Oct. 7, 1930. J. S. PECKER 1,777,807

ADJUSTABLE BEARING FOR POWER DRIVEN FEED ROLLS

Filed Feb. 12, 1929

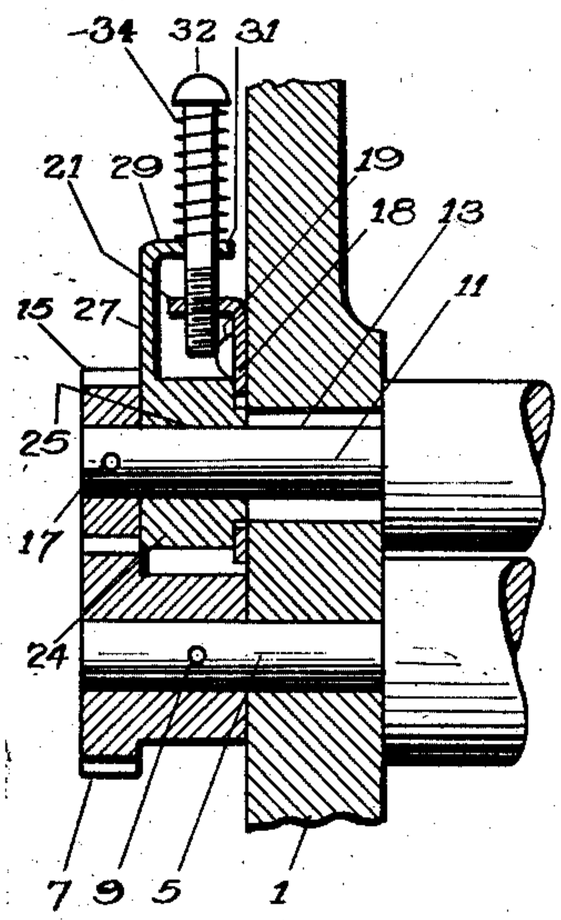
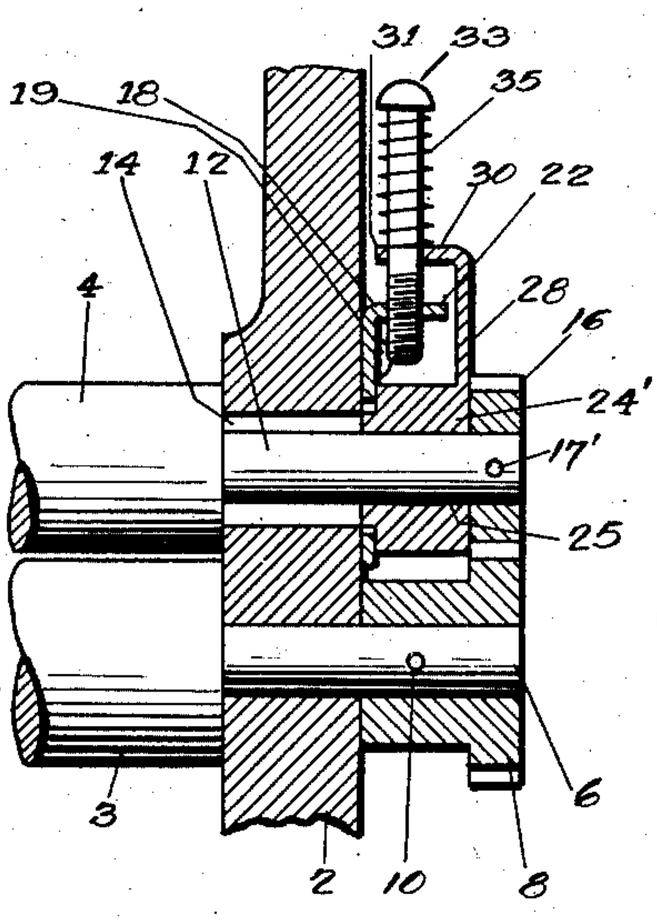


Fig. 1



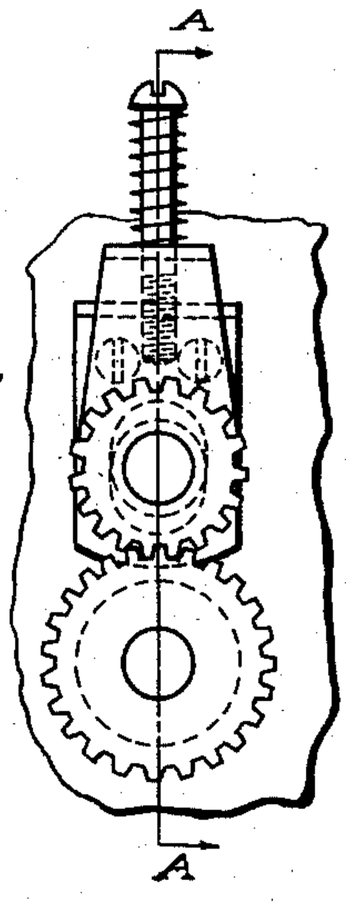


Fig. 2

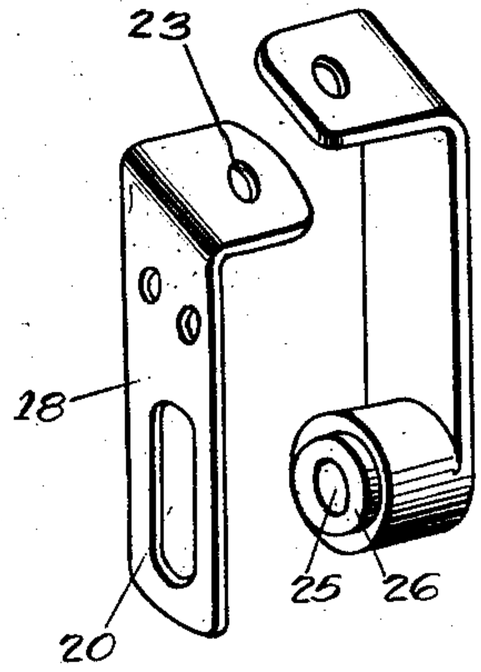


Fig. 3

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UNITED STATES PATENT OFFICE

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ADJUSTABLE BEARING FOR POWER-DRIVEN FEED ROLLS

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This invention relates to adjustable bearings for power driven feed rolls and more specifically deals with power driven rolls in which the pass therebetween may be varied to permit the feed rolls to operate on sheet material of varying thicknesses.

This invention is designed with particular reference to paper feed rolls employed in connection with envelope filling machines. While the invention will be described as being used in connection with such machines, it will, of course, be readily understood that it may be utilized in connection with any feed rolls which are capable of being utilized in connection with similar bearings.

An object of the present invention is to provide an exceedingly simple manner of supporting one of a pair of feed rolls so that the same may be adjusted to accommodate varying thicknesses of material being fed, while at the same time permitting the power operating elements to remain in engaged position.

Another object of the present invention is to provide an adjustment for one of a pair of rolls which, while permitting adjustment of said roll, at the same time forces the roll into yielding engagement with the material being fed between the rolls.

An additional object of the present invention is to provide a roll adjustment which can be rapidly and effectively varied to suit conditions prevailing in the machine, the adjustment being of such a simple character as to eliminate the necessity of any special tools; and the adjustable mechanism is so located with respect to the frame of the machine that it is readily accessible from the exterior in order that the adjustment may be effected without disassembling any portions of the machine.

With these and other objects in view, reference will be had to the following description, together with the accompanying drawings forming part hereof, and while I have shown a specific embodiment, it will be understood that I may resort to minor changes in the various details, and similarly that the finish or arrangement of parts may be varied to suit requirements so long as they do not depart from the scope or spirit of the claims hereunto appended.

In the drawings,

Fig. 1 is a vertical sectional view taken along the line A—A of Fig. 2.

Fig. 2 is a side elevation of my invention.

Fig. 3 is a detail view of the adjustable bearing member and its cooperating parts shown in disassembled relation.

Referring more particularly to the drawings, I have indicated the feed rolls as being used in connection with an envelope filling machine which comprises side frames indicated at 1 and 2, which are suitably spaced to receive therebetween feed rolls 3 and 4.

One of the feed rolls, such as indicated at 3, is fixedly secured in the frames 1 and 2 for rotation by means of reduced hubs 5 and 6 having keyed to the ends thereof gears 7 and 8 by means of keys 9 and 10, so that while the roll 3 is capable of rotation upon imparting power to the gears 7 and 8, it has no bodily movement.

The feed roll indicated at 4 is likewise provided with reduced hubs 11 and 12 which extend through elongated openings 13 and 14 formed in the respective side frames 1 and 2, and to the end of the reduced hubs 11 and 12 gears 15 and 16 are secured by means of keys 17 and 17′.

The gears 15 and 16 are so positioned as to mesh with the gears 7 and 8 on the feed roll 3 so that rotation of one of the feed rolls imparts rotary motion to the other feed roll, it being understood that a plurality of pairs of feed rolls similar to 3 and 4 are employed, which are geared together in the manner illustrated, whereby rotary motion is imparted to the entire series of rolls from a single power source.

In order to provide means for adjusting one of the feed rolls, such as indicated at 4, I secure to the exterior faces of the frames 1 and 2 the brackets 18 and 18′, by means of screws 19 or other suitable fastening means, and the brackets 18 and 18′ are provided with elongated openings 20 which register with the elongated openings 13 and 14 in the side frames 1 and 2, but which are of slightly greater length than the elongated openings

13 and 14. The brackets 18 and 18′ are provided at one end with angular extensions 21 and 22 which project outwardly from the side faces of the frames 1 and 2, forming in reality outwardly projecting ears, each of which is provided with a screw-threaded opening 23.

Interposed between the side frames 1 and 2 and the gear wheels 15 and 16 are bearing blocks 24 and 24′, which are provided with bores 25 to receive the reduced hubs 11 and 12, which are rotatably supported thereby. Each bearing block is provided on its inner face with a reduced hub 26 of a length similar to the thickness of the brackets 17 and 18, and of a diameter corresponding with the width of the elongated opening 20 in each bracket, so that it is readily seen that the bearing blocks 24 and 24′, while capable of vertical movement or movement in the direction of length of the slots 20, are incapable of lateral movement or movement in the direction of the width of the slots 20.

Integrally formed with the bearing blocks 24 and 24′ are the upstanding arms 27 and 28 terminating in the inwardly directed ears 29 and 30, which are adapted to overlie the ears 21 and 22 on the brackets 18 and 18′ and in spaced relation thereto, and each of the ears 29 and 30 are provided with openings 31, which openings are so positioned as to align with the screw threaded openings 23 in the brackets 18 and 18′.

Adjustment of the roll, such as indicated at 4, is accomplished by means of bolts 32 and 33 which pass through the aligned openings 31 and 23, and the bolts 32 and 33 are screw threaded at their lower ends so as to thread through the openings 23 in the brackets 18 and 18′, the remaining portions of the bolts having smooth surfaces to permit the angular ears 29 and 30 to slide thereon. Interposed between the angular ears 29 and 30 and the heads of the bolts 32 and 33 are coiled springs 34 and 35 which normally exert pressure on the angular ears 29 and 30 and tend to force the roll 4 into engagement with the roll 3. It will be seen that by adjusting the bolts 32 and 33 the springs 34 and 35 are compressed to a greater or lesser extent, and consequently that the roll 4 is urged toward the roll 3 with greater or lesser pressure, depending upon the direction of rotation of the bolts 32 and 33.

It will further be seen that when sheet material of a thickness greater than the pass between the two rolls 3 and 4 is being fed, the roller 4 will automatically adjust itself against the tension of the springs 34 and 35 so as to accommodate the material of greater thickness, in this way providing a yielding contact between the roll 4 and the material being fed.

From the foregoing it is clearly apparent that the means for adjusting the roll 4 are provided on the exterior faces of the frames 1 and 2, so that ready access may be had to the adjusting mechanism, and that there is no need for disassembly of any portions of the machine to accomplish the necessary adjustment, and while I have described my invention as being applicable to the top roll 4 of the pair, it will be readily understood that the top roll 4 could be fixedly secured and the roll 3 adjusted by similar mechanism, or if it is desirable, similar adjusting mechanism might be applied with both rolls in a manner similar to that shown and described in connection with the adjustable roller 4.

It is also obvious from the foregoing description that an exceedingly efficient, practical construction is provided which can be applied to known machines at relatively little expense, and while the brackets 18 and 18′ and the bearing blocks 24 and 24′, together with the upstanding arms 27 and 28 and ears 29 and 30, are here indicated as being formed of a single piece of material, it is evident that these parts could be made out of a plurality of pieces of material without the exercise of the inventive faculty. However, by forming these parts in the manner shown the invention can be cheaply manufactured by well known metal working operations such as stamping, swaging or the like, thereby materially reducing the expense involved in the production thereof.

What is claimed is:

1. A device of the character described comprising a frame having a plurality of pairs of openings therein, one pair of which is elongated, a pair of rollers journaled in said openings, bearing blocks at opposite ends of the roller journaled in the elongated openings provided with upstanding arms terminating in inwardly projecting ears having an opening therein, brackets secured to said frames and having angular extensions underlying the ears on the upstanding arms and having threaded openings therein, and a bolt passing through the openings in the bracket members and ears by means of which the roller mounted in the elongated openings may be adjusted.

2. A device of the character described comprising frame members provided with a plurality of pairs of openings one pair of which is elongated, a roller fixedly journaled in one pair of openings, a second roller having hubs projecting through the pair of elongated openings, gears on each pair of said rollers meshing with each other, bearing blocks on opposite ends of said hubs provided with upstanding arms terminating in inwardly directed ears carrying openings therein, a bracket secured to the exterior faces of said frame members and having an angular extension underlying the said ears and having threaded openings therein, bolts passing through the openings in said angular

extensions and ears and threadedly engaging said extensions, and a spring carried by said bolts and interposed between the head thereof and the ears.

3. A device of the character described, comprising frame members provided with a plurality of pairs of openings, one pair of which is elongated, rollers journaled in said openings, gears carried at opposite ends of each roller, brackets secured to said frame members and having elongated openings therein registering with the elongated openings in the frame members but of greater length than said openings in the frame members and terminating in outwardly directed extensions having threaded openings therein, bearing blocks for the opposite ends of the rollers interposed between the frame members and gears and comprising reduced hub portions fitting within the elongated openings in the bracket members and slidable therein, and means for sliding said bearing blocks to adjust the pass between the rollers.

4. A device of the character described comprising frame members provided with a plurality of pairs of openings one pair of which is elongated, rolls journaled in said openings in superposed relation and having interengaging gears at opposite ends thereof, bearing blocks at opposite ends of the roll which is mounted in the elongated openings, arms on each bearing block terminating in inwardly directed ears having an opening therein, brackets secured to the frame members and provided with outwardly directed extensions having threaded openings therein registering with the openings in the inwardly directed ears, a spring cooperating with each bearing block and normally urging the rolls towards each other, and means cooperating with the outwardly directed extensions and the inwardly directed arm for varying the tension of said springs.

5. A supporting device for a shaft comprising a bearing member, an arm extending from the bearing member and having a laterally directed ear disposed parallel with the plane of said bearing member and perforated, a bracket having an elongated opening adapted to lie opposite said bearing member and provided with a laterally directed extension to lie under the said ear and in spaced relation thereto, and having a threaded opening, and a threaded bolt operating through the opening of said ear and threadedly engaging the threaded opening of said extension, whereby to adjust the ear and extension toward and away from each other.

6. A supporting device for a shaft comprising a bearing member, an arm extending from the bearing member and having a laterally directed ear disposed parallel with the plane of said bearing member and perforated, a bracket having an elongated opening adapted to lie opposite said bearing member and provided with a laterally directed extension to lie under the said ear and in spaced relation thereto, and having a threaded opening, a threaded bolt operating through the opening of said ear and threadedly engaging the threaded opening of said extension, whereby to adjust the ear and extension toward and away from each other, and a spring encircling said bolt and located between the outer end of the bolt and said ear and which spring is tensioned under the influence of turning movement of said bolt.

In testimony whereof I have hereunto set my hand, this 9th day of February, 1929.

JOSEPH S. PECKER.