

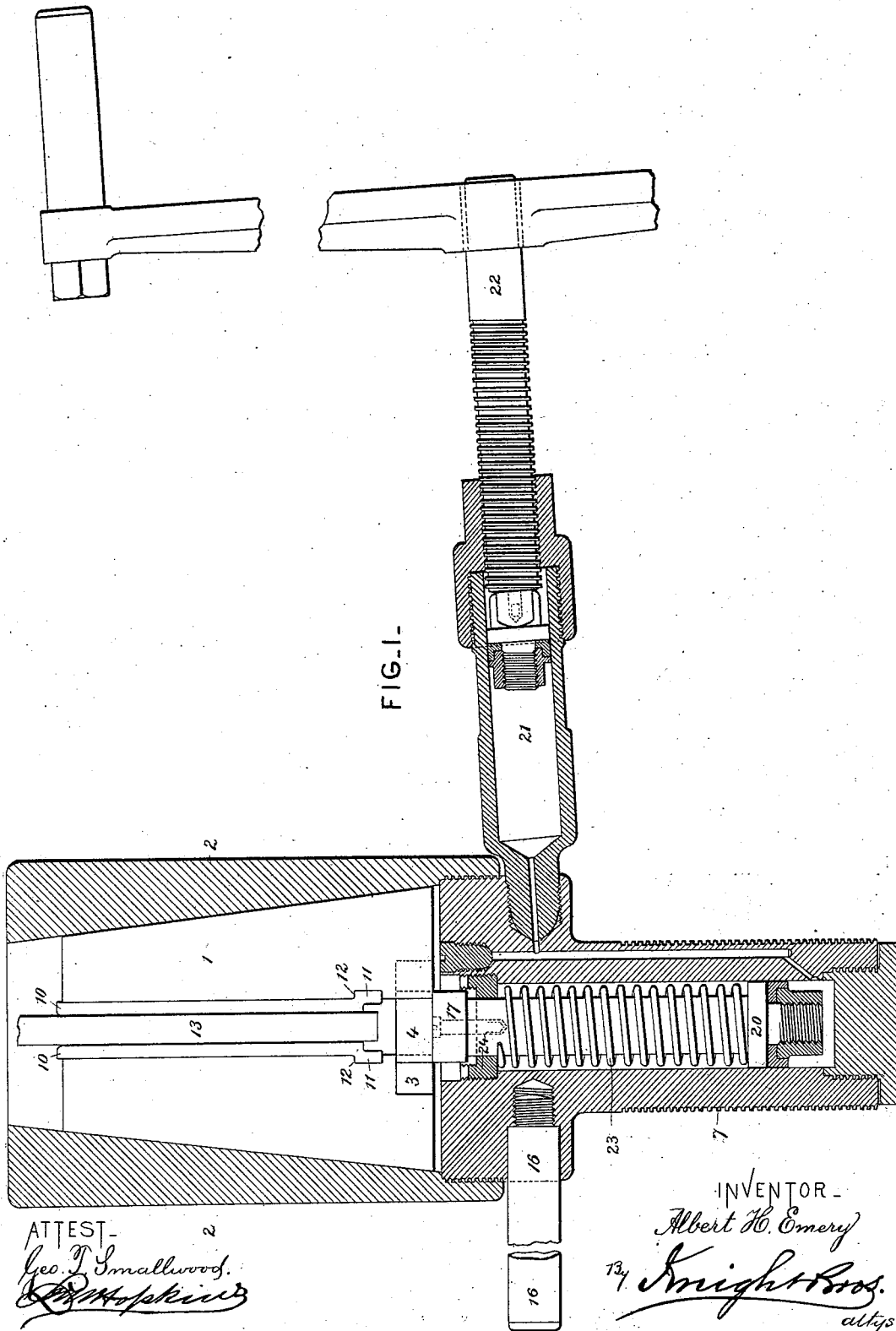
(No Model.)

2 Sheets—Sheet 1.

A. H. EMERY.
HOLDER FOR TESTING MACHINES.

No. 306,730.

Patented Oct. 21, 1884.



(No Model.)

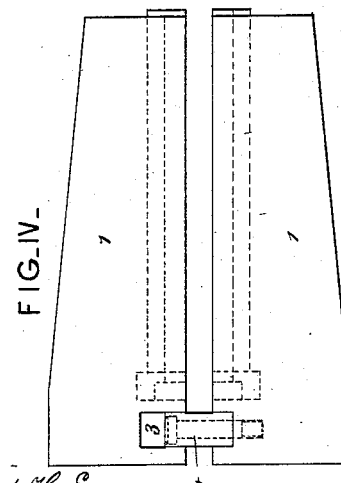
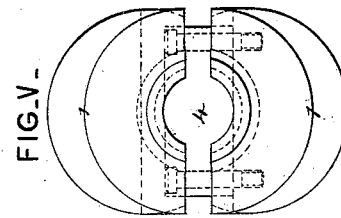
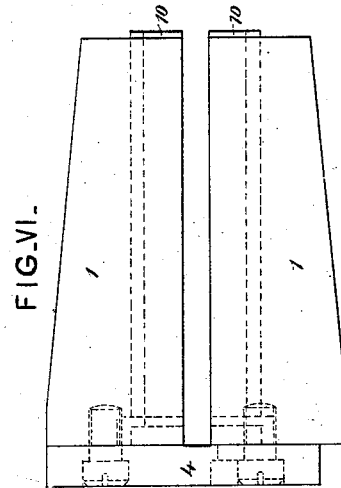
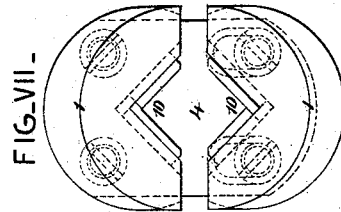
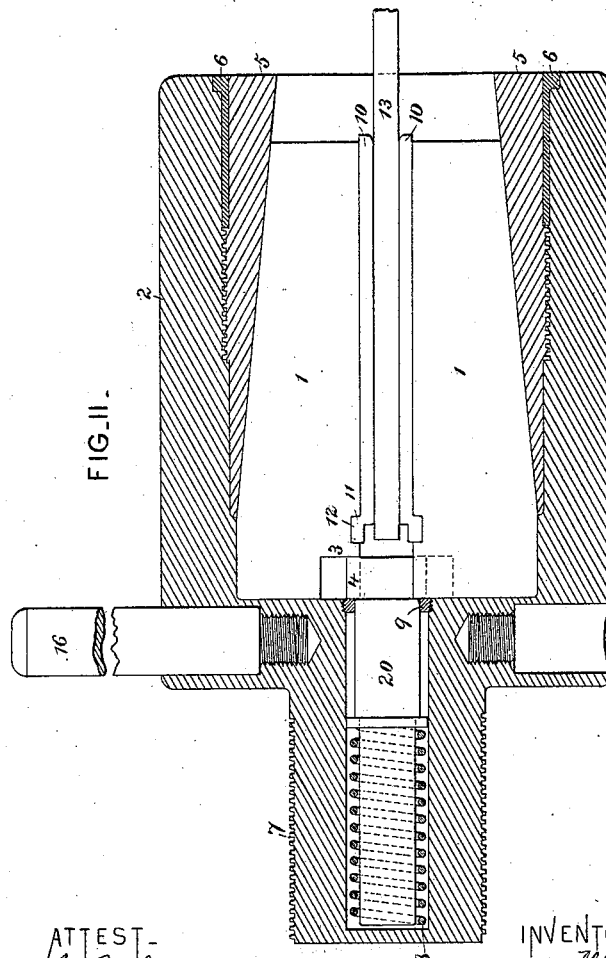
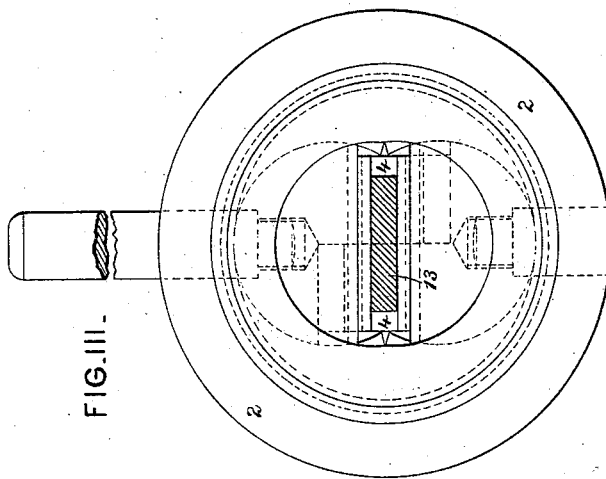
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HOLDER FOR TESTING MACHINES.

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ATTEST.
Geo. T. Smallwood,
Attorney.

INVENTOR.
Albert H. Emery
134 *Knights Bros. attys.*

UNITED STATES PATENT OFFICE.

ALBERT H. EMERY, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE
EMERY SCALE COMPANY, OF SAME PLACE.

HOLDER FOR TESTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 306,730, dated October 21, 1884.

Application filed February 7, 1881. (No model.)

To all whom it may concern:

Be it known that I, ALBERT HAMILTON EMERY, a citizen of the United States, formerly of New York, now residing at Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Holders for Testing-Machines, of which the following is a specification.

The subject of my invention is a holder for testing-machines constructed with a set of holding-wedges working within converging seats in a sleeve or casing and forced forward simultaneously by a hydraulic ram acting on a plunger. The wedges are provided at their heels with plates or lugs to compel their simultaneous movement by the engagement of the plate or lug which projects from one wedge beneath the heel of the other. The converging seats are preferably formed in a bushing secured within the sleeve or casing of the holder and reversible, so that the holder may be adapted for strains of either tension or compression, while the wedges are caused to tightly grip the specimen by the force of the strain applied thereto, whether in tension or compression, as hereinafter described. A spring is employed to retract the plunger when released by the pump of the hydraulic ram.

In the accompanying drawings, Figure I is a longitudinal section of a holder illustrating parts of the invention. Fig. II is a longitudinal section of a holder illustrating other parts of the invention. Fig. III is an end view of the holder shown in section in Fig. II. Fig. IV is a side view of the paired wedges with bushings adapting them to grip a specimen of cylindrical section. Fig. V is an end view of the same. Fig. VI is a side view of the paired wedges with bushings adapting them to grip a square specimen. Fig. VII is an end view of the same.

1 represent a pair of holding-wedges having cylindrical backs; and 2 a sleeve having cylindrical seats with converging axes within which said wedges work. Each of the wedges is adapted to be engaged by a lug or plate, 4, at the heel thereof, so as to compel their simultaneous movement within the sleeve. These plates may be variously constructed and applied. For example, there may be a lug pro-

jecting from the heel of one wedge and engaging in a recess in the face of the opposite wedge, as represented in Figs. IV and V, and fully described and claimed in my application No. 120,077, of even date herewith; or the wedges may be held relatively by a pair of lugs or plates, one projecting from the heel of each wedge and engaging behind the heel of the other, as represented in Figs. I, II, and III; or they may be held by a single plate, as represented in Figs. VI and VII. In this case the plate is fastened securely to the heel of one wedge, and provided at its other end with slots for the reception of the shanks of screws which are driven into the end of the opposite wedge. The heads of the screws abutting against the plate prevent the independent longitudinal movement of either wedge, while the slots permit their free movement to and from each other.

5 represents a reversible bushing secured within the sleeve 2, and formed with the cylindrical seats for the wedges, which, by reason of their cylindrical backs, are enabled to turn freely on their axes, and thereby adjust themselves automatically to a specimen and grip the same with uniform pressure. The thread by which the bushing is screwed into the sleeve projects from the surface, as shown in Fig. II, so that the said bushing, with the wedges, may be readily reversed in position in order to adapt the holder for gripping a specimen under either tension or compression, as may be required. The annular recesses between the forward end of the bushing and the surrounding sleeve is filled by a ring, 6, enabling the sleeve to afford a solid support or bearing for the wedges to resist and sustain the radial pressure which they exert when strains are applied. The shank of the holder is shown at 7 screw-threaded to adapt it to be fastened to the draw-head, piston-rod, or other part of the testing-machine. The said shank may be screwed into the sleeve 2, as illustrated in Fig. I, or formed in one therewith, as shown in Fig. II.

8 represents a spring for forcing the wedges out, so as to apply initial pressure to the specimen, as I have described in my application above referred to. Said spring constitutes no

part of my present invention, but is adapted for use in connection with other parts thereof, as illustrated in Fig. II. It operates on a ram, 20, confined by a guide-ring, 9.

5 10 represents inner bushings interposed between the holding-wedges 1 and a specimen, 13, and adapted by their shape and dimensions to conform to the size of the specimen to be tested. The said inner bushings are provided with
10 shoulders 11, engaging in recesses 12 near the heels of the wedges, so as to hold them securely under longitudinal strain. Handles are shown at 16 for carrying the holder and screwing it into the head of the testing-machine or other
15 part to which it is to be applied.

17 represents an anvil of hardened steel for receiving the impact of recoil on the breaking of a specimen.

In my present invention I employ, for the
20 purpose of forcing the wedges out and applying initial pressure to specimens, a hydraulic ram, 20, which may be actuated by the pump-plunger 21 and crank-screw 22, or other suitable means, the water being forced beneath the
25 ram 20, which acts upon the wedges 1, and when released by the retraction of the screw 22 is forced back by a spring, 23, confined by a cap, 24.

Instead of working the ram by direct connection with a pump, it may be connected with
30 an accumulator actuated by gravity or steam; or the ram may be connected directly with the liquid in the straining-press, so that the pressure on the ram will correspond with the strain
35 on the specimen. The details of these connections are reserved for other applications.

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

1. The combination, with the gripping- 40 wedges, of a hydraulic ram to press the said wedges forward and cause them to grip the specimen before or during the application of the strain.

2. The combination of the gripping-wedges 45 and hydraulic ram, and a pump for actuating the ram, substantially as and for the purposes set forth.

3. In combination with one or more sliding wedges, a plate fixed to and projecting from 50 one or each of said wedges and engaging behind the heel of the other, so as to compel them to move in unison.

4. The combination, with the sleeve or case and the sliding wedges, of a bushing screwed 55 into the said sleeve and containing seats for the sliding wedges.

5. The combination, with the holding-wedges and the sleeve containing the same, of the converging bushing constructed so as to be reversible, to adapt the holder for use for strains 60 of either tension or compression.

6. The combination, with the sleeve and reversible bushing, of a band filling the annular space between the sleeve and the forward end 65 of the bushing, to adapt the sleeve to afford a solid support against the radial pressure of the wedges, as explained.

7. The combination of the gripping-wedges, hydraulic ram, and retracting-spring, substantially as and for the purposes set forth. 70

ALBERT H. EMERY.

Witnesses:

OCTAVIUS KNIGHT,
HARRY E. KNIGHT.