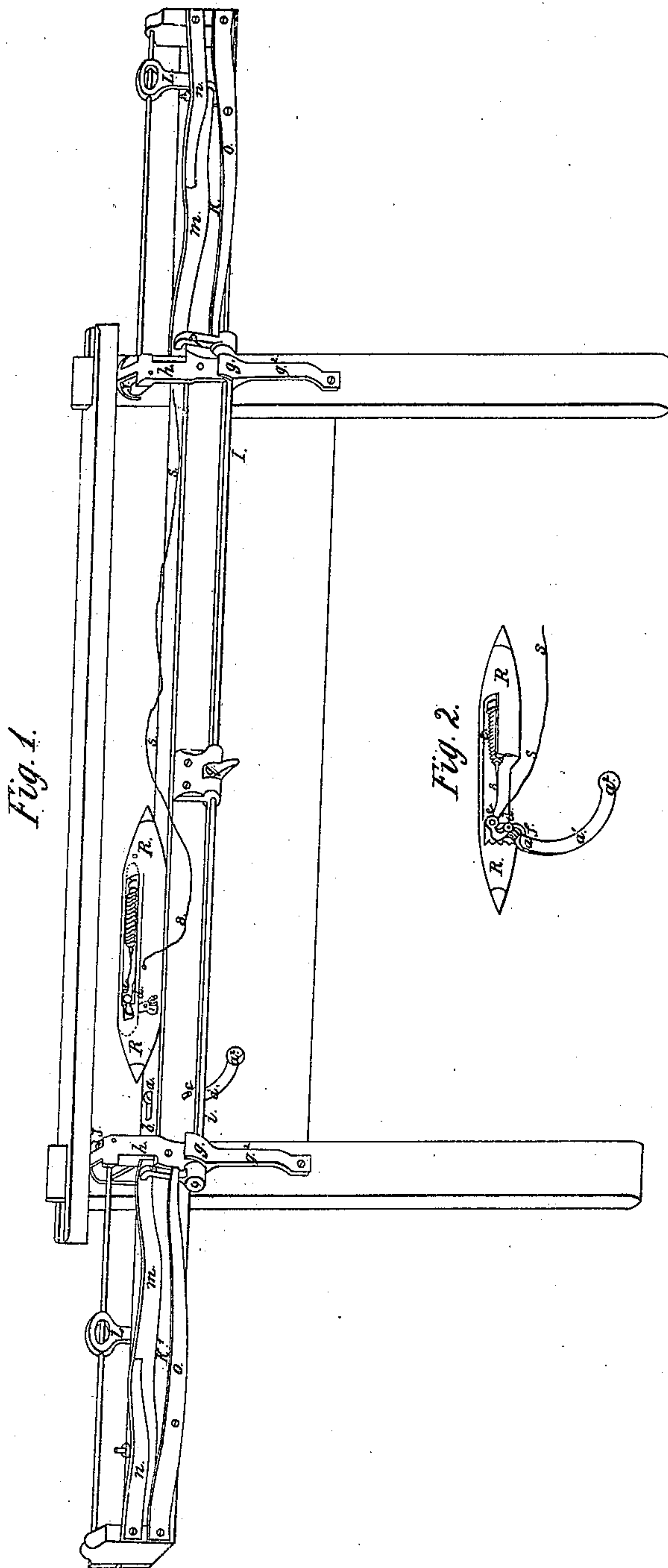


*Pilson & Heath.*  
*Stop Motion.*

N<sup>o</sup> 14, 971.

*Patented May 27, 1856.*



# UNITED STATES PATENT OFFICE.

ROBERT PILSON AND STEPHEN P. HEATH, OF LAUREL, MARYLAND.

## LOOM.

Specification of Letters Patent No. 14,971, dated May 27, 1856.

*To all whom it may concern:*

Be it known that we, ROBERT PILSON and STEPHEN P. HEATH, of Laurel, in the county of Prince Georges and State of Maryland, have invented and made certain new and useful Improvements in Power-Looms, which we term the "Self-Acting Check or Filling Stop-Motion;" and we do hereby declare that the following is a full, clear, and exact description of the same in construction, application, and the mode of operating the same, reference being had to the accompanying drawing, making a part of this specification, and in which—

Figure 1, is a diagram of the lathe part of the loom, and to which the said improvements are attached. Fig. 2, is a view of the shuttle showing also, a portion of the said improvements combined.

The construction of our improvements consists, in using the ordinary power loom, in any of its various forms, to the lathe part of which are attached the improvements; consisting first of a device which we may term a balance dog, a gravitating catch  $a$ , formed of a rod or curved bar of metal  $a$ ,  $a^1$ , with a ball or weighted end  $a^2$ , Fig. 1. This device being of suitable size and weight, is inserted through a slot or mortise  $b$  formed in the race board of the loom, and by means of a pin, or axis  $c$  this gravitating catch hangs pendant through the mortise, as shown in Fig. 1. In conjunction with this gravitating catch, is employed what we term a balance drop, or filling stirrup,  $d$ , Figs. 1, 2, which device is inserted or arranged within the shuttle, as shown, swung or hung on an axis. The upper part of this device  $d$ , is in shape of an eye or ring  $e$ , and the lower part, slightly bent, as at  $f$ , Fig. 2, which figure shows the position, or conjunction of the balance drop, and the gravitating catch, used together as will hereafter be more fully set forth.

In the construction of looms made by us, we employ and attach to the lathe part thereof a mouth piece formed with a bracket fastening to which is formed a hook or rod rest bearing  $g$ ,  $g$ . This bracket shaped mouth piece,  $g^2$ ,  $g^2$ ,  $h$ ,  $h$ , answers the two-fold purpose of mouthpiece, and as rest or bearing for the stop rod  $i$ ,  $i$ , and thus doing away with the usual separate bearing, or rests, used ordinarily in looms as supports for the stop-rod. This bracket mouthpiece,

has also elastic friction rollers  $J$ ,  $J$ , employed to press against the shuttle as it passes into and from each shuttle box, and thus greatly tending to prevent the shuttle from flying or falling off the race board.

In connection with our improvements we employ the usual shuttle boxes, pickers, and springs, stop rod and fingers, as seen in Fig. 1,  $K$ ,  $K$ ,  $L$ ,  $L$ ,  $m$ ,  $m$ ,  $n$ ,  $n$ ,  $o$ ,  $o$ ,  $P$ ,  $P$ ,  $q$ .

The operation of our improvements is as follows, viz: In weaving as is well known, the filling or woof, exhausts, runs out, and frequently breaks, and if not guarded effectually against, invariably causes great imperfection, and irregular texture, a great inequality in the woven fabric, and it often occurs too, that these causes derange and injure at times the mechanism of the loom, and all of which are greatly to be guarded against and all of which liability, or injurious tendencies, we have most effectually overcome in our improvements, operating as they do in the following manner. The loom being set in motion, the lathe vibrates backward and forward, and while this is going on, the shuttle with its bobbin of filling is passing, right and left across the loom and between the chain or warp letting off the filling in the well known manner. By reference to Fig. 1, the shuttle  $R$ ,  $R$ , is shown as passing into the shuttle box  $K^1$  and in this movement, the thread filling  $s$ ,  $s$ ,  $s$  is being taken off the bobbin  $t$ , and so long as the filling has the least tension upon it, the eye  $e$ , of the balance drop is kept down nearly horizontal toward the bobbin, and thus the lower part or the toe  $f$ , is kept from striking or tripping against the end  $a$  of the gravitating catch,  $a^1$ ,  $a^2$  as the shuttle passes into the box  $K^1$ , and as the shuttle passes into the box, it strikes against the swell spring  $m$ , which pressing outward against the finger  $P$  of the stop rod,  $I$ ,  $I$ , causes the rod to turn outward, thereby admitting of the horizontal finger,  $g$  to pass below the breast beam of the loom and the frog lever, attached below to the breast beam, and thus so long as the filling is not exhausted or broken the shuttle will freely slide over the gravitating catch, on balance dog  $a$ ,  $a^1$ ,  $a^2$ , and as the momentum of the shuttle is not disturbed or retarded, the shuttle readily acts against the swell springs  $m$ ,  $m$ , causing them to perform their required office. But the moment the filling



runs out, or breaks, the balance drop or stirrup, drops down, when in so doing its toe part *f*, trips against the gravitating catch or dog *a*, *a*, *a*<sup>2</sup>, when the momentum or motion of the shuttle is checked, which effectually prevents the shuttle from completely passing into the box *K*<sup>1</sup>, and which also counteracts the pressure of the shuttle against the swell spring *m*, by which means no action is imparted to the stop rod *i*, *i*, whereby the horizontal finger *g*, instead of passing below the frog lever device attached below the breast beam, strikes flush against the frog, whereby the band of the driving pulley is instantly thrown off or shifted, which readily checks or stops the operating of the loom, when the filling can be readily renewed.

Owing to the peculiar principle of gravity pertaining to our stop motion devices, it is obvious that any degree of tension, greater or less attending the use of coarser, or finer filling, or no matter at what degree of speed the lathe and shuttle are moving, still the action or mechanical functions of the devices are unerring; and the inherent operating principle of the devices is of such a character, that there is a perfect adaptation or accommodation of their action to the amount of resistance, or degree of tension imparted by the filling; consequently the same devices, or one, and the same shuttle are susceptible of being used on different looms, and also, as well in coarse filling as in fine filling.

From most successful experiments with our improvements (which can be attached with facility to any power loom in present use in factories,) we find that in no one instance have the improvements failed to operate well and with perfect satisfaction and certainty, and no matter at what part of the lathe the filling may exhaust, or break, the shuttle stops before passing twice across the race board. To all practical weavers or factors, the great utility and marked important features of our improvements are evident, and the necessity of some simple, and durable device for check or "stop filling" motion has long been felt; for it most frequently occurs, that in the "fork" stop motion at present used on power looms, that the shuttle flies out, and striking against

the "forks" breaks them and thus materially deranges the mechanism of the loom. 55

It is useless in a specification to dwell upon the merits of our improvements, and therefore, have merely described them in as brief a manner as possible. The advantages and object of using a bracket shaped mouth piece, formed with a hook rest *g*, *g*, are that one individual device is made to answer several purposes, besides enabling the employment of a shorter stop rod, thus diminishing the cost in the dispensing with several distinct devices, and by which also a most important result, is accomplished, in completely counteracting the invariable tendency, separate, distinct hooks or rests ordinarily used, have in becoming loosened or detached, and deranged, caused by the concussion or jarring of the lathe of the loom. Such objections and injurious results, can not occur in the employment of the bracket formed mouth piece as described, the better enables the improved application in combination of the swell springs *m*, *m*, and the fingers *P*, *P*. Again, too, it will be seen, that the improved mouth piece *h* with the friction pressure rollers *J*, *J*, perform a most essential service by keeping the shuttle always steady in its movements back and forth across the race plate of the lathe. It may be well enough also to remark that the shuttles in use with the ordinary power loom can be readily altered to answer in the application of our improvement, by simply mortising out a place or space sufficient to admit the insertion of the filling stirrup or balance drop device *d*, *e*, *f*, Figs. 1, 2. 90

Having described the construction, application and operation of our improvement, what we claim as new and original with us, and desire to secure by Letters Patent of the United States is— 95

We claim the combination of a balance catch in the shuttle, arranged substantially as described, in combination with the balance weight in the lathe acting from gravity also for the purpose described. 100

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Witnesses:

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