(No Model.)

2 Sheets—Sheet 1.

J. A. HAMPTON.

BALING PRESS.

No. 370,475. Patented Sept. 27, 1887.

Fig. 1.

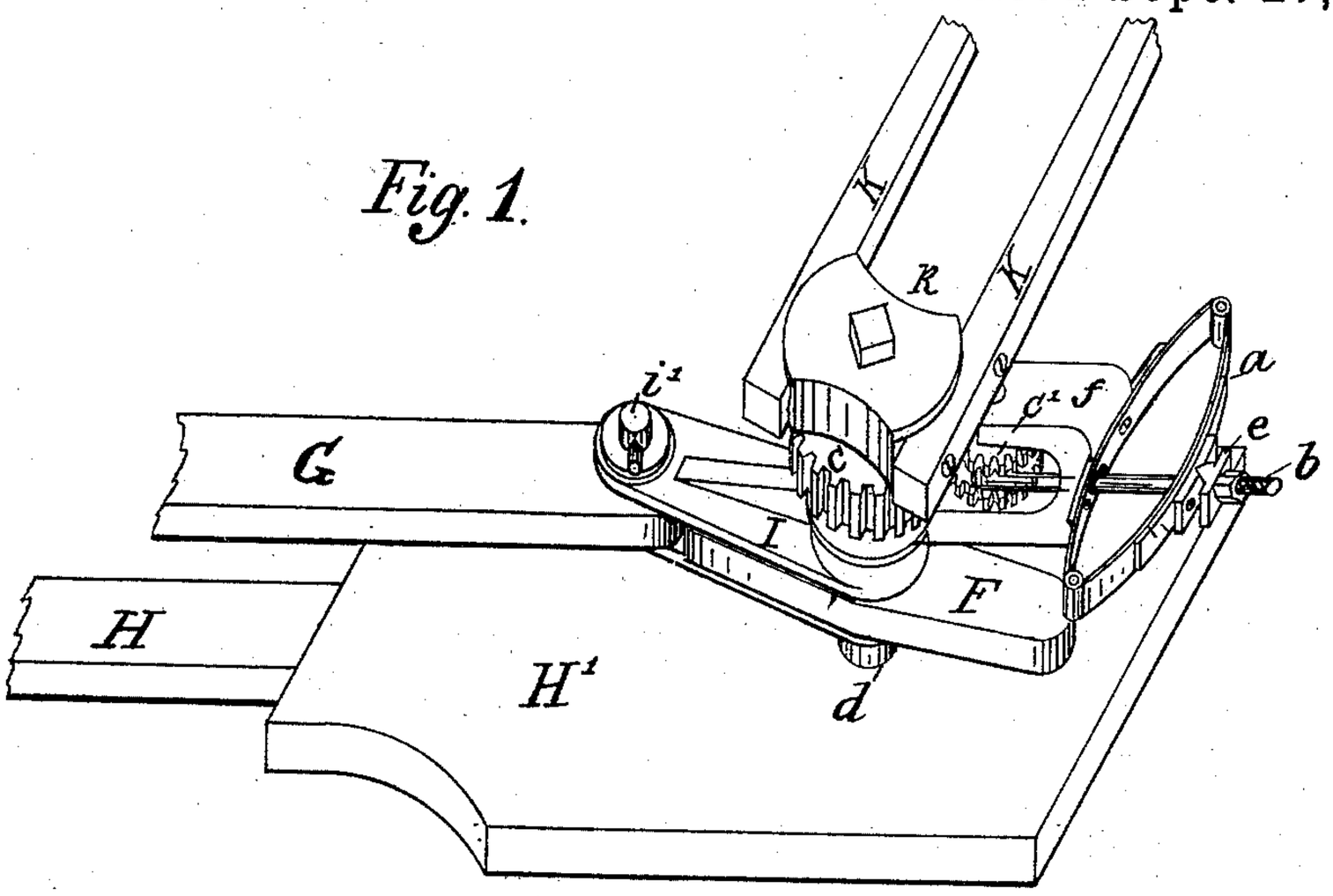
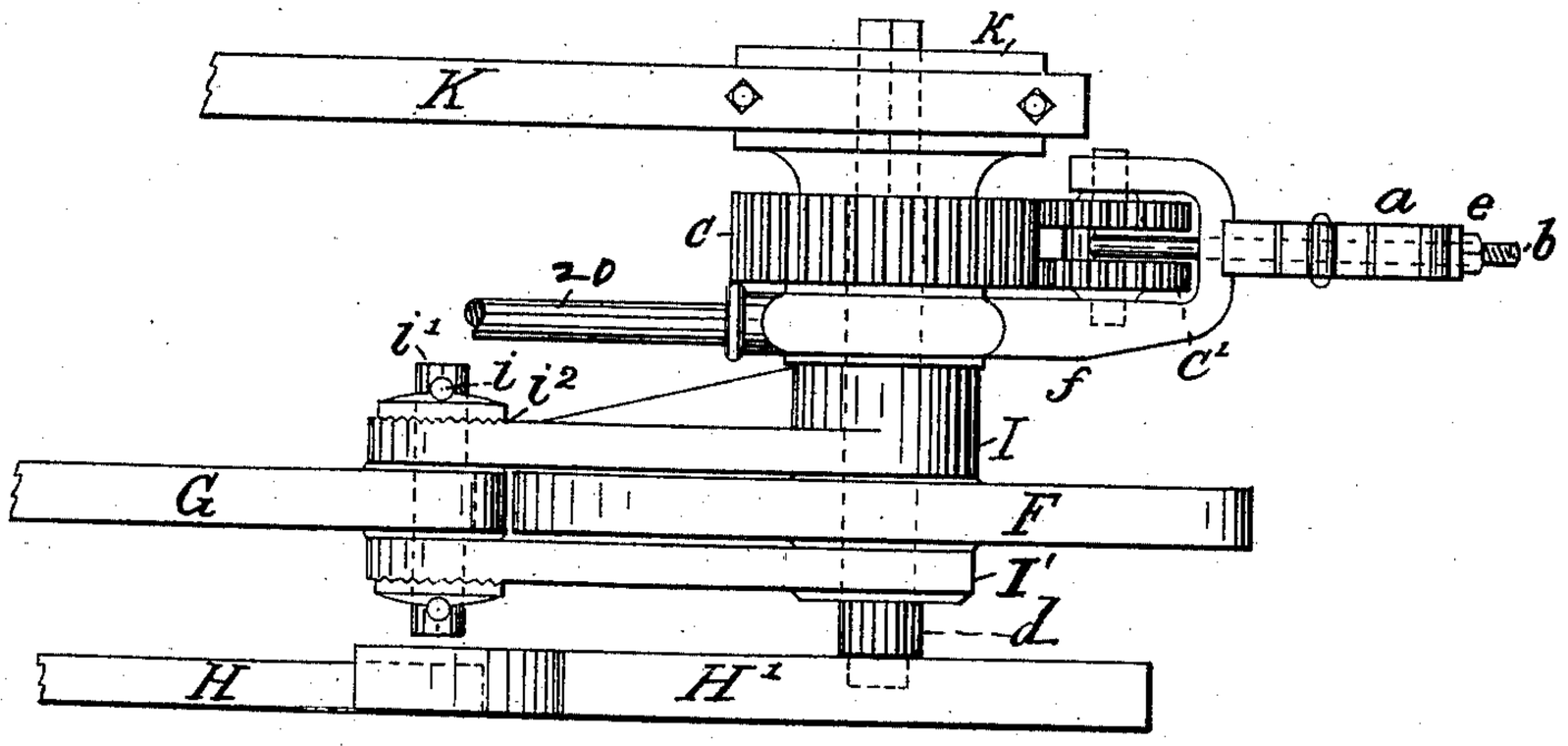


Fig. 2.



WITNESSES:

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

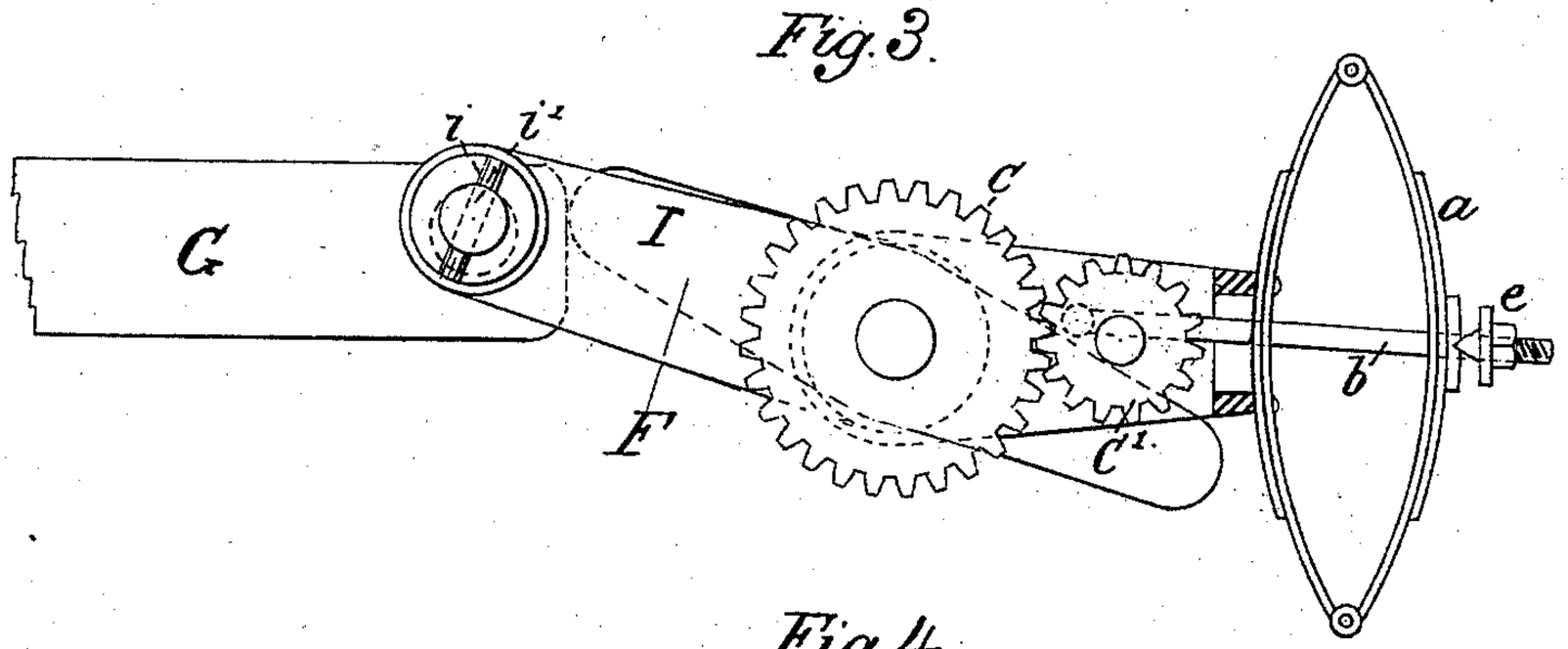


Fig. 4.

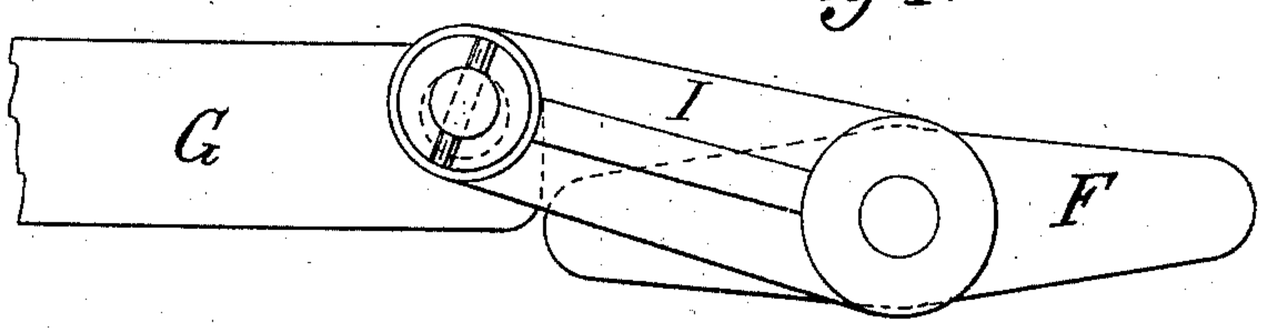
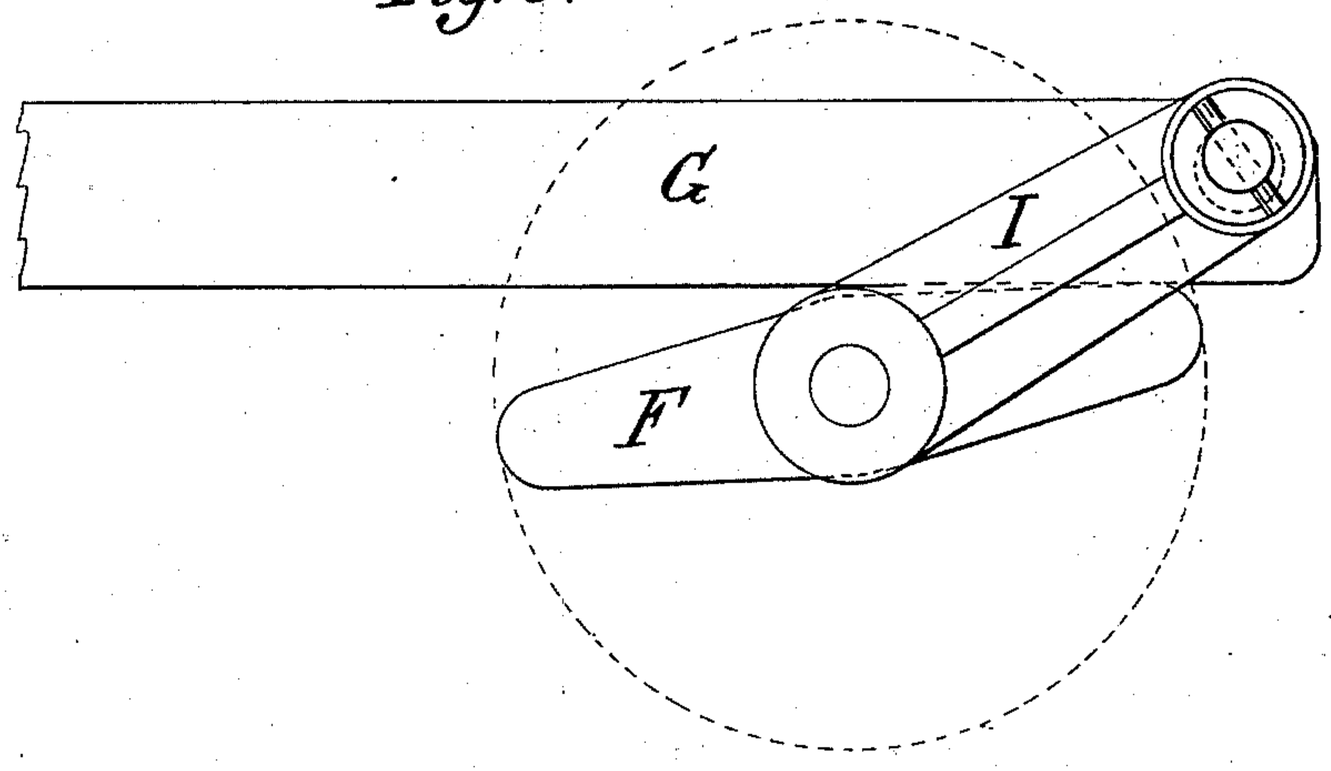


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN A. HAMPTON, OF ROSEDALE, KANSAS.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 370,475, dated September 27, 1887.

Application filed August 3, 1886. Serial No. 209,856. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. HAMPTON, of Rosedale, Wyandotte county, Kansas, have invented certain new and useful Improvements in Baling-Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

This invention relates more particularly to a horse-power for baling-presses than it does to any other portion of the machine or apparatus, and as the other portions of the press do not form any part of my present invention, I have deemed it unnecessary to show anything more in the drawings than an illustration of my arrangement of the horse-power.

The invention may be construed as an improvement upon the horse-power shown and described in my two former United States Patents that are numbered, respectively, 309,387 and 345,502.

The objects which I seek to accomplish may be briefly recited as follows: to increase the amount of power that is to be applied in compressing the material, and at the same time to lengthen the stroke of the pitman or driving-lever and thereby secure a much larger feed-space in the baling-chamber; to provide devices for releasing the pitman at any desired portion of a stroke, and to provide devices for equalizing the power that is applied to the machine, or rather to provide means for storing up a portion of the power while the operation of compression is suspended, and for releasing and utilizing such stored-up power at the point of compression that will allow it to act to the greatest advantage.

In the drawings, which illustrate the manner of carrying out my invention, Figure 1 is a perspective view of the horse-power. Fig. 2 is a side elevation of the same. Fig. 3 is a detail plan view of the equalizing devices. Fig. 4 is a detail plan view of the tripping-lever in the act of releasing the pitman, and Fig. 5 is a detail plan of the pitman in the act of beginning a stroke.

The letter H indicates a connecting-beam, which is extended in a longitudinal direction a suitable distance and firmly connected to the baling-chamber of the press in any desired way, its opposite end being connected to the bed-plate H′, as shown. At about the center of said plate I locate the lower end of the vertical shaft *d*, which I will designate as the "trip-lever shaft," and upon this shaft two cranks or links, I I′, are loosely mounted a short distance apart and in the same plane, and their outer ends are connected to the pitman G by means of the peculiarly-shaped pin *i*′, as will be more fully described farther on. Also keyed or otherwise firmly secured to said shaft and located between the said links is the tripping-lever F, which has two arms extending in the same longitudinal direction; and immediately above the link I, but not connected to it, is located a beam or rod, 20, one end of which engages the tripping-lever shaft loosely, while its opposite end is firmly connected to the press-box of the machine. Keyed to the same shaft, above the beam 20, is a main gear-wheel, C, which meshes with the pinion C′ for the purpose of compressing and releasing the spring *a* once, twice, or three times to each revolution, and above the said gear-wheel the casting *k* is located on said shaft, and to which one end of the sweep or pole K is secured. In this instance the end of said pole is shown divided or bifurcated for convenience. The end of the beam 20, which engages the trip-lever shaft *d*, and which is in the form of a casting, is extended rearwardly, so as to form a stirrup, *f*, and the pinion C′ is journaled in said stirrup. Said pinion is formed, preferably, of two oppositely-located gear-wheels, with a crank-pin between them and with oppositely-projecting journals for engaging bearings in the stirrup *f*, and these different portions are to be cast solid or integral with each other.

Firmly secured to the rear side of the stirrup *f*, in any approved way, is the spring *a*, which is adapted to be compressed and released during the operation of the machine. A connecting-rod, *b*, engages the crank-pin of the pinion C′, and connects said pinion with the spring *a*. Said connecting-rod passes from the crank-pin of the pinion rearwardly through an aperture in the stirrup and through an aperture in one leaf of said spring which registers with the aperture in the stirrup, and then over the intervening space between the two portions of the spring and through another aperture in the other leaf of said spring, as shown. The rear end of said connecting-rod

is provided with a screw-thread and nut, so that the tension of the spring may be adjusted whenever required, and as the pin in the pinion C′ describes a complete circle when the press is in operation, and as the end of said connecting-rod *b* must consequently oscillate to a considerable degree in following said crank-pin, it is obvious that the connection between the spring *a* and said rod must be comparatively loose. Therefore a metal block, *e*, having a knife-edge, is located on the said rod between the spring and the adjusting-nut, and the different apertures in the stirrup and the spring should be made somewhat oblong, and so allow room for the rod to play therein.

I would say in this connection that I could make a spiral spring answer all the purposes of the bow-spring that I show, and I only make use of a bow-spring because of its convenient form; and, likewise, I may say the gearing for compressing and releasing the spring may be changed without departing from the invention.

For the purpose of releasing the pitman G at different points in the stroke of the machine I construct the pin *i′* with an eccentric portion for engaging said pitman, as shown more clearly by broken lines in Figs. 3, 4, and 5. Hence it follows that all that is necessary to make the trip-lever release the pitman earlier is to revolve said pin in its bearings in the outer end of the links I I′, and thereby throw the end of said pitman farther away from the ends of the trip-lever; and, likewise, when a later release is desired, the pin *i′* is to be adjusted in an opposite direction. Although said pin may be held in any desired position to which it may be adjusted by means of suitable screw-threads and nuts, yet I would prefer to use the devices for this purpose which I here show, and which consist in a short pin, *i*, which is driven in an aperture in each end of the eccentric-pin *i′*, and a washer, i^2, which is serrated or provided with teeth upon one side. Of course the sides of the links I I′ which are engaged by said washers are also serrated to correspond with the teeth upon the washers. With this construction, then, when it is desired to release the pitman earlier than it had previously been released, all that is required is to remove one or both of the transverse pins *i*, which will allow the serrations of the washers to be disengaged from the teeth on the links, and then turn said pin *i′* to the desired point and replace the pins *i*.

It will be noticed that although the arms of the trip-lever F are considerably shorter than the links I I′, yet the stroke of the pitman is not dependent on the length of said arms altogether, as almost the entire width of the body of the pitman is located between the ends of the said lever and the point at which the links are pivoted to the pitman, thus virtually increasing the length of the stroke of the pitman while using a trip-lever of comparatively short length.

The operation of the invention may be described as follows: The sweep K is caused to turn in a circle toward the left hand. The ends of the arms of the trip-lever F are then in their relation brought to bear first against the side or edge of the pitman G, and then as the movement continues they roll around upon the edge of said pitman to the end, which forces said pitman toward the baling-chamber of the press, the links I I′ acting to guide the pitman and the trip-lever in their mutual relation until a point in the movement such as is shown in Figs. 3 and 4 is reached, when the rotary movement of the trip-lever causes its end to be disengaged from the end of said pitman, and it (the pitman) is caused to rebound by the expansion of the material in the baling-chamber, and a new stroke is begun, as before. Meanwhile the gear-wheel C has moved along with the trip-lever and has rotated the pinion C′, and the spring *a* has been compressed and also released during the stroke, thereby increasing or adding to the power that has been applied to the material in the baling-chamber. The relations of the main gear-wheel C and pinion C′ are in this instance such as will cause the said pinion to make one complete revolution every time the sweep K makes a half one.

The power that is stored up by the spring is released and applied to help compress the material just at the proper time—that is, after the pitman has been released and has rebounded and is just in the beginning or at the middle of its stroke, as shown in Fig. 5.

In conclusion I would say that the power taken from the sweep for the purpose of compressing the spring is, or should be, taken at such time as it is not needed for other purposes—that is, the spring is, or should be, compressed while the machine is running lightest, after the pitman has done its severest work and before it gets to the middle of another stroke. At the middle of its stroke, it will be remembered, is where the power that is stored up in the spring is to be released and thrown upon the pitman, as before described. Thus all irregularity of movement will be overcome, and the resistance to the power applied to the sweep will be practically the same at any point or portion of a revolution.

Having thus described my invention, what I claim is—

1. In a baling-press, a trip-lever shaft, gearing connected therewith, and a spring, in combination with a trip-lever, links, and pitman, arranged and adapted to operate substantially as described.

2. In a baling-press, the combination of the base-plate H′, vertical shaft *d*, tripping-lever F, pitman G, links I I′, connecting-beam 20, having an extension in the form of a stirrup, *f*, gear-wheel C, pinion C′, journaled in said stirrup, connecting-rod *b*, and spring *a*, for the purpose described.

3. In a baling-press, the combination of pin *i′*, provided with an eccentric portion for engaging a bearing in the pitman of the machine, suitable devices for locking said pin in posi-

tion, pitman G, links I I′, and tripping-lever F, for the purpose described.

4. In a baling-press, the combination of a pin provided with an eccentric portion, as described, serrated washers i^2, links I I′, also serrated for the reception of said washers, a pitman, the tripping-lever F, and the shaft *d*, all arranged to operate substantially as described.

5. In a baling-press, a trip-lever shaft and gearing connected therewith, in combination with a spring which is alternately contracted and expanded during the rotation of said shaft, substantially as described.

6. In a baling-press, a device for storing power, consisting in the combination of a vertical power-shaft, a main gear-wheel keyed on said shaft, a pinion operating in stirrup *f* and meshing with said gear-wheel, a spring, and a rod connecting said spring with said pinion, all arranged and adapted to operate substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN A. HAMPTON.

Witnesses:
JOSEPH HODNETT,
C. A. KENYON.