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R. J DAVIS.

SPACING APPARATUS.

APPLICATION FILED MAR. 15, 1905.

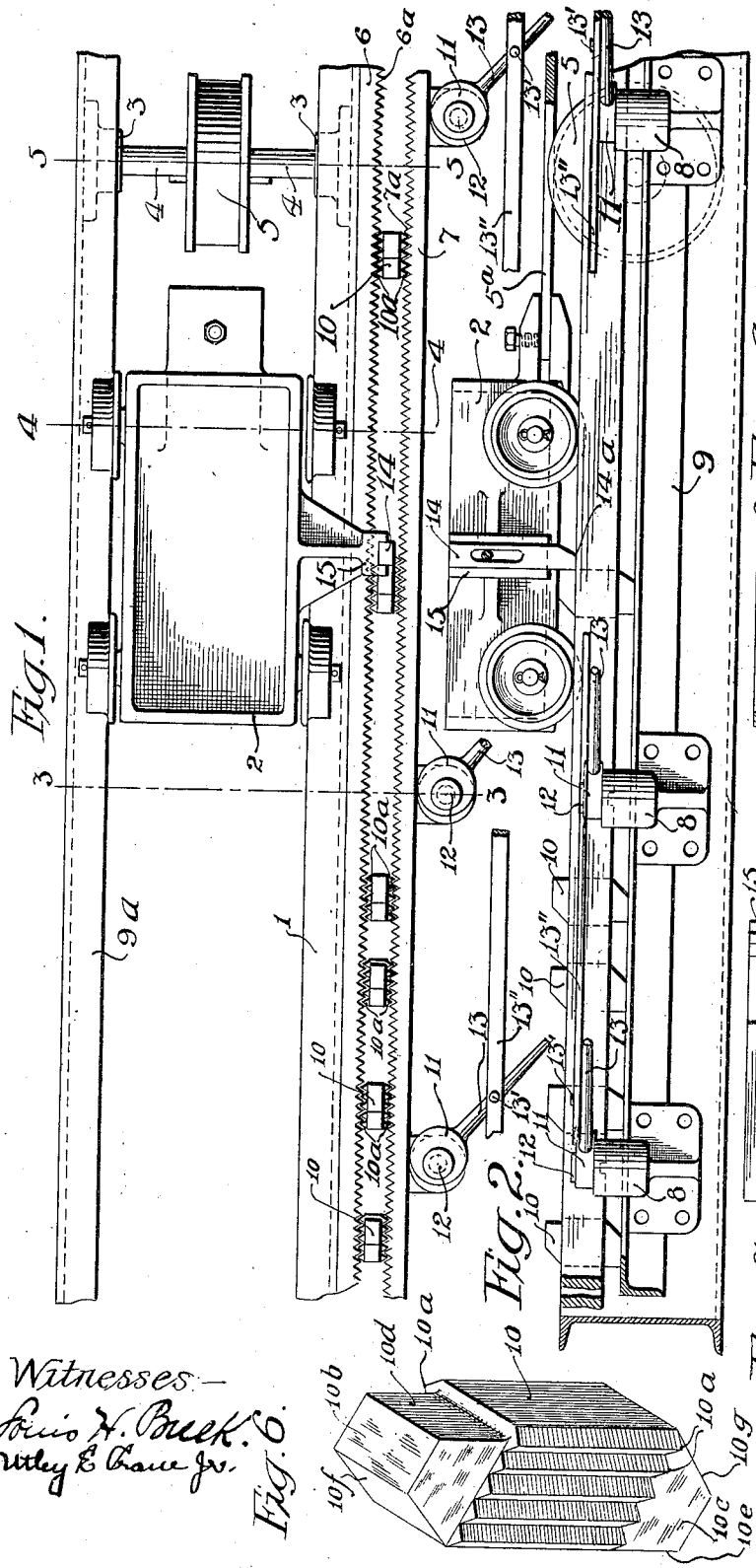


Fig. 1.

Fig. 2.

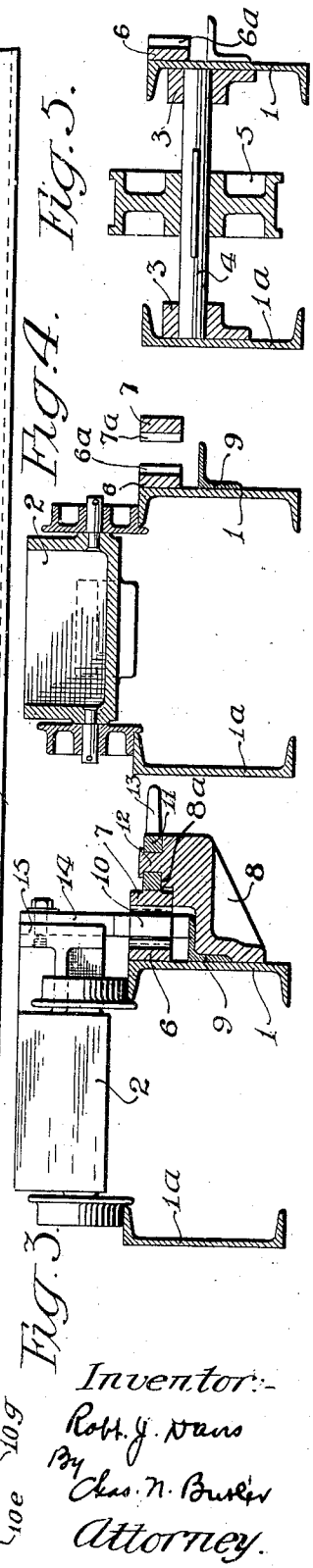


Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

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SPACING APPARATUS.

No. 827,907. Specification of Letters Patent. Patented Aug. 7, 1906.

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To all whom it may concern:

Be it known that I, ROBERT J. DAVIS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Spacing Apparatus, of which the following is a specification.

This invention is designed to provide improved mechanism for spacing holes formed particularly in punching structural shapes.

The leading objects are to provide adjustable stop mechanism that can be operated with facility and the minimum liability to error in regulating the distances shapes are to be moved between the several punching operations and to obtain a positive adjustment to a close scale that cannot be varied by slipping or flexibility in the action of the adjustable mechanism.

In machines heretofore employed considerable time is required to make the necessary adjustments of the parts for effecting the spacing, there is difficulty in obtaining an exact adjustment, and the parts are not positively held in the desired positions. My invention is designed to overcome these defects and to provide a simple and efficient mechanism.

In the accompanying drawings, Figure 1 represents a plan view of a section of my spacing apparatus. Fig. 2 represents a side elevation thereof. Fig. 3 represents a sectional view taken on the line 3 3 of Fig. 1. Fig. 4 represents a sectional view taken on the line 4 4 of Fig. 1. Fig. 5 represents a sectional view taken on the line 5 5 of Fig. 1, and Fig. 6 represents a perspective view of a stop made in accordance with my invention.

As shown in the drawings, the girders 1 and 1^a provide a track for the truck 2 and a support for bearings 3, having journaled therein shafts 4, on which are splined rollers 5, the truck acting to move the shape 5^a, engaged thereto and supported by the rollers.

The girder 1 has the rack-bar 6, with vertical serrations 6^a secured to the outer face thereof. A rack-bar 7, having vertical serrations 7^a, is movably supported by the brackets 8, secured to the girder 1. An angle-bar 9, supported by the brackets 8, supports stops 10, having vertical serrations 10^a, adapted to be engaged by the serrations 6^a and 7^a, the outer movement of the bar 7 being limited by the shoulders 8^a on the bracket, so that the stops cannot be moved longitudinally between the serrated bars. Cams 11, fulcrumed on studs 12, carried by the respective brackets, are turned by levers 13 to move the bar 7 and clamp the stops 10, having their serrations thereby firmly engaged by the serrations of the bars 6 and 7, the stops being released by releasing the cams. In order to throw the levers and cams so as to either clamp or unclamp several points by a single operation, the levers are pivotally connected by studs 13′ with a bar 13″. By this arrangement the operation of any one of the levers effects the operation of all the levers and cams simultaneously.

The stops have the projecting ends 10^b and 10^c, with the vertical faces 10^d and 10^e and the inclined faces 10^f and 10^g. The faces 10^d and 10^e are unequally distant from the plane parallel thereto passing centrally through the stop, so that by reversing a stop an adjustment can be obtained that divides the space occupied by a serration.

When the stops are properly set, the several faces 10^d and 10^e are disposed so that in moving the truck forward a bolt 14, having a limited vertical movement in the guide 15, carried by the truck, is engaged by the stops, while in moving backward the inclined face 14^a of the bolt engages the inclined faces of the respective stops, whereby the bolt is automatically lifted and passed without checking the movement of the truck.

It will now be understood that by means of a scale or marks placed upon the bar 6 or 7 to indicate the spacing desired and with the cams released the stops can be lifted out of their engagements and placed in the positions required, while they are positively held by closing the cams, so as to grip them between the bearings formed by the bars 6 and 7.

Having described my invention, I claim—

1. In spacing apparatus, bearings having vertical serrations therein, a plurality of stops having vertical serrations therein, and cams for clamping said stops and bearings together.

2. In spacing apparatus, a stationary bar having vertical serrations therein, a movable bar having vertical serrations therein, a plurality of stops having vertical serrations therein registering with the serrations of said bars, and cams for clamping said parts together.

3. In spacing apparatus, a girder, a bearing secured to said girder, a series of brackets secured to said girder, a movable bearing supported by said brackets, cams fulcrumed

on said brackets and acting on said movable bearing, and stops clamped by said bearing.

4. In apparatus of the class described, a girder, a bar having vertical serrations secured to said girder, brackets connected with said girder, a bar having vertical serrations movably supported on said brackets, a series of stops having vertical serrations adapted to be engaged by the serrations of said bars, means carried by said girder for supporting said stops, and cams for clamping said bars and stops together.

5. In apparatus of the class described, a pair of girders, a roller supported by said girders, a truck supported by said girders, a bolt carried by said truck, a series of stops, bars for holding said stops, and cams for clamping said bars and stops together.

In testimony whereof I have hereunto set my hand, this 13th day of March, A. D. 1905, in the presence of the subscribing witnesses.

ROBERT J. DAVIS.

Witnesses:
JOHN THIEL,
UTLEY E. CRANE, JR.