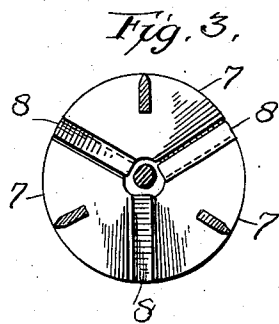
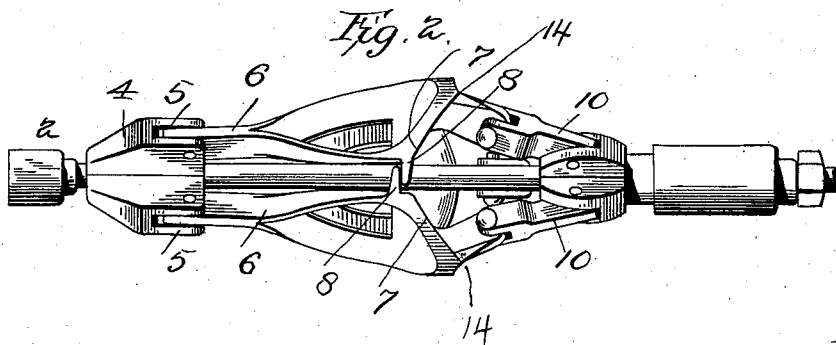
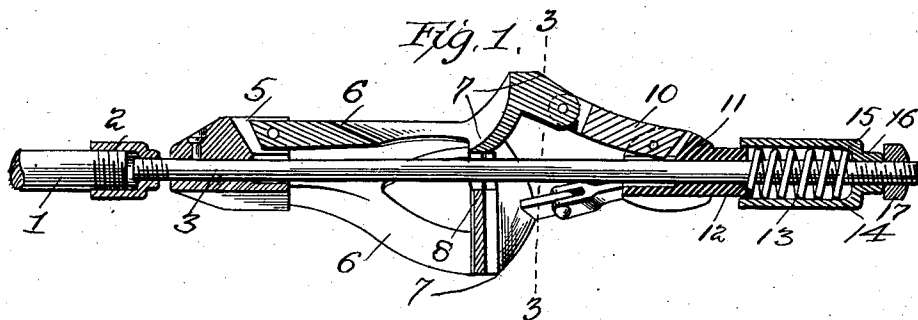


(No Model.)

D. W. DART.
FLUE CLEANER FOR BOILERS.

No. 567,265.

Patented Sept. 8, 1896.



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UNITED STATES PATENT OFFICE.

DANIEL W. DART, OF BINGHAMTON, NEW YORK, ASSIGNOR TO SIDNEY B. DOOLITTLE, OF SAME PLACE.

FLUE-CLEANER FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 567,265, dated September 8, 1896.

Application filed June 8, 1896. Serial No. 594,772. (No model.)

To all whom it may concern:

Be it known that I, DANIEL W. DART, a citizen of the United States, residing at the city of Binghamton, in the county of Broome and State of New York, have invented certain new and useful Improvements in Flue-Cleaners for Boilers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to devices for cleaning or scraping boiler-flues, and it is the object thereof to provide a device in which the pressure of the knife-edges against the walls of the flues can be regulated at will.

A further object is to provide a cleaner having the greatest amount of elasticity, and one that will remove all the dirt cut loose, the knives being arranged in the form of a disk and being adapted to effectually cut under the scale or dirt.

The device is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation; Fig. 2, a central longitudinal section, and Fig. 3 a cross-section of the invention on line 3 3 of Fig. 1.

In the drawings a rod 3 is shown, having a coupling 2 screwed upon one end thereof, internally threaded to receive the end of the operating-rod 1. A head 4, bolted to the rod 1 adjacent to the coupling 2, has three lateral bifurcated branches 5, extending therefrom, which receive the ends of the arms 6, pivoted therein. The opposite ends of these arms are divided and the branches diverge and are connected by the knives 7, formed integral therewith. The sides of the knives are concavo-convex, and each one forms the segment of a disk that substantially corresponds in size to the interior of the boiler-flue. Each knife is provided on each side thereof with a flange 8, adapted to overlap the corresponding flange of the adjacent knife. From the center of each knife there extends a short stud that fits within the bifurcated ends of a link 10, to which it is pivotally secured. The opposite ends of these links 10 are pivoted

within the bifurcated branches of a head 11, corresponding to the head 4. The head 11, however, is movable along the rod 1. This head is provided with a sleeve 12, against the end of which a spring 13 bears, this spring being coiled about the rod 1 and confined within the barrel 14, having a head 15 with a small extension 16, said head and extension being internally screw-threaded to fit the threads on the rod 1 in order that the barrel and spring may be adjusted. The adjustment of this spring varies the position and tension of the knives. A nut 17 surrounds the rod 1 and further serves to hold the sleeve in its adjusted position. The spring allows the knives to be contracted and keeps a tension thereon at all times. The cutting edge of each knife is beveled at an angle to the knife-body, the body retreating from the edge toward the rod 1. This gives the knives a shear cut against the scale or dirt within the boiler-flue and prevents them from passing over the dirt, but compelling them to cut beneath the same.

The usual form of scrapers or scraper-arm is of a V shape, having the point or angle extending out from the body of the scraper midway of its periphery, whereby the action of the scrapers is simply to scrape against the wall of the tube or flue both ways, whereas in my device the periphery of each segment is flat and smooth and two opposite knife-edges are formed thereon, one on the front and one on the rear end of the segment, and the bevels are turned and extend within the body of the cleaner and toward the operating-spindle. The advantage of this construction is that whereas the ordinary scraper has simply a rubbing action and often forces much of the incrustation against the body of the tube, forming what might be described as a "paste" against the tube, my knives cut under the dirt or incrustation with a shearing cut and carry the matter so cut inwardly down the bevels and away from the tube. This advantageous operation is aided by bringing each knife to a nose or point 14, which acts as a guide or centering-point that first strikes the tube and lifts the dirt, which is then sheared off from this point both ways and carried to the center and out of the cleaner ahead

of the knives. Thus not only a more perfect cleaning is obtained, but all clogging of the knives by the accumulation of the dirt over and around its edges is prevented.

5 When the cleaner is closed to its fullest extent, the overlapping flanges 8, which have recesses between them, are brought closely together, the central rod 1 entering said recesses and thus forming a solid disk which
10 will carry out all the dirt cut loose.

The main part of the work is done when the cleaner is pushed forward by the cutting edge at the front, which extends downwardly and inwardly from the point 14, although
15 much effective work is also done on the return stroke by the opposite edge.

Having thus described my invention, what I claim is—

A flue-cleaner comprising in combination,
20 a central rod provided at one end with a sta-

tionary head and at the opposite end an adjustable head, knives each pivoted at its opposite ends to said heads, yielding means holding said knives, each of said knives provided with the segmental portions having opposite cutting edges on the segment and a guiding-point at the center of each segment, said sections extending into the body of the cleaner and there provided with overlapping flanges, and recesses between the flanges, said overlapping flanges forming a holding-disk when closed by pressure on the knives, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

DANIEL W. DART.

Witnesses:

CHARLES H. WICKHAM,
F. N. GILBERT.