

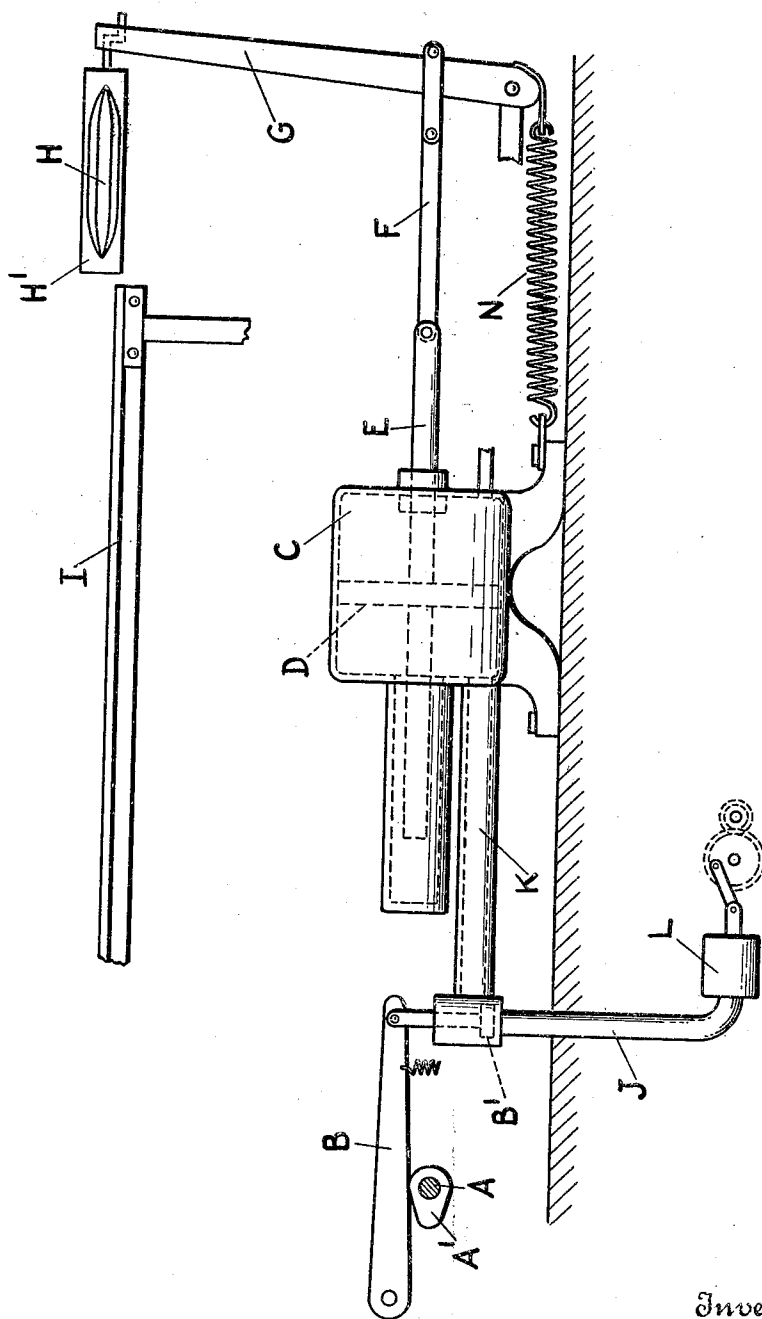
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LOOM

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LOOM

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For a detailed description of the present form of my invention, reference may be had to the following specification and to the accompanying drawing forming a part thereof. In said drawing the figure is a side elevation of a shuttle-operating device constructed in accordance with the invention.

My invention relates to the means for reciprocating the shuttle of a loom, whereby greater power may be applied thereto to give the shuttle a wider and swifter range of play than heretofore, and so provide for larger, wider and speedier looms. By this invention I have overcome the chief trouble heretofore experienced in the construction and operation of wide, and hitherto, very heavy looms, such as those employed for carpets, cotton duck, felt, etc. By my invention these looms may be from 300 to 700 inches in width and yet of much lighter and, in other respects, smaller and simpler construction, than those heretofore required for work of such dimensions. My novel loom also involves smaller foundations because of the diminished degree of shock and vibration which accompanies its increase in the force and power applied to the shuttle-throw.

In brief, I operate the shuttle of the loom separately and independently of the chain of mechanism that works the lay and head mechanism, but still in related synchronism therewith. By this feature and the simplification resulting therefrom, I am able to work the pick motion with but twenty-five percent of the total power applied to the loom, whereas it has heretofore required as high as seventy-five percent of the total. I preferably employ for such separate operation of the pick motion a pneumatic cylinder acting directly on the picker stick but controlled in time by the strokes of the remainder of the machine.

In the accompanying drawing, the figure is a diagrammatic side elevation illustrating the invention.

Referring to the drawing, I represents the lay of a loom along which a shuttle H is to be reciprocated. This lay can be of any convenient construction and action appropriate to the shuttle. The bobbin H is shown as

contained in a conventional bobbin carrier H¹, said bobbin carrier being operated by a picker-stick G. Instead, however, of actuating said picker-stick from the mechanical chain or system of gearing that works the remainder of the loom, I provide a special actuation thereof by means of a pneumatic cylinder C containing a piston D and piston-rod E, which has a slide bearing in both ends of the cylinder C. The right-hand end of the piston-rod is linked to the picker-stick G by the toggle-point sweep-stick F. The suction pipe is provided with a vertical section J which is connected at its lower end to an air pump L which maintains in said pipe an approximate vacuum. The valve B¹ is normally positioned to close the upper end of pipe J and to open the left end of cylinder C to the atmosphere through horizontal pipe K of the suction pipe. The valve B¹ is mounted on the end of a lever B which rides on a shaft A, which is one of the operating shafts for the remainder of the loom and lies along one side thereof. On shaft A is a cam A¹ which, at the proper moment, lifts lever B and the valve B¹, said valve then connecting cylinder C to the suction of pump L and closing the upper end of pipe J. Cylinder C is instantly exhausted on the left of piston D while the atmospheric pressure on the right of that piston drives it instantly to the left, thereby actuating the picker-stick G and throwing the shuttle H across the loom. Conversely, when cam A¹ passes out from under lever B, the valve B¹ drops closing suction pipe J and opening pipe K to the atmosphere. Thereupon the atmospheric pressure, together with retracting spring N throws the picker-stick G and the complementary bobbin carrier, into which the bobbin has been thrown, back towards the right, restoring the shuttle to its position shown in the drawing.

This shuttle-throwing apparatus is separate from the main loom-operating gearing, having only the time-controlling cam A¹ on the shaft A of said gearing, the function of which is only to work valve B¹ and its control is adjustable according to its position

on the circumference of shaft A. The machine as above-described is relieved of the sledge-hammer blows now delivered by the picker-ball on the picker-ball shoe to throw the shuttle, as in the usual loom of the present time. A large percentage of the vibration and noise is eliminated and the heavy structure previously needed to withstand such vibration is not necessary in my novel loom. Its extreme simplicity is obvious, while the practical width is only limited by the size of cylinder and piping needed to allow for the desired quantity of air to be displaced in the proper time. The lighter construction of the loom and foundations requires less space for a loom of greater capacity. My pneumatic device is noiseless as well as simple and has other great advantages over the looms of the of the prior art.

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

1. In a loom, picker mechanism comprising a pivotally mounted picker stick, means normally acting to move the picker stick in one direction, a cylinder, a reciprocatory piston mounted in said cylinder, means connecting the piston with the picker stick, means for exhausting air from the cylinder on one side of the piston, so as to move the picker stick in the other direction, and means for alternately connecting said cylinder with said exhausting means and to the atmosphere.

2. In a loom, picker mechanism comprising a pivotally mounted picker stick, a cylinder, a piston therein, means for periodically exhausting said cylinder at one side of the piston, so as to move the picker in one direction, and other means located exteriorly of the cylinder for moving the picker stick in the opposite direction.

3. In a loom, picker mechanism comprising a pivotally mounted picker stick, a cylinder, a piston therein, normally exposed to atmospheric pressure on one side, means for periodically and alternately exposing the other side of the piston to suction and to the atmosphere so as to control movements of the picker stick, and means normally acting to move the picker stick in one direction.

4. In a loom, picker mechanism comprising a pivotally mounted picker stick, a cylinder, a piston therein connected with said picker stick, a suction pipe connected with one end of said piston and having an opening to the atmosphere, means for creating a suction in said pipe, a periodically operated valve alternately connecting said suction pipe with said suction means and the atmosphere, and means normally acting on the picker stick to move it in one direction.

5. In a loom, picker mechanism comprising a pivotally mounted picker stick, a cylinder, a piston therein connected with said picker stick, a suction pipe connected with one end of said piston and having an opening to the

atmosphere, means for creating a suction in said pipe, a valve controlling communication between the suction pipe and the atmosphere, an operating member connected to the valve, means for periodically actuating said operating member so as to alternately operate the valve to place the cylinder in communication with the atmosphere or the suction means, and means normally acting to move the picker stick in one direction.

6. In a loom, picker mechanism comprising a pivotally mounted picker stick, means normally acting to move it in one direction, a cylinder, a piston mounted in said cylinder and connected with said picker stick, a suction pipe connected with one end of the cylinder and provided with two branches, a valve chamber at the intersection of the branches of the suction pipe and open to the atmosphere, means for applying a suction to said suction pipe, a valve in said chamber controlling communication between the suction pipe and the atmosphere, and means for periodically actuating said valve.

7. In a loom, picker mechanism comprising a pivotally mounted picker stick, means normally acting to move it in one direction, a pneumatic motor connected with said picker stick, a suction pipe leading from said motor and having an opening to the atmosphere, means normally acting to maintain a constant suction within said pipe, a valve controlling the opening to the atmosphere, and means for periodically operating said valve.

8. In a loom, picker mechanism comprising a pivotally mounted picker stick, means normally acting to move it in one direction, a pneumatic motor connected with said picker stick, said motor having one side of its piston normally exposed to atmospheric pressure and the other side exposed alternately to atmospheric and sub-atmospheric pressure, a cam shaft, and means operated by said cam shaft for controlling the last mentioned alternate exposure to atmospheric and sub-atmospheric pressure.

9. In a loom, picker mechanism comprising a pivotally mounted picker stick, means normally acting to move the picker stick in one direction, a cylinder, a piston therein, a toggle member connecting said piston and said picker stick, means for exhausting said cylinder at one side of the piston so as to move the picker stick in opposition to the first mentioned moving means, and means for periodically connecting said cylinder with said exhausting means.

10. In a loom, picker mechanism comprising a pivotally mounted picker stick, a spring acting to yieldably move the picker stick in one direction, a cylinder, a reciprocatory piston mounted in said cylinder, a piston rod having a slide bearing in both ends of the cylinder, a toggle member connecting said piston and said picker stick, a suction pipe

formed of two suctions one of which is connected directly with the cylinder, an air exhausting mechanism connected to the other branch of the suction pipe, a valve casing connecting said branches of the suction pipe and open to the atmosphere, a valve in said valve casing controlling communication of the suction pipe to the atmosphere, and means for periodically operating said valve.

Signed at Albany, county of Albany, State of New York.

EZEKIEL J. WILSON.