

*E. B. Bigelow.*  
*Loon.*

N<sup>o</sup> 2,744.

*Patented Aug. 2, 1842.*

*Fig. 1*

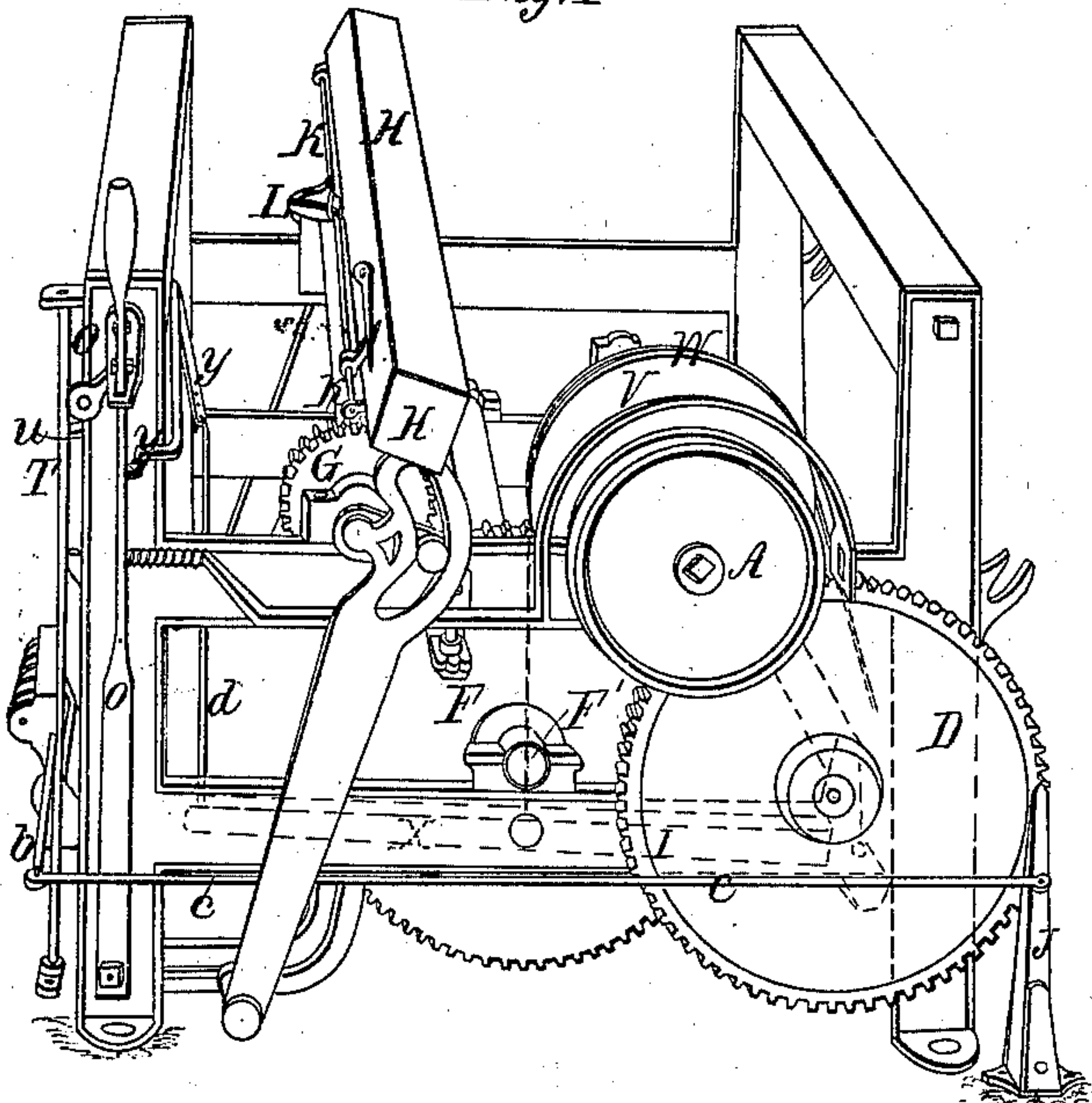
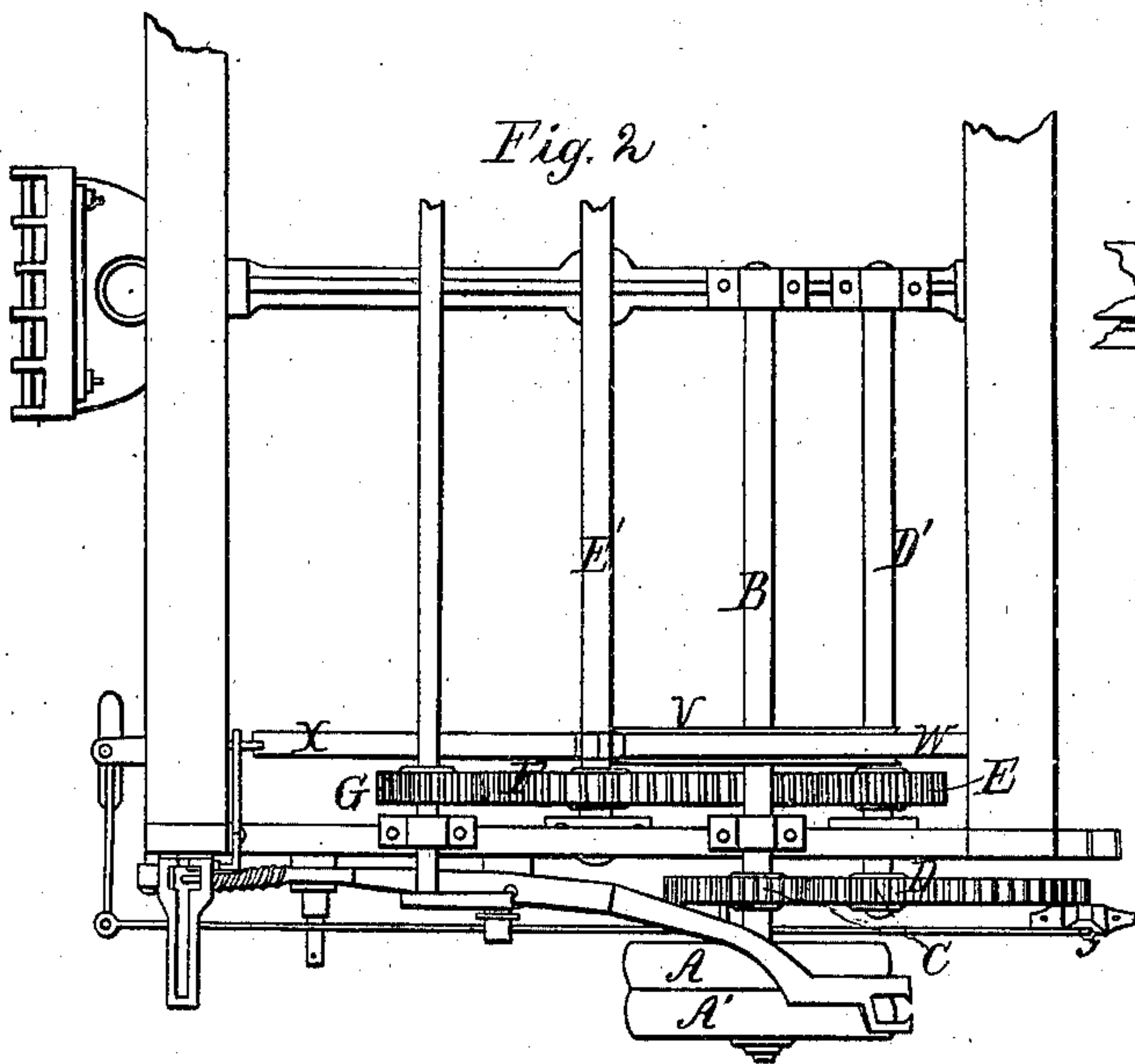


Fig. 2



*Fig. 3*

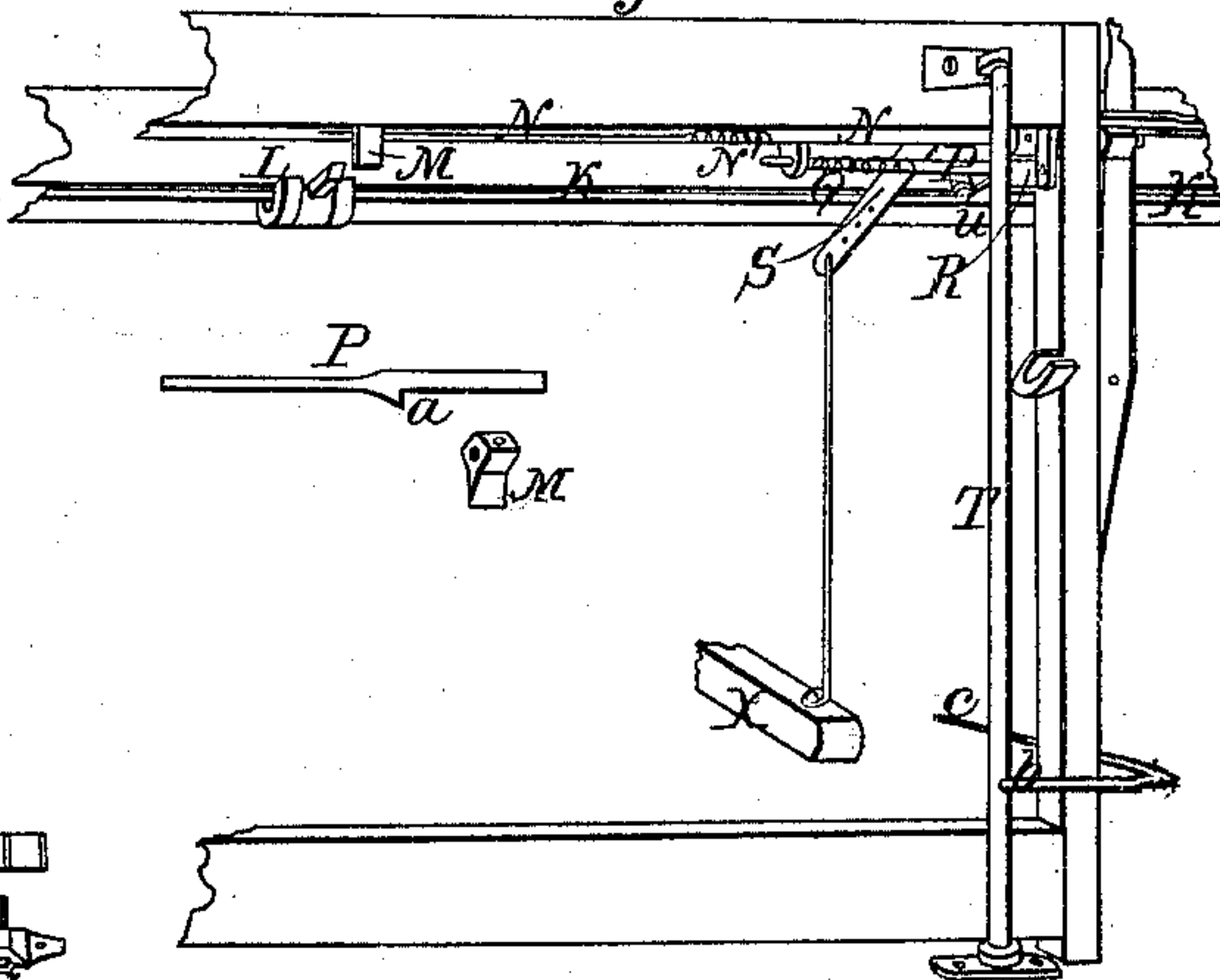
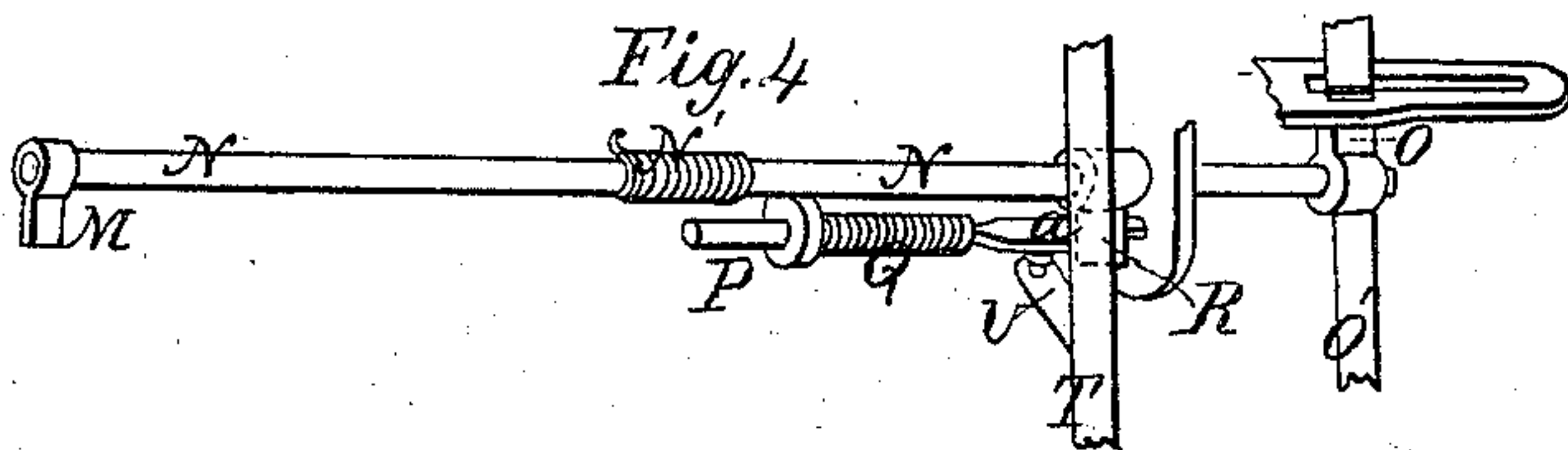


Fig. 4





# UNITED STATES PATENT OFFICE.

ERASTUS B. BIGELOW, OF LANCASTER, MASSACHUSETTS.

POWER-LOOM FOR WEAVING COUNTERPANES, &c.

Specification of Letters Patent No. 2,744, dated August 2, 1842; Antedated May 1, 1842.

*To all whom it may concern:*

Be it known that I, ERASTUS B. BIGELOW, of Lancaster, in the county of Worcester and State of Massachusetts, have invented  
5 certain Improvements in the "Loom for Weaving Counterpanes and Which May Be Applied to the Weaving of other Articles," for which Letters Patent of the United States were granted to me, dated April 24,  
10 1840, which improvements are applicable also to looms in general operated by power and intended for weaving figured fabrics; and I do hereby declare that the following is a full and exact description thereof.

15 The improvements for which I now claim a patent, consist, first, in the manner in which I construct and arrange the toothed gearing so as to obtain the power that is necessary for the lifting of the weights  
20 which are suspended from the harness in looms intended for figured weaving; which weights, with the friction consequent thereon, produce a very considerable resistance, which it is necessary to overcome. Sec-  
25 ondly, in the arrangement of the parts concerned in the stopping of the loom by the manner in which the protecting rod acts thereon. Thirdly, in an apparatus for counteracting the momentum of the loom, when  
30 it is thrown out of gear for changing the spools, or for any other purpose.

In the accompanying drawing, Figure 1, is a perspective view of those parts of the loom which it is necessary to show for the  
35 purpose of illustrating my improvements; the parts thereof not necessary to this illustration being omitted. This view is taken from the end which contains the toothed gearing. Fig. 2, is a top view of this gear-  
40 ing, and of a part of the frame and its appendages.

A, A', are a fast and a loose pulley, which are of the ordinary kind; on the shaft B, of these pulleys there is a small driving wheel  
45 C, which meshes into the large wheel D. The wheel C, may vary in size according to the power to be gained. In the machine from which the drawing is taken it has thirty-two teeth, and the wheel D, one hun-  
50 dred and fifty teeth. On the shaft D', of the wheel D, there is a wheel E, with fifty teeth, which meshes into the wheel F, of a hundred and fifty teeth, which wheel is on the cam shaft E', and drives the wheel G,  
55 upon the crank shaft which carries the cranks by which the lathe H, is operated.

This number of teeth will show the relative proportions, or diameters, of these wheels; this, however, may be varied, in a manner well understood by machinists, without  
60 varying the principle, or mode of action of the combination. It is to be understood, however, that the wheels E, and F, must be of the same size with each other, or of such relative proportions as to bring the arrest-  
65 ing pin I, on the wheel D, which serves to stop the loom, round, so as to be arrested by the stop lever J, at the moment when the lathe arrives at the proper point of its mo-  
70 tion in approaching the breast beam.

The following is the manner of arranging the parts concerned in the stopping of the loom. K, K, Fig. 3, is the protecting rod, on the lathe, which is constructed in the or-  
75 dinary way. In the protecting rod as heretofore used, the bayonet L, acts upon a lever placed under the breast beam, the outer end of which lever causes the machine to be thrown out of gear by the shifting of the band. Instead of acting upon such a  
80 lever, I allow the bayonet L, to come into contact with a projecting piece M, on a rotating shaft, Fig. 3, which shows the underside of the breast beam, and the manner in which I arrange the rotating shaft, and  
85 connect it with other parts; Fig. 4, represents the rotating shaft, and its connecting parts, on a large scale, and without the frame.

N, N, is the rotating shaft, and when the  
90 bayonet on the protecting rod comes into contact with the projecting piece M, on the inner end of this shaft, it will cause it to rotate sufficiently far to allow the bayonet  
95 to pass the piece M, freely, and thus to obviate the injury which would be likely to occur by the sudden arresting of the lathe when under the full momentum of the machine, as is the case in the ordinary loom. The cam O, on the end of this shaft liberates  
100 the shipper spring O', and shifts the band in the usual way. The spiral spring N', is attached to the shaft and to the breast beam in such manner as to cause the shaft to re-  
105 sume its proper position when left free to do so. The additional apparatus for suddenly arresting the motion of the loom when the shuttle is in the warp, and consequently does not enter the shuttle box, consists of a  
110 sliding shaft P, which is forced forward by the spiral spring Q, and is held back by the stop piece R, made fast upon the shaft N,



said stop piece bearing against a shoulder *a*, on *P*; and when this shaft *N*, vibrates, the sliding rod *P*, will consequently be relieved, and carried forward to the requisite distance for causing the vertical shaft *T*, to rotate to a short distance; the shaft being connected to the sliding shaft *P*, by an arm *U*, which receives a pin on the sliding shaft: The rotating of the shaft *T*, causes it to draw in the stop lever *J*, Figs. 1 and 2, so as to stop the wheel *D*, by bringing its upper end into contact with the arresting pin *I*, by means of the arm *b*, and the rod *c*, as will be readily understood by examining the drawing. The pin *I*, being close to the periphery of this wheel, acts with a leverage equal to its radius, and produces the desired effect with perfect safety to the machinery.

The following is a description of the apparatus for counteracting the momentum of the loom when it is thrown out of gear. *V*, is a friction pulley, around the upper half of which passes a friction band *W*. This band is made fast at one end to the lower part of the back of the frame of the loom, and at the other end to a lever *X*, suspended somewhat like a treadle, and operating as a weight to the band; this is shown in dotted lines in Fig. 1. When the lever *X*, is raised, the pulley *V*, will revolve without making any sensible friction on the band; but when it is down, a very powerful friction will be produced by the mere adhesion of the band to the pulley.

The lever *X*, is connected by a rod *d* to the elbow lever *y*, *y*, and when the shipper spring is held in, it keeps the lever *X*, elevated, but when said spring is liberated, the lever *X*, will be allowed to fall, and produce the required friction upon the pulley *V*.

It will be readily perceived that variations may be made in the arrangement of each of the three combinations above described, while the same results may be obtained; I do not intend, therefore, by anything contained in the foregoing description to limit myself to the precise form and combination of parts herein given, but to vary these as I may think expedient, while I attain the same end by analogous means. For example, instead of the rotating shaft for throwing the loom out of gear, a vibrating lever may be employed, which shall allow the bayonet of the protection rod to pass it, while its opposite end might be made to produce the motions now attained by means of the rotating shaft; a mode of operation,

and a result, which I should deem analogous to those described. Instead of the band on the friction pulley, a friction brake may be brought into play, and the result in this case would be nearly the same. But I have given those methods of construction which I think are the most simple, direct, and efficient

Instead of attaching the arresting pin *I*, to the wheel *D*, there may be three such pins attached to, and projecting from, the wheel *F*, at such points near its periphery as will cause the motion of the loom to be arrested at the proper time by the action of a stop lever. The stop lever *J*, must, in this case, be so arranged as to be brought into contact with one of the arresting pins at the proper time, by means analogous to that described, but modified to suit the change of position. Should the relative revolutions of the lathe and cam shafts be altered, the number of arresting pins must be adapted thereto.

What I claim as constituting my improvements on the power loom for weaving counterpanes, and other figured fabrics, and which I desire to secure by Letters Patent, is—

1. The manner in which I have combined the rotating shaft, with the other parts connected with the stopping of the loom; that is to say, I claim the allowing of the bayonet of the protecting rod to pass freely beyond the projecting piece on the rotating rod, or lever, against which it strikes, so as to prevent the sudden arresting of the lathe, or the motion of the looms, by said bayonets, when the shuttle does not arrive at its place within the shuttle box, but remains in the warp.

2. And in this part I likewise claim the combining with the rotating shaft, or lever, the sliding shaft *P*, and its appendages, for acting upon the stop lever, and the suddenly arresting the motion of the loom by said stop lever, at the time, and substantially in the manner herein described.

3. I claim likewise, the combination of the friction pulley and band, with the apparatus for stopping the loom, said friction pulley and band, or other device, being connected with the loom and operating substantially in the manner, and for the purpose, herein set forth.

ERASTUS B. BIGELOW.

Witnesses:

CLEMT. T. COOTE,  
THOS. B. JONES.