No. 608,937. Patented Aug. 9, 1898.

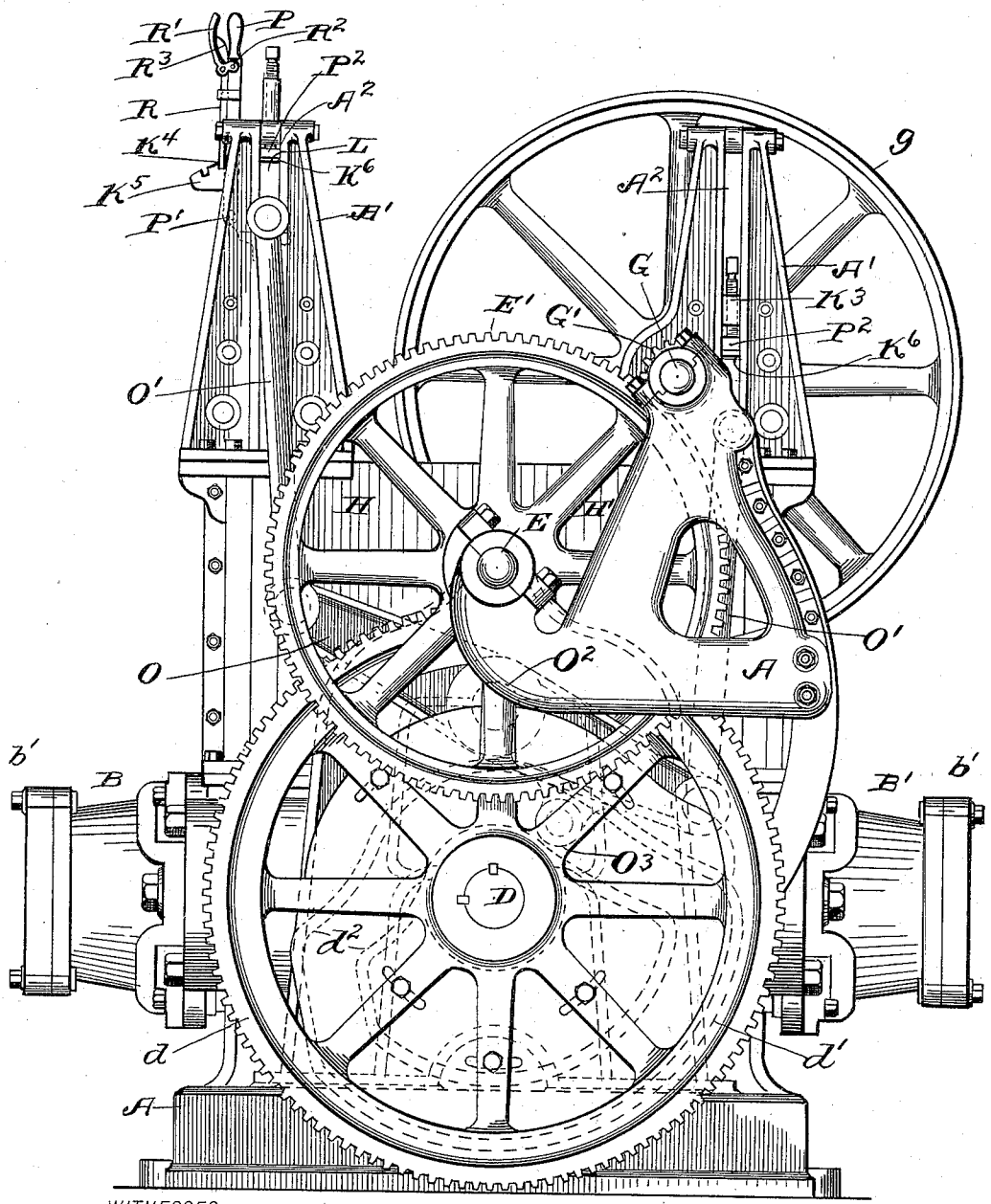
W. W. WALLACE.

MACHINE FOR MAKING CLAY PRODUCTS.

(Application filed Aug. 9, 1897.)

(No Model.) 3 Sheets—Sheet 1.

-FIG. 1-



WITNESSES:

J. C. Fitzpatrick

Daniel E. Daly

INVENTOR

William W. Wallace

BY Lynch, Dorer & Donnelly

his ATTORNEYS.

THE NORRIS PETERS CO. PHOTO-LITHO., WASHINGTON, D. C.

No. 608,937. Patented Aug. 9, 1898.

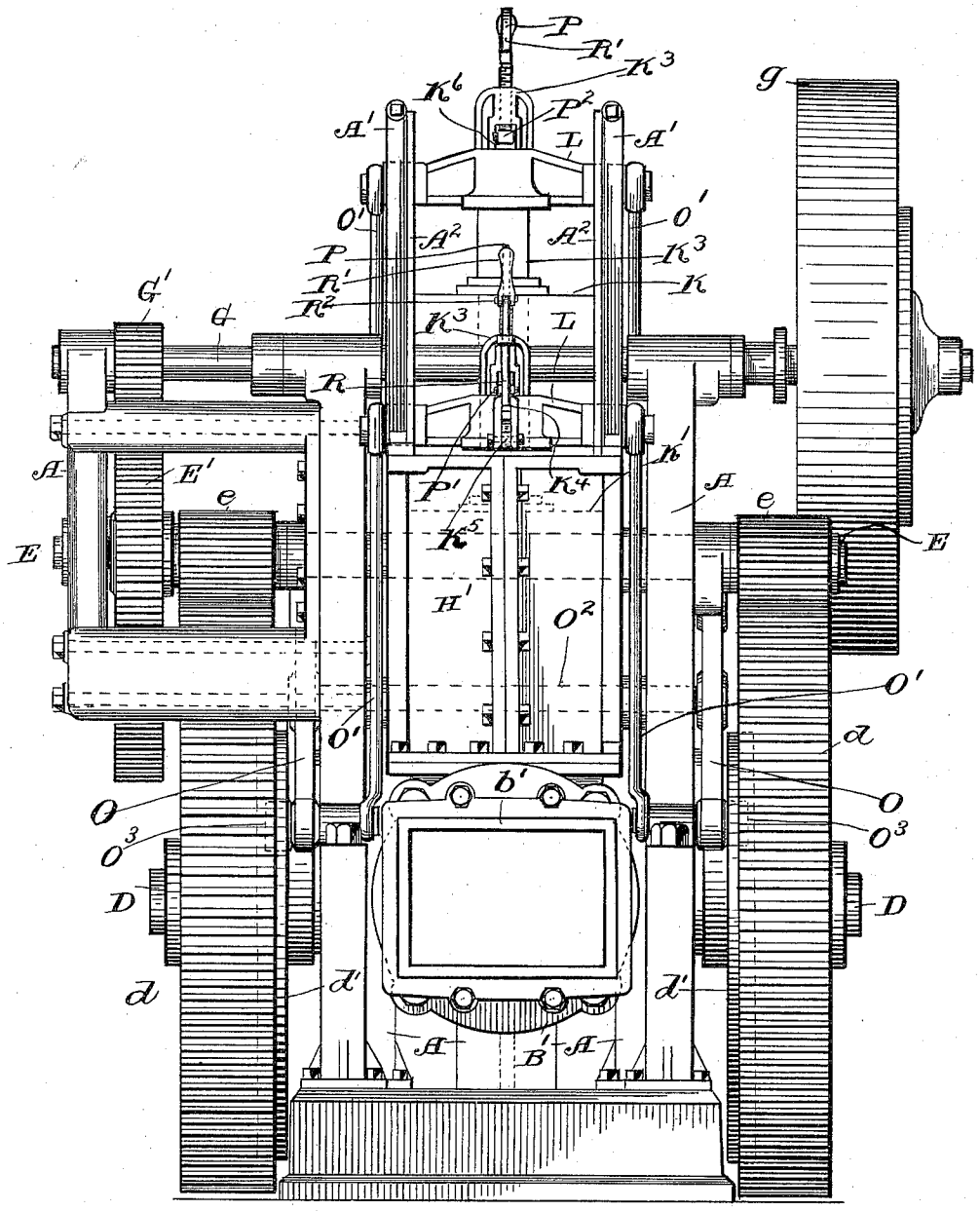
W. W. WALLACE.

MACHINE FOR MAKING CLAY PRODUCTS.

(Application filed Aug. 9, 1897.)

(No Model.) 3 Sheets—Sheet 2.

FIG. II



WITNESSES:
J. C. Turner
Daniel E. Daly

INVENTOR
William W. Wallace
BY
Lynch, Dorer & Donnelly
his ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 608,937. Patented Aug. 9, 1898.

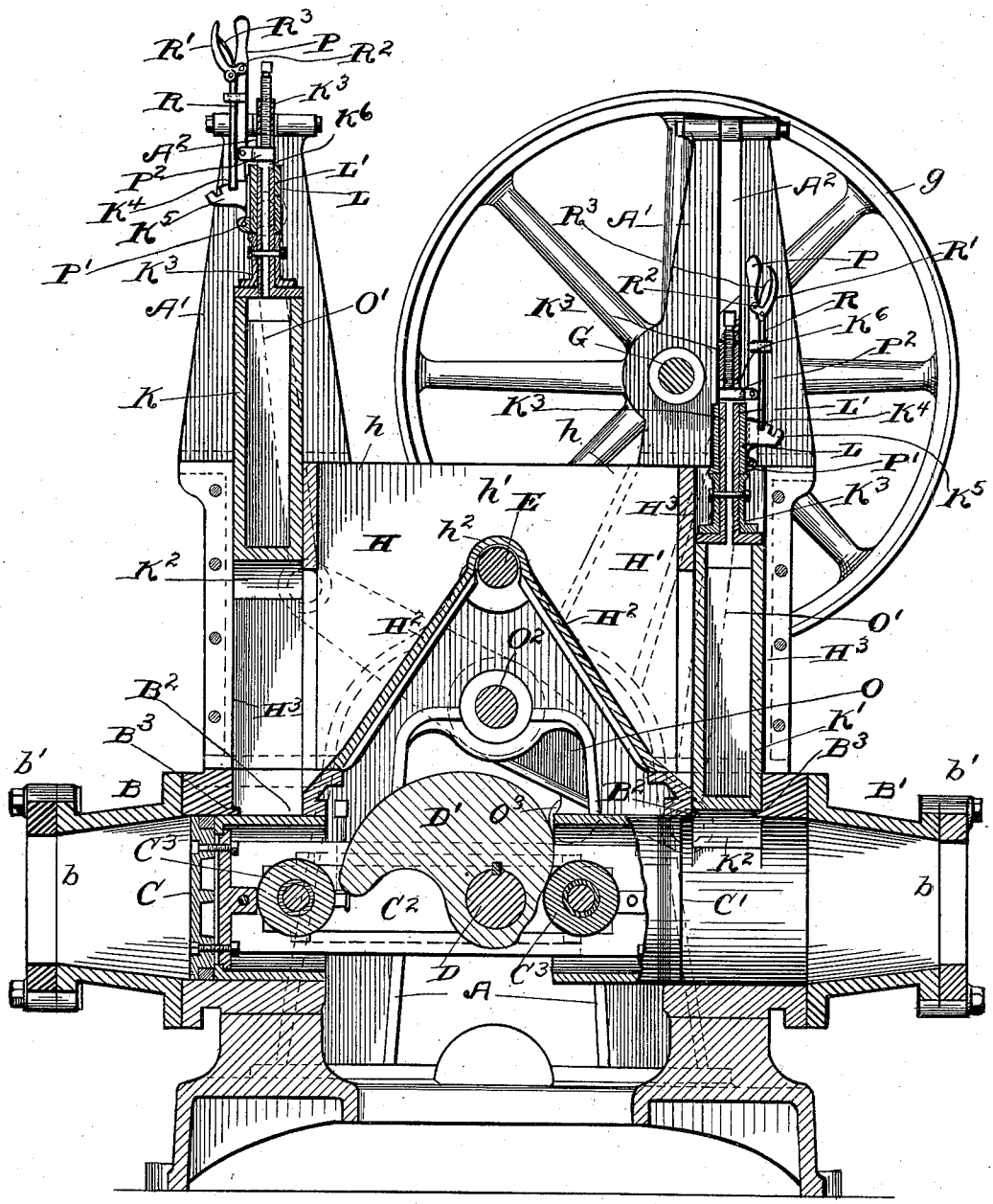
W. W. WALLACE.

MACHINE FOR MAKING CLAY PRODUCTS.

(Application filed Aug. 9, 1897.)

(No Model.) 3 Sheets—Sheet 3.

FIG. III



WITNESSES:

J. C. Turner

Daniel E. Daly

INVENTOR

William W. Wallace

BY

Lynch, Dorer & Donnelly

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM W. WALLACE, OF WILLOUGHBY, OHIO, ASSIGNOR TO THE AMERICAN CLAY WORKING MACHINERY COMPANY, OF BUCYRUS, OHIO.

MACHINE FOR MAKING CLAY PRODUCTS.

SPECIFICATION forming part of Letters Patent No. 608,937, dated August 9, 1898.

Application filed August 9, 1897. Serial No. 647,534. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. WALLACE, of Willoughby, Lake county, Ohio, have invented certain new and useful Improvements in Machines for Making Clay Products; and I do hereby 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 pertains to make and use the same.

My invention relates to improvements in brick-machines or clay-product machines, and more especially to that class of brick-machines that are known in the trade as "plunger-machines," wherein suitably-operated plungers force through a die the clay or material employed in the manufacture of the brick or other clay product.

My invention involves, broadly, a machine comprising a case having an inlet at which the clay is introduced into the said case and having its discharging end provided with a die through which the clay is forced by a suitably-operated plunger arranged to reciprocate within and endwise of the said case, a hopper having an outlet communicating with the interior of the aforesaid case, and a suitably-operated plunger suitably guided within the said hopper and arranged to force clay from the hopper into the aforesaid case, and the two plungers being so timed that the upright plunger shall force enough material into the aforesaid case preparatory to each discharging stroke of the plunger within the said case.

My invention comprises also two horizontal die-bearing cases arranged a suitable distance apart and in line, two suitably-connected plungers arranged to force material from the different cases, respectively, feed-hoppers communicating with the interior of the said cases, and two upright plungers movable up and down within the said hoppers and arranged to force material from the hoppers into the different cases, respectively, and the parts being so arranged and timed that one of the horizontally-reciprocating plungers shall make its discharging stroke while the other horizontally-reciprocating plunger is making its return stroke, and each upright plunger shall force material into the horizontal case below it preparatory to each discharging stroke of the plunger arranged to operate within the said case.

The invention comprises also certain novel and meritorious features of construction and combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure I is a side elevation of a brick-machine embodying my invention. Fig. II is a right-hand side elevation relative to Fig. I. Fig. III is a side elevation, mostly in central vertical section.

Referring to the drawings, A designates the stationary supporting-frame of the machine.

Two cylinders or cases B and B′, that are suitably supported from the lower portion of said frame, are arranged horizontally a suitable distance apart and in line endwise. Each of said cases has a discharge-opening b at its outer end and has said end provided with a die b', that is arranged as required to render it capable of shaping or operating upon the clay or material forced from said opening. Each of said cases at its inner end and at the top is provided with an aperture or inlet B^2, at which the clay or material to be operated upon is introduced into the case.

Two plungers C and C′ are arranged to operate within and endwise of the different cases, respectively. Said plungers are therefore arranged horizontally a suitable distance apart and in line endwise. The two plungers are operatively connected with each other in any approved manner, and C^2 designates the link or connection between the two plungers, and the plunger connection is provided, preferably, with two rollers C^3 C^3, arranged horizontally and transversely of the connection and a suitable distance apart lengthwise of the said connection. A cam D′ is operatively mounted or formed upon a shaft D between the said rollers. Shaft D in the case illustrated is arranged parallel with the said rollers and is consequently arranged horizontally and transversely of the machine. The peripheral or operating surface of the aforesaid cam has such arrangement that it shall push the different rollers outwardly alternately, and thereby cause the aforesaid plungers to operate alternately—that is, by the operative connection between the two plungers and the

suitably-operated cam interposed between the two rollers of said connection the plungers are simultaneously reciprocated; but of course one plunger makes its discharging stroke while the other plunger is making its return stroke. Shaft D is operatively provided with two spur-gears *d d*, arranged at opposite sides, respectively, of the supporting-frame.

Each gear *d* meshes with a pinion *e*, that is operatively mounted upon a shaft E, that is arranged a suitable distance above and parallel with shaft D and is suitably supported from the stationary framework. Shaft E at one end is operatively provided with a spur-gear E′, that meshes with a pinion G′, operatively mounted upon the driving-shaft G, that is arranged above and parallel with shafts E and D and is suitably supported from the stationary framework of the machine. The driving-shaft is arranged, preferably, between the central portion and one end of the machine and is provided with a driving-wheel *g*.

Two upright hoppers H and H′ are arranged above the different cases B and B′, respectively. Each of said hoppers has its inlet *h* at its upper end, and the inlets of the two hoppers are in open relation with each other at *h′* above shaft E. Each hopper has its bottom H^2 declining toward the hopper's outlet that coincides with the inlet B^2 of the horizontally-arranged case below said hopper. The declination of said bottom toward the hopper's outlet facilitates the passage of material introduced into the hopper to said outlet. The bottoms of the two hoppers are connected together at their upper ends by a web or yoke h^2, that is preferably integral with said bottoms and bridges the aforesaid shaft E a suitable distance below the hopper's upper extremities.

Two upright plungers K and K′ are arranged to reciprocate vertically above the inlets of cases B and B′, respectively, and over the outlets of the different hoppers, respectively, and each of said hoppers has formed thereon vertically-arranged slideways H^3, that are instrumental in guiding the plunger within said hopper during the vertical reciprocation of said plunger. Said vertically-reciprocating plungers perform the function of engaging the clay or material that descends the hopper interiorly and forcing the same into the horizontally-arranged cases below, and hence supply said cases with enough material preparatory to the discharging stroke of the horizontally-reciprocating plungers. Said plungers K K′ have their under sides concave, as at K^2, and extending circumferentially of the horizontally-arranged cylinders, and hence they are capable of forcing more material into said cylinders than they could if their under sides were straight. Each of the horizontally-arranged cases B and B′ is provided at its inlet with a shoulder or stop B^3, that limits the downward movement of the plunger above. Each plunger K and K′, at its upper end and centrally, is provided with an upwardly-extending stem K^3, that extends through a vertical hole L′, formed in a cross-head or slide L, that is arranged horizontally and parallel with the aforesaid shafts and at each end engages a slideway A^2, formed upon a standard A′, that is rigid with the supporting-framework of the machine.

Means for establishing operative connection between each slide L and the upright plunger below is provided, as will hereinafter appear.

Each gear *d* in the case illustrated is provided with a cam *d′*, having a recess or groove d^2, engaged by the roller O^3 of a walking-beam or tilting lever O, that is mounted upon a shaft or pin O^2, arranged approximately centrally between and parallel with shafts D and E. The two levers O O extend between the paths of the two slides L L, and the said levers at one side of their axes are operatively connected, by means of links O′, with opposite ends, respectively, of one of the said slides, and are operatively connected at the opposite sides of their axes by means of other links O′ with opposite ends, respectively, of the other slide L. The trend of the cam-recesses of cams *d′* is such that the levers O are tilted in unison and in opposite directions alternately, and consequently the two vertically-reciprocating plungers when they are operated move in opposite directions, so that one of them makes its discharging stroke while the other is making its return or idle stroke.

The parts are so arranged and timed that the horizontally-reciprocating plungers C and C′ shall move simultaneously, but in opposite directions, respectively, as already indicated, and one of said horizontally-reciprocating plungers shall consequently make its discharging stroke while the other horizontally-reciprocating plunger is making its return or idle stroke, and the two vertically-reciprocating plungers K and K′ shall force material in advance of the different horizontally-reciprocating plungers, respectively, when the respective horizontally-reciprocating plunger, after its discharge stroke, has returned far enough to accommodate the introduction of material in advance of it.

It will therefore be observed that by my improved construction the machine has a large capacity and the introduction of enough material into the die-bearing cases is insured.

The means preferably employed for establishing operative connection at will between a slide L and the upright plunger below the said slide comprises an upright lever P, that is fulcrumed at its lower end at P′ to the said slide centrally between the latter's ends and longitudinally of the slide, and is consequently tiltable in a vertical plane and laterally of the said slide. Lever P at any suitable point between its ends is provided with a laterally and inwardly projecting arm P^2, that in the operative position of the lever

engages a hole K^6, formed in the stem of the said plunger, and thereby establishes operative connection between the plunger and the slide. By actuating the said lever outwardly, and thereby disengaging its arm P^2 from the plunger-stem hole, operative connection between the plunger and the slide is interrupted, and the slide will reciprocate without the plunger, that will drop and be arrested by the stop B^3 below and close the outlet of the adjacent hopper. Hence one of the vertically-reciprocating plungers and the coöperating horizontally-reciprocating plunger below can be operated independently of the other plungers if for any reason this becomes necessary or desirable.

Mechanism for positively locking each lever P in the latter's operative position is provided and comprises, preferably, a bolt or latch R, that is arranged uprightly alongside of the lever and is movable longitudinally and depends from a vertically-tiltable lever R′, fulcrumed at R^2 to the said lever P. The latch or bolt in its operative position engages a notch K^4, formed in an arm or flange K^5 with which the lever-bearing slide is provided. By tilting latch-lever R′ upwardly against the action of a suitably-applied spring R^3, that acts to retain the bolt or latch in the latter's operative position, the said latch or bolt is disengaged from the aforesaid notch, so as to render the slide's lever P free to be rendered inoperative.

What I claim is—

1. In a brick-machine, the combination with a feed-hopper having an outlet at its lower end; a plunger movable up and down over said outlet, and provided, at its upper end, with an upwardly-extending stem that has a lateral hole, and a suitably-actuated and suitably-guided vertically-reciprocating cross-head or slide above the plunger; of a lever fulcrumed to said slide and provided with an arm arranged to extend into the aforesaid hole, and thereby establish operative connection between the plunger and cross-head, and the said lever being tiltable in the direction required to disengage the said arm and hole, and means for retaining the said lever in its locking or operative position, substantially as and for the purpose set forth.

2. In a brick-machine, the combination with an upright hopper having an outlet at its lower end; a plunger arranged to move up and down over the said outlet, and provided, at its upper end, with an upwardly-extending stem that has a lateral hole, and a suitably-actuated and suitably-guided cross-head or slide having a notched arm; of a lever supported from the said slide and provided with an arm arranged to extend into the aforesaid hole and thereby establish operative connection between the slide and plunger; a bolt or latch extending along the aforesaid lever and engaging, in its operative position, the notch in the aforesaid slide-arm, and a spring acting to retain the said latch or bolt in its operative position, substantially as shown, for the purpose specified.

3. In a brick-machine, two cases arranged horizontally and in line endwise, and provided with discharge-openings at their outer ends; dies arranged at the said openings in position to operate upon the clay or material forced through the openings; two plungers arranged to operate within and endwise of the different cases, respectively; means for simultaneously actuating the said plungers in opposite directions, respectively; two hoppers arranged above the different cases, respectively, and each of the said hoppers having an outlet connected with the chamber of the case below; two plungers movable up and down over the inlets of the different cases, respectively; suitably-guided vertically-reciprocating cross-heads or slides; means for establishing operative connection between each of the vertically-reciprocating plungers and one of the said slides; two corresponding walking-beams or tilting levers arranged at opposite sides, respectively, of the machine; means for operating the said levers in unison, and links establishing operative connection between the said levers and the aforesaid slides, all arranged and operating substantially as shown, for the purpose specified.

In testimony whereof I sign this specification, in the presence of two witnesses, this 10th day of July, 1897.

WILLIAM W. WALLACE.

Witnesses:
C. H. DORER,
ELLA E. TILDEN.