No. 679,385. Patented July 30, 1901.

H. KLEMME & E. AUGUSTIEN.

COUPLING HOOK FOR EXTENSION LADDERS.

(Application filed Mar. 14, 1901.)

(No Model.)

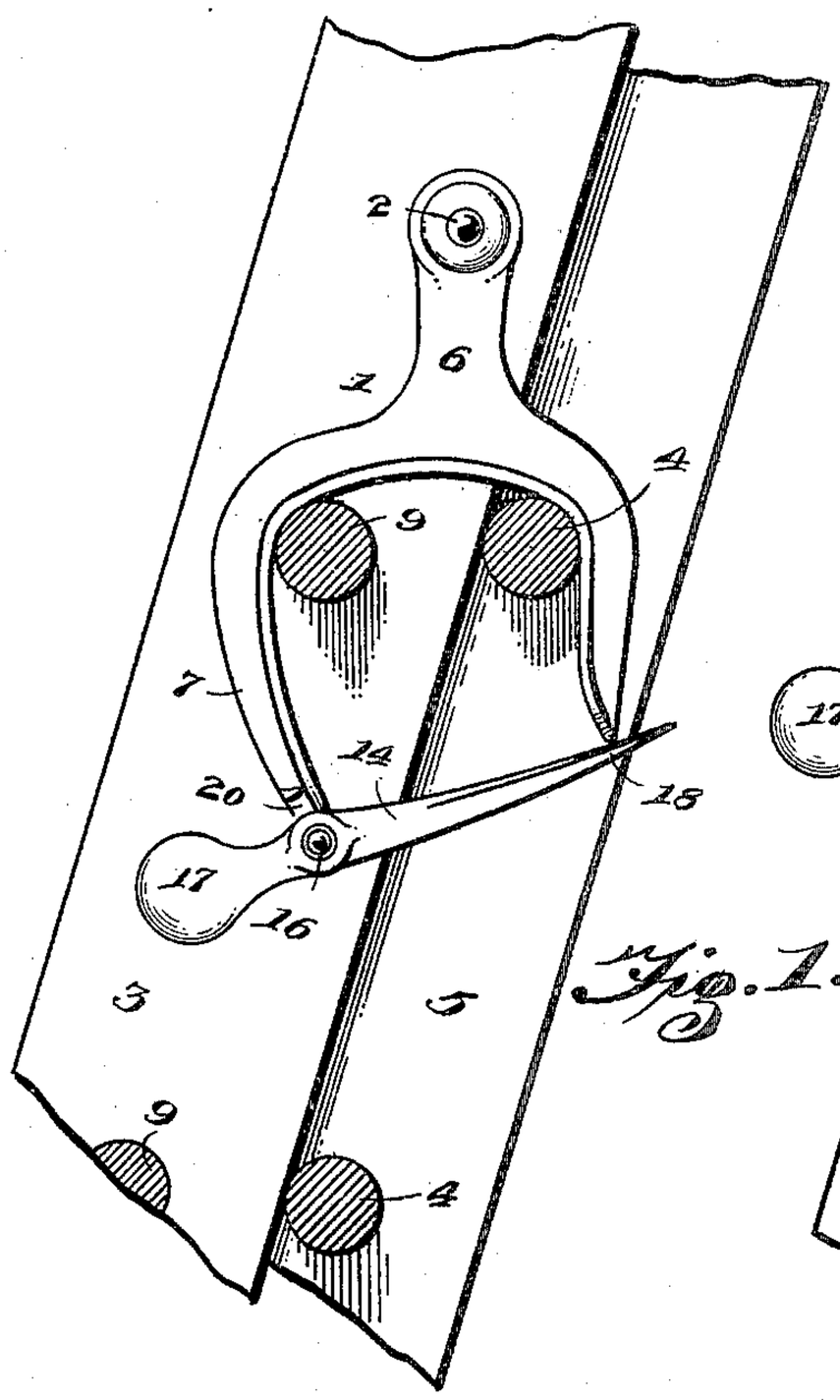


Fig. 1.

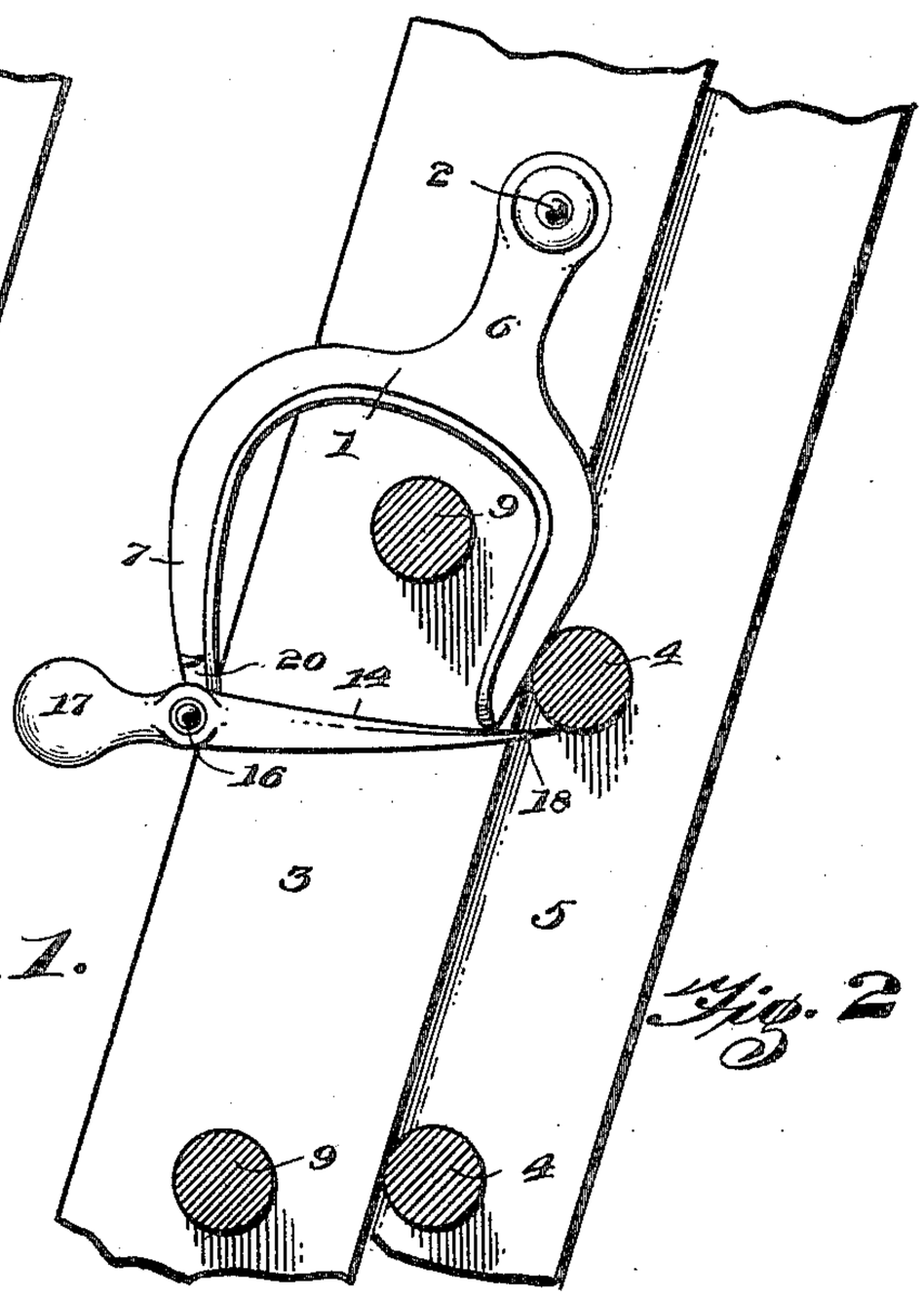


Fig. 2

Fig. 3.

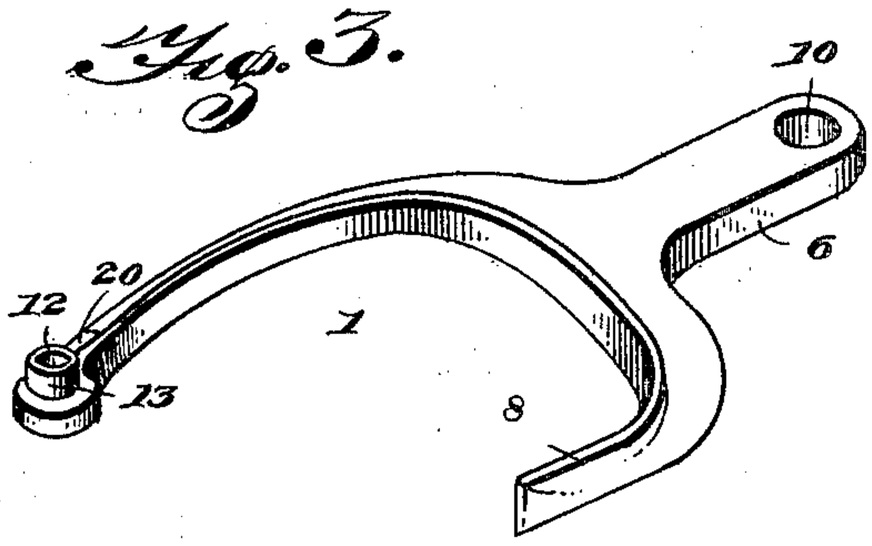
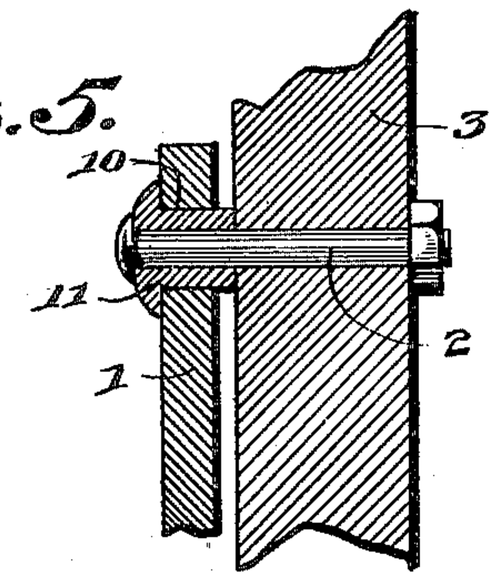


Fig. 5.



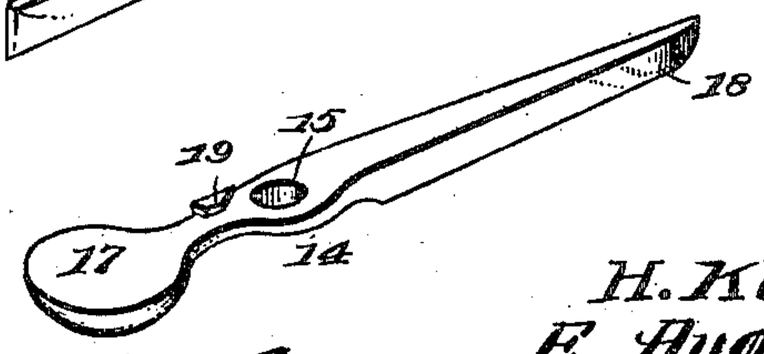


Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

HERMAN KLEMME AND EDWIN AUGUSTIEN, OF SHEBOYGAN, WISCONSIN.

COUPLING-HOOK FOR EXTENSION-LADDERS.

SPECIFICATION forming part of Letters Patent No. 679,385, dated July 30, 1901.

Application filed March 14, 1901. Serial No. 51,116. (No model.)

To all whom it may concern:

Be it known that we, HERMAN KLEMME and EDWIN AUGUSTIEN, citizens of the United States, residing at Sheboygan, in the county of Sheboygan and State of Wisconsin, have invented a new and useful Coupling-Hook for Extension-Ladders, of which the following is a specification.

The invention relates to improvements in coupling-hooks for extension-ladders.

The object of the present invention is to improve the construction of coupling-hooks for extension-ladders for the use of fire departments, painters, and the like, and to provide a simple, inexpensive, and efficient one having an automatically-operating latch-lever adapted to close the mouth of the hook to prevent the same from catching the rungs of a stationary ladder-section when an extension-ladder section is lowered.

A further object of the invention is to provide a coupling-hook of this character which will be adapted to open automatically and to close in a similar manner to enable it to be readily engaged with the desired rung.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a vertical sectional view of a portion of an extension-ladder provided with a coupling-hook constructed in accordance with this invention. Fig. 2 is a similar view, the hook being in position to be automatically opened when the extension-ladder section is moved upward. Fig. 3 is a detail view of the hook. Fig. 4 is a similar view of the weighted lever. Fig. 5 is a detail sectional view illustrating the manner of pivoting the hook.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a hook pivoted by a bolt 2 to an extension-ladder section 3 and adapted to engage the rungs 4 of a main or stationary ladder-section 5 to hold the extension-ladder section at the desired adjustment. The hooks are made right and left hand and are designed to be arranged at each side of an extension-ladder, and each hook consists of an upper centrally-arranged shank 6 and front and rear sides or legs 7 and 8, extending forward and rearward from the lower end of the shank and depending at points in advance and in rear of the shank to provide a recess or opening to receive one of the rungs 9 of the extension-ladder section 3 and one of the rungs 4 of the other section 5, as clearly illustrated in Fig. 1 of the accompanying drawings, whereby the extension-ladder section is rigidly supported at the desired adjustment. The shank is provided at its upper end with an opening 10, and a bushing 11 is preferably arranged therein and receives the bolt 2. The bushing, which has its inner end bearing against the adjacent side of the extension-ladder section, as clearly shown in Fig. 5, is provided at its outer end with an annular flange, and there is sufficient space between the annular flange of the bushing and the side bar of the extension-ladder section 3 to permit the hook to swing freely without binding.

The front or outer side of the hook extends downward beyond the inner or rear side and is longer than the same and is provided with an aperture 12, and it has an annular flange 13, arranged at the aperture and forming a tubular bearing or journal for a weighted lever 14. The lever 14 is provided between its ends with an opening 15 for the reception of the tubular journal 13, and it is secured to the same by a suitable fastening device 16, passing through the aperture 12 and having a head extending beyond the tubular journal to retain the lever thereon. The lever, which is normally arranged at an inclination, has its outer arm enlarged to form a weight 17, and its inner arm extends upward and rearward to a point beyond the inner side of the hook. The inner or upper end 18 of the weighted lever is arranged in the path of the rungs 4 of the sections 5, and it is adapted to be engaged by the same, as indicated in Fig. 2 of the drawings, whereby the hook is open. When the extension-ladder section 3 is raised from the position illustrated in Fig. 2, the inner side of the hook is swung inward or rearward over the adjacent rung 4, and by slightly lowering the extension-ladder section the parts are brought to the position shown in Fig. 1; but if the upward movement of the extension-ladder sec-

tion be continued the weighted lever will swing downward sufficiently to pass the said rung. As soon as the end 18 of the weighted lever has passed the said rung 4 it will be automatically returned to its normal position by the weighted arm 17. The weighted arm of the lever 14 performs the double function of automatically closing the lever and of swinging the hook rearward or inward to maintain it in a position for automatically engaging the rungs 4, and the said weighted arm swings the hook inward when the device is opened automatically, as above explained, so that when the extension-ladder section is lowered the hook will engage the rung.

The outer arm of the hook is provided at its inner face with a lug 19, arranged to engage an enlargement or boss 20, located at the outer side of the arm 7 of the hook and adapted to limit the upward swing of the weighted arm to prevent the weighted lever from reversing its position. The inner arm of the weighted lever abuts against the end of the inner side 8 of the hook. The hook receives one of the rungs of the extension-ladder section, and when it is in engagement with one of the rungs 4, as shown in Fig. 1, the rungs are located at opposite sides of the recess or space between the sides of the hook, whereby the hook is rigidly held and is prevented from moving in either direction.

It will be seen that the coupling-hook is exceedingly simple and inexpensive in construction, that it is strong and durable and adapted to be readily applied to an extension-ladder, and that the weight of the lever performs the double function of operating the lever and of swinging the hook inward to hold the same in proper position for engaging the rungs 4. It will also be apparent that the lever, which closes the mouth of the hook, is normally arranged at a slight inclination and is adapted when the extension-ladder section is lowered to cause the hook to swing forward and pass the rungs 4 to permit the said extension-ladder section to move freely and that the device will not interfere with the upward and downward movement of the extension-ladder section.

What we claim is—

1. A device of the class described comprising a hook pivoted at the top and provided with depending approximately vertical inner and outer sides forming a space or recess to receive the adjacent rungs of a ladder, and a lever arranged at a slight inclination and mounted on one of the sides of the hook and abutting against the other side and provided with a weight arranged to close the lever and to swing the hook inward, substantially as and for the purpose described.

2. A device of the class described comprising a hook consisting of a centrally-arranged shank, and the approximately vertical inner and outer sides depending from the shank, one of the sides being longer than the other, and a lever pivoted between its ends to the longer side of the hook and having its outer arm weighted and adapted to swing the hook inward and to hold the inner arm of the lever against the shorter side of the hook, substantially as described.

3. A device of the class described comprising a hook consisting of a centrally-arranged shank, and the approximately vertical sides depending from the shank, one of the sides being longer than the other and having a boss, and a weighted lever fulcrumed between its ends on the longer side of the hook and arranged to swing the latter inward and provided with a lug arranged to abut against the boss to limit the swing of the lever, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

HERMAN KLEMME.
EDWIN AUGUSTIEN.

Witnesses:
JOS. L. PFEILER,
JUL. KROOS.