B. SMITH.

FIRE ESCAPE.

APPLICATION FILED OCT. 15, 1908.

969,209.

Patented Sept. 6, 1910.

2 SHEETS—SHEET 1.

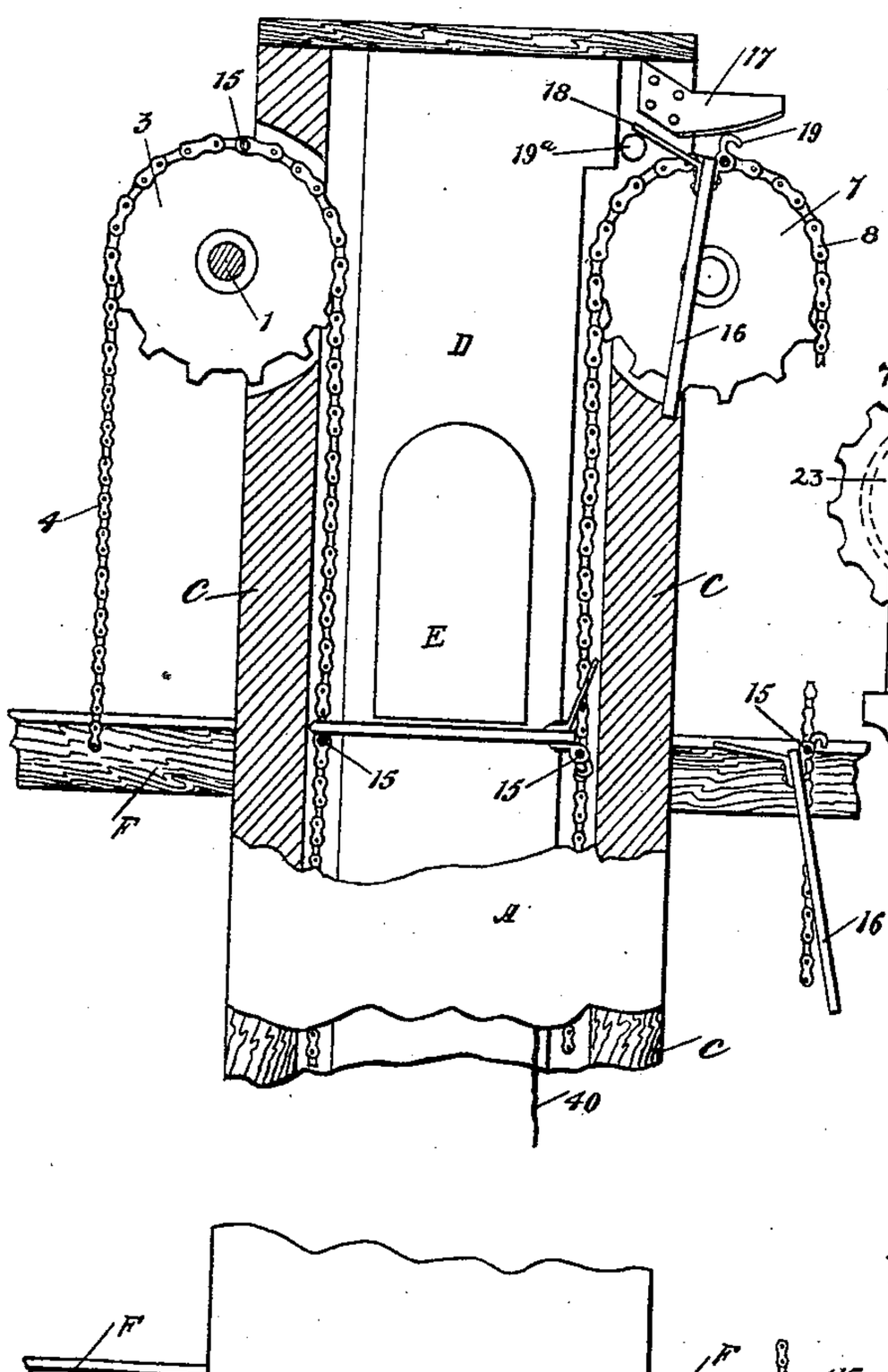


Fig. 1.

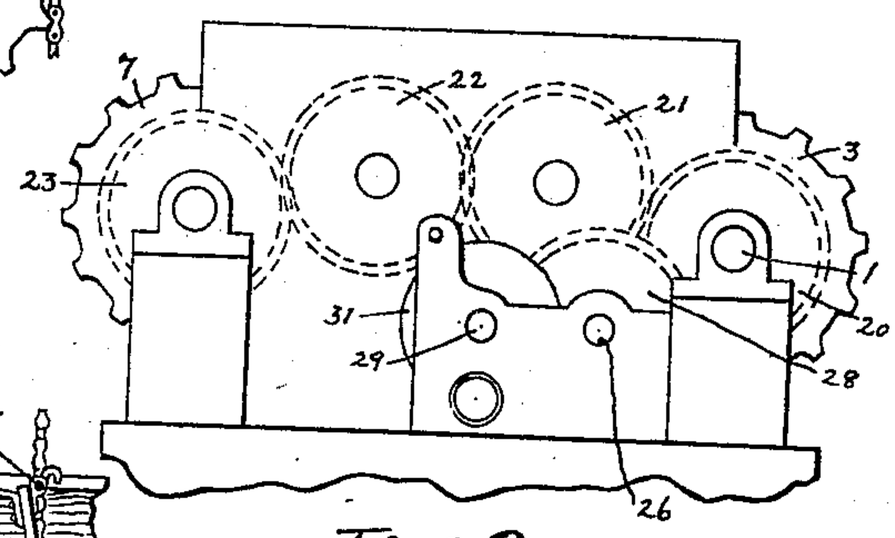


Fig. 2.

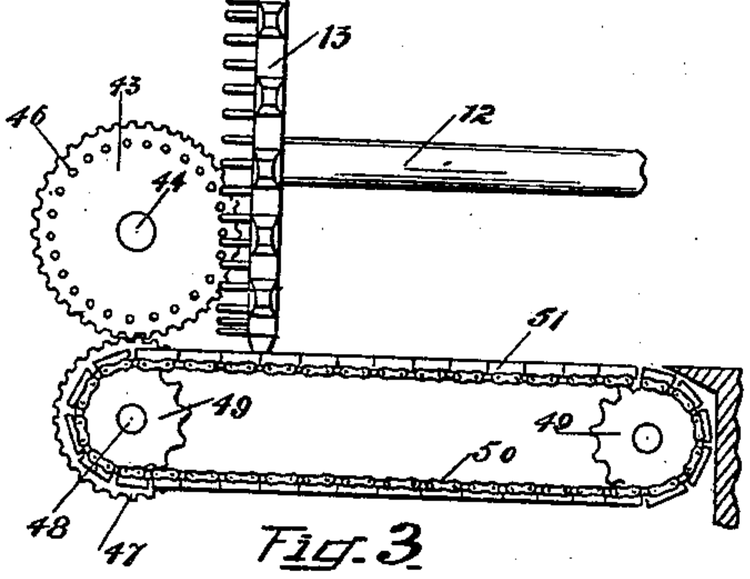
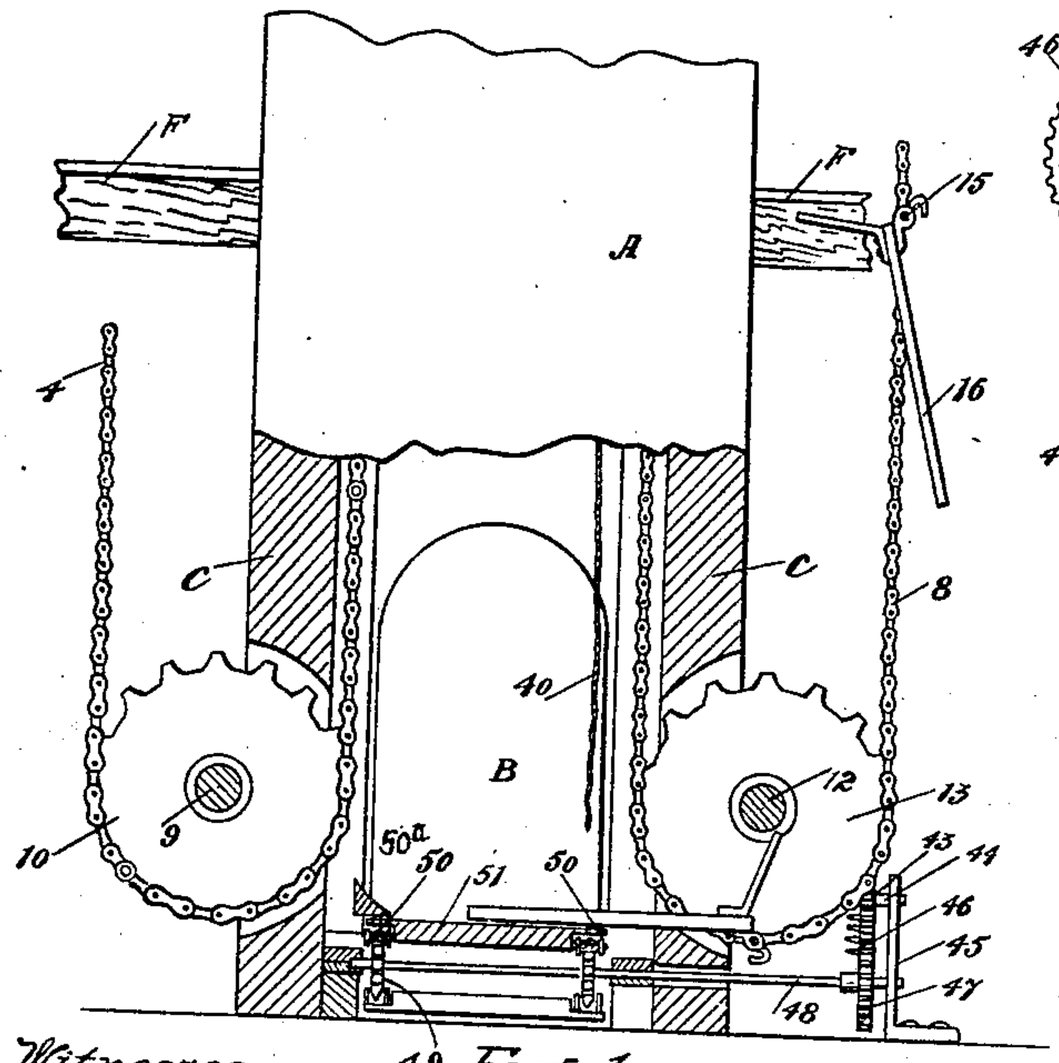


Fig. 3.



Witnesses

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2 SHEETS—SHEET 2.

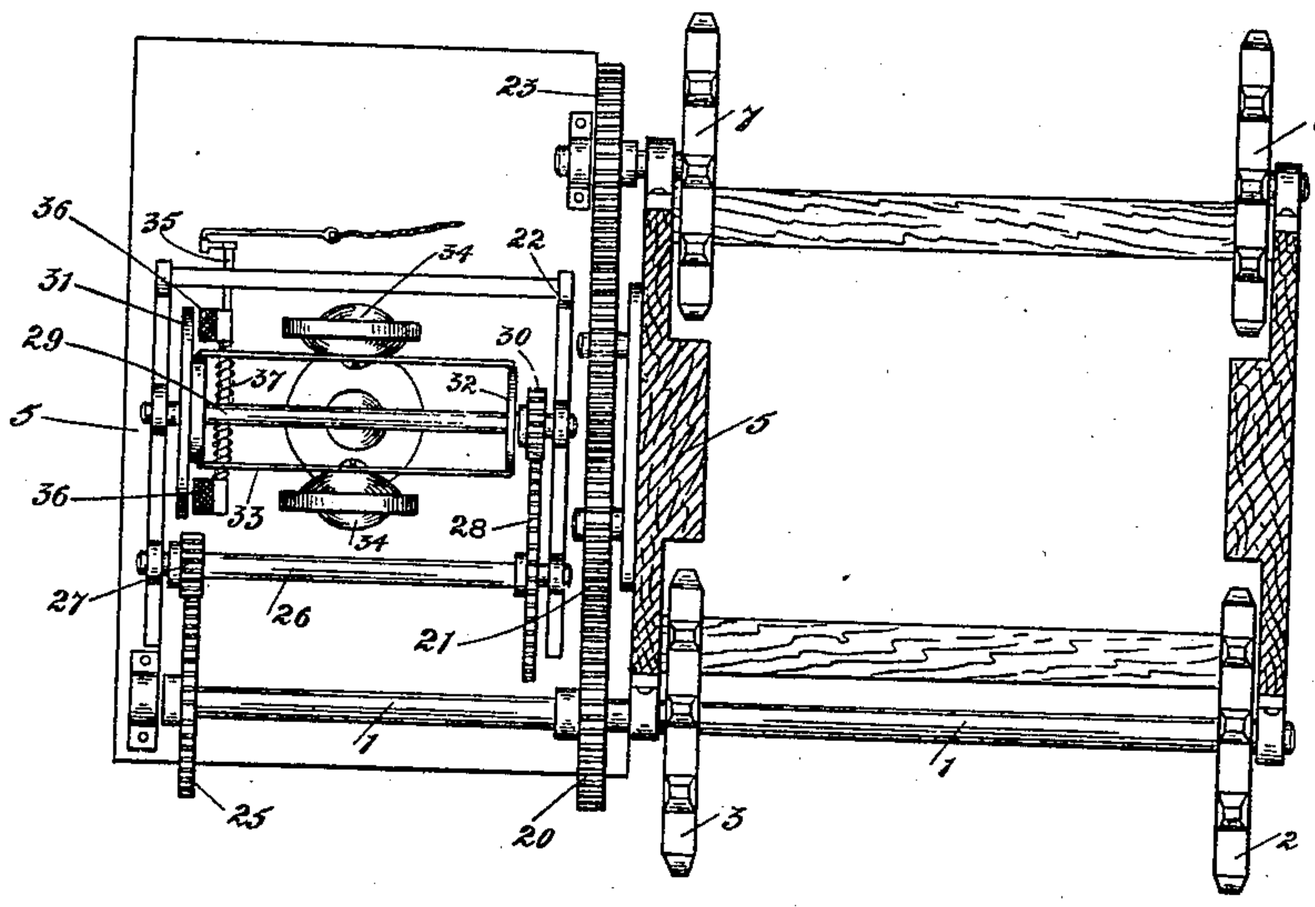

Fig. 4.

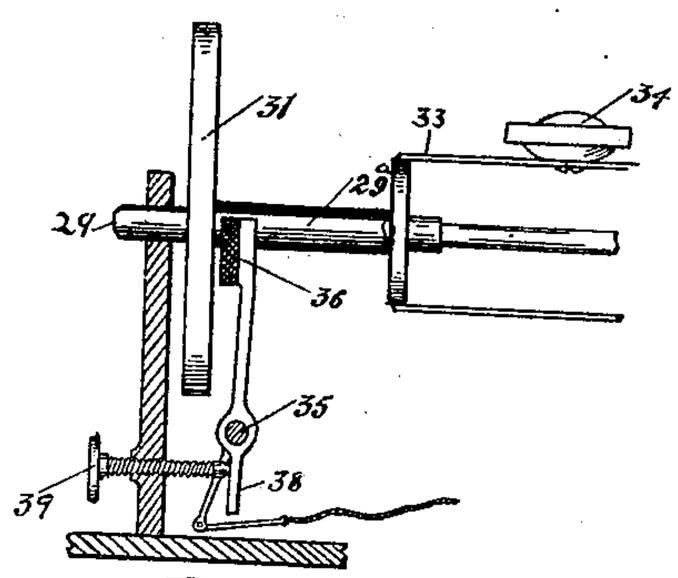

Fig. 5.

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UNITED STATES PATENT OFFICE.

BENJAMIN SMITH, OF UTICA, NEW YORK.

FIRE-ESCAPE.

969,209. Specification of Letters Patent. **Patented Sept. 6, 1910.**

Application filed October 15, 1908. Serial No. 457,780.

To all whom it may concern:

Be it known that I, BENJAMIN SMITH, a citizen of the United States, residing at Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to a fire escape, and I declare the following is a full, clear, concise and exact description thereof sufficient to enable one skilled in the art to make and use the same, reference being had to the accompanying drawings in which like reference characters refer to like parts throughout.

One of the particular features of the invention is the employment of endless chains, being passed over revolving members at the upper and lower ends, and one of which carries a series of platforms which by the operation of the device are brought successively to each story of the building at such a rate of speed that a person can easily step onto one as it comes by. At the bottom of the device the platform is withdrawn, the person landing on a moving walk extending to the exterior of the building.

There are other features of the invention which will be apparent on reading the specifications and drawings thereof.

In the drawings, Figure 1 is a front view of the device, the intermediate portions being removed and part of the front, which may be taken to represent the outer wall of the building, being also cut away; Fig. 2 is a view from the opposite side, showing the arrangement of gears at the top by means of which the chains are operated together; Fig. 3 is a view of part of the mechanism at the bottom, looking toward the right in Fig. 1, showing mechanism by which the moving platforms or walk is operated through connection with the chain carrying mechanism; Fig. 4 is a plan view of the top, and Fig. 5 is a sectional view on the line 5—5 of Fig. 4.

Referring to the figures in detail, A represents one wall of the structure which incloses the device and may be taken as representing the front or outer wall of the building, which is apertured as at B for access to and egress from the escape. C represents side walls the rear wall D also being provided with suitable openings, as E, and which separates the escape from the several floors from the body of the building, the several openings being provided at each floor F, so that a person can step from the floor F through the door E onto the platform as it passes down. It may be well to note in passing that in actual practice it is proposed to make the interior to provide for these platforms being about two feet square so that a single person can be readily accommodated, it being intended to have the platforms pass in such rate of travel that a considerable number of persons can escape from the building in a very limited time without overcrowding or accident.

Mounted at the top and at one side is shaft 1 which carries sprocket-wheels 2 and 3 the latter of which carries chain 4. A corresponding chain (not shown) is carried on sprocket-wheel 2. This shaft 1 extends beyond the escape proper, as seen in Fig. 4, and forms an element of the mechanism which operates and controls the device, as will be seen. On the opposite side of the device is mounted in suitable journals sprocket-wheels 6 and 7, each being provided with a chain, sprocket-wheel 7 carrying chain 8 (the chain for wheel 6 not being shown). The mounting or support of the wheels 6 and 7 is not extended across the space between these wheels as in the case of shaft 1, and a clearance is thereby provided for the platforms which are carried by chains 8 and that on wheel 6. At the bottom of the device and suitably supported is sprocket-wheel 10 suitably supported on the shaft 9 at the rear of the machine, a corresponding wheel being provided at the front, but not being shown in that figure, and which sprocket-wheels are engaged by the chain on sprockets 3 and 10 while sprocket 2 likewise carries a chain which rides on a gear at the bottom corresponding to 10, the latter chain and gear not being shown. At the opposite side of the machine, on shaft 12, is mounted sprocket-wheel 13 which carries chain 8. A corresponding wheel is placed at the front of the machine which carries the chain which rides on upper wheel 6, the lower wheel and the chain not being shown. On each side of the machine the chain 4 and its corresponding chain at the front and chain 8 and its corresponding

chain at the front are connected by rods 15, which are mounted at such points as to be substantially opposite each other.

On one side of the machine are mounted swinging platforms 16 by means of lugs passing around certain of the rods 15, the platforms being of suitable number for the use of the device. At the top of the machine is a bracket 17 and a stud 19ª which may be provided with a friction roller. The platform 16 has a hook 19 and an arm 18. When the chains which carry the platforms bring one of the platforms to the top the lug 19 strikes against the bracket 17 and tilts the platform 16 so that the arm 18 passes above the stud 19ª, In continued movement of the device the platform is swung into position horizontal of the escape, its free edge coming to rest upon one of the corresponding rods 15 on the opposite pair of chains, as seen in Fig. 1.

The device may be operated by very slight weight on any of the platforms, added weight increasing the rapidity of the movement which, however, is controlled by the mechanism to be described, which also controls the action of the chains to make them move synchronously.

As stated, shaft 1 extends across the device and carries gear 20 which meshes with gear 21 journaled on the wall of the fire escape and which meshes with gear 22, likewise mounted, the train of gears ending at gear 23 which is mounted to revolve with sprocket-wheel 7 on a common shaft. This causes the chains to move synchronously. At the farther end of the shaft 1 is a gear wheel 25. 26 is a shaft carrying pinion 27 which meshes with gear-wheel 25 and which has at its opposite end a gear 28. 29 is a shaft carrying pinion 30 which meshes with gear 28. Shaft 29 has at its outer end, slidably mounted thereon, a disk 31 which is connected with a spring governor. The governor comprises a disk 32 mounted on the shaft 29 and springs 33 connected with disk 32 and to the disk 31, directly as in Fig. 4 or by a collar 29ª as in Fig. 5, the springs being operative under centrifugal force of weights 34 whereby the action of the governor brings the disk 31 inward. These several gears and shafts are suitably mounted in frames, as will be understood.

On one side of the frames is suitably supported a brake-shaft 35 with brake-shoes 36. The brake-shoes are normally kept clear of the disk 31 by means of a spring 37 which holds the shoes to their normal limit from the disk 31, but in such a position relative thereto so that the action of the governor when it exceeds a certain speed will bring the disk into contact with the brake-shoes 36. The shaft 35 has a downward depending member 38 and the frame has an adjusting screw 39 adapted to bear against the member 38 whereby to adjust the position of the shaft and the brake-shoes at a given distance from the disk 31, so as to render the governor more or less sensitive, or in other words, operate at a degree of greater or less speed. To this member 38 is attached a brake rope 40 which extends downward within the fire escape and within easy reach of the doorway from any floor into the escape, so that any person can operate the rope to apply the brake and stop the movement of the chains and platforms as desired.

At the bottom of the device and at one side is placed a triangular strip 50ª which extends from front to rear and against which the free edge of the step bears as it approaches the bottom, the curvature of the strip being such as to maintain the platform in a level position after it has been freed from the bar 15 on its side of the machine.

At the bottom of the device is provided mechanism for operating the moving walk, extending to the exterior of the building. Sprocket-wheel 13 is provided with pins 42. A gear-wheel 43 is mounted on a shaft 44 supported in the bracket 45 mounted on the base of the structure. This gear-wheel is provided with pins 46 so that it may be rotated by action of sprocket-wheel 13. Wheel 43 meshes with a gear-wheel 47 mounted on shaft 48 which extends across the rear of the fire escape and carries sprocket-wheels 49 with chain 50 on which are mounted the steps of the walk, so that as the device is operated and the platforms are lowered to the base of the device the walk is operative to carry a person from the interior of the fire escape into the street.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A device of the character described comprising a plurality of sprocket chains mounted in pairs, a series of platforms adapted to be passed from the top to the bottom of the device by support thereof on the said chains, a laterally moving walk at the bottom of the device, gear mechanism operating the said chains synchronously and controlling the moving walk at the base of the escape, adjustable governing mechanism limiting the speed of operation of the device and means for retarding the action of the device independent of the governing mechanism, substantially as described.

2. In a device of the character described, a series of sprocket wheels mounted at the top and bottom of the device, sprocket chains supported on the said wheels, platforms supported on the chains at one side of the device, means at the top of the device whereby the platforms are thrown into a horizontal position to be supported by the chains on the opposite side of the device, a movable walk at the base of said escape, gear mechanism connected with the series of sprocket

wheels and operating said walk, and means for controlling the speed of action of the device, substantially as described.

3. In a fire escape the combination of gear wheels arranged in pairs, chains running on said gear wheels, one pair of chains having secured thereto pivotally mounted platforms and the opposite pair of chains having secured thereto bars to engage and hold said platforms in a horizontal position while descending; said gears and chains acting synchronously and a movable walk at the base of said escape operated thereby and a governing device for controlling the movement of said mechanism, substantially as described.

4. In an automatic fire escape, the combination of sprocket wheels arranged in pairs, sprocket chains riding thereon, platforms pivotally mounted on one pair of sprocket chains, bars mounted on the opposite pair of chains, a movable walk at the foot of the fire escape operatively connected with and synchronously acting with the said platforms, and an adjustable governing device for controlling said mechanism, substantially as described.

5. In a fire escape, the combination of sprocket wheels arranged in pairs, sprocket chains thereon, platforms pivotally mounted on one pair of chains, bars secured to the opposite pair of chains to support the outer edge of the platforms, and means swinging the said edge of the platforms into position for such support, the same comprising a fixed bracket, a lug on the platform engaging with the bracket, an arm on the platform and a bearing stud engaging the arm whereby to swing the platform into supported position, substantially as described.

6. In a fire escape, the combination of sprocket wheels arranged in pairs, chains running on the said wheels, platforms pivotally secured to one pair of chains and having lugs and arms mounted thereon, a fixed bracket adapted to engage the lug on the platform and mounted at the top of the escape by which engagement to swing the said platform, a stud fixedly mounted and adapted to engage the said arms and raise the platform into horizontal position whereby its free edge may be supported by the sprocket chains on the opposite side of the device, the said chains carrying means therefor, substantially as described.

7. In a fire escape, the combination of platforms pivotally mounted on sprocket chains, said platforms having lugs secured to their underside adapted to engage with fixedly mounted brackets at the top of the fire escape and swing the platform, said brackets, upwardly extending arms secured to the platform, fixedly mounted studs adapted to engage the arms and further swing the platforms with the continued movement of the chains into horizontal position whereby to rest on the opposite sprocket chains, the latter having bars provided therefor, substantially as described.

8. In a device of the character described, the combination of sprocket wheels arranged in pairs, chains running on said sprocket wheels, one pair of chains having secured thereto, pivotally mounted platforms and the opposite pair of chains, having secured thereto bars to engage and hold said platforms in a horizontal position while descending and triangular strips at the base of said device, adapted to support said descending platforms in a horizontal position after the free ends thereof have left the supporting bars, substantially as described.

9. In a fire escape, the combination of sprocket wheels, sprocket chains carried thereby, platforms pivotally mounted on said sprocket chains, mechanism to swing said platforms into horizontal position from beneath, bars secured on an opposite pair of chains, adapted to support the free ends of said platforms in a horizontal position, while descending, triangular pieces at the base of said escape, adapted to support the free ends of said platforms in horizontal position after said ends leave said bars, a movable walk adjacent to the base of the said fire escape and mechanism controlled by an adjustable controlling device for governing the said mechanism in synchronous action, substantially as described.

10. An automatic fire escape comprising a series of vertically movable chains with platforms carried thereby, said platforms pivotally mounted to one set of said vertically moving chains and adapted to engage the opposite set of said vertically moving chains by a movement from beneath whereby said platforms may be lowered to the ground in a horizontal position and platforms at the base of said aforementioned platforms and moving at right angles thereto, substantially as described.

11. In an automatic fire escape, the combination of a plurality of carrying platforms, certain thereof acting or moving vertically and certain thereof moving horizontally, means operatively connecting the systems whereby to secure the synchronous operation of the same, retarding means adjustable to govern the speed of the said platforms, substantially as described.

12. An automatic fire escape consisting of a plurality of rotatable chain-carriers, platform carrying and platform supporting chains thereon, said platforms, gear mechanism at the base of the escape intermeshed with the system of chain-carriers to be actuated therewith and a horizontally movable platform operated by said mechanism, substantially as described.

13. An automatic fire escape comprising a plurality of gear members arranged in a

vertical series and in a horizontal series, the series being operatively connected and carriers supported on each series of members, the vertically movable carriers being adapted to carry substantially to the level of the horizontally movable carriers, substantially as described.

14. An automatic fire escape comprising sets of vertically movable endless carrier chains, platforms carried thereby, a pair of said chains being on each side of the well or vertical chamber of the apparatus, one of said pair traveling on supports of a diameter substantially equal to the distance across the well and the said supports being placed to rotate with their periphery substantially at the bottom of the escape, whereby platforms carried by the chains pass to the bottom of the well and are there withdrawn to one side thereof and a guide adapted to support the free edge of the platforms, while being withdrawn, whereby to maintain the platforms level, substantially as described.

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

BENJAMIN SMITH.

Witnesses:
WALTER STAFFORD,
ELEANOR T. DE GIORGI.