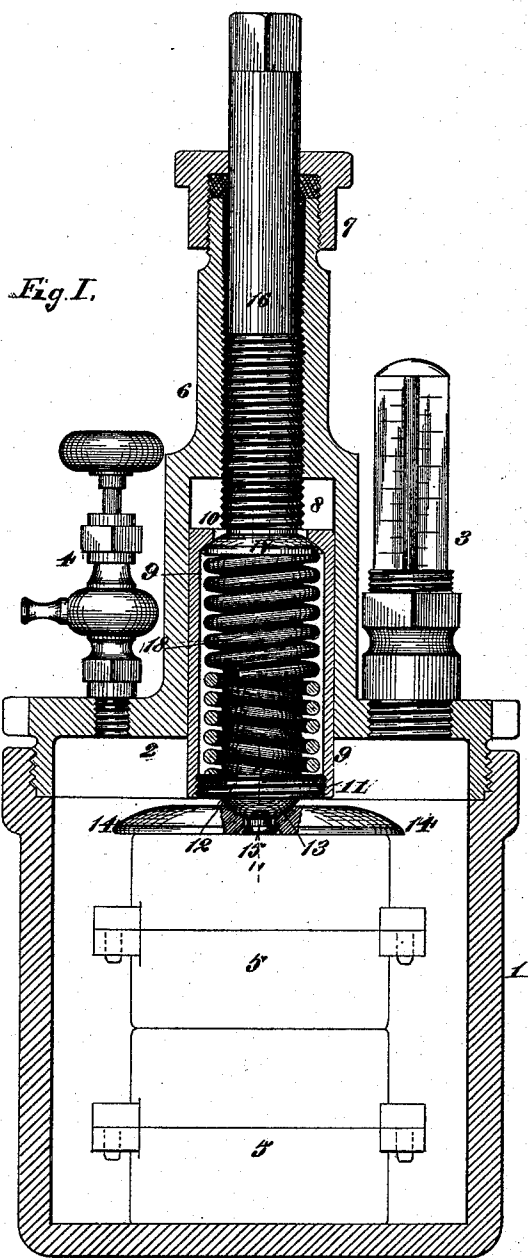


(No Model.)

E. B. CRANE.  
VULCANIZER.

No. 410,073.

Patented Aug. 27 1889.



*Attest:*  
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# UNITED STATES PATENT OFFICE.

EDWARD B. CRANE, OF CALIFORNIA, MISSOURI.

## VULCANIZER.

SPECIFICATION forming part of Letters Patent No. 410,073, dated August 27, 1889.

Application filed April 25, 1889. Serial No. 308,560. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD B. CRANE, of California, in the county of Moniteau and State of Missouri, have invented a certain new and useful Improvement in Vulcanizers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure I is a vertical section, part in elevation, of my improved device. Fig. II is a detail section of the nut, taken on line II II, Fig. I.

My invention relates to certain improvements in vulcanizers; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawings, 1 represents the casing or boiler, having a top 2, provided with a thermometer 3 and valve 4, as usual. No novelty is claimed in these parts, and they may be of any ordinary construction, and, so far as my invention is concerned, the thermometer and valve may be dispensed with entirely. Within the casing the usual flasks 5 are placed.

Extending upward from the top 2 is a hollow neck 6, provided with a stuffing-box 7 at its upper end and having an enlarged opening 8, in which fits and works a sleeve 9, with an inwardly-extending flange 10 on its upper end, and threaded at 11 at its lower end to receive a threaded button or nut 12, which is provided with a rounded lower surface or end 13, against which fits a disk 14, that rests on the top flask, and which is cut out to receive the rounded end of the nut, as shown, thus forming a "ball-and-socket" joint or bearing between the parts. The disk is held to the nut by a screw 15, which fits loosely in the disk, so as not to interfere with the rocking of the disk on the nut, so that a uniform pressure of the disk on the flasks is obtained. The nut 12 has perforations 12<sup>a</sup> (see Fig. II) to admit steam to the sleeve 9, which acts to increase the efficiency of the spring and preserve its tension. The sleeve 9 is held to the lower end of a shaft or plug 16 by means of a button or flange 17, which is made fast to the shaft, and which fits against the rounded lower surface of the flange 10 on the sleeve. The upper surface of the button 17

is rounded to fit the rounded surface of the flange 10, and as the opening in the upper end of the sleeve through which the lower end of the shaft or plug 16 passes is larger than the diameter of the shaft a ball-and-socket joint is formed, which provides a universal bearing between the members. The shaft 16 has threaded connection with the interior of the necks 6.

Within the sleeve between the button 17 and the nut 12 a spiral spring 18 is placed. I prefer to make this spring double—that is, with an inner and an outer coil, as shown, the coils being wound in opposite directions, thus obtaining greater and a more uniform power or pressure.

The operation of the device is as follows: The flasks being placed in the casing 1, the top 2, carrying its parts described, is applied, and the disk 14 is made to press on the flasks, the spring exerting its pressure between the nut 12 and the button 17, and thus forcing or holding the disk with a uniform tension on the flasks. When the heat is applied and the material in the flasks reaches the proper condition, the disk 14 is forced downward by turning the shaft 16 and the flasks closed. The spring is of sufficient force before the disk is moved down to hold the flasks sufficiently together to prevent the escape or displacement of the contents during the heating process.

I claim as my invention—

1. In a vulcanizer, the combination of a suitable casing adapted to hold the flasks, a disk adapted to rest on the flasks, a sleeve to which the disk is secured, a shaft secured to the sleeve, a button on said shaft, and a spring located within the sleeve and bearing against said button, substantially as and for the purpose set forth.

2. In a vulcanizer, the combination of a suitable casing adapted to hold the flasks, a disk, a sleeve fitting in the hollow neck of the casing, and to which the disk is secured by a ball-and-socket joint, a shaft having threaded connection with the said neck, and to which the sleeve is connected by a button or flange 17, and a spring 18, located within the sleeve, substantially as and for the purpose set forth.

3. In a vulcanizer, the combination of a suitable casing adapted to hold the flasks and

having a hollow neck, a sleeve fitting within the neck, a disk secured to the sleeve by means of a nut having a rounded surface 13, adapted to fit the disk, and a screw 15, a  
5 spring located within the sleeve, and a shaft having threaded connection with the neck and provided with a flange 17, substantially as and for the purpose set forth.

4. In a vulcanizer, the combination of a  
10 suitable casing adapted to hold the flasks, a

disk, a sleeve, a nut securing the disk to the sleeve, a spring within the sleeve, and an operating-shaft, said nut being provided with perforations, substantially as and for the purpose set forth.

EDWARD B. CRANE.

In presence of—

GEO. H. KNIGHT,  
EDW. S. KNIGHT.