United States Patent [19]

Lauterbach

[11] **3,899,274**

[45] **Aug. 12, 1975**

[54] **ADJUSTABLE STOP BLOCK FOR TIMING SPINDLE**

[75] Inventor: **William L. Lauterbach,** Pittsburgh, Pa.

[73] Assignee: **United States Steel Corporation,** Pittsburgh, Pa.

[22] Filed: **Nov. 4, 1974**

[21] Appl. No.: **520,319**

Related U.S. Application Data

[63] Continuation of Ser. No. 443,263, Feb. 19, 1974, abandoned.

[52] **U.S. Cl.** **425/237;** 425/367

[51] **Int. Cl.** **B29c 3/00;** B30b 11/16

[58] **Field of Search** 425/363, 367, 449, 237, 425/471; 249/119

[56] **References Cited**

UNITED STATES PATENTS

2,843,879	7/1958	Komarek et al.	425/237
2,977,631	4/1961	Komarek et al.	425/367 X
3,269,611	8/1966	Komarek	425/449 X
3,674,397	7/1972	Harris	425/363 X
3,734,659	5/1973	Harris	425/237 X

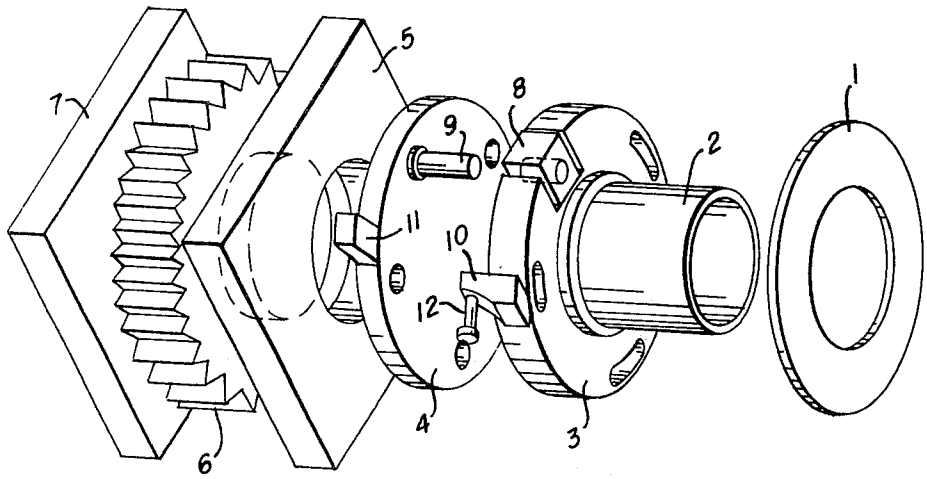
Primary Examiner—J. Howard Flint, Jr.

Attorney, Agent, or Firm—William L. Krayer

[57] **ABSTRACT**

A mechanism is disclosed to adjust the timing of two opposed cylindrical briquette mold rolls so that the complimentary pockets or other mold configurations are consistently in opposing or mating positions. The synchronizing mechanism comprises a new configuration of an adjustment screw supported on the flange of a timing sleeve and a stop block to engage the adjustment screw, located on a coupling flange.

6 Claims, 2 Drawing Figures



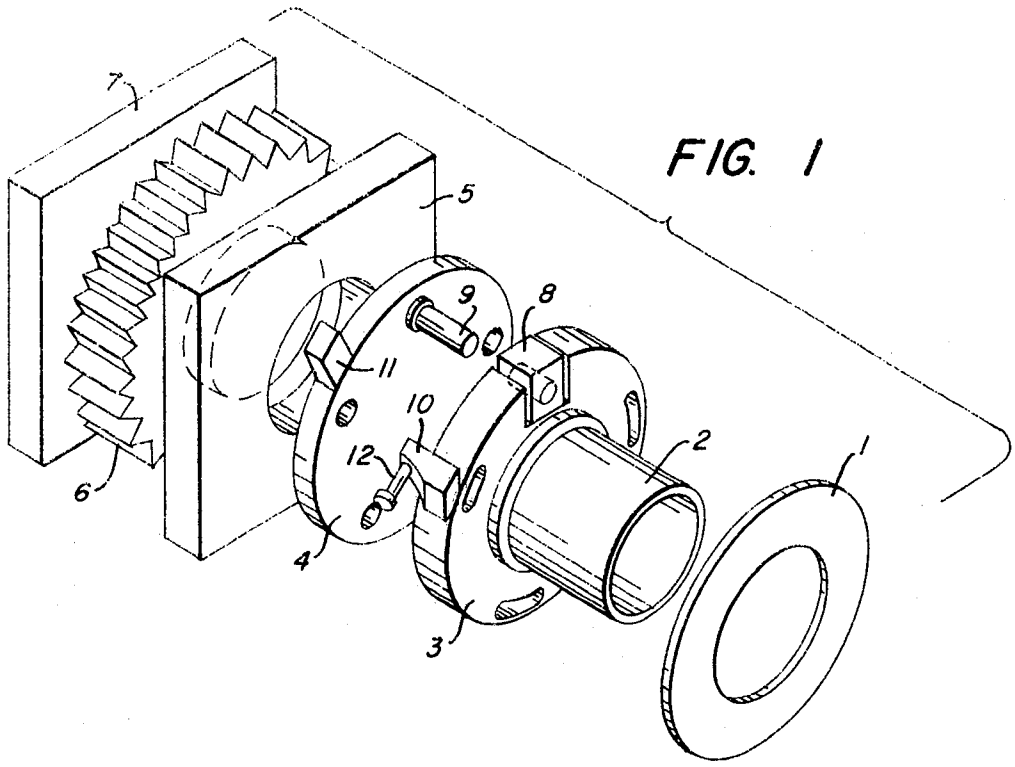
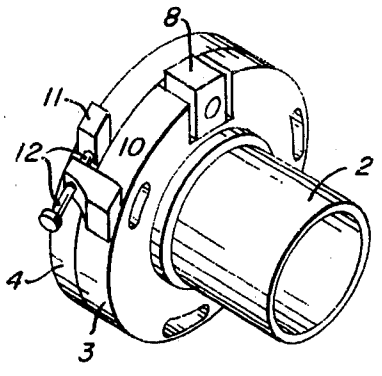


FIG. 1

FIG. 2



ADJUSTABLE STOP BLOCK FOR TIMING SPINDLE

This is a continuation of application Ser. No. 443,263, filed Feb. 19, 1974, now abandoned.

BACKGROUND OF THE INVENTION

Hot reduced iron ore to be introduced to a briquetting machine is commonly fed into the nip of two tandem rolls having opposing mold faces, such as illustrated in Komarek U.S. Pat. No. 3,077,634. Komarek shows a briquetting machine characterized by a cylindrical central body having V-shaped recesses for accommodating mold inserts. These cylindrical units are placed in tandem so that faces of two molds oppose each other as the cylinders turn, compressing the particulate material which falls between them. Temperatures of the gas are about 1100°–1400°F. A continuous ore feeding operation requires that a screw feeder constantly force the hot ore into the bottom of a bowl or other tapered device for direction into the nip of the rolls. The pressures and temperatures of the screw feeding operating are necessarily severe, rendering synchronizing adjustments difficult to maintain.

The two tandem roll faces must be adjusted axially and made to face each other squarely. In addition, on order to manufacture well-formed product, the complimentary mold pockets must pass through the nip of the rolls at the same time, i.e. the lands and pockets must oppose each other directly in order to form a perfectly shaped briquette. Normally the briquettes of reduced iron ore are pillow-shaped, but they may be of any molded shape for purposes of this improvement on machines of the type disclosed by Komarek.

In order to align the pockets in briquetting roll segments prior to start up of the briquetting operation, it is expedient to rotate one roll slightly while the other one remains fixed until the two pocket halves match exactly. This alignment is necessary in order to form perfect "pillow" or other symmetrical briquettes as opposed to some offset form of shape which would be formed if rolls are misaligned. The importance of forming complete molded shapes as opposed to offset pillows is demonstrated by the fact that when offset pillows are formed the briquetted product emerges from the rolls in strip form, i.e. without breakable land impressions, rather than as separate briquettes, and frequently clogs or blocks up the passage below the machine and eventually causes a shutdown. In order to rotate one roll while the other roll remains fixed, briquette machines are normally driven by one standard floating shaft coupling and one adjustable or timing shaft coupling. The standard coupling contains no means of rotational adjustment. The timing coupling is designed to allow for the rotational adjustment required.

It has been common for the prior art device to develop "slippage", or slight misalignment under the very difficult conditions encountered in the use of a briquette machine to make briquettes from reduced iron ore. Slippage of as little as one-eighth inch at the outside diameter of the coupling is intolerable for good briquetting.

With the addition of my improvement, the major portion of the holding force required is now transferred to the new stop blocks which are much more capable of holding the initial alignment setting and therefore the slippage referred to is essentially eliminated.

SUMMARY OF THE INVENTION

This invention might best be described as an improvement to a roll drive coupling and timing mechanism for roll-type briquette machines. The improvement consists of two stop block assemblies which are mounted diametrically opposite each other on the outside of the timing mechanism. It will be further described with reference to the accompanying drawing.

FIG. **1** is an exploded perspective view of the coupling and timing portions of a drive train for a briquette mold roll machine utilizing my invention.

FIG. **2** is a detailed perspective of the major elements of my invention in coaction for use in synchronizing a mold roll with another mold roll.

Referring to FIG. **1**, the prior art assembly includes a split clamping ring **1**, a roll timing sleeve **2**, a timing sleeve flange **3**, a coupling flange **4**, roll block **5**, star wheel **6**, and roll block **7**. Mounted on the timing sleeve flange **3** is a roll timing nut **8** and passing through coupling flange **4** is roll timing screw **9**.

The improvement of my invention is the addition of fixed nut **10** on timing sleeve flange **3**, and stop block **11** on coupling flange **4**, in the respective positions shown. Through fixed nut **10** passes adjustment screw **12**.

In FIG. **2**, the parts may be seen in engagement. Fixed nut **10**, mounted on timing sleeve flange **3** is in juxtaposition with stop block **11** when timing sleeve flange **3** is assembled next to coupling flange **4**. Adjustment screw **12** has been adjusted to butt up against stop block **11**.

While prior art adjustment assembly **8** and **9** may still be used, it has been found inadequate to retain the large, heavy assembly in place for proper timing, but my improvement may be used with or without the prior art unit. When adjusted as shown in FIG. **2**, the rotation of the star wheel **6** is perfectly coordinated with the paired star wheel forming the other half of the tandem briquette mold roll machine, operating from the same drive.

Persons skilled in the art will recognize that fixed nut **10** and stop block **11** may be exchanged in position with respect to the timing sleeve flange **3** and coupling flange **4**. I do not intend to be restricted to the particular illustrations and examples of my invention shown herein. It may be otherwise variously practiced within the scope of the following claims.

I claim:

1. In a tandem roll briquette mold machine wherein the revolution timing of at least one roll is adjustable to coordinate it with the other roll, the adjustable roll having driving means including a timing sleeve and a coupling, the improvement in the timing adjustment mechanism comprising a flange on said timing sleeve, an adjusting screw mounted on said flange, and a stop block mounted on said coupling and adapted to engage said adjusting screw.

2. In a tandem roll briquette mold machine wherein the revolution timing of at least one roll is adjustable to coordinate it with the other roll, the adjustable roll having driving means including a timing sleeve and coupling, the improvement in the timing adjustment mechanism comprising a flange on said timing sleeve, a fixed nut mounted thereon, an adjusting screw mounted through said fixed nut, and a stop block mounted on

said coupling and adapted to engage said adjusting screw.

3. Apparatus for adjusting the revolutions of a mold roll in a mold roll briquetting machine synchronically with the revolutions of a tandem mold roll comprising coupling means for coupling a drive means to said mold roll, said coupling means having a drive side including drive means and a roll side including a mold roll, stop block means on one of the drive and roll (first) sides for opposing angular motion thereof with respect to the second side, and opposing angle adjusting means on the second side for adjusting the angle thereof with respect to the first side.

4. In a tandem roll briquette mold machine wherein the revolution timing of at least one roll is adjustable to coordinate it with the other roll, the adjustable roll having driving means including a timing sleeve and a coupling, the improvement in the timing adjustment mechanism comprising a flange on said timing sleeve, a stop block mounted on said flange, and an adjusting screw moutned on said coupling and adapted to engage said stop block.

5. In a tandem roll briquette mold machine wherein the revolution timing of at least one roll is adjustable to coordinate it with the other roll, the adjustable roll having driving means including a timing sleeve and coupling, the improvement in the timing adjustment mechanism comprising a flange on said timing sleeve, a stop block mounted on said flange, a fixed nut mounted on said coupling, and an adjusting screw mounted through said fixed nut and adapted to engage said stop block.

6. Apparatus for adjusting the revolutions of a mold roll in a mold roll briquetting machine synchronically with the revolutions of a tandem mold roll comprising coupling means for coupling a drive means to said mold roll, said coupling means having a drive side including drive means and a roll side including a mold roll, stop block means on one of the drive and roll (first) sides for rotational alignment thereof with respect to the second side, and opposing rotational alignment adjusting means on the second side for adjusting the angle thereof with respect to the first side.

* * * * *