Aug. 25, 1931. J. T. ROBINSON 1,820,251

CREASING MECHANISM

Filed March 22, 1929

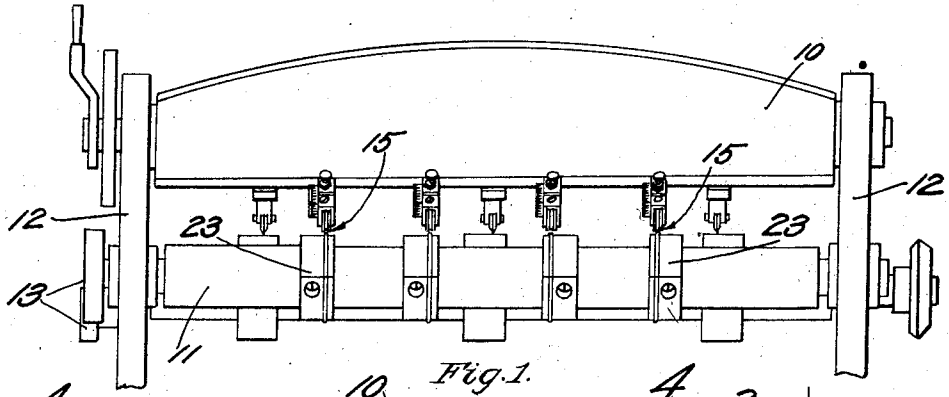


Fig. 1.

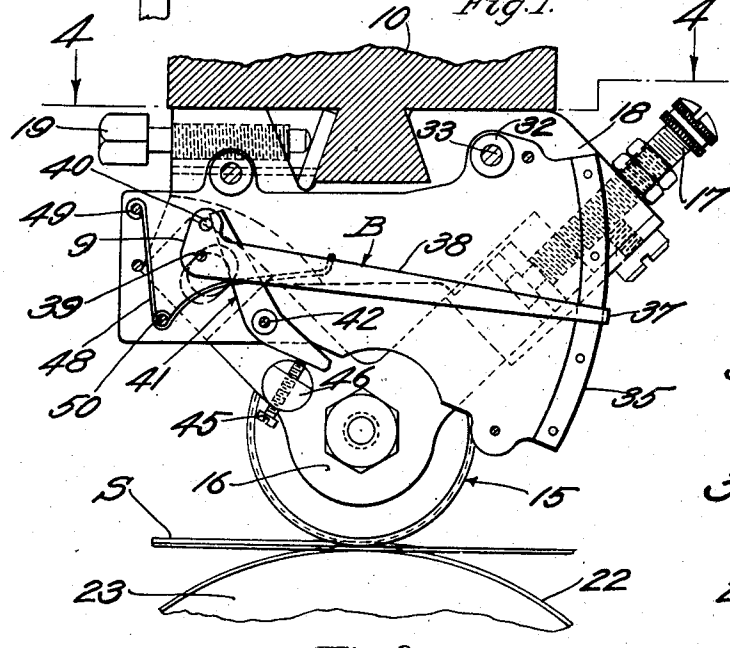


Fig. 3.

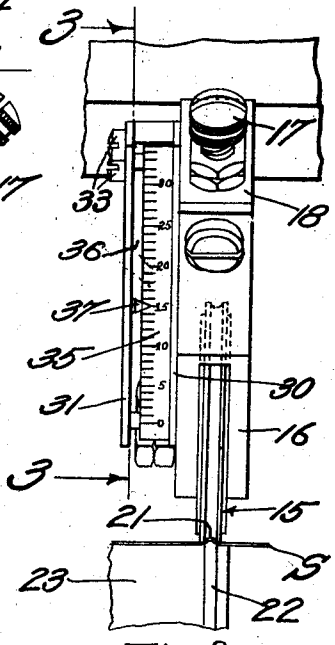


Fig. 2.

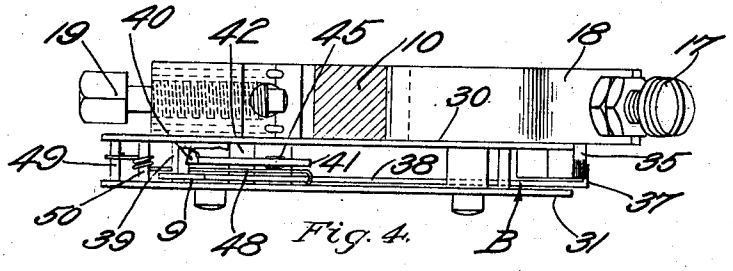


Fig. 4.

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UNITED STATES PATENT OFFICE

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CREASING MECHANISM

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This invention relates to machines for creasing or scoring cardboard and similar stock in the preparation of the blanks which are subsequently folded to make boxes. The invention is directed especially to devices for adjusting the relative positions of cooperating creasing elements.

The essential portions of a creasing machine comprises a plurality of units, each including a cooperating relatively adjustable creasing wheel and roll between which the stock to be creased is passed. Usually, a plurality of carriers are mounted in a slideway in the machine, each carrier being provided with a creasing wheel which is adjustably movable toward and from a cooperating creasing roll by an adjusting screw. The creasing rolls of all units usually are mounted upon a common shaft and often vary considerable in diameter.

In setting up the machine for creasing a particular stock each unit is adjusted separately to space the cooperating wheel and roll apart the required operative distance so that a good crease is made in the stock passing therebetween. It has been extremely difficult if not impossible to adjust the several units alike so that the creases in the stock would be uniformly good. The best results were obtained only after a long tedious series of readjustments of each and all units. This situation has been aggravated by the lost motion in the adjustable parts of the units and by the variation in the diameter of the creasing rolls, a condition which could not be remedied except by unusual care in their manufacture and a consequent prohibitive cost. The importance of adjusting the creasing units so as to provide equal operative distances between cooperating creasing wheels and rolls is illustrated by the fact that when this distance varies more than about 0.001 of an inch neither uniform nor good creases are obtained.

It is an object of the present invention to overcome these difficulties and to provide creasing units which may be readily and conveniently adjusted so that the creasing wheel and roll of each and every unit may be spaced apart accurately to provide equal operative distances therebetween.

It is another object of the invention to provide an indiactor which may be attached to each creasing unit and which assists not only in setting up and adjusting each unit but also makes possible the same accurate or like adjustment of all units.

Before explaining in detail the present invention, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation, and it is not intended to limit the invention beyond the terms of the several claims hereto appended as considered in view of the prior art and the requirements thereof.

The invention will be more clearly understood from the following description in conjunction with the accompanying drawings; in which,

Fig. 1 is a front elevational view of a portion of a creasing machine embodying the invention.

Fig. 2 is a similar view on an enlarged scale and partly broken away of the creasing unit:

Fig. 3 is a sectional view taken upon line 3—3, Fig. 2; and

Fig. 4 is a sectional view taken on the line 4—4, Fig. 3.

Usually scoring and creasing machines of the type to which the present invention relates comprise a plurality of sections through which the stock is passed to crease and score the same along the desired parallel lines. For the purpose of illustration only one section is indicated in the embodiment of the invention shown in the drawings. This machine comprises a bar or slide 10 mounted in fixed position in the machine and a shaft 11 disposed parallel and adjacent to the bar 10. Conveniently and as herein shown, the frame of the creasing and scoring machine may include a pair of parallel side

uprights 12 between which a suitable table (not shown) as well as the bar 10 are supported, said uprights carrying suitable bearings in which the shaft 11 is mounted. The shaft 11 is rotated by gears 13 driven by power from any suitable source not shown.

Separately, detachably and adjustably mounted on the bar 10 are creasing devices 15 corresponding in number and arrangement to the creased lines desired on the blank. Preferably, as shown, the creasing devices 15 comprise disks or wheels rotatably mounted in carriers 16 adjustable as by adjusting screws 17 in holders 18 detachably secured as by set screws 19 to the bar 10. It will be seen that the holders 18 with their creasing devices can be applied at will to the bar 10 or removed therefrom or adjusted therealong transversely of the machine in accordance with the requirements of the work.

The creasing wheels 15 have peripheral surfaces shaped to cooperate with complementary surfaces formed on creasing rolls 23 on the shaft 11 to crease the stock S. To this end and as most clearly shown in Fig. 2, each creasing wheel 15 is formed with a peripheral groove 21 which receives a rib 22 formed on each roll or collar 23 which may be adjustably secured to the shaft 11 in any suitable manner.

In order to facilitate the adjustment of the creasing wheels 15 and creasing rolls 23 relatively in accordance with the invention, a suitable indicator may be provided with each creasing unit. The form of indicator illustrated comprises parallel plates 30 and 31 spaced apart as by spacers 32 and secured to the holder 18 as by screws 33. A scale 35 is secured between the plates 30 and 31 at one end thereof so as to leave a passage 36 for a pointer 37 formed at the free end of one arm 38 of a bell crank B pivotally mounted upon a stud 39 extending between the plates 30 and 31. The free end of the other arm 9 of the bell crank B is provided with a laterally projecting pin or stud 40 adapted to engage one end of a lever 41 pivotally mounted upon a stud 42 extending between the plates 30 and 31. The other end of the lever 41 is positioned to engage an adjustable stop, such as an adjusting screw 45 mounted in a lug 46 fixed upon the carrier 16. A spring 48 is secured at one end to a stud 49 and surrounds a stud 50 and at its free end engages the arm 38 of the bell crank B so as to urge the pin 40 upon said arm resiliently against one end of the lever 41 and consequently urge the other end of the lever 41 resiliently against the adjustable stop 45.

In setting up and adjusting the creasing units for a given stock S, one of the creasing wheels 15 is moved into engagement with its cooperating roll 23 by operation of the adjusting screw 17. The adjusting screw 45 is then operated to move the pointer 37 to the zero mark on the scale 35. The creasing wheel 15 is then spaced from the roll 23 by the operation of the adjusting screw 17 and power is supplied to the machine to rotate the roll 23. Stock S is then passed between the wheel 15 and roll 23 and creased. If the crease thus formed is not good, the operative distance between the wheel 15 and roll 23 is adjusted until a good crease is formed. The position of the pointer 37 relative to the scale 35 is then noted and the creasing wheels 15 of the remaining creasing units are adjusted in like manner by first moving the creasing wheel into engagement with the cooperating creasing roll and setting the pointer 37 at zero upon the scale 35. The wheels 15 are then spaced from their cooperating creasing rolls 23 by the operation of the adjusting screw 17 until the position of the pointers 37 all give similar readings upon the scales 35.

What I claim is:

1. In a creasing machine having a creasing device comprising a holder, a carrier adjustably mounted in said holder, a creasing wheel rotatably mounted in said carrier, means for adjusting said carrier, and a creasing roll mounted to cooperate with said wheel, the combination therewith of an indicator having a scale mounted on said holder, an indicating pointer pivotally mounted on the holder, and means operatively connected with said wheel for adjusting the position of said pointer relative to the scale when said roll and wheel are in engagement whereby said pointer will indicate the operative distance between said wheel and roll when said carrier is adjusted.

2. In a creasing machine having a creasing device comprising a holder, a creasing wheel adjustably mounted in said holder, and means for adjusting the position of said wheel in said holder, the combination therewith of an indicator including interengaging relatively movable members one movably mounted upon said holder and serving as an indicating pointer and the other pivotally mounted on said holder and connected with said wheel, and means for adjusting one of said cooperating members.

3. In a creasing machine having a creasing device comprising a holder, a carrier adjustably mounted in said holder, a creasing wheel rotatably mounted in said carrier, and means for adjusting said carrier, the combination therewith of an indicator having a scale mounted on the holder, an indicating pointer movably mounted on the holder, an adjusting screw on said carrier, and resilient connections between said screw and pointer.

4. In a creasing machine having a creasing device comprising a holder, a carrier adjustably mounted in said holder, and a creasing wheel rotatably mounted in said carrier, and means for adjusting said carrier, the combination therewith of an indicator hav-

ing a scale mounted on the holder, an indicating pointer movably mounted on the holder, an adjustable stop on said carrier, a lever mounted on the holder and operatively connected at its opposite ends with said stop and pointer.

5. In a creasing machine having a creasing device comprising a holder, a carrier adjustably mounted in said holder, a creasing wheel rotatably mounted in said carrier, and means for adjusting said carrier, the combination therewith of an indicator having a scale mounted on the holder, an indicating pointer pivotally mounted on the holder, an adjustable stop on said carrier, a lever pivotally mounted on the holder, and means for causing opposite ends of said lever to engage resiliently said stop and pointer.

6. In a creasing machine having a creasing device comprising a holder, a carrier adjustably mounted in said holder, a creasing wheel rotatably mounted in said carrier, and means for adjusting said carrier to move said wheel in its own plane, the combination therewith of an indicating pointer pivotally mounted on the holder to swing parallel to said plane, a lever pivotally mounted upon said holder between said pointer and wheel and having a free arm extending past said pointer, means engaging the other arm of said lever to cause it to move when said carrier is adjusted, and an arm on said pointer extending from the pivotal connection thereof away from said wheel to engage said free arm.

In testimony whereof I affix my signature.

JOHN T. ROBINSON.