June 22, 1926.

1,589,808

W. J. McCANN

SPACING CARRIAGE

Filed March 5, 1925

3 Sheets-Sheet 1

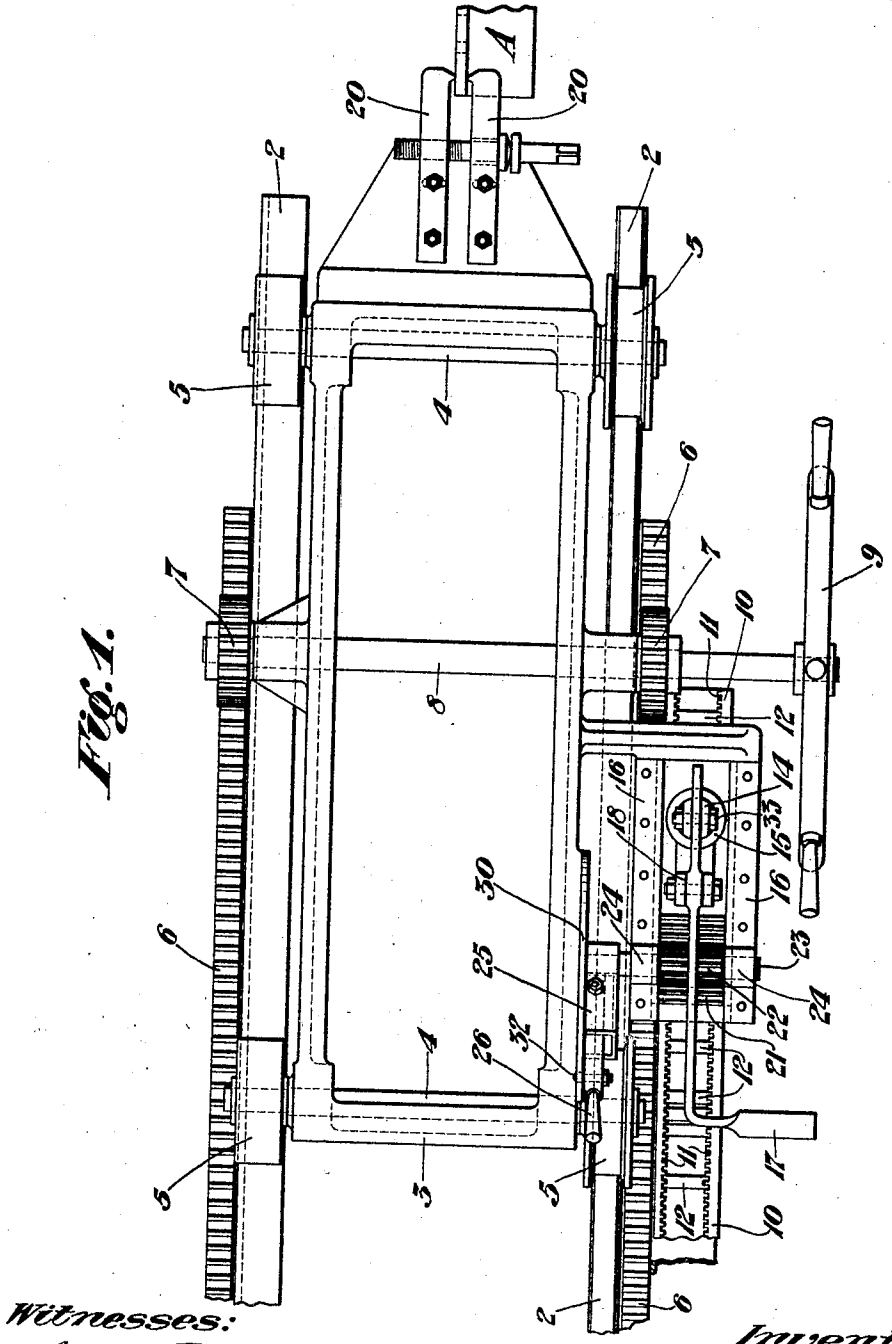


Fig. 1.

Witnesses:
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3 Sheets-Sheet 2

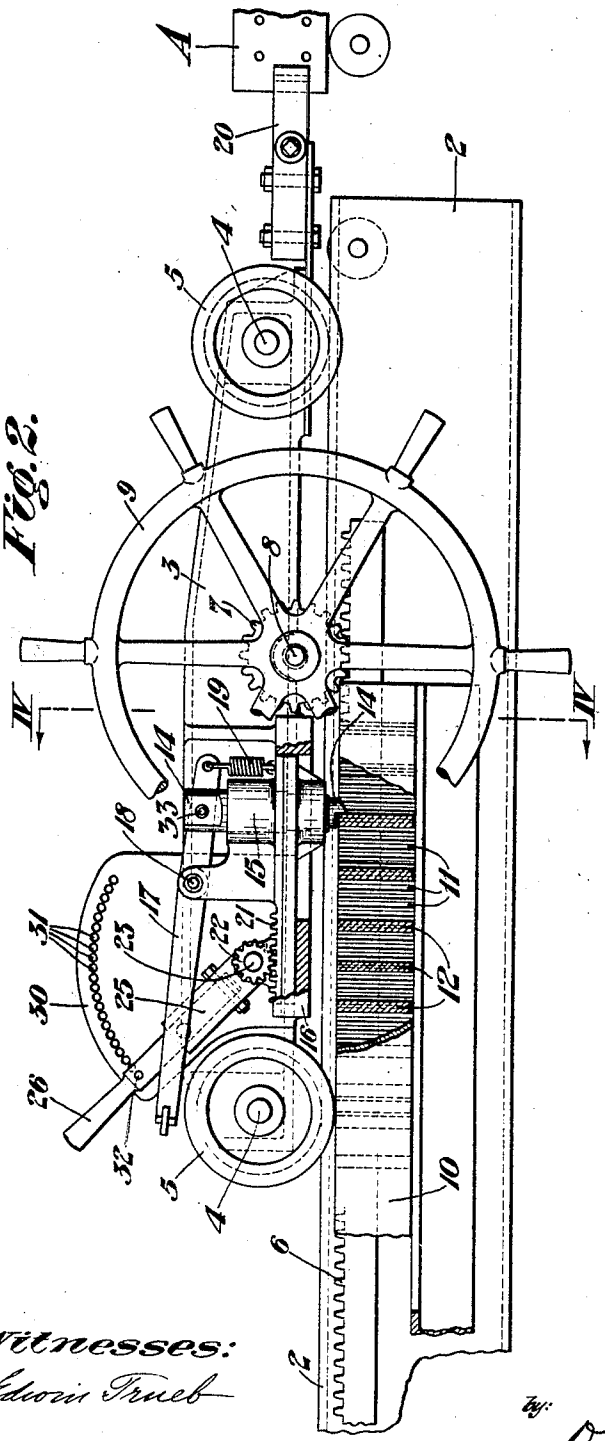


Fig. 2.

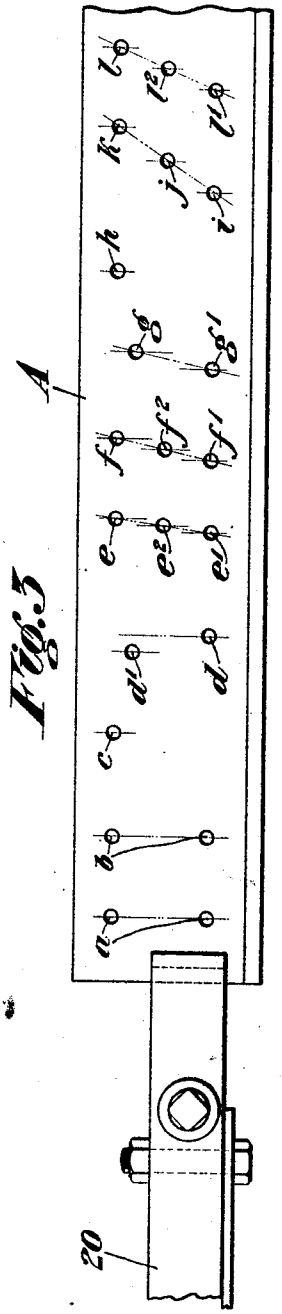


Fig. 3

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1,589,808

SPACING CARRIAGE

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3 Sheets-Sheet 3

Fig. 4.

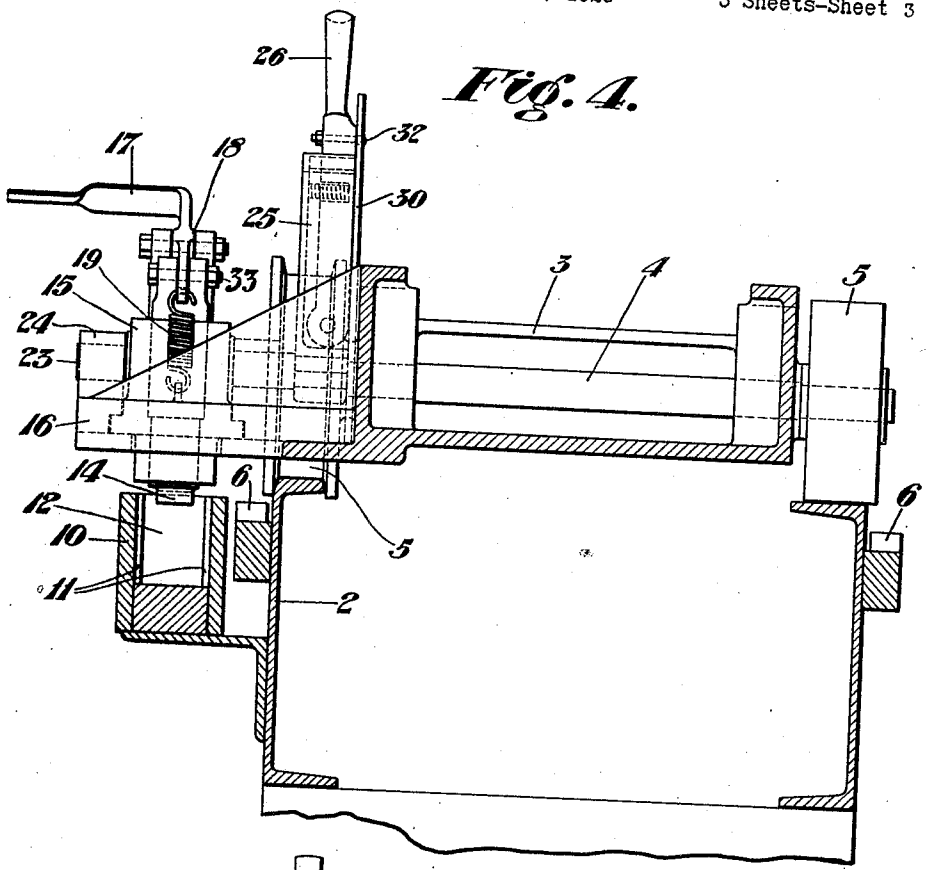
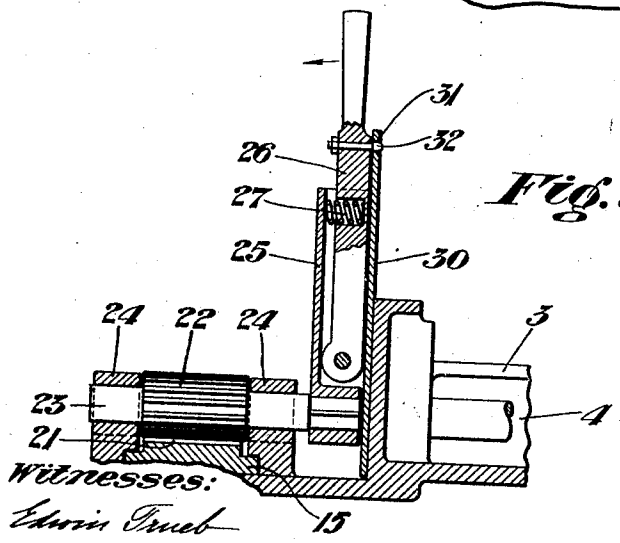


Fig. 5.



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Patented June 22, 1926. 1,589,808

UNITED STATES PATENT OFFICE.

WILLIAM J. McCANN, OF SEWICKLEY, PENNSYLVANIA.

SPACING CARRIAGE.

Application filed March 5, 1925. Serial No. 13,323.

This invention relates to spacing carriages, and more particularly to spacing carriages for punching machines and the like, and has for one of its objects the provision of a novel form of adjustable stop mechanism for such carriages which will permit the work-piece to be moved through the machine shorter distances than the stop mechanism now generally in use, and therefore permit the closer spacing of work operations.

Heretofore spacing carriages for punching machines and the like have generally been provided with a fixed rack on the carriage table, and a plurality of stops removably mounted in the rack for adjustment to various positions within limits, and a stop plunger carried by the carriage and adapted to cooperate with the stops in said rack to limit the movement of said carriage, the plunger being mounted for vertical movement only. With this stop mechanism, the number of stops used and their adjustment was limited.

Another object of this invention is to provide means for adjusting the stop plunger relative to the carriage, in addition to the adjustment of the stops in the rack and, therefore, provides a greater and finer range of adjustment than possible with the stop mechanism heretofore in use.

A further object is to provide a spacing carriage of the class described, having the novel design, construction, and combination of parts hereinafter described, and illustrated in the accompanying drawings.

In the drawings—

Figure 1 is a plan view of a spacing carriage embodying my invention.

Figure 2 is a side elevation thereof.

Figure 3 is a detail elevation showing a piece of work engaged by the gripping jaws of the carriage.

Figure 4 is a transverse sectional elevation taken on the line IV—IV of Figure 2.

Figure 5 is a fragmentary sectional elevation showing construction of the lever for operating the plunger adjusting mechanism.

Referring more particularly to the drawings, the numeral 2 designates the table of the carriage, which is fixedly mounted with relation to the punching or other machine, (not shown,) through which the work is adapted to be moved.

A work moving member or carriage is mounted to move on the table 2 and comprises a body portion 3 having axles 4 on which are journaled wheels 5, adapted to travel on the sides of the table 2.

The table 2 has toothed racks 6 extending longitudinally along each side thereof, and the carriage is provided with rack pinions 7 on a shaft 8, which pinions mesh with the racks 6 to propel the carriage longitudinally of the table, when the shaft 8 is rotated. The shaft 8 is provided with a suitable hand wheel 9 for manual rotation thereof.

A suitable spacing rack 10 is mounted on the one side of the table 2 and is provided with suitable spaced serrations or slots 11 for the reception of stop members 12. The slots 11 are so spaced that the stop members may be adjusted to various positions, such adjustments, however, are limited to the spacing of the slots 11.

A stop plunger 14 is mounted for vertical movement in a suitable housing 15, which is slidably mounted between guides 16 on the carriage body 3. The plunger 14 is adapted to be moved vertically to clear the stop members 12 by a lever 17 fulcrumed at 18 on the housing 15 and connected at 33 to the upper end of the plunger. The rearward end of the lever 17 projects beyond the plunger 14 and a coil tension spring 19 has one end connected to the projecting rearward end of the lever 17 and its other end connected to the housing 15 so as to normally hold the plunger 14 in its lowered or stop engaging position.

The plunger 14 is adapted to engage the stop members 12 when the carriage is moved longitudinally of the table.

A pair of work engaging and holding jaws 20 are mounted on the forward end of the carriage body 3 and are adapted to firmly grip the work-piece A, so that the work-piece will be moved through the machine as the carriage is moved.

The plunger housing 15 is provided with a toothed rack 21, and a rack pinion 22 is mounted on a shaft 23, journaled in suitable bearings 24 on the guides 16. The pinion 22 is in mesh with the rack 21 and is adapted to cause movement of the housing 15 longitudinally of the carriage body 3 when the pinion is rotated.

The shaft 23 is provided with an operating lever socket 25 in which is pivoted an operating lever 26 adapted to have a sidewise pivotal movement within the limits of the

socket. A spring 27 normally presses the lever 26 to its extreme inside position.

A dial plate 30 is on the carriage body 3 and provided with a series of perforations 31. The lever 26 is provided with a suitable pin 32 adapted to be engaged in the perforations 31.

In operation, the stop members 12 are adjusted at the proper points in the rack 10 to stop the carriage so that the work-piece A will be successively stopped in the machine for the formation of the holes *a*, *b*, *c*, *d*, *e*, *f*, *g*, *h*, *i*, *j*, *k* and *l*. However, the holes *d'*, *e'*, *e*², *f'*, *f*², *g'*, *l'* and *l*² are closer to the preceding holes than it is possible to adjust the stops 12, therefore, such holes will be gaged by changing the position of the plunger stop 14 by moving the lever 26 around the dial plate 30, thereby rotating the rack pinion 22 and moving the plunger housing 15 and plunger 14 longitudinally relatively to the carriage body 3. For example, if the holes *f*, *f'* and *f*² are to be formed, as the plunger 14 approaches the stop 12, which will stop the carriage in proper position for forming the hole *f*, lever 26 will be moved around the dial plate a sufficient number of notches to advance the plunger housing and plunger a distance equal to the distance the hole *f'* is from the hole *f*. The carriage is then advanced until the plunger 14 engages the stop 12 for the hole *f*, the hole *f'* is then formed, and after the hole *f'* is formed the lever 26 will be brought back on the dial plate a sufficient number of notches to retract the plunger 14 a distance equal to the distance hole *f*² is from the hole *f'*. The carriage is then advanced until the plunger 14 again engages the stop 12 for the hole *f*, and the hole *f*² will be formed, after the hole *f*² is formed, the lever 26 will be further brought back on the dial plate to its normal or zero position, and the carriage will then be advanced until the plunger 14 engages the stop 12 for the hole *f* and the hole *f* will be formed.

Any of the groups of holes may be formed in a similar manner to that described for the holes *f*, *f'* and *f*².

While I have shown and described only one specific embodiment of my invention, it will be understood that I do not wish to be limited thereto since various modifications may be made without departing from the scope of my invention as defined in the appended claims.

I claim—

1. In a spacing carriage for punching machines and the like, a stationary table, a carriage movable relative to said table and the machine, means for moving said carriage, a plurality of stop members removably carried by said table and adapted to be mounted in various fixed positions on said table, a second stop member carried by said carriage and adapted to cooperate with said first mentioned stop members to stop said spacing carriage at predetermined positions, and means for adjusting the position of said second stop member in the direction of travel of said carriage to vary the amount of travel of said carriage.

2. In a spacing carriage for punching machines and the like, a stationary table, a carriage movable relative to said table and the machine, means carried by said carriage for engaging a work-piece, said carriage being adapted to move the work-piece through the machine, means for moving said carriage, a plurality of stop members removably carried by said table and adapted to be mounted in various fixed positions on said table, a second stop member carried by said carriage and adapted to cooperate with said first mentioned stop members to stop said carriage at predetermined positions, and means for adjusting the position of said second stop member in the direction of travel of said carriage to vary the amount of travel of said carriage.

3. In a spacing carriage for punching machines and the like, a stationary table, a carriage movable relative to said table and the machine, means carried by said carriage for engaging a work-piece, said carriage being adapted to move the work-piece through the machine, means for moving said carriage, a plurality of stop members carried by said table removably, said stop members being adjustable within certain predetermined limits, a second stop member carried by said carriage and adapted to cooperate with said first mentioned stop members to stop said carriage at predetermined positions, and means for adjusting the position of said second stop member in the direction of travel of said carriage so as to vary the limit of movement of said carriage beyond the limits of adjustment of said first mentioned stop members.

4. In a spacing carriage for punching machines and the like, a stationary table, a carriage movable relative to said table and the machine, means for moving said carriage, a plurality of stop members carried by said table, said stop members being adjustable within certain predetermined limits, a second stop member carried by said carriage and adapted to cooperate with said first mentioned stop members to stop said carriage at predetermined positions, and means for adjusting the position of said second stop member in the direction of travel of said carriage so as to vary the limit of movement of said carriage beyond the limits of adjustment of said first mentioned stop members.

5. A spacing carriage for metal working machines, comprising a stationary table, a carriage carried by and movable relative to

said table and said machine, means for moving said carriage, a spacing rack on said table, a plurality of stop members removably mounted in said rack and adapted to be mounted in various fixed positions in said rack, a stop plunger carried by said carriage and adapted to cooperate with said stop members to stop said carriage, and means for adjusting said plunger relative to and in the direction of travel of said carriage to vary the movement of said carriage relative to said stop members.

6. A spacing carriage for metal working machines, comprising a stationary table, a carriage carried by and movable relative to said table and said machine, a pair of work engaging jaws carried by said carriage, means for moving said carriage, a spacing rack on said table, a plurality of stop members removably mounted in said rack and adapted to be mounted in various fixed positions in said rack, a stop plunger mounted on said carriage and adapted to cooperate with said stop members to limit the movement of said carriage, and means for adjusting said plunger longitudinally relative to said carriage to further vary the limit of movement of said carriage.

7. A spacing carriage for metal working machines, comprising a stationary table, a carriage carried by and movable relative to said table and said machine, a pair of work engaging jaws carried by said carriage, means for moving said carriage, a spacing rack on said table, a plurality of stop members removably mounted in said rack and adapted to be mounted in various fixed positions in said rack, a stop plunger housing slidably mounted on said carriage for longitudinal movement relative thereto, a stop plunger mounted in said housing and adapted to cooperate with said stop members to limit the movement of said carriage, and means for moving said plunger and plunger housing longitudinally relative to said carriage.

8. A spacing carriage for metal working machines, comprising a stationary table, a carriage carried by and movable relative to said table and said machine, a pair of work engaging jaws carried by said carriage, means for moving said carriage, a spacing rack on said table, a plurality of stop members removably mounted in said rack and adapted to be mounted in various fixed positions in said rack, a stop plunger housing slidably mounted on said carriage for longitudinal movement relative thereto, a stop plunger mounted in said housing and adapted to cooperate with said stop members to limit the movement of said carriage, and a rack and pinion, and pinion operating means for moving said plunger housing and plunger longitudinally relative to said carriage.

In testimony whereof I have hereunto set my hand.

WILLIAM J. McCANN.