F. VAN D. CRUSER.

APPARATUS FOR TESTING THE BREAKING STRENGTH OF MATCH SPLINTS AND THE LIKE.

APPLICATION FILED DEC. 14, 1914.

1,200,086. Patented Oct. 3, 1916.

Fig. 1.

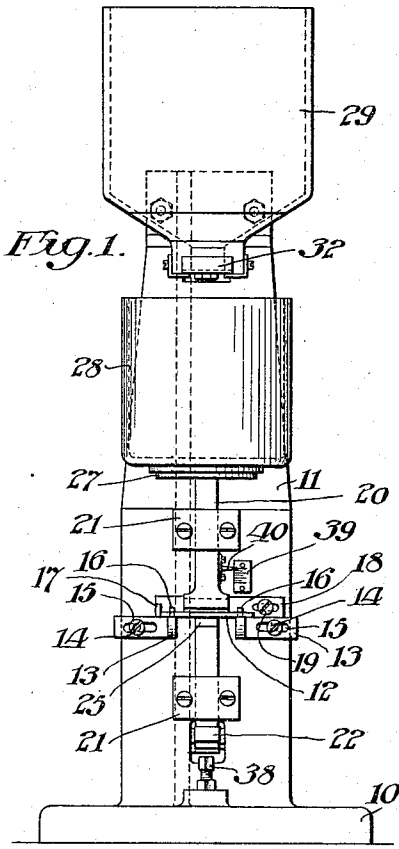


Fig. 2.

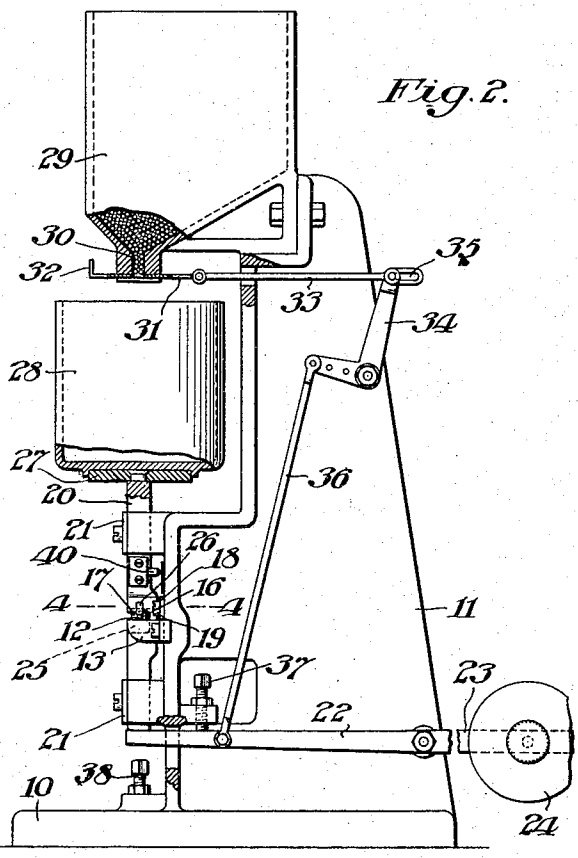


Fig. 4.

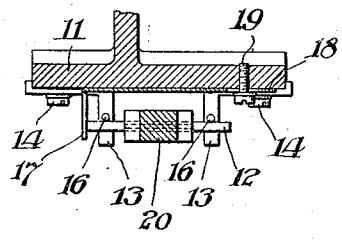
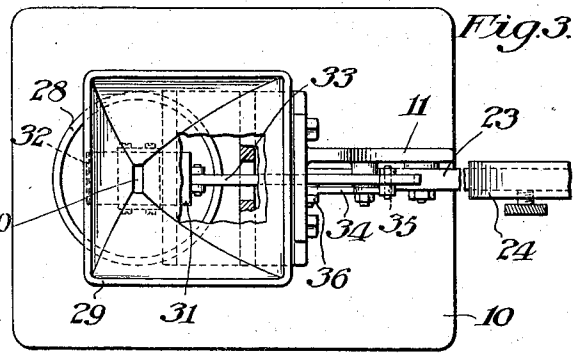


Fig. 3.



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UNITED STATES PATENT OFFICE.

FREDERICK VAN DYKE CRUSER, OF OSWEGO, NEW YORK, ASSIGNOR TO THE DIAMOND MATCH COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

APPARATUS FOR TESTING THE BREAKING STRENGTH OF MATCH-SPLINTS AND THE LIKE.

1,200,086. Specification of Letters Patent. Patented Oct. 3, 1916.

Application filed December 14, 1914. Serial No. 877,035.

To all whom it may concern:

Be it known that I, FREDERICK V. D. CRUSER, a citizen of the United States, and resident of the city and county of Oswego and State of New York, have invented certain new and useful Improvements in Apparatus for Testing the Breaking Strength of Match-Splints and the like, of which the following is a specification.

The object of this invention is to provide an apparatus of simple and efficient construction for testing the transverse breaking strength of match and similar splints.

In the present form of embodiment of my invention means are provided for supporting a horizontally-disposed specimen splint at or adjacent its ends, and intermediate the ends of the splint is a vertically movable bar or plunger having a surface which is adapted to bear upon the unsupported body portion of the splint. This bar or plunger is equipped with a detachable cup which may be gradually loaded with shot or other weight material from an overhanging hopper until the load is sufficient to break the splint, and means are provided whereby the flow of material to the cup is automatically checked upon the breaking of the splint, to the end that the contents of the cup may be weighed and the transverse breaking strength of the splint thus be accurately ascertained.

My invention also comprises various novel features of construction and operation, all of which will be hereinafter fully described and definitely claimed.

In the drawings, Figure 1 is a front elevation of the apparatus, showing a specimen match splint in position to be tested. Fig. 2 is a side elevation of the apparatus, partly in section. Fig. 3 is a plan, the hopper and standard being slightly broken away to expose parts otherwise concealed. Fig. 4 is a transverse section, as on the line 4—4 of Fig. 2.

10 designates a suitable base and 11 a standard thereon. On the face of the standard are spaced projections adapted to support the ends of a horizontally-disposed specmen splint, as 12. In the present instance these projections comprise angle-brackets 13 the basal parts of which are slidingly fitted to ways in the standard and adjustably held in place by set-screws 14 passing through elongated holes 15 in such parts. By proper adjustment of the brackets relative to each other a specimen splint of a predetermined length may be supported, at or adjacent its ends, upon the outwardly projecting limbs of the brackets. These limbs are preferably provided with upstanding teats or studs 16 which rearwardly support and position the splint. An adjustable end stop for the splint is also provided, which stop comprises a forwardly projecting arm 17 on a bracket bar 18 which is secured to the standard by a set-screw 19 passing through an elongated hole in the bar. By this construction the bar with its stop arm may be readily adjusted transversely of the standard and secured, in order to determine the endwise position of the splint.

20 designates a vertically movable bar or plunger arranged midway between the brackets 13. This bar is slidingly fitted to spaced guides 21 on the standard, being supported at its lower end by the arm 22 of a lever which is fulcrumed to one side of the standard. The other arm 23 of the lever bears an adjustable weight 24 which may be set toward or from the fulcrum of the lever as desired in order to counterbalance the bar 20 and its appurtenances, as will presently appear.

The face of the bar 20 is appropriately recessed, as at 25, to permit the disposition of the splint upon the supporting brackets and to provide a bearing surface which overhangs the unsupported body portion of the splint. This bearing surface is preferably slotted to receive a piece of rubber 26, or other cushioning substance for the splint.

On the bar is a head 27 upon which is detachably seated a cup 28 adapted to receive shot, or other suitable weight material, from a suitable source of supply. In the present instance shot is supplied from a hopper or magazine 29 which is supported on the standard so as to overhang the cup 28. The discharge orifice 30 of the hopper is located centrally above the cup, or substantially so, and is provided with an apertured slide-gate 31 which may be moved to open or close the orifice and thus respectively permit or check the flow of shot from the hopper to the cup, as desired. One end of the slide gate is provided with a lip 32 whereby the gate may be conveniently seized and moved to bring its aperture into register

with the orifice of the hopper. The opposite end of the gate is connected by means of a link 33 with one arm of a bell-crank lever 34 which is pivoted to the side of the standard, the link having a pin and slot connection, as at 35, with the lever so as to permit the manual shifting of the gate. The other arm of the bell-crank lever is connected by means of a link 36 with the inwardly extending lever arm 22, whereby when the latter is depressed the lever and link connections are actuated to shift the gate to closing position and thus check the discharge of shot from the hopper to the cup.

Suitably disposed on the standard 11, adjacent the outer end of the lever arm 22, are upper and lower screws 37, 38, respectively, which serve as adjustable stops to determine the range of vertical movement of the lever arm. The standard is preferably provided, adjacent the bar 20, with a graduated scale 39 to which points an index member 40 on the bar, the index being at zero when the lever arm is in raised or normal position.

The operation of the apparatus thus described is briefly as follows: The bar 20, with the empty cup thereon, is lifted by hand until the lever arm 22 impinges against the screw 37, the counterweight 24 being adjusted on the arm 23 to balance the parts in this position. The gate 31 is manually moved to the left to close the discharge orifice of the hopper, the slotted outer end of the link permitting this movement. The hopper is supplied with shot or pellets. A specimen splint is now positioned on the brackets 13 and the gate is pushed to the right until the opening therein registers with the discharge orifice of the hopper, whereupon the pellets flow from the hopper into the underlying cup. As the load in the cup increases the bar bends the opposing unsupported body portion of the splint, the extent of the bend being indicated by the relative position of the index and scale. The bending continues until the splint breaks, which it does abruptly. Thereupon the bar 20 drops and sharply depresses the opposing lever-arm until the latter impinges against the screw 38, such movement being transmitted through the links and bell-crank lever to the gate in a manner to cut off the flow of material from the hopper. This done the cup is removed from its support and the contents weighed, such weight denoting the transverse breaking strength of the splint. The material is returned to the hopper and a similar operation repeated on other specimen splints.

I claim—

1. In an apparatus of the character described, the combination with means for supporting a splint horizontally at points at or adjacent its ends, of a vertically reciprocative bar having a portion arranged to overhang and bear directly upon the unsupported body portion of the splint, a detachable holder on said bar, means for loading said holder with weight material, and determining means for the load actuated by the said bar in the descent upon the breaking of the splint.

2. In an apparatus of the character described, the combination, with means for supporting a splint horizontally at points at or adjacent its ends, of a vertically reciprocative bar having a portion arranged to overhang and bear directly upon the unsupported body portion of the splint, a detachable holder on said bar, a hopper arranged to load said holder with weight material, a gate for the discharge orifice of the hopper, an element against which said bar impinges during its descent, and connections between said element and the gate whereby said gate is closed when the splint is broken by the load.

3. In an apparatus of the character described, the combination, with means for supporting a splint at points at or adjacent its ends, of a member arranged to bear upon the unsupported body portion of the splint, a detachable holder on said member, a hopper arranged to load said holder with weight material, a gate for the discharge orifice of the hopper, a counterpoised lever engaged by said member, and connections between said lever and the gate whereby the gate is closed when the splint is broken by the load.

4. In an apparatus of the character described, a standard, adjustable supports thereon for the ends of a horizontally disposed match splint, a vertical slide bar on said standard movable between the supports, having a bearing surface overhanging the unsupported body portion of the splint, a detachable holder on said bar, a hopper arranged to load said holder with weight material, a gate for the discharge orifice of the hopper, an element against which the said bar impinges during its descent, and connections between said element and the gate whereby said gate is closed when the splint is broken by the load.

Signed at the city and county of Oswego and State of New York this 8th day of December, A. D. 1914.

FREDERICK VAN DYKE CRUSER.

Witnesses:
MINNIE L. WHITE,
WILLIAM A. ALLEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."