

W. W. GRIER.  
Hydraulic-Rams.

No 157,325.

Patented Dec. 1, 1874.

Fig 1.

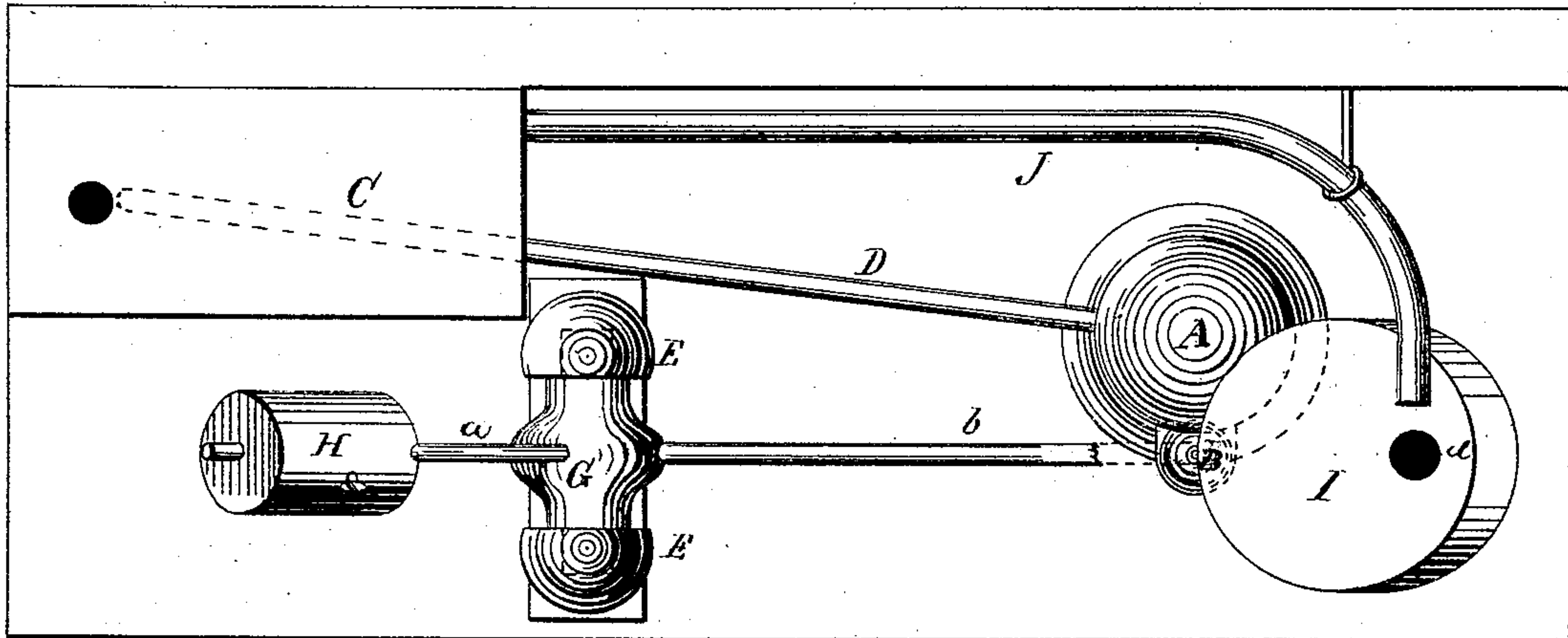
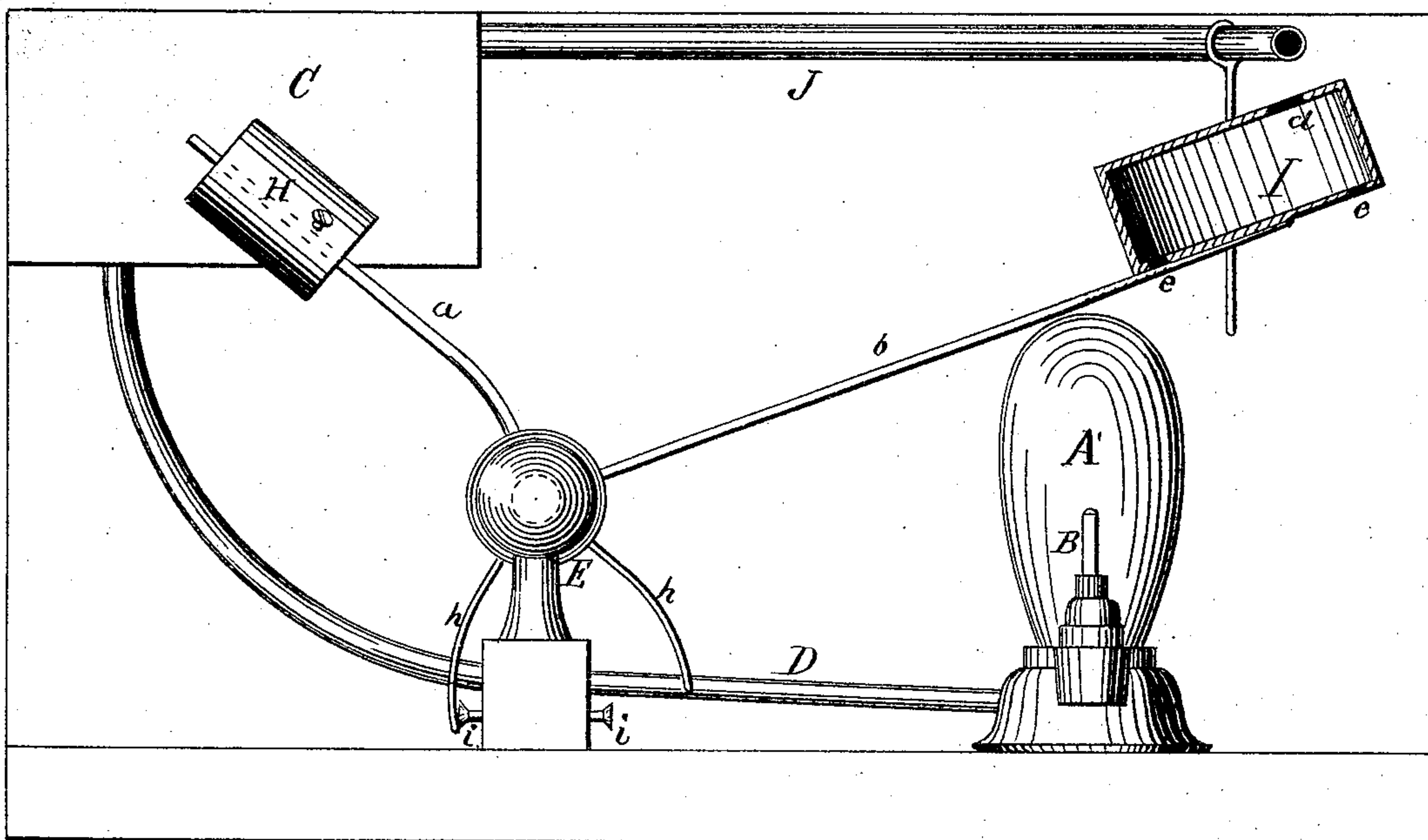


Fig 2.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

WILLIAM W. GRIER, OF HULTON, PENNSYLVANIA.

## IMPROVEMENT IN HYDRAULIC RAMS.

Specification forming part of Letters Patent No. **157,325**, dated December 1, 1874; application filed September 2, 1874.

*To all whom it may concern:*

Be it known that I, WILLIAM W. GRIER, of Hulton, county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Device for Starting a Hydraulic Ram, of which the following is a specification:

The nature of my invention consists in an automatic device to start the valve in a hydraulic ram by the employment of the waste water when said valve shall have stopped for want of sufficient headway or from the effects of sand or other like impediment, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, which forms a part of this specification.

Figure 1 is a top view, and Fig. 2 is a side view, of my invention.

A represents a hydraulic ram, with its valve B constructed in any of the known and usual ways. C represents the reservoir, from which water is conveyed to the ram through the pipe D in the usual manner. To one side of the ram A are two posts or standards, E, between which is a roller, G, hung upon a shaft or journals having their bearings in said posts. From the roller G extend two arms, *a* and *b*, as shown. The arm *a* is provided with an adjustable weight, H, fastened at any point desired, by a set-screw or other convenient means. To the outer end of the arm *b* is fastened a cup, I, which is closed on top, and has an aperture, *d*, therein. In the bottom of the cup I is a small drain or outlet, *e*. From the top of the reservoir C extends a waste-pipe, J, the end of which is curved forward, so as to be immediately over the opening *d* of the cup I when said cup is in its normal position. The normal position of the cup is elevated, as shown, which it attains by means of the weight H on the arm *a*. The tilting of the roller G with its

arms is limited by means of curved rods *h h* striking set-screws *i i*, and by the adjustment of said set-screws the amount of the movement of the roller can be varied, so as to make the device act just as desired.

Automatic starting devices have been used for hydraulic rams whereby the waste water escaping from the valve has been utilized. A serious objection to these devices arises from their failure to repeat their operation upon the continued stoppage of the ram. I overcome this objection. The operation of my device will be repeated so long as there is waste water escaping from the reservoir.

The operation of the device is as follows: When the valve B, from any cause, should stop, the waste water or overflow from the reservoir C will pass through the waste-pipe J and fill the cup I. As soon as this cup overbalances the weight H the cup will descend and the arm *b* strike the end of the valve, so as to start the same. The valve being then in operation, the flow of waste water from the reservoir is at once discontinued, and the cup soon becomes emptied through the drain or waste-outlet *e*, so that the weight H can overbalance and elevate it.

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

1. In combination with a hydraulic ram and its valve, the waste-water pipe of the reservoir and starting mechanism, substantially as described, for operating the valve, as and for the purpose set forth.

2. The rods *h h* and screw *i i* for adjusting and limiting the tilting of the roller G, as set forth.

In testimony that I claim the foregoing as my invention, I hereunto affix my signature this 1st day of September, 1874.

WILLIAM W. GRIER.

Witnesses:

JNO. A. STRAIN,  
G. H. WARD.