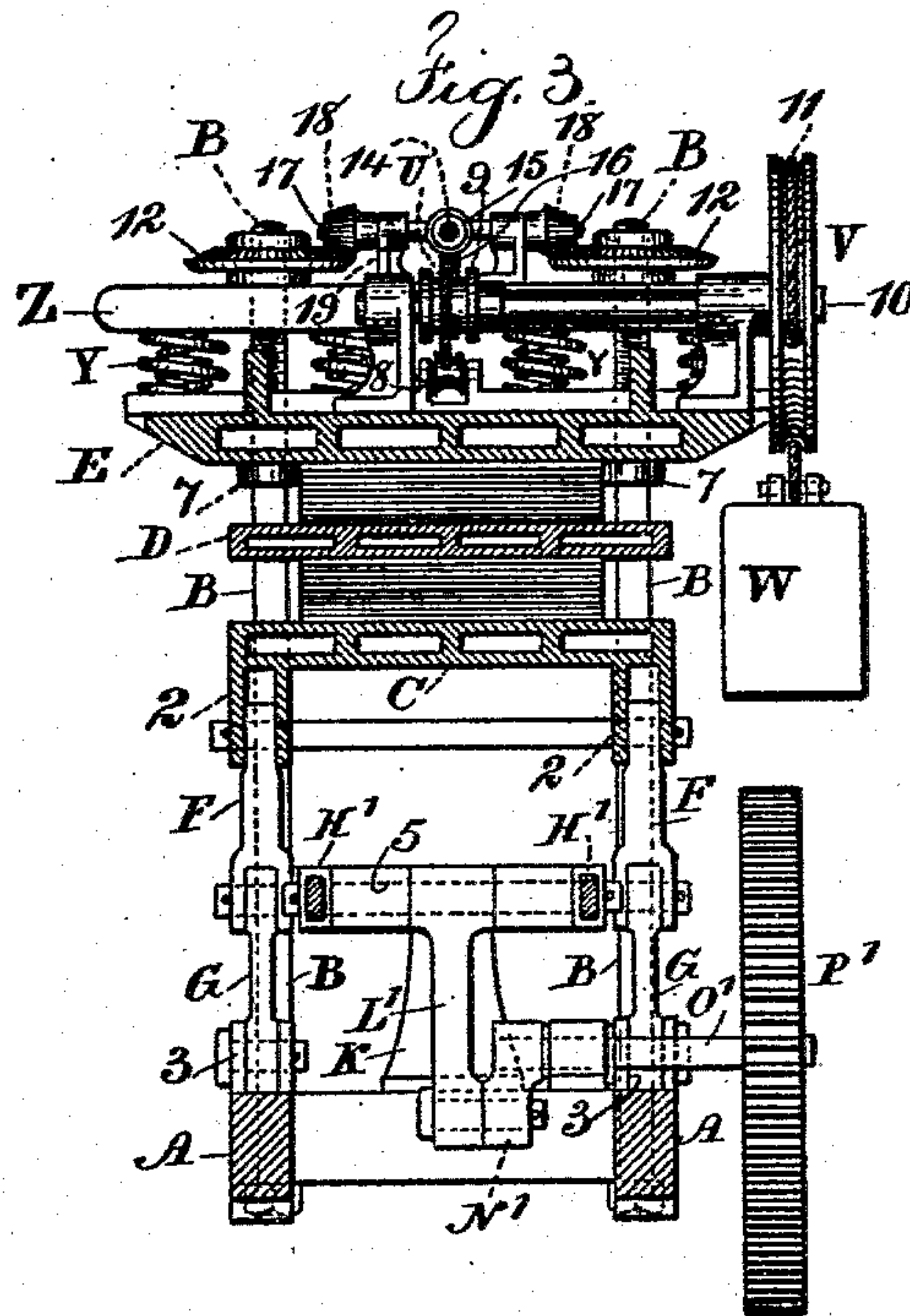
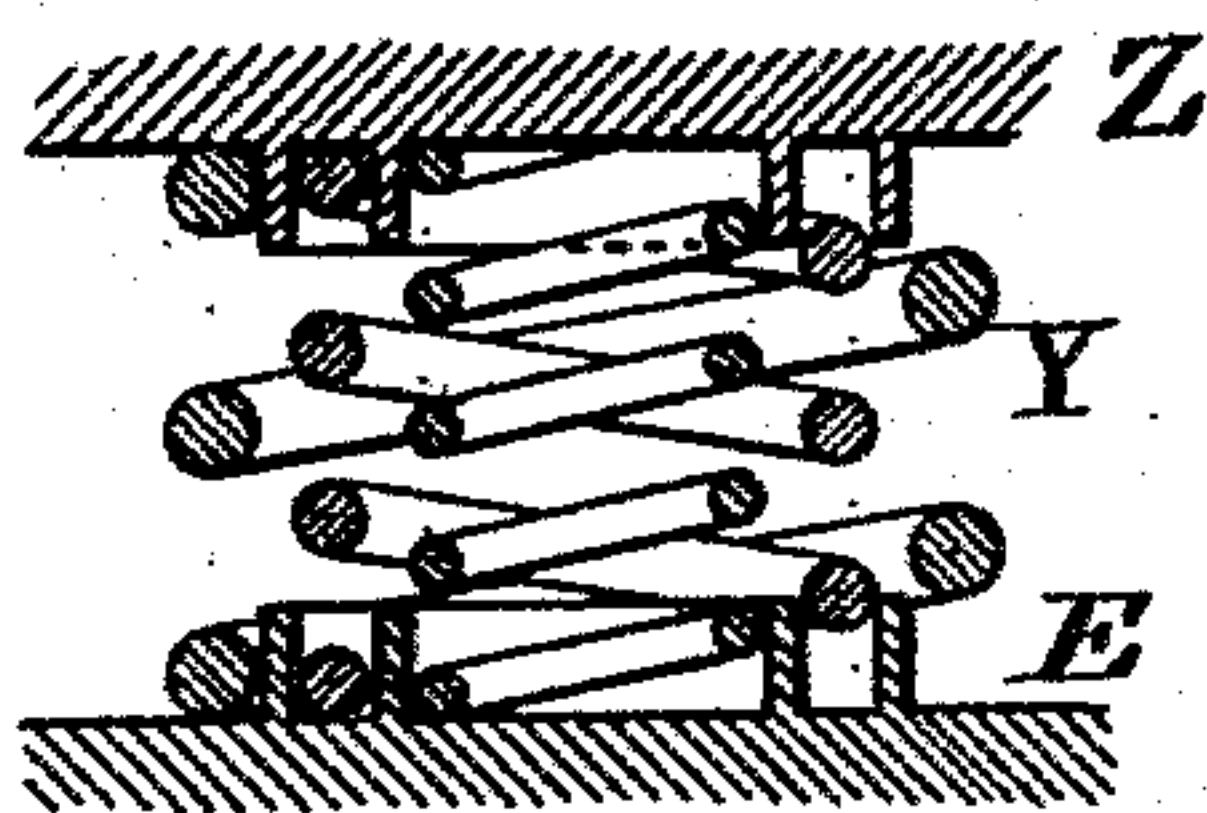


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN J. HAYES, OF FLUSHING, ASSIGNOR TO THE JOHN J. HAYES MACHINE COMPANY, OF BROOKLYN, NEW YORK.

PRESS FOR VENEERS OR OTHER ARTICLES.

SPECIFICATION forming part of Letters Patent No. 516,012, dated March 6, 1894.

Application filed March 10, 1893. Serial No. 465,384. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. HAYES, a citizen of the United States, residing at Flushing, in the county of Queens and State of New York, have invented an Improvement in Presses for Veneers or other Articles, of which the following is a specification.

Presses have been made for the reception of veneers, rubber belts and other articles in which the follower and platen have been heated for acting upon the material that is pressed and curing or drying the same; but with veneers especially it is desirable only to expose them to a regular amount of pressure to prevent the risk of injury, and in consequence a greater or less number of veneers being inserted between the respective parts of the press, it has been usual to employ hydraulic pressure that allowed the followers to remain at a greater or less distance apart according to the thickness of the veneers introduced.

In my present improvements I dispense with the heavy and cumbersome devices employed in hydraulic presses and actuate the follower by toggle mechanism, and I provide yielding supports for the head block and adjustable mechanism for the same, whereby nearly uniform pressure can be given upon the veneers or other articles under the ordinary variations connected with the introduction of veneers into such press; and I provide one or more tables between the follower and the head block, which are heated, so that the veneers are dried with rapidity and while in a straight condition and under pressure sufficient to prevent the warping or bending of such veneers.

In the drawings, Figure 1 is a general plan view of the apparatus. Fig. 2 is an elevation of the same. Fig. 3 is a vertical cross section near the line *xx*, and Fig. 4 is a detached sectional view of one set of springs.

The bed plate A is of suitable size and strength and upon it are the columns or tie bars B that pass vertically through the end portions of the follower C, the table D and head block E; and these parts can be raised or lowered and in so doing they slide upon the columns B. The flanges 2 upon the under side of the follower C strengthen

the same, and to these flanges are connected the upper ends of the toggle bars F F', and the lower bars G G' of the toggles are connected at their lower ends to bearings 3 on the bed plate A. It is advantageous to construct the parts with the upper ends of the toggle bars F F' between the pairs of flanges 2 and to insert the lower ends of the toggle bars G G' between the pairs of vertical lugs forming the bearings 3 and to unite the toggle bars by knuckle joints through which the pins 4 pass. The pairs of toggle bars F F', G G' act vertically to raise the follower C, and there are horizontally acting toggle bars that give motion to the aforesaid pairs of toggle bars F F', G G', and these horizontal toggle bars are composed of links H H' extending from the pins 4 to the pins 5 and to links I I', which links I I' are brought together at the pin 6 which passes through a central support K upon the bed plate A, and there are links L L', hanging from the pins 5 and extending to the cranks N N' upon the horizontal shafts O O', and these shafts O O' are connected together by the gear wheels P P' that are rotated by competent power, preferably by the pinion Q upon the shaft R that is supported in bearings S and driven by a belt to the pulley T.

It will now be understood that when the toggles and cranks are in the positions indicated by dotted lines, the follower C is lowered so that the space between the follower and the head block is increased and the veneers or other articles to be pressed can be introduced into position, and when the pulley T is rotated, the toggles are gradually moved until they assume the horizontal and vertical positions represented in full lines, and at this point the rotation of the parts is suspended until the necessary time has elapsed for effecting the drying of the veneers or the curing or drying of other articles, and when in this position the thrust of the respective parts is so balanced that there is no tendency for the parts to become displaced when the power is disconnected, that is to say, the vertical toggles F F', G G' are in line and perpendicular, and the links H H', I I' are horizontal and in line with each other and reliably hold the vertical toggles in their posi-

tions, and the cranks N N' are at or near their lowest positions and hence are not liable to move by the weight of the parts. This arrangement of toggle mechanism is therefore
 5 very convenient and reliable for actuating the press.

It is advantageous to apply collars 7 around the columns B for supporting the head block E and regulating the position to which it may
 10 descend when the pressure is relieved and the table D is provided with suspending chains or ropes U passing over pulleys 8 to the drum 9 upon the shaft 10, and upon this shaft 10 is a pulley or grooved wheel V from
 15 which the weight W is suspended by a cord or rope 11, hence this weight W tends to rotate the shaft 10 and draw up the table D through the action of the ropes U, and when the weight W is raised, the table D can be easily drawn
 20 down. It is preferable to so proportion the weight W to the table that the table can be easily moved up or down by hand. I have represented the shaft 10 as supported in bearings upon the head block E.

As a resistance to the head block when pressure is applied by the toggles, I make use of springs Y between the upper surface of the head block and the end plates Z Z' which
 30 have holes through which the columns B pass, and the upper ends of these columns are screw-threaded and there are beveled gear wheels 12 the hubs of which form nuts to the screws upon the columns B, and these beveled gear wheels are rotated in either one di-
 35 rection or the other by the hand wheel 13, shaft 14 and worm pinions 15 acting upon the worm wheels 16 upon the cross shafts 17 in bearings 19 which have bevel pinions 18 at
 40 their ends gearing into the beveled wheels 12 of the aforesaid nuts; and it is to be understood that the screw threads upon the columns and in the nuts are to be right and left handed, so that by rotating the hand wheel 13 the respective beveled gear wheels and
 45 nuts will be raised or lowered bodily, and the bearings 29 upon the end plates Z Z' support the shaft 14 and the end plates Z Z' rise and fall with the beveled gear wheels and nuts 12, the springs Y lifting such end plates.

It is advantageous to make use of helical springs, one within the other in groups, as represented, so that the necessary elasticity may be obtained, and by employing a greater
 50 or less number of springs in each group, so the strength of each group of springs may be varied as required, and by setting the springs down more or less, so the pressure exerted upon the veneers or other articles can be varied, the springs yielding to inequalities in
 55 the thickness of the articles acted upon. In instances where the springs have been applied around the screw threaded columns and between the head blocks and the nuts, it has been necessary to disconnect the nuts for
 60 changing the springs to vary the pressure of the springs upon the head block.

By my present improvements the springs

are introduced between the head block and the end plates, so that they can be changed or increased or lessened in number to vary
 70 the pressure applied to the head block, by simply slackening the nuts or the collars sufficiently for slipping out one set of springs and introducing another, or for increasing or lessening the number of the springs made
 75 use of as a resistance for pressing the veneers or similar articles. This is a great convenience, as the pressure often has to be varied according to the character of the material acted upon. 80

The follower C, table D and head block E are represented in Fig. 3 as hollow so as to be adapted to the reception of steam or other fluid at the required temperature for heating up the follower, table and head block to
 85 the desired extent for acting upon the material that is being pressed. These parts may be constructed in any desired manner and supplied with steam or other fluid by flexible pipes or otherwise as heretofore usual
 90 in presses.

I claim as my invention—

1. The combination in a press with the follower and bed plate, of the pairs of toggle blocks between the bed plate and the fol-
 95 lower, horizontal toggle bars between the vertical toggle bars, a central support for such horizontal toggle bars, cranks and connecting rods between the cranks and the centers of the horizontal pairs of toggle bars and
 100 gear wheels for connecting the shafts of the cranks, and mechanism for revolving such gear wheels, substantially as set forth.

2. The combination with the bed plate in a press having upwardly projecting lugs, of
 105 a follower having flanges upon the under side, toggle links connected at their upper ends to the flanges of the follower and at their lower ends to the bearing lugs on the bed plate, a central support upon the bed plate,
 110 horizontal toggle links in pairs extending from the central joints of the vertical toggles, crank arms and their shafts supported on the bed plate, links between the cranks and the center joints of the horizontal tog-
 115 gles, and gear wheels connecting the respective shafts, and a pinion for driving such gear wheels, substantially as set forth.

3. In a press for veneers and other articles, the combination with the follower and
 120 screw threaded columns and head block, of nuts upon such columns, end plates through which the columns pass and against which the nuts act, movable springs introduced between projections on the opposite surfaces of
 125 the end plates and the head block and gearing carried by the end plates and acting upon the nuts and by which such nuts can be rotated simultaneously in one direction or the other, and the springs can be introduced
 130 or removed without taking off the nuts, substantially as set forth.

4. The combination in a press, of a follower, mechanism for moving the same, a bed

5 plate, screw threaded columns connected with the bed plate, a head block, nuts on the screw threaded columns and mechanism for rotating the same in either direction, a table between the follower and the head block, a cross shaft supported by the head block, a wheel and weight for rotating the cross shaft, and connecting ropes or chains extending in opposite directions from the cross shaft to

the table, whereby the ends of the table are moved with uniformity by the action of one weight, substantially as set forth.

Signed by me this 3d day of March, 1893.

JOHN J. HAYES.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.