No. 745,141. PATENTED NOV. 24, 1903.

F. BIELHEN.

FIRE ESCAPE.

APPLICATION FILED APR. 25, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

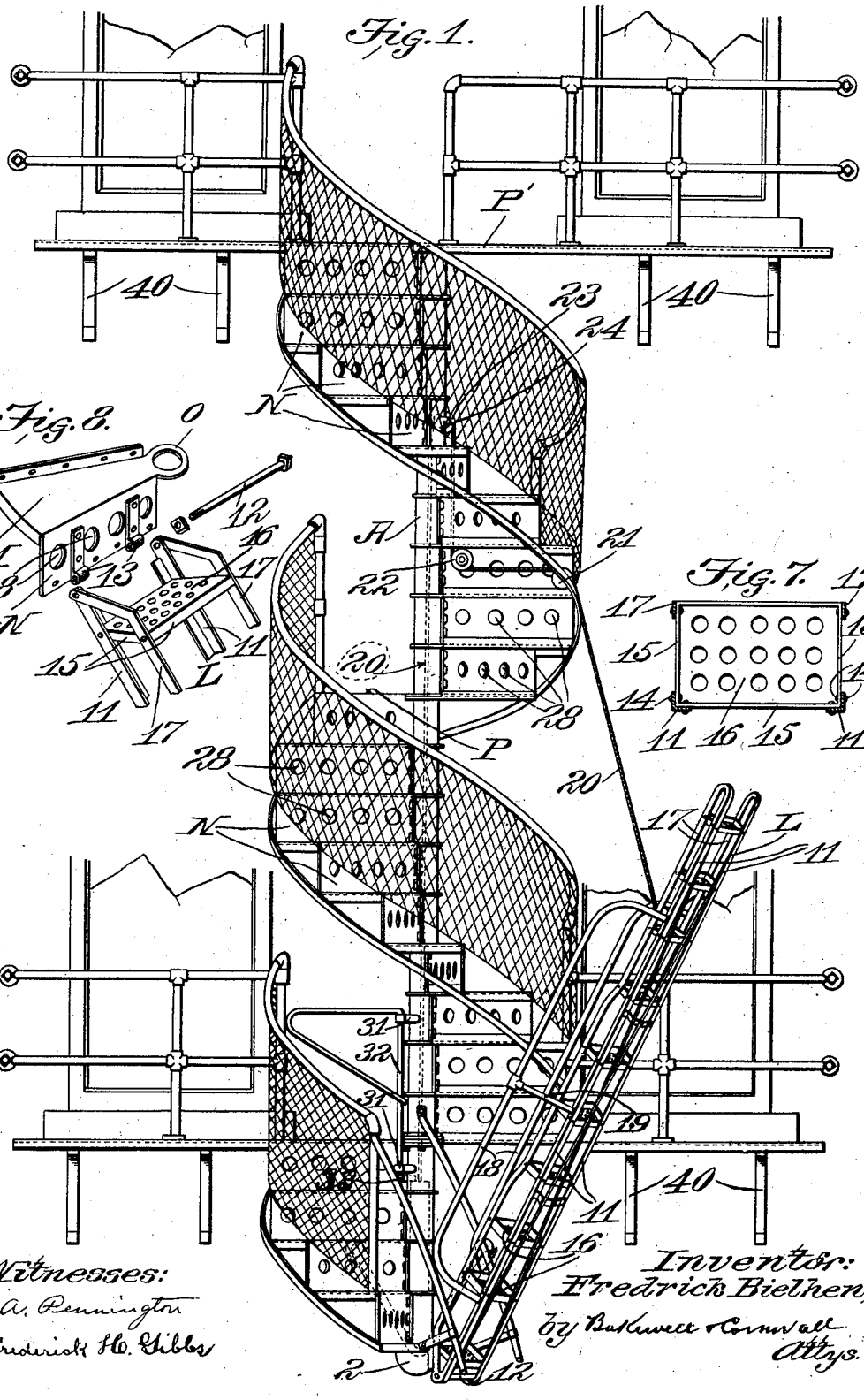


Fig. 8.

Fig. 7.

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

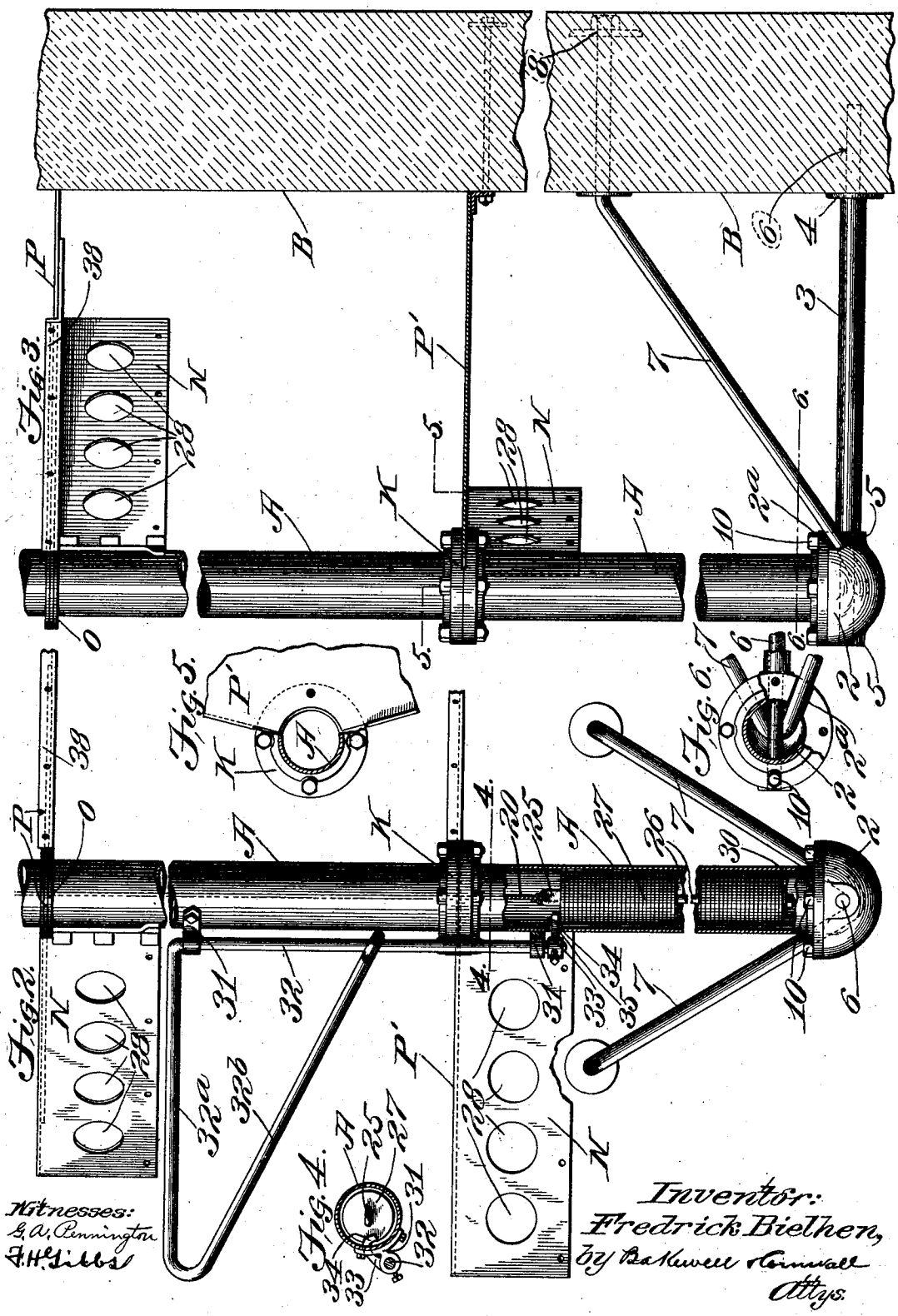
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NO MODEL. 2 SHEETS—SHEET 2.



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

No. 745,141. Patented November 24, 1903.

UNITED STATES PATENT OFFICE.

FREDRICK BIELHEN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO AMERICAN FIRE ESCAPE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 745,141, dated November 24, 1903.

Original application filed March 23, 1903, Serial No. 149,096. Divided and this application filed April 25, 1903. Serial No. 154,244. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK BIELHEN, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Fire-Escapes, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevational view of the fire-escape in position on a building. Fig. 2 is an enlarged elevational view of a portion of the lower part thereof broken for better illustration of details. Fig. 3 is a side elevation similar to Fig. 3, showing the supports for the central column attached to the building-wall. Fig. 4 is a section on line 4 4 of Fig. 2. Fig. 5 is a section on line 5 5 of Fig. 3, and Fig. 6 is a section of Fig. 3 on line 6 6.

This invention is an improvement upon the fire-escape shown and described in Letters Patent No. 695,140, of March 11, 1902, granted to me, and has for its object the production of that apparatus in an improved form. In the apparatus of that patent is a ladder which, it is stated, is hinged on the lower step, and when not in use may be swung up where it may be balanced by a cable and weight running in the pipe A or on the side of the building. Since filing the application upon which said patent was issued the ladder has been used extensively, and it has been found necessary to provide means for locking it in its elevated position, so as to prevent unlawful lowering of the same to permit access to the stairway from below, and many other features of detail construction have been changed to meet the requirements of practical use, the essential details of which are hereinafter more fully pointed out, and specifically referred to in the claims.

The general features of this invention are disclosed in an application filed by me March 23, 1903, Serial No. 149,096, from which this application is divided.

In modern building construction it is frequently found that the wall of the ground floor or first story, generally occupied by stores, is filled to such a large extent with glass that no convenient resting place is provided for the lower supporting-bracket shown in the patent mentioned and other means of support must be provided.

To support the standard A in the present construction, the lower end thereof is provided with the flanged collar 1, which has bolt-holes through the flange thereof at convenient intervals for attaching to it the pot 2, which pot is best shown in Figs. 2, 3, and 6.

Between the building-wall B and the standard A is a horizontal pipe 3, preferably provided with a flange 4 at one or both ends, and the pot 2 is provided with the offset 5, against which bears the outer end of said pipe 3, while the opposite end thereof bears against the building-wall, the rod 6 extending into said building-wall and into the said pot, as shown.

Extending obliquely downwardly from the building-wall is a rod or pipe 7, which loops under the rod 6 within the pot 2 and is preferably anchored within said building-wall, as by means of the anchors 8. The pot 2 is provided with vertically-extending slots or grooves 2^a, which permit its being placed in position after the rod 6, pipe 3, and rod 7 are positioned, after which the bolts or screws 10 are tightened to hold said parts firmly in place, thereby forming a very secure support at the lower end of the standard above which other means of support may run from the standard to the building-wall, as hereinafter mentioned. Secured to the lower step of the spiral stairway is a ladder L, formed with angles 11, provided with pintle-bearings, in which is held the pintle or rod 12, passing therethrough and through lugs 13, secured to one of the lower steps, the said angles extending thence to the end of the ladder and the flanges of said angles being utilized as means through which may be projected bolts or rivets 14 for securing the flanges 15 of the steps 16 to said angles, while other angles or straps 17 extend from the free end of the ladder back to the attached end thereof and are secured in the same manner to said flanges 15. The steps 16 are formed of perforated sheet metal stamped into the required form with said flanges 15 integral therewith.

At points intermediate the ends of the ladder are attached the ends of the rail 18, which ends are secured to said angles 11 and straps 17, rising thence away from and substantially parallel therewith for a portion of its length, while the intermediate risers or braces 19 are connected to said rail, straps, and angles to secure the said parts firmly together.

Secured to the ladder L at any convenient point is a cable 20, which extends thence upwardly over a pulley 21, secured back of one of the steps, near the outer end thereof, and thence over the companion pulley 22 near the inner end of said step, or, if desired, the first pulley may be omitted. The object of the two pulleys is to permit the cable extending upwardly in such lines as to provide sufficient clearance or head room for persons passing down the steps at all times.

From the inner pulley 22 the cable passes through an opening or openings in one or more steps and upwardly, where it passes over the pulley 23, secured in the bracket 24 on the side of standard A, thence through a convenient opening in said standard to the interior thereof, where it is attached to the loop 25 of the weight-rod 26, upon which rod are suspended a series of plates 27, which plates are formed in stamping the openings 28 of the risers N, the said plates being punched therefrom primarily to lighten said risers, and thereby decrease the weight of the structure, and afterward utilized to form the counterbalance-weight for the ladder L, thereby permitting the nicest adjustment of said balance with minimum cost of material, the several plates being held in position on the rod 26 by means of the washer-plate 30 and nut. (Shown in Fig. 2.) Thus it will be seen that the ladder L may be exactly counterbalanced, or it may be either overbalanced or underbalanced, according to the requirements at the particular point of application.

In some instances it may be desirable to have the ladder drop as soon as it is released and before the weight of a person descending is added thereto, as in hotels and factory buildings where women are employed. Secured to the standard A at convenient points above the point of ladder attachment are clips 31, (see Figs. 1 and 2,) within which are held the rod 32, provided with the horizontally-projecting offset 32^a and return oblique bend 32^b, which form a gate or barrier intended to rest normally parallel with the riser of the landing-step. Adjustably secured to the lower portion of said rod 32 is a member 33, provided with the curved extension 34, adapted to pass through an opening 35 in standard A and rest normally above the weight 27, thereby locking said weight in its lowermost position and positively preventing lowering of the ladder L either through accident or design except after movement of the gate or barrier, which latter projecting normally into the path of a person descending the fire-escape will be forced outwardly, thereby swinging the extension or lock 34 away from above the weight 27, whereupon the ladder L may fall of its own weight or upon application thereto of the weight of the person descending.

The tread M and risers N of the steps, as well as the rings O, surrounding the standard A, are preferably formed from stamped or pressed sheet metal by special dies and stamping-presses, the said parts being of uniform dimensions generally throughout the structure.

The intermediate platforms or platform between landings are formed of plates, as shown in Fig. 3, with loops integral therewith, which loops surround the standard A; but at the landings, where the flanged couplings K occur, the platform-plate P does not surround the standard, being let in between the flanges of said coupling, the meeting faces of which are slightly cut away for that purpose, as best shown in Figs. 3 and 5. At landings the platform is extended laterally along the side of the building and above some of the steps of the spiral stairway, the platform-plates being flanged at their outer edges and supported by angles 40, which terminate in extensions projecting into the building-wall, where they are properly anchored, and the platform being connected with the intermediate filler-plate P'.

From the foregoing it will be seen that the apparatus forming the subject-matter of this invention may be made in detached sections comprising a plurality of steps, which sections may be united at the point of application or at the building to which it is attached.

I am aware that minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

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

1. In a fire-escape, a ladder supported near the lower end thereof, a counterbalance-weight for said ladder, a receptacle for said counterbalance-weight, a locking means coöperating therewith adapted to lock said weight in position, and releasing means, normally in the path of a person descending said fire-escape, coöperating with said locking means, and adapted to be automatically operated by a person descending said fire-escape; substantially as described.

2. In a fire-escape, a spiral stairway and central supporting-column, a ladder, a weight in said column which is less than sufficient to hold said ladder normally elevated, a locking means for said weight, in said column, and a releasing means for said lock in the path of, and operable by a person descending said fire-escape; substantially as described.

3. In a fire-escape, a spiral stairway and central supporting-column, a ladder, a weight in said column which is less than sufficient

to hold said ladder normally elevated, a locking means for said weight, and a releasing means for said lock operable by a person descending said fire-escape; substantially as described.

4. In a fire-escape, a platform, a series of steps rising therefrom, a ladder supported below said platform, a counterbalance-weight coöperating with said ladder, means for locking said ladder in elevated position, and releasing means for said weight normally closing the passage from said platform to said ladder, and operable from said platform; substantially as described.

5. In a fire-escape, a central supporting-column, a spiral stairway, made in detached sections, each comprising a plurality of steps, a coupling for said sections, a platform connected with said coupling, a pivoted ladder normally sustained in an elevated position, a cable connected with said ladder, and a weight carried by said cable in said column; substantially as described.

6. In a fire-escape, a spiral stairway, made in detached sections, each comprising a plurality of steps, a sectional supporting-column, a flanged coupling uniting the said sections, a platform connected with said coupling between the flanges thereof, a weight in said column, a cable connected therewith, and a pivoted ladder normally sustained in an elevated position thereby; substantially as described.

7. In a fire-escape, a central supporting-column, a spiral stairway made in detached sections, a coupling for said sections, a platform connected with said coupling, a pivoted ladder normally sustained in an elevated position, a cable connected therewith, a weight on said cable, and a locking means for said weight in said column; substantially as described.

8. In a fire-escape, a spiral stairway and central supporting-column, a ladder, a weight in said column, a cable connected with said ladder and said weight, a locking means for said weight entering said column, and a releasing means for said lock operable by a person descending said fire-escape; substantially as described.

9. In a fire-escape, a spiral stairway and central supporting-column, a ladder, a weight in said column, a locking means for said weight projecting into said column, and a releasing means for said lock comprising a barrier normally in the path of a person descending said fire-escape; substantially as described.

10. In a fire-escape, a central column, a platform, a series of spiral steps rising therefrom, and being connected with said column, a ladder supported below said platform, a counterbalance-weight coöperating with said ladder, means entering said column, for locking said ladder in elevated position, and releasing means for said weight normally closing the passage from said platform to said ladder operable from said platform; substantially as described.

11. In a fire-escape, a hollow supporting-column, a spiral stairway, a weight in said column, a lock for said weight, a ladder connected with said weight, and automatically-operated means for releasing said weight; substantially as described.

12. In a fire-escape, a central supporting-column, a spiral stairway, a weight in said column, a ladder connected therewith, a pivotally-supported lock for said weight, and automatically-operated means for releasing said weight; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 23d day of April, 1903.

FREDRICK BIELHEN.

Witnesses:
FREDERICK H. GIBBS,
GEORGE BAKEWELL.