

2 Sheets—Sheet 1.

PNEUMATIC LET-OFF MECHANISM FOR LOOMS.

Patented Apr. 18, 1893.

Fig-1.

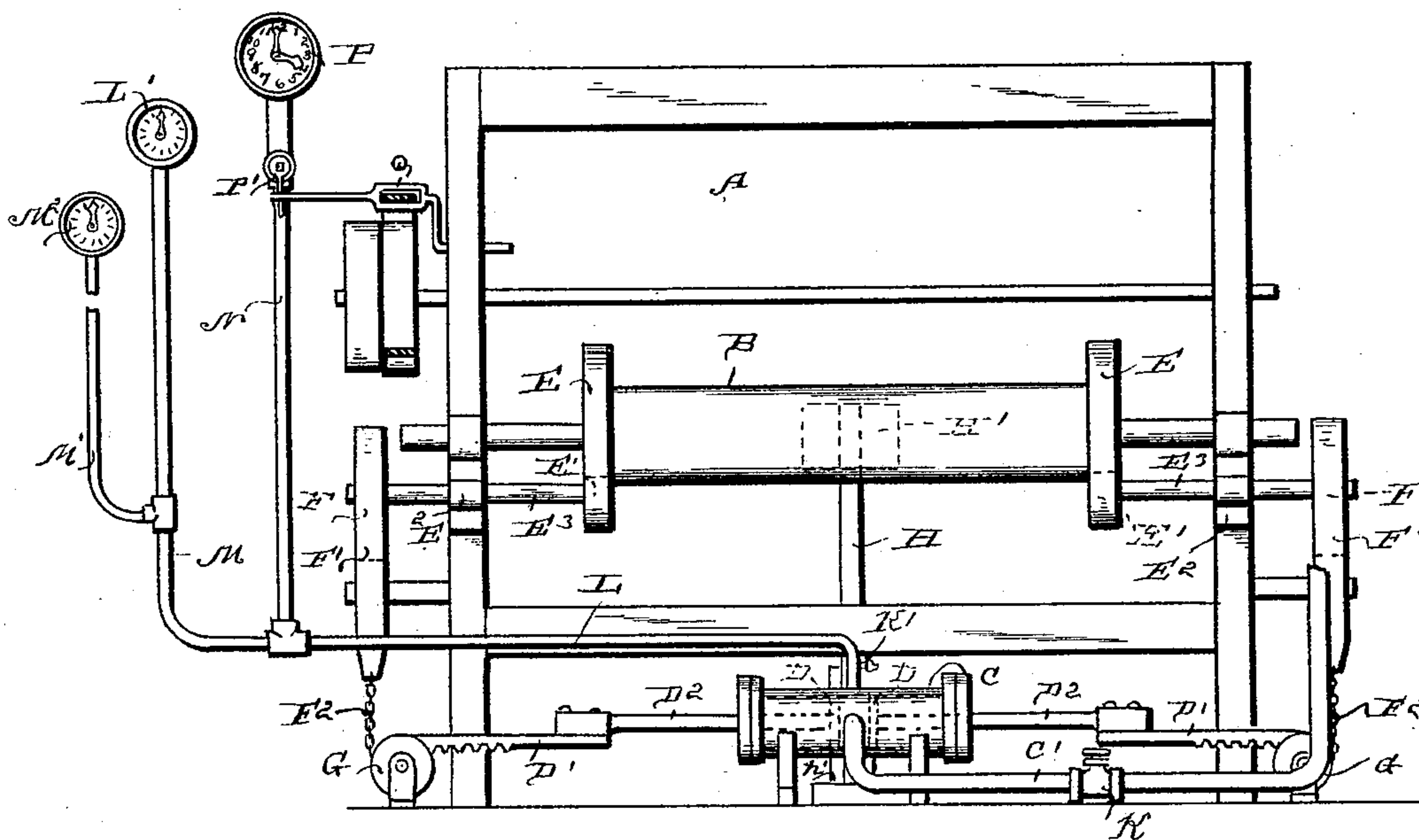


Fig. 2.

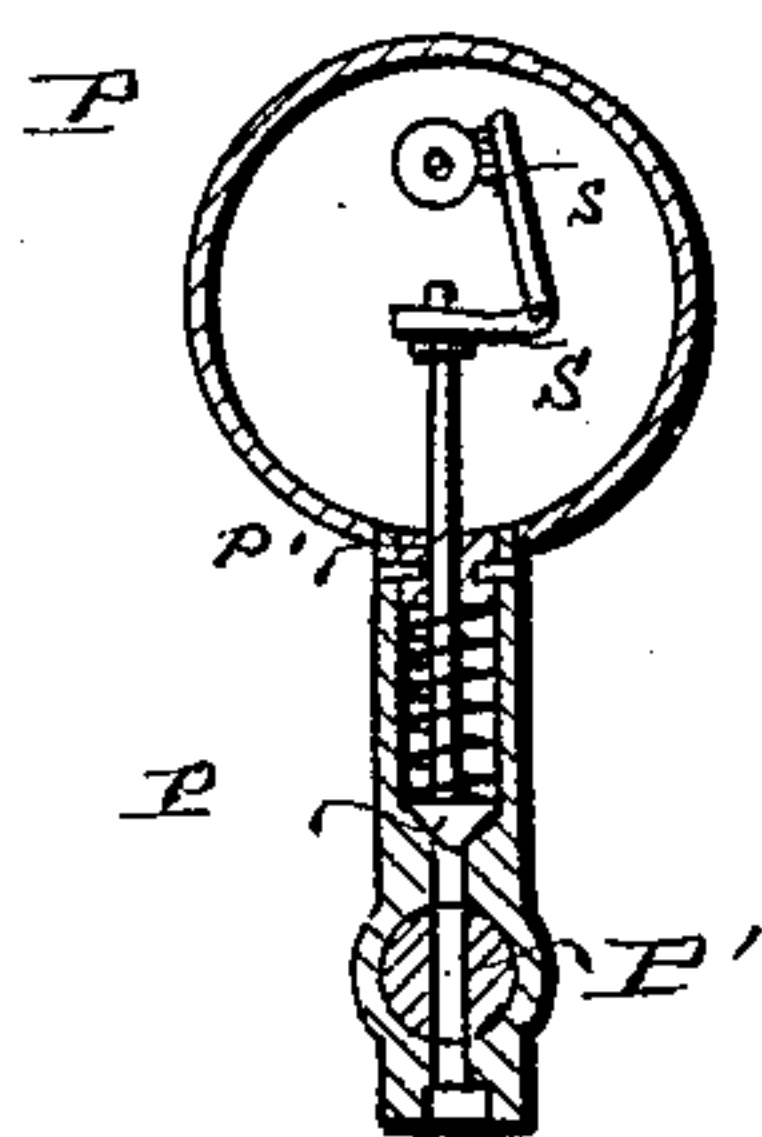
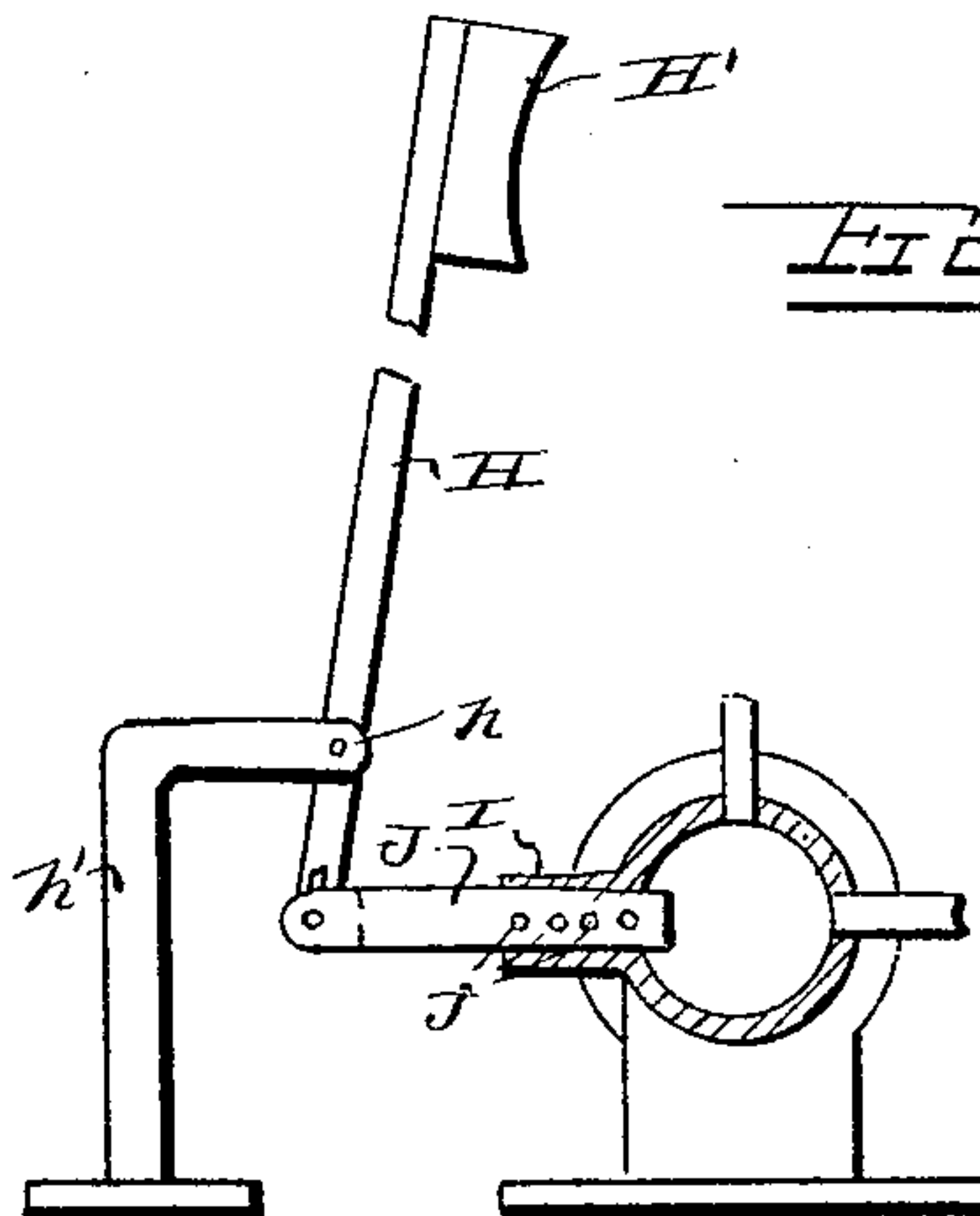


Fig. 3



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2 Sheets—Sheet 2.

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Fig-5

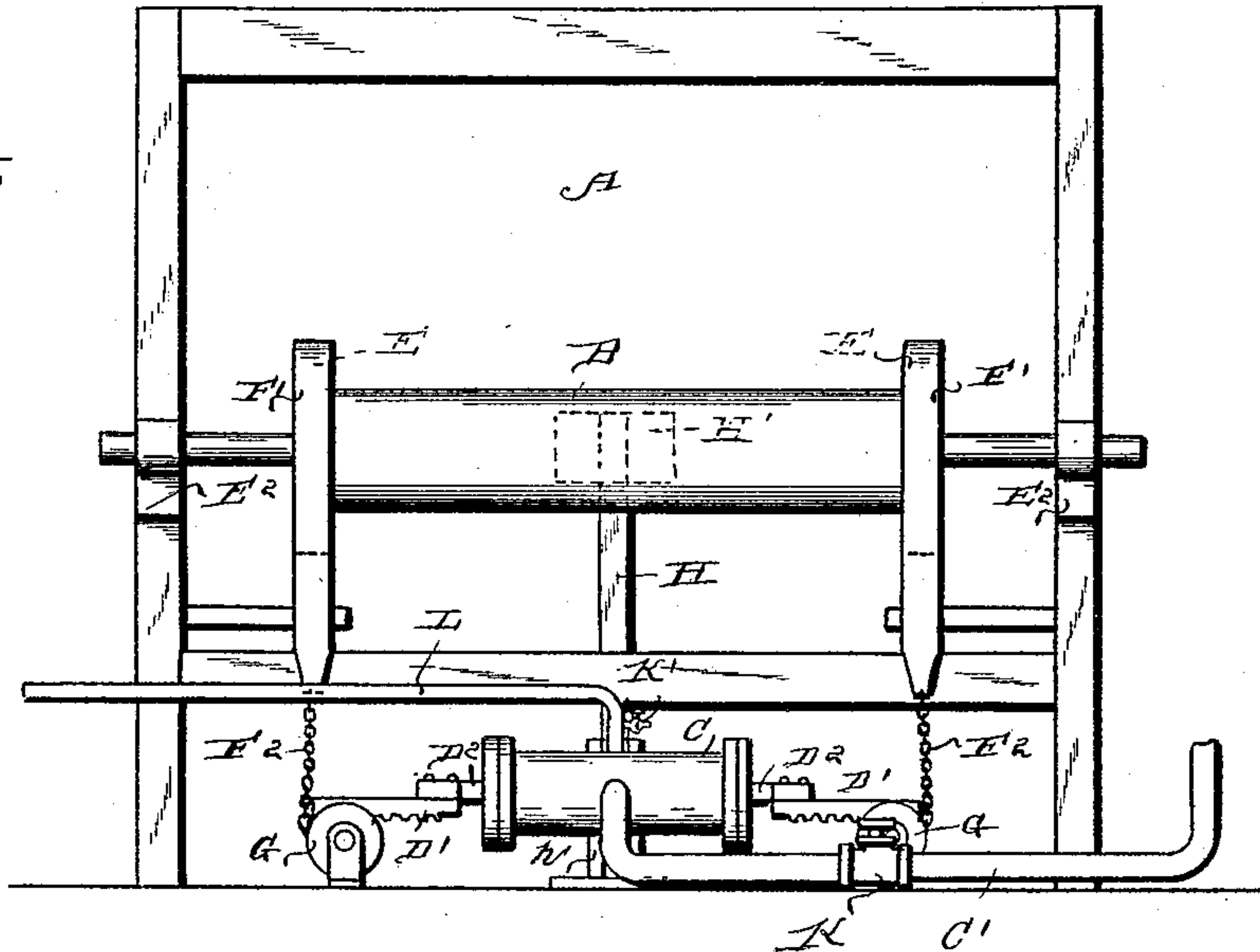


Fig. 7

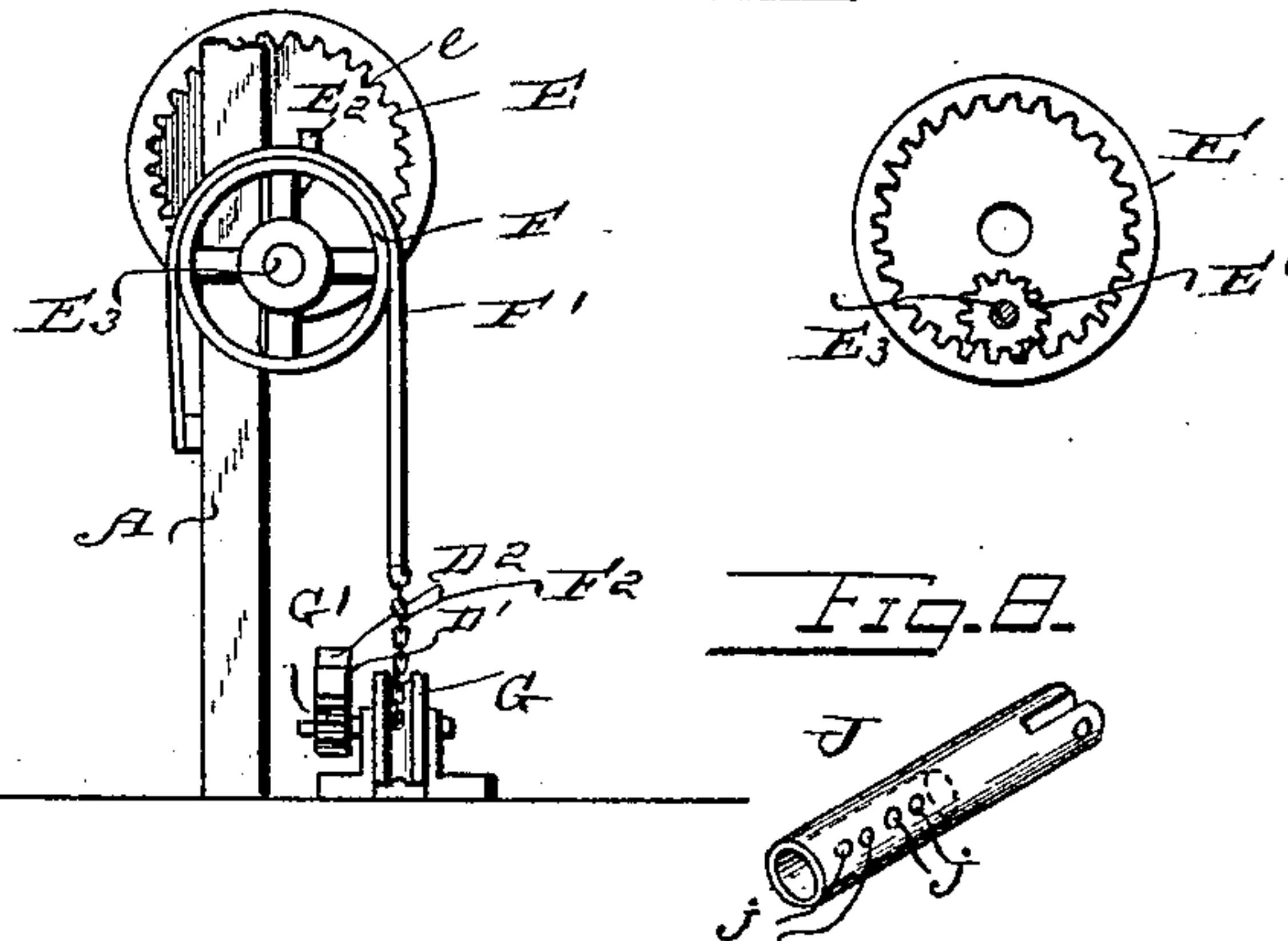


Fig-4-

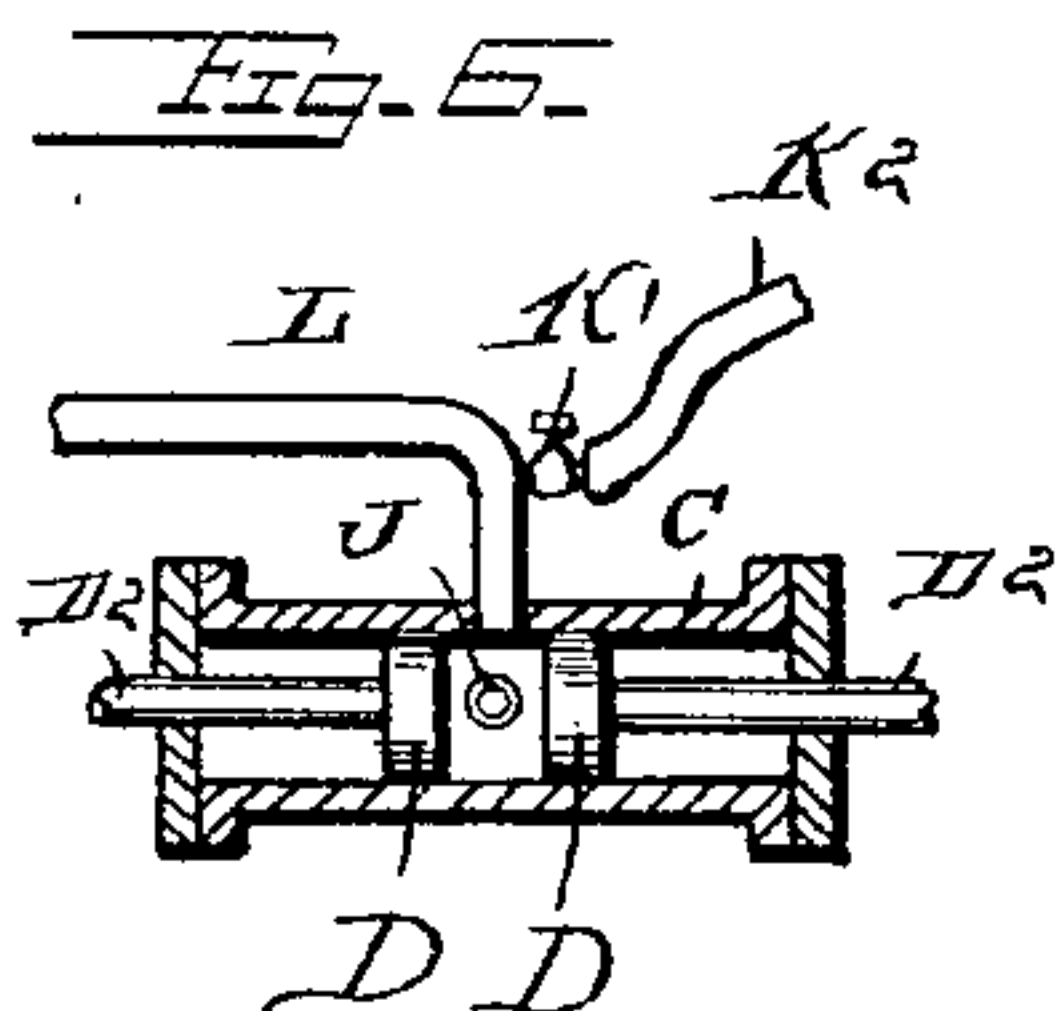
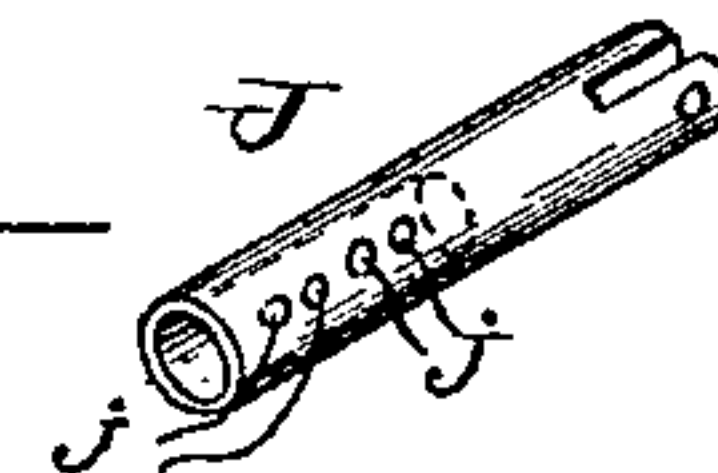


Fig. 8.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANK STINER, OF SPENCER, MASSACHUSETTS.

PNEUMATIC LET-OFF MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 495,847, dated April 18, 1893.

Application filed June 30, 1892. Serial No. 438,537. (No model.)

To all whom it may concern:

Be it known that I, FRANK STINER, a citizen of the United States, and a resident of Spencer, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Pneumatic Let-Off Mechanism for Looms; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a view of a loom having my invention applied thereto. Fig. 2 is a detail sectional view of the clock and valve. Fig. 3 is a detail sectional view of the governor. Fig. 4 is a partial end view of Fig. 1. Fig. 5 is an end view of a loom having a modified form of the invention. Fig. 6 is a detail sectional view of the pressure cylinder and its pistons. Fig. 7 is a detail view showing the gear in connection with the warp beam. Fig. 8 is a detail perspective view of the tube J.

This invention has relation to certain new and useful improvements in automatic let off mechanism for looms, and it consists in the novel construction and combination of parts, all as hereinafter specified, and pointed out in the claims.

Referring to the accompanying drawings, the letter A designates the frame of the loom, and B the warp beam thereof.

C designates a cylinder or chamber, which is affixed to the floor, underneath the loom or in other suitable position, and which is connected at its central portion by a pipe C', with a source of pressure, which may be either hydraulic, pneumatic or steam. Working in this cylinder are two pistons D, D, the rods D² of which project through opposite ends of the cylinder, and carry racks D'.

On the ends of the warp beam B, are secured wheels E, having internal gear e, and running in the teeth of each of these wheels is a small pinion E', carried by a short shaft E³, having bearings in a bracket E² secured to the side frames. On the opposite end of each of these short shafts is a friction wheel F, around the periphery of which is a friction strap F', connected by a chain F² to a grooved

wheel G having a gear G' operated upon by one of the racks D'.

It will be apparent that when pressure is admitted to the cylinder, the pistons will be forced toward the respective heads thereof, thereby actuating the gears G' and grooved wheels G, causing a tension on the friction stamps, which will be communicated to the warp beam through the connection above described; also that the degree of tension will depend upon the amount of the pressure in the cylinder. I may if desired, dispense with the internal gears E', shafts E³, and wheels F, and run the friction straps direct from the grooved wheels G to the beam heads, as shown in Fig. 5. For the purpose of automatically regulating the pressure in the cylinder, to keep the proper tension on the warp—I provide the devices now to be described.

H represents a lever, fulcrumed at h in a bracket h', affixed to the floor, or other suitable support. On the upper end of this lever is a plate H' concaved to fit the beam and warp, against which said plate rests by the action of gravity.

I is a hollow tube connecting with the cylinder C, and J is a second short tube arranged to work as a plunger inside of tube I. The tube J, as shown is provided with a series of perforations j, and is carried by the short arm of the lever H. As the warp continues to unwind from the beam, and the diameter of beam and warp decreases, and consequently less tension is required, the plate H', by reason of the fact that it follows the beam, will have moved the lever H, so that a part of the perforated portion of the tube J will be drawn out of the tube I, permitting escape of pressure, which is thereby reduced in the cylinder. The smaller becomes the diameter of the beam, the more pressure is allowed to escape.

K is a cock for the purpose of governing the admission of pressure to the cylinder.

K' is an escape cock, to take off any excess of pressure. When air is employed, a flexible tube K² may be connected to this cock for the purpose of dusting off the loom.

L is a pipe connected to the escape valve connection, and which carries on an arm M a gage L', which indicates the pressure in the cylinder, for the information of the operator. A second arm M' of this pipe may be led to a

distance or to an adjoining room, and connected with a similar gage M². To a third arm N of this pipe is connected a clock P. P' is a valve in the pipe N, which valve governs the operation of the clock. This may be effected in the following manner:—A small plunger p operated by the pressure, moves a rod p', which is connected thereto, and thereby a bell crank lever S, carrying a brush-like device s. When the valve P' is opened, the brush s will be held out of contact with the balance wheel, and the clock will go. When however, said valve is closed, the brush contacts with the balance wheel, and stops the clock. The valve P' is operated by a connection Q with the shifting lever of the driving belt, as shown, so that when the loom is stopped the valve will be closed. It will be apparent therefore that the clock will be running only when the loom is in operation, and that the difference between standard time, and the time indicated by this clock will represent the time lost by the non-operation of the loom.

25 Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. The herein described let-off mechanism for looms, comprising essentially a pressure cylinder, pistons working in said cylinder, the piston rods and their racks, the gears operated by said racks, friction straps connected to said gears, the warp beam, means whereby said straps are caused to act upon

said beam, and a device arranged to contact with said beam and control the pressure in said cylinder, substantially as specified. 35

2. In a loom, the combination with the warp beam having the internal gears on its ends, the pinions running in said gears, their shafts and wheels, of the friction straps on the periphery of said wheels, the grooved wheels to which said straps are connected, their gear, the pressure cylinder, the pistons therein, and the racks connected to the rods of said pistons and operating said gear, substantially as specified. 40 45

3. In a loom, the combination with the piston cylinder, its pistons, the friction devices operated by said pistons, the warp beam of the device for automatically controlling the pressure in said cylinder, said device comprising the lever having contact with the warp beam, and the perforated pipe carried by said lever and sliding in a tube leading from said cylinder, substantially as specified. 50 55

4. The combination with the warp beam the cylinder, and the tube leading therefrom, of the escape pipe sliding in said tube, and the lever carrying said pipe, said lever having a contact with said warp beam, substantially as specified. 60

In testimony whereof I affix my signature in presence of two witnesses.

FRANK STINER.

Witnesses:

H. F. SHAW,

GEO. S. GREEN.