

No. 749,406.

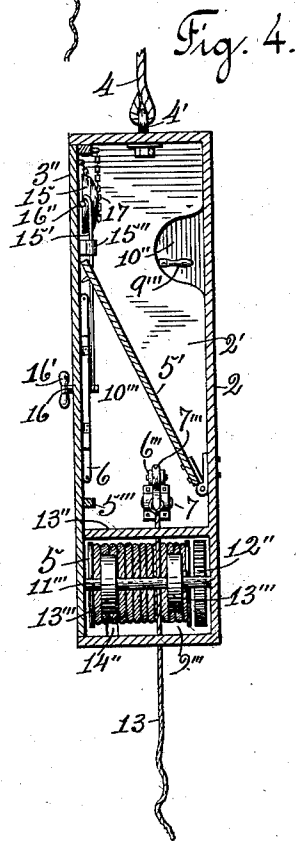
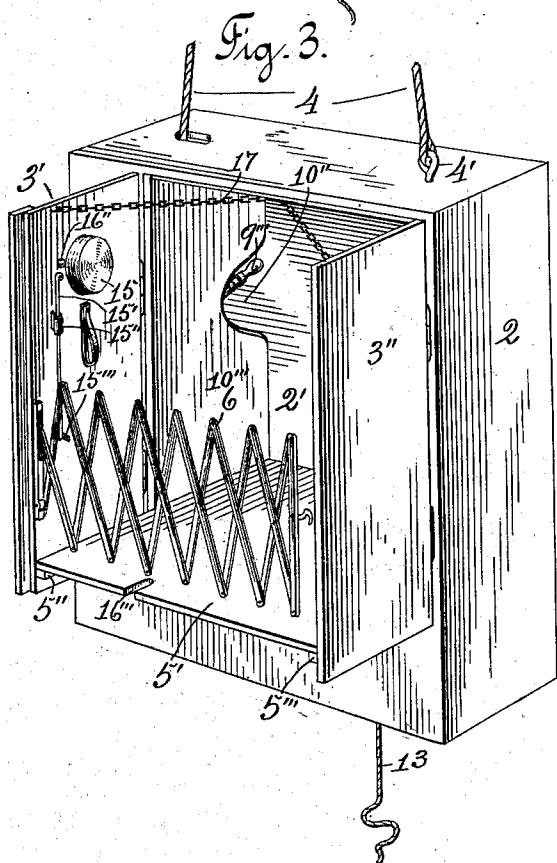
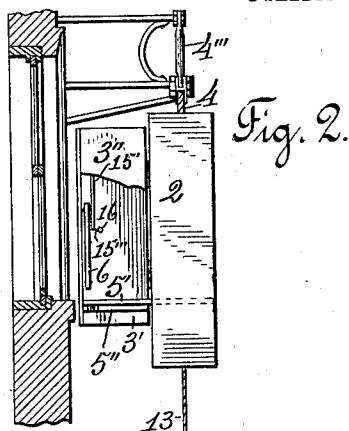
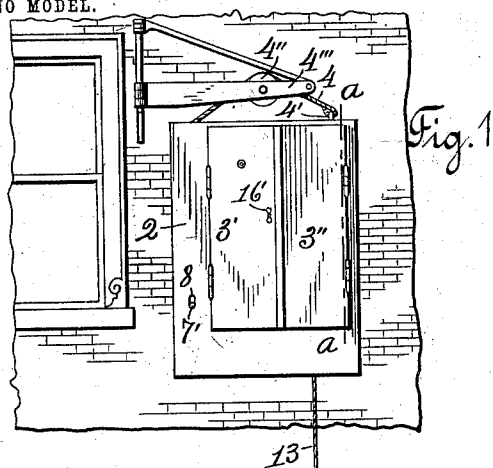
PATENTED JAN. 12, 1904.

J. SPIRO.
FIRE ESCAPE.

APPLICATION FILED JULY 20, 1903.

2 SHEETS—SHEET 1.

NO MODEL.



Witnesses
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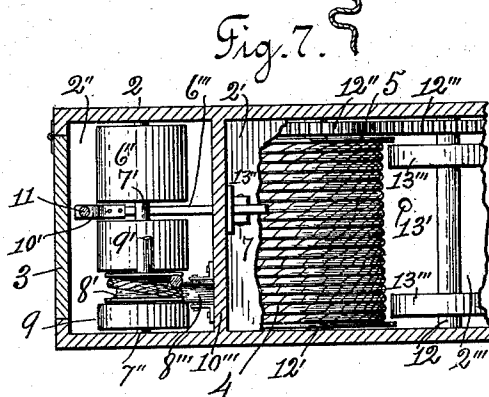
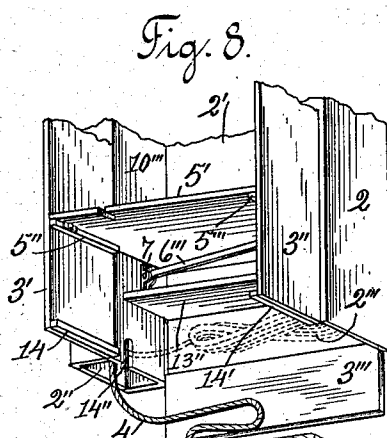
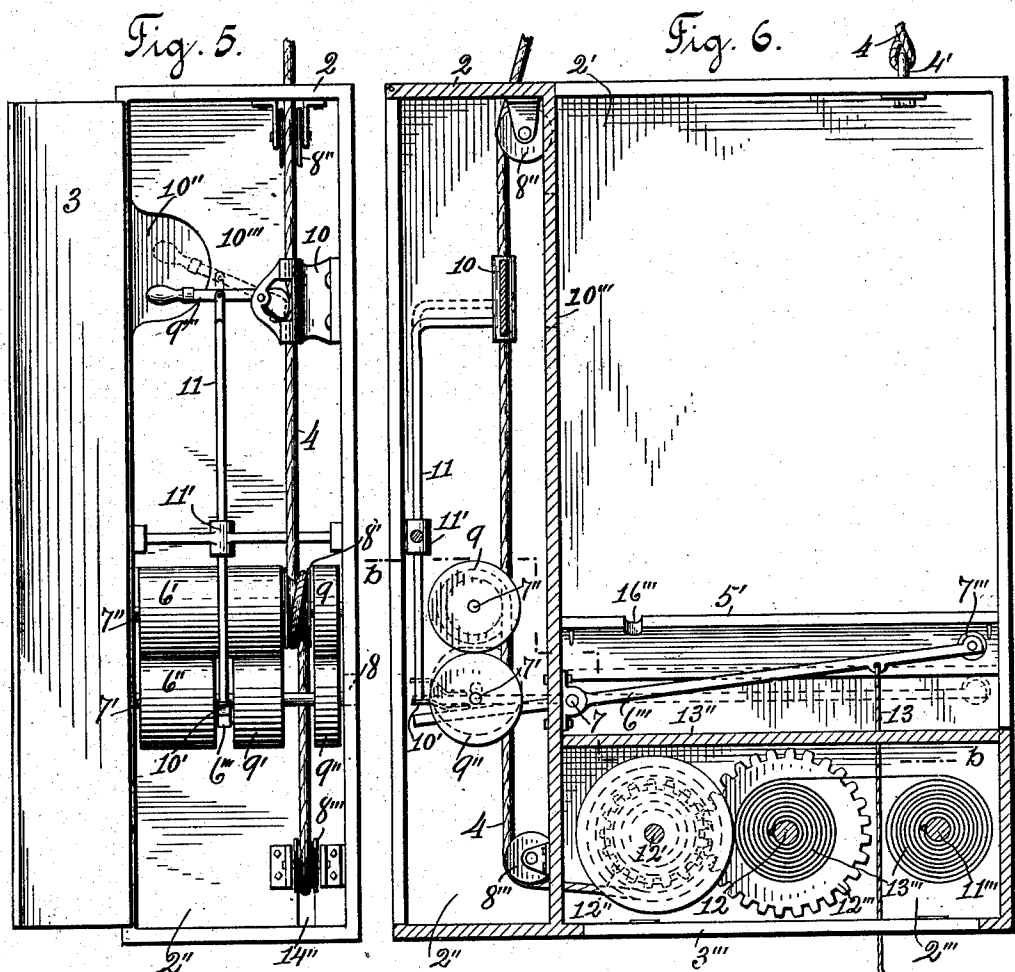
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JULIUS SPIRO, OF NEW YORK, N. Y.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 749,406, dated January 12, 1904.

Application filed July 20, 1903. Serial No. 166,215. (No model.)

To all whom it may concern:

Be it known that I, JULIUS SPIRO, a citizen of the United States, and a resident of New York, Brooklyn borough, in the county of Kings and State of New York, have invented certain new and useful Improvements in Fire - Escapes, which improvements are fully set forth in the following specification.

This invention relates to improvements in mechanical contrivances of that class availed of as building accessories and chiefly for the purpose of facilitating the escape from a burning building of the occupants thereof, such contrivances being commonly known as "fire-escapes."

The objects of this invention are to provide an apparatus of the character above indicated which shall be simple and inexpensive as regards construction, durable, efficient, and reliable in practical service, mainly automatic in operation, convenient in its application to practical purposes, and which shall possess certain well-defined advantages over prior analogous constructions.

The invention consists in the novel disposition and relative arrangement of the various cooperating parts thereof, whereby the attainment of the foregoing objects is rendered practicable, in certain combinations, and in certain details of construction, all of which will be specifically referred to hereinafter and set forth in the appended claims.

In a general sense my present invention comprises a carriage having a depressible member conjoined therewith, a sheave operatively disposed at an elevated point, a flexible connection working on said sheave, one portion of said connection at one side of said sheave being firmly secured at the end thereof with said carriage and the opposite portion of said connection at the opposite side of said sheave extending downwardly along said carriage, and elements between said depressible member and the downwardly-extending portion of said flexible connection whereby a frictional or braking effect proportionate to the weight sustained by said depressible member in practice may be automatically applied to said flexible connection.

It further comprises hand-operative features of construction whereby the aforementioned automatically-applied frictional or braking effect may, irrespective of the weight sustained by said depressible member, be increased or diminished, according to the requirements of the user.

The invention is clearly illustrated in the accompanying drawings, wherein similar reference-numerals denote corresponding parts throughout the several views.

In said drawings, Figure 1 is a front elevation of a fire-escape embodying my said improvements, a fragment of a building being shown in conjunction therewith to more clearly disclose the practical application of the device. Fig. 2 is a detail view showing the device as having been moved relatively with respect to the building with which it is conjoined from the position it occupies in Fig. 1 into the position it occupies when in readiness for service, certain of the parts thereof being shown as having been accordingly adjusted. Fig. 3 is a perspective view of said fire-escape, the essential parts being adjusted for service. Fig. 4 is a vertical transverse section along the line *a a* of Fig. 1, the movable parts occupying their normal or closed positions. Fig. 5 is a side elevation of said fire-escape, the door for the lateral minor compartment thereof being open to disclose certain elementary parts situated within said compartment. Fig. 6 is a front elevation of said fire-escape, the front wall and doors thereof being removed. Fig. 7 is a detail sectional view showing the disposition and relative arrangement of certain minor features of the general construction, the section being taken along the line *b b* of Fig. 6, the front wall of the device being retained and the upper friction-roller made use of being removed. Fig. 8 is a detail perspective view, the carriage made use of somewhat modified as to details of construction.

In carrying out my invention, reference being had to the accompanying drawings, I make use of a carriage 2, here shown as being box-like in general character and partitioned to form a main compartment 2', a lateral minor

compartment 2'', and a storage minor compartment 2'''. Access may be had to the interior of the compartments 2' 2'' 2''', respectively, by way of suitable openings formed in the inclosing walls of the carriage 2, such openings being normally closed, that for the compartment 2' by a door 3, that for the compartment 2'' by the oppositely-swinging doors 3' 3'' at the front of said carriage, and that for the compartment 2''' by the downwardly-swinging door 3'''.

4 denotes a flexible connection in the form of a wire cable, rope, or the like. This connection is secured at one end thereof to the carriage 2, as through the medium of the eye 4', extends upwardly from the latter and works on the sheave 4'', here shown as operatively conjoined with the crane or bracket 4''', and from said sheave said connection extends downwardly along the carriage 2 and in this instance through the compartment 2'', its lower end portion being arranged to wind on the spring-controlled drum 5 within the compartment 2''' or stored when suitably adjusted within said compartment, as indicated in dotted lines in Fig. 8.

Within the compartment 2' I arrange a depressible member 5', approximating the character of a platform, the same in this instance being hinged at its rear side to the rear wall of the carriage 2, said member accordingly tending at all times to fall by its own gravity. When the doors 3' 3'' are closed, the member 5' occupies substantially the position indicated in Fig. 4 of the drawings, and upon said doors being opened, as to the extent indicated in Fig. 3 of the drawings, the member 5' falls by its own gravity to a horizontal position approximately and thereafter under the load thereto applied in practice ultimately seats at the opposite sides thereof on the ledges 5'' 5''', the latter being conjoined with the doors 3' 3'', respectively, at the inner sides thereof, as clearly shown in Fig. 3.

A guard 6 or analogous device is employed, in conjunction with the doors 3' 3'', for preventing accidental dislodging of the load from the member 5' in the practical operation of the apparatus.

An important feature of my improved apparatus is the providing of mechanism whereby a frictional or braking effect proportionate to the load sustained by the member 5' in practice may be applied automatically and continuously during the occupancy of said member by such load to the connection 4 for accordingly regulating the speed at which the carriage 2 shall descend from an elevated point. To the foregoing end I employ opposing friction-rollers 6' 6'' adjustable into frictional contact one with the other, as through the medium of the lever 6''', working on the pivot 7. The free end of the lever aforementioned takes under the adjustably-journaled shaft 7', on

which is firmly mounted the roller 6'', the roller 6' being firmly mounted on the shaft 7'', journaled to rotate in opposite walls of the carriage 2 and having a fixed center of motion. The frictional contact of said rollers is accordingly effected through depression of the opposite end of the lever 6''', as through the medium of the load applied to the member 5', the latter under proper adjustment of the parts engaging such opposite end of said lever indirectly through the friction-wheel 7''', carried by such lever. The shaft 7' bears in elongated openings formed in opposite walls of the carriage 2, one of which openings is shown in Fig. 1 of the drawings and denoted by the reference-numeral 8, and said openings are so formed and positioned as to permit a parallel arrangement of the shafts 7' 7'' within the compartment 2'' and likewise the movement of the latter shaft bodily in the direction of the former shaft through proper manipulation of the lever 6''', as indicated in dotted lines in Fig. 6. Essentially one of the rollers aforementioned should be formed from yielding or elastic material, as vulcanized rubber, though in practice each is formed from such material by preference. I further employ a sheave 8', firmly mounted on the shaft 7'' at one end of the roller 6', and the connection 4 encircles said sheave after the manner indicated in Fig. 5 and thence extends downwardly to and into the compartment 2''' for the purposes hereinbefore specified. The connection 4 is guided along a substantially vertical line through the compartment 2'' by means of the idlers 8'' 8''', on which said connection works, as clearly illustrated in Fig. 6. To facilitate the coöperation of the rollers 6' 6'', it is advisable that additional elements 9 9' 9'', each of a roller-like character, be employed, the same being firmly mounted, that denoted by the numeral 9 on the shaft 7'' and those denoted by the numerals 9' 9'' on the shaft 7', substantially as illustrated in Fig. 5. The shafts 7' 7'' are arranged adjacent to that portion of the connection 4 which extends along the carriage 2 and in this instance are accordingly situated within the compartment 2''.

The mechanism last particularly referred to when properly adjusted and under suitable elasticity of the rollers 6' 6'' or either of them is serviceable only in applying to the connection 4 a frictional or braking effect proportionate to the load sustained by the member 5', and it is desirable that further means be provided whereby a braking or frictional effect sufficient to fully check or stop the descent of the carriage 2 may be applied to the connection 4 at the will of the operator. To this latter end I employ a gravity-lever 9''', pivotally conjoined with the bracket 10, which bracket is secured to a wall of the carriage 2 interiorly of the compartment 2''. The normal tendency of the lever 9''' is by reason of

its own gravity to bind against the connection 4, which works vertically through the bracket 10 and is exposed to the action of the cam-like head of said lever, as will be clearly understood on reference to Fig. 5 of the drawings. The lever 9''' may be provided with a suitable handle, as shown, to be grasped by an occupant of the member 5' when desiring to manipulate said lever, said occupant gaining access to such lever by way of a suitable opening 10'', formed in the vertical partition 10''', which divides the carriage 2 into the main and lateral compartments 2' 2''.

In order that the gravity of the lever 9''', and accordingly its grasp on the connection 4, may be automatically overcome by the load applied to the member 5', I provide a connecting-rod 11, pivotally attached at its upper end to the lever 9''', depending therefrom and having a sliding engagement with a suitable guide 11' in alinement with the free end of the lever 6''', said connecting-rod being of proper length to be engaged at its lower end and lifted by the free end of the lever 6''' upon the opposite end of the latter lever being depressed.

To the end that a limited return or downward movement sufficient to insure a full binding action of the lever 9''' on the connection 4 may be imparted through depression of the lever 9''', as by the hand of the operator, to the connecting-rod 11 upon the latter having been lifted, as stated, and without affecting the lever 6''' I interpose between the lower end of the connecting-rod 11 and the adjacent end of the lever 6''' an elastic element 10', here shown as taking the form of a leaf-spring and secured to the lever 6''' at the free end thereof.

Where the mechanism hereinbefore described for automatically regulating the speed at which the carriage 2 shall descend from an elevated point is availed of, it is essential that the lower portion of the connection 4 be elastically held in opposition to the weight of the carriage 2, attached to said connection at the opposite end thereof, and accordingly I provide a spring-controlled drum 5, on which the lower portion of said connection winds in practice, said drum being in this instance controlled by the oppositely-coiled spring 13''', conjoined, one of the coils thereof with the fixed shaft 11''' and the other coil thereof with the rotatable shaft 12, the latter shaft and the shaft 12' being operatively connected by means of the spur-gears 12'' 12''', suitably mounted on the shafts last named, and the drum 5, being suitably mounted on the shaft 12'.

The foregoing elements are arranged within the storage-compartment 2''', as clearly shown in Fig. 6.

13 denotes a flexible connection depending from the lever 6''' through a suitable opening 13', formed in the bottom member of the car-

riage 2, and a like opening (not shown) formed in the horizontal partition 13'', which divides the carriage 2 into the main and storage compartments 2' 2'''. The connection 13 is provided to the end that a person located at a window or other station lower than the point occupied by the apparatus as a whole may by properly drawing downward on the connection last referred to break the grasp of the lever 9''' on the connection 4 through the medium of the lever 6''' and connecting-rod 11, and thus ease the apparatus as a whole down to such window or station for service by such person.

Where the lever 9''' is solely relied on as a means for applying the required friction to the connection 4, I purpose to extend the doors 3' 3'' downwardly to the bottom of the carriage 2, provide said doors one with a ledge 14 and the other with a like ledge 14' and hinge or pivotally attach the trap-door 3''' at its rear edge to the carriage 2 at the bottom thereof, substantially as indicated in Fig. 8, said trap-door accordingly resting at its front edge when the doors 3' 3'' are closed on the ledges 14 14'. It will be observed that upon said doors 3' 3'' being opened door 3''' falls by its own gravity and permits that portion of the connection 4 (indicated in dotted lines in Fig. 8) stored within the compartment 2''' to fall to the base of the building in conjunction with which the apparatus as a whole is being used. Such dangling portion of the connection 4 may then be grasped by an individual or individuals who may be at hand for the purpose of aiding in effecting the descent of the carriage 2 or for returning the latter to its original elevated position.

The partition 10''' has a suitable opening 14'' which permits the connection 4 to lead from the compartment 2'' into the compartment 2'''. 105

The crane or bracket 4''' is attached to the building in conjunction with which the apparatus as a whole is being used in any appropriate and well-known manner.

15 denotes an alarm-gong, which is sounded by means of the vertical striker 15' working through the guide 15'', the latter being conjoined with one of the doors at the front of the carriage 2. The said striker is loosely connected at its lower end with a radial arm 15''', projecting away from the inner end of the stem 16, which stem projects through the door with which the striker is conjoined and is provided at its outer end with a finger-piece 16'. The striker 15' is somewhat resilient, and its upper bulbous end under upward movement of said striker engages the displacing-stud 16'', is thereby sprung somewhat away from the gong 15, and is freed from said stud for a blow on the gong 15 under suitable additional upward movement of said striker, as in common practice and as will be readily understood. 125

The member 5' is suitably cut away, as at

16"', to provide space for the striker 15' under the closed condition of the doors 3' 3"', and any suitable element or device, as the chain 17, may be employed for limiting the opening movement of the latter.

The operation of the device will be apparent from the foregoing description thereof, and, further, it will be seen that my improved fire-escape may be modified to some extent without materially departing from the spirit and principle of my invention.

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

1. In a fire-escape a flexible connection and a movable carriage combined therewith, the said carriage having a back, a movable floor pivoted to the back, device for normally holding said floor raised near to said back, and means for releasing the floor from its raised position, so that it may drop, to a horizontal position, substantially as described.

2. In a fire-escape, a carriage having a back, two sides, and a door, the floor of said carriage being pivoted thereto, and being of a greater depth than the depth of the carriage sides, the said door when closed being adapted to hold the floor folded up within the carriage, and to release said floor, when opened, substantially as described.

3. In a fire-escape, the combination with a movable carriage, a floor pivoted thereto, means for holding the floor normally raised within the carriage, of a flexible supporting connection for supporting the said carriage, mechanism for regulating the movement of the carriage on said supporting connection, adapted to be actuated by the floor when it is in its horizontal position, substantially as described.

4. In a fire-escape, the combination with a movable carriage, a floor pivoted thereto, doors on said carriage which when closed hold the floor in a vertical position and a flexible connection, for supporting the carriage and mechanism for regulating the movement of said carriage on said connection adapted to be actuated by the pressure of the floor, when the doors are opened, and the floor fallen to its horizontal position, substantially as described.

5. In a fire-escape, a carriage having a pivoted floor, normally held out of the way, of a flexible connection for normally supporting said carriage, a friction-grip for regulating the run of the flexible connection, and a mechanism for increasing the friction of said grip, when the floor is lowered, to a horizontal position, substantially as described.

6. An apparatus of the class herein described comprising a carriage having a load-sustaining member movably conjoined therewith and a bracket firmly conjoined therewith; a flexible connection for suspending said car-

riage, one end portion of said connection being secured to said carriage and the other end portion thereof extending loosely therealong and loosely through said bracket; a gravity-lever suitably conjoined with said bracket and tending at all times, by reason of its gravity, to apply to said connection a frictional or braking effect; and elements between said load-sustaining member and said gravity-lever whereby the latter may be automatically moved against its own gravity and its braking action on said connection accordingly destroyed, upon and during the application of a load to said member, substantially as herein specified.

7. An apparatus of the class herein described comprising a carriage having a load-sustaining member movably conjoined therewith and a bracket firmly conjoined therewith; a flexible connection for suspending said carriage, one end portion of said connection being secured to said carriage and the other end portion thereof extending loosely therealong and loosely through said bracket; a gravity-lever suitably conjoined with said bracket and tending at all times, by reason of its gravity, to apply to said connection a frictional or braking effect; a connecting-rod conjoined with and projecting away from said gravity-lever; and an additional lever cooperating with said member and said connecting-rod, in such a manner that movement applied to said member will result in said gravity-lever being moved against its own gravity, and its braking action on said connection accordingly destroyed, substantially as herein specified.

8. An apparatus of the class herein described comprising a carriage having a bracket firmly conjoined therewith; a flexible connection for suspending said carriage, said connection extending loosely through said bracket; a lever suitably conjoined with said bracket and whereby, under direct movement imparted thereto, a frictional or braking effect may be applied to said connection; and mechanism for reversely moving said lever, the said mechanism embodying an elastic element permitting said lever to be directly moved, as by hand-pressure, during the tendency of said mechanism to reversely move the same, substantially as herein specified.

9. An apparatus of the class herein described comprising a carriage having a depressible, load-sustaining member conjoined therewith; a flexible connection for suspending said carriage, one end portion of said connection being secured to said carriage and the other end portion thereof extending therealong; means for yieldingly holding the last-named end portion of said connection against the weight of said carriage when suspended; a roller having a fixed center of motion; an

additional roller adjustable toward and away from the first-named roller, the latter receiving motion from said connection in the practical operation of the apparatus as a whole; and a lever between said adjustably-disposed roller and said member, whereby, upon said member being depressed, said adjustably-dis-

posed roller will be brought into frictional contact with the roller first above referred to, substantially as herein specified.

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Witnesses:

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